



Smart Cities Plan

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# NATIONAL CITIES PERFORMANCE FRAMEWORK

Final Report



Australian Government



# COPYRIGHT

## Statement

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### National Cities Performance Framework

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ISBN: 978-1-925362-97-8

National Cities Performance Framework Final Report  
(PDF)

ISBN: 978-1-925363-02-9

National Cities Performance Framework Final Report  
(Hardcopy)

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# FOREWORD

Australia's success in the 21st century economy depends on our cities, suburbs and regional centres.

Australia's most valuable resource is our human capital. Our people – their ideas, skills, experience and enterprise – are the driving force of productivity growth and our future prosperity.

Great cities attract, retain and develop talent – our bright minds and businesses – facilitating job creation and supporting growth.

Increasingly our cities compete on a global stage, and the liveability of a city can be the determining factor in a city's success.

Today, Australia's cities are amongst the world's most liveable.

While the opportunities have never been greater, every city has its own fingerprint, its own DNA, and a one size fits all approach will not work.

Congestion and affordability can be critical in capital and major cities with strong growth. In contrast, many regional cities perform well across measures of liveability but can suffer from more limited local employment opportunities. By understanding the diverse make up of Australia's largest metropolitan and regional cities we can tailor local solutions.

The Turnbull Government's *Smart Cities Plan* is committed to creating the foundations for success across all Australia's cities and regional centres.

Delivering on this commitment starts with common goals, agreed across governments, and an ability to measure their delivery over time.

The National Cities Performance Framework supports this approach, measuring the performance of Australia's largest cities.

The Performance Framework is the first official cities performance framework of its kind in Australia, bringing together critical data in an easily accessible online format.



In one location, you will be able to track the performance of cities across key measures: jobs and skills; infrastructure and investment; liveability and sustainability; innovation and digital opportunities; governance, planning and regulation; and housing.

The Performance Framework will support all levels of government to better target, monitor and evaluate cities policy. As Professor Greg Clark observes in his international preface, a common evidence base is key to understanding the opportunities and challenges facing our cities.

The high quality of the Performance Framework reflects an exhaustive exploration, research and consultation process to secure the best city data sets Australia has to offer. But, the Performance Framework is also a living resource that will be improved over time, through continuous improvement, structured around annual updates and three yearly reviews.

The Government will work closely with all levels of government, industry and the community to drive these improvements. This will include drawing on resources made available through the Government's open data initiatives, including [data.gov.au](http://data.gov.au), [NationalMap](#) and the [Data Integration Partnership Australia](#).

I would like to thank all those who have contributed to this great project across the public, private, community and not for profit sectors.



*Angus Taylor*

The Hon Angus Taylor MP  
Assistant Minister for Cities  
and Digital Transformation  
December 2017



# MEASURING CITY SUCCESS:

## An International Perspective

Following the evolution of the Australian National Cities Performance Framework has been an inspiring opportunity to observe very good minds working on a complex and important quest.

Cities are an emerging focus in Australian public life. Australia is on the move towards a larger population, a greater focus on knowledge based services industries, and its famed liveability is finding a new context in great cities that rank highly in many global comparisons. Australians are moving to these cities in record numbers. With 21 Australian cities accounting for around three quarters of national population and GDP, it is now clear that Australia needs its cities to continue succeeding.

Understanding how those 21 Australian cities work, what makes them tick, how they can avoid negative paths, and secure the dividends that population growth should bring, is therefore essential.

This Performance Framework is the result of careful consideration. The expert team that prepared it note that it is the first official Performance Framework of its kind in Australia. Although similar frameworks have been developed by the OECD and World Bank, the EU, and others, few have been able to make such clear decisions about what to include or exclude.

A new science of cities is evolving globally. The World Bank's 2009 World Development Report ably showed that the rise in standards of living in lower income countries is strongly correlated with urbanisation: cities reduce poverty, they don't cause it. Recent OECD studies have shown the economic advantages of urban proximity and exchange. Cities help make businesses more productive. The Intergovernmental Panel on Climate Change's (IPCC) work keenly observes that cities are the key sites for climate change action. Smarter cities can be very environmentally efficient. Recent United Nations reports highlight the importance of well-run cities to secure development goals. In almost all fields of daily life, the city is an important context, or shaper, of life chances and human outcomes.

The Performance Framework project team has correctly differentiated between 16 important 'contextual indicators' such as life expectancy, housing prices, and languages spoken, and a further 30 'city performance indicators' such as employment growth, work trips by public transport, air quality, and local government fragmentation. The performance indicators are measures of things that can change if effective interventions are made at the local level. They are not inherited attributes that cities can do little about. The Performance Framework will measure whether cities are making progress on the things that matter, the things that they can influence.

A major value of an exercise of this kind is the creation of a common evidence base for all cities within one country. This has multiple advantages.





First, it allows us to compare the different situations across the cities using the same data. This illuminates the distinct and specific challenges or successes that each city has had. This is important for developing City Deals and other bespoke agreements that meet the specific needs of the diverse cities. This approach also helps to build up a clear picture of how the Australian urban system is emerging and changing. As the Performance Framework allows us to observe 21 cities simultaneously, it provides rich insight into patterns, trends, relationships and flows between cities. This is very important for policy, because it helps us to think about how all Australian cities can succeed, not just who is leading and who is lagging. Thirdly, this common framework of data should help to make Australian cities more visible in global reviews and studies by making comparative Australian data more accessible globally. This could have the effect of increasing the 'standing' of Australian cities globally and adding to their reputations.

One of the key challenges to resolve in the development of performance frameworks for cities is how to account for the unintended consequences of urban growth. Too often, simplistic policy propositions focus only on how to boost cities, and not on how to manage the consequences of growth and success. There are two different dimensions to this that need to be measured. The first ones are the 'side-effects' of urban growth: traffic congestion, housing price inflation, air pollution, sprawl, segregation and lengthy commutes. This Performance Framework focusses strongly on various 'side effects' and uses them as indicators of whether cities are coping well with growth or not. The second set are the 'systems-effects', the nature of change between the different cities in the Australian system, whether success in one place is at the expense of failure in another. This Performance Framework helps us to identify such changes.

As Australia enters a new phase in its policy for cities this Performance Framework can play a critical role. At the fundamental level it lays out what we should be measuring if we want Australian cities to become smarter, better places to live and work. Looking into the future, this Performance Framework will tell us if Australia's transition to a highly urbanised society is going well or not. At the more specific level this Performance Framework also provides important insights into how to frame City Deals. By focussing on issues such as local government fragmentation, transport integration or jobs accessibility it allows cities to consider how they could be better coordinating with regional neighbours. Through this, the Performance Framework can assist with quality of life improvements, including through the negotiation of City Deals, by providing the key measurable common outcomes to which such partners could subscribe.



Prof Greg Clark CBE FAcSS



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# 1. EXECUTIVE SUMMARY

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Australian cities have long been an important economic and social asset and will be more important than ever in the 21st century.

Our cities provide great opportunities for innovation and productivity in the global knowledge-based economy and are recognised as great places to live, work and study. However, our cities also face challenges that require careful management, including increasing congestion and pressure on housing, infrastructure and amenities.

The Australian Government is committed to the continual improvement of our cities. The National Cities Performance Framework will assist in this goal by providing data to help all levels of government, industry and the community make the best policy and investment decisions for Australia's future. It will support greater awareness and understanding of Australia's cities, not just for policy makers, but for all Australians.

The Performance Framework is the first official framework of its kind in Australia, bringing together critical city level data in an easily accessible online format at [smart-cities.dashboard.gov.au](https://smart-cities.dashboard.gov.au).

## Purpose of the Performance Framework

The Performance Framework will:

- help users to understand the context for the performance of cities
- help users measure the performance of cities
- support the selection, focus and evaluation of City Deals.

The role and purpose of the Performance Framework is discussed in Section 3.





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## Policy Priorities

The Performance Framework is designed to measure how well our cities are performing against the Australian Government's six Smart Cities policy priorities:

- **Jobs and Skills:** the Government aims to boost employment by supporting education, skills and industry development.
- **Infrastructure and Investment:** the Government aims to improve accessibility and productivity in cities by supporting transport solutions that efficiently connect people with jobs and services.
- **Liveability and Sustainability:** the Government aims to improve safety, social cohesion and health in our cities. The Government also aims to improve air quality, access to green space and active transport, while acting to reduce carbon emissions.
- **Innovation and Digital Opportunities:** the Government aims to harness the productive potential of information and communications technologies and the digital economy, and to make more data publicly available.
- **Governance, Planning and Regulation:** the Government aims to deliver coordinated and integrated policy, planning and investment across all levels of government.
- **Housing:** the Government aims to improve housing supply and affordability, and encourage appropriate densities and diversity of housing options.

Section 4 describes the Smart Cities policy priorities and explains how the Performance Framework helps measure their success.

## Indicators

The Performance Framework contains a select and representative set of key indicators for which nationally consistent, comparable and reliable data is available. In developing the Performance Framework, the Government drew on a range of Australian and international performance frameworks and research literature, and consulted with leading city policy and data experts.

The Performance Framework contains 16 contextual indicators and 30 performance indicators for Australia's 21 largest cities plus Western Sydney (see Box 2). These include traditional economic and social indicators – such as the unemployment rate, homelessness rate and life expectancy – as well as indicators that shed light on the specific challenges associated with living in major cities – such as peak travel delay due to traffic congestion and access to green space.

The complete list of indicators, and a discussion of how they were selected, is provided in Section 5.

## Future Directions

The creation of the Performance Framework has involved an exhaustive process of exploration, research and consultation to identify and secure the best available city level indicators. The Performance Framework is a living resource that will be improved over time, through continuous improvement, structured around annual updates and three yearly reviews.

Consistent, comparable and reliable city level datasets are often unavailable or available only for the capital cities. The Government is therefore looking to work with state, territory and local governments, industry and the community to create and locate more and better data for future iterations of the Performance Framework.

A discussion of the Performance Framework future directions is in section 6.



## 2. CITIES IN CONTEXT: Opportunities and Challenges

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Australia's cities are economic and social assets that present great opportunities for innovation, job creation and prosperity in the 21st century.

Australia's cities have been growing in social and economic importance for the past century. Today, around three quarters of Australians live and work in our largest 21 cities (Box 1: Chart 1), generating the vast majority of GDP.

The rise of our cities in recent decades reflects the increasing importance of knowledge services, which have steadily increased their share of our economy over the past 30 years (Box 1: Chart 2). Our cities are gateways to the global economy and the engine rooms for knowledge services industries, supported by rising education levels.

Continued globalisation and technological change mean our economy will increasingly rely on knowledge services (Box 1: Chart 3). Australian cities are at the forefront of this shift, supporting the necessary concentration of economic activity and exchange of ideas.

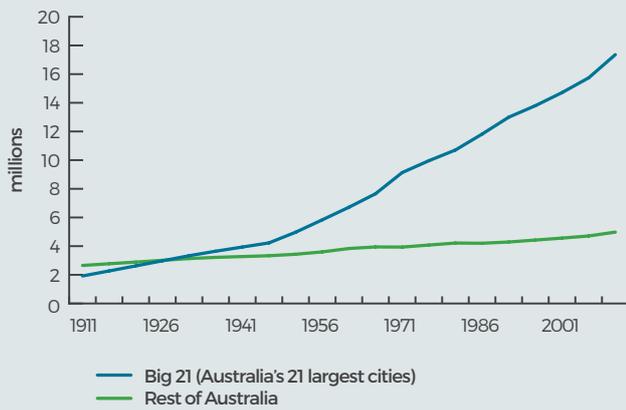
Our cities are also great places to live, work and study, regularly topping global liveability indexes. Managed well, our cities can attract, retain and develop increasingly mobile talent and organisations, encouraging them to innovate, create jobs and support growth.





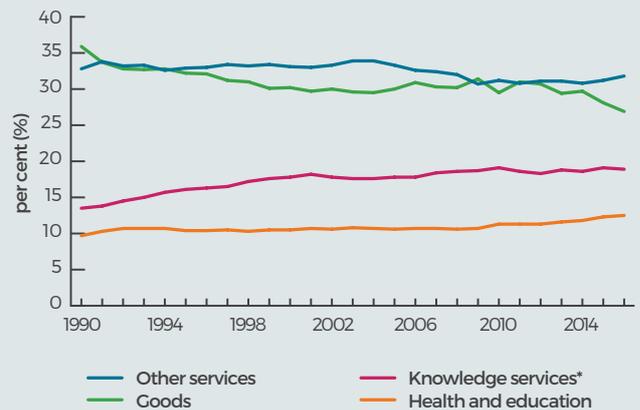
### Box 1: Australian cities in context

Chart 1: Population



Source: ABS, PM&C

Chart 2: Share of GDP by industry



\*The Department of Industry, Innovation and Science defines the most knowledge-intensive services industries as: Professional, scientific and technical services; Information, media and telecommunications; and Financial and insurance services.

Source: ABS, PM&C

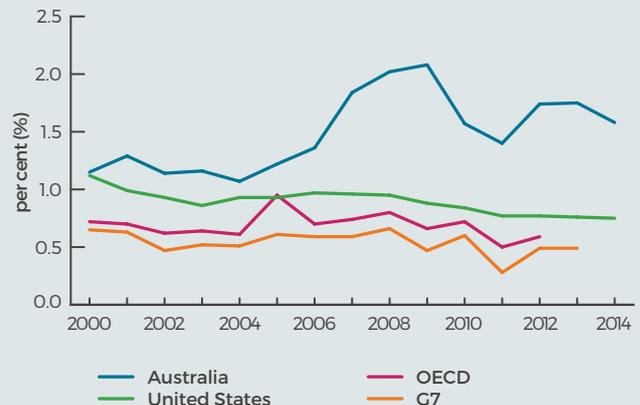
Chart 3: Knowledge services employment share



\*The Department of Industry, Innovation and Science defines the most knowledge-intensive services industries as: Professional, scientific and technical services; Information, media and telecommunications; and Financial and insurance services.

Source: ABS, PM&C

Chart 4: Population growth



Source: OECD



While the opportunities are great, our cities' success also presents challenges. Over the past decade, Australia's population growth has been double the OECD average (Box 1: Chart 4) in line with increases in net overseas migration. With around nine in 10 migrants settling in urban areas, Infrastructure Australia has projected that growth in our capital cities alone, between 2011 and 2031 will be approximately 6.4 million persons. This is equivalent to a new Melbourne and Brisbane.

Well-targeted migration provides a range of economic and social benefits for cities. For example, high skilled migration can bring in the best and brightest from overseas to fill skill gaps, build on overseas connections and start businesses that train and employ Australians. But, high population growth also increases pressure on housing, infrastructure and amenity. Careful management and reform to planning, regulation and investment is needed to accommodate these demands.

Housing affordability is a key concern in our big cities. The ratio of median dwelling prices to household income has increased for all capital cities over the past 15 years, and now sits at around eight in Sydney and around seven in Melbourne (Box 1: Chart 5).

Congestion is also a particular problem in the bigger cities, with fewer jobs accessible within 30 minutes. For example, in Brisbane 65 per cent of jobs are accessible within 30 minutes, while the figure is 60 per cent in Melbourne and 58 per cent in Sydney (Box 1: Chart 6). Accessibility can also have distributional consequences, adding to inherent employment disparities. For example, in Sydney, unemployment rates range from two per cent in the Northern Beaches to seven per cent in the South West.

While congestion and housing are less of an issue outside the big cities, smaller cities face other challenges, for example around employment and education opportunities.



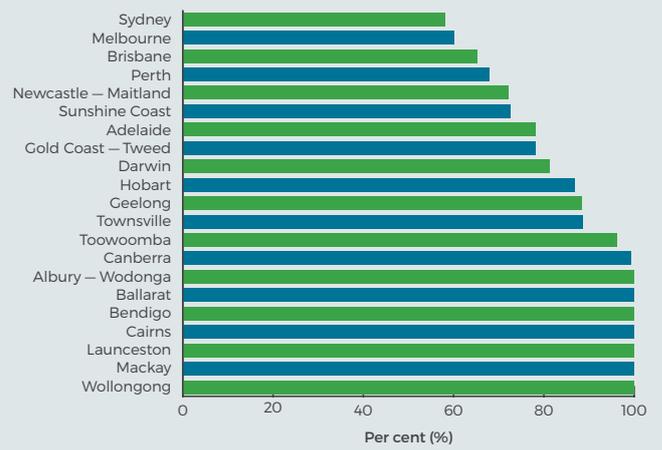
Box 1: Australian cities in context (continued)

Chart 5: Housing affordability



Source: CoreLogic, ANU

Chart 6: Share of jobs accessible within 30 minutes by car



Source: SGS Economics & Planning





### 3. PURPOSE

## of the Performance Framework

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The Performance Framework will help governments, businesses and communities better understand and measure the performance of our cities. The Performance Framework will also support governments to select, design and evaluate City Deals and implement policies to make our cities more productive and liveable.

Specifically, the Performance Framework will:

- help users to understand the context for the performance of cities
- help users measure the performance of cities
- support the selection, focus and evaluation of City Deals.

The Performance Framework contains a select and representative set of performance indicators based on nationally consistent, comparable and reliable data sets. The Performance Framework does not canvas all the unique features of every city and will support, but not replace, more detailed city level indicator frameworks, including tailored indicators developed for City Deals.

The Performance Framework is the first official framework of its kind in Australia, bringing together critical cities information in an easily accessible online format, in one location. The Performance Framework Dashboard is available at [smart-cities.dashboard.gov.au](https://smart-cities.dashboard.gov.au). The Dashboard allows users to readily track and compare the performance of cities across key measures: Jobs and Skills; Infrastructure and Investment; Liveability and Sustainability; Innovation and Digital Opportunities; Governance, Planning and Regulation; and Housing.



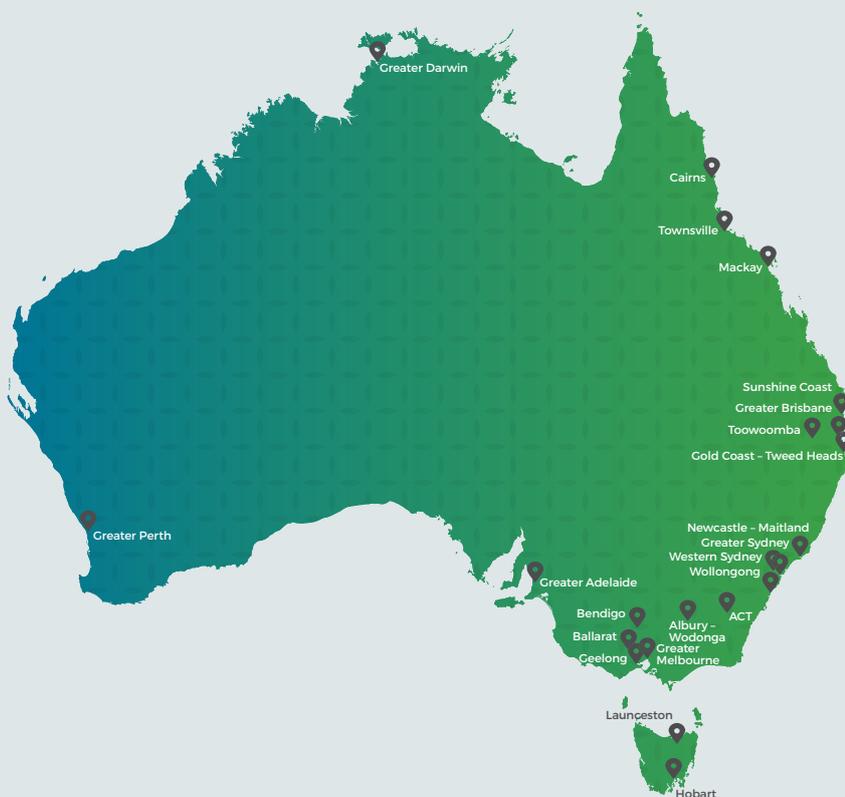


## Box 2: City coverage of the National Cities Performance Framework

The spatial extent of the cities are defined using the following geographical boundaries<sup>1</sup>:

- Capital cities are based on the Australian Bureau of Statistics (ABS) *Greater Capital City Statistical Areas*
- Western Sydney is based on an aggregation of NSW Electoral Commission Local Government Areas<sup>2</sup>
- All other cities are based on the ABS's Significant Urban Areas<sup>3</sup>

The data used to inform the city indicators were matched to city geographies using a variety of matching techniques (see Data Dictionary at Appendix A).



The Performance Framework covers Australia's 21 largest cities, plus Western Sydney:

### Cities in the Performance Framework

- Albury – Wodonga
- Ballarat
- Bendigo
- Cairns
- Canberra
- Geelong
- Gold Coast – Tweed Heads
- Greater Adelaide
- Greater Brisbane
- Greater Darwin
- Greater Hobart
- Greater Melbourne
- Greater Perth
- Greater Sydney
- Launceston
- Mackay
- Newcastle – Maitland
- Sunshine Coast
- Toowoomba
- Townsville
- Western Sydney
- Wollongong

<sup>1</sup> Any exceptions to these geographical boundaries are noted in the Data Dictionary at Appendix A.

<sup>2</sup> The Local Government Areas include those that make up the Greater Sydney Commission's Western City District and the area of the Western Sydney City Deal: Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly.

<sup>3</sup> More detail about ABS geographies can be found here: <http://www.abs.gov.au/websitedbs/D3310114.nsf/home/Geography>



## Purpose of the Performance Framework

### 3.1: Understanding City Context

The Performance Framework contains 16 contextual indicators. Contextual indicators are not designed to assess performance. Rather they help users understand a city's inherent social, economic and demographic characteristics.

Contextual indicators highlight the circumstances and characteristics of a city on dimensions that are not amenable to, or appropriate for, local policy intervention. While contextual indicators are not measures of performance, they can help to understand why a city performs the way it does and what policies may be effective for improving economic performance and quality of life. For example, a city's age distribution is not readily amenable to local policy change. However, it is important to understand when considering performance indicators such as the labour force participation rate, educational attainment and median household income.

### 3.2: Measuring City Performance

The Performance Framework contains 30 performance indicators. Performance indicators are an important tool for evidence-based policy-making. Tracking performance indicators can alert policy makers to potential issues in our cities and can provide a starting point for considering different policy options.

Performance frameworks are most effective when indicators provide insight into the policy questions under consideration. Successful performance frameworks:

- **Have clear policy objectives:** performance frameworks should set out policy objectives clearly and explain how each indicator helps measure a policy's success. Performance indicators measure how cities are performing against the Australian Government's six Smart Cities policy priorities, as outlined in Section 4.
- **Have consistent, comparable and reliable indicators:** performance frameworks should be transparent and easily understood to galvanise public support and drive more informed decision-making. A description, rationale and calculation methodology for each indicator is provided in the Performance Framework Data Dictionary at Appendix A.
- **Track performance over time and across cities:** to monitor progress and measure the effect of interventions, indicators should be tracked over time and comparable across cities. To this end, the Performance Framework will be updated annually.





### 3.3: Monitoring and Evaluating City Deals

**City Deals** are agreements between the Commonwealth, state or territory, and relevant local governments to jointly plan, invest and reform a city to deliver the objectives of the **Smart Cities Plan**.

The Performance Framework will help:

- select and prioritise locations for City Deals and allocate resources to the areas of greatest need, or where city policies are likely to have the greatest effect.
- shape the focus and content of City Deals, and provide a starting point for considering policy options.
- monitor and evaluate City Deals – the Performance Framework can be used to guide performance evaluation and to help identify if agreed City Deal commitments are achieving the desired effect or where changes may be needed.

The Performance Framework contains a select set of indicators for which nationally consistent, comparable and reliable data is available. The Performance Framework does not seek to canvas all the unique features of each city. City Deals may have their own tailored indicators in addition to relevant Performance Framework indicators. For example, in negotiating the *Townsville City Deal* governments agreed to monitor indicators of overnight visitors and tourism expenditure, given the particular importance of tourism to the city.







## 4. POLICY PRIORITIES

The Australian Government has set out six Smart Cities policy priorities that articulate the Smart Cities Plan's ambitions for smart policy, investment and technology.

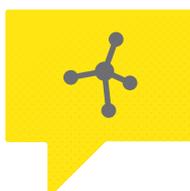
Each policy priority has three objectives that have been used to guide the selection of indicators in the Performance Framework. The policy priorities are complementary. For example, achieving infrastructure and investment objectives can also deliver higher economic growth and better amenities.



### 1. Jobs and Skills

Jobs and Skills encompasses all key elements of employment, education and training in our cities, including the performance of the labour market and the skills of the population to meet the evolving demands of the economy. The Government aims to boost employment by supporting education, skills and industry development. Jobs and Skills policy objectives include:

1. Higher economic growth
2. Higher employment
3. A more skilled workforce



### 2. Infrastructure and Investment

Infrastructure and Investment encompasses all key dimensions of the city's investment environment, with a particular focus on the quality, efficiency and effectiveness of infrastructure. The Government aims to improve accessibility and productivity in cities by supporting transport solutions that efficiently connect people with jobs and services, and goods with markets. Infrastructure and Investment policy objectives include:

1. Better infrastructure
2. Better use of existing infrastructure
3. Increased and more effective investment



### 3. Liveability and Sustainability

Liveability and Sustainability encompasses three broad dimensions: the health and wellbeing of residents; the attractiveness and amenity of the city; and the state of the environment and the local response to climate change. The Government aims to improve safety, social cohesion and health, while reducing disadvantage in local communities. The Government also aims to improve air quality, access to green space and active transport, while acting to reduce carbon emissions. Liveability and Sustainability policy objectives include:

1. Better environmental outcomes
2. Improved quality of life
3. Better amenity



### 4. Innovation and Digital Opportunities

Innovation and Digital Opportunities encompasses three broad dimensions: city productivity; innovation and entrepreneurship; and access to public and private data. The Government aims to harness the productive potential of information and communications technologies and the digital economy, including by improving the way in which data is collected, collated and distributed. Innovation and Digital Opportunities policy objectives include:

1. Higher productivity
2. Greater transparency and better data use
3. Greater innovation and entrepreneurship



## 5. Governance, Planning and Regulation

Governance, Planning and Regulation encompasses land use planning in cities and its administration, as well as how effectively city governance and regulation support economic, social and environmental outcomes. Long term planning is critical for delivering the coordinated infrastructure, housing and services that shape our cities and the lives of residents. The Government aims to deliver coordinated and integrated policy, planning and investment across all levels of government. Governance, Planning and Regulation policy objectives include:

1. Better city planning
2. Improved investment environment
3. Effective government



## 6. Housing

Housing encompasses three broad dimensions: the affordability of housing in our cities; the supply and diversity of new housing stock; and the location of housing, including the accessibility of jobs and services. The Government aims to improve housing supply and affordability, and encourage appropriate densities and diversity of housing options. Housing policy objectives include:

1. Improved housing affordability
2. Increased supply and diversity of housing
3. Housing in the right locations





## 5. INDICATORS

The Performance Framework contains both contextual and performance indicators. Contextual indicators aim to help users better understand the changes and trends in our cities. Performance indicators link to the Australian Government's six Smart Cities policy priorities and aim to inform better city policy decisions.

### Research and Development

The selection of indicators followed an extensive research and development process. The Government has drawn on a range of existing Australian and international performance frameworks and research literature, and the advice of leading policy experts. The aim was to build a sound conceptual basis for the Performance Framework, organised around the six Smart Cities policy priorities.

Key frameworks and examples of indicator dashboards drawn on in the development of the Performance Framework are set out in Box 3. The Government engaged SGS Economics & Planning to support this work. The full list of references is at Appendix F.



### Box 3: Key indicator frameworks and dashboards



Produced on four occasions between 2002 and 2013 by the Australian Bureau of Statistics, Measures of Australia's Progress (MAP) was designed to help address the question, 'Is life in Australia getting better?' MAP contains statistical measures to demonstrate change, grouped under three broad headings: the society, the economy and the environment. Each dimension contains a range of statistical measures known as progress indicators.



The *Progress in Australian Regions – Yearbook* brings together information about Australia's regions from a range of different sources and presents that data in a consistent format over time. It provides a statistical resource that can help all Australians understand how their region is progressing against economic, social, environmental and governance indicators.

Each edition provides updated information on the same set of indicators to ensure consistent measures of progress in Australia's regions over time. The Yearbook was first published in 2014 and is updated annually.



*Community Indicators Victoria* was adopted after a 2006 report commissioned by VicHealth to assess community wellbeing. It offers a comprehensive framework of indicators, divided between five domains: social, economic, environmental, democratic and cultural. Extensive consultation and analysis was undertaken to ensure that the selected indicators are comparable across all the state's Local Government Areas, draw on reliable data, and measure important aspects of the community's wellbeing.



The *Sustainable Development Goals* (SDGs) were developed by the United Nations. The SDGs are goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets over 15 years.

The 17 goals recognise the need for strategies that build economic growth, address social needs, tackle climate change and protect the environment. The goals are supported by targets and a monitoring framework. Goal 11 relates to Sustainable Cities and Communities.



CITYkeys is a recent initiative funded by the European Union HORIZON 2020 program. CITYkeys is a performance measurement framework around key performance indicators and data collection procedures for the monitoring of smart cities. Cities contribute to the project in order to gather as much evidence and feedback as possible about the practical use, benefits and challenges of key performance indicators and smart city project evaluation frameworks.



The Economist Intelligence Unit's (EIU) annual Liveability Ranking assesses 140 cities across the world, producing an overall liveability score on the basis of thirty indicators in five categories: stability, healthcare, culture & environment, education and infrastructure. The EIU's rankings are widely cited and provide a simple snapshot of cities' success in providing overall quality of life for their residents.



The International Organization for Standardization publishes standards relating to a wide range of goods, products and services. ISO 37120 provides a holistic and integrated approach to sustainable development and resilience for cities and regions. It covers a range of city services and aims to improve quality of life within cities. It does not provide targets, but can be used to track and monitor city performance.

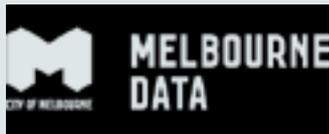


In August 2017, the City of Adelaide released an *Economic Insights Dashboard* that brings together data from a variety of external sources and makes internal data accessible for public use. The Dashboard includes indicators covering demographics, the economy, employment, city businesses, property and tourism.

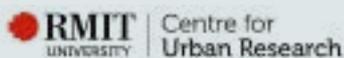


Tasmania Together was a long-term plan developed by the Tasmanian State Government and overseen by an independent body, the Tasmania Together Progress Board. Tasmania Together was adopted in 2001, and set twelve goals to be achieved by its end date of 2020. 143 benchmarks relating to these goals were identified to measure the state's progress.

### Box 3: Key indicator frameworks and dashboards



The City of Melbourne's Census of Land use and Employment (CLUE) provides comprehensive information about land use, employment and economic activity. Every two years the City of Melbourne conducts a census of all local businesses on questions such as: current land use, change in land use, types of business and how fast they are growing and key trends in employment. CLUE assists the City of Melbourne's business planning, policy development and strategic decision making. Select datasets are available on Melbourne Open Data.



The Centre for Urban Research was formed in 2012 by urban researchers from across RMIT University's School of Global, Urban and Social Studies to collaborate as part of a national hub for applied and policy-relevant urban research. The Centre provides leadership at RMIT University in the study of critical urban issues, and builds connections with industry, not-for-profits and government. The Centre includes the Healthy Liveable Cities Group, which examines the influence of city design and planning on health and wellbeing.



The *Green Star – Communities* program is run by the Green Building Council of Australia. Precincts, neighbourhoods and communities that apply for accreditation are scored against indicators in the following categories: Governance, Liveability, Economic Prosperity, Environment and Innovation. A rating of one to six stars is awarded on the basis of these indicators. The Green Star – Communities framework is used by governments and organisations across the country.



The Australian Urban Research Infrastructure Network (AURIN) provides a common data portal to provide meaningful data and knowledge – urban intelligence – as the evidence base for informed decisions about the smart growth and sustainable development of Australia's cities and towns. AURIN provides access to quality urban data which can be used to track how cities are developing and changing.



The Regional Australia Institute has developed an online interactive map to unlock insights into regional performance. [In]Sight: Australia's Regional Competitiveness Index snapshots the competitiveness of Australia's Local Government Areas and Regional Development Australia regions by highlighting data and rankings for ten themes and 68 indicators.



Committees and peak bodies produce a variety of benchmarking reports and strategies, which aim to measure the performance of cities.

The Committee for Sydney has produced two annual benchmarking reports, which assess Sydney's attractiveness in fourteen domains against major global cities. The Australian Sustainable Built Environment Council has released a success indicator framework for cities outlining its priorities for the development of transparent and consistent indicators across all of Australia's major cities.







## Consultation

Preparation of the Performance Framework has involved extensive consultation across the three tiers of government, industry and the community. This included expert workshops, roundtables, bilateral meetings and an online forum established for the Cities Reference Group. The Government also released the Performance Framework Interim Report for public feedback in July 2017 and invited submissions.

Submissions and stakeholder consultations have been positive about the introduction of the Performance Framework and the prospect of a coordinating role for the Australian Government in measuring cities' performance. Stakeholders have provided many useful insights and data sources, resulting in a substantial improvement to the Performance Framework report, online dashboard and indicators (see Appendix B for indicators removed since the Interim Report).

Some stakeholders suggested extending or expanding the scope, coverage and depth of the Performance Framework. In particular, some stakeholders suggested the Performance Framework cover more cities and sub-city locations and include more or different indicators. Other stakeholders emphasised the need to keep the Performance Framework to a small number of select and representative indicators to ensure it remained clear and accessible.

The Government would like to thank all those who contributed to the development of the Performance Framework during the consultation process. All stakeholder indicator suggestions have been recorded and these will continue to inform the Government's priorities for the Performance Framework (see Section 6 for future directions). A full list of stakeholders consulted in the preparation of this report is at Appendix D and a list of those who provided a formal submission to the Interim Report are at Appendix E.

## Selection Criteria

Through research and consultation, the Government first identified then shortlisted indicators that embody the six Smart Cities policy priorities. The list was then refined with the aim of identifying a small set of nationally consistent, comparable and reliable indicators. The final set of indicators is not intended to be exhaustive. The Government has made a conscious decision to keep the Performance Framework as streamlined as possible to avoid what one stakeholder referred to as the 'indicator labyrinth'.

Shortlisting of indicators was guided by the internationally accepted Civitas criteria, adapted to the Australian context:<sup>4</sup>

- **Relevance:** Performance indicators must be relevant to the Government's six Smart Cities policy priorities. Performance indicators were favoured that are amenable to policy change and that have broadly accepted policy interpretations (i.e. a fall in unemployment is good, a rise bad).
- **Completeness:** Indicators have been selected to cover all six policy priorities (Jobs and Skills; Infrastructure and Investment; Liveability and Sustainability; Innovation and Digital Opportunities; Governance, Planning and Regulation; and Housing).
- **Data availability:** Indicators were prioritised that have, and will continue to have, data series available for most of the 21 largest Australian cities and Western Sydney.
- **Comparability:** Indicators that are defined and measured consistently across the 21 cities were preferred to enable meaningful comparison of data. Internationally accepted indicators were also favoured to allow for international comparisons.

<sup>4</sup> Rooijen, T., Nesterova, N. & Guikink, D. 2013.



## Indicators

- **Reliability:** Indicators were favoured that are underpinned by objectively, accurately and quantitatively measured data. Indicators should have clear definitions that are not subject to different interpretations. This holds for the definition itself and for the calculation methods behind the indicator.
- **Familiarity:** The indicators should be easy to understand by decision makers and key stakeholders. Indicators were preferred that are standard or commonly-used benchmarks of performance.
- **Non-redundancy:** Indicators within a system or framework should generally not measure the same element of a policy priority. This means only one indicator was generally selected for each policy element. Similarly, where possible, highly correlated indicators were excluded to avoid double counting of effects. However, some indicators have implications for more than one policy priority (see Box 8).



## Challenges and Compromises

The Australian Government has aspired to populate the Performance Framework with indicators that meet all of the adapted Civitas criteria, but, largely due to data limitations, this was not always possible.

### Data limitations

Australia produces a wealth of economic, social and environmental data and this is growing all the time. However, there is a range of limitations that has required compromises in the Performance Framework:

- **Proxy indicators have been used in some cases due to the absence of data** on the primary issue of interest. For example, comparable data on violent crime is not available for all states and territories. Instead, the Performance Framework uses an indicator measuring perceived safety.
- **Source data is not available at city geographies.** To deal with this problem, data for geographically overlapping regions are adjusted to match city geographies. For example, a number of city-level indicators, such as the unemployment and participation rates, were constructed as averages of smaller-area data using weights based on population size. In some cases, such as GDP per capita, data was not available at all (Box 4).
- **Survey data for cities is subject to larger standard errors** than state or national-level data. These errors can be especially large for small cities. Additionally, seasonal patterns can affect data that is collected every month or every quarter. To address these issues, monthly and quarterly data have been converted to annual averages.
- **Data is not always available on a regular basis.** For example, some indicators are based on Australian Census data, which is available only every 5 years.



#### Box 4: City-level economic output (Gross Domestic Product)

Gross domestic product (GDP) is the standard measure for assessing an economy's size and performance. The ABS produces official GDP and gross state product measures for the National economy and the state and territory economies. There is no official measure of economic output for Australia's cities.

In the absence of an official ABS measure, a number of alternative estimates have been produced using a variety of techniques. One of these estimates was included in the Performance Framework Interim Report under the Jobs and Skills policy priority.

Feedback on the Interim Report noted that estimates of city-level economic output vary widely depending on the techniques and assumptions used and they tend to produce inconsistent rankings. For this reason, no estimates of economic output, output per capita, or output per worker (labour productivity) are included in the Performance Framework.

The Government will further explore options for city-level economic output estimates, with a view to including this indicator in future Performance Framework updates.

#### Performance Indicator Limitations

Ideal performance indicators can be used to assess the complete and final stage effects of a policy (Box 5). Often termed 'outcome' or 'impact' indicators, this type of indicator tracks and measures the quality and quantity of long-term results generated by policy interventions. Examples of this type of indicator in the Performance Framework include air quality and peak travel delay. Where such indicators were unavailable or of insufficient quality, 'output' or 'input' indicators have been included. For example, social cohesion is an important part of liveability, but was not available, so support in times of crisis and volunteering rates have been used.

The effect of policy interventions may not always be clearly reflected in performance indicators. In some cases, policy interventions will have a direct and immediate impact on an indicator – for example, on broadband connections or the amount of public housing in a city. However, in other cases, factors, some beyond the control of governments, can swamp the effects of localised policy interventions. For example, the short-term effect of changes in macroeconomic conditions on employment growth in a city may be larger than any given government policy change.





### Box 5: Performance Indicator Types

Indicator types included in the Performance Framework are:

- **Input indicators:** These indicators relate to whether a city has the right resources in place to achieve a particular activity or intervention. Input indicators are useful for tracking policy decisions, because they can be updated quickly once an action occurs. However input indicators cannot tell whether the ultimate policy objective is achieved. An example of an input indicator in the Performance Framework is population change per building approval.
- **Output indicators:** These indicators measure the results of an activity. Like input indicators, output indicators can be updated quickly once an action has occurred. However output indicators cannot tell whether the ultimate policy objective is achieved. Output indicators in the Performance Framework include homelessness rates and broadband connections.
- **Outcome and impact indicators:** These indicators measure the quality and quantity of long-term results generated by program outputs. These indicators can often only be measured well after the activity has occurred. Outcome and impact indicators in the Performance Framework include air quality and peak travel delay.

### 5.1: Contextual Indicators

Contextual indicators highlight the circumstances and characteristics of a city on dimensions not amenable to, or appropriate for, local policy intervention. While contextual indicators are not measures of performance, they can help to understand why a city performs the way it does and what policies may be effective for improving economic performance and quality of life. For example, the age distribution (age dependency ratio) is not readily amenable to local policy change. However, it is important to understand a city's age distribution when considering performance indicators such as the labour force participation rate, educational attainment and median household income.

A list of contextual indicators is provided at Box 6. Detailed information about each contextual indicator, including how it is calculated, the source of the data, why it matters and its limitations is provided in the Performance Framework Data Dictionary at Appendix A.

### Box 6: Contextual Indicators

- Population size and growth
- Indigenous population share
- Population density
- Dwelling type
- Household size
- Housing tenure
- Life expectancy
- Share in bottom income quintile
- Index of Relative Socio-economic Disadvantage
- Languages other than English
- Age dependency ratio
- Housing prices
- Sector share of employment
- Disability rate (*New*)
- Household income
- LinkedIn connectivity



## 5.2: Performance Indicators

Performance indicators reflect the performance of cities in achieving wider economic, social and environmental objectives. Performance indicators aim to help governments implement city strategies by linking the six Smart Cities policy priorities to clearly defined performance measures.

A list of performance indicators is at Box 7. Detailed information about each performance indicator, including how it is calculated, the source of the data, why it matters and its limitations is provided in the Performance Framework Data Dictionary at Appendix A.

### Box 7: Performance Indicators

#### Jobs and Skills

- Employment growth (*New*)
- Unemployment rate
- Participation rate
- Educational attainment

#### Infrastructure and Investment

- Jobs accessible in 30 minutes
- Work trips by public and active transport
- Peak travel delay

#### Liveability and Sustainability

- Adult obesity rate
- Perceived safety (*New*)
- Access to green space
- Green space area
- Support in times of crisis
- Suicide rate
- Air quality
- Volunteering (*New*)
- Greenhouse gas emissions per capita
- Office building energy efficiency (*New*)
- Access to public transport (*New*)

#### Innovation and Digital Opportunities

- Knowledge services industries
- Broadband connections
- New business entrants and exits
- Patents and trademarks

#### Governance, Planning and Regulation

- Governance fragmentation

#### Housing

- Public and community housing
- Homelessness rate
- Rent stress
- Mortgage stress
- Housing construction costs
- Dwelling price to income ratio
- Population change per building approval



### Box 8: Mapping performance indicators to policy priorities

The six Smart Cities policy priorities provide a practical reference point for the Performance Framework but the Government recognises that in some cases indicators may contribute to more than one policy priority. For example, the homelessness rate is categorised as a housing performance indicator as housing authorities manage many of the relevant policy levers. However, homelessness is also relevant for the social objectives contained in the Liveability and Sustainability policy priority.

In the end, the Government took the view that the exact linkage between indicators and the policy priorities is less important than ensuring all key indicators are included in the Performance Framework.

Figure 1: Policy priorities overlap







## 6. FUTURE Directions

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The Performance Framework is a living resource that will be improved over time, through continuous improvement, structured around annual updates and three yearly reviews. The Government will work closely with state and local governments, industry and the community to improve and refine the Performance Framework.

### 6.1: Continuous Improvement

The Government will update the Performance Framework annually, starting in 2018-19.

- **Data updates:** The data underpinning existing Performance Framework indicators will be updated annually, where possible. In some instances, for example, for Census data, which is updated only every five years, alternative proxy data sources will be investigated. The use of time series data will also be considered.
- **Indicator updates:** The Performance Framework will be reviewed annually to identify options to improve existing indicators or substitute new indicators where better data become available. For example, for energy use and greenhouse gas emissions (Box 9). A list of potential future indicators is at Appendix C, which includes city-level GDP (Box 4).
- **Sub-city information:** The Performance Framework may be updated to include information on indicators to illustrate variation at the sub-city level for the five mainland state capital cities where data is available.
- **Research supplements:** The Government will consider commissioning annual policy research papers on themes related to the Performance Framework. These research papers could consider urban topics, such as housing, skills or innovation, or themes that cut across city types, such as capital cities, regional cities or urban growth areas.





### Box 9: City level estimates of greenhouse gas emissions per capita

Reporting each city's greenhouse gas emissions is a key ambition of the Performance Framework.

At present, there is no official measure of city level greenhouse gas emissions per capita, or city level energy consumption, on which to base an emissions measure. The official measure of Australia's greenhouse gas emissions is the National Greenhouse Gas Inventory, produced by the Department of the Environment and Energy. However, this measure is currently only available at the national, state and industry sector level.

A number of Australian local governments participate in international carbon reduction schemes, which require an emissions inventory. Examples include the Compact of Mayors, the Carbon Disclosure Project, and the Carbon Climate Registry. However, these calculations use widely varying methodologies, which makes comparison between cities difficult.

In light of these limitations, the Performance Framework currently includes a modelled estimate of per capita emissions based on an allocation of state-level emissions (see the Performance Framework Data Dictionary at Appendix A).

The CSIRO, in collaboration with the Department of the Environment and Energy and stakeholders from across the energy sector, is currently bringing together energy-use data from a diverse range of sources to create, for the first time, a more comprehensive picture, called the Energy Use Data Model (EUDM). The EUDM will provide publicly accessible fine-grain energy-use data through a central online platform. Launch of the initial EUDM platform – expected in 2018 – will support the construction of more accurate and comparable city level energy consumption data. This will allow more robust emissions estimates to be included in future updates of the Performance Framework.

## 6.2: Three-Yearly Reviews

The Government will review the Performance Framework every three years in consultation with state and local governments, industry and the community, starting in 2020. The review will include an assessment of the Performance Framework purpose, policy priorities, coverage and indicators. It will consider the need to include additional cities and sub-city level information where this is identified as a priority by stakeholders, and data is available. The review will also consider the potential for international benchmarking of Australian cities to help policy makers to better understand how our cities are placed to compete in the global economy.





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### 6.3: Future Work

A set of possible future indicators that the Government is considering for inclusion in the Performance Framework are at Appendix C. For several of these, such as greenhouse gas emissions and energy consumption, work is well underway within the Australian Government. In other cases, such as comparable and timely crime statistics or information on development approval time, inclusion is an aspiration, and there is considerable work to be done to create and make available the data needed for the relevant indicators.

We are also exploring options with the Australian Urban Research Infrastructure Network (AURIN) to collect new data to underpin improved indicators in the Framework. AURIN connects data providers to data users in a secure, seamless and controlled environment.

The Government is also exploring options to engage private sector data experts and providers of data exchanges to facilitate engagement with the Commonwealth to help broader access to city-level data sets. More broadly, the Government is seeking to improve the access and use of public and private data through a range of initiatives (Box 10).





## Box 10: The Australian Government's Data Agenda

### *Data Integration Partnership for Australia*

The Government established the Data Integration Partnership for Australia (DIPA) in 2017 to coordinate the public sector's data activities to maximise the use and value of the Government's vast data assets. The DIPA will support evidence based policy decision making, including for Australian cities. By 2020, the DIPA will provide:

- An integrated and geospatially enabled data asset drawing on public sector data from the Departments of social services, health, education, industry, employment, the environment and the tax office
- Timely information, updated at regular and reliable intervals minimising lag between collection and availability
- Detailed information about demographic, social and economic outcomes using population models built from multiple data sources
- Improved understanding of life course transitions, household changes and physical mobility to inform urban planning

### *Smart Cities and Suburbs Program*

The \$50 million Smart Cities and Suburbs Program supports collaborative projects that implement technology based solutions to urban challenges. Projects will deliver collaboration between local governments, industry, research organisations, tech start-ups and manufacturers in cities and towns across Australia. Under Round One of the Program, the Government will provide a total of \$28.5 million for 52 innovative projects across Australia. Projects will help to address a wide range of urban challenges, such as congestion, environmental management, parking, development planning, public safety and accessibility of information and services. Round One will support the roll-out of a wide range of technologies, for example: trialing a driverless electric shuttle in Perth to help reduce congestion; a city-scale transport, energy and digital infrastructure network in Newcastle; and CCTV, smart lights, wifi and smart parking in Darwin.

### *CSIRO Future Cities Program*

The newly established 'Future Cities' initiative will provide greater visibility and awareness of the CSIRO's research into cities, people and urban life and increase the opportunities for collaboration. At the national scale, CSIRO is developing an Energy Use Data Model (EUDM — See Box 9) to enable new insights into how peak load, daily load shape, demographics, technology and environment all interact to drive energy behaviour. The CSIRO is also developing forecasting systems, chemical transport models and emissions inventories to help measure, understand and reduce the impacts of air pollution in urban Australia.

At the local scale, CSIRO is establishing a network of Urban Living Labs to support place-based urban experimentation and learning. CSIRO recently launched The Sydney Science Park Urban Living Lab in partnership with property developer Celestino in Western Sydney. The Urban Living Labs provide a unique opportunity to investigate the relationships between urban greening, energy efficiency, demand for water, community wellbeing and health.

### *Productivity Commission Data Availability and Use Inquiry*

The Government will shortly respond to the 2017 Productivity Commission Data Availability and Use Inquiry. The inquiry report highlighted a number of data management and use issues. For example, no single agency oversees what data Government agencies are collecting or how that data might be made more accessible. The Government is carefully considering the Productivity Commission's recommendations including new institutional and governance arrangements to facilitate greater data sharing and release.



# APPENDIX A:

## Data Dictionary

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### Data limitations

The Data Dictionary identifies limitations that affect particular indicators. In addition, the National Cities Performance Framework *Final Report* describes a range of limitations that apply more broadly to indicators in the Performance Framework (see 'Challenges and Compromises').

### Geographical glossary<sup>5</sup>

#### Western Sydney

Western Sydney is based on an aggregation of the NSW Electoral Commission Local Government Areas that make up the Greater Sydney Commission's Western City District and the area of the Western Sydney City Deal: Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly.

#### GCCSA

Greater Capital City Statistical Areas

#### LGA

Local Government Areas

#### SA2

Statistical Areas Level 2

#### SA3

Statistical Areas Level 3

#### SA4

Statistical Areas Level 4

#### SUA

Significant Urban Areas

<sup>5</sup> Information on ABS statistical areas is available at [http://www.abs.gov.au/websitedbs/D3310114.nsf/home/Australian+Statistical+Geography+Standard+\(ASGS\)](http://www.abs.gov.au/websitedbs/D3310114.nsf/home/Australian+Statistical+Geography+Standard+(ASGS))

## Contextual Indicators

### Population

#### Description

The number of people who live in a city. The latest annual population growth rate and the average annual growth rate over the past decade are also provided.

#### Rationale

Information about population levels and population growth over time can help users to understand likely pressures on housing, public infrastructure and services.

#### Data source

ABS — Regional Population Growth (Cat. No. 3218.0) — 2016

#### Source-data geography

SA2 (ASGS 2016)

#### Method

SA2 data are summed to align with city geographies.

#### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

#### Unit

Persons

#### Data update

Annually



## Indigenous population

### Description

The proportion of a city's population that identify as Aboriginal or Torres Strait Islander.

### Rationale

Aboriginal and Torres Strait Islander peoples are culturally and linguistically diverse. However, common to Aboriginal and Torres Strait Islander communities is a culture that is different to the non-Indigenous culture. Elements of cultural difference may include, but are not limited to: concept of family structure and community obligation, language, connection to country and continuation of traditional knowledge. This in turn has an effect on the areas of concern that Aboriginal and Torres Strait Islander peoples might see as important to their wellbeing (see ABS Frameworks for Australian Social Statistics, 2015).

### Limitations

The ABS estimates that the 2016 Census undercounted the Indigenous population by around 18 per cent.

### Data source

ABS – *Census of Population and Housing 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data are summed to align with city geographies and proportions are calculated.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Five yearly

## Population density

### Description

Population density is measured as the number of persons per square kilometre in each city. Density estimates vary within cities as well as across cities. To control for within-city variation, city-wide estimates are constructed using a population-weighted average.

### Rationale

Increasing density enables more people and businesses to access the benefits of being in a city, and can, for example, help spread the costs associated with building and maintaining infrastructure. However, increasing density also puts increased stress on the existing built and natural environment and can detract from a city's liveability.

### Data source

ABS – Regional Population Growth (Cat. No. 3218.0) – 2016

### Source-data geography

SA2 (ASGS 2016)

### Method

Population densities are calculated for SA2s. SA2 density estimates are then aggregated to city geographies using a population-weighted average.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Persons per square kilometre

### Data update

Annually



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## Dwelling type

### Description

The share of dwellings in a city that are detached houses, semi-detached houses, apartments or other.

### Rationale

This indicator shows the degree of diversity in a city's housing stock. Understanding this diversity can provide insights into a city's population density, the dwelling options available to households, and local infrastructure, service and amenity needs.

### Data source

ABS – *Census of Population and Housing 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data are summed to align with city geographies and proportions are calculated.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Five yearly

## Average household size

### Description

The average number of people per occupied dwelling in a city.

### Rationale

Trends in household size contain information about consumption and lifestyle preferences, the size of dwellings and housing affordability.

### Data source

ABS – *Census of Population and Housing 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data on usual residents of dwellings and total number of occupied dwellings are summed to align with city geographies. A simple average is then calculated using the derived totals.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Persons per dwelling

### Data update

Five yearly



## Housing tenure

### Description

The share of occupied private residential dwellings in a city that are owned outright by the occupier, owned with a mortgage, rented, or other.

### Rationale

Housing tenure data can help users understand how changes in housing policy or the housing market will affect a city's residents.

Housing tenure has an impact on labour mobility. Owner occupiers are typically less likely to move locations compared with renters. Housing tenure also tends to be correlated with housing density: a larger share of renters live in higher density housing, and a larger share of owner-occupiers live in detached houses.

### Data source

ABS – *Census of Population and Housing 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data are summed to align with city geographies and proportions are calculated.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Five yearly

## Life expectancy at birth

### Description

The number of years a person born today is expected to live, assuming current age-specific death rates are experienced throughout their lifetime.

### Rationale

Life expectancy is a proxy for the health of a city's population.

### Data source

ABS – Life Tables, States, Territories and Australia (Cat. No. 3302.0.55.001) – 2014–2016

ABS – Regional Population Growth (Cat. No. 3218.0) – 2016

### Source-data geography

SA4 (ASGS 2016)

SA2 (ASGS 2016)

### Method

Life expectancy values are constructed using population weights.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Years

### Data update

Annually



## Share in bottom household income quintile

### Description

The share of a city's households in the bottom 20 per cent of the national household income distribution. A figure below 20 per cent indicates that a city has proportionally fewer lower-income households than the Australian average.

### Rationale

This indicator can help users understand the extent of socio-economic disadvantage in a city.

### Data source

ABS – *Census of Population and Housing 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data are summed to align with city geographies and proportions are calculated.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Five yearly

## Index of relative socio-economic disadvantage

### Description

The Index of Relative Socio-economic Disadvantage (IRSD) is one of the ABS Socio-Economic Indexes for Areas (SEIFA). It is based on Census information and ranks cities in Australia according to relative disadvantage. A low score indicates relatively greater disadvantage. This could be because a city has many households with low incomes, many people with no qualifications, or many people in low skill occupations.

### Rationale

Understanding the geography of socio-economic disadvantage is important for devising appropriate social policy interventions.

### Limitations

The IRSD is an ordinal measure: a city with a score of 1000 will not be twice as disadvantaged as one with a score of 500. The IRSD only measures relative disadvantage: a city with a high score has a relatively low incidence of disadvantage, but this does not necessarily mean it has a large proportion of relatively advantaged people. The ABS advises that SEIFA are primarily designed to compare relative socio-economic characteristics of areas at a given point in time, not to compare individual areas across time.

### Data source

ABS – *Census of Population and Housing 2011*  
ABS – Socio-Economic Indexes for Areas (SEIFA) – 2011  
ABS – Regional Population Growth (Cat. No. 3218.0) – 2016

### Source-data geography

SA2 (ASGS 2011)  
SA2 (ASGS 2016)

### Method

SA2 SEIFA scores are converted to city geographies using a population-weighted average.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Index

### Data update

Five yearly



## Languages other than English

### Description

The proportion of a city's residents who speak a language other than English at home.

### Rationale

This indicator is a measure of a city's linguistic diversity. Understanding linguistic and, by association, cultural diversity can help target policies that support community integration and cohesion.

### Limitations

This indicator does not measure English language proficiency. A relatively high proportion of residents speaking languages other than English at home does not necessarily imply lower levels of proficiency in English.

### Data source

ABS – *Census of Population and Housing 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data is summed to align with city geographies and proportions are calculated.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Five yearly

## Age dependency ratio

### Description

The ratio of the number of people aged 0 to 14 and 65 and over, to those aged 15 to 64. The dependency ratio represents the number of 'dependents' – those less likely to be active in the labour market – for every 100 people of working age. Proportions of people in the 0–14; 15 to 64; and 65+ age brackets are also provided, as is the median age in each city.

### Rationale

The dependency ratio is an indicator of the pressure the economy may be under to support its dependent population.

The dependency ratio can also give an indication of which services might be in high demand in a city. For example, cities with a relatively large number of older people are likely to have high demand for aged-care services and retirement homes. Cities with a relatively large number of working-age people may have higher demand for childcare services and schools.

### Limitations

Some people continue working beyond the age of 64 and not everyone aged 15 to 64 is employed.

### Data source

ABS – *Regional Population Growth (Cat. No. 3218.0) – 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data are summed to align with city geographies and proportions are calculated.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Annually



## Median housing prices

### Description

The median price over 12 months for:

- detached dwellings
- non-detached dwellings

Non detached dwellings include townhouses and terrace houses, units and apartments.

### Rationale

This indicator, together with 'Household income', can help users understand how affordable housing is in a city (see 'Dwelling price to income ratio').

### Limitations

Differences in dwelling prices across cities are driven by a range of factors. These include income levels, amenity, and the flexibility of city planning and zoning systems in responding to changes in housing demand.

### Data source

CoreLogic (custom data) 2017

### Source-data geography

SA2 (ASGS 2011)

### Method

SA2 data on median prices are aggregated to align with city geographies using a weighted average. Weights are based on the number of dwellings sold in an SA2 as a fraction of total sales in the city.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

\$

### Data update

Quarterly

## Sector share of employment

### Description

The proportion of employed persons in a city that work in:

- goods producing industries
- market services industries
- non-market services industries

Goods producing industries include Agriculture, Forestry and Fishing; Mining; Manufacturing; Utilities; and Construction. Non-market services industries include Public Administration and Safety; Education and Training; and Health Care and Social Assistance. Market services comprise all other industries as defined by the ABS.

### Rationale

Cities can have different industry specialisations and employment mixes, depending on factors such as local resource endowments, history and policy choices. As such, cities can have different policy needs and are affected by economic developments in different ways.

### Limitations

ABS Labour Force employment data are based on place of residence. This means this indicator can be a poor proxy for the industry share of jobs located in a particular city in some circumstances. For example, mining employees flying out of Perth for work will tend to overstate the employment share of mining in Perth.

**Data source**

ABS – Labour Force (Cat. No. 6291.0.55.003) – 2017  
 ABS – Regional Population Growth (Cat. No. 3218.0) – 2016

**Source-data geography**

SA4 (ASGS 2011)  
 SA2 (ASGS 2016)

**Method**

SA4 data are converted to city geographies using population weights and proportions are calculated and an annual average is taken.

**City geography**

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

**Unit**

Percentage

**Data update**

Quarterly

**Disability rate****Description**

The proportion of a city's population that self identifies as having disability. A person has disability if they report they have a limitation, restriction or impairment, which has lasted, or is likely to last, for at least six months and restricts everyday activities.

**Rationale**

Disability can impact on a person's capacity to participate in the economy and engage in the community. People with disability are also at a higher risk of becoming socially disadvantaged. This indicator can provide broad insights into service needs for people with disability in a city.

**Limitations**

This indicator provides no information on the type, cause or prevalence of disabilities people have.

**Data source**

ABS – Disability, Ageing and Carers, Australia, (Cat. No. 4430.0, custom data request) – 2015

**Source-data geography**

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

**Method**

Source data align with city geographies.

**City geography**

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

**Unit**

Percentage

**Data update**

Irregular updates



## Household income

### Description

Median annual household income. A household's income represents the combined income of all household members aged 15 years and older.

### Rationale

Household income is a broad indicator of standard of living. It can also be compared against cost of living factors, such as housing prices, in different cities to obtain benchmarks for assessing affordability.

### Data source

ABS – *Census of Population and Housing 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data on weekly household incomes are summed to align with city geographies. Weekly values are annualised. Medians are derived from Census data collected in ranges.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

\$

### Data update

Five yearly

## LinkedIn connectivity

### Description

The average share of LinkedIn account holders' contacts that are located:

- in the same city
- in other parts of Australia
- overseas

### Rationale

This indicator can help users understand how well connected workers in a city are to various markets. Knowledge exchange with a broader audience – e.g. those outside an account holder's city – implies exposure to more diverse, innovative and novel views.

### Limitations

This indicator gives no indication about the number of contacts the average account holder has or the extent of their engagement with contacts in different areas.

Data are not available for all cities.

### Data source

LinkedIn

### Source-data geography

GCCSA (capital cities), SUA (other cities)

### Method

Source data geographies align with city geographies.

### City geography

GCCSA, SUA

### Unit

Percentage

### Data update

Irregular updates



## Performance Indicators

### Jobs and Skills

#### Employment growth

##### Description

The percentage change in the level of employment in the current year compared to the previous year. A person is classified as employed if they are 15 years or older and worked one hour or more in the reference week for the ABS Labour Force Survey. ABS Labour Force employment data are based on place of residence, not place of work.

##### Rationale

Employment growth is an indicator of the strength of a city's labour market and economy. Many people gain a sense of worth from their work and enjoy greater opportunities for social engagement, which enhance both mental and physical wellbeing.

##### Data source

ABS – Labour Force, Detailed (Cat. No. 6291.0.55.001) – 2017  
ABS – Regional Population Growth (Cat. No. 3218.0) – 2016

##### Source-data geography

SA4 (ASGS 2011)  
SA2 (ASGS 2016)

##### Method

SA4 data are converted to city geographies using population weights and growth rates are calculated from the derived estimates.

##### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

##### Unit

Percentage

##### Data update

Monthly

#### Unemployment rate

##### Description

The share of a city's labour force that is unemployed, calculated as a 12 month average. A person is classified as unemployed if they are 15 years or older, available for and seeking work, and not in paid employment. Sub-indicators present the Indigenous unemployment rate and the youth unemployment rate (persons aged 15 to 24).

##### Rationale

The unemployment rate is an indicator of the amount of spare capacity in a city's labour market. Being unemployed also has implications for a person's economic, social and emotional wellbeing.

##### Limitations

The unemployment rate can understate the amount of spare capacity in the labour market when there are a lot of people who would prefer to work more hours, or give up looking for work because jobs are unavailable.

##### Data source

ABS – Labour Force (Cat. No. 6291.0.55.001) – 2017  
ABS – *Census of Population and Housing* 2016  
ABS – Regional Population Growth (Cat. No. 3218.0) – 2016

##### Source-data geography

SA4 (ASGS 2011)  
SA2 (ASGS 2016)

##### Method

SA4 data are converted to city geographies using population weights and proportions are calculated from the derived estimates.

##### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

##### Unit

Percentage

##### Data update

Monthly



## Participation rate

### Description

The share of a city's civilian population aged 15 years and over that is in the labour force, calculated as a 12 month average. A person is classified as being in the labour force if they are either employed or unemployed. Sub-indicators present labour force participation rates for men and women.

### Rationale

A city's participation rate and working-age population together determine the size of its labour force – the labour supply available to the local economy.

### Data source

ABS – Labour Force (Cat. No. 6291.0.55.001) – 2017

ABS – Regional Population Growth (Cat. No. 3218.0) – 2016

### Source-data geography

SA4 (ASGS 2011)

SA2 (ASGS 2016)

### Method

SA4 data are converted to city geographies using population weights and proportions are calculated from the derived estimates.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Monthly

## Educational attainment

### Description

The proportion of a city's population that have completed Year 12. A sub indicator presents the share of the population whose highest level of education attained is:

- Bachelor degree or higher
- Certificate Level III, IV or a Diploma

### Rationale

Educational attainment has broad implications for economic, social and health outcomes. People that attain high levels of education are, in general, better equipped to perform high-skilled work and earn higher wages. Highly educated people also tend to find it easier to move between industries or to retrain. This means a better educated labour force is usually better placed to adapt to structural changes in the economy – for example, to cope with the disruptions caused by technological change or global competition.

### Limitations

This indicator does not provide information on fields of study or whether workers' skills match what employers need.

### Data source

ABS – *Census of Population and Housing 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data are summed to align with city geographies and proportions are calculated from the derived totals.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Five yearly



## Infrastructure and Investment

### Jobs accessible within 30 minutes

#### Description

The share of jobs in a city that can be reached by car in a commute of 30 minutes or less. This indicator represents a city-wide average – commute times in different parts of a city are weighted by population size.

#### Rationale

Better access to jobs makes it simpler to find work or change employers, and can improve the quality of job matches in a city – one of the determinants of labour productivity. Shorter commute times also give people more time for leisure outside work.

The share of jobs accessible within 30 minutes is a partial indicator of the efficiency of a city's transport infrastructure.

#### Limitations

This indicator only includes travel by car and does not provide full information on the effectiveness of a city's transport network.

#### Data source

ABS – *Census of Population and Housing 2016*

SGS Economics and Planning

ABS – Regional Population Growth (Cat. No. 3218.0) – 2016

#### Source-data geography

SA2 (ASGS 2016)

#### Method

Travel times are assessed using a distance matrix and information on average travel speeds. For each SA2, the share of jobs in the corresponding city that can be reached in 30 minutes is calculated using Census place of work information. SA2 estimates are then converted to city geographies using population weights. For some SA2s, there are jobs beyond the boundaries of their cities that are easily accessible by car – for example, people in parts of Canberra can drive to Queanbeyan in less than 30 minutes. Where this is the case, jobs accessible in 30 minutes is capped at 100 per cent.

#### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

#### Unit

Percentage

#### Data update

Five yearly



## Share of work trips by public transport and active transport

### Description

The proportion of journeys to work that are taken by:

- public transport
- walking or cycling ('active transport')

### Rationale

Understanding commuting patterns is important for transport planning and identifying opportunities to promote healthy lifestyle choices.

The share of people that travel to work by walking, cycling or public transport is affected by commuter preferences, the location of jobs and workers, transport prices and infrastructure. For example, more people will commute by car if driving is a cheap and quick way to get to work. More people will walk to work if jobs are close to where people live.

### Limitations

This indicator does not separately identify the share of work trips that are made by individual modes of public transport – for example, trips by train, bus or ferry. It does not provide direct information on the effectiveness of a city's transport network.

### Data source

ABS – *Census of Population and Housing 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data are summed to align with city geographies and proportions are calculated from the derived totals.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Five yearly

## Peak travel delay

### Description

The percentage increase in the duration of a car trip made during the busiest traffic periods (7am to 10am and 4pm to 7pm) compared with when there is no congestion. This indicator is constructed using data on car trips that would take 30 minutes in a period of traffic free flow (at 2am).

### Rationale

Data on travel delays provides information on how well a city's road network is meeting peak demand. A reduction in peak travel times could improve access to jobs, one of the determinants of labour productivity. Shorter commute times also give people more time for leisure outside work, making a city more liveable for the people that use its roads.

### Limitations

This indicator measures the proportional increase in car travel times during peak traffic periods. It does not permit comparisons of actual commute times nor does it provide information on travel delays for modes of transport other than car travel.

Data are not available for all cities.

### Data source

TomTom Australia

New Zealand Congestion Index

### Source-data geography

GCCSA, SUA (ASGS 2011)

### Method

Source data align with city geographies.

### City geography

GCCSA (capital cities), SUA (other cities)

### Unit

Percentage

### Data update

Irregular updates



## Liveability and Sustainability

### Adult obesity rate

#### Description

The share of people aged 18 and over with a body mass index (BMI) greater than 30. A person's BMI is calculated as their weight (in kilograms) divided by the square of their height (in metres).

#### Rationale

Obesity is a risk factor for chronic diseases such as cardiovascular disease, diabetes and cancer (see World Health Organisation: <http://www.who.int/topics/obesity/en/>). High rates of obesity put added strain on public health services. Being overweight or obese can also affect a person's quality of life.

#### Limitations

BMI is a measure of weight, not fat. Factors like age, gender and muscle mass can affect a person's BMI independent of body fat.

#### Data source

Public Health Information Development Unit (PHIDU) — Social Health Atlas of Australia

ABS — National Health Survey (Cat. No. 4364.0) — 2015

ABS — Regional Population Growth (Cat. No. 3218.0) — 2016

#### Source-data geography

ASGC Local Government Area 2011

#### Method

LGA data are converted to city geographies using population weights and proportions are calculated.

#### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

#### Unit

Percentage

#### Data update

Irregular updates

### Perceived safety

#### Description

The share of people aged 18 years and over who report that they feel safe or very safe walking alone in their local area after dark.

#### Rationale

Feeling unsafe in their community can affect people's health and wellbeing. If people feel unsafe, it can negatively influence their social activities and erode trust within their communities (ABS, Australian Social Trends, 2010). Perceptions of safety are also influenced by factors such as crime rates in a city.

#### Limitations

Factors other than crime can influence how safe a person feels in a particular context. This can include age, sex, ethnicity, education, health and economic status (ABS, Australian Social Trends, 2010).

#### Data source

PHIDU — Social Health Atlas of Australia

ABS — Regional Population Growth (Cat. No. 3218.0) — 2016

#### Source-data geography

ASGC Local Government Area 2011

#### Method

LGA data are converted to city geographies using population weights and proportions are calculated.

#### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

#### Unit

Percentage

#### Data update

Irregular updates



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## Access to green space

### Description

The share of dwellings in a city that are located within 400 metres of green space. In the Performance Framework, green space is synonymous with the ABS definition of 'parkland'. The ABS defines parkland to include parkland, nature reserves and other minimal use protected or conserved areas.

### Rationale

Access to green space provides amenity as well as opportunities for physical exercise and improved mental health. Green space can also improve air quality and heat management, making a city more liveable.

### Limitations

Green space area is calculated using Mesh Blocks — small geographical areas that are categorised according to principal land use. Areas the Performance Framework defines as green space (i.e. a 'parkland' mesh block) may include any public open space, sporting arena or facility, whether enclosed or open to the public. As such, this indicator could overestimate the amount of publicly-accessible green space in a city.

Some green space in a city may fall within Mesh Blocks categorised according to other land uses — for example, areas defined as 'residential'. This could lead to an underestimate of the amount of publicly-accessible green space in a city.

No adjustment is made to account for the size or quality of green space.

### Data source

ABS — Australian Statistical Geography Standard (ASGS): Volume 1 — Main Structure and Greater Capital City Statistical Areas, (Cat. No. 1270.0) — 2016

### Source-data geography

Mesh Block (ASGS 2016)

### Method

For each SA2, the number of dwellings within 400 meters of one or more parkland-category Mesh Blocks is calculated. SA2 estimates are then summed to align with city geographies and proportions are calculated from the derived totals.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Five yearly



## Green space area

### Description

The proportion of land area in a city that is defined as green space. In the Performance Framework, green space is synonymous with the ABS definition of 'parkland'. The ABS defines parkland to include parkland, nature reserves and other minimal use protected or conserved areas.

### Rationale

Access to green space provides amenity as well as opportunities for physical exercise and improved mental health. Green space can also improve air quality and heat management, making a city more liveable.

### Limitations

Green space area is calculated using Mesh Blocks — small geographical areas that are categorised according to principal land use. Areas the Performance Framework defines as green space (i.e. a 'parkland' mesh block) may include any public open space, sporting arena or facility, whether enclosed or open to the public. As such, this indicator could overestimate the amount of publicly-accessible green space in a city.

Some green space in a city may fall within Mesh Blocks categorised according to other land uses — for example, areas defined as 'residential'. This could lead to an underestimate of the amount of publicly-accessible green space in a city.

No adjustment is made to account for the quality of green space.

### Data source

ABS — Australian Statistical Geography Standard (ASGS): Volume 1 — Main Structure and Greater Capital City Statistical Areas, (Cat. No. 1270.0) — 2016

### Source-data geography

Mesh Block (ASGS 2016)

### Method

Mesh Block data are summed to align with city geographies and proportions are calculated from the derived totals.

### City geography

CCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

**Unit** Percentage

**Data update** Five yearly

## Support in times of crisis

### Description

The share of people that stated in a survey that they feel there is someone outside their household who could be asked for support in a time of crisis. Support could be in the form of emotional, physical or financial help. It could come from family members, friends, neighbours, work colleagues or from community, government or professional organisations.

### Rationale

Support in a time of crisis can reduce a person's financial, physical, psychological or emotional hardship. Feeling that there is help can also affect a person's wellbeing. High rates of people reporting that they can access support in times of crisis might mean there are adequate support services in a city, or that there is strong social cohesion.

### Data source

PHIDU — Social Health Atlas of Australia

ABS — Regional Population Growth (Cat. No. 3218.0) — 2016

### Source-data geography

ASGC Local Government Area 2011

### Method

LGA data are converted to city geographies using population weights and proportions are calculated.

### City geography

CCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Irregular updates



## Suicide rate

### Description

The number of suicides in a year per 100,000 people, calculated over the period 2010 to 2014.

### Rationale

Knowing a city's suicide rate, together with related mental and physical health indicators, is important for gauging the demand for support services.

### Data source

PHIDU – Social Health Atlas of Australia

ABS – Regional Population Growth (Cat. No. 3218.0) – 2016

### Source-data geography

ASGC Local Government Area 2011

### Method

LGA data are converted to city geographies using population weights.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Irregular updates

## Air quality

### Description

The average amount of particulate matter in a city's air per cubic metre, measured over the course of a year. Sub-indicators present data for particles smaller than:

- 10 microns in diameter (PM<sub>10</sub>)
- 2.5 microns in diameter (PM<sub>2.5</sub>)

### Rationale

Air quality is an indicator of the environmental impact of economic activity in a city. The World Health Organisation warns that chronic exposure to particles in the air adds to the risk of developing cardiovascular diseases, respiratory diseases and lung cancer.

Australian governments have set air quality standards for PM<sub>10</sub> and PM<sub>2.5</sub> (see <http://www.npi.gov.au/resource/particulate-matter-pm10-and-pm25>).

### Limitations

A city's air quality can be affected by production taking place outside its boundaries, or by weather events and natural disasters beyond the control of policy makers. Particulate matter is a partial indicator of ambient air quality.

Data are not available for all cities.

### Data source

World Health Organisation, based on data collected at state and territory monitoring stations – 2016

### Source-data geography

WHO-defined city geographies

### Method

Source data geographies are used as proxies for city geographies.

### City geography

GCCSA, selected SUAs (ASGS 2016)

### Unit

Micrograms per cubic metre

### Data update

Irregular updates



## Volunteering

### Description

The share of people aged 15 years and older who volunteered their time, services or skills to a club, organisation or association in the past twelve months.

### Rationale

Volunteering can strengthen community bonds and improve social wellbeing by facilitating interactions among people outside their normal peer groups. Volunteers also help provide essential services, such as emergency services, sports clubs, parent teacher associations and elderly support services, some of which might not otherwise be supplied.

### Limitations

Volunteering rates might be affected by large one-off events like the Olympics or the Commonwealth Games.

### Data source

ABS – *Census of Population and Housing 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data are summed to align with city geographies and proportions are calculated from the derived totals.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Five yearly

## Greenhouse gas emissions per capita

### Description

The estimated per-capita amount of greenhouse gases emitted in a city in a year, based on:

- Scope 1 emissions – direct greenhouse gas emissions
- Scope 2 emissions – indirect greenhouse gas emissions from the generation of purchased electricity

### Rationale

Emissions data help to understand a city's contribution to climate change and to target climate-change mitigation policies.

### Limitations

Emissions data are not available at the city level. This indicator has been estimated by attributing state-level emissions to cities using city-level data on employment by industry and population. No adjustment has been made to account for intrastate differences in residential energy use or emissions, or for intrastate differences in emissions and energy use within industries. Actual emission levels will depend on the type of production activity taking place in a city, regional differences in residential energy use and emissions, and the energy sources businesses and households depend on. Data are only presented for capital cities. Scope 2 emissions data are not available for all states and territories. Information on greenhouse gas emissions reported in Australia is available at: <http://www.environment.gov.au/climate-change/climate-science-data>

### Data source

National Greenhouse Gas Inventory

ABS – Labour Force, Detailed, Quarterly (Cat. No. 6291.0.55.003) – 2017

ABS – Regional Population Growth (Cat. No. 3218.0) – 2016

### Source-data geography

States and territories, SA2 (ASGS 2016), SA4 (ASGS 2016)

### Method

State and territory emissions by industry are attributed to city geographies using weights based on employment by industry data (for non-residential emissions) and population data (for residential emissions). Two predominantly non-urban industries (Agriculture, forestry and fishing and Mining) are excluded.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

**Unit** Tonnes of carbon dioxide equivalent

**Data update** Annually



## Office building energy and water efficiency rating

### Description

The average National Australian Built Environment Rating System (NABERS) score for rated office buildings in the city, weighted by rated floor space.

NABERS ratings are based on an assessment of the operational performance of a building over a 12 month period, for energy and water, by tenants and building owners. A NABERS assessment controls for factors such as climactic conditions, hours of use, energy sources, size and occupancy, meaning it is comparable within and across cities.

A score of 6 is consistent with market-leading performance. A score of 1 means the building has considerable scope for improvement.

### Rationale

Office buildings are large consumers of energy and water within cities. Buildings with a higher NABERS assessment use less energy and water, and produce fewer greenhouse gas emissions and less waste. This information can be useful for potential tenants looking to minimise their environmental footprint and lower their energy and utility bills.

### Limitations

This indicator only covers rated buildings, and may not provide an indication of the efficiency of all office buildings in a city. This indicator does not account for the efficiency of buildings in the residential or industrial sectors.

Some cities have a small number of buildings with a NABERS rating and the average can shift significantly when a new rating enters the data set. Cities with fewer than 10 rated buildings are Albury Wodonga, Ballarat, Bendigo, Cairns, Geelong, Launceston, Mackay, Toowoomba, Townsville, Western Sydney and Sunshine Coast.

### Data source

National Australian Built Environment Rating System

### Source-data geography

GCCSA (Capital cities), Western Sydney and SUA (other cities)(ASGS 2011)

### Method

Source data geographies align with city geographies.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

**Unit** Average energy rating (from 1 to 6)

**Data update** Annually

## Access to public transport

### Description

The proportion of dwellings within 400 metres of a frequently serviced public transport stop – one with a scheduled service every 30 minutes from 7am to 7pm on a normal weekday.

### Rationale

A well-integrated and accessible public transport system has the potential to reduce traffic congestion in a city and improve residents' access to jobs and goods and services.

### Limitations

Access to public transport can make it easier for people to get to jobs, but it does not mean that jobs are close by.

Data are not available for all cities.

### Data source

Royal Melbourne Institute of Technology  
– Creating liveable cities in Australia – 2017

### Source-data geography

GCCSA

### Method

Source data geographies align with city geographies.

### City geography

GCCSA

### Unit

Percentage

### Data update

Irregular updates



## Innovation and Digital Opportunities

### Knowledge-intensive services

#### Description

The share of employed persons that work in the top three knowledge-intensive services industries. The Department of Industry, Innovation and Science measures an industry's knowledge intensity as the value of its stock of knowledge based capital (intangibles) as a proportion of its gross value added. Using this metric, the most knowledge-intensive services are: Professional, scientific and technical services; Information, media and telecommunications; and Financial and insurance services.

#### Rationale

Workers in knowledge-intensive services industries tend to be well educated, well paid and well placed to succeed in an increasingly competitive and fast changing global economy.

#### Limitations

While workers in knowledge-intensive industries tend to be highly skilled, these industries also rely on lower-skilled workers. There are also high-skilled workers in other industries.

ABS Labour Force employment data are based on place of residence. This means this indicator can be a poor proxy for the industry share of jobs located in a particular city in some circumstances. For example, mining employees flying out of Perth for work will tend to overstate the employment share of mining in Perth.

#### Data source

ABS — Labour Force Survey (Cat. No. 6291.0.55) — 2017  
 ABS — Regional Population Growth (Cat. No. 3218.0) — 2016  
 Department of Industry, Innovation and Science — Industry Monitor — 2016

#### Source-data geography

SA4 (ASGS 2011)  
 SA2 (ASGS 2016)

#### Method

SA4 data are converted to city geographies using population weights and proportions are calculated.

#### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

#### Unit

Percentage

#### Data update

Quarterly



## Broadband connections

### Description

The share of households in a city with an active broadband connection, defined as an access speed of 256 kilobits per second or faster.

### Rationale

The internet plays a pivotal role in how people learn, communicate, innovate and do business. Access to the internet is important for fostering innovation and supporting productivity.

### Limitations

This indicator measures access to the internet based on a relatively low threshold speed. It does not provide information on relative broadband speeds.

### Data source

ABS – *Census of Population and Housing 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data are summed to align with city geographies and proportions are calculated.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Five yearly

## New business entrants and exits

### Description

The business entry rate is the number of new businesses that started actively trading on the business register over the past year as a share of the total number of registered businesses at the start of the year. The business exit rate is the number of businesses that stopped actively trading on the business register over the past year as a share of the total number of businesses in the city at the start of the year.

### Rationale

Business entry and exit rates are indicators of dynamism and economic activity in a city. Strong entrepreneurial activity is associated with a dynamic and innovative local economy.

### Limitations

A business entry can occur for reasons other than the creation of a new business. It may occur, for example, when a business starts to actively remit Goods and Services Tax (GST) and so is counted as an 'actively trading' business. Businesses with turnover below \$75,000 are not required to register for GST; those that don't register for GST are not included in counts of new businesses.

A business exit is not the same thing as a business failure. A business exit may occur, for example, when a business is sold and its Australian Business Number changes, or when a business is taken over or involved in a merger.

### Data source

ABS – Data by region (Cat. No. 1410.0) 2011–2016

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data are summed to align with city geographies and proportions are calculated.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Annually



## Intellectual property

### Description

The number of:

- patent applications by residents in a city per 100,000 people per year
- trademark applications by people resident in a city per 100,000 people per year

### Rationale

Intellectual property, including patents and trademarks, provides a foundation for innovation, which creates knowledge, builds businesses and contributes to economic growth.

Patent applications are an indicator of the amount of innovation and research and development occurring in a city. Tracking data on patent applications can help understand how well a city is fostering innovation.

When new firms start or new products and services are launched, a trade mark is often filed to protect the name and brand value. As such, trade mark applications can be used as an indicator of innovative activity.

### Limitations

Innovation that occurs in one city will sometimes be recorded in patents registered elsewhere. This can occur when a business with offices in more than one city has all of its patents registered by its head office. In addition, Australian firms sometimes register patents overseas, and this data is not captured in this indicator.

### Data source

ABS — Data by Region (Cat. No. 1410.0) 2011–2016

DIIS — SA3 Regional Innovation Data 2009–15 (data.gov.au) [original source — IP Australia]

ABS — Regional Population Growth (Cat. No. 3218.0) — 2016

### Source-data geography

SA3 (ASGS 2011)

SA2 (ASGS 2016)

### Method

SA3 data are converted to city geographies using population weights. Derived estimates are divided by the size of the population and multiplied by 100,000.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Number of IP right applications per 100,000 persons

### Data update

Annually



## Governance, Planning and Regulation

### Local government fragmentation

#### Description

The number of Local Government Areas in a city per 100,000 people.

#### Rationale

Fragmented governance occurs when a city is governed by more than one local government authority. This is common in many of Australia's largest cities. In some circumstances, fragmentation can hinder a city's economic performance. While smaller area governments tend to be more responsive to local citizens, larger area governments are better placed to deal with complex city-wide coordination problems and enjoy economies of scale in public administration.

#### Limitations

Evidence of the relationship between fragmentation and economic growth is not conclusive and may vary with local conditions.

This indicator is less relevant for cities that have one local government area, or none at all. Cities with one local government area include: Bendigo, Cairns, Geelong, Mackay, Sunshine Coast, Toowoomba and Townsville. Canberra is treated as having one local government area.

#### Data source

ABS – Regional Population Growth (Cat. No. 3218.0) – 2016  
ABS – Australian Statistical Geography Standard (ASGS): Volume 3 – Non ABS Structures, (Cat. No. 1270.0) 2016

#### Source-data geography

SA2 (ASGS 2016)  
ASGS Local Government Area 2016

#### Method

SA2 data are summed to align with city geographies. Total number of LGAs is divided by the size of the population and multiplied by 100,000.

#### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

#### Unit

Local Government Areas per 100,000 persons

#### Data update

Annually

## Housing

### Public and community housing units

#### Description

The number of public and community housing units per 100,000 people. Public and community housing refers to housing units rented from a state or territory housing authority, a housing co-operative, or a community or church group.

#### Rationale

The availability of public and community housing is an important consideration for policies addressing housing affordability issues and socio-economic disadvantage.

#### Limitations

Public and community housing may not always be the best solution to addressing housing affordability or socio-economic disadvantage. The appropriate level of public and community housing provision should vary depending on local conditions and levels of socio-economic disadvantage.

#### Data source

ABS – *Census of Population and Housing 2016*

#### Source-data geography

SA2 (ASGS 2016)

#### Method

SA2 data are summed to align with city geographies. Number of public and community housing units are divided by the size of the population and multiplied by 100,000.

#### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

#### Unit

Number per 100,000 persons

#### Data update

Five yearly



## Homelessness rate

### Description

The number of homeless people per 100,000 people. A person is classified as homeless if they do not have suitable accommodation alternatives and their current living arrangement:

- is in a dwelling that is inadequate, or
- has no tenure (e.g. squatting), or
- has an initial tenure that is short and not extendable, or
- does not allow them to have control of, and access to, space for social relations.

### Rationale

This indicator can help users understand the extent of socio-economic disadvantage in a city and inform policy decisions concerning housing and other services for homeless people.

### Data source

ABS – *Census of Population and Housing: Estimating homelessness* (Cat. No. 2049.0) – 2011

### Source-data geography

SA2 (ASGS 2011)

### Method

SA2 data are summed to align with city geographies, divided by the size of the population and multiplied by 100,000.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Number per 100,000 persons

### Data update

Five yearly

## Rent stress

### Description

The proportion of occupied households for which rent payments make up 30 per cent or more of household income. This indicator is expressed as a percentage of the total number of households in a city, including households that are not renting.

### Rationale

Around one in three households rent. Households that cannot afford to pay rent can put pressure on public and community housing. Lack of access to affordable rental housing can exacerbate this problem.

### Data source

ABS – *Census of Population and Housing 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data are summed to align with city geographies and proportions are calculated. Households are excluded where there is incomplete information on income.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Five yearly



## Mortgage stress

### Description

The proportion of occupied households for which mortgage payments make up 30 per cent or more of household income. This indicator is expressed as a percentage of the total number of households in a city, including households that rent or own their homes outright.

### Rationale

Households that spend a large share of their income on mortgage payments have less money to spend on other things. These households are also typically more vulnerable to financial shocks associated with house price falls or interest rate rises, which can increase risks of default or further constrain consumer spending. Having a large number of households in mortgage stress presents broader risks to the local economy.

### Data source

ABS – *Census of Population and Housing 2016*

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data are summed to align with city geographies and proportions are calculated. Households are excluded where there is incomplete information on income.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Percentage

### Data update

Five yearly

## Housing construction costs

### Description

The average cost per square metre of constructing a new detached house in a city. This indicator presents average costs for a standardised building type: a full-brick detached house with a tiled roof, built on a flat site.

### Rationale

Construction costs are a large component of housing prices, along with the cost of land. Monitoring construction costs enables a better understanding of the factors contributing to house price levels in a city.

### Limitations

Construction costs vary depending on the type of building, the materials used to build it, the workers employed and the cost of complying with regulations. This indicator does not disaggregate contributions to construction costs from materials, labour, taxes, fees and charges, and profit margins.

Cost estimates outside the capital cities are measured with less precision than the capital city estimates.

### Data source

Rawlinsons Guide to Construction Costs

SGS Economics & Planning

### Source-data geography

Rawlinsons-defined city geographies

### Method

Rawlinsons cost estimates are used for the capital cities. Cost estimates for non-capital cities are derived using Rawlinsons' regional indices. Source data geographies are used as a proxy for city geographies.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

\$ per square metre

### Data update

Annually



## Dwelling price to income ratio

### Description

The ratio of the median dwelling price to median annual household income.

### Rationale

Home ownership is an aspiration for many Australians. Purchasing a home is also the largest single expenditure for a typical household. The dwelling price to income ratio is a key measure of housing affordability.

Low levels of housing affordability have negative implications for a city's economic performance by reducing labour market efficiency, undermining social cohesion and exacerbating wealth inequality (Australian Housing and Urban Research Institute).

### Data source

CoreLogic – *Housing Affordability Report*

### Source-data geography

GCCSA, SA4 (ASGS 2011)

### Method

For capital cities, source data geography aligns with city geographies. For non-capital cities, dwelling price to income ratios are constructed from SA4 data using a simple average.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Ratio

### Data update

Annual

## Population change per residential building approval

### Description

The ratio of population change to residential building approvals, calculated as a five-year average.

### Rationale

Population change is an indicator of demand for housing. Residential building approvals are a forward indicator of the volume of dwelling investment and the supply of new housing in a city. Tracking relative movements in population change and building approvals over time helps understand how well housing supply is keeping up with new demand.

### Data source

ABS – Building approvals, Australia, Aug 2017 (Cat. No. 8731.0) – 2017

ABS – Regional Population Growth (Cat. No. 3218.0) – 2016

### Source-data geography

SA2 (ASGS 2016)

### Method

SA2 data on population change and building approvals are summed to align with city geographies. Derived population change estimates are divided by number of new building approvals.

### City geography

GCCSA (capital cities), Western Sydney and SUA (other cities) (ASGS 2016)

### Unit

Persons per number of approvals

### Data update

Annually



## APPENDIX B:

### Indicators Removed Since Interim Report

Indicator	Description
Median individual income	Replaced with median household income, which is more relevant for considerations of housing affordability.
Economic output and labour productivity	Reliable city-level data unavailable.
Underemployment rate	Reliable city-level data unavailable.
Cost of congestion	Bureau of Infrastructure, Transport and Regional Economics estimates are from 2015. Not regularly updated and only available for capital cities. Two measures related to congestion – jobs accessible in 30 minutes, and peak travel delay – have been included instead.
Average time without power	Reliable city-level data unavailable.
Residential water use	Reliable city-level data on residential water consumption volumes is unavailable. See 'Future directions' for possible future indicators of water use and security.
Indigenous life expectancy	Reliable city-level data unavailable.
Violent crime	Comparable city-level data unavailable. States and territories use different definitions, methodologies and units, making data difficult to compare and interpret.
Land use strategy	This indicator does not provide a measure of the quality of a land-use strategy. All cities had land use or housing strategies in place in some form so there was no variation in the indicator.
Development assessment decision time	Comparable city-level data unavailable. States and territories use different definitions and units, making comparisons between cities in different states difficult and potentially misleading.
Investment readiness	Plans for attracting and managing investment were common, but the measure could not take account of in the quality or implementation of the plans.



# APPENDIX C:

## Possible Future Indicators

	Indicator	Description
Jobs and skills	Economic output and labour productivity	Economic output per person and per hour worked.
Infrastructure & Investment	Business investment	Value of business investment per person.
Liveability & Sustainability	Waste	Volume of waste diverted to landfill per person.
	Emissions per person	Total emissions from all sources per person.
	Walkability index	Ease of access to urban services.
	Violent crime	Number of offences per 100,000 people.
	Energy consumption	Energy consumption (gas, electricity, transport) per person.
	Water	Water scarcity, water consumption and water health.
	Chronic diseases	Prevalence rate in the population for circulatory and respiratory diseases.
	Trust index	Index measuring trust in institutions and communities.
	Road safety	Traffic deaths per capita.
Innovation & Digital Opportunities	Broadband speed	Peak download and upload speeds in kilobits per second.
Governance Planning & Regulation	Development assessment time	Average time from application to shovel ready.
	Local government revenue	Share of local government revenue that is own source revenue.
	State and local taxes	State and local taxes as a share of household income.
	Government expenditure	Government expenditure as a share of economic output.
	Construction costs	Share of construction costs that are taxes and charges.
Housing	Dwelling completions	Number of completions per year.
	Dwellings in disaster areas	Share of dwellings that are in disaster prone areas/insurance premiums per \$ housing value.



# APPENDIX D:

## Consultation

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Below is a list of the individuals and organisations consulted during the preparation of this Report.

### Organisation

Australasian Railway Association

Australian Bureau of Statistics

Australian Chamber of Commerce and Industry

Australian Housing and Urban Research Institute

Australian Institute of Architects

Australian Institute of Landscape Architects

Australian Local Government Association

Australian Trade and Investment Commission (Austrade)

Bureau of Infrastructure, Transport and Regional Economics – Australian Government

Bus Industry Confederation

Chief Minister, Treasury and Economic Development Directorate – ACT Government

City of Sydney

Clean Air and Urban Landscapes Hub – University of Melbourne

Committee for Sydney

Commonwealth Bank of Australia

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Consult Australia

Cooperative Research Centre for Low Carbon Living

Council of Australian Governments Industry and Skills Council

Council of Capital City Lord Mayors

Curtin University

Cycling Promotion Fund

Data61

Department of Communications and the Arts – Australian Government

Department of Education and Training – Australian Government

Department of Employment – Australian Government

Department of the Environment and Energy – Australian Government

Department of Health – Australian Government

Department of Industry, Innovation and Science – Australian Government

Department of Infrastructure and Regional Development – Australian Government

Department of Social Services – Australian Government

Department of the Treasury – Australian Government



Department of the Chief Minister  
– Northern Territory Government

Department of Premier and Cabinet – NSW Government

Department of Infrastructure, Local Government  
and Planning – Queensland Government

Department of Premier and Cabinet  
– Government of South Australia

Department of Premier and Cabinet  
– Tasmanian Government

Department of Premier and Cabinet  
– Victoria State Government

Department of the Premier and Cabinet  
– Government of Western Australia

Geoscience Australia – Australian Government

Green Building Council of Australia

Housing Industry Association

Infrastructure Australia

LinkedIn

Mastercard

National Growth Areas Alliance

Planning Institute of Australia

Property Council of Australia

Regional Australia Institute

Regional Capitals Australia

SGS Economics and Planning

Smart Cities Council Australia New Zealand

Social Ventures Australia

Universities Australia

Urban Development Institute of Australia

Water Services Association of Australia

WSP | Parsons Brinkerhoff



# APPENDIX E:

## Public Submissions on the Interim Report

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Individuals and organisations that made public submissions to the Cities performance Framework Interim Report are listed below. Individuals and organisations that requested anonymity or made private submissions are not listed.

### Individual or Organisation

Australia and New Zealand Driverless Vehicle Initiative (ADVI); ITS Australia (Intelligent Transport Systems); iMOVE CRC, Electric Vehicle Council; ClimateWorks Australia, and Parking Australia

Australian Local Government Association

Australian Sustainable Built Environment Council

Cairns Regional Council

City of Ipswich

City West Water

Committee for Melbourne

Consult Australia

Core Logic

Creator Tech PTY LTD

Department of Infrastructure, Local government and Planning – Queensland Government

Green Building Council Australia

Lake Macquarie City Council

Liverpool City Council

Local Government Association of Queensland

Master Builders Australia

Michael Edgecombe

National Growth Areas Alliance

National Health and Medical Research Council

Centre for Research Excellence in Health

Liveable Cities and Healthy Liveable cities Group; and Centre for Urban Research at RMIT University

Penelope-Jane Fry

PerthALIVE

Professor John Stanley

Property Council of Australia

Regional Development Australia (RDA) Tasmania

Southern Sydney Regional Organisation of Councils (SSROC)

Sunshine Coast Council

Urban Development Institute of Australia

Urban Taskforce Australia

Water Services Association of Australia



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Smart Cities Plan

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# NATIONAL CITIES PERFORMANCE FRAMEWORK

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