



# Smart cities

**A snapshot of Australia in 2017**

KPMG and Public Sector Network  
Smart Cities Series 2017



With buzzwords like 'digital', 'data' and the 'Internet of Things' dominating the conversation about smart cities, KPMG and the Public Sector Network brought together more than 440 leaders from government, universities and industry to talk about what it really takes to make a city smart.



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## About the survey

Public Sector Network surveyed the event participants, by email and hard copy, during August and September 2017. There were 57 responses.

# Foreword

We live in an era of mass urbanisation. Nine out of ten Australians live in a town or city and two thirds of us in one of the capital cities. Cities generate 80% of Australia's gross domestic product and are social and cultural hubs ranking highly every year on liveability indices.

But what about the future? With services, infrastructure and resources put to the test by a growing and ageing population, climate change and economic disruption, how can we make sure our cities remain liveable and sustainable? And how can we mobilise data, knowledge and people to deal with the many intractably wicked problems that we face?

The answer is to do it smarter. Data and digital technology are certainly part of the answer but we mustn't forget the human factor. We need to better understand what people want and need and what they actually do. We need to uncover what is of value, both to citizens and to potential investors. We need to weigh up opportunities and risks and go out and create the future that we want. Data helps, but what we need more is to engage with communities, deeply and in the long term.

We hear a lot about major cities such as Barcelona and Singapore but this is something every local government can do, regardless of its size and resources. Whether you are the City of Sydney or the City of Kalamunda, councilors, policy makers and planners have a new opportunity to show what local government can do. Each city must be smart about its future in its own way.

It was a great pleasure to chair the Smart Cities Series 2017. All up we visited six cities around the country between 29 August and 7 September. We heard from city mayors and chief executive officers, planners and policy makers, academics, and corporate and community leaders. On the agenda were strategy, building a business case, innovation, engaging communities and establishing strong partnerships and collaboration. What we captured was a snapshot of a smart city movement that is focussed on citizen needs and ready for change. In this report we look to share the common themes of conversation, some case studies and insights from the survey.

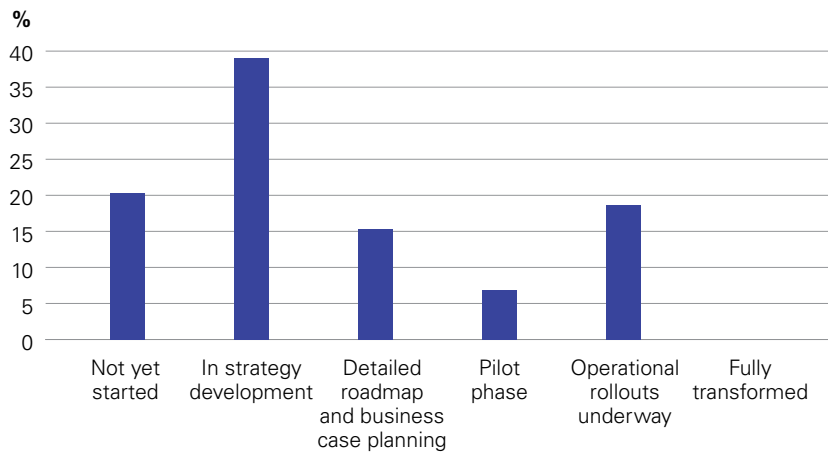


**Paul Francis**  
Smart Cities Lead  
KPMG Australia

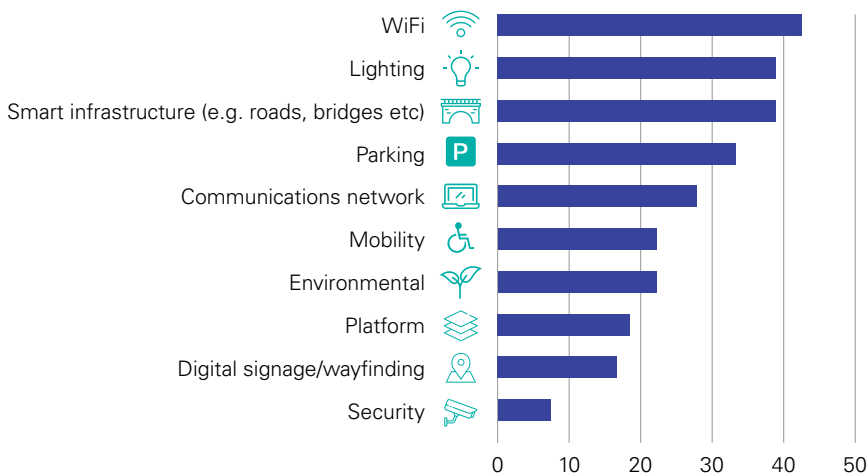
# Where are we on the smart city journey?

Our survey of event participants showed that 80% of respondents have started their smart city journey with 39% working up their strategic plans and 15% preparing detailed roadmaps and business cases. It's exciting to see 26% of councils now running pilot programmes or rolling out new projects into their communities.

Where are you on your smart city journey?



What are the top 3 projects you are planning over the next 12-18 months?



## What's up ahead?


Wi-Fi, lighting and smart infrastructure such as roads and bridges are the most common projects being rolled out over the next 12-18 months. Our panellists and participants also spoke about stormwater management, driverless cars, waste collection, CCTV analytics and revitalising town centres as priority areas.

“It’s a good time for local governments to engage, we have a national smart cities plan from a policy but also funding perspective. We’re in a beneficial place in Australia, we can learn from three other regions around the world that have moved down this path before us.”

“I think we’ve got 10–15 local authorities that are really embracing this agenda, they have the strategy, staff and resources in place and are deploying. There’s another 20 or so that are moving to that place and there are a couple hundred that are just starting their journey.”

**Adam Beck,**  
Executive Director,  
Smart Cities Council ANZ

39%  are working up their strategic plans

26%  of councils now running pilot programmes or rolling out new projects



# Who's got the map?



Becoming a smart city is not a matter of flicking a switch. It's a journey. For local government this is a strategic framework to guide decisions about where to go, both in the short- and long-term.

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“There is a gulf between those councils that are aware of the opportunities to smarten their services and those that aren't there yet. Don't re-invent the wheel. Anything you think of may have been done by someone who can share their knowledge and experience.”

**Mark Burry,**

Founding Director of the Smart Cities Research Institute and Professor of Urban Futures, Swinburne University of Technology

Fortunately, the international smart cities movement is mature enough now so that Australian local governments can draw on a range of resources when putting together their smart city strategic framework. Australia's own Smart Cities Council also provides a library of information and other resources to its members. Individual cities can stand as examples to local governments still at the early stages of maturity.

- The British Standards Institute's PAS 181 Smart city framework establishes good practice for smart city strategies.
- TM Forum's digital maturity model and collaborative working groups can help organisations rapidly improve their digital infrastructure.
- Hypercat has developed a standard for a secure and interoperable Internet of Things (IoT) for cities.

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“A smart city strategy is the city strategy. You don't need any other.”

**Paul Francis,**

Smart Cities Lead,  
KPMG Australia

Whatever the approach, local governments will need to establish a baseline from which to measure progress using the metrics relevant to their strategy. This baseline marks the first stage of maturity. An effective maturity model will allow a local government to quickly assess its strengths and weaknesses and its current smarts, then map relevant and achievable waypoints on the smart city journey.

There is one advantage of not been part of the first wave of smart city development seen in North America, Europe and India: Australia can now take its pick of tested strategies and models. Opportunities to lead are still there though. Adam Beck, from the Smart Cities Council, Australia and New Zealand, argues that local crises in energy, housing affordability and climate are wake-up calls which will

allow the smart city movement to take the lead, as we have with the green building movement, by applying the smart city concept to building design, urban development and infrastructure. By breaking it down into smart precincts, smart campuses, smart urban development and infrastructure, we can start to shift our thinking. The take-home message is learn from others, but also learn by doing.

### Case study: A city with three horizons

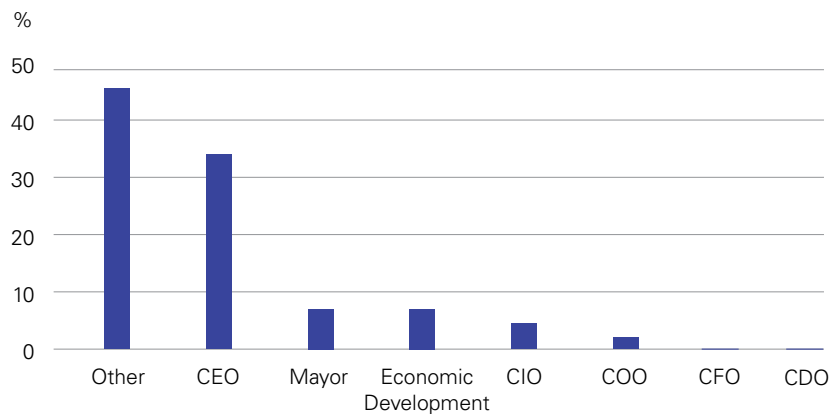
The City of Newcastle has embarked on a journey that will take from its industrial foundations to a diversified economy rich in opportunities in creative and knowledge industries. Three horizons guide its decisions in every aspect of the city, including its governance, environment, mobility, economic growth, and liveability:



The city has not forgotten the human factor. Engagement with stakeholders from primary school students to university partners and industry groups has set shared priorities and established a common understanding of strengths and challenges for the city and the Hunter region. It is this engagement that will ensure that the smart city strategy will keep its relevance to citizens.

Ownership of the smart city strategy is diverse. While 40 percent of survey respondents stated that the CEO and Mayor were the key drivers, the majority placed ownership across a wide range of leaders from communications managers and corporate services GMs to CIOs and heads of strategic planning.

**The smart city strategy is owned by...**



Bud Kapoor, Sales Manager, Smart+Connected Communities at Cisco outlines four critical success factors for a smart city, none of them technology-led.

**1 Vision**

Be clear about what you want to do and what outcomes need to be achieved for citizens. Be technology agnostic.

**3 Commitment**

Don't rush. Spend time thinking about what you want to achieve. And once you're in, you're in. Be there for the long haul.

**2 Leadership**

A smart city needs leaders who can think beyond the boundaries of their own specialisation or sector and bring people together.

**4 Collaboration**

Share knowledge. Share resources. Don't re-invent the wheel. Collaboration is one of the best strategies for dealing with uncertainty.



### Case study: Welcome to the Ten Gig City

The City of Adelaide's vision is to be a globally connected city, rich in opportunities and a destination for entrepreneurs. The key infrastructure underpinning this vision is a network offering businesses reliable upload and download speeds of up to 10 gigabytes per second, giving entrepreneurs, start ups, corporates and the property, investment and creative communities the bandwidth to compete nationally and internationally. The city itself will be relying on this infrastructure to become more sustainable by improving energy performance and increasing the use of renewable energy in the city's buildings, driving low-emission activities and transforming waste and recycling.

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"It's what people will do with it that matters – the entrepreneurs, the start ups, the corporates, the property, creative and investment communities – this will ensure that the city thrives."

**Martin Haese,**  
Lord Mayor, City of Adelaide



# Finding the money



In early 2017, the Commonwealth Government announced the launch of round one of the Smart Cities and Suburbs Program designed to support local governments, private companies, research organisations and not-for-profit bodies to work collaboratively and deliver innovative smart city projects. Over 170 councils submitted applications and funding outcomes will be announced in late 2017.

This is funding that local governments can use to seed projects that can be test cases for future initiatives. It can also kick-start the dialogue and collaborations that will lead to long-term partnerships and investment. The multi-functionality, flexibility and scalability of digital networks, together with the potential to monetise the value of data, means that local governments have a wider range of financial and funding models available to them than what was available with traditional infrastructures.

While federal funds will be valuable to kick-start projects, local governments will need to consider other ways to fund and finance their smart cities in the long term.

## Extract the full value of data

Data has commercial value as well as public. With more and better quality data about who's doing what in the city, there is scope for new business models where the value that can be extracted from that data is monetised. As data custodians, local governments have considerable data-analytics potential in their hands, which they must balance with public imperatives such as equity and privacy.

Good quality data about service provision also gives local governments the information they need to price those services in new ways, capture value, and enter performance-based contracts where suppliers can share in efficiency gains and the benefits of innovation.

## Case study: Smart procurement at City of Prospect

"The council has been conservative in its approach to smart technology" says Cart Hart, CEO of the City of Prospect. "We won't go out and buy it". Instead the key question for the council is "how can we structure our tender of services around opportunities to introduce smart technology". The City of Prospect's recent waste tender demonstrates this approach. Instead of purchasing compacting bins or bins that notify when they are full, the council has sought bids for waste management delivered on a platform of smart technology and innovation. With the smart technology the council can measure the quantity and type of waste being collected. The innovation part of the platform means that services can be tailored. The result? The City of Prospect pays for the outcome rather than the technology and minimises the cost of service delivery.



### Finding savings

A lot of what local governments do is information management. It's just not digital. Going 'digital by default' will almost certainly deliver savings. For example, in the early stages of the City of Geelong's digital strategy, 25% of rate payers took up the option to receive a digital rates notice, saving the city \$1 million. This now stands as a test case for its ongoing program to become digital by default, with further savings ahead.

# 95%

It is encouraging that 95% of people responding to the survey said they understood the investments, returns and other benefits of smart city initiatives.

### Alternative funding models

We also see new opportunities arising from new technology and the willingness to collaborate with partners from a range of sectors. The City of Geelong, for example, has sought to bring together partners from the business sector and industry on its 'clever bollards' project with opportunities to advertise or develop new business models.

# 21%

However, only 21% said they had explored alternative funding models, such as bonds, and public-private partnerships to make them happen.

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*"We were after a business model, not a funding model or a payment plan. It's a completely different perspective."*

**Andrew Downie,**  
 Manager Digital,  
 Information & Technology,  
 City of Greater Geelong

# Bringing communities along

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“We need to design with people, not for people.”

**Mark Burry,**

Founding Director of the Smart Cities Research Institute and Professor of Urban Futures, Swinburne University of Technology



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“One of the challenges is maintaining the relevance of this terminology, ensuring that the community understands that it’s not just about gadgets but it’s for them ... and it absolutely influences decisions in everyday life.”

**Cate Hart,**

CEO, City of Prospect

When we look at the cities that have succeeded in transforming their futures we see that, above all, they have engaged their citizens. They have started with questions. What do people value? Why do they choose to live here? What do they imagine or want their futures to be? What do they do with their time? They’ve asked them about their appetite for risk. They’ve discussed options. They’ve talked about how it will be paid for. They’ve negotiated. They’ve got commitment from community leaders.

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“We are planning for people. So it’s dynamic. We have to use technology in a smart way to get the best leverage for the community with the least cost.”

**Eric Lumsden,** Chairman Western Australian Planning Commission, Department of Planning

We can see that the factors in a city’s success are human, not technological. Local governments must develop a vision that is meaningful to people in an area connected economically, geographically and culturally.

Engagement takes time. Longer than a planning meeting. In some cases, that may mean that a local government needs to put its relationship with its citizens on a new footing if it wants people to stay the distance. As one workshop participant put it “we need to encourage citizens to lift their eyes from ‘I need broadband’ to an ongoing discussion about the community and what can be gained by having that infrastructure”

Trust needs to be built. People need to feel that the time that they give to their local governments is well spent, before they give it and give more. And as Samantha McIntosh noted, you need to show, quickly, that proposals will work.

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“You need to real examples of things working on the ground. So, find new business models, test them, get your example and show the community. Then scale up and reapply it.”

**Samantha McIntosh,**

Mayor of the City of Ballarat

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“Overall, digital inclusion is increasing in Australia... Nevertheless, many Australians (45%) are missing out. Digital inclusion is closely related to income, age, education, and other socioeconomic factors.”

**The Australian Digital Inclusion Index 2016,**  
Swinburne University of Technology




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“Invite everyone to be part of a structured dialogue, which is also dynamic, able to continue in spite of inevitable change, whether that’s planned or unplanned, known or unknown.”

**Abbas Rajabifard,**  
Head of the Department of Infrastructure Engineering,  
University of Melbourne

### Digital inclusion – empowering smart communities

Those human factors are not all though. If we want to have citizens engaged and involved in meaningful decisions then they, like any decision maker, need information.

The City of Geelong realised this when it was taking the first steps in its digital strategy. Recognising that 45% of

their population risked being digitally excluded because of age, income and education, the council worked at building awareness, developing digital skills and creating digital spaces where all citizens could access information and services in an environment where they could be assisted.

Digital inclusion and engagement is also fundamental to the City of Ipswich’s smart city plans. With a relatively young median age of 32, high population growth and an economy in rapid transition, it has committed to several priorities that will help people actively participate in the life of the city. These include digital skilling, engaging the community in swift civic solutions, digital service standards designed to improve access to services, and a Healthy Living Lab that will help the community to address health issues – one of the key challenges for the city.

# Data: The power of platforms, not silos

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“Data is the bedrock for improvements in service, and being Smart City-ready is dependent on the right systems being put in place.”

**Toni Jones,**  
Partner,  
National Local Government Leader,  
KPMG Australia

Data is fundamental. From it we derive the information and insights we need to design and deliver services, make decisions and drive innovation. That is where the value is. This potential value opens up new financial models to local governments looking for ways to deliver services without passing the cost to citizens.

To get that benefit, data has to be collected, structured, analysed and made available to be used and re-used in real time right across the urban fabric, not just by the local government organisation. It should also move across city boundaries. This quality of interoperability will become a more pressing requirement as the Internet of Things pervades our urban spaces.

## Case study: Geelong – a clever and creative city region

The City of Geelong is developing a network of multi-modal connections and environmental sensors to control and provide lighting, Wi-Fi and city navigation.

It is engaging with citizens and communities to uncover what would be of value, working with industry on new business models, and universities to understand how the City of Geelong can tackle the economic, social and environmental challenges the region faces. As Andrew Downie says: “It’s not just about the service industry ...

collecting IoT data then informs our future infrastructure and service planning—it’s about unlocking what’s happening in the city.”

The public sector has been seen as slow to be part of the data and digital technology revolution, but this may be a good thing as governments can now leap-frog past the first wave of efforts to the more standards- and technology-agnostic platforms available now. For citizens, this attention to data will pay off as tailored and timely information and services.

# Don't go it alone

“Collaboration is a good thing but it's not easy to do. You have to harness it so that it produces practical, useful outcomes.”

**Maree Adshead**,  
Chief Executive Officer,  
ODI Queensland & Small Business  
Champion, Queensland Government



There is only so far you can go with top-down planning and management within a council. If you want innovation, then collaboration will take you further than the wildest dreams of any town planner. It is apt that some of the best ideas we've heard about collaboration came from the panels and workshops:

- Collaboration is the best way to search out a solution in conditions for uncertainty, when it may not be very clear what is needed.
- Partnerships are resilient. Trust will pull you through difficult situation when the plan fails.
- Collaboration can supplant competition of the kind that stands in the way of learning and sharing information.
- They reduce the costs of entry for smaller players with something to contribute.
- They break down vested interests and monopolies.
- They challenge the meaning of failure. Failed attempts produce information. They build experience. They break open new possibilities and opportunities for people.
- They will stop you re-inventing the wheel.

Local governments are well placed to use their buying power, resources, data and cross-sectoral relationships to help create ecosystems and test beds for innovation. And as Danni Addison from Urban Development Institute of Australia pointed out, governments create the playing field in which commercial interests find their opportunities.

The challenge for governments, and any institution when collaborating with different types of organisations such as start-ups is to balance the fast burn culture and the slow burn of long-term deep innovation. Governments also need to be open with data, intellectual property and their governance—something that can take an administration out of its comfort zone.

Several Australian cities have formalised their knowledge sharing by signing various agreements other cities, nations and associations around the world such as Ipswich and the Netherlands, Adelaide and Jaipur and Bendigo with the Global Smart City and Community Coalition.

## Thank you to all the speakers and panellists at the events

**Professor Barney Glover**, Vice-Chancellor and University President, University of Western Sydney

**Professor David Wilkinson**, Deputy Vice Chancellor, Corporate Engagement and Advancement, Macquarie University

**Professor Pascal Perez**, Director, SMART Infrastructure Facility, University of Wollongong

**Professor Chris Pettit**, Associate Director, City Futures Research Centre, UNSW

**Damien Giurco**, Professor of Resource Futures, Institute for Sustainable Futures, UTS

**Johanna Pitman**, Program Director, CityConnect, BlueChilli

**Robert Matchett**, Director, ENE-HUB

**Dale Rankine**, CEO I Reekoh

**Lucienne James**, Business Development Manager I Conexie

**Grant Dobson**, Head of Sales & Marketing I Duncan Solutions

**Trent Loebel** I Duncan Solutions

**Jason Baden**, Country Manager I Ruckus

**Adam Beck**, Executive Director I Smart Cities Council Australia and New Zealand

**Piers Hogarth-Scott**, National Practice Lead Internet of Things, KPMG

**Dr Nathaniel Bavinton**, Smart City Coordinator, City of Newcastle

**Bruce Macnee**, Manager of Strategic Planning, Liverpool City Council

**Nathan Rogers**, Chief Information Officer, Northern Beaches Council

**Dr Nathaniel Bavinton**, Smart City Coordinator, City of Newcastle

**Kate Deacon**, Executive Manager - Research, Strategy and Corporate Planning, City of Sydney

**Cr Kay Fraser**, Mayor, Lake Macquarie

**Leesa Croke**, Deputy Director-General of Policy and Cabinet, ACT Government Brian Weir, Researcher Canberra Urban and Regional Futures, University of Canberra

**Nick McNaughton**, Chief Executive Officer, ANU Connect Ventures

**Brook Dixon**, Managing Director, Delos Delta

**Roger Rooney**, Smart Parking Project Manager, ACT Government

**Peter Tegart**, General Manager, Queanbeyan-Palerang Regional Council

**Luke Johnson**, General Manager, Wollondilly Shire Council

**Adam Beck**, Executive Director, Smart Cities Council Australia and New Zealand

**John Bowdery**, Director, Customer Experience in Transport Canberra and City Services, ACT Government

**Professor Mark Burry**, Founding Director of the Smart Cities Research Institute and Professor of Urban Futures, Swinburne University of Technology

**Professor Glyn Davis**, Vice-Chancellor, University of Melbourne

**Leah Sertori**, Chief Executive Officer, BE Bendigo

**Danni Addison**, Chief Executive Officer, UDIA Victoria

**Professor Mark Burry**, Founding Director of the Smart Cities Research Institute and Professor of Urban Futures, Swinburne University of Technology

**Cr Margaret O'Rourke**, Mayor, City of Greater Bendigo

**Bud Kapoor**, Sales Manager Australia I Cisco

**Defkalion Kalogridis**, ANZ Business Development Manager I Yotta

**Andrew Downie**, Manager Digital, Information & Technology, City of Greater Geelong

**Cr Samantha McIntosh**, Mayor, Ballarat City Council

**Kelly Grigsby**, Chief Executive Officer, Wyndham City Council

**David Silvester**, Deputy Secretary, Network Planning Transport Group, Transport For Victoria

**Professor Abbas Rajabifard**, Head, Department of Infrastructure Engineering, University of Melbourne

**Lord Mayor Martin Haese**, Mayor, City of Adelaide



**Dr Jennifer Taylor**, Digital Platforms and Reporting Manager, Senior Research Fellow: Australian Centre for Business Growth, University of South Australia

**Terry Gold, Managing Director**, Techstars Adelaide & Adjunct Industry Fellow, University of South Australia

**Jenny Vandyke**, Managing Director, Startup Adelaide

**Philip Vafiadis**, Chairman & Co-Founder, Innovyz

**Professor Ali Babar**, Australian Centre for Smart Cities, The University of Adelaide

**Matthew Salier**, Director New Venture Institute, Flinders University

**Cate Hart**, Chief Executive Officer, City of Prospect

**Cr Lorrain Rosenberg**, LGA President, City of Onkaparinga

**David Bevan**, Manager of Business Systems and Solutions, City of Salisbury

**Chad King**, Manager - Transformation at City, City of Playford

**Ben Pole**, Chief Operating Officer, Ipswich City Council

**Graham Quirk**, Lord Mayor, City of Brisbane

**Maree Adshead**, Chief Executive Officer, ODI Queensland & Small Business Champion, Queensland Government

**Paul Burton**, Professor of Urban Management and Planning and Director, Cities Research Institute, Griffith University

**Mark Paddenburg**, Chief Executive Officer, Innovation Centre Sunshine Coast

**Professor Laurie Buys**, Professor, School of Design, Theme Leader, Infrastructure for Sustainable Communities, Queensland University of Technology

**Steve Baxter**, Chief Executive Officer, Transition Level Investments

**Merrick Spain**, Smart Cities Lead | Telstra

**Ricardo Martello**, City Futures Manager | Logan City Council

**Alok Patel**, Chief Executive Officer, Azcende

**Zubair Khatree**, Smart City Program Manager | Ipswich City Council

**Andrea Kenafake**, Divisional Manager City Planning and Sustainability, City of Brisbane

**Malcolm Middleton**, Queensland Government Architect, Department of Infrastructure, Local Government and Planning

**Ian Hatton**, Digital City Program Manager, City of Gold Coast

**Drew Stevenson**, Manager Corporate & Technology, City of Rockhampton

**Ricardo Martello**, Smart Cities Manager, Logan City Council

**Professor Marcus Foth**, Professor of Urban Informatics, Queensland University of Technology

**Eric Lumsden**, Chairman Western Australian Planning Commission, Department of Planning

**Rhonda Hardy**, Chief Executive Officer, Shire of Kalamunda

**Daniel High**, Manager Economic Development, Economic Development and Place Activation, City of Perth

**Professor Kent Anderson**, Deputy Vice Chancellor (Community & Engagement), University of Western Australia

**Professor Julian Bolleter**, Australian Urban Design Research Centre, University of Western Australia

**Dr Jemma Green**, Councillor at City of Perth & Research Fellow at Curtin University

**Brodie McCulloch**, Chief Executive Officer, Spacecubed

**Allison Hailes**, Chief Executive Officer, Urban Development Institute of Australia

**Dr Jemma Green**, Councillor, City of Perth & Research Fellow, Curtin University

**Mayor Brad Pettitt**, Mayor, City of Fremantle

**Joanne Abbiss**, Chief Executive Officer, City of Kwinana

**Rhonda Hardy**, Chief Executive Officer, Shire of Kalamunda

**Shayne Silcox**, Chief Executive Officer, City of Melville

**Michael Foley**, Chief Executive Officer, City of Swan

**Dale Page**, Director Planning and Community Development, City of Joondalup

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