

URBAN SYSTEMS TRANSFORMATION GREATER ADELAIDE



THE URBAN CHALLENGE

Future Earth Australia, hosted by the Australian Academy of Science, is leading a process to co-design a national strategy for Australian sustainable cities.

Australia is already one of the most urbanised countries in the world, with 89% of the population living in urban areas (UNDESA, 2014) and 67% living in the capital cities. Australia's estimated resident population of 24.6 million people (June 2017) is projected to increase to between 37.4 and 49.2 million people by 2066 (ABS, 2018a). All capital cities are projected to grow at a greater pace than the rest of their respective state or territory (ibid). Some are seeking to constrain growth; others, including many regional centres, are looking for extra or renewed growth.

Our urban environments are an interrelated system comprising social, economic, ecological and technical spheres. Urban systems transformation is needed to ensure that people can move around efficiently, live in safe and healthy homes, receive adequate education and medical care and enjoy lives of social equity in a healthy and biodiverse environment.

The metropolitan plans for most Australian capital cities include consistent sustainability planning and design principles such as containing urban sprawl, reducing car dependency and providing greater housing choices. However, in practice, urban decision-making is subject to numerous complex drivers—social, environmental, economic, institutional, technological—with the potential to create barriers to sustainable development.

The challenge lies in ensuring effective and consistent urban policy and decision-making in the complex urban institutional environment (across spatial scales and decision-making levels, and across sectors), with genuine stakeholder and community engagement that understands the many and varied underlying

aspirations and values. In turn, this process needs to be guided by a shared vision of our urban futures, underpinned by approaches to co-produce, share and implement knowledge to inform decision-making. In this context all decision-makers and stakeholders are both providers and users of knowledge.

However, current urban development and decision-making is characterised by a lack of shared vision and excessive fragmentation in institutional arrangements and in relevant knowledge development, translation and use.

RESPONDING TO THE CHALLENGE

Future Earth Australia is working to improve the appreciation of the underlying barriers and enablers to sustainable urban development, and the supporting development, synthesis, translation, accessibility and application of relevant knowledge. Through a nationwide consultative process, it is co-developing a national strategy for the sustainable development of Australia's cities and communities over the coming decades.

Through a series of workshops in the capital cities, Future Earth Australia asked policymakers, practitioners, researchers, business and community stakeholders to contribute to the development of local and national strategies. Each workshop included a special focus on the specific city and the surrounding region, as well as implications for a national approach.

THE IMPORTANCE OF A NATIONAL STRATEGY

To be successful, transformational strategies will need to include shared urban visions of feasible and desirable futures, with a focus on:

- key systemic leverage opportunities
- collaborative and aligned urban governance integrated across systems, sectors and scales
- effective stakeholder and community engagement across multiple goals and diverse values
- co-produced knowledge development and use by policy and urban decision-makers.

These elements should all be supported by continuing learning and adaptive management. A national strategy will provide governments, practitioners, business, communities and researchers with recommendations for cost-effective and integrated urban systems transformation.

To help us achieve these goals, workshop participants are asked to consider:

- current issues and future visions for their city and region
- how to improve engagement outcomes with stakeholder and community groups by policy and decision-makers
- actions that if taken locally (at state/territory level) and nationally would increase the sustainable development of the city/region
- how such actions might contribute to a national strategy for urban systems transformation.

A national strategy will also help Australia meet our commitments under the United Nations' Sustainable Development Goals (SDGs). SDG 11 is to 'make cities and human settlements inclusive, safe, resilient and sustainable', but transformation is underpinned by integration of all 17 of the goals.

Greater Adelaide workshop

On 20 February 2019, Future Earth Australia held the eighth in a series of national workshops for its project 'Urban systems transformation: sustainable cities' in Adelaide. The workshop was co-organised by CSIRO, the University of South Australia and the University of Adelaide and included participants from the state government, councils, universities, local businesses, NGOs and research groups.

This document summarises discussions grouped under the following workshop themes: urban visioning initiatives and pathways; collaborative governance and decision-making; stakeholder and community engagement; and co-produced knowledge development, usage and learning.





SPEAKERS

Dr Tim Muster, Team Leader, Adaptive Liveable Cities, CSIRO Future Cities

Dr Muster acknowledged the traditional owners of the land, past, present and emerging. He spoke about the CSIRO Adaptive Liveable Cities team, which is working on a future cities initiative focused on matters such as where and how people will live if urban populations double, what cities will look like in the future and how cities will be connected. The research team supports the work of Future Earth Australia and its partners in developing a national urban strategy. CSIRO is interested in promoting the value and importance of cities to the community and government, as they form a significant part of the economy and are hubs for generating and sharing knowledge.

Australian cities are a vibrant part of the nation and represent a large proportion of the human capacity. However, there are pressures on cities, such as population changes, a shift into renewable energy, reliance on cars (and vulnerability to fuel prices), equity and housing affordability. There is currently a great deal of talk about smart cities, but we also need smart and connected people to make the most of a smart city's functionality.

Dr Stephen Berry, Renewable Energy and Decarbonisation Manager, University of South Australia

Dr Berry thanked the University of Adelaide for providing the venue and Future Earth Australia for making the journey to Adelaide. Researchers at the University of South Australia are focused on creating wonderful cities where everyone is brought along on the journey, which means ensuring that urban visions are inclusive. Creating great urban environments requires that the natural environment is respected and rehabilitated. Thousands of years of cultural heritage must be recognised and embraced.

Adelaide is different in nature and scale to other capital cities in Australia. This has allowed Adelaide to focus on trialling projects at a realistic scale. Some of these trial urban experiments include Christie Walk (a model ecological cohousing development), Lochiel Park (a model green village) and the Tonsley Innovation District.¹ The latter was a car manufacturing site that has successfully been reshaped into an innovation district. There are now more jobs at Tonsley than when it housed car manufacturers, while maintaining a lower environmental impact.



The Lochiel Park development is a living lab. Energy and water use are measured by the minute and the residential energy efficiency is constantly monitored. Together, these projects have demonstrated in real time how energy efficient houses work.

Professor Chris Leishman, Director, Centre for Housing, Urban and Regional Planning, University of Adelaide

Professor Leishman welcomed attendees and applauded the diverse backgrounds and values in the room. He noted that, when flying into Adelaide, the first impression is that of a huge sprawling city, reeking of unsustainability. In general, Australia's productiveness seems to be slowing; sprawl and urban issues are stymieing economic growth. As such, politicians and economists are starting to appreciate the value of sustainability. Cities in the UK have grappled with decline for 30 to 40 years and have established many successful projects to overturn decay. In Adelaide, current issues are around strategies for new housing and whether Adelaide should densify.

1. <https://tonsley.com.au/news/update-tonsley-innovation-district/>

PANEL DISCUSSION

Several regional experts were asked to give a short presentation about their view on current issues and visions for Adelaide and regional South Australia (SA), and to give their insights on the major challenges for achieving sustainable development.

Dr Donna Ferretti, Director, Donna Ferretti & Associates

Greater Adelaide is large and spreading, and there is concern that if the sprawl continues, the Barossa and McLaren valleys will become suburbs of Adelaide. *The 30-Year Plan for Greater Adelaide* (Government of South Australia, 2017a) was founded on good principles, but its success will depend on the methods used to implement change and whether traditional methods are used to achieve new objectives. The goals of the plan are good, but residents have not been properly involved. There are concerns regarding buildings overlooking and overshadowing other buildings and around reliance on cars. The plan aims to densify the central business district, major centres and key transit corridors and railway stations. Transport corridors are a good idea, as they enable people to use public transport, which reduces car dependency and creates space for pedestrians.

Planning currently allows eight-floor developments along the Anzac Highway, yet most of the buildings have only three stories and occupy the entire site. The remaining space is covered in concrete for parking, which increases the heat island effect. Developers argue that this reflects market demand, but market aspirations can be shaped to reflect sustainability considerations that are not expressed in price signals. The development industry should be encouraged to build higher and have more lower-ground space with landscaping. This would result in more attractive designs and a more active street. The development industry hasn't done the research about what the public wants.

Professor John Boland, Environmental Mathematics, School of Information Technology and Mathematical Sciences, University of South Australia

Professor Boland believes that building regulations need to be modernised to ensure that more environmentally and socially responsible outcomes are produced in Adelaide. On 24 January 2019, Adelaide recorded its hottest ever day on record, reaching 46.2°C in the city. Electricity and wholesale prices spiked at peak demand and there was curtailment of power

going to grid. There was so much pressure that parts of system blew. Better house design and a house energy rating scheme would reduce pressure during the whole year, but particularly during seasonal maximums when heat stress is greatest.

Most houses currently have black roofs, no insulation, high solar heat gain windows and no shutters. Greenery is important as it lowers the ambient temperature around houses.

It is anticipated that the current building code will be amended with the *Nationwide House Energy Rating Scheme* (NatHERS). Professor Boland commented that possible opposition within the community and industry would come to pass as changes to the code become the norm. For instance, there was public outcry when smoking was banned on buses, but the outrage faded over time. The same could happen with stricter building regulations.



Mr Vaughan Levitzke, Chief Executive, Green Industries SA

Green Industries SA sits in the environment portfolio of the Government of South Australia. It focuses on recycling and regulating use of materials and engages with the public on topics such as single-use plastics.

Green Industries SA is often asked what makes up a smart city. Mr Levitzke believes the most important elements of a smart city are the Internet of Things, data insight-driven design, renewable energy, entrepreneurship, zero waste, cleaner production, biomaterials, sustainable water, better health, citizen friendliness, green spaces, good research and learning. Mr Levitzke asserted that Adelaide has begun to incorporate planning around these themes, as evidenced by the 2003 Herbert Girardet report, *Creating a Sustainable Adelaide*.

The role of design is critical, and Adelaide could be a design centre rather than just an adoptee. Artificial intelligence will reduce jobs and there will be a need to find ways to increase employment. Imminent demographic changes need to be considered—what will happen when all the baby boomers have gone? Disaster planning in Adelaide is still rudimentary. More holistic and integrated approaches to transport and planning are needed and should be considered alongside health, species loss and materials.

Mr Ross Womersley, Chief Executive Officer, South Australian Council of Social Service

There is a persistent, long-term issue with people living in poverty. Mr Womersley pointed to analyses which have shown that one in 10 households in SA are living below the poverty line, and that this figure likely includes 23 000 children. These figures have remained steady over time. In the context of adaptation, these people have the least capacity to take advantage of sustainability initiatives.

Unemployment is a major issue, with those who are only able to work even one hour per week considered employed. This definition sets up a system of working poor—people who earn just enough to not receive benefits. Being poor costs: money-saving technologies such as solar panels, batteries, electric bikes or cars are not affordable, and bank fees, late fees and bulk purchases can be big issues.

Given that there are many empty properties in Adelaide, there should be a disused building tax that would be an incentive to put the buildings to purpose or pay a dividend to the community.

South Australia has the lowest Digital Inclusion Index—a measure of digital access, affordability and literacy—in Australia.² Fifteen per cent of households have no internet connection. All three measures of the index are linked to income. As life is increasingly moving onto the digital interface, poorer people are ever more likely to be left out. Sustainability, as defined by the SDGs, is inclusive and should leave no segment of the population behind.

Questions

There is tension between private car use and public transport planning. Which direction is best?

The support given to individualised motorised vehicles is one reason for urban sprawl in Adelaide. If we are serious about creating a compact city then there need to be more public transport options. The South Australia Department of Planning, Transport and Infrastructure currently manages the planning system and is still investing in more and bigger roads. There are few incentives for active transport, and driverless vehicles do not result in sustainability.

We need to unweild people from their cars—even if public transport is present, people often don't use it. This requires bold decision-making. Many international cities place restrictions on car use in the city centre. For example, in commercial areas, produce may be delivered in early morning, but throughout the day access is limited to emergency vehicles only. Park and ride may help change people's reliance on cars, as may removing peak-time surcharges for public transport.

Developers are failing to address the aims set out in the 30-year plan for more amenity spaces and building connection to the street. Have there been design tests and studies to guide developers, examples, guidelines and policy? Successful higher density cities such as Paris and Berlin have very strict guidelines.

There are design guidelines regarding density within the central business district. Under the new SA planning system that is currently being rolled out there will be changes to the planning code and development assessment procedures.

2. <https://digitalinclusionindex.org.au/wp-content/uploads/2018/08/Australian-digital-inclusion-index-2018.pdf>

that diverse groups of stakeholders are involved in co-production and that their knowledge is included in the process. It was suggested that financial incentives could be used to encourage collaboration in urban transformation, but it was unclear how industries like the insurance sector might be incentivised to fund research in this area.

Disciplinary and institutional silos must be broken to effectively co-create knowledge. At the same time, joint responsibility must be taken for outcomes of the process. Leadership in this process should come from within the community and not be led solely by government.

KEY PRIORITIES FOR A NATIONAL STRATEGY

A persistent issue is the short-term nature of many government policies and projects; these need to have longer-term vision in order to produce lasting results. This includes ensuring that projects are sustainable in the long term and promote intergenerational equity, which would involve a shift away from purely economic indicators of success.

Health has become a ubiquitous policy item, and sustainability should achieve the same importance. There is a push towards healthy and connected communities, both in cities and in regional areas, which can help to promote sustainable policy action. One way to achieve the target in equity and sustainability is to build low-cost sustainable homes, as per the 1000 Homes in 1000 Days initiative.

For urban transformation to take place, we need to embrace diversity in approach, thinking and solutions. The planning industry and policies need to be flexible and able to adapt to change, but consistent policy is needed to provide market certainty about where to invest.

PROFESSOR CHRIS SAINT, CRC FOR LOW CARBON LIVING, UNIVERSITY OF SOUTH AUSTRALIA

Professor Saint spoke about the CRC for Low Carbon Living research node, which has 25 projects with funding of \$3–3.5 million and 15 PhD and Masters students. In 2015 the CRC set up the Industry Friends of Low Carbon Living forum series, a new tech and systems initiative to facilitate industry and government engagement. In total, these forums have attracted over 600 attendees with 72 speakers representing a mix

of industry, government and researchers. Four more public events with industry and government are planned for 2019, featuring topics such as low carbon housing transition and a Lochiel Park workshop to communicate findings to date and seek pathways for Adelaide to become the first carbon neutral city. The CRC will have finished by June 2019, but there is a bid by Professor Deo Prasad (of the CRC for Low Carbon Living) for a Future Cities CRC, which has good industry support. There is a good opportunity to establish a regional living lab in Whyalla with involvement of the city council if the bid is successful.

GREATER ADELAIDE

Adelaide, the capital of SA, covers 5350 km² and is located on the east coast of Gulf St Vincent. It extends from the Barossa Valley in the north to the Fleurieu Peninsula in the south and the Mount Lofty Ranges to the east.

FACTS AND FIGURES

Adelaide is the fifth most populous city in Australia, with an estimated population of 1.4 million people (ABS, 2018b). It is ranked as one of the world's most liveable cities (The Economist, 2018). Greater Adelaide encompasses 27 councils and seven administrative regions (Government of South Australia, 2017a). This area traverses five Aboriginal nations: Kurna, Ngarrindjeri, Ramindjeri, Ngadjuri and Peramangk.

Greater Adelaide is home to 84% of SA's population (South Australia Planning Portal, 2018), and between 2011 and 2016 grew by an average of 0.9% per year (South Australia Planning Portal, 2018). Residential infill in middle-ring metropolitan areas like Marion and Charles Sturt and greenfield developments in the outer areas of Adelaide saw considerable population increases. By 2030, Adelaide is projected to see 560 000 new residents, 258 000 new homes and the creation of 282 000 jobs (Government of South Australia, 2010).

Overall population increase can be attributed mainly to immigration to Australia and natural population increase. However, in recent years the rate of population growth has slowed due to a combination of declining migration rates nationally and South Australians moving interstate (South Australia Planning Portal, 2018). People aged between 20 and 39 years accounted for the largest age bracket to migrate interstate, likely in the interest of employment and education opportunities (ibid).

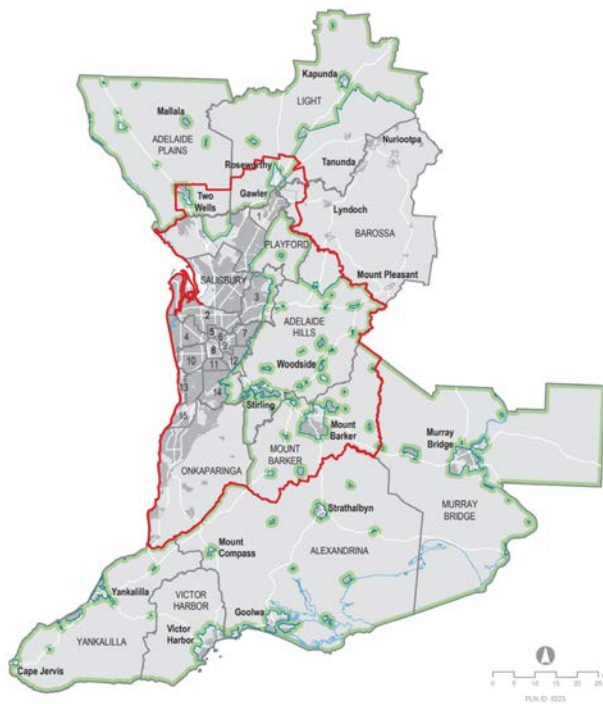


Figure 1: Greater Adelaide Planning Region. The red line encloses the Greater Adelaide Capital City Statistical Area (Source: Government of South Australia, 2017a)

Major sectors of employment for those living in Greater Adelaide are healthcare and social services (14.2%), retail (11.4%) and manufacturing (10.4%) (ABS, 2017).

REGIONAL CHALLENGES

Aging population

Consistent with a nationwide trend, Adelaide's population is ageing as baby-boomers move into retirement and beyond (South Australia Planning Portal, 2018). Between 1986 and 2016 the proportion of people aged 65 and over increased from 11.7% to 17.7% (South Australia Planning Portal, 2018). SA has the second oldest population in Australia, and by 2041 people aged 65 years and older are projected to represent 23% of the state's population (Government of South Australia, 2017b).

Labour restructuring post manufacturing decline

Automotive manufacturing has historically played an important role in SA's economy. After being in decline since the 1990s, it fell sharply in the wake of the global financial crisis as the high Australian dollar and mining boom made the manufacturing sector uncompetitive (Spoehr, 2017).

In July 2015 the SA unemployment rate peaked at 8.2% and 7% in the 2016 census. For comparison, the national unemployment rate was 5.7% (ABS, 2017). The closure of Holden's manufacturing plant in late 2017 was a salient moment, resulting in 50 000 job losses once suppliers and direct employees were counted (Dowling, 2017). In 2017 the male unemployment rate was around 7% and male full-time employment rates were in decline (Dowling, 2017).

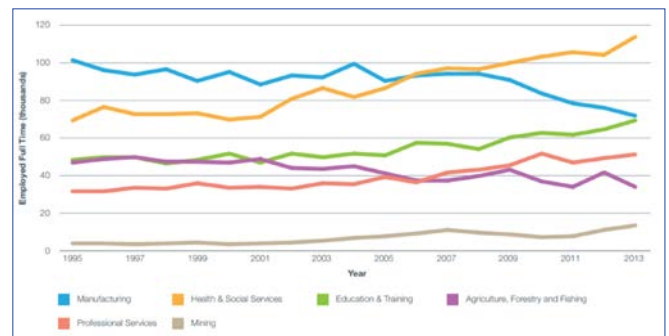


Figure 2: Changes in employment by industry in South Australia, 1995–2013 (Government of South Australia, 2013, p. 28)

While employment growth is being enjoyed in health, aged care and community services, there is limited transferability of skills for the large numbers of mostly male employees that previously worked in manufacturing. Since the mid-2010s, both the Australian and SA governments have sought to plug the investment gap through infrastructure spending, particularly on major roads such as the North–South corridor (ABC News, 2018), and tendering new contracts to build submarines and naval ships in Adelaide. Prospects of building skills-based industries in technological design, manufacture and innovation appear promising for restructuring the labour market in the medium to long term (Spoehr, 2017).

Brain drain: young people moving away

In recent years Adelaide has experienced an exodus of young people who move principally to Melbourne and Sydney in search of better prospects. These people are often those with higher levels of education or are skilled workers. This is problematic for the productivity of the labour force, consumption and cycling of incomes through generations (ABC News, 2018). While this kind of movement has been relatively normal in SA since the beginning of the 1980s, the trend is particularly pronounced in times of economic downturn, such as during the 1990–91 recession and the global financial crisis in 2008 (Bogle, 2018).

The Australian Bureau of Statistics projects that SA could enter population decline around 2066, which contrasts with the predictions for Melbourne, Sydney and other major Australian cities. This could undermine the economic health of the city and state (O'Neil and Gill, 2018).

MAJOR PLANNING DOCUMENTS

The Greater Adelaide Regional Organisation of Councils is a conglomerate of council representatives of the area that operates through the Local Government Association of South Australia.³ The major piece of state legislation governing urban development is the *Planning, Development and Infrastructure ACT 2016*, however local council plans are sanctioned by the *Development Act 1993*.

The 30-Year Plan for Greater Adelaide

The Government of South Australia contributes to governance of greater Adelaide through its *30-Year Plan for Greater Adelaide*, which was released in 2010 and refreshed in 2017 (Government of South Australia, 2017a). The plan is the state's key policy and budgetary instrument, providing a strategic land use guide for long-term growth of the city and region.

The plan acts as the node to integrate local and state government governance. It guides a range of planning documents, including development plans by local councils in Greater Adelaide, and state planning documents such as the *Integrated Transport and Land Use Plan* (Government of South Australia, 2013).

The 2017 refresh consolidated the initial 89 targets to six quantifiable targets. These are: to contain the urban footprint (encouraging infill development); diversify transport (60% of new housing to be within proximity to rail); increase active transport; encourage walkable neighbourhoods; increase urban green cover; and diversify dwelling choice.

Integrated Transport and Land Use Plan

Established in 2013, the *Integrated Transport and Land Use Plan* (ITLUP) was the first of its kind in SA to consider transport and land use together (Government of South Australia, 2013).

The ITLUP works in the framework of the 30-year plan and seeks to vastly increase the proportion of citizens living close to a fixed rail line. This intends to create a more compact urban form as a means of limiting the city's ecological footprint and maximising access to services and employment. In the context of restructuring of major industries in SA, gains in productivity associated with integrated transport can accelerate the development of advanced manufacturing and defence, mining, food and wine industries in the region.

Greater Metropolitan Adelaide plans

The 27 councils that comprise the Greater Adelaide area each have their own metropolitan plans established under the *Development Act 1993* and the associated *Development Regulations 2008*. Each local plan is informed and guided by the *30-Year Plan for Greater Adelaide*. Along with characterisation of their city, they give their objectives and strategies for governing changing conditions.

3. www.lga.sa.gov.au/garoc

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