InfrastructureSA

20-YEAR STATE INFRASTRUCTURE STRATEGY

SNAPSHOT

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INTRODUCTION

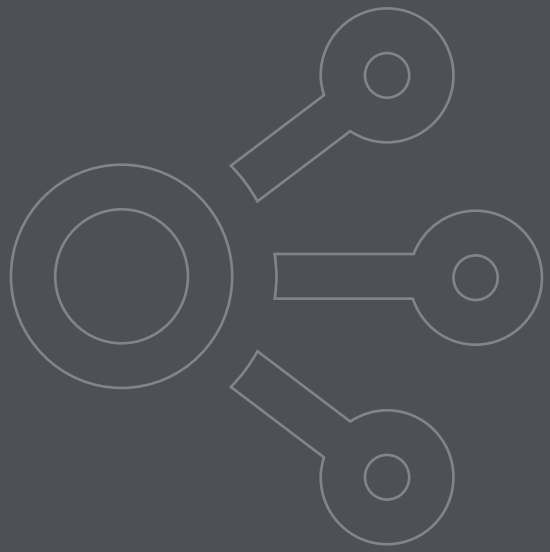
Infrastructure SA (ISA) is an independent statutory body established to provide independent assurance and advice to the State Government relating to the identification, assessment, prioritisation and delivery of major infrastructure projects in South Australia. Given this advisory capacity, ISA is not responsible for project selection or delivery, nor does it develop government policy. This remains the responsibility of government. ISA will work collaboratively with the individual State agencies to progress the best possible outcomes for South Australia.

Development of a 20-year infrastructure strategy for the State is an ISA key deliverable. This Strategy will be updated every five years or less to ensure relevance and responsiveness to change. As the first integrated 20-Year State Infrastructure Strategy, it is important that this version sets the strategic direction and the initial priorities for infrastructure development in South Australia. ISA anticipates that future versions will build on this Strategy as initiatives are pursued, further detailed studies are completed and the strategic planning and data analysis capabilities across government matures.

The Government has set a clear growth agenda with an ambition to shift economic growth to an average 3% per year and raise population growth to more closely align with the national average. This will necessitate a significant change, and infrastructure has a fundamental role to support this through direct investment, improved productivity and access to markets, as well as maintaining access to services as the population grows. Its role is particularly salient in the context of the current COVID-19 pandemic and the State's subsequent recovery. Infrastructure is a long-term asset, and it needs to be planned in a considered and integrated way to ensure that the liveability of communities is maintained.

In developing South Australia's first long-term integrated infrastructure strategy, ISA has consulted broadly with the community and industry, and engaged closely with relevant government agencies. The Strategy takes a statewide view, and aims to set the longer-term priorities and direction for infrastructure investment to achieve the following objectives:

- **Sustained economic and jobs growth**
- **Planned population growth**
- **Connected and productive regions**
- **A vibrant, global Adelaide**
- **Enviable liveability.**



PRIORITIES

Priority 1:	Develop frameworks that appropriately value the economic contribution of regional projects when prioritising infrastructure
Priority 2:	Require government agencies to produce 10-year asset management plans
Priority 3:	Develop a digital connectivity strategy to position South Australia to take advantage of the opportunities arising from digital infrastructure
Priority 4:	Address regional lack of supply of early learning facilities
Priority 5:	Prepare and manage growth in demand for schooling
Priority 6:	Recognise education facilities as community assets and promote shared use where possible
Priority 7:	Implement an integrated health service and infrastructure planning framework that clearly articulates the service need and considers and prioritises a range of infrastructure and non-infrastructure responses
Priority 8:	Develop and fund interventions that reduce demand for hospital-based services and contribute to improved health outcomes
Priority 9:	Consider available capacity within the private health system to augment public health system services appropriately
Priority 10:	Reposition the social housing portfolio to be more fit for purpose
Priority 11:	Increase private sector investment in the supply of affordable housing
Priority 12:	Develop a holistic justice sector strategy with an aim to have a coordinated approach to future infrastructure investment
Priority 13:	Develop new infrastructure assets for correctional services and Forensic Mental Health Services
Priority 14:	Explore alternative models to increase supply of crisis, transitional and post-release housing
Priority 15:	Develop tourism assets and product to enhance the State's appeal to interstate and international visitors
Priority 16:	Provide better transport connectivity to facilitate ease of access to tourist attractions
Priority 17:	Develop business cases for investment in sports infrastructure based on strategic need and prioritise multi-use facilities
Priority 18:	Government should prioritise the consideration of infrastructure initiatives identified in the Arts Plan 2019–2024
Priority 19:	Plan the cultural precinct on North Terrace to position it as a major attraction for the State
Priority 20:	Develop a business case to investigate options for addressing cultural storage needs

PRIORITIES

Priority 21:	Improve public transport patronage to take a greater share of demand as Adelaide grows
Priority 22:	Make strategic investments to improve connectivity to, between and within key economic precincts
Priority 23:	Improve the safety of the road network
Priority 24:	Take a more strategic approach to promoting active transport options
Priority 25:	Develop a Future Mobility Strategy
Priority 26:	Identify key economic corridors through Adelaide and the regions and plan interventions to create more efficient supply chains
Priority 27:	Improve the efficiency of freight through Adelaide
Priority 28:	Improve landside access to international gateways
Priority 29:	Optimise air freight capacity through more connections and add flexibility
Priority 30:	Support sufficient firm capacity or dispatchable power to enable an efficient and reliable energy market in South Australia
Priority 31:	Support additional demand response measures
Priority 32:	Support measures to mitigate a net negative demand from the grid in an efficient way
Priority 33:	Champion development of a National Water Plan to secure water supply
Priority 34:	Develop a South Australian sustainable water resources framework
Priority 35:	Develop water infrastructure to unlock economic opportunities
Priority 36:	Identify necessary flood mitigation infrastructure
Priority 37:	Develop regional waste management plans
Priority 38:	Leverage capabilities and infrastructure to build the circular economy and expertise in managing new waste streams

STRATEGIC CONTEXT

Making South Australia more productive

South Australia has a long history of below par economic and population growth relative to the nation. The State's population has also been growing at a slower rate relative to the national average, with annual growth rates as of June 2019 at approximately 0.9% compared to the national average of around 1.5%. Significant net departures from the core working-age cohorts is resulting in an ageing of the population and a loss of productive workforce. The State economy has seen some traditional industries declining and the emergence of new growth industries such as defence. These new industries have different infrastructure requirements and a greater reliance on technology and flexible skilled labour. This transition presents an opportunity for South Australia to reposition itself and find new areas of growth into the future.

The Government has responded with *Growth State: Our Plan for Prosperity*[1] as its economic plan for the State. This identifies nine key export-focused sectors that will drive this growth, and has a stated medium-term target of an average economic growth rate of 3% per annum. Investment in infrastructure that supports these growth sectors will be fundamental to improving productivity in the State and growing the economy. The Government has also stated an ambition for population growth to reach the national growth rates. This would see annual population growth increase from circa 13,000 to approximately 30,000 per year.

In contrast to Sydney or Melbourne, which are having to build their way out of urban congestion and try to keep up with growth, South Australia has the opportunity to invest in infrastructure that will facilitate and catalyse growth in both urban and regional contexts. This can most effectively be achieved through a long-term, proactive and coordinated approach to support the Government's growth ambitions and will also be important as the economy rebuilds from the impacts of COVID-19.

Maintaining liveability

The challenge in pursuing the Government's goals for growth is to foster new economic opportunities while sustaining and enhancing liveability, measures of which include cost of living, access to services, level of congestion, safety and a clean environment.

Accessibility of facilities and services and active and passive recreation spaces, in particular open and green spaces, are key. As the world becomes more urbanised, green infrastructure will play an increasingly important role to maintain liveability standards.

While South Australians generally benefit from a relatively high standard of living, it is important to acknowledge that liveability for regional populations, the long-term unemployed, low-income workers, people with disabilities and/or mental illness, and Aboriginal communities is generally compromised to some degree due to unequal access to services and opportunity. Adequate infrastructure co-designed and integrated to support the delivery of essential and other services to those community members remains important.

Ensuring sustainability and resilience

The State's natural ecosystems are the foundation for its liveability and environmental assets – including minerals, soil, energy and timber – underpin a significant portion of the State economy and exports. There is ample opportunity to capitalise on growing consumer demand for clean, green products and unique tourism experiences. Planning for infrastructure needs to consider its impact on the environment through the choice of materials used, the impact of its built form and on the services it enables.

1 Government of South Australia (2019). *Growth State: Our Plan for Prosperity.* Available from: growthstate.sa.gov.au

Climate change has become more evident in the last 20 years due to an increase in extreme weather events. Such events are expected to increase in frequency, presenting health and other implications including stress on the functionality of infrastructure.

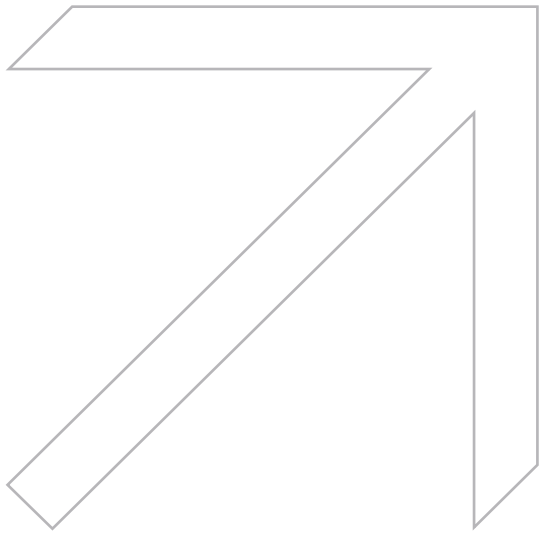
Building resilience to climate change impacts is becoming a greater priority and needs to be factored into long-term infrastructure planning. Examples of how infrastructure planning must consider the impacts of climate change include green infrastructure to manage the heat island effect, water infrastructure to provide water security during periods of drought, stormwater infrastructure to accommodate more frequent and intense storms and resilient transport infrastructure to withstand higher daily temperatures.

The devastating bushfires that South Australia, and other states, experienced in the 2019/20 summer, and the COVID-19 pandemic in 2020, highlight the need for resilience to be a critical element in infrastructure planning.

Infrastructure is capital intensive

Infrastructure can be expensive to develop and maintain, and consumes a significant amount of both public and private capital. The State Budget allocates a total of $12.9 billion to infrastructure over the following four years. However, in the current fiscal environment, it is clear that the State Government needs to be efficient with its allocation and investment decisions to ensure maximum benefits are realised from investment of scarce capital.

There needs to be focus to optimise current capacity and 'sweat' assets through non-capital demand management strategies, improved efficiencies through adoption of technology and better data analysis and targeted incremental investments. All investment decisions should be informed by evidence of its contribution to economic growth or public value. Growth ambitions cannot be achieved by government investment alone; opportunities also need to be explored as to how to leverage greater private sector capital investment in infrastructure.



GEOGRAPHIC CONTEXT

South Australia has a highly urbanised population concentrated in Greater Adelaide and lacks the significant regional centres found interstate.

Urban areas

A long, narrow city bounded by hills to the east and the sea to the west, Adelaide spans about 80 km from Gawler in the north to Seaford in the south. Its urban footprint is constrained by important food production zones in both the north and south.

Traditionally, development has expanded the urban fringe. Development in the outer urban greenfield areas can come with a significant cost premium for most infrastructure services, whereas infill development in established urban areas can be more efficient. These areas are most likely to be within 10 km of the CBD where there is either a change of land use or generally older housing stock with relatively low capital-to-site-value ratios and good access to transport corridors. The Greater Adelaide Plan set a target that 85% of all new dwellings by 2045 be built within the metropolitan infill. The resulting change in settlement patterns is an important factor in planning for infrastructure and should drive where urban infrastructure investment is focused.

ISA supports the work of the State Planning Commission to understand future land supply constraints, identify strategic major infill opportunities and develop policy that facilitates land aggregation to enable better development outcomes. Strategic investment in infrastructure will be necessary to unlock some of these opportunities.

For the State to be successful and to capture the growth opportunities presented by emerging industries, the Greater Adelaide region needs to be vibrant, productive and globally focused while articulating a clear positioning and vision for the future of Adelaide.

A key asset and recent focus of investment is the Riverbank area adjacent to the River Torrens through the CBD of Adelaide. The Riverbank precinct – encompassing the Royal Adelaide Hospital, BioMed City, Lot Fourteen, the Botanic Gardens and the central cultural and entertainment area up to Adelaide Oval – will be the focus of upwards of $7–8 billion of public and private investment. As it evolves, the heart of Adelaide and its economic, social and cultural activity will move towards the northern edge of the city, and this area will become the global focus for Adelaide. With a wide range of stakeholders across the precinct, coordination of investment and activity will maximise benefits and establish a clear global positioning.

Regional and remote areas

The regions contain strong communities and are an important part of the State's culture and history. They offer unique visitor experiences, quality produce, some of the world's greatest wine producing regions and pristine coastlines. However, the regional population overall is ageing and has not grown, with small declines in some areas. This is not only creating some labour shortages and social disruption as people leave communities but also placing a burden on social services.

The relatively small and thinly distributed regional population makes it a challenge to economically and efficiently provide infrastructure. Investment in the creation of regional hubs should be considered as a means of providing a more efficient, modern and complete range of regional services. New service delivery models that do not require the same level of infrastructure to provide services also need to be explored and developed.

South Australia's regions are already productive, delivering the majority of merchandise exports. Maximising the value derived from regions will be pivotal to the State achieving its growth ambitions, and frameworks need to be established that appropriately value regional economic contribution when prioritising infrastructure investment.

Remote areas encompass 63% of the State but are home to only around 3,000 people who reside in a number of small townships and settlements and Aboriginal communities. These areas are subject to some of the greatest disadvantage in the State and face particular challenges in providing water, energy and social services. Infrastructure investment in these areas needs to recognise the social value in providing access and services.

KEY PRINCIPLES

Throughout the development of the Strategy, several themes emerged that, if addressed at a holistic level, would improve the planning and delivery of infrastructure in South Australia.

Optimise current assets before building new

Building new infrastructure is expensive and the full range of options, including effective incremental interventions and non-capital solutions and new service models enabled by technology, should be considered. Improving the utilisation of existing asset capacity before investing in new and additional capacity will be important to effectively manage capital budgets. Where a new build is required, designs should be adaptable to change and standardised as much as possible to improve efficiency of delivery.

Adopt a lifecycle approach to new infrastructure

Any investment decision for new infrastructure should also consider the full lifecycle cost, as the operating cost over the life of the asset can be significant for some classes of infrastructure.

Maintenance backlogs were consistent across all classes of infrastructure. It is important that programmed asset maintenance is properly funded as it can often prolong the life of assets, is less costly than responsive breakdown maintenance, is less disruptive due to reduced downtime and can better maintain service levels and meet customer expectations. Investment in asset maintenance also disperses government investment across regions and sectors and can be an effect stimulus. However, to ensure that maintenance budgets are efficiently and effectively managed to maximise benefit, a certain level of maturity of strategic asset management capability is required.

There is potential for public-private partnerships and other contestable delivery models to provide greater discipline in this lifecycle approach, where full lifecycle costs are accounted for and service levels maintained.

There is also benefit in government agencies being required to produce 10-year asset management plans to improve capital efficiency.

Prioritise infrastructure that contributes to economic and jobs growth

Infrastructure has an important role to facilitate and catalyse growth. The *Growth State* plan identifies nine key growth sectors, and supporting these via strategic infrastructure investment will be important. Infrastructure that has the potential to unlock growth and export opportunities in these sectors should be identified and prioritised where there is a supporting business case. To achieve a step-change in growth, particularly in the wake of COVID-19, it will be important to identify opportunities that have scale and global demand.

One sector that offers scale and is heavily reliant on infrastructure to unlock economic value for the State is the resources sector. Government should work with stakeholders to identify appropriate infrastructure requirements and corridors, and play a role to facilitate multi-user access and provide greater certainty to de-risk projects.

Innovation precincts will be a key driver of growth, and Adelaide boasts several distinct offerings. These include Tonsley, Technology Park, Adelaide BioMed City, Lot Fourteen and the Osborne Naval Shipbuilding Precinct. To be successful, these precincts must be supported with good governance, place-making, connections – both physical and digital – and a clear value proposition to potential investors.

Make evidence-based planning decisions

To ensure that taxpayers and investors are getting value for money and that benefits are maximised, emphasis must be placed on decision-making supported by strong evidence. This requires data and robust forecasting that can be trusted. ISA has found the maturity and robustness of data across government to be mixed. This is a capability that should be invested in.

Investment decisions must also be informed by business cases that clearly define the problem or opportunity that is being addressed and contain a thorough options analysis, including how current assets may be optimised and how the private sector may be leveraged, before identifying the preferred solution. Investment decisions should be deferred until a business case is complete. Throughout the development of the Strategy, ISA has observed a lack of consistent rigour across government in the preparation of thorough business cases. Greater investment and resourcing is required in this area. ISA has developed an independent assurance framework to ensure a structured, disciplined and consistent approach to all major capital investment proposals.

Break down silos through integrated planning

Infrastructure does not exist in isolation. Its role is to support and facilitate activity, and that activity is part of a system. For infrastructure planning and investment to be efficient and effective, it cannot be done in silos. An integrated whole-of-government approach to planning is critical to maximise benefits.

Land use and infrastructure planning, as well as services planning necessary to support a growing population, should be fully integrated across all sectors to provide the framework that encourages economic development and builds stronger, more cohesive and resilient communities.

Expand funding and procurement models and leverage private sector capital

All funding and procurement models should be explored to encourage innovation and appropriate risk allocations, and draw on private capital to meet infrastructure needs where appropriate.

Different commercial models that may be able to attract private sector investment should be considered early in the planning for projects. Where there is strategic merit, government should explore what role it can play to de-risk the project and aggregate demand sufficiently to attract private capital.

Governments should also proactively consider where outsourcing of public services could provide efficiencies and improved services.

User pays models are commonly used to fund infrastructure. These models can provide a link between user benefits and costs for economic infrastructure. Opportunities to expand the use of such models should be explored as an alternative to general government revenue.

Build capability and capacity across public and private sectors

As the South Australian infrastructure pipeline grows, industry's capability and capacity for delivery becomes an increasingly important consideration. For industry to invest in its capability in the State, transparency and a continuous pipeline of work is key.

Government will have a role to play in ensuring that there are sufficient skills in the market through industry participation plans on procurements and through its role in promoting apprenticeships and traineeships.

Capability within government is also important. The public service must have the necessary knowledge and skills to manage the infrastructure pipeline. Traditional pay classifications and scales may need to be adjusted to attract and retain the right talent.

INFRASTRUCTURE SECTORS

DIGITAL

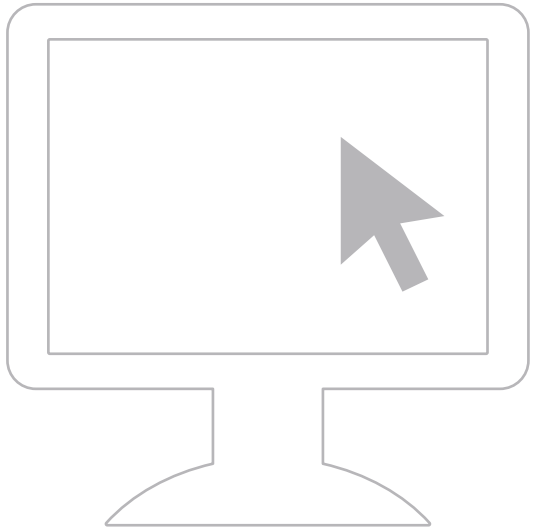
Digital infrastructure is key to unlocking new markets, new business models and improved productivity, as well as new service delivery models that will enable more efficient investment in other infrastructure. Digital connectivity was vital through to the COVID-19 crisis to enable new models of work, education and service provision.

Needs and challenges

- The pace of digital transformation is accelerating and digital capability will be central to growth in key sectors and the provision of services.
- While parts of Adelaide have excellent connectivity through programs such as GigCity, much of regional South Australia has poor digital connectivity, which limits expansion opportunities for business, flexible arrangements for workers, access to new service delivery models including remote learning, and social inclusion overall.
- New technologies such as 5G, Internet of Things and microsatellites provide new opportunities, but have different infrastructure requirements.
- The governance and ownership of digital infrastructure across the State is disparate, which risks duplication of assets and networks, under-utilises capacity and limits the ability to maximise opportunities.
- The public sector should be an exemplar in the use of digital technology and broadband communications.

Future priorities

- Develop and implement a holistic digital connectivity strategy that considers both public and private networks to address access issues across the State, sets targets for levels of connectivity, addresses cybersecurity risks, and leverages existing capacity and investment. The Strategy should be developed as a partnership across all levels of government and the private sector.



EDUCATION

Education infrastructure must respond to population growth and provide the spaces and assets necessary to enable and promote modern, flexible and relevant education that delivers the skills to support growth and social inclusion.

Needs and challenges

EARLY CHILDHOOD EDUCATION AND CARE

- The supply and demand for early learning services are not matched, with an oversupply in some metro areas and undersupply in others.
- There is a shortage of early learning services in regional areas that is limiting opportunities for children and inhibiting (predominantly) female workforce participation.

PRIMARY AND SECONDARY

- Over the next 20 years, the number of school-aged children is projected to increase by over 18,000. This will place increased pressure on education infrastructure to meet this demand.
- The ability to respond efficiently to increased demand is compromised by unbalanced growth across the State. This results in some schools being over capacity and others significantly under capacity.
- Despite significant recent investment across the school portfolio, not all schools have received significant upgrades and there is a disparity in the standard of educational facilities across the portfolio. Inconsistent educational experiences can exacerbate uneven demand across the portfolio (as new facilities can be an attractor) and impact learning outcomes and equitable access.
- The shift towards more infill development and greater densities creates demand for new or additional capacity at schools in areas where land supply is constrained and expensive.
- There is a significant maintenance backlog, with some facilities that are old and no longer fit for purpose.
- Contemporary education is changing, with a need for more flexible spaces and digital capability.
- Government has invested significantly in the expansion of fibre optic connectivity to schools, which provides an excellent opportunity to leverage benefits from this infrastructure.

TERTIARY EDUCATION

- Higher education is continuing to evolve and needs to respond to a trend towards lifelong learning and micro-credentials to ensure people are suitably skilled for future industries.
- Providing suitable and relevant tertiary education qualifications can be challenging in areas of low population.
- TAFE SA has a significantly under-utilised portfolio of campuses across the State.
- Innovation precincts need to have strong partnerships between industry and universities to create shared intellectual property and commercialised research.
- Stronger and integrated transport connectivity is required to support universities precincts.

Future priorities

- Address the regional lack of supply of early learning facilities through better understanding demand and the potential to leverage existing assets to provide an infrastructure response, as well as explore service models and training flexibility to provide more options for employment.
- Prepare and manage growth in demand for schooling by reserving land where possible for future educational needs, and consider a range of interventions to efficiently spread demand across the portfolio. While all non-capital options should be explored, strategic investment plans should be developed for existing schools in areas of forecast demand that have under-utilised capacity to enable them to take a greater share of demand. Designs for any new schools should be standardised where possible.
- Recognise education facilities as community assets and promote shared use where possible.

Artist's impression, Flinders Village
Image courtesy of Flinders University

HEALTH

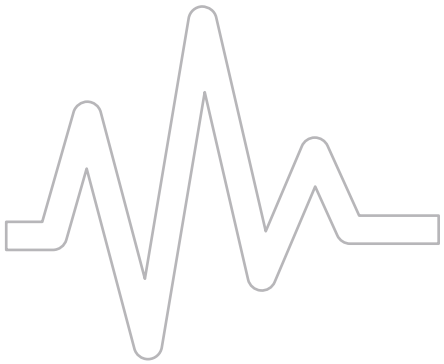
Promotion of health, wellbeing and rehabilitation, and prevention of disease, illness and injury in the community, and response to occasional shocks such as COVID-19 must be supported by well-planned and managed infrastructure that enables the most efficient and effective service delivery.

Needs and challenges

- Pressures on the health system are increasing with an ageing population, lifestyle associated chronic diseases such as diabetes and heart disease, an increase in mental health issues as well as changes in consumer expectations.
- The structure of the health system creates inefficiencies and cost-shifting between the public and private systems and State- and Commonwealth-funded services. The recent pilots of Priority Care Centres offer a model that may help address this through a more integrated approach that blends funding streams.
- Compared to other states and territories, South Australia had the highest hospital expenditure (43% of health expenditure) and one of the lowest expenditures (33%) on primary health care. Health is the largest single expenditure sector in the State Budget, consuming over 37% in 2019/20. The cost of providing care in public hospitals in South Australia across admitted, non-admitted and emergency services is higher than the national average.
- The nature of medicine, medical technology and care is constantly evolving, placing different requirements on infrastructure. Data is playing an increasingly important role in health planning.
- The measures implemented in response to COVID-19 have highlighted the importance of new models of care, accelerated telehealth and improved leveraging of the private sector to support additional capacity in the public health system.
- It is a challenge to provide a high standard of care across a large state with low population densities in regions. Some health services need a critical mass to operate efficiently, both in terms of infrastructure utilisation and access to trained medical staff.
- There is a significant maintenance backlog in both facilities asset management and asset replacement cycle for biomed equipment.
- The health and biomedical industry is a sizable contributor to GSP, and through efficient and targeted investment in health precincts, medical research can make a positive contribution to Growth State objectives.

Future priorities

- Implement an integrated health service and infrastructure planning framework that clearly articulates the service need and considers and prioritises a range of infrastructure and non-infrastructure responses. This framework should provide a system-wide approach to managing demand.
- Develop and fund interventions that reduce demand for hospital-based services and contribute to improved health outcomes. A greater focus on health and wellbeing, community-based care and technology-enabled monitoring, diagnostics and treatment is required.
- Utilise available capacity within the private health system to augment public health system services.



HOUSING

Housing is an important economic and social enabler. Appropriate housing that is located close to jobs, education, transport options, health facilities and other services promotes social inclusion and facilitates greater workforce participation and labour productivity.

Needs and challenges

- There is a growing housing affordability issue, with 32% of lower income households experiencing housing stress in 2017/18.
- Total social housing (both public and community housing) has seen a net reduction over the years despite population growth. The changing nature of household composition has meant much of the portfolio is no longer fit for tenants' needs and family structures.
- Social housing has a significant waitlist, with a large portion of tenants having high needs. Lower needs tenants are having to rely on the private rental market.
- There is a lack of fit-for-purpose housing in some regional areas to accommodate growing workforces at times of increased economic activity. This can be a barrier to attracting skills and labour.
- There is a significant maintenance backlog in public housing.
- Despite several pilots, there has been a general lack of institutional investment into affordable housing to increase supply.
- In December 2019, the South Australian Housing Authority (SAHA) released the *Our Housing Future 2020–2030* strategy. It aims to deliver over 20,000 affordable housing solutions, including an investment of $453 million into new affordable home ownership opportunities and new social housing. An additional $75 million over 10 years is allocated for deferred capital maintenance and to improve energy efficiency within social housing.

Future priorities

- Reposition the social housing portfolio to be more fit for purpose through a strategic asset management approach.
- Increase private sector investment in the supply of affordable housing. Opportunities should be explored to renew the current public housing portfolio to attract private sector investment.

Artist's impression, Kidman Park streetscape
Image courtesy of Housing SA

JUSTICE

The justice system ensures the safety of the community while supporting programs and measures that facilitate rehabilitation and reduce recidivism.

Needs and challenges

- Different interconnected agencies and service providers working across various touch points can create inefficiencies and gaps.
- While the sector needs to respond to population growth, social issues such as the growing prevalence of drug abuse and policy stances on crime have the greatest impact.
- Both infrastructure and non-infrastructure responses to address a growing case backlog are required. ISA acknowledges that strategic planning to address this issue is underway.
- Many assets in the justice system are older, with increasing maintenance backlogs, and some may no longer be fit for purpose or suitable for contemporary service models.
- Current prisons are at 153% of design capacity, which is compromising operational flexibility and inconsistent with international good practice.
- The prison population profile is ageing, with high rates of complex needs such as drug dependence, disabilities, mental health issues and homelessness, and a disproportionately high representation of Aboriginal people.
- There is a lack of adequate modern forensic mental health facilities.
- The average cost to house a prisoner is expensive: $228.68 per day compared to $20.82 per person per day in community corrections.
- There is a lack of stable post-release housing to aid rehabilitation and reduce recidivism.

Future priorities

- Develop a coordinated justice sector strategy with the aim to have an integrated approach to future infrastructure investment.
- Develop new infrastructure assets for correctional and forensic mental health services. Planning for these facilities should be integrated to determine the potential for efficiencies in a joint facility or how they can best operate as separate facilities within an integrated system. The preferred option should be subject to a robust business case, and private sector funding and operational options should be considered.
- Explore alternative models to increase supply of crisis and post-release housing.

TOURISM, SPORT & CULTURE

TOURISM

Improving the breadth of and access to the State's tourism experience will better leverage South Australia's unique assets and fuel this key growth sector, particularly post-COVID-19.

Needs and challenges

- The Government aims to increase the visitor economy from the current $7.6 billion per year to $12.8 billion by 2030. This will place an increased demand on tourism infrastructure.
- South Australia is blessed with unique and significant natural assets that encompass reserves, national parks, coastal areas and waterways. Infrastructure is needed to not only access these but also facilitate an enriched and memorable experience. Its design should be sensitive to the surrounding environment and implemented in a sustainable way.
- The ongoing development of quality tourism product – the facilities, assets and services designed to meet the needs of tourists – is critical for the success of the sector in a competitive global market and provides a compelling reason for visitors to travel to South Australia.
- Adelaide has seen a recent spike in investment in accommodation and business event facilities; however, there is a lack of quality and large-scale facilities in the regions. There is a need for suitable facilities to attract events and visitation.
- Adelaide Airport has seen recent growth with additional direct international connections. Further connections could open up new markets and increase visitation. More efficient regional connections could increase visitation into the regions.
- The road network plays an important role in providing touring routes and access to assets. Much of the road access to those assets is in poor condition, which limits access and visitor experience.
- Water-related infrastructure such as jetties, wharves, boat ramps and navigation aids are critical assets that activate tourism experiences. Ongoing maintenance and upgrades can be a challenge for local communities and councils. The ferry link to Kangaroo Island is a critical connection to the attractions on the island, and the current infrastructure does not provide for an optimum visitor experience.

Future priorities

- Develop tourism assets and product to enhance the State's appeal to interstate and international visitors. Planning should be at a regional scale so that assets complement each other while creating a diversity and scale of product in the region to encourage greater visitor nights and expenditure. To support this, government should consider expanding resources to work with industry to develop business cases for viable product that supports the *Visitor Economy Sector Plan 2030* and the *South Australian Regional Visitor Strategy*. Opportunities to secure private sector investment in tourism product should be a priority.
- Provide better transport connectivity to facilitate ease of access to tourist attractions and improve the visitor experience. Frameworks should be developed that value the economic contribution from tourism utilising this transport infrastructure that goes beyond traditional *travel time saved* metrics of transport economics.

South Australian Aquatic and Leisure Centre
Image courtesy of the Office for Recreation, Sport and Racing

SPORT

Access to open spaces and sporting facilities supports active and healthy lifestyles, while the presence of world-class stadia attracts national and international events and visitors, and inspires younger generations to participate in organised sport.

Needs and challenges

- The Office for Recreation, Sport and Racing (ORSR) is developing the *South Australian Sport and Active Recreation Infrastructure Plan* that will identify the needs, challenges and specific infrastructure gaps for this sector.
- Many legacy assets were built as single-purpose facilities and are under-utilised and not financially viable. Elite court sports and soccer lack modern facilities for athletes, media and patrons.
- ORSR owns and operates several significant assets that are at or approaching the end of their useful life. These have significant maintenance requirements and lack the amenity expected at contemporary sporting facilities and required by current building access codes.
- Access to recreation infrastructure must be ensured in the context of increased urban infill.
- The current elite training centre for South Australia's Sports Institute (SASI) is old and inadequate as an elite-level training facility, making it difficult to attract and retain world-class athletes and coaching staff.

Future priorities

- The *Sport and Active Recreation Infrastructure Plan* should identify strategic needs. Any new investments should be subject to rigorous business cases and prioritised according to short-, medium- and long-term objectives, with a preference for multi-use facilities. Grant funding of projects should be aligned with the strategic objectives in the plan.

CULTURE

A vibrant arts and culture ecosystem is an economic generator in its own right and supports the State in attracting and retaining population.

Needs and challenges

- Many assets are under-utilised and/or are unsuitable for the current requirements of the performing arts.
- A significant part of South Australia's cultural collection is stored in facilities that aren't fit for purpose and unavailable for public viewing.
- The Art Gallery of South Australia, South Australian Museum and State Library of South Australia face maintenance backlogs.
- Cultural institutions need to identify alternative revenue streams including private sector and philanthropic investment in developing cultural capital.
- Regions need opportunities to experience and express culture to help maintain their vibrancy.
- South Australia's film industry, particularly the visual effects sector, is growing rapidly and is attracting more associated businesses to Adelaide.

Future priorities

- ISA supports government working through the recommendations of the Arts and Culture Plan and undertaking the necessary business cases before making any investment decisions. Priority should be given to projects that support economic activity and culture, better use of existing assets, creation of shared spaces and facilities, and access by younger generations.
- ISA supports the development of a business case to identify options to address cultural storage and public access needs, and encourages the exploration of options for shared storage facilities and a program of digitisation of the collection to enable sharing as well as preservation.
- Planning of the cultural precinct on North Terrace must enable it to be positioned as a major attraction for the State and maximise opportunities for shared multi-use spaces.

TRANSPORT

PASSENGER TRANSPORT

Passenger transport facilitates movement of people and connects communities. The nature of the network is shaped by historic settlement patterns and geography of the region. Well-planned transport infrastructure has the ability to shape cities and communities and contribute to liveability and ability to access services.

Needs and challenges

- For Adelaide to be an attractive place to do business and achieve economic growth, transport networks into the CBD and other key economic activity precincts need to be efficient and able to manage peak period demand.
- Adelaide is very car dependent, with approximately 85% of daily trips using motor vehicles while public transport represents only 8.3% of daily trips. Active transport is also low. Despite recent investments in cycling and walking infrastructure, there is no holistic network.
- The road network within in Adelaide is characterised by a grid-like network with a high occurrence of intersections. This presents a natural capacity constraint as population grows. Many intersections are already at capacity at peak times. The 2019 Australian Infrastructure Audit estimated congestion cost Adelaide $1.44 billion in 2016 and predicts this will rise to $2.6 billion in 2031. In such conditions, spot investment at intersections may have limited network benefit without a coordinated approach.
- To maintain network efficiency as the population grows and to avoid the congestion experienced in other states, it will be important for public transport to take a greater share of the demand.
- Making public transport more attractive in a constrained budget environment requires evidence-based trade-off decisions to strike optimum policy settings that balance overall network coverage with frequency on key corridors for journeys to work. There should be a focus on more frequent and efficient services on key trunk routes that are supported by greater integration across modes, and a range of more innovative services to service local communities, such as on-demand services.
- While rail plays an important role within the public transport network, the majority of public transport trips are on the bus network. Buses are likely to remain the dominant mode for the foreseeable future due to lower capital costs and greater flexibility and adaptability to technology change. It is, therefore, important to identify key trunk corridors and focus investment and interventions on these.
- Interventions should first consider low-cost or operational solutions such as bus priority lanes and clearways through to incremental solutions such as indent bus stops, improved traffic signalling, intersection upgrades and removal of level crossings. This will require targeted capital investment and should be delivered in a corridor- or area-based approach rather than spot investments. A program of level crossing removal should be focused along key corridors to provide maximum benefit to those routes and opportunities for good place-making outcomes. In the longer term, the viability of a Bus Rapid Transit (BRT) network should be explored.
- Regional and remote areas offer little in the way of public transport and face significant road safety issues.
- There is a significant maintenance backlog across the road network and the quality of some roads is poor, with many only rated one or two stars out of five for safety.
- The transport sector has been subject to significant recent disruption with rideshare, e-scooters, electric vehicles (EVs) and autonomous vehicles. This is likely to continue in light of further technological and business model development.

Future priorities

- Improve public transport patronage so that it can take a greater share of demand as Adelaide grows. The public transport network should be built around key corridors that are able to provide efficient and frequent services. Integrated services, including on-demand services, are needed to feed commuters from broader catchments into these key corridors. There is the opportunity to make evidence-based incremental investments across the network that could make public transport more efficient and attractive. Policy settings and price signals should be considered to increase patronage, as well as policy settings to encourage development adjacent to transport corridors to increase catchment and provide good place-making outcomes. ISA supports franchising rail and tram service operation, a model which has shown to provide efficiency savings that could be reinvested in the network, provided appropriate contractual incentives and controls are put in place. Studies on how to best service growing areas of urban infill, particular in the north-west of Adelaide and the Mount Barker growth corridor, should be undertaken.
- Improve connectivity to, between and within the CBD and other key economic precincts via strategic investments. The key economic precincts will generate much of the daily commute as well as the economic activity within Adelaide. These precincts should be accessible and attractive places and investment should be prioritised to improve the accessibility of these precincts. All non- or low-capital solutions should be explored before committing to any new build.
- Improve the safety of the State's road network. Much of the road network is in poor condition and does not have appropriate treatments. This compromises safety. A consideration of safe-system road design is needed as part of the road maintenance program to incorporate interventions such as sealed shoulders, overtaking lanes, centre- and edge-line treatments, rest areas and protective barriers that will improve road safety and contribute to lowering the road toll.
- Take a more strategic approach to promote active transport options. Places that encourage cycling and walking through good design contribute to positive health and wellbeing, and to improving the liveability of communities. Adelaide has relatively low levels of active transport, and investment in appropriate infrastructure has historically been piecemeal. A more strategic approach that looks to build a safe and accessible active transport network should encourage greater participation in cycling and walking.
- Transport is subject to ongoing technological change. Develop a Future Mobility Strategy to position South Australia to best take advantage of the new technology and minimise any unintended consequences.

FREIGHT TRANSPORT

Efficient, well-managed and integrated freight networks are needed to support economic growth by providing South Australian businesses with cost-competitive connections to world markets.

Needs and challenges

- Efficient freight supply chains will be critical to South Australia achieving its growth ambitions. The State can be challenged by a lack of volume to support the investments necessary to improve efficiency and productivity. This can result in the need to aggregate demand to create the economic case for the investment in significant infrastructure. However, targeted incremental investments in the network to address pinch points can provide strong benefits.
- South Australia's merchandise exports are heavily reliant on industries such as food, agriculture and resources, sectors that are located in regional or remote areas and require efficient freight supply chains and routes to market. Much of the current road network supporting industry in the regions is in poor condition that limits efficiency and productivity. There are also limited options to get bulk minerals to market. For South Australia to fully capture potential growth opportunities from its iron ore resources,

a more efficient bulk export solution must be identified. Government should work with industry and local councils to identify potential efficiency and safety improvements to supply chains. Proposed solutions should be evidence-based and mode-agnostic, and should consider incremental investments in the network such as rail spurs and addressing pinch points or first/last mile constraints in the supply chain.

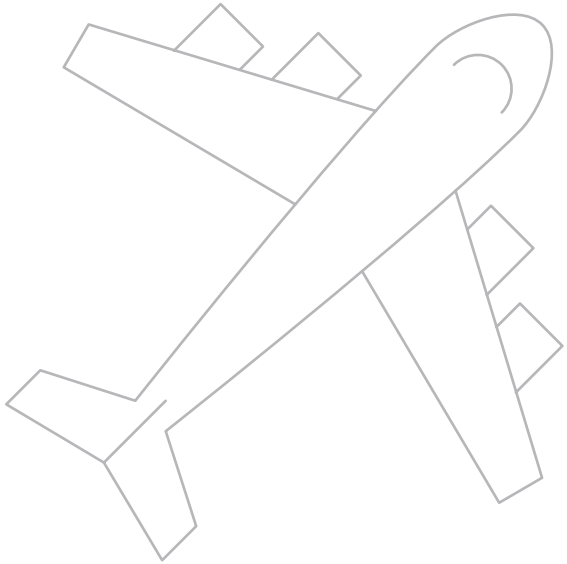
- Road freight accounts for 88.3% of domestic freight compared to 5.9% for rail, and will continue to perform the majority of the freight task. There has been a significant recent increase in the Restricted Access Vehicle Network (RAVNet), although gaps remain that add inefficiency to supply chains. This includes pinch points in the network that restrict access for larger high productivity vehicles (HPVs) and incomplete risk assessment on routes. The increased use of HPVs will improve productivity and should be facilitated; however, their impact on the network and other users needs to be managed.
- With the major international gateways of Port Adelaide and Adelaide Airport within Adelaide, it is vital to have an efficient freight network through the metropolitan area. Without a more free-flowing motorway network, travel times for freight will slow through Adelaide and the cost of congestion will increase.
- The majority of interstate freight is between South Australia and Victoria, yet there is no continuous motorway connection to the port. There remains a safety risk at the end of the South Eastern Freeway, restricting the use of the highest productivity vehicles. While the GlobeLink Study showed there was not an economic case at current volumes for a new motorway connection, it did identify the potential for a new connection in the long term. The priority in the shorter term should be to work with industry to identify incremental investments in the current network that will return the greatest benefit. The Government should complete its study into the final stages of the North-South Corridor to determine the option that provides the greatest economic return. Studies should also be undertaken to determine a more efficient ring-route network.
- Significant projects on the network have flow-on impacts across the network that need to be understood and modelled to identify the optimal solution. The strategic transport model for Adelaide was built in the 1990s, and although it has been updated several times, there is a need to develop a new transport model to better identify the likely impacts on the network.
- South Australia has 10 operational ports, with another two on the Eyre Peninsula having received development approval. There appears to be sufficient capacity within the existing ports to manage the forecast export and import task. While there may be market opportunities for lower capital-cost port solutions and increased competition, it is likely to be a major new iron ore project or potentially a hydrogen export facility that will require a significant new or expanded port facility. A more efficient response is to focus on improving the landside access to ports and maximising the utilisation of existing assets until there is an economic case for new capacity. Government can play a role in facilitating multi-user proposals that will contribute to economic growth.

Future priorities

- Identify key economic corridors and plan interventions to create more efficient supply chains by addressing pinch points and understanding the triggers for road upgrades. This should involve a rolling program that is developed through engagement with industry and local government. User charging should be considered where there is an economic case to ensure efficiency gains can be realised from investments that may otherwise be delayed.
- Implement interventions to improve the efficiency of freight movements through Adelaide. All non-or low-capital solutions should be explored in the first instance; however, a more free-flowing network should be planned for in the longer term.
- Create efficient supply chains to international markets via the State's sea and air ports to make South Australia globally competitive and grow the economy. Concentration of volumes at the last mile of landside access to these gateways has negative impacts on congestion and efficiency.

Planning studies need to identify precise locations and the most efficient treatments to address these. Particular attention should focus on access to Outer Harbour and the interaction between road, rail and commercial vehicle access to Adelaide Airport, particularly in light of any change in traffic patterns as Airport East is developed and necessary road improvement on the Eyre Peninsula in light of the closure of the rail to Port Lincoln.

- Optimise air freight capacity through increased connections and added flexibility. International passenger connections will continue to carry the majority of air freight into the foreseeable future. While there may be some spare capacity in current connections, opening connections to new markets, particularly the west coast of the USA and north Asia, will not only provide a boost to tourism but enable more efficient supply chains to deliver premium, high-value South Australian produce into those markets. ISA sees benefits to providing some added flexibility to be able to attract flights within the shoulder periods of the curfew and believes that the restrictions within the Adelaide Airport Curfew Regulations should be reviewed.



UTILITIES

South Australian businesses and consumers must be able to access secure, reliable, affordable and sustainable energy and water supplies to meet domestic needs, and provide key inputs to industry to capture growth opportunities and remain competitive.

ENERGY

Needs and challenges

- Affordable, reliable and secure energy is key to facilitating economic growth and easing cost of living pressures.
- The energy system is very complex, with a complicated regulatory regime that oversees a system that must match supply and demand in real time and operate within defined technical limits to remain stable.
- The State has an average demand of approximately 1,500 MW, however its profile has a lot of variability during the day, with pronounced peaks in the morning and evenings and extreme peaks of approximately 3,000 MW on hot days. This compares to installed generation capacity of approximately 6,230 MW, with a significant amount of additional renewable generation proposed. There is also approximately 1,600 MW of installed solar photovoltaics (PV). This 'peaky' demand profile must be managed to minimise the amount of investment in under-utilised standby generation.
- Renewables are now proving to be the cheapest form of generation. These need to be balanced with other investments to ensure that energy is available when needed and the system can operate within the defined technical limits. The Australian Energy Market Operator has recognised this by commencing a Renewable Integration Study. The necessary support measures need to be economically efficient to avoid putting unnecessary upward pressure on prices, and could include more interconnection with the National Energy Market, increased grid-scale storage and specific system support investments such as the recently approved synchronous condensers. However, in the medium term fast-response gas generation is likely to continue to play an important role in balancing the system and providing sufficient firm capacity.
- The high penetration of behind-the-meter solar PV is also resulting in a trend toward net negative demand on the grid on mild sunny days. This is causing complications as the grid was designed for a minimum level of demand to remain stable. The Australian Energy Market Commission has called for a grid for the future to address this trend. This will need to be managed to avoid significant investment in augmentation of the grid.
- EVs are currently a small proportion of all vehicles sold; however, Infrastructure Australia forecasts they will comprise 30% of new car sales within 10–15 years. If the entire transport fleet were to transition to EVs, this could result in significant additional load on the grid. However, if managed with smart charging and appropriate incentives, it is possible that EVs could be a flexible load that assists with managing the stability of the grid.
- Hydrogen is an emerging future industry for fuel use, and could play multiple roles in the energy market: feed stock for the natural gas network and specialised turbines for energy generation, fuel for fuel cells and as a demand response tool in the electricity market (via ramping up and down electrolysis used to produce hydrogen). There is also a potential export market for hydrogen into the Asian region that could impact both water and electricity infrastructure requirements near port locations. ISA supports studies in understanding the potential for hydrogen and associated infrastructure implications.

Future priorities

- Support sufficient firm capacity or dispatchable power to enable an efficient and reliable energy market in South Australia through the transition to a decarbonised market. Firm capacity should not only limit price volatility in the spot market and enable an efficient contract market; it also provides other support measures that can help system strength and security. The South Australian Government has been active in supporting this through the Grid-Scale Storage Fund as well as triggering the Retailer Reliability Obligation. Any future intervention should be economically efficient to guard against upward pressure on prices for consumers. An efficient market is one that is incentivised to make the necessary investments to provide sufficient firm capacity.
- Support additional controlled demand response measures. Demand response has the potential to be an efficient way to manage peaks and improve the reliability of the South Australian energy market. Being able to reduce demand from the grid in a controlled way should reduce the need for standby generation as well as some of the volatility in the spot market. The long-term goal should be to promote a market for demand response to incentivise large industrial loads to reduce demand at peak times. There is also the potential for residential loads to assist through the greater uptake of smart meters and appliances that enable loads such as air-conditioners or pool pumps to be switched off for short periods during peak times. Home battery installations also have the potential to spread the peak demand.
- Support measures to mitigate a net negative demand from the grid in an efficient way. The trend towards net negative demand on the grid as the amount of uncontrolled solar PV increases will create challenges given the grid is not designed to have zero demand. Measures are required to mitigate this issue while longer-term consideration of the grid of the future plays out. Measures including but not limited to Virtual Power Plants should be explored and supported to help manage the flow of energy into the grid in a way that improves its reliability and reduces volatility.

WATER

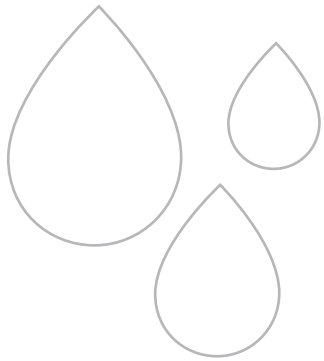
Needs and challenges

- Water is the State's most valuable resource, and securing suitable supplies is fundamental for economic growth and critical human needs. There is a history of drought and low rainfall over much of the State and scarce underground water sources. Growing population and climate change will put further pressure on this resource. This makes it imperative to manage water resources holistically and have the infrastructure necessary to secure a sustainable supply.
- South Australia has a heavy reliance on water sourced from the River Murray. Implementation of the Murray-Darling Basin Plan is important to ensuring equitable water supply to the communities, industries and ecology across the basin.
- Water supplies in Adelaide and key regional centres are relatively secure following investments made in response to the Millennium Drought, such as the North-South Interconnector and the Adelaide Desalination Plant (ADP). While the ADP provides additional water security, water is supplied at a cost premium relative to water sourced from the River Murray and Mount Lofty Ranges. As population grows and climate change impacts rainfall and flows in the River Murray, it will be important to monitor supplies and maintain infrastructure so that the River Murray and Mount Lofty Ranges can continue to supply the majority of Adelaide water needs.
- Some of the more remote regional areas of South Australia that rely on underground water or rainfall for water supplies have greater issues in securing adequate and safe water supplies.
- The variability of cost and allocations of River Murray water for agricultural use requires innovative supplies to support the industry in the Riverland, which relies on river water for irrigation. South Australia has a long history of good water management practices to address this challenge.

- Secure and affordable water supplies are required to capitalise on key growth opportunities presented by wine and agriculture industries to the north and south of Adelaide.
- Unlocking resources in regional and remote regions has significant water requirements and will require infrastructure to supply water for extraction and processing.
- Urban population growth is driving the need for expansion of infrastructure and services, including upgrades to treatment plants. New technologies will provide efficiencies in the control and management of systems and reduce environmental discharges.
- The trend towards urban infill is reducing the amount of permeable space in the suburbs, which is increasing stormwater run-off. Much of the urban stormwater infrastructure is old and unsuitable for the changing volume and frequency of rain events. This is increasing the flood risk within metropolitan Adelaide.
- Taking a holistic approach to urban water supplies that also considers treated wastewater and stormwater as important water resources has the potential to increase supply to support initiatives such as Green Adelaide that will improve liveability, help address climate change and heat island effects and promote active lifestyles and wellbeing.

Future priorities

- Develop a South Australian sustainable water resources framework to identify all available water resources in a holistic way so that the most efficient solution is adopted to secure water supplies for productive use. This framework would include an urban water direction statement for Adelaide and South Australian towns that optimises the use of all water sources to support growth and greening in a changing climate, and water security strategies for priority regional areas to optimise the use of all water sources to support economic growth.
- Develop business cases for projects that the South Australian sustainable water resources framework identifies as having potential to unlock economic growth that would otherwise be constrained by lack of secure water supplies.
- Identify necessary flood mitigation infrastructure. The increased risk of flooding in urban areas due to more frequent storms resulting from climate change together with increased run-off caused by less permeable area and old infrastructure could have significant economic, health and safety impacts. Potential mitigation strategies should be explored and business cases developed to identify the most appropriate and efficient solution.
- Champion development of a National Water Plan to secure water supplies. Water flows do not respect jurisdictional boundaries and South Australia has traditionally relied on the River Murray for approximately 80% of its water supply for regional and urban use. A holistic and strategic approach based on science is needed to ensure secure and safe long-term water supplies to meet anticipated demand across Australia in the context of a changing climate and planned economic growth. The National Water Plan should enable effective implementation of the Murray-Darling Basin Plan to ensure there is sufficient and reliable water supply to meet the needs of regional and urban communities serviced by this basin.



WASTE

Needs and challenges

- As part of more sustainable resource use, the amount of waste that is sent to landfill needs to be limited.
- South Australia produces the most waste per capita of all national jurisdictions, but is also the most efficient at processing and recycling its waste and has the nation's lowest waste-to-landfill rate. As its population grows, so will the amount of waste. The need for infrastructure to collect, process and recycle this will increase.
- New waste streams generated by solar PV cells, lithium batteries and electronic equipment that come to the end of their lives will need to be well-managed. End-of-life PV cells will be Australia's largest waste stream in approximately 15 to 20 years.

Future priorities

- Leverage capabilities and infrastructure to build the circular economy and expertise in managing new waste streams.
- Green Industries SA should further develop a regional strategy that addresses specific waste management logistics and provides infrastructure solutions to meet forecast increases in waste volumes.

Plastics bundled for recycling
Image courtesy of Green Industries SA

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