InfrastructureSA

South Australia's 20-Year State Infrastructure Strategy Discussion Paper

Submissions from Companies

infrastructure.sa.gov.au

17 November 2023

Strategy Team
Infrastructure SA
GPO Box 2343
Adelaide SA 5001

Via electronic submission – infrastructure@sa.gov.au

Dear Infrastructure SA

20 Year State Infrastructure Strategy Discussion Paper

Thank you for the opportunity to provide comment on the discussion paper for South Australia's 20 Year State Infrastructure Strategy (**Strategy**). This submission is provided on behalf of both Adelaide Airport Limited and Parafield Airport Limited ("**together AAL"**) as operators of Adelaide and Parafield Airports.

Summary

AAL supports the following initiatives relating to each Strategy objective:

- ***Objective 1: Enabling Infrastructure***
  - Protection of air freight corridors and infrastructure (for growth).
  - Ensuring services-infrastructure can facilitate other critical infrastructure that is reliant on those services for planned growth.

- ***Objective 2: Liveable and well-planned places***
  - Protection of aviation capacity in long term urban planning.
  - Efficient public transport to and from airports.
  - Government facilitation of the transition of flight training schools to electric aircraft.
  - Tourism infrastructure investment including for global-scale business events.

- ***Objective 3: Accessible and inclusive infrastructure***
  - Improved equitable access to infrastructure.

- ***Objective 4: A decarbonised, sustainable economy***
  - Government facilitation of the Sustainable Aviation Fuel transition - leveraging hydrogen and renewable energy.
  - Integrate sustainable technologies into the State transport system.
  - Facilitate the use of the dormant fuel pipeline from Port Adelaide to Adelaide Airport for fuel supply include future Sustainable Aviation Fuel supply.

- ***Objective 5: Improved resilience***
  - Infrastructure planning that will mitigate the impact of climate change.
  - Reform domestic border harmonisation utilising the Federal quarantine power.

- ***Objective 6: A stronger infrastructure industry***
  - Protect Adelaide and Parafield Airports as nationally significant infrastructure.

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Background

The current location of Adelaide Airport (since 1954) was very well planned as an integrated transport node that has set Greater Adelaide up for future growth. Adelaide Airport has been in a state of expansion since the inaugural scheduled flight on 16 February 1955 and, with the continued facilitation of investment, there is forecast to be well over a century of growth potential on the current site. This growth will be facilitated by quieter, more fuel-efficient next generation aircraft. The location of our airport six kilometres from the city creates ease of access to economic and tourism precincts and is a significant competitive advantage for South Australia. The airport location itself is entirely embedded into Adelaide's transport and logistics networks as well as being home to 10,000 jobs and tens of billions of dollars of investment on and around the airport. After more than 70 decades of long-term planning and investment, there is no other feasible site for Adelaide's aviation infrastructure. We are committed to investing in our infrastructure and will be investing $1 billion in capital investment over the next five years, of which over half will be on major aviation infrastructure projects.

Adelaide Airport is the aviation gateway to South Australia. Since May 1998 AAL has been custodian of a 99 year operating lease for Adelaide and Parafield Airports from the Commonwealth Government. Adelaide Airport is the fifth-largest domestic and international airport in Australia processing more than 8 million passengers on an annualised basis. Adelaide Airport is the State's largest single site employment precinct directly employing more than 10,000 people on and off airport and contributing to the generation of a further 12,700 jobs. The airport contributes $3 billion to the South Australian economy, equivalent to 3.1 per cent of Gross State Product. Adelaide Airport has transitioned from an aviation and infrastructure facility to a broad-based economic activity node, encompassing a variety of aviation and non-aviation services, facilities and developments. It is also a critical transport hub connecting South Australia with global and domestic markets. AAL is owned by large superannuation funds who have held ownership since privatisation with significant numbers of members holding an indirect investment in our airports to protect them in their retirements. Our investors are long term and are ready to support the infrastructure required for our airports and understand the critical importance of aviation and tourism to the Australian economy.

Parafield Airport is South Australia's premier general aviation airport and is a major world standard international training airport. Pilots trained at Parafield Airport go on to fly international services to and from Adelaide Airport. The provision of commercial, retail and industrial activities contributes to the viability of the airport as a business enterprise and provide an economic core and employment centre for the northern suburbs of Adelaide and beyond.

Adelaide and Parafield Airports are situated on Commonwealth land subject to the planning regulation embedded in the Commonwealth Airports Act, however there are a significant number of common planning interface matters with the State. We have mutual interests in the operation of the Master Plans for each airport and in the opportunities for collaboration relating to the protection of South Australia's airspace and aviation growth capacity through our State's Planning System. Our latest Adelaide Airport Master Plan was completed in late 2019 with the Parafield Airport Master Plan due for submission by June 2024. Adelaide Airport has ensured that it has planned the airport with plenty of capacity for long term growth beyond the 30 year planning horizon of this plan. Adelaide Airport's Master Plan 2019 outlines that additional capacity by way of a third runway is not needed until at least 2062, which would then facilitate significant additional growth well beyond the end of our headlease term. Adelaide Airport has safeguarded land on the airport site available for this future runway development. Adelaide Airport's ideal location ensures that we can integrate developments around our airfield into the local community. The location of the airport ensures that it is part of the wider State transport solution with proximity to key transport networks and the city. The location allows aircraft to arrive and depart over the ocean during nighttime periods, minimising community impacts.

Discussion

This submission notes the six objectives identified for the Strategy and provide broad comment on each of these.

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Objective 1: Enabling Infrastructure

Freight

Adelaide Airport is the gateway to South Australia for both passengers and airfreight.

The majority of air freight in South Australia, Australia and globally is carried in the cargo hold of passenger aircraft (belly cargo). Belly cargo space is critical to exports as it is materially cheaper on average than space on a dedicated freighter. It provides exporters with a suitable option for sending regular shipments, rather than stockpiling to send infrequent large shipments. Export destinations are decentralised and passenger aircraft networks are able to be significantly broader and more cost efficient than dedicated freight networks. Like most other cities, freight is a vital component of the business of the passenger aircraft that serve Adelaide's business – the combination of freight and passengers is critical to underpin the growth of our State's international connectivity. International Air Transport Association (IATA) figures show that revenue from freight in the cargo hold of the aircraft can attribute up to 20% of the revenue of particular flights. Transporting freight in the cargo hold of an international flight drives down the cost of ticket prices for passengers and can be the difference between a prospective route being profitable or unprofitable. As such, demand for freight on Regular Passenger Transport services make direct flights to South Australia more desirable, and more direct aviation services is a key lever to facilitate growth in business, education, tourism and trade.

We consider there is significant export growth opportunities at Adelaide Airport. Adelaide Airport, along with the State Government, should actively seek to attract international widebody passenger (and 'belly freight') aircraft to reduce the cost and increase the speed / reliability to market of perishable and high value exports. This will also embed a logistics hubbing skillset / employment and scale in South Australia. Adelaide Airport's focus on growing the network and frequency of airline Regular Passenger Transport services inbound and outbound from Adelaide also has the effect of increasing the network and frequency of direct freight. The most critical facilitation of airfreight growth is attracting additional widebody international Regular Passenger Transport services.

We are continuing to plan, design and develop our dedicated freight and logistics precinct (**Airport East**), with significant development well underway or completed east of Keswick Creek and detailed design underway for precinct infrastructure west of Keswick Creek including site preparation.

Air freight is expected to more than double over the next 20 years, requiring infrastructure to support and enable that growth and achieve increased levels of productivity and efficiency. This includes:

- An efficient road network catering for High Productivity Vehicles with direct access to key areas of Adelaide Airport and Parafield Airport which support existing and future freight and logistics operations and aviation related facilities such as our Airport East and Morphett precincts at Adelaide Airport and Airport Business and Enterprise precincts at Parafield Airport.
- The availability, affordability and timely supply of water and energy infrastructure for development of the precincts at Adelaide and Parafield Airport that support freight and aviation operations and to enable transition to more sustainable operations such as electrification of ground support equipment and aircraft.
- Infrastructure to support future technologies such as vertical take-off and landing (VTOL) aircraft which may be piloted or autonomous and used for the movement of freight.

Adelaide Airport is part of the critical transport network that supports and connects South Australia. Investment in ensuring efficient access and egress, through road infrastructure to and from the airport, is critical for connectivity for passengers, freight movements and for the significant workforce who operate from the airport. It is critical that the State Government builds and maintains roads providing efficient access to the airport in consideration of future passenger, freight and employment growth.

AAL advocates for recognition of the importance of air freight within the Strategy and the associated infrastructure required to support it to provide a more holistic view of the freight sector and overall network. AAL also seeks to understand how emerging and innovative technologies, which could impact the freight sector, will be considered as part of the Strategy and the associated infrastructure required to support them.

Water and Energy

The reliable and timely provision and upgrade of services infrastructure, such as water and energy, to accommodate development is essential to enable:

- The development of sustainable facilities and precincts which support freight and aviation operations at both Adelaide and Parafield Airports;
- The development of commercial precincts at both Adelaide and Parafield Airports which provide employment and economic benefit to the State;
- The transition of existing facilities and operations towards more sustainable alternatives; and
- AAL to respond to opportunities to introduce new and innovative technologies to the State, such as electric vertical take-off and landing (**eVTOL**) aircraft.

The Strategy should address the risks and constraints of services infrastructure that exist today as well as facilitate growth in sustainable, efficient, reliable and affordable services infrastructure. There will be increasing demands on some services as we transition towards more sustainable resource alternatives. Existing assets should be maximised – however, not at the expense of sustainability, efficiency, reliability or development - acknowledging the age of assets and capacity constraints that currently exist. Transparency in relation to limitations, constraints and surpluses within service providers' existing networks will better inform future investment and provide accountability for the resolution of long-term issues.

Service providers are currently limited to investment plans only within their regulatory cycle (every 4 – 5 years). Improvements to the regulatory environment and integrated planning environment would increase service providers' responsiveness to change and ability to commit to necessary investment that may be required within an already approved cycle. The existing regimes result in costs for potential upgrades for shared infrastructure being put to single users regarded as being the marginal triggers for an upgrade, but whose demand may only be a small proportion of the existing demand on the network. This inhibits development and State growth. It is essential that servicing of critical infrastructure and economic hubs such as the Airport can be prioritised by service providers to enable State growth.

Objective 2: Liveable and well-planned places

Coordinated Planning

The Discussion Paper acknowledges the need for coordinated planning and investment to support essential services. As a critical transport hub, Adelaide Airport is essential to the State.

Long-term and effective protection and safeguarding of Adelaide Airport is the shared responsibility of AAL and all levels of government and is critical to ensuring ongoing aviation operations and safety. Inappropriate development around airports results in unnecessary constraints on airport operations and sustained negative impacts on community amenity due to the exposure to aircraft noise. These impacts need to be managed in a balanced and transparent manner to ensure that residents are protected and that development does not impact on the future capacity of airports, which in turn would impact on economic and growth opportunities for the State.

To effectively achieve airport safeguarding, recommendations have been provided to the State Planning Commission that the Greater Adelaide Regional Plan should consider the Guidelines contained in the National Airports Safeguarding Framework (**NASF**). The NASF is a national land use planning framework that aims to:

- Improve community amenity by minimising aircraft noise-sensitive development developments near airports; and
- Improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted by jurisdictions on various safety-related issues.

It is important to recognise that safeguarding extends beyond the boundaries of the airport itself to those areas associated with the movement of aircraft to and from Adelaide and Parafield Airports. The operation of both

airport sites should be recognised when the State seeks to identify areas for further residential growth, both greenfield and infill, to ensure that inappropriate and arbitrary measures are not taken to limit the future development of both airport sites for their intended purpose.

AAL continues to promote the implementation of the NASF Guidelines and the insertion of corresponding policy within the Planning and Design Code.

In considering coordinated planning across the State, and as AAL looks to further activate and develop the land within Adelaide Airport, there are considerable community and economic benefits that could also be gained by the State through activation of areas surrounding the airport, building on the large employment base that works at the airport to create a more integrated experience in the community.

Public Transport

We are supportive of efficient access to public transport to and from the airport, which also improves the liveability of the city. The 2019 Adelaide Airport Master Plan has retained land next to the terminal for the provision of a State Government funded high-capacity public transport corridor to the airport.

Education and Skills

Parafield Airport is the principal general aviation and pilot training airport in South Australia and is a significant economic and employment generator in the State. There is an opportunity for the State Government to support advancements in electric aircraft for flight training schools to reduce aircraft emissions, minimise noise impacts on surrounding communities whilst further supporting education and training. This region also needs sufficient energy infrastructure capacity to support this.

Cultural, Tourism and Recreational Facilities

Investment (by the State) in quality tourism infrastructure and experiences will have strong benefits for the State (for example, Adelaide Oval). We are greatly supportive of major events, which attract national and international visitors to the State and support the State making investment in infrastructure that will facilitate visitation. The State should consider opportunities to invest in or develop events related facilities that can accommodate large numbers of visitors – this would increase South Australia's competitiveness in bids for larger global scale business events/conferences. Unique and exciting tourism attractions such as indigenous cultural facilities or modern art facilities will also benefit the tourism economy.

Objective 3: Accessible and inclusive infrastructure

Adelaide Airport is strongly supportive of improved and equitable access to infrastructure. We seek to update our legacy infrastructure to meet and, where possible, go beyond the minimum code requirements of the Public Transport Disability Standards and/or the Australian Standards relating to building accessibility, signage and other information and facilities to assist people with disabilities.

Any future expansion, developments or alterations to infrastructure must, as a minimum, be undertaken in accordance with the Public Transport Disability Standards and/or Australian Standards applicable at the time. We look forward to increasing the integration of the flow of journeys with our partners to pre-empt the friction points experienced by our diverse customer base.

Objective 4: A decarbonised, sustainable economy

Decarbonised Energy System

AAL has finalised a detailed decarbonisation strategy to validate the pathway and abatement measures to achieve a 100% reduction in scope 1 and 2 emissions by 2030. We have also modelled our scope 3 emissions (relating largely to in-flight fuel burn) and has developed a range of conceptual initiatives that will require significant work with our partners (including the State) to seek to achieve our target of net zero by 2050.

Transitioning Transport

Adelaide Airport recognises the important role we have to play to reduce carbon emissions in the aviation sector. Carbon emissions from aviation are currently ~2-3% of global emissions and, with forecast increases in demand for travel, this contribution will increase. An aviation industry priority is to accelerate the transition of our industry to Sustainable Aviation Fuel (SAF), while seeking to control the cost of that transition. We consider that the Federal and State Government have roles to facilitate initial high risk private investment in SAF.

In some further specific initiatives:

- We consider that South Australia could leverage its competitive advantage in hydrogen and renewable energy to develop an at-scale South Australian power to liquid sustainable fuel production sovereign capability.
- There are opportunities for the State to integrate innovative and sustainable technologies into its transport system with the use of electric vehicles and provide support for electric aircraft.
- The State is likely to be called upon to use its planning and statutory powers to facilitate the open-access connection of an aviation fuel pipeline from Port Adelaide to Adelaide Airport. This infrastructure would facilitate efficient transport of aviation fuel (including future sustainable aviation fuel) to improve road safety and reduce carbon emissions by significantly reducing the need for daily trucking of aviation fuel.

Objective 5: Improved resilience

Critical Infrastructure

Adelaide Airport ensures that it builds resilience of our infrastructure into our planning and the operations and maintenance of assets.

Government efforts to ensure minimum cyber security standards for critical infrastructure should continue.

The COVID pandemic identified the dormant sovereign risk of State border closures in the event of the known risk of a significant communicable disease. To address this risk of decentralised border closures, the State should encourage the Federal Government to utilise its Constitutional quarantine powers (s51(ix)) to regulate in this space and create certainty and harmonisation within our nation.

Planned Resilience

South Australia must continue to adapt and mitigate the impacts of climate change. This includes climate change events such as flooding. In recent years, AAL has invested to upgrade critical airport power and sewer infrastructure nodes across the airport site to address potential impacts from flooding and are currently accounting for the effects of climate change such as sea level rise and increased intensity of extreme rainfall events in updated flood modelling for both Adelaide and Parafield Airports. The State Government must continue to ensure it considers sustainable infrastructure in its infrastructure projects and through the Strategy.

AAL supports the sentiments of the Discussion Paper which notes the vital role that green and blue infrastructure has in supporting resilience and takes the opportunity to highlight the importance of management of stormwater both on and off the airport. Adelaide Airport is located downstream of major urban stormwater catchments including Brown Hill Creek and Keswick Creek, the performance of which impacts the airport that can experience flooding as a result of overflow from these systems. AAL highlights the importance of the Brown Hill and Keswick Creeks Stormwater Board's proposal for the Keswick Creek Flow Diversions project. We support the acceleration of this project - the airport cannot be treated as an area that is available for overflow from upstream catchments.

Adelaide Airport continues to focus on sustainable infrastructure when building or maintaining its assets. We have begun re-surfacing our main runway and taxiways as part of essential maintenance works. The overlay works are a ~$70million project and part of Adelaide Airport's ongoing maintenance program, to provide a safe operating environment for all aircraft. Through this project, we have incorporated sustainable practices and measures such as the use of recycled asphalt throughout the project.

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Objective 6: A stronger infrastructure industry

The privatisation of major Australian airports, including Adelaide Airport, is a successful example of private business investing in the prosperity of our communities. Excellence in infrastructure planning is critical, and Adelaide Airport must continue to be recognised as nationally significant infrastructure as the gateway to our State.

Conclusion

Thank you for the opportunity to contribute to the Strategy.

AAL has recently provided a separate submission on the Greater Adelaide Regional Plan Discussion Paper that can be read in conjunction with this submission.

Adelaide Airport has a privileged role to play and has committed considerable investment to maintain, develop and enhance airport infrastructure – this in turn supports the growth of South Australia. We look forward to a Strategy that supports the provision of sustainable, efficient, reliable and affordable infrastructure through the State as a whole and of course to support growth in aviation and airport related activities.

If you have any queries in relation to the above, or require any additional information, please do not hesitate to contact me.

Yours sincerely
ADELAIDE AIRPORT

Brenton Cox
MANAGING DIRECTOR

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APA Submission

South Australia 20-year State Infrastructure Strategy

November 2023

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Ms Tara Hage
Manager Strategy
Infrastructure SA

Lodged by email: infrastructure@sa.gov.au

13 November 2023

RE: APA Submission to the South Australia 20-year State Infrastructure Strategy

Dear Ms Hage,

Thank you for the opportunity to comment on South Australia's 20-year State Infrastructure Strategy Discussion Paper (Discussion Paper).

APA is an ASX listed owner, operator, and developer of energy infrastructure assets across Australia. Through a diverse portfolio of assets, we provide energy to customers in every state and territory. As well as an extensive network of natural gas pipelines, we own or have interests in gas storage and generation facilities, electricity transmission networks, and 681 MW of renewable generation infrastructure.

We are actively involved in the energy transition taking place across Australia. In August 2022, we published our inaugural Climate Transition Plan which outlines APA's pathway to net zero operations emissions by 2050.

South Australia is a world leader in adopting renewable energy. As the Discussion Paper acknowledges, gas powered generation (GPG) will play a key role in firming renewables and stabilising the system during the energy transition. Regulatory settings must therefore support continued investment in gas infrastructure and new gas supplies. This will ensure that consumers receive both reliable gas and electricity as the energy market transitions.

It is well documented that the economics of thermal generation, including GPG, are under pressure due to the lower marginal cost of wind and solar generation. As increasing volumes of renewable generation come online, this pressure is expected to increase. The South Australian Government should consider whether existing market arrangements are sufficient to support continued investment in GPG.

We would welcome the opportunity to discuss our submission in more detail. Should you have any questions or queries, please contact John Skinner on [redacted] or [redacted]

Regards,

[redacted]

Beth Griggs
General Manager
Regulation and External Policy

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1 Submission

Key points

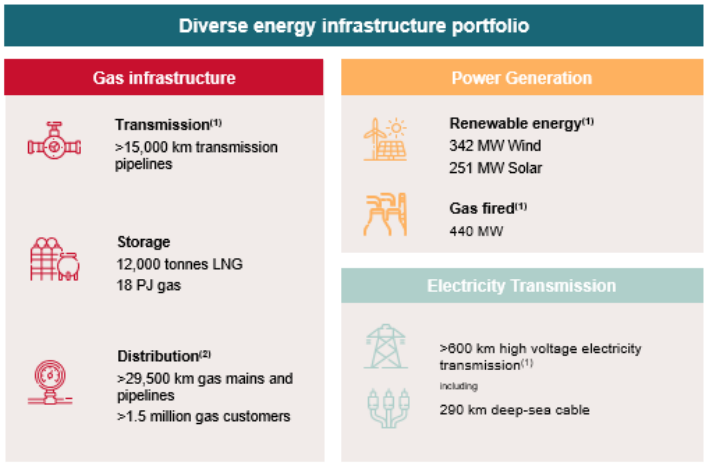
- Gas will play a key role in the energy transition. As experience in South Australia is showing, GPG will have an important role in firming renewables and supporting the security and reliability of the energy system.
- As increasing volumes of renewable generation come online, the South Australian Government should consider whether existing market arrangements are sufficient to support continued investment in GPG.
- With declining gas reserves in southern markets, Governments should work closely with industry partners to support and fast-track the development of new gas reserves.
- Gas infrastructure has an essential role to play in helping Australia achieve least cost decarbonisation. As experience in Europe is showing, repurposing gas pipelines is a cost-efficient and safe option to transport renewable gases.

1.1 APA as a partner of choice in Australia's energy transition

APA is a leading Australian Securities Exchange (ASX) listed energy infrastructure business. Consistent with our purpose to strengthen communities through responsible energy, our diverse portfolio of energy infrastructure delivers energy to customers in every state and territory on mainland Australia.

Our 15,000 kilometres of natural gas pipelines connect sources of supply and markets across mainland Australia. We operate and maintain networks connecting 1.4 million Australian homes and businesses to the benefits of natural gas. And we own or have interests in gas storage facilities, gas-fired power stations.

Figure 1



We also operate and have interests in 681 MW of renewable generation infrastructure, while our high voltage electricity transmission assets connect Victoria with South Australia, New South Wales with Queensland and Tasmania with Victoria.

In October 2022, we completed the acquisition of Basslink Pty Ltd, which owns and operates the 370km high voltage direct current electricity interconnector between Victoria and Tasmania. The acquisition adds a third electricity interconnector to APA's energy infrastructure portfolio and is consistent with our strategy to play a leading role in the energy transition.

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Most recently, we announced the acquisition of Alinta Energy Pilbara, an energy infrastructure business in Western Australia with gas and solar generation, battery storage and electricity transmission assets. Alinta Energy Pilbara also has an extensive pipeline of wind, solar, gas and electricity transmission projects. The acquisition is consistent with our strategy to play a leading role in the energy transition.

APA actively supports the transition to a lower carbon future. In August 2022, we published our inaugural Climate Transition Plan which outlines our commitments to support Australia's energy transition and pathway to achieve net zero operations emissions by 2050. We recently launched our inaugural Reconciliation Action Plan which aims to support our journey in building better relationships with First Nations peoples in order to strengthen communities through responsible energy – this is a key focus of APA's sustainability strategy.

As a national and leading energy infrastructure business, we take a customer-led approach to the development of new energy infrastructure, working to meet our customers' needs by delivering reliable, affordable and low emissions energy solutions.

APA can support South Australia's transition to net zero through the timely delivery of supporting infrastructure. As well as recent experience developing and connecting renewable generation assets to the national electricity grid, we have:

- extensive experience working with communities
- a track record of partnering with governments in financing and managing delivery contracts and interfaces
- trust from stakeholder groups as a national operator of complex energy infrastructure
- a proven social licence to operate.

1.2 Gas is essential for energy security during the energy market transition

This section relates to questions 16: How do we maintain an affordable, reliable and secure energy system through the energy transition.

The Discussion Paper highlights that gas is expected to play a crucial role in navigating the energy market transition as the electricity sector moves to renewable energy sources.[1] GPG will provide crucial 'firming' of renewables, particularly at peak times.[2]

As recent experience in South Australia has shown, periods of low wind and solar availability require significant volumes of long duration dispatchable resources to be available to support the reliability and security of the system. Without GPG providing long duration dispatchable generation, South Australia is unlikely to have developed its renewable energy capacity to the extent that it has in such a short time frame.

Absent replacement dispatchable resources in other states, issues are likely to be experienced as coal power stations retire. The role of dispatchable generation such as GPG will become

[1] South Australian Government, *20-year State Infrastructure Strategy Discussion Paper,* October 2023, p36
[2] Ibid p36

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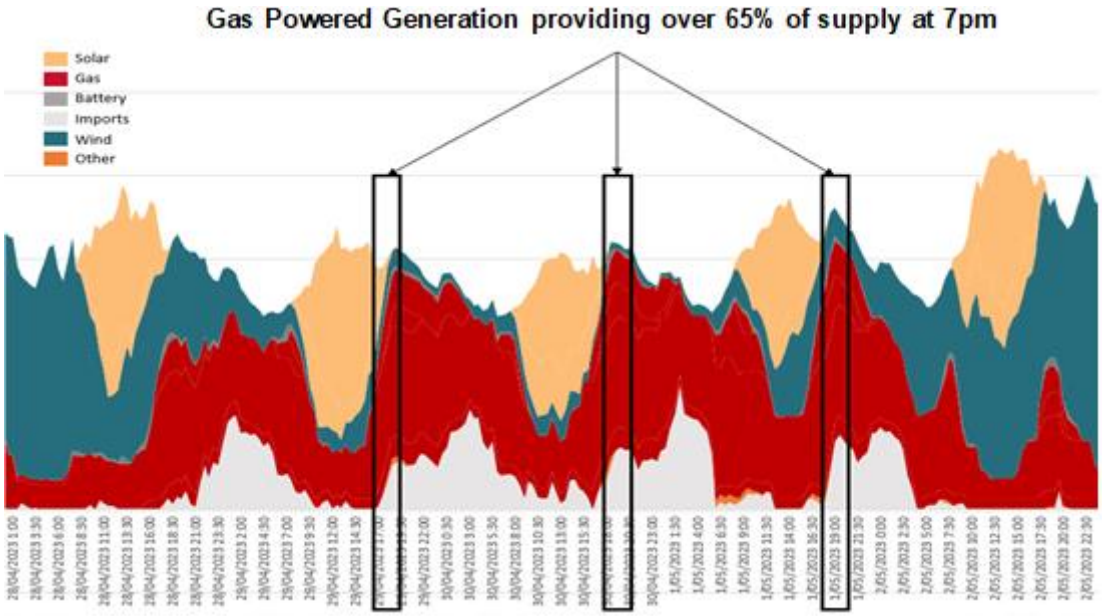
even more critical if there are delays in building the necessary electricity transmission and other forms of long duration storage to support renewable energy projects.

Despite the introduction of synchronous condensers in South Australia, GPG remains critical in ensuring sufficient electricity supply, including system strength and long duration firming, during periods of low wind and solar generation. For example, in the period from 28 April 2023 to 2 May 2023, GPG was critical to supply adequacy due to periods of low wind and solar generation. As shown in Figure 2, on three out of five days, GPG provided over 65% of peak electricity consumption at 7pm.

Figure 2: GPG supporting energy reliability in South Australia



Source: OpenNEM

Events in Queensland and Victoria over recent years have also demonstrated the flexibility and security offered by gas pipelines and GPG:

- **Flexibility and energy security**
  On 25 May 2021, a failure of one of the generation units at Callide Power Station in Queensland caused 477,000 customers to lose power.

  In mid-June 2021, Yallourn Power Station in Victoria reduced electricity generation to approximately 20% capacity due to the threat of floodwater from the Morwell River.

  Following both these events, GPG stepped up to help provide crucial electricity generation in both Queensland and Victoria. GPG doubled its output while not increasing overall emissions. The ability of gas turbines to quickly ramp up and provide long duration dispatchable generation shows they will be a critical part of the energy system for many years to come.

- **Addressing shortfalls through the gas network**
  In mid-July 2021, the Longford gas plant in Victoria suffered a reduction in production due to technical problems, significantly reducing the amount of gas being supplied to the Victorian market. This led to AEMO issuing a notice of threat to system security.[3]

  In response to this event, it was the flexibility of APA's 7,500 kilometres of interconnected gas transmission pipelines that form an East Coast Gas Grid that enabled APA to get gas from the north to the south, helping to rapidly address these shortfalls.

  On this occasion, APA's customers were able to utilise their inventory position (known as 'Park') on the Moomba to Sydney Pipeline (MSP) to support supply to the markets through this event. Further additional capacity was available during this event should the market have required it. The recent MSP capacity upgrade has ensured additional flows from the MSP into southern markets can be accommodated should a similar issue arise.

The gas network is a flexible, affordable and safe store of energy, making it ideal to help support energy supply during extreme weather or periods of reduced supply. Locating GPG close to major demand centres also reduces exposure to electricity transmission capacity and frequency constraints often experienced by the overconcentration of renewable generation in common areas of the grid. This advantage may become critical if there are delays in building the necessary transmission investment to support renewable energy.

Gas infrastructure will play an important role for many decades to come, and therefore regulatory settings must support continued investment in our gas infrastructure. This will ensure that consumers continue to receive both reliable gas and electricity as the energy market transitions.

1.3 Maintaining investment in GPG

This section addresses questions 16: How do we maintain an affordable, reliable and secure energy system through the energy transition.

It is well documented that the economics of thermal generation (both coal and GPG) are under pressure due to the lower marginal cost of wind and solar generation and the reduced flexibility of such plant. This is leading to announcements about the closure of thermal assets:

- In February 2022 Origin submitted notice to AEMO for the potential early retirement (in 2025) of Eraring Power Station. Origin stated that this decision reflected the continuing, rapid transition of the National Electricity Market (NEM) as we move to cleaner sources of energy.[4]
- In November 2022 AGL announced that it will close one of the ageing gas-fired Torrens Island power stations due to challenging economic conditions.[5]

[3] AER, *AER gas weekly report – 20-26 June 2021* (14 July 2021) <https://www.aer.gov.au/system/files/AER%20gas%20weekly%20report%20-%2020%20%E2%80%93%2026%20June%202021.pdf>.
[4] Origin Energy, *Media Release, Origin Proposes to accelerate exit from coal generation,* 17 February 2022
[5] Sydney Morning Herald, AGL to close SA gas power plant in 2026 as renewables accelerate, 24 November 2022

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As increasing volumes of renewable energy come online, the pressure on thermal power station operators is expected to increase. The completion of the NSW to South Australia interconnector (Project Energy Connect) and other interconnectors, which will increase the amount of energy that can be transferred between jurisdictions, will compound the problem.

In contrast to thermal power (particularly coal fired), which is expected to retire from the system and not be replaced, gas fired Open Cycle Gas Turbine (OCGT) peaking plants will become more important as coal power retires. As AEMO points out, this is because OCGT GPG will provide flexible and firm electricity supply, albeit less frequently than historically, but with greater importance to maintain reliability of the system.[6]

While governments are taking steps to incentivise the introduction of new renewable generation projects (such as through the Capacity Incentive Scheme), GPG is not being incentivised through similar mechanisms. This means that GPG operators will need to recover their costs and risk premium through high prices in the NEM. Often, this will involve bidding in capacity at the Market Price Cap (MPC), which as of 1 July 2022 is $15,500/MWh. When the NEM dispatches capacity at the MPC, all capacity is dispatched at that price, regardless of whether the capacity is underwritten or not.

In its July 2022 Consultation Paper, the Energy Security Board (ESB) recognised that the NEM's energy only design and existing MPC may not be sufficient to encourage investment in enough generation to maintain a reliable system.[7] The ESB's modelling suggested that the existing MPC is materially too low to give a high likelihood of meeting the current reliability standard.

Energy Ministers are encouraging more wind and solar through the Capacity Investment Scheme underwriting scheme. GPG however, will rely on the MPC to allow it to recover its costs. The dispatch profile of GPG is very uncertain, and many factors will impact on whether OCGT generators bid into the market, including:

- the weather
- outages at coal power stations
- the cost of gas
- delays in building electricity assets

It is unclear whether the MPC and energy only market will encourage sufficient new investment in GPG to maintain a reliable system as coal fired generation and their baseload generation exits the system.

Consistent with the ESB's findings, the South Australian Government should consider whether alternative arrangements are required to ensure there is continued investment in GPG in order to maintain a secure and reliable energy system in South Australia.

[6] AEMO, *Gas Statement of Opportunities,* March 2023, p23
[7] Energy Security Board, *Capacity Mechanism, High-level Design Paper,* June 2022, p13

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1.4 Developing new gas supply is critical for energy security

This section addresses question 16: How do we maintain an affordable, reliable and secure energy system through the energy transition?

Both the Australian Energy Market Operator (AEMO) and the Australian Competition and Consumer Commission (ACCC) have recently flagged the risk of East Coast supply shortfalls this decade.[8]

Governments should be cognisant that they have a role to play in expediting approval processes to ensure that frontier basins can be established and connected to the interconnecting gas grid as soon as possible. Failure to approve new sources of gas supply to replace rapidly depleting existing sources may result in the market adopting less efficient (and higher cost) options to bring gas to southern markets, such as LNG import terminals (see Section 1.6.1), introducing new energy security risks.

As an energy exporting nation with an extensive, interconnected grid that can move gas between supply fields and demand locations, we should be prioritising the development of our own gas resources and utilisation and expansion of the gas transmission network (if required), ahead of importing of LNG through import terminals.

Governments should work closely with industry partners to support and fast-track the development of new gas reserves, including the Beetaloo Basin. The Beetaloo, in particular, is a natural gas resource of potentially significant scale and can help offset the very significant gas supply shortfalls that may commence later this decade.

1.5 Gas infrastructure is very efficient and reliable

This section addresses question 20: How do we better account for the impacts of climate change in our infrastructure, to support improved resilience?

Gas infrastructure is very reliable and efficient at delivering energy. Because gas pipelines are underground, it is a very rare occurrence for network faults to disrupt customer supply. The fact that gas can be compressed means the gas grid holds significant inventory and can be relied upon to operate flexibly for customers. Consequently, even during maintenance activities, customers are rarely disrupted.

Gas pipelines are not currently subject to formal reliability standards. One of the key reasons for this is that gas reliability is very good. For example:

- Gas distribution customers experience an outage approximately once every 66 years on average[9]. This is in contrast to electricity distribution customers, who experience an outage, on average, around once or twice a year.[10]

[8] AEMO, Gas Statement of Opportunities, *March 2023,* ACCC, Gas Inquiry 2017-2030 Interim update, September 2023, p9
[9] Australian Energy Regulator (AER), *Gas Network Performance Report* (Report, 2022) 61
[10] AER, *Electricity Network Performance Report 2022* (Report, 2022) 21

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- Gas transmission pipelines also have very good reliability with only 0.03 loss of supply events per annum per km of pipeline. This compares to 0.42 loss of supply events per annum per km for high voltage powerlines.[11]

Given gas infrastructure is so reliable, we should consider how to repurpose it for renewable gases, including hydrogen.

Furthermore, it is currently more cost efficient to deliver energy via gas infrastructure than electricity networks. For example, the SA gas distribution network, as shown in Table 1 below, delivers energy to customers at around half the cost of the electricity distribution network (2021 data).[12]

Table 1

Benchmarking SA electricity and gas networks based on energy delivered

	Regulated Asset Base ($m)	Actual Annual Revenues ($m)	Actual Energy Delivered (GWh) (1 TJ = 0.277 GWh)	Average cost to deliver a GWh ($)
SA Electricity distribution network	4581	858	9,666	88,765
SA Gas distribution network	1748	244	5,806	42,022

If gas distribution infrastructure is eventually decommissioned, the electricity network will have to be upgraded to accommodate the avoided gas load. The build out of renewable generation will require increases in electricity distribution and transmission infrastructure, with a consequential impact on household and industry electricity bills.

The cost savings associated with electrification often overlook the significant cost of electricity network infrastructure upgrades and the cost of new generation. The cost of this new infrastructure will push up network charges for all customers across the NEM.

While we don't know exactly how much that will cost, gas infrastructure delivers energy very efficiently and the construction of new electricity assets will likely result in bill increases for customers. This means that we might not see the customer bill reductions that policy makers and advocates seem to be assuming.

[11] Australian Pipeline and Gas Association (APGA), *GPA Engineering, Pipelines v Powerlines – A Technoeconomic Analysis* (Report, 2022) 13
[12] AER, *Electricity DNSP Operational Performance Data 2022*; AER, *Gas Distribution - Operational Performance Data 2022* (16 December 2022).

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1.6 On-going investment in gas infrastructure is critical to the energy transition

This section addresses questions 16: How do we maintain an affordable, reliable and secure energy system through the energy transition.

Gas infrastructure operators have a strong track record of delivering the necessary infrastructure to ensure customers have sufficient gas in the locations they need it.

To date, the incremental expansion of existing infrastructure has been the most efficient, timely and lowest cost solution to ensure that gas is delivered when and where it is needed. Gas retailers coordinate with producers to ensure they secure gas supplies and with pipeline operators to ensure they can transport gas from gas fields to their end customers.

Since 2021 APA has announced three expansions of the East Coast Gas Grid to efficiently provide the capacity required to transport more gas from Queensland and the Northern Territory to southern markets:

As it becomes clear that further investment in gas infrastructure is needed, market signals and bilateral contracting will help support the continued expansion of the East Coast gas network. Importantly, the most recent expansions of APA's East Coast Gas Grid are responding to increases in the need to transport gas from Queensland to meet peak demand in southern markets.

Further incremental expansion will become more challenging and subject to increased investment risk, however, as demand peaks become shorter in duration. This is expected as renewable generation displaces thermal, mainly coal, generation and requires more GPG to provide dispatchable firming. The investment risk is exacerbated by the uncertainty in domestic policy for long term gas supplies and the risk of further, adverse, regulatory intervention.

1.6.1 LNG import terminals are not an efficient option

This section addresses question 16.

The development of new LNG import terminals is likely to represent a less reliable and higher cost option compared to investment in new gas fields and infrastructure to deliver domestic gas. Long term, stable gas prices are required to support customers in Australia. Imported gas pricing is likely to be higher cost, on average, relative to domestic supplies and is subject to greater supply risks, particularly during periods of conflict.

The carbon emissions of LNG gas imported through Floating Storage and Regassification Units (FSRUs) are also around 20% higher than pipelined gas. This is due to the energy consumed during the liquification of natural gas. Should carbon pricing become mandated, this higher intensity will also mean that LNG imports will become incrementally more expensive.

It would be inconsistent with net zero 2050 aspirations for policymakers to prioritise LNG import terminals over the development of domestic infrastructure and new gas supplies, given

LNG imports that displace domestic gas would add to, and not reduce, Australia's carbon emissions.

Gas retailers' appetite to invest in new gas developments in eastern Australia may also be impacted should an LNG terminal be sanctioned. This is because retailers will have less of an incentive to contract long term, impacting mid-stream and pipeline infrastructure owners' confidence to invest in gas infrastructure. In turn, this will risk bringing new domestic gas supplies to market.

1.7 The repurposing of existing gas infrastructure for renewable gases

This section relates to question 20: How do we better account for the impacts of climate change in our infrastructure, to support improved resilience?

Energy Ministers recognise that gas will play a crucial role in the energy transition, and that the continuing use or repurposing of gas infrastructure could therefore be important for both gas and electricity users.[13]

Gas infrastructure has an essential role to play in helping Australia achieve least cost gas decarbonisation. Repurposing natural gas pipelines to transport renewable gases, including hydrogen, has significant advantages:

- Converting existing gas networks is more cost-efficient in comparison to constructing new, dedicated hydrogen pipelines.[14]
- Gas pipeline networks are already available and socially accepted (routes, including rights of way and use).[15]
- Technologies for converting the natural gas infrastructure to hydrogen operation are already being applied.

Regardless of which renewable gas proves most effective, renewable gas providers can utilise pre-existing gas infrastructure like distribution networks, pipelines, metering equipment, and human expertise. An Oakley Greenwood report recently commissioned by the Tasmanian Government in the development of its gas strategy supports this approach.[16]

The recently published BCG Report also found that existing gas infrastructure will play an important role in supporting sectors where electrification will be too hard or expensive (peaking applications in particular). During the transition phase, preserving gas infrastructure was also considered to enable the development of low-carbon gases like green hydrogen, which will likely be needed in a net zero future, for industrial use at a minimum.[17]

Frontier Economics has also investigated the potential for gas infrastructure to decarbonise the economy. In its September 2020 report, Frontier concluded that making continued use of

[13] Energy Ministers Consultation Paper, *December 2022,* p8
[14] Ibid, Amber Grid et al, *European Hydrogen Backbone* (Report, April 2022) <https://ehb.eu/files/downloads/ehb-report-220428-17h00-interactive-1.pdf>.
[15] European Union Agency for the Cooperation of Energy Regulators, *Transporting Pure Hydrogen by Repurposing Existing Gas Infrastructure: Overview of existing studies and reflections on the conditions for repurposing* (16 July 2021) 6.
[16] Oakley Greenwood, *Tasmanian Gas Strategy: Background research, analysis and suggest next steps* (Report, October 2021) p.16.
[17] Boston Consulting Group, *The role of gas infrastructure in Australia's energy transition* (Report, June 2023).

existing gas assets wherever possible, including for the transport of hydrogen, can help avoid the material costs of investing in new assets to deliver energy.[18]

The cost-effectiveness of pipeline infrastructure has also been considered in the Pipelines vs Powerlines: A Technoeconomic Analysis in the Australian Context report, produced by GPA Engineering and commissioned by the Australian Pipelines & Gas Association (APGA).[19]

The report indicates that hydrogen pipelines are likely to play a central role in Australia's net zero energy market. Hydrogen pipelines, for the purpose of energy transport and storage, were found to be up to four times more cost-competitive when compared to electricity transmission infrastructure, in the context of like distance and capacity scenarios.

The ability of pipelines to store large amounts of energy is another factor supporting the repurposing of gas pipelines. The gas network is a flexible, affordable and safe store of energy, making it ideal to help support energy supply during extreme weather or periods of reduced supply. Gas turbines can quickly ramp up and provide long term dispatchable generation, which shows gas pipelines will be a critical part of the energy system for many years to come. While gas pipelines are currently used for storing natural gas, it is likely that they will be repurposed and used as a hydrogen store in the future.

1.7.1 Australian and overseas experience repurposing gas infrastructure

We note that the Consultation Paper states that 'current gas transmission infrastructure may not be suitable for gas needs in the future'.[20] This section of our submission outlines some examples, both locally in Australia and internationally, where existing gas infrastructure has been repurposed for storage and transport of renewables gases.

1.7.1.1 A step closer to Australia's first 100% hydrogen-compatible transmission pipeline

One of APA's key Pathfinder projects, the Parmelia Gas Pipeline (PGP) Conversion Project, is seeking to enable the conversion of around 43-kilometres of the PGP in WA into Australia's first 100 per cent hydrogen-ready transmission pipeline.[21] This project was partially funded by the Western Australian Government's Renewable Hydrogen Fund.

In May 2023 APA announced findings from phase two of the PGP Conversion Project which confirmed the technical feasibility of converting a 43km section of the high-pressure natural gas pipeline to carry 100% hydrogen.[22] The project will now progress to phase three, which will consider preparing the section of pipeline for hydrogen service and will include detailed safety studies and conversion plans. The detailed conversion plans will consider any

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[18] Frontier Economics, *The Benefits of Gas Infrastructure to Decarbonise Australia,* (Report, 17 September 2020) 9 <https://www.energynetworks.com.au/resources/reports/2020-reports-and-publications/the-benefits-of-gas-infrastructure-to-decarbonise-australia-frontier-economics/#:~:text=1%20INTRODUCTION-,Frontier%20Economics%20has%20been%20engaged%20by%20Australian%20gas%20industry%20associations,gas%20infrastructure%20to%20decarbonise%20Australia.&text=Australia%20has%20committed%20to%20reducing,part%20of%20the%20Paris%20Agreement.>.

[19] Australian Pipelines & Gas Association, *Pipelines vs Powerlines: A Technoeconomic Analysis in the Australian Context* (Final Report, 24 August 2021).

[20] Commonwealth, *Future Gas Strategy Consultation Paper* (Consultation Paper, September 2023) 29.

[21] APA, *APA set to unlock Australia's first hydrogen-ready transmission pipeline* (Media Release, 23 February 2021) <https://www.apa.com.au/news/media-statements/2021/apa-set-to-unlock-australias-first-hydrogen-ready-transmission-pipeline/>.

[22] APA, *Testing confirms technical feasibility of converting gas transmission pipeline* (Media Release, 19 May 2023).

modifications to ancillary equipment such as above-ground facilities and investigating supply and offtake arrangements required to meet the needs of customers.

Off the back of this research, APA has also developed a Pipeline Screening Tool that provides a high-level assessment of the hydrogen readiness of its pipeline assets, based on key pipeline material and operating characteristics. Initial assessments using the Pipeline Screening Tool indicates there is a high likelihood that around half of APA's natural gas pipeline assets could be used for hydrogen transportation, in 100% pure or blended form, with no, or small, changes to their current operating profile.

1.7.1.2 European experience in repurposing gas infrastructure

While Australia has only recently begun investigating opportunities for domestic renewable gas markets, other countries around the world, particularly in Europe, are further ahead. An increasing number of projects around the world are demonstrating the potential for re-use of gas infrastructure to transport renewable gases.

For example, studies carried out as part of the European Hydrogen Backbone initiative found that repurposing gas pipelines for hydrogen would equate to ~10-15 per cent of the costs involved for constructing new hydrogen pipelines (including decommissioning natural gas operation, water pressure tests, dismantling of connections etc.). The capital cost per km of repurposed hydrogen pipelines is still substantially lower, at ~33 per cent of the cost of building new hydrogen pipelines.[23]

Figure 2: Gasunie's hydrogen transmission pipeline

In the Netherlands, Gasunie, the Netherlands' gas transmission operator, has been transporting hydrogen along a modified natural gas pipeline since 2018 (see Figure 2).

This 12 km pipeline can transport more than 4,000 tons of hydrogen per year for industrial purposes. The pipeline has now been operating reliably and safely for five years.[24]

On 27 June 2023, Gasunie announced that it has taken the investment decision for the first part of its national hydrogen network. This nationwide network will cost around €1.5 billion and largely consist of existing natural gas pipelines.[25]

From 2030, the Netherlands' national hydrogen network will connect seaports with the major industrial customers as well as connections to Germany and Hamburg (see Figure 3). About

[23] Amber Grid et al, *European Hydrogen Backbone* (Report, April 2022) 17-8 <https://ehb.eu/files/downloads/ehb-report-220428-17h00-interactive-1.pdf>.
[24] Gasunie, 'Hydrogen pipeline in Zeeland has been proving added value for three years' *News* (Web Page, 18 November 2021) < https://www.gasunie.nl/en/news/hydrogen-pipeline-in-zeeland-has-been-proving-added-value-for-three-years>.
[25] Gasunie, 'Dutch national hydrogen network launches in Rotterdam', 27 June 2023, < https://www.gasunie.nl/en/news/dutch-national-hydrogen-network-launches-in-rotterdam>

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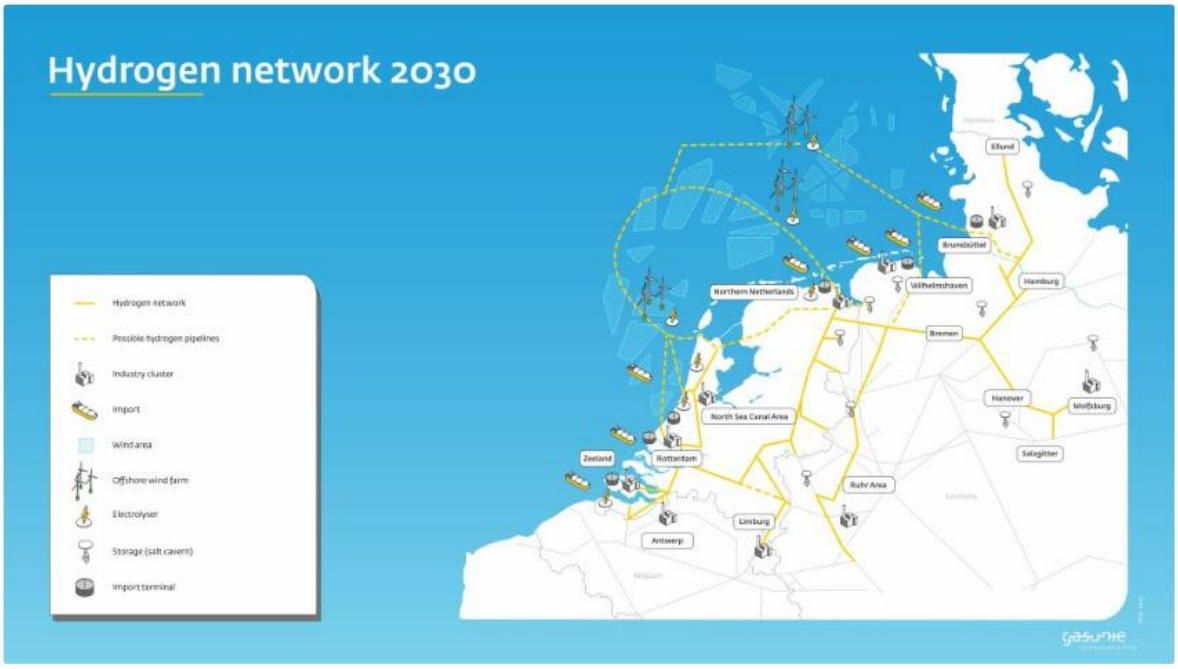
85% of the network will consist of reused natural gas pipelines, which is 75% cheaper than building new infrastructure.[26]

Figure 3 Planned European Hydrogen Network 2030



1.8 A renewable gas scheme to support the decarbonisation of industry

This section addresses question 19: What measures can be taken to enable the infrastructure industry to decarbonise?

The Discussion Paper highlights that three materials – concrete, steel and aluminium – make up for 23% of total global emissions.[27]

Many industries, including these hard to abate sectors, will require zero carbon gases to provide the feedstock or high grade industrial heating necessary for them to decarbonise.

We are of the view that the decarbonisation of these industries can best be supported through a market based renewable gases policy that provides strong incentives for the development of renewable gases.

The Australian renewable gas industries are still in their infancy and governments should play a key role in ensuring a level playing field for all potential uses of renewable gases. The recent KPMG Report recommends that any renewable gas policy has a significantly better chance of meeting its objectives if the renewable gas scheme is 'use agnostic' and open to all potential use cases.[28] Policy decisions should therefore encourage the market to find the best

[26] Ibid.
[27] South Australian Government, *20-year State Infrastructure Strategy Discussion Paper,* October 2023, p39
[28] KPMG report – Policy options to support Australia's decarbonisation journey, October 2023, p 44

opportunities for commercialisation, and not explicitly rule out any use cases while the market is developing.

We recognise that any renewable gas policy will have a focus on reducing overall emissions, and therefore targeting a renewable gas policy at particular sectors of the economy may be an appropriate place to start. However, it is unclear how the renewable gases industry will develop and the speed at which particular sectors will look to decarbonise.

In our view, any renewable gas policies should not limit opportunities to particular use cases. Instead, the market should be allowed to find the best uses for renewable gases. Widening the scope of opportunities for renewable gas is likely to stimulate domestic demand substantially more than restricting use to particular use cases.

The BCG Report[29] found that many of Australia's distribution networks are compatible with transporting a 10-20% hydrogen blend. This means that many networks in Australia could be well-placed to demonstrate the physical and economic feasibility of low-carbon gases and support their development by blending low carbon gas into the distribution network.[30]

1.9 Carbon capture and storage's (CCS) role in decarbonising Australia

This section relates to question 15: What infrastructure investments will support industries to transition to a global net zero future?

CCS involves capturing, transporting and storing carbon dioxide (CO_2) by injecting the captured greenhouse gases back into the ground or another form of storage. There is a complex supply chain that is involved in this process, including (but not limited to):

- CO_2 capture process (e.g., carbon dioxide removal, point source carbon capture)
- Transportation of CO_2 to designated area
- Sequestration for permanent storage underground

According to the International Energy Agency (IEA), a scalable CCS industry can be a major supporting pillar to a successful clean energy transition.[31] The UN Intergovernmental Panel on Climate Change also recognises CCS will form a vital role to reducing global greenhouse gas emissions in line with the climate goals.[32]

Investment in CCS presents multiple opportunities for Australia's pathway to net zero by 2050 and beyond. It is an enabler to accelerate Australia's decarbonisation journey by offsetting emissions sources in hard-to-abate sectors while also achieving net-negative global emissions through engineered sequestration approaches including:

- bioenergy with CCS (any energy pathway where CO_2 is captured from a biogenic source and permanently stored)

[29] Boston Consulting Group, *The role of gas infrastructure in Australia's energy transition* (Report, June 2023).
[30] Ibid.
[31] International Energy Agency, 'Putting CO2 to Use: Creating value from emissions' (Technology Report September 2019).
[32] Intergovernmental Panel on Climate Change, 'Mitigation of Climate Change' (Report, 4 April 2022).

- biochar (carbon-rich form of charcoal that can be added to soil to sequester carbon)
- direct air capture and storage (removes CO_2 directly from ambient air to be stored in deep geological forms).[33]

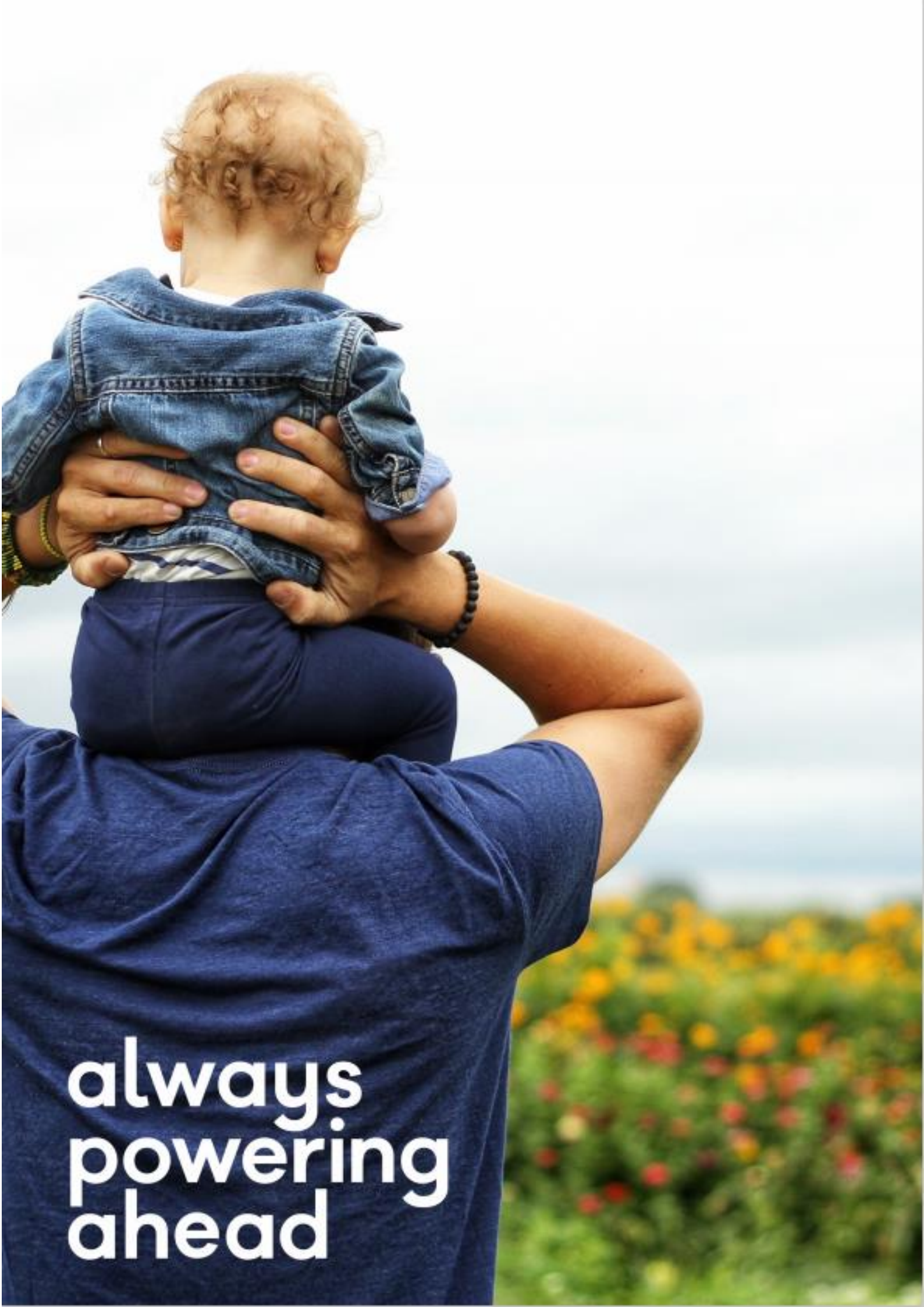
The Australian Government also considers CCS as a proven technology.[34] To incentivise businesses to explore CCS in their industrial processes, the Clean Energy Regulator provides funding for eligible CCS projects through the Emissions Reduction Fund.[35]

At APA, we continue to investigate innovative projects and leading industry partnerships relating to CCS and future fuels that can help Australia reach net zero by 2050.

APA was a consortium member of the Mid-West Blue Hydrogen Project that conducted a carbon capture and storage feasibility study in the Mid-West region of WA to look at blue hydrogen technology and associated CCS opportunities.[36] The feasibility study is now complete and confirms that the Mid West region is suitable for blue hydrogen production and CCS.[37]

International developments have also informed our position on CCS' potential role in Australia's decarbonisation journey. There are CCS facilities that are already operating at a commercial scale or on schedule to be operating in the very near future. For example, in 2020, the Norwegian Government awarded a licence for CO_2 storage to the Northern Lights project as part of its wider CCS initiative called Longship. Longship is the Norwegian full-scale CCS project in which the Norwegian Government provides financial support, facilitation, and risk mitigation.

[33] Climate Change Authority, 'Reduce, remove and store: the role of carbon sequestration in accelerating Australia's decarbonisation' (Insights Paper, April 2022).
[34] Australian Government, 'Reducing emissions through carbon capture, use and storage' (Web Page, Last updated 29 July 2022) <https://www.dcceew.gov.au/climate-change/emissions-reduction/carbon-capture-use-storage)>.
[35] Australian Government, 'Carbon capture and storage method' (Web Page, 31 August 2022) < https://www.cleanenergyregulator.gov.au/ERF/Choosing-a-project-type/Opportunities-for-industry/carbon-capture-and-storage-method>.
[36] APA, 'Consortium to investigate delivery of low cost hydrogen' (Media Release, 4 November 2021).
[37] Pilot Energy, 'APA Group, Warrego Energy, and Pilot extend mid-west consortium (Media Release, 19 September 2022).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16 November 2023

Strategy Team
Infrastructure SA
GPO Box 2343
ADELAIDE SA 5001
via email infrastructure@sa.gov.au

Dear Strategy Team,

Re: South Australia's 20-year Infrastructure Strategy discussion paper feedback

Thank you for the opportunity to provide feedback on the South Australia's 20 year State Infrastructure Strategy discussion paper.

The review of this Strategy acknowledges the need to continuously optimise and coordinate the State's infrastructure needs. ATCO considers that energy infrastructure will play a central role over the next 20 years as we progress towards the target of net zero by 2050.

ATCO supports the objectives of the new Strategy and sees alignment for energy infrastructure to provide:

- Accessible and inclusive infrastructure that supports social inclusion and economic participation.
- Infrastructure that supports a decarbonised, sustainable economy that capitalises on our competitive advantages and opportunities.

In summary, the key concepts ATCO would like to see considered in an updated Strategy are:

- Interaction between electricity and gas markets to create an integrated energy system approach and use of existing gas infrastructure to create efficiencies in the energy system.
- Continued exploration of innovative approaches to accelerate the energy transition and unlock opportunities to decarbonise adjacent sectors in transport, heavy industry and manufacturing.
- Leadership and coordination by government in identifying locations for key infrastructure development to encourage investment and reduce uncertainty.

We have elaborated on the above points in the below response.

How do we maintain an affordable, reliable and secure energy system through the energy transition?

Electricity and gas markets in South Australia are connected and frameworks that explore the development and evolution of these systems over 20 year period are best served by considering the ways an integrated system can deliver efficient and lower emission energy to end users. Interactions between all energy sources can be utilised to balance pressures across all energy infrastructure to deliver efficiencies in providing secure, reliable, and affordable energy. A system wide ecosystem approach could potentially lead to a whole of energy solution that improves overall performance and efficiency for all energy assets at a lower cost to the end consumer. Integrating the outcomes of the

Australian Hydrogen Centre's recent study into the feasibility of blending hydrogen into the distribution network, which was supported by the SA Government could be a starting point in exploring these solutions.

Continued exploration of innovative approaches to accelerate the energy transition, including ways that encourage the development of new energy options to provide secure and reliable energy, will complement existing solutions. Prioritising the ongoing decarbonisation of SA's energy sector will unlock flow-on opportunities in adjacent sectors in transport, heavy industry, and manufacturing. South Australia – with its strong penetration of renewable energy compared to other jurisdictions – has a unique opportunity to explore and benefit from opportunities to couple clean energy with broader decarbonisation priorities in the hydrogen sector, as well as through green exports and commodities. Capturing these opportunities will rely on the continued collaboration of government, the private sector and local communities, and the updated Strategy provides a forum through which a longer-term horizon can be engaged on by all relevant parties.

Energy storage will play a vital role in helping South Australia transition to net zero. All forms of storage will be needed to meet varying energy demands. The technology used to meet this storage need will be determined on a case-by-case basis to meet the function required. Batteries as well as the use of hydrogen could play a role to meet storage needs. ATCO agrees with the CSIRO's observation that the immediate capacity gap is mainly for short and medium durations. While existing technologies can supply storage at these durations, there are barriers to uptake that make meeting the requirements difficult[1].

Signals and incentives are needed to encourage investment across a range of storage types in the near term to ensure adequate storage capacity is developed and available to contribute to emission reduction commitments. Constraints currently impacting on the development of storage include identifying and accessing land with the right characteristics to optimise storage potential and network connection. Storage development needs to be considered in conjunction with transmission and distribution to help optimise network developments and create an environment conducive for investment. Policy leadership by the government to identify appropriate locations with the right characteristics, as achieved in the Hydrogen Jobs Plan, reduces uncertainty and creates an environment for investment. It also creates the opportunity to integrate training to further economic development in identified locations.

How can we think differently about infrastructure investment to support equitable access and a more inclusive society?

Infrastructure investment in strategic locations has the potential to have a significant impact on the local community and economic prosperity as our economy and industries decarbonise. ATCO acknowledges the foresight of the SA Government in its Hydrogen Jobs Plan to utilise this investment to reinvigorate the regional town of Whyalla. This approach should be considered more widely to influence the locations of other significant infrastructure investments in the state.

Recognising the value of incorporating priorities and development needs of communities, improve environmental outcomes and deliver inclusive economic growth benefits should be used by governments to help direct investments and partner with businesses well equipped to deliver and nurture these outcomes over the longer term. This can be realised by encouraging developers, owners and operators to consult on and implement community benefit sharing plans, alongside First Nations engagement and partnership strategies, which look to collaboratively build economic and socioeconomic capability over the long-term in conjunction with host communities, all levels of government, and other private players.

[1] CSIRO (2023) Renewable Energy Storage Roadmap, p 14

About ATCO

ATCO is a diversified energy infrastructure business and has been operating in Australia to provide employment opportunities for over 60 years. Our business interests in Australia include ownership and operation of Western Australia's largest gas distribution network, power stations in Karratha, WA and Osborne, SA, an interest in a 325 MW pumped storage hydro project in Central West New South Wales and investor and developer of hydrogen production facilities. We are keen to bring our global transmission capability to the Australian market to assist in the energy transition.

If you have any questions or would like to discuss this issue, please contact Kiran Ranbir, Manager Energy Policy and Government Strategy on [redacted].

Yours sincerely

[redacted]

John Ivulich
Chief Executive Officer and Country Chair

From: Megan Burke <[redacted]>
Sent: Monday, 13 November 2023 5:51 PM
To: Infrastructure SA
Subject: Submission - South Australia's 20-Year State Infrastructure Strategy -

[redacted]

Hello,

I would like to make a submission in response to South Australia's 20-Year Infrastructure Strategy.

I understand submissions close today (the online form has already closed).

While I am New Zealand based, we are a trans-Tasman team and I am submitting on behalf of Downer's Transport and Infrastructure business unit. Our business is very active in South Australia, and we appreciate the opportunity to respond.

Please acknowledge receipt of this email.

Responses to select questions:

Section 4.4 - Our productivity challenge; Q1 - What opportunities should we consider to improve South Australia's economic growth?
A consistent work pipeline to maintain skilled workforce employment both within the industry and within the state will improve state economics. Currently the peaks and troughs of work are not conducive to maintaining a consistent workforce manning level. Compounding this - in the current labour market - is when that this workforce is stood down, there are a high percentage of employees that leave the industry.

Another area that stifles growth is the amount of red tape. Whilst there have been some good work in this space it needs to go further. For example rigid specifications, conservative culture and processes and licencing requirements that restrict innovation and growth.

Section 6.5 - Education and skills; Q11 - How can infrastructure support improved education and skills outcomes for South Australia?
Coupled with the effects of Q1, a skills drain from the industry though retirement from the industry and career changes have limited expedient escalation of base level staff to deliver works when the peaks hit. In addition to this major projects across the country have created a shortage of project management and supervisory staff to help support such delivery requirements.

The civil construction sector has lost significant skills through retirement and employment sea changes. The Federal Government has not classified the civil construction sector as a sector that has a skills shortage. This means that funding for training, VISA accessibility, etc. are not readily available. Redirecting the Civil Industry Training Board Levy into this area would assist growth in skills rather than the traditional building trades areas.

Section 8.1 - Green industries; Q15 - What infrastructure investments will support industries to transition to a global net zero future?
Whilst SA has been a leader in sustainable funding initiatives and redirecting waste streams has made significant inroads, repurposing waste streams into a form for reuse in many cases comes at a cost.
There are forward thinking customers that will pay the premium, there are others that will not. Low carbon products are available to replace virgin derivatives but are sometimes not taken up due to the additional cost. This means that that the investment in developing these products to market such as Reconophalt suite of asphalt products is soured and its benefits not fully realised due to poor uptake.
If end users could be incentivised to utilise lower carbon products this could offset the producer costs, which would reduce as volume as use of sustainable products increase.

Whilst current policies support the transition to a global net zero future, the reality is these are not valued as part of valued offerings reverting back to bottom line pricing as the deciding factor.

Section 8.4 - A circular economy; Q18 - What action is needed to achieve a circular economy in South Australia?
Currently the industry is working towards providing more sustainable products and services. Technology is evolving opening additional avenues to provide more sustainable solutions. In some cases these are overlooked by state government due to the rigidity of specifications and perceived risk in using these products. This is in contrast to the work being done in the local government sector where there is more of a willingness to try new products and processes in this area.

Innovation is spoken about but to innovate requires shared risk, more often than not, this restricts these opportunities being taken up as the customer takes a more conservative approach.

In summary, the products and services are available, but the market is not as open to them as it should be given the amount of sustainability-focused conversation behind it.

Section 9.1 - Planned resilience; Q20 - How do we better account for the impacts of climate change in our infrastructure, to support improved resilience?
It is clear the frequency and severity of extreme weather events are increasing. The use of different pavements configurations could reduce the impact. For example:
- Flood damage: The use of bound pavement to provide more resilient design to better withstand these situations
- Extreme heat: higher melting point binders to counteract this. Also reflective surfaces to reduce pavement temperatures.

Section 10.1 - Planned pipeline; Q23 - How can government and industry work together to support the supply of skilled labour needed to deliver a transparent infrastructure pipeline?

Whilst there has been an unprecedented volume of work available in the road sector to date, this has recently been closed off due to limits in Federal funding. Where organisations have trained and developed skilled workers, these workers in a market where the volume of work has declined and where labour in other sectors is in demand, move to other industries and more often than not do not return.
Workflow peaks and troughs need to be smoothed out to provide a more consistent pipeline of works that can keep this workforce employed in this industry.

Compounding this is the large scale major project in the forward pipeline. While this will provide work for those involved, there will be an equal number of organisations who will be outside of these projects who - due to the funding required for these large scale projects - will be facing a significant reduction in work. This will create a 2-speed infrastructure economy (major projects vs consistent ongoing maintenance work) having far-reaching effects, including labour availability and migration from the small organisations.

More support is required for the civil construction to identify the critical skills needed and provide support to those rather than the current blanket approach to educational funding by the State government.

It is worth mentioning that DIT have been very proactive and transparent in communicating their future work pipeline and knowing the pipeline - good or bad - has provided organisations with information well before the event.

Section 10.3 - Effective procurement; Q25 - How can government continue to encourage collaboration and innovation in procurement?
Whilst innovation is supported, it is not normally considered unless the tenderer is one of the lowest bidders under their conforming bid submission. This poses an issue when a conforming bid is not seen as viable solution yet still needs to be submitted. Being clear, honest and transparent about non price attributes in tender assessment will drive improvements.

Placing a price on carbon could assist this approach

We support the procurement approaches to alliances and early contractor involvement by the government as they have assisted in providing better project outcomes in our experience.

Thank you for the consideration of this feedback.
We look forward to the next stages of SA's infrastructure strategy development.

For any further detail, please contact me on the details below.

King regards,

Megan

Megan Burke
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egis

EGIS FEEDBACK / NOV 2023

IN CONFIDENCE

SOUTH AUSTRALIA NEXT 20-YEAR STATE INFRASTRUCTURE STRATEGY

Consultation Closes: 13 November 2023

InfrastructureSA

Document information

GENERAL INFORMATION

Author(s)	David Gardner, Richard Wen
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V01	13-Nov-2023	Abel Son, Paul Bennett

RECIPIENTS

Name	Organisation
Tara Hage, Manager Strategy	Infrastructure SA

TABLE OF CONTENTS

INTRODUCTION

Egis is pleased to present Infrastructure SA this feedback on the South Australia's next 20-Year State Infrastructure Strategy.

To inform the development of the Strategy, Egis framed its recommendations according to the series of questions associated to the six key objectives described in the Discussion Paper.

Egis' suggested initiatives relate to the Chapters listed hereunder and a final section have been added to reference the supporting evidences that helped develop our propositions.

- Chapter 5
  - Section 5.1 - Freight and supply networks
  - Section 5.2 - Water supply
  - Section 5.4 - Digital connectivity
  - Section 5.5 - Resource exports
- Chapter 6
  - Section 6.1 - Coordinated planning
  - Section 6.3 - Public transport
- Chapter 8
  - Section 8.1 - Green industries
- Chapter 10
  - Section 10.3 - Effective procurement
  - Section 10.4 - Funding and financing solutions

We assure Infrastructure SA of our enthusiasm to be involved in this consultation and to be instrumental in the assessment of the State's infrastructure needs, strategic goals and priorities and by so doing participate to its economic growth by 2045.

We would appreciate the chance to continue supporting Infrastructure SA and gathering additional ideas, potentially among the chapters not yet covered thus far.

Meanwhile, we would welcome the opportunity to discuss our submitted feedback and provide any clarification that may be required.

For further information about this submission, please contact:

David Gardner
SA Manager - Omada Rail Systems
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[redacted]

CHAPTER 5 – ENABLING INFRASTRUCTURE

Section 5.1 Freight and supply networks

Question 2 - What infrastructure constraints are preventing a more efficient, accessible, and productive freight sector?

***Increased Freight Network into Adelaide Target with net zero emissions*.**

Create a new Rail and Road bypass around Adelaide, removing the need for freight services to travel from Murray Bridge through Adelaide Keswick, Islington and Kilburn to the North.
Create new freight terminals north (Two Wells/Mallala) and south of Adelaide (Murray Bridge/Mintaro) similar to The Australian Government owned, National Intermodal Corporation's Intermodal freight model new existing sites at:

- Beveridge - Victoria,
- Rocky River - Victoria
- Somerton - Victoria
- Moorebank – New South Wales
- Riverina (Wagga Wagga) New South Wales

Working with other states to create an integrated National freight logistics system where all interstate freight is moved by rail.

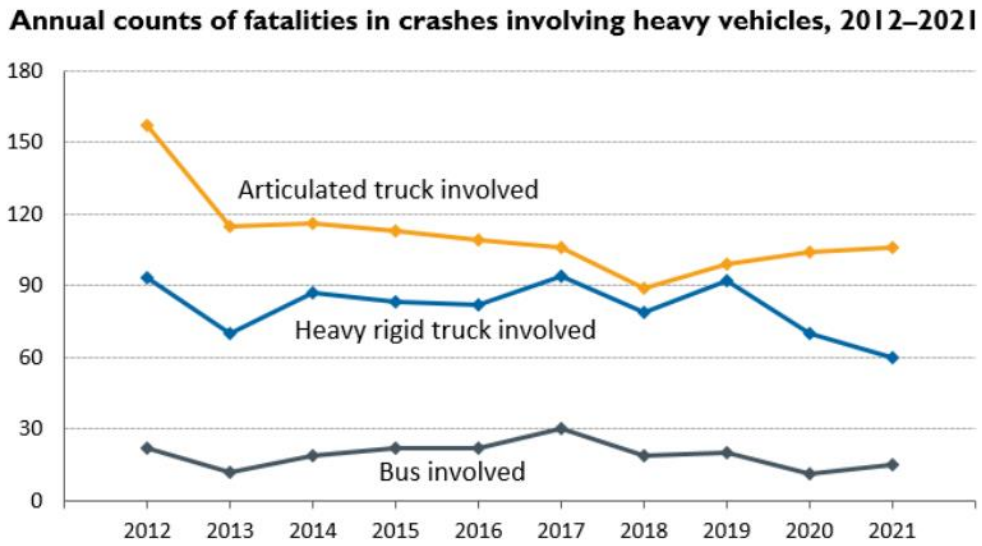
Benefits

- Land release of existing terminals at Keswick Yard and Islington / Kilburn gives the State Government the potential to utilise the land for affordable housing, utilise existing transport services and increases patronage on current ready rail networks. Appendix 1
- State government support may be available to implement an intermodal hub in these areas
- Creation of jobs and services in regional areas leading to opportunities of growth in housing and investment
- Increased availability, capacity and markets and reduced costs for transporting South Australian goods and products leading to a resilient and flexible rail-freight network
- Reducing the reliance on road transport reducing congestion, emissions, road maintenance costs whilst increasing road safety. Appendix 2
- Utilising new signalling systems that are designed with built in resilience, preventing environmental or external issues impacting the network.

Appendix 1

The land within the marked area would be available for redevelopment for community housing schemes or sold to fund other government projects.

Appendix 2



Source the Department of Infrastructure Transport, Regional Development, Communications, and the Arts. Road heavy vehicles safety. Statistical report 01/2023

Re-open Regional Grain Networks to Eyre Peninsula, Pinnaroo and Lameroo

The opening up of the regional rail network would create the availability of a high-capacity low-cost transport solution to move goods efficiently direct from producers.

Benefits

- Removal of heavy trucks from regional roads reducing traffic congestion, emissions, road maintenance requirements, and improving road safety on regional roads.
- Reducing transport costs would increase the profits for the producers. Global demand for Australia grain is high and pricing is a premium.

- Creation of jobs in rural areas
- It would also be used to provide new public transport services to rural areas. Creating more transport options would improve the standard of living for rural communities and promote regional growth.
- They could also be used to promote tourism in regional areas bringing increased revenue to the area.

Adelaide Metropolitan Train Network Expansions

Utilise the current ARTC Adelaide to Melbourne freight line corridor freed up by the new Adelaide North Connector to create an express rail service to Mount Barker with a new park ride facility at Totness.

Benefits

- Mount Barker and surrounding areas would have metropolitan rail line for services into Adelaide CBD
- Reduction in carbon emissions, removal of commuter movements on local roads easing congestion on the South Eastern Freeway
- Express services required at peak times as service to Belair accommodates all other stations. Review of timetabling would be required to expediate services.
- Increased patronage would bring greater income for State Government
- Increase tourism in the area boosting the local economy.

Freight Network Hydrogen Re-fuelling Terminals

Transitioning diesel freight fleet to hydrogen or hydrogen/battery hybrid locomotives.

Benefits

- Promoting the use of hydrogen will lead to more production, capacity and create a need for an expansion of production plants creating more jobs and opportunities. The more hydrogen is used the more investment there will be into production, improving efficiency and new ways to produce it.
- Reduction on emissions moving the state closer to Net Zero
- Reduction in the reliance on oil and fossil fuels allows more self-reliance and reduces the dependency on imports and impacts caused by fluctuating prices over which we have no control.
- South Australia already has two Hydrogen generation plants a growing need would require improvement to existing plants or new bigger plants creating more jobs.

Section 5.2 Water supply / Section 5.3 Energy transmission

Question 3 - How can we enable a sustainable and affordable water supply into the future?

Question 4 - How do we realise the opportunities and mitigate risks with transforming our transmission and distribution infrastructure for the future?

New Dam

Creation of a new dam on the Murray this could be used to regulate the flow (Keeping a constant flow downstream even if the supply into the dam is reduced from limited flow from other states)

The dam could also be used as a source of water to be pipelined to new townships providing water for domestic use (cheaper and easier than desalination for drinking water) industry and agriculture.

Hydro electric generators could be installed to assist with the production of green electricity within the state. Creation of construction jobs building then maintaining the dam. Tourism opportunities for sport and recreation. Creation of a new holiday resort?

Section 5.4 Digital connectivity

Question 5 - What are the barriers to increased adoption of digital technology to improve productivity?

Satellite communications network

With South Australia now having a Space Centre they should be able to build and launch a satellite communications network (Similar to Starlink) this would be able to provide unrivalled internet which would be available to every part of South Australia. This would provide high speed, low latency, secure and stable network could be Australia wide generating a very healthy income for the state.

This would generate jobs, attract new business statewide, allow the state to become an industry leader. Whilst also providing uninterrupted connectivity for any emergency events allowing for the better response and management.

Improved communications allow for the devolution of businesses creating opportunities in regional areas. This would in turn promote growth in these areas leading to the creation of jobs, new housing, commerce, and greater prospects for the local populace, while boosting the local economy.

Section 5.5 Resource exports

Question 6 - What investments could unlock the value of South Australia's resources?

Deep-water harbour

Creation of a deep-water harbour to enable direct loading of minerals and commodities from the ports and connect them direct to the mine with their own dedicated rail line.

This would have the benefit of once complete reduced transportation costs so bigger profits, creation of jobs to build the port and rail connections, then the ongoing staffing and maintenance, creating growth in the local area.

CHAPTER 6 – LIVEABLE AND WELL-PLANNED PLACES

Section 6.1 Coordinated planning

Question 7 - How can South Australia better coordinate infrastructure investment to support a growing population?

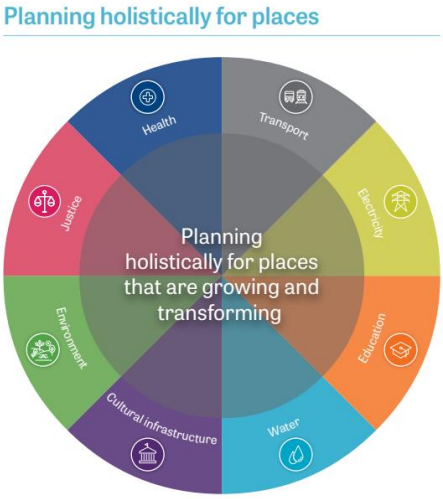
Place-based Infrastructure Compact

South Australia can consider implementing a 'Place Based Infrastructure Compact' as a planning model that aligns growth with infrastructure and services to transform areas.

As an example, NSW has implemented a similar planning framework which introduces the idea of the Place-based Infrastructure Compact (PIC) model (through A Metropolis of Three Cities). The model responds to the increasing costs to government and the community in providing infrastructure and services to support growth.

In NSW, the PIC is a strategic planning model that looks holistically at a place to better align growth with the provision of infrastructure and services. It's a collaborative way for government agencies, utility providers and local councils to answer critical questions for transforming areas:

- Can existing infrastructure be extended or improved, or is new investment needed?
- What will it cost?
- How can it be funded?
- When and where should it be delivered?
- How will this benefit people into the future?



The PIC model has three main components:

- A collaborative approach across government agencies, utility providers and local councils
- A six-step method integrating housing and job growth forecasts with the infrastructure needed to support them
- A digital and data tool to collect and help analyse a broad range of information from many different sources.

Case Studies from other state(s)

Case Studies	Description
Greater Parramatta and the Olympic Peninsula (GPOP)	As one of the fastest growing areas in Greater Sydney, GPOP will continue to be a major generator of new jobs and housing in the future. For GPOP to reach its potential it must become more liveable, productive and sustainable as it grows. Working with 20 government agencies, utility providers and Parramatta City Council, GCC completed an 18-month pilot of the PIC. The result was a clear understanding of what is needed, and the costs to support growth and create great places for the community and businesses. The PIC was exhibited in November to December 2019 and feedback received was summarised in a Consultation Outcomes Report.
Western Sydney PIC Program – Initial PIC Area	The Western Parkland City is growing and there is a need to think carefully about what, where and when infrastructure is needed for people who live, work, play and do business in the city. As a commitment in the Western Sydney City Deal, GCC led the delivery of the Place-based Infrastructure Compact (PIC) program for the initial PIC area covering 36,000 hectares of land in the centre of the Western Parkland City. Working with more than 30 government agencies, utility providers and councils, the GCC completed a two-year PIC comprising of three key areas for future growth: ■ The Western Sydney Aerotropolis Growth Area ■ Greater Penrith to Eastern Creek ■ The Austral to Glenfield corridor. The PIC was exhibited in November 2020 to February 2021 and feedback received were summarised in a Consultation outcomes report
Macquarie Park Innovation District	The Macquarie Park Innovation District is situated to the northwest of Sydney's CBD. It is the largest non-CBD office market in the country and the fourth largest employment centre in Greater Sydney. We led the development of the Macquarie Park Strategic Infrastructure and Services Assessment (SISA). The SISA used key steps from the PIC model to strategically understand the infrastructure and services needed to support both recent and future growth and change across the 350-hectare district.

Section 6.3 Public transport

Question 9 - How can we improve public transport services across Adelaide and outer metropolitan areas to encourage greater patronage?

Extension of Southern Rail Lines to facilitate expansion of Southern Area to increase patronage on Southern Lines

Benefits

- Southern Vales area of Adelaide area is seeing continuous growth in population, expansion of rail network will alleviate commute from area to work areas, reducing traffic on Southern expressway and create liveable and well places communities.
- Increased patronage would bring greater income for State Government
- Increase tourism in the area boosting the local economy.

Extension of Outer Harbour line into Osbourne Shipyards

A new station (interchange) could be added at Dry Creek to allow passengers from the existing broad gauge network board standard gauge services to Osbourne

Benefits

- AUKUS partnership predicts additional workforce for the 20 – 30-year project will increase to 5,500 people into the Osbourne Terminal, transportation of staff required for the project with additional staff employed in the area will have rail transport for daily commute.
- Reduction in carbon emissions, removal of commuter movements on local roads from Victoria and Port Road
- Creation of jobs building the new infrastructure, improved rail maintenance requirements and staff for new rail services
- Hydrogen/hybrid or overhead electric powered services would provide Net Zero solution.
- Passenger route could be extended to Outer Harbor port to provide transport link for shipping and also for tourists from cruises giving them the option of heading towards Gawler and the Barossa

Note: Bring back rail services in the Barossa this would improve tourism in the area both from Adelaide locals and visitors, bringing tourists into the Barossa and its surrounding areas boosting the local economy with all the benefits that brings.

Call it the wine train and have the locomotive shaped like a wine bottle? Make it a memorable gimmick people would want to come and be a part of. Get the wineries involved both in support for building the line (They have already said they will support it) and they could have their own themed carriage on the train. Build it up to become as much a part of Adelaide as the Fringe!

With so many wineries easily accessed from the train line and the local towns to call into this train could generate so much to the area. You can enjoy a day out sampling the delights then be transported back to Adelaide you wouldn't need a designated driver!

Adelaide Airport Rail Connection

Adelaide Airport has no connection to rail, currently all travellers are utilising road vehicles to transfer between airport and CBD. Restrictions around current access for light rail to the airport to the CBD are constrained, large land acquisition would be required to accommodate rail service.

Utilise the tunnel boring machines for the Torrens to Darlington Project for a light rail tunnel from Adelaide Airport to Mile End CBD where the tunnel can emerge and the rail to connect to existing Adelaide Metropolitan network.

Benefits

- Additional income for the state government as passenger services would be high due to the service offered.
- Reduction in carbon emissions, reduction of vehicles from local roads
- Re purposing of Tunnel Boring Machine for additional project, cost effectiveness.
- No land acquisition required as service is underground.
- Current Adelaide Rail fleet will be able to run on the new connection, no additional cost required.
- Electrify the new connection to reduce carbon emissions and increase efficiency.
- Creation of jobs, staff from Torrens to Darlington project to flow onto the new connection project
- Land release from removal of freight services at Keswick Yard enable the connection from the tunnel to Adelaide Metropolitan Network seamless.
- Project delivery will align with re-signalling of current Seaford interlocking which will be outdated when project is due to commence.

Public Transport Timetables

Remodelling of current train timetables to introduce express train running into and from Adelaide CBD during peak times, look at the potential to introduce passing loops on existing rail networks.

As an alternative to duplicating the Gawler line to improve the commute times. Reduce the amount of times the trains have to stop. Only stop the trains at 'Main' express stations. Run buses or build a shuttle train line to service the intermediate stations which deliver passengers to the 'Main' stations. Currently there is the space to build service roads or an automatic autonomous rail line next to the existing railway to provide this service.

Reducing the number of stops would allow all trains to run 'express' and be unaffected by the current 'stopper' services which can cause delays, preventing on time running.

A far more punctual service would allow for better interfaces between transport methods creating punctual services which in turn would lead to improved patronage.

Similar methods could be looked at for the rest of the network which would provide the same improvements.

6.6 Cultural, tourism, and recreational facilities

Question 12 - How can we sustainably grow these sectors to realise greater benefits for visitors and residents?

Ferry Terminals

Creation of three new ferry terminals one in Adelaide one on the Yorke peninsula and one on the Eyre Peninsula. (include Kangaroo Island)

These would create multiple jobs with the ports and ferries but would also boost tourism in Adelaide and all of the destinations. As well as improved port facilities along with an expanded and improved transport network making it easier for tourists to get here then explore.

Get the overnight ferry from Adelaide, wake up, have breakfast on board then ready to explore your destination without the drive.

CHAPTER 8 – A DECARBONISED, SUSTAINABLE ECONOMY

Section 8.1 Green industries

Question 15 - What infrastructure investments will support industries to transition to a global net zero future?

Glass recycling plant

Current studies into plastic and the pollution it causes and its risks to health points to a need for a replacement. A return to glass which is easily recyclable (but is not as robust, heavy thus costs more to transport) would be a temporary solution as the 10c recycling means that little glass is lost. However, funding research (from the many top universities in SA) into producing new products either from using existing waste or from a completely new low cost, zero emission 100% recyclable product should be encouraged. If a product is created it that could be used worldwide the benefits far outweigh the costs.

CHAPTER 10 – A STRONGER INFRASTRUCTURE INDUSTRY

Section 10.3 Effective procurement

Question 25 - How can government continue to encourage collaboration and innovation in procurement?

Encourage Alliances models and Interactive Procurement

An alliance contract approach – is suited to large scale and technically complex projects and fosters value for money outcomes through supporting innovation, taking a shared risk approach, by providing flexibility around scope challenges and scheduling, by adopting a one team approach to problem solving and through skillful management of complex stakeholder, cultural and environmental needs. When the government is familiar with the alliance contracting model, it can efficiently and effectively partner with Proponents to achieve high quality outcomes. Further, through the recent rounds of market sounding, participants have identified this approach as a preferred approach for project delivery given the complex technical nature, high risk and complex interfaces of the Project.

The following key elements of the project's procurement contribute to achieving a value for money outcome:

- A Performance Management framework – to allow holistic measurement and monitoring of key elements of the project, including measurement of the desired business case benefits to ensure the project performance, ensuring that Proponents are designing and delivering infrastructure that optimises ongoing operating and maintenance resource and cost efforts (i.e., whole-of-life considerations).
- Implementing the Benefits Management Plan (BMP) – is essential to measure performance, deliver the widest possible benefits to society (and not just financial ones), provide value for money to the public, and create a worthy circle of lessons learned and shared. Continual monitoring of the BMP throughout the lifecycle of the project is required to ensure that the benefits defined in the project initialisation phase and Business Case are on track to be delivered.

Interactive Procurement	Description
What are the benefits	■ Improve private sector proposals, which should ultimately deliver better value outcomes for the State. ■ Minimise the risk of Proponents misunderstanding the State's requirements. ■ Promote collaborative exchange of information to ensure Proponents are able to deliver their best proposals.
Case Study: Alliance procurement on the Torrens to Darlington (T2D) tender	Egis, as part of the ConnecT2D Alliance is currently preparing a joint bid for the Design, Construction and Maintenance of assets of the future 10.2 km of Tunnel that will be running underneath the city of Adelaide. Thanks to the two Interactives sessions every week with Department of Infrastructure and Transport, Egis makes sure of the timely achievement of the key Project milestones with minimised disruptions to the transport network, businesses and the broader community, safety outcomes achieved, optimising industry participation in delivery of the Project and delivering sustainable industry growth to support the South Australian economy, as well as timely handover of assets.

Section 10.4 Effective procurement

Question 26 - What are the funding and financing options government should consider in future, to ensure its infrastructure program remains affordable and sustainable?

Innovative funding strategies

SA may consider the following funding options available to ensure its programs remain affordable and sustainable

- Development of funding using net proceeds of asset sales and other windfall gains
- Reduction of public transport subsidies – in alignment with regulatory determinations
- Tolls on new and upgraded transport links
- Limited reprioritisation of current capital plans
- Value capture from beneficiaries of new infrastructure where feasible.

EVIDENCES

- *Beveridge intermodal precinct land acquisition - Rail Express*
- *Work set to start at Somerton intermodal hub - Rail Express*
- *Moorebank interstate terminal on track for 2024 - Rail Express*
- *Riverina intermodal open for business - Rail Express*
- *https://www.barossawinetraincampaign.com/*
- *https://www.infrastructure.nsw.gov.au/media/v0oefego/sis_report_section160_print.pdf*

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13 November 2023

Jeremy Conway
Chief Executive
Infrastructure SA
GPO Box 2343
Adelaide SA 5001

Email: infrastructure@sa.gov.au

Dear Jeremy,

Re: Submission – South Australia's 20-Year State Infrastructure Strategy

ElectraNet is pleased to make this submission to Infrastructure SA in response to its Discussion Paper for South Australia's 20-Year State Infrastructure Strategy. This reflects our ongoing discussions with Infrastructure SA and its support for the transmission network developments we have identified as strategically important infrastructure priorities for the State's economic future.

Consistent with this, the Discussion Paper identifies South Australia's electricity transmission network as an essential enabler in the transition to a net zero emissions future and in supporting the South Australian Government's economic priorities.

South Australia remains at the forefront of the transition to a clean energy future and is on track to 100 per cent renewable energy on an annual basis by 2026-27. This supports the South Australian Government's goal of reducing state greenhouse gas emissions by more than 50 per cent below 2005 levels by 2030.

With its high penetration of renewable energy South Australia is positioned as an increasingly attractive destination for investors seeking to access low emission energy, including green industries, mining projects and hydrogen developments.

This is driving a huge upsurge in demand that must be met with timely supply and network solutions. South Australia has an abundance of renewable energy resources to meet increased demand that can be unlocked with additional capacity in the transmission network.

South Australia's electricity transmission network is an essential enabler in the transition to net zero and in supporting the South Australian Government's economic priorities.

Our Transmission Annual Planning Report released on 31 October 2023 has identified AEMO's Integrated System Plan projects, Mid-North Renewable Energy Zone Expansion and South-East Expansion, as critical projects for South Australia to fully capitalise on the global green transition.

Timely action on these priority projects is essential to meet South Australia's energy needs to support the state's economic growth and deliver a least cost energy transition to net zero.

The submission sets out our recommendations in the context of the State Infrastructure Strategy to ensure South Australia develops this transmission infrastructure to safeguard our energy future and underpin the State's economic transformation in the transition to net zero.

Towards Net-Zero

The pace of the transition to renewable energy and decarbonisation of the economy has consistently exceeded expectations.

ElectraNet has connected over 3,000 MW of wind and solar generation to the transmission network and over 500 MW of Battery Energy Storage Systems (BESS) to date. An additional 2,000 MW of rooftop solar generation is connected at customer premises, which now represents the largest generator in the State. These figures compare with current average grid demand of approximately 1,400 MW and maximum demand level of 3,300 MW.

ElectraNet is currently supporting almost 3,000 MW of formal connection enquires and applications to the South Australian transmission network and a potential pipeline of up to 20,000 MW of new connections, including renewable generators, energy storage and loads, seeking to provide and access low emission energy.

Renewable energy sources at a grid-scale and in homes and businesses continue to replace thermal generation such as gas. This is also displacing the system services provided by traditional generation sources and leading to falling levels of minimum grid demand, reaching -32MW in October 2022 and expected to fall further in the coming years.

This ongoing investment in renewable energy places South Australia on track to reach 100% net renewable energy within the next 5 years.

However, additional renewable generation development and new network solutions will be required to meet the rapid increase in demand that will underpin South Australia's transition to net zero.

Demand Outlook

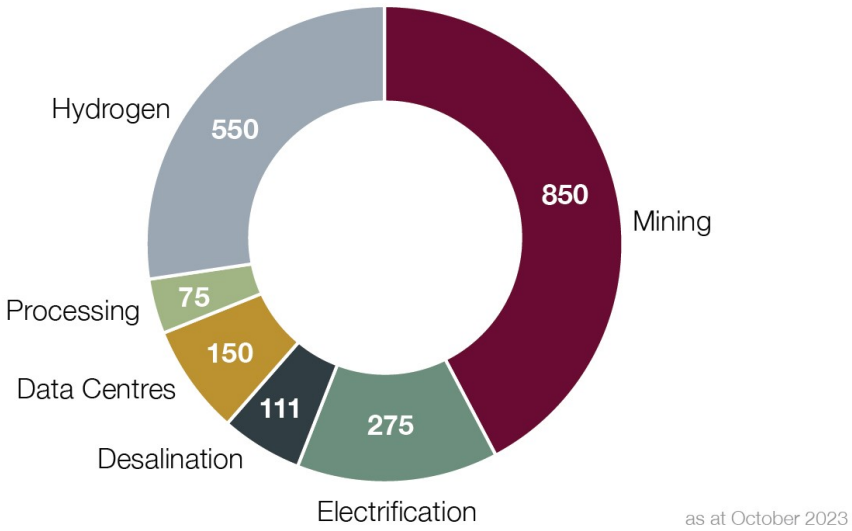
South Australia is experiencing a rapid and material uplift in its electricity demand. Key developments driving a significant potential increase in demand include:

- The development of hydrogen facilities near Whyalla and other large hydrogen hubs in accordance with the South Australia Government's hydrogen strategy
- The development of large iron ore mining operations and the production of "green steel" in keeping with South Australian Government's Magnetite Strategy
- The potential connection of large new customer loads such as new expanded mining operations, new industrial loads and other energy-intensive projects underpinning the re-industrialisation of the economy, consistent with the South Australia Government's Advanced Manufacturing Strategy.

International and domestic proponents are increasingly seeking to take advantage of South Australia's low-cost and low-emission electricity from renewable sources.

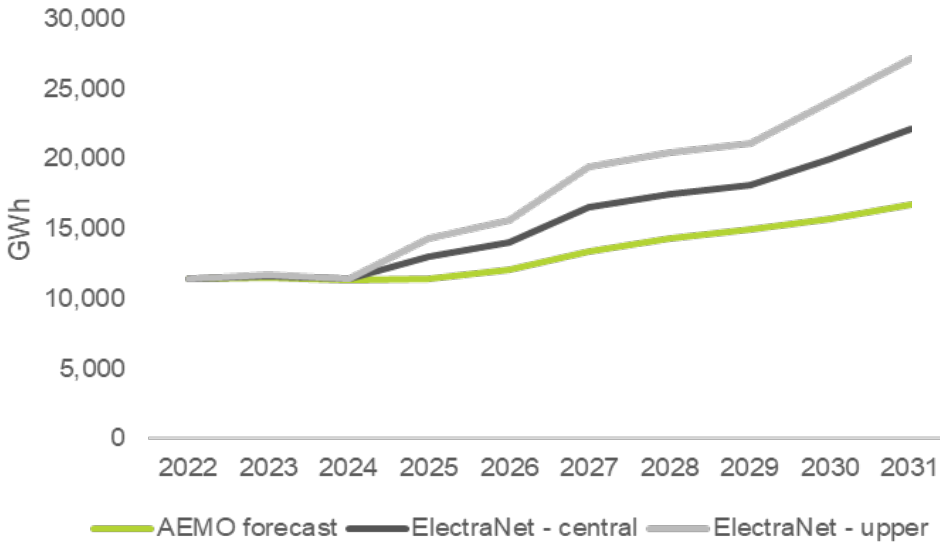
A breakdown of this potential industrial load growth is shown in Figure 1 below.

Figure 1. Breakdown of potential industrial load growth (MW)



On present indications, it is reasonably likely that around 1,000MW of additional load will connect to the transmission network by 2030. This central forecast is illustrated in Figure 2 below (in energy terms) set against AEMO's current step change forecast. The upper forecast shows the outlook if all currently known loads were to proceed.

Figure 2. South Australian Electricity Demand Outlook



Importantly this does not include a range of known loads that have yet to start connection discussions, including those in discussion with the South Australian Government, nor does it include the impact of greater electrification, which could be substantial.

The rapid increase in demand has a material impact on the renewable energy developments and enabling transmission investments required in South Australia. New supply sources must be in place before new demand comes online, and in turn the required network must be in place first.

Supply Options

To meet the significant projected increase in demand above, additional supply will need to come from new sources of renewable generation, supported by energy storage.

The work we commissioned from Energeia for the Department of Energy and Mining also considered the priority development of Renewable Energy Zones (REZs) in South Australia to unlock the additional renewable generation resources that will be needed to provide this clean energy supply.

This built on AEMO's 2022 ISP and considered development cost, delivery risk and strategic leverage for State policy objectives. This work identified prioritised options for development that would unlock renewable generation resources in the Mid North, Riverland, Northern SA, Eastern Eyre Peninsula and South-East.

We understand the *Hydrogen and Renewable Energy Act* will provide for Release Areas to be declared in South Australia to facilitate renewable energy exploration and development in prioritised areas. We continue to work with the South Australian Government through this planning process to support the continued connection of these resources to the network to ensure timely development of renewable supply.

Integrated System Plan 2024

ElectraNet continues to engage in the current 'whole of system' planning process embodied in the Integrated System Plan (ISP) developed by the Australian Energy Market Operator (AEMO) for the National Electricity Market (NEM). The draft 2024 ISP is due to be released in December 2023 and the final in June 2024.

Demand forecasts are central to the ISP to support timely and efficient development of transmission projects and in identifying the optimal development path across the NEM.

AEMO's approach is to require a degree of commitment to be demonstrated before including prospective loads in its demand forecasts[1]. This approach assigns zero probability to loads that do not meet AEMO's criteria for inclusion, even if they are reasonably expected to proceed.

This approach will inevitably understate load growth in a growing demand environment in which growth will come substantially from new large industrial loads.

As shown above, ElectraNet expects there to be significant load growth in South Australia during the 2020s. A balanced view of expected demand is essential to ensure timely and efficient transmission development to meet South Australia's energy needs.

AEMO is required under the National Electricity Rules to consider policies that impact on power system needs. We understand that a number of interstate jurisdictional policies are having a substantial impact on the outcomes of the ISP. This includes the Victorian Government's offshore wind policy which aims to deliver 2GW of wind development by 2032 and 4GW by 2035 and increasing amounts thereafter. We understand this is negatively impacting on the generation development profile in South Australia being modelled in the ISP and in turn on the optimal development path for transmission investment.

As a consequence of both the low demand outlook and jurisdictional policies reflected in the ISP, no actionable transmission developments are expected to be forecast for South Australia in the ISP until the mid-2040s.

[1] AEMO advises that new loads and additional loads will only be included in the central scenario if they have secured environmental approvals, network connection agreements and have announced positive final investment decisions.

Given this position and the rapidly increasing demand outlook it is important that clear infrastructure development priorities and supporting policies are in place to safeguard South Australia's energy future.

Transmission Development Priorities

The rapid increase in demand has a material impact on the speed and quantum of renewable energy developments and enabling transmission investments required in South Australia.

New supply sources must be in place before new demand comes online, and in turn the required network must be in place prior to this.

This is significant as the development of major transmission assets requires at least 5 years from initial planning to delivery. Timely and efficient transmission investment is therefore essential to maintain reliability and deliver least cost supply outcomes for customers.

While there is an element of risk to customers in developing the network before it is needed, there are far greater risks in not having an adequate transmission network when it is needed for new or increased load. It is therefore important for customers that the network is optimally developed in a timely manner, in the right location and the right size.

This underscores the importance of building transmission 'in time' and with enough capacity for future expansion. Failure to adequately plan for transmission could put a handbrake on the South Australian economy, leave its energy security exposed and lead to higher costs for customers.

Timely action is critical to prepare for this expected load in order to meet South Australia's energy needs, support the State's economic growth and deliver a least cost energy transition to net zero.

We have identified the following near-term network development priorities in our 2023 TAPR to meet the emerging supply requirements in South Australia, which require priority action as follows:

- Mid-North Expansion (Southern) - following preparatory activities we have undertaken this project should now be progressed as an 'actionable' project
- Mid-North Expansion (Northern) - this project should now be progressed as an 'actionable' project
- South-East Expansion - following preparatory activities we have undertaken this project should now be progressed as an 'actionable' project
- Eyre Peninsula upgrade - following the completion of Eyre Peninsula Link in February 2023, based on new load interest we are shortly commencing the Regulatory Investment Test for Transmission to investigate options to increase the capacity of the line.

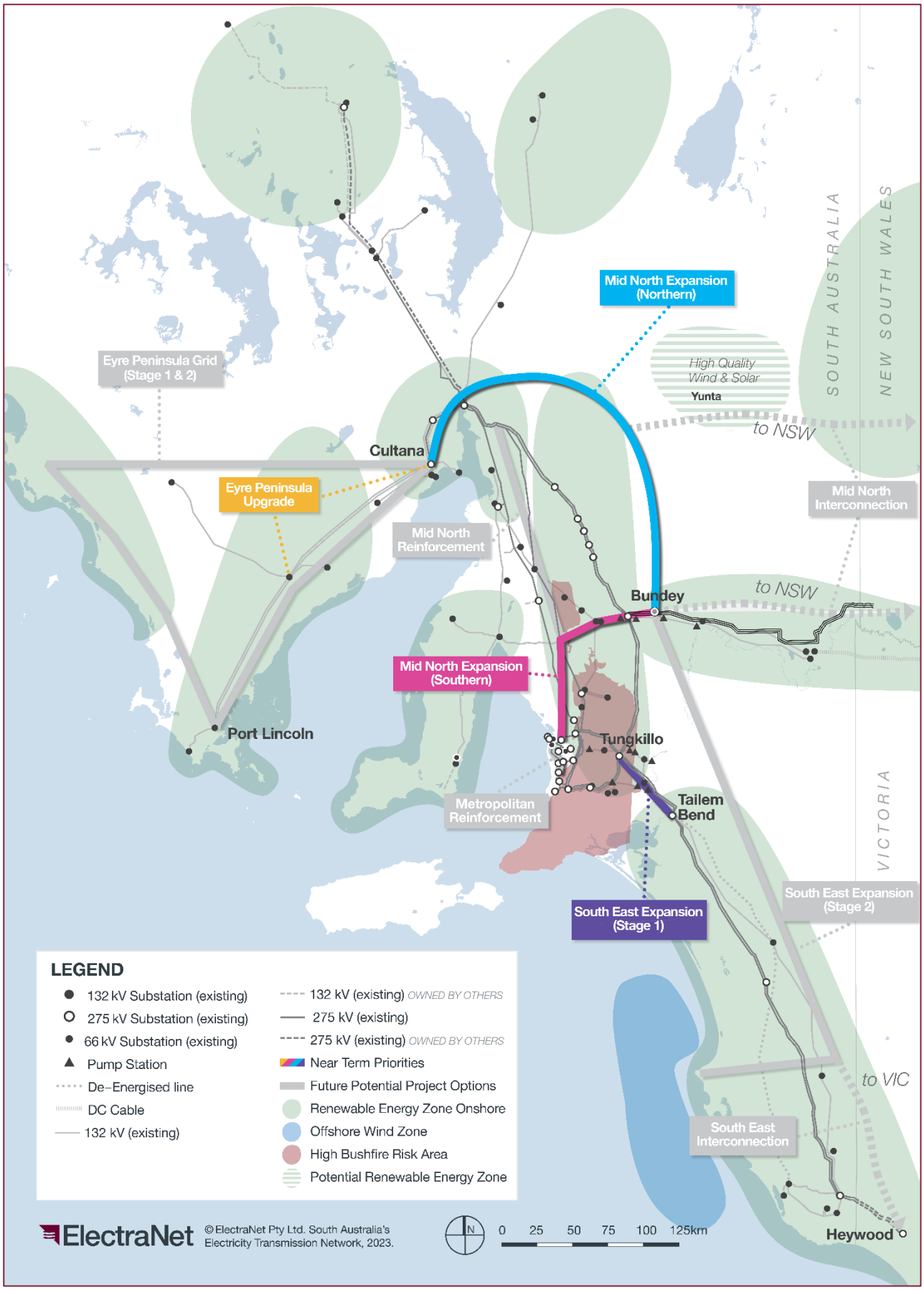
These transmission development priorities are shown in Figure 3 below.

The Mid-North Expansion (Southern) is an essential part of the 'network backbone' and is required to enable higher transfers of renewable energy to meet load growth and ensure security of supply through a diverse transmission path to Adelaide as we become more dependent on distant generation sources. This should commence as an 'actionable' project as soon as possible.

The Mid-North Expansion (Northern) also forms part of the 'network backbone' and is central to achieving the Government's economic policy objectives in meeting demand growth and unlocking renewable energy resources. This should commence as an 'actionable' project as soon as possible as a no regrets measure to ensure this can be developed on a timely basis to support emerging loads and deliver full benefits to customers.

The Mid-North Expansion (Southern) and Mid-North Expansion (Northern) projects will together unlock substantial benefits for the State through enabling industry growth and delivering additional local renewable energy development, which will otherwise be constrained by the current network.

Figure 3. Transmission solutions to meet emerging supply requirements in South Australia



ElectraNet has the proven track record to deliver major projects on time, on budget and in partnership with the community. By the end of 2023 we will have successfully delivered over 1,000 km of new transmission line over the last five years. Importantly, this has been delivered collaboratively with local communities and Traditional Owners, to establish and maintain social licence for this infrastructure. ElectraNet was recently recognised for its demonstrated excellence in this regard as the joint winner together with the Barngarla Determination Aboriginal Corporation of the Premier's Award for Energy and Mining - Community Category, for our successful collaboration on Eyre Peninsula Link, the new 270km high voltage transmission line from Cultana to Port Lincoln.

Disaster Resilience

An outcome of the energy transition is Adelaide's increasing reliance, as traditional generation sources nearby progressively retire, on renewable energy generation sources concentrated in the State's Mid-North and transported to the metropolitan area via existing transmission corridors that traverse the high bushfire risk zones of the Eastern Hills.

This presents a low probability, but high impact risk to security of supply to Adelaide in a major bushfire scenario. Equally, any reliance on greater imports from Victoria over the Heywood Interconnector which traverses bushfire zones carries similar risk. These bushfire risks can also be expected to increase over time with climate change.

An extended loss of supply to the Greater Adelaide area in such a scenario could be catastrophic. Creating a diverse supply path that avoids high bushfire risk zones is one of the important benefits for customers of the Mid-North Southern project.

Infrastructure Strategy Objectives

Infrastructure SA has identified six key strategic objectives to be achieved through its updated infrastructure strategy. Timely and efficient development of the state's electricity transmission infrastructure delivers on each of these objectives as follows:

- *Enabling infrastructure* – transmission investment is essential to meet South Australis's future energy needs and support economic growth as the State transitions to a green economy, unlocking its abundance of low-cost renewable energy.
- *Liveable and well-planned places* – well planned transmission infrastructure in partnership with local communities and Traditional Owners ensures projects are delivered in a manner that builds social licence and minimises impacts on surrounding communities.
- *Accessible and inclusive infrastructure* – delivery of transmission unlocks economic growth in regional and remote areas through enabling mining, hydrogen, industrial and renewable generation developments that benefit these communities.
- *A decarbonised sustainable economy* – timely transmission development is required to deliver affordable, reliable and clean power supply to underpin the economic transformation of the State through the energy transition to net zero.
- *Improved resilience* – the development of more diverse transmission supply paths into the State's major load centres is essential to maintain security of supply and resilience to growing threats such as bushfires.
- *A stronger infrastructure industry* – building on ElectraNet's experience in successfully delivering over 1,000km of transmission lines in the last 5 years, an ongoing pipeline of transmission investment and connection of renewable energy and storage developments to the grid maintains South Australia's capacity to provide for its energy future.

This reinforces transmission development as a key strategic infrastructure priority for the State.

Recommended Actions

Given the importance of timely transmission investment to the State's economic future, we recommend that:

1. The South Australian Government partner with ElectraNet to ensure the timely and efficient planning and development of the transmission 'network backbone' to meet the State's energy needs, support the Government's economic priorities and deliver a least cost energy transition to net zero.
2. The South Australian Government adopt and communicate a firm policy position to AEMO to make all three priority future ISP projects, namely Mid-North Southern, Mid-North Northern and the South-East Expansion, actionable in the ISP under the national transmission planning framework to ensure timely development of these projects aligned with the growth of South Australia's economy as a major enabler for industrial, mining and hydrogen development.
3. The South Australian Government consider low probability high impact scenarios such as bushfire risk and its impact on supply security in planning for the State's future energy needs.
4. Infrastructure SA identify these three priority ISP projects as key infrastructure priorities for the State in its updated 20-Year Infrastructure Strategy and provide ongoing advice and support for the timely and efficient coordination, planning, prioritisation and delivery of this infrastructure to meet the State's future energy needs.

We look forward to continuing to engage with Infrastructure SA as we work with the South Australian Government in supporting the State's economic transformation to 2050.

Yours sincerely

Simon Emms

Chief Executive Officer

Submission – South Australia's 20-Year State Infrastructure Strategy Discussion Paper

November 2023

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Background

Flinders Port Holdings welcomes the opportunity to comment on the *Infrastructure SA (ISA) 20-Year Infrastructure Strategy* Discussion Paper.

Flinders Port Holdings, including its controlled subsidiaries (collectively **'the Group'** or **'FPH'**), is the leading privately-owned port operator in South Australia, handling the vast majority of the State's international imports and exports each year.

The Group delivers its services through the following key operating entities:

- Flinders Ports (FP) is the port operator for FPH's seven owned ports, as well as performing the core marine operations functions for commercial ports at Whyalla, Port Bonython and Ardrossan. In addition to port operations, FP also has a hydrographic survey division, HydroSurvey.
- Flinders Adelaide Container Terminal (FACT) is South Australia's only container terminal operator, handling containerised imports and exports.
- Flinders Logistics (FL), a logistics and stevedoring services provider, with a focus on mineral resources and oil and gas sectors in Australia. FL provides supply chain solutions to South Australian businesses.
- Flinders Warehousing & Distribution (FWD) provides container-related storage and handling services.

Flinders Port Holdings strongly supports the views expressed by Infrastructure SA in its October 2023 Discussion Paper. It is essential that South Australia's existing assets and prioritisation of future infrastructure needs are co-ordinated and managed through evidence-based analysis.

Flinders Port Holdings is explicit that unless South Australia makes strategic infrastructure plans and decisions, there will be detrimental outcomes. In particular, there would be little chance – especially with the current infrastructure base - that the State Government's ambitious plans for its economy and its community be achieved.

FPH remains committed and responsible in managing the assets which provide the safe and efficient sea gateway to South Australia's economic growth and is integral to the State's future.

As such FPH recognises the responsibility it carries to make highly strategic investment decisions that can ensure a future in which it is both financially strong and has technologically sophisticated assets. Anything less is detrimental to South Australia.

Chapter 4 – The Economic context

Section 4.4 Our productivity challenge

The Discussion Paper makes the vital point that the State must play a key role in planning and coordinating the infrastructure and connectivity needed to support economic growth opportunities. Flinders Port Holdings continues to see a fragmented approach to this coordination in that multiple government departments perform elements of State planning in siloed fashions. Essential infrastructure development, such as that which Flinders Port Holdings has been undertaking, does require a cohesive public policy framework to ensure its freight and passenger corridors and services are also upgraded in tandem. The company is looking to the State's 20-Year Infrastructure Strategy to ensure this concern can be addressed.

The ports' ability to move with global changes in shipping is absolutely vital for efficient and long-term sustainability. FPH has worked with State Government to successfully complete major dredging campaigns to deepen and widen the Port Adelaide channel to ensure that the port remains a viable option for larger container shipping lines to call Adelaide which service importers and exporters. Recent trade indicators show the shipping industry has begun to utilise this capacity with larger ships visiting South Australia over the past 3 years. We recognise that there are State based agencies and regulations that govern areas of the port, however as a port operator, changes to State regulations over time is another threat to the ability of a port to adapt to changes in the shipping industry and placing greater emphasis on appropriate consultation is essential.

Chapter 5 – Enabling Infrastructure

5.1 Freight and supply networks

The larger container vessels will continue to grow trade through the Flinders Adelaide Container Terminal. The Terminal will inevitably receive the more efficient but larger tri-trailer container road trains to service those vessels. This requires an infrastructure emphasis to be placed on the quality and location of the most efficient and safe port road links. In addition, further strategic investment in alternate transport modes will be required. If this does not occur, an obvious impediment to the State's three per cent growth trajectory is immediately evident.

The Group recognises the importance of rail for the future development and growth of the ports around the State. This is likely to become increasingly important over time, as can be seen by the growth of other Australian ports where urban encroachment is occurring, and road access has become increasingly difficult as volumes grow, and ports expand their footprints.

The most serious concerns in relation to urban encroachment which comes not just from housing, but rather the nearby Osborne Naval Shipbuilding Precinct, which has re-routed a number of roads that subsequently caused major traffic delays at rail crossings for up to 30 minutes at a time. The closure of unimpeded road access to the Port Adelaide inner harbour bulk and general cargo berths, when considered in addition to the Osborne situation, has meant the main access is now impeded by rail crossing activity impacting on port efficiency into/out of those port areas. This highlights the importance of long-term strategic planning by State Governments on potential changes to road and rail routes to ports and the necessary flow on infrastructure requirements such as grade separations and enhanced supply chain efficiency via improved rail connections.

Attracting major importers / exporters to the State will require investment in major distribution centres that are located in close proximity to major freight routes and port infrastructure. State planning with key stakeholders in these sectors is critical to ensure these enabling factors are not blocked.

The recently upgraded Western Victorian rail network to standard gauge has meant that that network can now connect to the regional South Australian rail network. This not only allows for a sustainable mode shift for cargo that is currently being road transported to South Australia to rail, but also improves access to South Australian import/export pathways. Increasing cargo through South Australian ports would also attract the attention of major shipping lines to Adelaide which in turn provides greater capability to all South Australian importers and exporters.

The rail connection between Pinnaroo and Murrayville and upgrading the Pinnaroo to Tailem bend rail network is vital to this mode shift and freight corridors thriving.

The improvement in productivity in vehicles has also had an impact on regional rail connectivity to regional ports such as Port Lincoln, where the rail line has recently been closed with all grain deliveries to the port now being received by HPV transport. Regional ports must have a symbiotic relationship with its surrounding stakeholders in that this is where the most urban encroachment has occurred over time. Efficiency in supply chains into these ports must ensure social impacts are considered.

Upgrading the Eyre Peninsula rail network to improve long term sustainability of freight movements to Port Lincoln, in particular grain and mineral commodities would be beneficial. Port Lincoln is a deep sea port that has excess capacity for major growth opportunities.

5.2 Water Supply & 5.3 Energy transmission

Key to facilitating trade across the State and through the relevant port is a clear alignment with enabling infrastructure. Ports of export (predominant need for minerals and resources) can be high users of water and electricity. As such, planned growth areas must ensure the enabling infrastructure is available at the right volumes. This enabling infrastructure should inform examples such as the next deep sea port in terms of proximity to an existing network or system.

5.4 Digital connectivity

Delivering meaningful, affordable, and resilient connectivity for citizens, businesses and emergency services; one that is coordinated across government agencies and enables full participation in digital services and systems anywhere, anytime are vital.

SA still has numerous areas with poor or no connectivity with some major freight and rail networks having poor or no coverage which limits expansion opportunities for business.

5.5 Resource exports

The State's planning includes an emerging magnetite sector. Increased development and production of large quantities of iron ore in the State will require a deep sea port, moving away from sub optimal, less sustainable export methodologies (i.e. transhipment). The State must be planning for a logical location where the industry and the State can maximise benefits from such common user infrastructure. Road and rail access to the main rail network in the State is critical to the successes of such a project. The port location and operations are only one component for consideration, preservation of natural freight corridors for all transport modes (i.e. rail, slurry pipe and road) is equally as important.

A deep sea port capability will become critical for sustainable large-scale growth of the mining sector, this planning is critical to ensure alignment with industry, as active participates in enabling these types of critical State infrastructure.

If the Government is able to narrow down or focus upon a specific location for a new deep sea port including provision of road and rail to that location, that will drive choice and options for miners and other economic growth.

Chapter 6 – Liveable and well-planned places

6.1 Coordinated planning

In 2020, Flinders Port Holdings completed its 50-year Port Masterplan encompassing all of the seven ports in FPH's portfolio and is now updating key drivers within this plan. The study continues to provide strategic context and direction for FPH in the management and development of all activities into the long-term for the benefits of the State. It includes an analysis of, and opinion on, what might affect the ports in the longer term from trading and strategic perspectives, and how this future State vision is influenced, both globally and regionally.

The importance of planning and goal alignment with State and Local Government is critical for long term productive service levels in and around port precincts, given adjacent land to the port is critical to the Masterplan development and is managed by third parties. Urban encroachment on ports will continue to be a major threat for all ports, with decisions made on land developments near ports made by State Government or through development assessment. Bipartisan port planning is critical for long term sustainability, and this includes road and rail routes servicing the ports with the need to ensure there is adequately planned port buffer zones between residential and 24/7 operational ports.

Co-ordinated planning associated with high voltage infrastructure and upcoming changes driven through Defence are critical. Overall design and management of key infrastructure in particular on the Lefevre Peninsula at Port Adelaide is critical. Siloed approaches will yield sub-optimal outcomes for the State which may threaten future container terminal growth capacity for the State. Any constraints on enabling port capacity to meet future demand will have a material negative affect on the economic heath of the State.

Ensuring that State Government is engaging freight supply chain participants in planning for the future is critical to avoiding unintended legacy issues and is an enabler for long term benefit realisation.

Preserving key future freight corridors and protecting existing freight routes to key critical infrastructure such as the container terminal and quay line in the inner harbour is vital. Protection from urban encroachment and competing interests that may restrict and bottleneck sustainable future growth in freight supply chain movements in/out of the State i.e. housing next to critical freight routes and major port activity is critical.

Long term planning for key infrastructure enablers such as grade separation between road and rail will become increasingly important for the container terminal as a mode shift between road and rail transport happens overtime.

An improved outcome for government would be the co-ordination of infrastructure planning including a nominated lead agency E.g. Department of Infrastructure & Transport.

6.2 Affordable Housing, 6.3 Public Transport, 6.4 Health and wellbeing & 6.5 Education and skills

No comment.

6.6 Cultural, tourism, and recreational facilities

Investment in partnership with industry, Tourism SA, in the promotion of cruising destinations, improvements in waterside facilities for entertainment and recreation is key to supporting this growing industry.

The COVID-19 pandemic had a significant impact on SA's visitor economy; however, cruising has made a buoyant return with South Australia receiving 103 cruise and expedition ships in 2022-23, bringing 227,900 passengers and crews to our shores. Tourism SA reports that this has seen the economic impact of cruise in our State grow 48 per cent since 2018-19 to $215 million. A record number of visits are scheduled across South Australian ports and anchorages during the 2023-24 cruise season.

Adelaide's Passenger Terminal with its fastest-growing cruise sector in South Australia, is critical infrastructure in this regard. In the cruise season it urgently requires more frequent trains and bus services for our visitors. The basic requirement of a carpark across from the cruise terminal (even if only for cruise season) is also an essential piece of infrastructure that has not been factored into tourism growth statistics; required for the frequent visits to and from those ships by passenger friends and relatives and the general public.

Infrastructure development should consider and provide community amenity where required.

Chapter 7 – Accessible and inclusive infrastructure

7.1 Our regions – A snapshot

7.2 Regional and remote areas

Re-investment in already existing community infrastructure makes sense to continue in providing jobs and economic stability. Additional growth in already established regional ports is directly aligned to the FPH Masterplan and is supported. Support from the State Government to access Federal regional development funding is also necessary to support marginal business cases.

7.3 Closing the Gap

Engagement of local workforce or local businesses is key to ensuring gaps are closed in regional communities. Employment and training programs to support new skills development in particular regional industries may also provide benefits.

Chapter 8 – A decarbonised, sustainable economy

8.1 Green industries

Co-ordinated management of regulated energy supply and enabling infrastructure will be of value.

Balanced incentives to encourage industry investment behind the meter, which could also assist in balancing network within the network will add value.

Installation of additional battery / network management to mitigate the risks associated with load balancing and peak demands during summer months.

Modal shift and balance between road and rail are a key enabler to achieve a better carbon footprint for the freight sector - key infrastructure planning for mode shift is important.

8.2 Decarbonised energy system

Ports play an important role in the State's economy, trade, and supply chains.

The 20-year Infrastructure Plan Discussion Paper outlines the opportunities to expand the volume or resource and higher value-add exports and interplay with the establishment of Renewable Energy Zones.

It identifies that supporting increased value from our resources will require strengthening our supply chain capability and enabling greater access to key infrastructure enablers including freight and supply networks, water, energy, digital connectivity, and facilitation of common-user infrastructure. We are well placed to support the objectives of the Government.

The Government of South Australia has adopted goals to reduce the State's net Greenhouse Gas (GHG) emissions by more than 50% below 2005 levels by 2030, and to achieve net zero emissions by 2050.

The discussion paper identifies that more still needs to be done to decarbonise the State's other high emitting sectors inclusive of transport and role of regional areas as part of the transition to a greener, decarbonised economy.

At FPH, we are committed to maintaining sustainability at the core of what we do, ensuring we minimise harm, decarbonise our business, collaborate with our communities and build resilience.

Our Sustainability Plan (Plan) is informed by our material assessment and addresses healthy environment, valued people, thriving communities and good governance. We have committed to net zero GHG emissions for scope 1 & 2 by 2040 and net zero for scope 3 by 2050.

We developed a carbon budget aligned to 1.5 degree which informed our Decarbonisation and Energy Strategies. The Decarbonisation Strategy recommended electrification as the preferred approach to reduce diesel consumption for all shore and near shore water-based activities.

Meeting a proportional share of Government net zero targets is a challenge for the maritime transport sector, especially where we face technology gaps and/or emissions beyond our direct control.

The provision of shore-based electricity for shipping vessels, enhanced road and rail freight transport options, low and zero emission port services could be part of the transition to a global net zero future. The cost of reducing emission associated with this is high and support from government as per other States would yield significant benefits.

Policy certainty, co-ordinated planning, and co-investment with the private sector to realise State growth objectives is therefore crucial.

Currently, many of the government programs have limited applicability to assist with the decarbonisation of the maritime transport sector. We would welcome further engagement around what incentives are required to enable this transition.

FPH provides critical infrastructure for the State. A co-ordinated approach across the State Government departments to produce updated and more regular downscaled climate change projections would assist how we consider the vulnerability, resilience and mitigation needs of our infrastructure assets.

Our climate risk and opportunity data can also be used to inform State strategy and funding prioritisation that enable us to adapt to a changing climate.

We are supportive of and have no specific comments regarding the resilience benefits of green and blue infrastructure to inform infrastructure planning, At FPH, we are considering the role of carbon farming for our hard to abate residual carbon emissions.

Circular economy action could also consider the role of low embodied carbon construction material supply chains, standards and capability and capacity building that is required to enable the adoption of use more broadly across the State. A recent example of this is through the Green Cement Transformation project through the Hallett Group, where the low carbon cement blending, and distribution hub is location at one of FPH Port Adelaide berths.

8.3 Transitioning transport

As South Australia grows, so will the freight task. Critical to this, is the supply chain for the movement of freight and infrastructure it relies on and that it is resilient to climate change.

Opportunities for modal shift from road to rail on key routes can make a significant contribution to State Government and private sector emission reduction and net zero targets.

In the Deloitte Access Economics report that was commissioned by the Australasian Railway Association it found that the benefits of rail freight include:

- 16 times less carbon pollution than road freight per tonne kilometre travelled.
- Rail freight generates 92 per cent less particulate emissions (PM10) than road freight for each tonne kilometre of freight moved.

Investment by the Government for the expansion of freight rail services to inland and across South Australia supports the transitioning to low carbon, more resilient transport infrastructure with associated health and well-being community benefits.

Consideration should be given to how the State will support low or zero carbon heavy vehicles through regulation requirements, electrical infrastructure to support charging of the freight vehicles and energy infrastructure requirements in regional and remote South Australia.

8.4 A circular economy

Waste recycling, material re-use and other similar opportunities continue to be important in de-carbonising our waste streams. FPH continues to support larger material recycling opportunities and businesses around the State to ensure this approach remains viable.

8.5 Infrastructure delivery

Additional support through research and design of innovative construction materials is essential to continue to develop and improve the carbon footprint of infrastructure. Case studies and examples of larger government projects where these material choices have been successful is of use to industry and is recommended.

Chapter 9 – Improved resilience

9.1 Planned resilience

The key to improved resilience is careful management of flood mapping scenarios across key port locations. Particular vulnerable locations in South Australia under FPH's control are Port Adelaide and Port Pirie. Co-ordination of these planning studies and any mitigation actions will yield benefits for local government, defence, ports and rail in particular if performed in a consultative and cohesive manner.

9.2 Critical infrastructure

Rail and road networks need to be enhanced such that if one is compromised the other can continue.

The rail network needs to be enhanced with more passes to increase train schedules and improve sustainability / carbon footprints for the State. (See previous statements re: rail / road networks).

9.3 Green and blue infrastructure

Engineering standards and planning guidelines making green / blue infrastructure a key part of planning approvals will drive this opportunity for the State across infrastructure developments. FPH is supportive of this type of initiative to ensure increasingly sustainable infrastructure is developed in the future.

Chapter 10 – A stronger infrastructure industry

10.1 Planned pipeline

The creation of infrastructure jobs for the future is key to the State's development. FPH supports increased focus in early skills development, advertising and marketing to make Infrastructure an area of attraction for future generations. Similarly, FPH supports visa management to the advantage of skills gaps from overseas when compared to the upcoming needs of the future.

10.2 Digital technology

Emerging technologies, growing amounts of data and smarter ways of getting insights are key to unlocking substantial productivity gains and efficiencies across infrastructure planning, delivery and operations.

Technology needs to be used to improve safety, operational performance, economic competitiveness and environmental sustainability.

IT architecture needs to be a flexible, scalable environment that can pivot when needed to meet requirements now and into the future.

10.3 Effective procurement

No comment.

10.4 Funding and financing solutions

FPH continues to support the unsolicited bid process as a mechanism to encourage development and private industry infrastructure development with government. This process allows industry to put proposals to government for the benefit of the State.

From: Tony Repaci <[redacted]>
Sent: Friday, 10 November 2023 4:55 PM
To: Infrastructure SA
Subject: Submission - South Australia's 20-Year State Infrastructure Strategy
Attachments: Project i-TRACE Executive summary 2023.pdf

[redacted]

Thank you for the opportunity to provide a submission in response to the Discussion Paper for South Australia's State Infrastructure Strategy.

This submission is on behalf of GS1 Australia and specifically refers to a project currently being undertaken by Australasian Railway Association (ARA) supported by GS1 Australia called Project iTRACE. While Project iTRACE is focussed on the rail industry, the principles of Project iTRACE is applicable across all industry sectors.

BACKGROUND

Project iTRACE is about standardising the identification and labelling of parts, components and assets (in the rail industry). The Standards to be adopted are GS1 Standards which are global, royalty free. GS1 is a not for profit organisation than manages these Standards which are used worldwide. The identification and labelling uses barcodes or similar RFID technologies. The easiest way to think of this is possibly the barcode used on grocery items e.g. a litre of milk. These barcodes or identifiers have been used in the retail sector for 50 years. Technical industries (rail, construction, mining industry sectors) are now gradually adopting these Standards nationally with several large suppliers using the Standards for their products and a range of rail operators and track managers also involved and adopting the Standards. GS1 Standards align to ISO standards and Standards Australia.

A high-level summary of Project iTRACE is attached.

RELEVANCE TO INFRASTRUCTURE SA STRATEGY

Project iTRACE has application to inventory and supply chain efficiency, verifying local content, decarbonisation, the circular economy and skills. It is an foundation enabler for key initiatives outlined in the Discission Paper and particularly the following Consultation Questions:

4. Digital Connectivity

Q5: What are the barriers to increased adoption of digital technology to improve productivity?

Project iTRACE is about digital data, providing a mechanism for parts, components or assets to be identified and labelled in a way that is harmonised across the sector and readable by barcode scanners, automating processes along the supply chain and within organisations using the part, component or asset as well as eliminating manual errors. The barcode used aligns with global GS1 Standards and can be applied by the supplier with the relevant data stored in any data base system (ERP, WMS Asset Registers etc), then scanned electronically by the parties in the supply chain with an aligned set of fields on their database giving them visibility of the key data attributes they want to know in regard to the part, component or asset. This provides foolproof inventory management and workflow efficiency – currently many organisations use paper based, manual systems which are prone to error and are very costly in terms of fixing those errors and the labour involved more broadly. The barriers to increased adoption are that with their own bespoke systems, suppliers and their customers are engaged in a very unproductive set of processes that are slow, costly and prone to error.

It is suggested that the final Strategy has, as a bare minimum, a statement along the lines of:

Industry supplying and maintaining infrastructure assets should adopt a standardised digital identification, tracking and tracing system. GS1 Standards, used across a range of industry sectors relevant to infrastructure are recommended with the experience of the retail, health and rail sectors used to inform as required.

8.4 Circular Economy

Q15: What action is needed to achieve a circular economy in South Australia?

Identification and labelling a part, component or asset uniquely using GS1 Standards, allow for tracking and tracing throughout the life cycle including the disposal or recycling at the end of the life cycle. This digital record provides an easy way to log movement towards a circular economy.

8.5 Infrastructure Delivery

Q16: What measures can be taken to enable the infrastructure industry to decarbonise?

The adoption of Project iTRACE (or more specifically GS1 Standards) will enable industry to trace their carbon emissions more precisely by applying a digital record accessed through the barcode or RFID tag, which can be used for ESG factors that are likely to be required.

It is suggested that the final Strategy has, as a bare minimum, a statement along the lines of:

Applying digital approaches to infrastructure should be explored and implemented to enable efficient and accurate tracking of SA's contribution to decarbonising and the Circular Economy.

10.1 Planned pipeline

Q23: How can government and industry work together to support the supply of skilled labour needed to deliver a transparent infrastructure pipeline.

The application of a digital system for inventory and asset management will free up staff who may have been involved in low value and manual process to be reskilled or moved to high value roles, boosting skills and human resources. Optimising the current workforce by re-assigning staff from unnecessary manual inventory and asset management tasks to value-add roles will boost productivity. It is important to note that young people, the future workforce, are digitally aware and trained, more motivated and able to take on roles which use digital data easily and quickly.

It is suggested that the final Strategy has, as a bare minimum, a statement along the lines of:

Ensure a digital approach is taken to inventory and asset management to free up resources for value-add roles and attract young people with digital skills.

10.2 Digital technology

Q24: How can we maximise the productivity benefits of digitising our infrastructure?

By automating all aspects of asset management through the adoption of (GS1) Standards, productivity will be maximised. Rail organisations that have adopted Project iTRACE report significant savings.
Key benefits already realised;

- Elimination of lengthy and costly annual stocktakes – move to cycle counting for quicker and more accurate results - *~50% cost saving*
- Accurate inventory controls - movement of material around the warehouse/s in a couple of barcode scans – *2.5 times faster*
- In-field traceability – capture of serialisation and batch information – *10 times faster*
- Reduced incorrect picks – better part selection accuracy
- Reduced reliance on human knowledge
- Ready to implement material master data sharing – *80% of industry needs better master data*.
- Reduce low value work and complexity
- Improved customer satisfaction – minimise errors
- Complete traceability of parts, components and asset management across the supply chain
- Increased production throughput/capacity – *20% improvement in productivity*

It is suggested that the final Strategy has, as a bare minimum, a statement along the lines of:

Exploration of digital approaches should underpin the Strategy, including how these approaches can maximise productivity.

SUMMARY

The adoption of common Standards across infrastructure assets (and their parts and components) has the potential to maximise productivity through a digital approach, underpin easily accessible data related to decarbonisation and the circular economy and assist in applying skills to productive roles in infrastructure.

If further information is required about Project iTRACE, please contact me at

Kind regards

Tony Repaci.

Tony Repaci
Director - Freight, Rail & Construction

GS1 Australia
Lakes Business Park | Building 4B 2-4 Lord Street | Botany | NSW | 2019
[redacted]
National Number 1300 BARCODE (1300 227 263)
www.gs1au.org

St Vincent's Institute of Medical Research is our Charity of Choice

Project i-TRACE

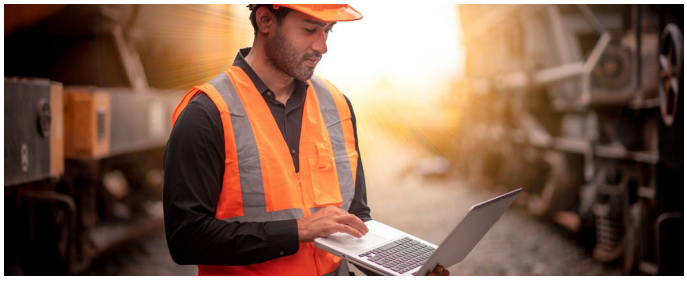
AUSTRALASIAN RAILWAY ASSOCIATION

GS1 Australia

Productivity improvement for a more efficient and safer rail industry

By laying the digital foundations to support effective Maintenance Repair and Overhaul (MRO) and asset management

Effective digitisation of all parts, components and assets in the rail supply chain begins with standardised and harmonised identification



What is Project i-TRACE?

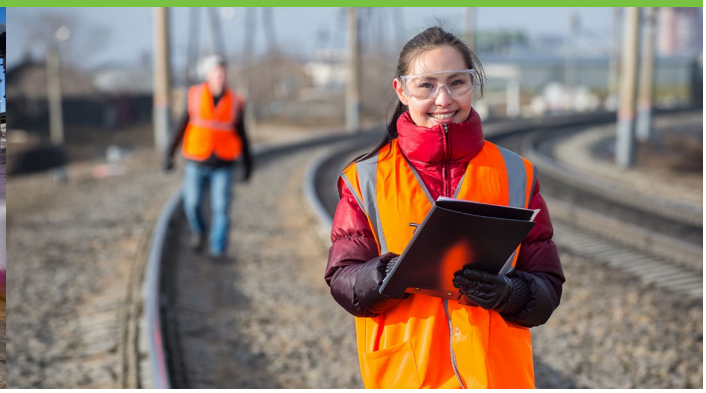
Project i-TRACE was initiated by the rail industry to digitise inventory management, automate all steps in the supply chain and provide critical information throughout the life cycle of a product, part or component.

Industry-wide productivity

Current rail industry processes are manual and bespoke, resource hungry, prone to error and inefficient.

The rail industry now has the opportunity to reap the benefits that other industries have already realised through supply chain harmonisation.

Project i-TRACE facilitates consistent data exchange leading to better inventory management and stock control, efficient MRO processes and effective supply chain management practices.



Why implement i-TRACE?

- **Rail operators and Rail Infrastructure Managers (RIMs)** will be able to effectively track and trace all their parts, components and assets - this will reduce costs and lead to improved safety
- **Manufacturers** will have a common, agreed industry standard on how to identify, code and tag their materials
- **Contractors** will be better placed to capture and digitally record accurate maintenance history of assets to both customers and suppliers
- **The industry** as a whole will benefit by removing unnecessary cost and waste in the way it manages materials and assets
  - Reduced inventory, write offs and waste
  - Improved MRO processes
  - Improved warranty management
  - Reduced operational costs
  - Improved through life support

Continuous improvement

- Foundational to achieving smoother and more cost-effective advanced supply chain and asset management processes
- Interoperability of tracking and asset management systems across organisational boundaries – connecting the end-to-end value chain
- Project i-TRACE supports:
  - Engineering and Type Approval harmonisation
  - Efficient and more accurate stocktakes
  - Safety, predictive maintenance and conditioning monitoring
  - Life cycle management
  - Warranty management
  - Inwards goods receipt
  - Advanced warehousing processes
  - Transport management processes

Contact us itrace@gs1au.org

From: lostriverinfo@bigpond.com
Sent: Friday, 10 November 2023 10:33 AM
To: Infrastructure SA
Subject: Submission - South Australia's 20-Year State Infrastructure Strategy - Discussion Paper feedback
Attachments: TARCOOLA to CEDUNA RAIL TRACK 10112023.jpg

Commercial in Confidence

Dear Infrastructure SA,

STANDARD GUAGE RAIL TRACK CEDUNA TO TARCOOLA.

Ceduna will experience significant commercial and social development in the infrastructure study period.
New industries and employment are predicted including : Tourism, Mining, Agriculture, Hydrogen, Green Metals Processing, Indigenous regional development & investment.

To support this growth a standard gauge rail track upgrade and extension of 250 km is required.
The proposed route connects Tarcoola (Main East-West Rail Line ARTC operated) down the DOG FENCE to NUNJIKOMPITA. This is a distance of 206km but avoids Pureba CP because the fence route is already bulldozed with a supporting road along the boundary of the fence along State Leasehold remote rural properties. Please see attached map. YELLOW dots are an alternative GOOGE TRACK ROUTE that is shorter but more directly impacts Pureba CP. A further minor track redevelopment (45km) would be required from Nunjikompita to Ceduna improving the Viterra Grain line Ceduna – Port Lincoln. The grain line and all significant improvements to rail transport are supported by our community.

Why is this investment essential. The connection would provide a nation building North-South rail connection for Australia strengthening Ceduna (Thevenard Port) and associated freight movements. This minor track 180-206km length would support the Eyre Pennisula (EP) to export produce and minerals to container ports in containers and strengthen grain trade within the EP. The proposed route will support new industry planned for the Western Gawler Ranges and Mineral Field. New industrial investment could consolidate around the rail and terminal spur connections. E.g HMIN sands EL 6844.

Tarcoola is a significant rail interchange to Perth, Darwin, Adelaide and beyond. Strengthening rail will make Western EP very competitive and this minor development in overall size will have an outsized impact or bang for government buck. The regional industry base would be transformed with competitive low cost freight. Obviously the current road freight on the A1 is good, but it is expensive and generally does not stop to pick up full loads with empty trucks. This would make Ceduna a vital transport node with the capacity for future port expansion.

The freight trains can be powered by renewable green Hydrogen and Ceduna would now be connected to Adelaide, the Spencer Gulf and APY lands by a direct rail connection. Note: CP Rail Canada is now trialling Green Hydrogen locomotives (also Tourist trains) and this is a necessary infrastructure site planning component in a 20 year plan. This additional planning action will also provide cost competitive reduced CO_2 emissions in the Transport, Agriculture, Mining & Materials hard to abate sectors.

WESTERN SOUTH AUSTRALIA NEEDS A DEMONSTRATED INCREASE IN INVESTMENT. Ceduna Tarcoola standard gauge Rail track is a landmark intergenerational project worth support.

Additional investment proposed are :

1. CEDUNA AIRPORT EXTENSION TO SUPPORT WIDE BODIED AIRCRAFT – TOURISM & FREIGHT. Ceduna is overflown every day by trans continental flights.
2. CONNECT A ROAD TRAIN APPROVED ROAD BESIDE THE RAIL LINE EXTENSION TO CONNECT HIGHWAY (A1 - ADELAIDE to Perth) with HIGHWAY (A87 - DARWIN to PORT AUGUSTA). This will save massive amounts of freight Km's cutting off the Gawler Ranges crazy triangle route.
3. CONNECT THE HIGH VOLTAGE ElectraNet to CEDUNA. This will reduce power costs to Adeliade during peak evenings with 30 minutes additional late afternoon wind and PV sun generation.
4. BUILD A DESALINATION PLANT AT 37619 FLINDERS HIGHWAY, LAURA BAY, 5680. Improve state water quality & supply with further potential to rail freight pure RO water into central South Australia.

I hope these recommendations and considered and look forward to seeing visible economic and social progress in the region.

Yours Faithfully,

Robert Sutton – Director
LOST RIVER AUSTRALIA PTY LTD
[redacted]

Mobile : [redacted]


SOUTH AUSTRALIA
Parakylia
Roxby D
Untitled Placemark
Tarcoola
Untitled Placemark
Glendambo
Reg'l Reserve
Untitled Placemark
erness Protection Area
A87
Woomera
Untitled Placemark
Yumbarra
Penong
Ceduna
Smoky Bay
A1
Streaky Bay
Wudinna
Venus Bay
Hawker
B83
Port Augusta
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11 November 2023

To: Infrastructure SA
Attn: Strategy Team
Level 15 Wakefield House
30 Wakefield Street
Adelaide SA 5000
Via: infrastructure@sa.gov.au

RE: 20-YEAR STATE INFRASTRUCTURE STRATEGY DISCUSSION PAPER

I am writing in response to the request for submissions regarding South Australia's 20-Year State Infrastructure Strategy Discussion paper (October 2023).

About the respondent:
Magnetite Mines is an ASX-listed resource company focused on developing magnetite-hosted iron ore projects in the highly-prospective Braemar Iron Formation of South Australia. The Company has established a 100%-owned Mineral Resource package containing 6 billion tonnes of magnetite-rich iron ore, including 2 billion tonnes in Probable Ore Reserves, providing the basis for the development of multi-generational mining assets in a greenfield resource province.

The Company is prioritising the development of the Razorback Iron Ore Project, located 240km north of Adelaide and 40km south of Yunta, to meet accelerating global market demand for premium grade iron ore products necessary for low-carbon iron and steelmaking, and position Australia as a leading participant in the global transition to a decarbonised steel industry.

About our response:
Magnetite Mines' response to the Discussion Paper is appended to this letter. Our response addresses five consultation questions proposed in the Discussion Paper, being those most directly relevant to Magnetite Mines' activities. In providing our responses, Magnetite Mines acknowledges the vision of the South Australian Economic Statement as the shared objective of the State Infrastructure Strategy across Government, industry and community stakeholders.

Please contact me at [redacted] if further information or clarification on our submission is required.

Sincerely,

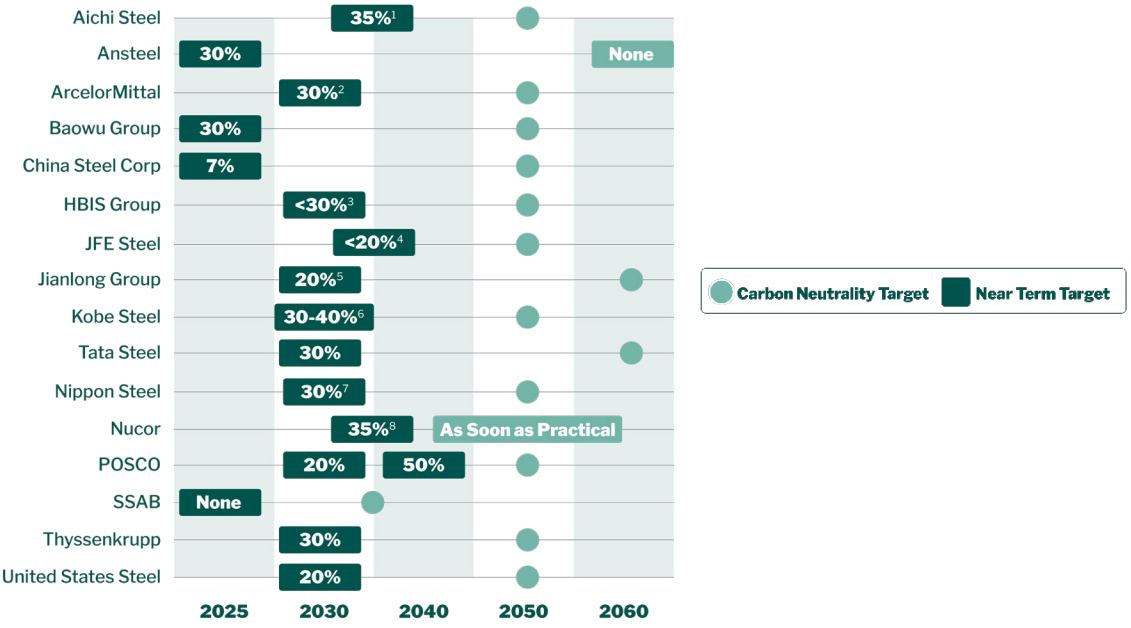
[redacted]

Allan Kane
General Manager – Sustainability
Magnetite Mines Ltd

Q1	What opportunities should we consider to improve South Australia's economic growth? (Section 4.4 – Our productivity challenge)

Magnetite Mines actively encourages South Australia to pursue the development of a green iron and green steel sector within the State, on a multiple hubs model.

Opportunities to pursue new or expanded economic growth outcomes can be identified where emerging disruption is being experienced. Supply chain disruption within the iron and steel sector is well-documented, and is predominantly influenced by regulated or self-imposed decarbonisation commitments by major international steelmakers. The figure below demonstrates the range of interim and long-term decarbonisation commitments various steel producers have announced.



The impact of these commitments is a clear transition to (1) high purity iron ore feedstocks and (2) eventual green iron production, a demand for which will only be met by magnetite-based concentrates. This reflects recent dialogue between Magnetite Mines and major steel producers whose respective long-term strategies are to source green iron in the form of hot briquetted iron produced with green hydrogen. Magnetite Mines understands this view is also taken by the SA Government.

While Australia's large natural endowment of magnetite ores provides the basis for this opportunity, it is the country's existing strategic and diplomatic partnerships with key sector leaders, Japan and Korea, that strengthens the opportunity. The market and decarbonisation alignment between Australia and Japan/Korea supports potential investment outcomes and has the potential to drive additional downstream processing of iron ore to green iron products within Australia through joint venture partnerships – an immensely significant economic opportunity for South Australia.

South Australia is uniquely positioned to emerge as a global green iron and green steel leader, given its abundant renewable energy resources, its existing renewable energy embedded transmission grid, emerging gold and green hydrogen sectors and expansive magnetite resources. Coupled with these natural endowments, the State operates leading regulatory frameworks to support responsible development and use of its resources.

The window to position South Australia as an investment destination for green iron and green steel production is narrow; the State must actively pursue potential downstream operators to attract local development. To this extent, Magnetite Mines understands that the SA Government, through the Department for Energy and Mining, is developing a green steel strategy. Further, it is the Company's understanding that a multiple hub model is envisaged within this strategy, whereby value-add processing of concentrates into other iron products could occur at two or more locations within South Australia.

Magnetite Mines actively supports the approach proposed by the SA Government and sees significant economic development potential on the eastern Upper Spencer Gulf and Mid North arising with green iron and green steel development.

Securing the substantial investment required for green steel production across multiple hubs requires key enabling infrastructure to be robustly planned and holding Government support, endorsement or approval. Clear coordination on enabling infrastructure is essential, and linkages between the green steel strategy and the State Infrastrucuture Strategy must imbue that clarity.

Recommended outcome: The State Infrastructure Strategy prioritises those infrastructure requirements that are identified by or support outcomes proposed by the green steel strategy, with particular focus on the infrastructure needs of the indicated multiple production hub model.

- The State Infrastructure Strategy should also consider its strategic alignment to national programs, such as the National Reconstruction Plan and updated critical mineral designations, to realise potential opportunities for funding for enabling infrastructure.

Q3	How can we enable a sustainable and affordable water supply into the future? (Section 5.2 – Water supply)

Improving economic growth outcomes in South Australia and the use of water are inextricably linked. This is particularly so for key sectors including construction, agriculture, manufacturing and mining that were responsible for a combined $28.1bn of gross value in 2021/22[i].

Ensuring the availability of sustainable, low-cost water supplies is a critical shared objective between Government, industry and other stakeholders. Conventional magnetite projects are significant consumers of water, even with water recovery and reuse initiatives, with estimates of between 1.6 and 2.8 GL/annum required to process 1 Million tonnes/annum (Mtpa) of magnetite concentrate[ii]. In the event of concurrent magnetite concentrate production in the Braemar totalling 30 Mtpa, an annual water demand of 48-84 GL may be likely. This conceptual upper water demand level equates to approximately 230 ML/day – a volume similar to the Northern Water Supply Project's Stage 2 supply profile[iii].

The draft Strategic Hydrogeologic Framework – Braemar Province[iii] indicates the relative sparsity of groundwater supplies in the region and the broad uncertainties associated with estimating and proving resources, securing access and potential impacts. Magnetite Mines' own investigations demonstrate the low groundwater yields in the southern Braemar region, with average flow rates between 1 and 2 Litres/second (L/s).

While further assessment of regional groundwater prospectivity is warranted, the draft Strategic Hydrogeologic Framework recommended investigation of a sea water supply option for the Braemar region. Magnetite Mines strongly supports such a project, with a range of benefits to be realised:

- provides access to an unconstrained water resource from the Spencer Gulf for mining, hydrogen production or other industrial application across the Braemer region
- reduces reliance on local groundwater that is currently utilised by the pastoral sector or by discrete groundwater-dependent ecosystems
- lower project CAPEX and lower water costs can be achieved by supplying saline water for onsite upgrading by each user relevant to their specific water quality needs.

Recommended outcome: Investigate an Eastern Water Supply project that supports the development and expansion of a magnetite mining and processing industry in the Braemar region.

Q4	How do we realise the opportunities and mitigate risks with transforming our transmission and distribution infrastructure for the future? (Section 5.3 – Energy transmission)

Magnetite Mines acknowledges the leading role ElectraNet has been taking with regards to advocating for new network transmission infrastructure to support South Australia's renewable generation, hydrogen production and other economic development policies and initiatives. Specifically, the Transmission Annual Planning Report Update (May 2023)[iv] and Transmission Annual Planning Report (October 2023)[v] have demonstrated the need for expanded transmission infrastructure to enable forecasted generation and load connections, as well as preparing for the future target of renewable energy generation that is 500% of local demand by 2050[vi]. It is noted that the proposed project is under consideration of the Australian Energy Markey Operator (AEMO)[vii].

Within ElectraNet's reports, the Mid North Expansion (Northern) priority is critical enabling infrastructure for north-south power distribution, opening a new Renewable Energy Zone around Yunta, and also for the currently undeveloped Braemar iron region. Development of the associated Mid North Expansion (Northern) assets will provide significant benefit to a broad range of future iron ore producers of which Magnetite Mines is a leading proponent. With Magnetite Mines' proposed mining operations to contribute over $1bn annually to Gross State Product, the economic value that can be unlocked through the Mid North Expansion (Northern) is immensely significant on regional, state and national scales.

The timing of commitment to the Mid North Expansion (Northern) priority project is critical for mining companies in the Braemar iron region. Magnetite Mines is currently undertaking a range of technical, environmental and other studies to develop its own single-user transmission line to service the Razorback Iron Ore Project's power demand. This bespoke infrastructure is potentially an inefficient solution when considered in the context of broader regional development outcomes that could be serviced through the development of an integrated, multi-sector approach by a Transmission Network Service Provider. Government intervention on the Mid North Expansion (Northern) priority project within six months would provide certainty for Braemar iron project proponents in confirming respective grid power connection and supply strategies and reduce highly inefficient standalone approaches to power supply solutions.

Recommended outcome: Take necessary intervention to support AEMO's classification of the Mid Northern Expansion (Northern) project as an 'Actionable Project' for commissioning by 2027/28.

- It is noted that a staged Mid Northern Expansion (Northern) project, with the initial delivery of the Bundey-Yunta section, may provide an effective and realistic short-term target.

Q6	What investments could unlock the value of South Australia's resources? (Section 5.5 – Resource exports)

The paucity of bulk commodity export options in South Australia is a significant constraint on the ability of project proponents to access global markets in an efficient and effective manner. With 17bn tonnes of magnetite resources already identified in South Australia, there remains few options to export magnetite products at any reasonable scale. Existing port capacities are constrained and are reliant on higher-cost transshipment processes.

Additionally, given the geographic spread of the State's magnetite resources, from the western Eyre Peninsula to the Braemar to the northern Gawler Craton, a singular bulk commodity port solution is unlikely to be fully effective; therefore, a bulk commodities export plan that provides for scalable material volumes, is essential to focus the development of additional port facilities in the State.

Recommended outcome: Investigate multi-user bulk commodity port solutions within the Spencer Gulf for which the SA Government is a lead proponent, and develop a future-facing bulk commodities export plan.

Further, the development of corridors between mines and ports are critical in product transport, general access, and utility and service provision. Magnetite Mines understands that the existing Infrastructure Corridors Project has largely been finalised; however, the Company advises that this project is material to proponents if infrastructure-heavy projects, such as the Razorback Project. The Infrastructure Corridors Project can provide an opportunity to streamline infrastructure development in the Braemar, and potentially improve the possibility for expanded collaboration. A formalize infrastructure corridors network in South Australia would be a significant land infrastructure asset for the resources, utility and transport sector.

Recommended outcome: Formalise and rapidly progress the Infrastructure Corridors program to an executed stage as a land infrastructure initiative supporting the resources sector.

- An infrastructure corridor for the Braemar iron region must be prioritised given the early stage of development for potential operators in this area and the potential competing infrastructure demand of each project.

Q15	What infrastructure investments will support industries to transition to a global net zero future? (Section 8.1 – Green industries)

As demonstrated in Magnetite Mines' response to Question 1 (opportunities to improve South Australia's economic growth), the potential development of a green iron and green steel industry in the State has arisen through the global transition to a net zero future. This is particularly relevant for the steel sector given its large net contribution to current carbon emission levels. The pursuit of a local green steel sector across multiple hubs provides a compelling opportunity to drive prosperity, improve community wellbeing outcomes and expand downstream or value-added manufacturing throughout South Australia.

A fundamental enabler to achieve the decarbonisation of the steel sector through expanded and new projects in South Australia is to establish the right statutory/policy and infrastructure environment to attract large international investment into new production facilities in the State.

Magnetite Mines proposes the following infrastructure-related actions as key steps towards South Australia assuming a leading global position as a green steel producer and key contributor to the global net zero transition:

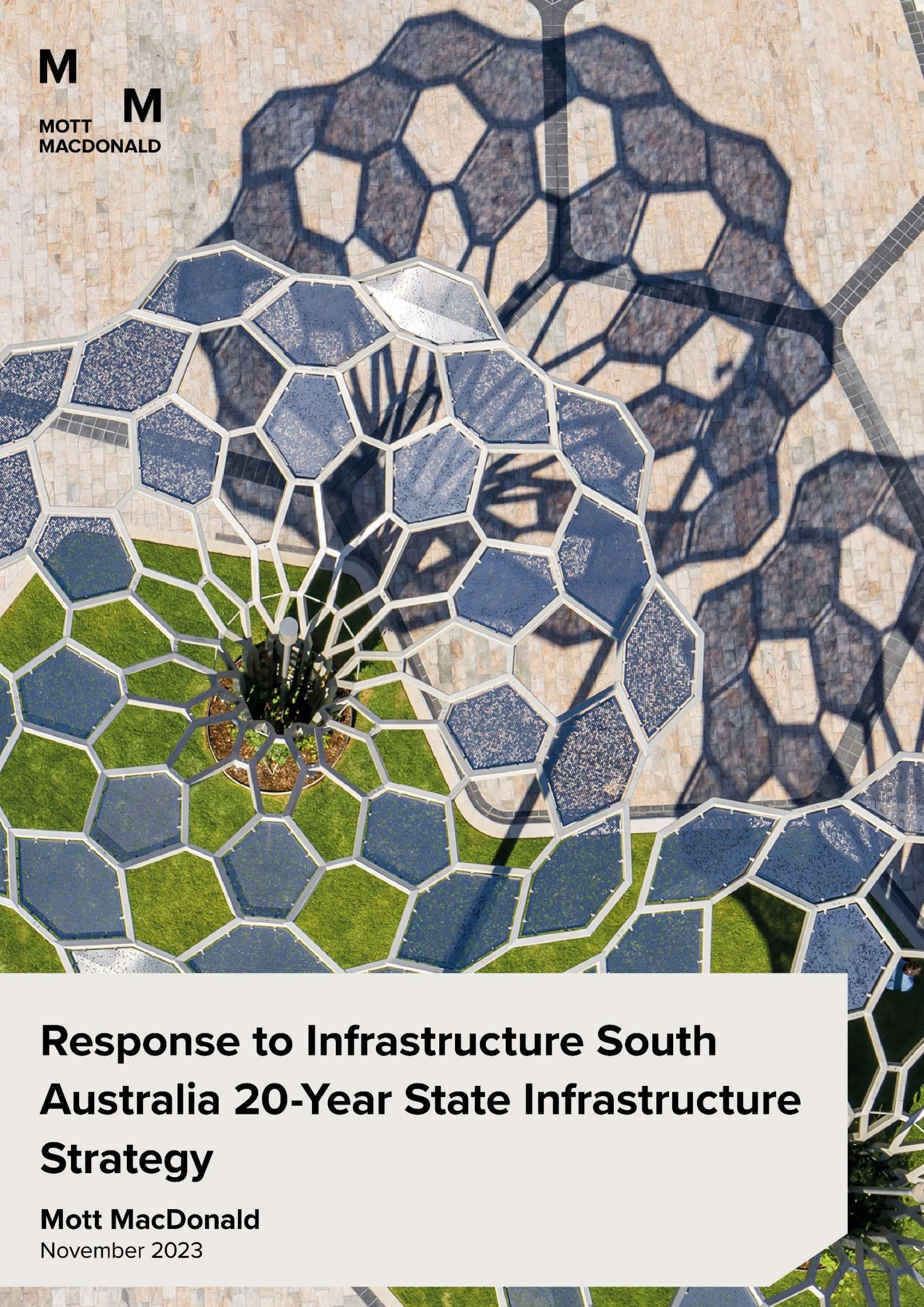
- designation of special industrial hubs, similar to Western Australia's strategic industrial areas program[viii], that support large-scale processing projects through a series of initiatives, including:
    - grant of access to SA Government land for development, including resolution of native title matters
    - Crown sponsorship or pre-approval of selected development types
    - dispensation from relevant royalty programs during primary project payback periods
    - access to shared infrastructure and utility connections that is fit-for-purpose.
- guarantees for access to affordable gas supplies as a transition fuel and to green hydrogen once validated and operating at scale
- co-located bulk commodity port development, as discussed in Magnetite Mines' response to Question 6.

Recommended outcome: Establish a special industrial hubs program that provides a low-risk investment proposition for green steel supply chain partners to produce green iron and green steel products in South Australia on a multiple hubs basis.

- Port Pirie is the most robust hub option to service the Braemar iron region, and should be pursued as part of a special industrial hubs program.

References

[i] Australian National Accounts: State Accounts, 2021-22 financial year | Australian Bureau of Statistics (abs.gov.au)
[ii] SA Department of Energy and Mining (2022) Draft Strategic Hydrogeological Framework – Braemar Province, 23 November 2022
[iii] Project Overview | Northern Water (northernwatersupply.sa.gov.au)
[iv] 2023 Transmission Annual Planning Report Update (electranet.com.au)
[v] electranet.com.au/wp-content/uploads/231101_2023-TAPR.pdf
[vi] Renewable Energy | SA Government Financing Authority (safa.sa.gov.au)
[vii] 2023-transmission-expansion-options-report.pdf (aemo.com.au)
[viii] Western Australia's strategic industrial areas (www.wa.gov.au)



Response to Infrastructure South Australia 20-Year State Infrastructure Strategy

Mott MacDonald

November 2023

Mott MacDonald
22 King William Street
Adelaide
SA 5000
Australia

T +61 (0)8 7325 7325
mottmac.com

Response to Infrastructure South Australia 20-Year State Infrastructure Strategy

Mott MacDonald

November 13, 2023

Acknowledgement of Country

Australia has over 250 Indigenous Nations and over 800 language dialects, and as we come together from various corners of the globe it is important to recognise the deep connections that every community has with Country.

Mott MacDonald acknowledges the Kaurna People as the Traditional Custodians of the land on which this paper was prepared. We pay our respects to their Elders past and present and to all First Nations Peoples.

We are grateful that we are able to continually collaborate with, and integrate First Nation's wisdom, culture and enduring kinship values in all aspects of the work we perform. It serves to remind us of the rich tapestry of human history that the journey of reconciliation helps to preserve.

Artwork:
Ben Gardiner Williams
Bundjalung and Gumbaynggirr Descendant

Contents

Figures

Executive summary

Adelaide enjoys significant advantages as the nation's most well-planned city; our accessibility, affordability, economic stability and easy but enjoyable lifestyle are what makes us special and are benefits that cannot be easily replicated.

When complimented by our world-leading status as an energy pioneer, transitioning to a coal-free grid with internationally leading levels of renewable energy, this provides significant opportunities for South Australia to attract new manufacturing, reindustrialise and rebuild Australia's sovereign abilities to make and create.

These are all reasons that planning in South Australia, and particularly in Adelaide, needs to be unique – we need to protect our planned nature but enhance the benefits this offers to both the community and the economy.

Mott MacDonald appreciates the opportunity to provide feedback to Infrastructure South Australia's Discussion Paper to support informing the South Australia's 20-year State Infrastructure Strategy.

A multi-national company, Mott MacDonald began in Australia as a small enterprise here in Adelaide more than a decade ago and has since grown to more than 1,250 employees across the nation. We are part of the 20,000 people who work for the Mott MacDonald group of companies globally.

We are driven by our purpose to improve society by considering social outcomes in everything we do; relentlessly focussing on excellence and digital innovation, transforming our clients' businesses, our communities and employee opportunities.

In Australia we are headquartered in Adelaide. Our work in South Australia has stretched from redeveloping Adelaide Oval, to managing Festival Plaza redevelopment, to multiple roles on the North South Corridor project including technical advisor for the River Torrens to Darlington Project.

We have a long and successful history in working with the South Australian Government in a range of functions to support the planning, business cases, design and delivery of infrastructure.

We believe it is a timely exercise from Infrastructure SA to reconsider the 20-Year State Infrastructure Strategy considering the strain on global supply chains and current and looming skill shortages that are becoming an increasing issue across infrastructure programs nationally.

We agree with the range of "global megatrends" and economic assumptions as suggested, noting that the long-term nature of a 20-year plan means likely significant variability across the timeframe and scenarios depending on world events.

Further, compounding the economic outlook following the COVID-19 pandemic is the current increase in international conflict which has negatively affected global supply chains.

If the world atmosphere continues to become more fractious, these impacts could broaden, leading to increased delays and cost increases for projects.

There is also a potential that global conditions could lead to economic downturn and constrain government funding for projects, which in turn could create a reluctance to invest in climate resilience and carbon reduction measures.

If infrastructure, and particularly government-funded infrastructure, is to keep up with community expectations and deliver sustainable long-term benefits, it is important that planning evolves to match market conditions and continue to deliver the best outcomes for the community at the best price for taxpayers.

This paper looks at potential methods that can improve infrastructure planning, looking over the horizon to realise lasting benefits for the community.

It is critical for the South Australian Government to realise measurable changes to ensure that infrastructure developments continue to meet the expectations of the South Australian community.

1 Outcomes-focused infrastructure

We know infrastructure shapes our communities. However, it is not just the quality of the physical assets, but the nature of services they enable which determine the strength of our communities. It is the connections between people, business, energy, water, data and nature that stimulates activity and progress.

If infrastructure projects are to provide measurable, transformational change in communities and the associated systems, we must do more than support incremental change. Infrastructure policy and decision-makers must increase their focus on the interaction between these complex systems and the outcomes communities are seeking to enable for people, places and nature – particularly in terms of carbon reduction and climate resilience.

Policy and projects must be seen as interventions in these physical, service and natural systems – also known as a 'systems of systems' approach – while investment must also be prioritised through its ability to realise a full range of social, environmental and governance outcomes, as well as economic ones; responding holistically to community needs around accessibility, inclusion, empowerment, resilience and wellbeing.

Gaining and maintaining community acceptance or "social licence", particularly with regard to brown-field developments or infrastructure that disrupts through construction, is also an increasing issue across the country.

It is important to listen to communities (particularly those impacted by planned developments) and to embed their priorities in infrastructure planning and decision making, to use data that conveys patterns and types of use as well as planning for infrastructure services, and the frameworks to support them.

By working this way, we know we can support wellbeing and address long-term inequalities while leaving a legacy of sustainable, resilient infrastructure that supports inclusive and healthy communities.

1.1 Delivering meaningful outcomes in an uncertain world

There is deep uncertainty about the future due to the potential catastrophic impacts of climate change, rapid changes in digital technology, artificial intelligence and increasing global instability. Addressing an uncertain future, with imperatives to shape a better future socially, economically and environmentally, is far from easy.

Further, we are experiencing significant change in society and mobility where social, technological, economic, environmental and political drivers are increasingly at play, creating uncertainty over what the future might look like.

In the face of this uncertainty, future demand cannot be predicted with much confidence. In turn, it becomes more challenging to understand what constitutes a resilient strategy and sound investment.

1.2 Move from 'predict and provide' type decision making

Currently the planning of (particularly transport) infrastructure within SA follows a traditional *'predict and provide'* approach that predicts future demands relying on strategic modelling and assumptions based on historical patterns. This modelling underpins investment decisions to provide infrastructure to meet that predicted future.

There is growing realisation around the world that this traditional forecast led approach is no longer appropriate and ignores potential benefits and consequences that aren't or can't be captured in modelling.

There is an alternative approach to infrastructure planning – "vision and validate'' – which could help define new and important drivers and benefits to deliver sustainable outcomes for our economy and our communities. "Vision and validate" means collaboratively deciding on the desired future and developing a strategy to help to get there. In areas where the value of the investment is high, and the impacts are significant – such as transport infrastructure – it can actively shape the future.

Mott MacDonald has been working with UK, New Zealand and Scottish jurisdictions to consider future scenarios, the uncertainties they pose, and develop plans that adopt a "vision and validate" approach to infrastructure planning. We believe this approach is fundamental to planning transport infrastructure in South Australia for the next 20 years to build on the State's strengths and improve its weaknesses.

1.3 Better informed decision making

Enhancements to the decision-making process could support those empowered in the process to make consistent, transparent and evidence-based decisions. These decisions should point towards the outcomes that have been prioritised for communities and industry. The tenants of appropriate speed, transparency and efficacy should be the focus of reform to enhance decision-making.

An initial step to enhancing decision-making would require the cascade of outcomes from strategic planning to the development of a clear outcomes framework that wraps structure, clarity and transparency around government priorities.

Priorities should rightly change over time, with the influences of external forces and the policies of elected government, however some will remain. The stability of those outcomes that remain beyond political cycles provides certainty for industry investment and the community expectations.

The development of an 'outcomes framework' should be sufficiently broad so as to allow build and non-build priorities to be jointly considered and their interactions considered.

Incumbent decision-making tools, such as cost-benefit analysis, are highly effective in the assessment of interventions with well-known costs and clear direct benefits, however are less effective as the sole determinant of a decision that:

- Incorporates values that are difficult to monetise – such as aesthetics, carbon abatement and climate resilience
- Prioritises regional growth – supporting the transfer of activity from one spatial area to another
- Supports minimum service standards for regional or remote areas – where the cost to provide may outweigh the economic benefit
- Seeks to lead and shape growth – investments that influence the distribution of urban growth and population settlement
- Prioritisation of resilience outcomes – where the probability of future risks may be uncertain or low, however the costs would be catastrophic
- Considers geopolitical factors – such as the risk of kinetic conflict
- Values cultural outcomes and inequity – cultural outcomes, such as recognising or incorporating cultural values and practices, which can hold immeasurable value
- Values inclusion and diversity – accounting for the broad range of socio-economic groups and ability to participate in our community
- Requires a complex co-dependency of actions and outcomes which can make the distribution and apportionment of costs and benefits very difficult.

The development (or evolution) of an 'outcomes framework' should specifically highlight those elements that should be systematically prioritised by planners and decision-makers. This framework should consider the contribution of individual actions and the cumulative impacts of coordinated activity. While this approach adds complexity, the use of logic tools like Theory of Change and Investment Logic Mapping will simplify the outcomes.

These frameworks can help to validate needs and link outcomes when underpinned by:

- An articulation of the expected benefits and costs
- Clear targets and expected timelines
- Outcome-linked KPIs, metrics and measures
- Benefits owner and a description of their accountabilities
- Identification of key risks and interdependencies
- A cumulative benefit statement or map
- Mechanisms for monitoring and reporting on progress at key stages of the project life cycle, delivery, ramp-up, routine operations and end-of-life.

This approach to the holistic consideration of an intervention, whether policy or project, can support policy makers to understand the consequences of action without overly simplifying these actions to a single number or ratio.

For instance, many projects are discussed in terms of job creation, however while maximising job creation (and skills development and retention) may be a positive economic driver, it could also be a goal that adds inefficiency and costs. Efficiently realising the benefits of a policy or project may often involve minimising costs, whereby enhancing the productivity of the measure.

The use of decision-making tools and frameworks that can integrate the views of the community directly into decision making should be highly valued. Participatory decision making, or the use of community feedback to set priorities for investment, provide platforms for this approach. Infrastructure Australia's 2021 Australian Infrastructure Plan and Reform Priority List provides a benchmark, through the surveying of more than 2000 community members to define and weight their outcome-based prioritisation of reform recommendations.

1.4 Infrastructure planning needs to evolve

Our communities are complex and rapidly changing, consequently, the expectations of infrastructure are growing. Whether responding to the impacts of a changing climate, increasing cyber resilience threats, growing expectations of social value and the reliance on infrastructure as a key lever of economic activity.

The overlap between our natural, built and service systems is increasing as a result. These interrelating systems feature complex dependencies, with infrastructure providing a link between them through either the modification of the natural environment, construction of the built environment or service optimisation to realise the benefits of built assets.

Further, gaining and maintaining community support or acceptance for large-scale infrastructure projects is becoming increasingly difficult. Communities across Australia are opposing large scale infrastructure developments, particularly those in the energy sector, due to perceived threats to local employment, changes to local amenity, lack of meaningful consultation and uncertainty created by change.

This can be avoided by strategically approaching regulatory and state landscape-level approval processes to bring the community in on the decision making and incorporating them in key decisions from the beginning (route/site selection particularly important).

Infrastructure planning must therefore take a wide view to consider the interaction between natural systems, built assets and the layer of services they support. The Australian Government's Infrastructure Policy Statement provides a foundation for outcome-led policy making and its cascade to infrastructure decision making.

There are numerous examples in the UK's Infrastructure Project's Authority for leadership on how to conceive these interactions and to tie them to outcomes-linked infrastructure planning and decision making, see Figure 1.

Figure 1 Built Environment Model

Source: The United Kingdom's Infrastructure Project Authority Transforming Infrastructure Performance

The (above) Built Environment Model seeks to explain how government and industry can intervene, or affect change, in existing systems. Critically, the model emphasises the opportunity to do more than build, but also to think about the role of policy, regulation, pricing and service planning to drive change. The model also emphasises the costs of intervention, with the construction of new infrastructure often carrying high and hidden costs.

Holistic thinking, and a genuine interrogation of the costs of action is challenging. However, to support the long-term ambitions of SA to be smart, sustainable and inclusive, this approach could maximise the value of individual investments and drive progress.

The move to embrace Systems thinking across the State Infrastructure Strategy could be anchored in the identification of discrete strategic goals or 'outcomes' that infrastructure services will deliver.

The vision under section (3.1) six objectives outlined in Section (3.2) provide the 'light on the hill' to guide effort. The development of targets and indicators (measures) to assess progress towards these goals is critical. Infrastructure SA could work with clients and delivery agencies to translate these state-wide priorities into organisational goals and targets, which are in turn translated into action plans, decision-making frameworks and ultimately project level goals.

This approach draws on the practice known as the 'golden thread' performance framework, which aligns performance metrics for individuals, teams and organisations to overarching objectives. This approach empowers every level of the decision-making process by setting out the logical chain of cause-and-effect so action will align to the defined outcomes.

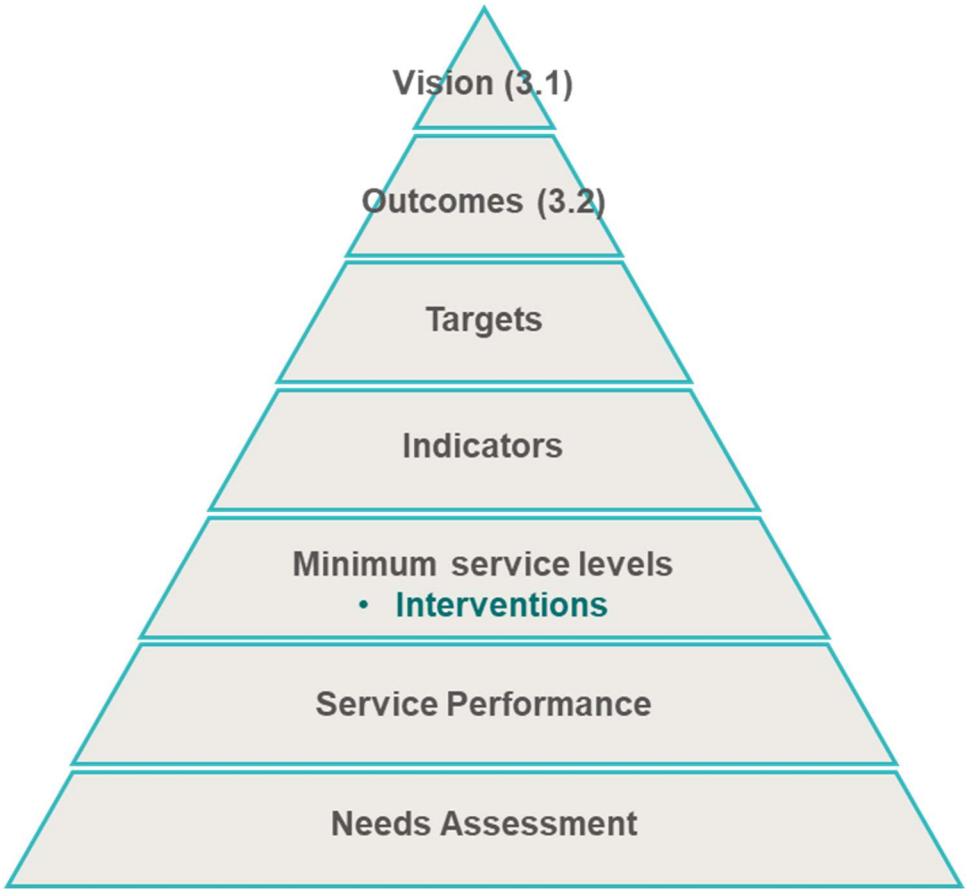


Figure 2 An outcomes-led policy framework for the next state infrastructure strategy

This top-down approach should be coupled with bottom-up, data lead assessment of the natural, built and service systems that infrastructure characterises. The rise of enhanced digital and data systems within infrastructure provides the opportunity for Infrastructure SA, and other like-minded bodies, to develop an understanding of infrastructure assets, networks, services, customer experience and industry depth.

Infrastructure SA could work with policy agencies to redefine comprehensive minimum service level expectations, to assess current performance against these service levels and consequently to define the gaps in performance.

Industry metrics will require consideration of supply and demand metrics, such as those considered by Infrastructure Australia's Market Capacity Report however, could extend more deeply into a coordinated view of pipeline and industry performance against metrics such as on-time, on-budget project delivery or maturity across culture, digital adoption and supply chain performance.

The role of the Infrastructure SA State Infrastructure Strategy could be to define the actions to close the gaps between current performance and expectations of minimum service levels.

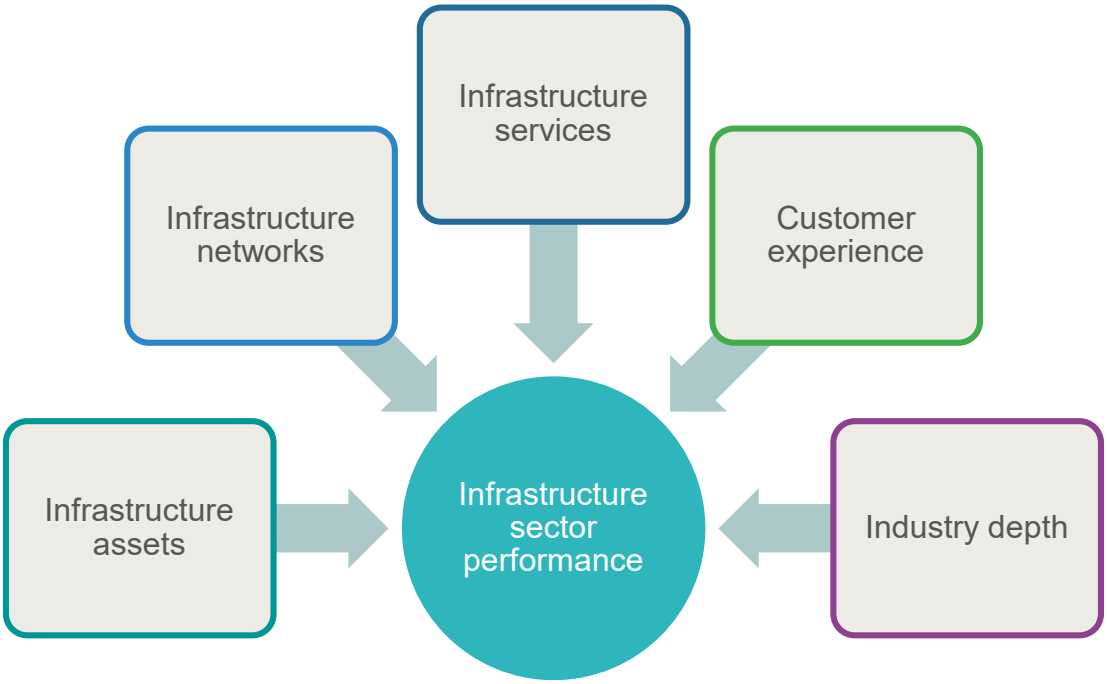


Figure 3 Infrastructure data requirements to support an assessment of community needs

The use of bottom-up metrics to articulate current sector performance and service expectations, as well as the top-down outcomes in order to drive progress, provides a systematic approach that offers transparency to the community in terms of the role of infrastructure in enabling outcomes.

This approach elevates to a discussion on infrastructure priorities rather than specific interventions – or investments. A key step in realising the vision of data-led infrastructure decision-making is consistent system performance definitions and metrics.

Similarly, the introduction and application of scenarios can create a dialogue over expected futures, risk tolerance and no-regrets decision-making, rather than rushing to solutions. The use of scenarios is an important step to avoid designing policy and investments for the world today and to shift them to a focus on the world of the future.

This approach places an added and focused legitimacy for the role of elected officials and government policymakers by elevating their role to focus on outcomes, scenario planning and risk management. If well-articulated, this approach can increase certainty in infrastructure planning and shift the dialogue from the immediate to the long-term.

1.5 Learning from best practice

As the infrastructure policy environment is rapidly evolving, the focus on the continuation of a “predict and provide” approach to infrastructure planning is no longer seen as adequate. Globally there is a pivot to a focus on ‘vision and validate’ which places a greater emphasis on the potential uncertainty that could impact the delivery of infrastructure. These potential effects need to be considered when prioritising investment and reform ahead of, and during, detailed appraisal.

Infrastructure SA is one of a number of organisations that work in this environment, approaches from similar organisations include:

Infrastructure Australia Australian Infrastructure Plan and Reform Priority List

Infrastructure Australia’s 2021 Australian Infrastructure Plan and Reform Priority List. The Infrastructure Australia approach created alignment around a series of time and accountability linked actions to drive

progress to overarching outcomes. The selection and weighting of the criteria to represent the outcomes were informed by engagement with the community and business.

The Reform Priority List and associated methodology was developed to assess the impact of reforms proposed by the 2021 Australian Infrastructure Plan and to prioritise those outcomes against a series of scenarios. The Reform Priority List applied an outcome focused lens considering community outcomes from infrastructure services and sustainability to develop a thirty criteria multi-criteria matrix to allow the filtering of policy reforms.

The use of a community-focused, outcome-based assessment methodology that links actions to impacts could help inform Infrastructure SA's approach to its 20-year strategy.

Enabling Better Infrastructure Principles (EBI)

The UK Institution of Civil Engineers' EBI has twelve principles that set a best practice approach to strengthen government's planning and prioritisation frameworks and prioritise objectives and Sustainable Development Goals (SDGs) as the foundational component of best practice long-term infrastructure planning and assessment.

The EBI Principles are currently under review. The focus of the review is to improve government planning to understand the maturity of their own systems and processes, better understanding of condition of assets and service levels as well as embedding a systemic, outcomes-led approach.

The consideration of organisational maturity to support long term planning should inform Infrastructure SA's approach.

UK Treasury Green Book

The UK Treasury's Green Book provides the key framework to prioritise projects and reform. It provides a unifying, yet flexible approach to appraisal that considers the external environment, outcomes and policies as well as interrelated programs to projects and reform. The Green Book transforms operations or services through interventions to realise outcomes.

The focus on embedding outcomes and appraisal methods beyond cost-benefit analysis should inform Infrastructure SA's approach.

Transforming Infrastructure Performance (TIP): Roadmap to 2030

TIP presents a framework to collectively prioritise societal outcomes and enable better use of data, technology and improved delivery models. The approach balances the impacts of intervention on the natural, built and service systems. The whole of system view of decision making offers a best practice approach to infrastructure decision making.

The use of a system-of-systems methodology that provides coordinated and integrated consideration of build and non-built interventions in the natural, built and service systems should inform Infrastructure SA's approach.

1.6 Decisions that systematically consider South Australia's regions

SA has large, but sparsely populated regional and remote areas. The state's regions account for approximately 30% of its population and economic output, but contribute more than 60% of its exports, including minerals and energy, wine, grain and meat.

Despite this, regional SA faces its challenges, including climate change risk, ageing population and population decline and challenges regarding equitable access to services.

Relying solely on cost benefit analysis (CBA) for making investment decisions, particularly in regional and remote areas is fraught. There may be less data available regarding regional or remote areas, making it more difficult to conduct a comprehensive CBA.

Typical CBAs may also not take into account geographical, climate resilience, demographic and economic differences in regional and remote areas, compared to urban areas, where an initiative could have a far greater impact or be focussed on a particularly disadvantaged group. Some benefits, such as improved quality of life, community cohesion or cultural preservation are difficult to quantify in monetary terms but are highly relevant in regional or remote areas.

Therefore, an integrated approach to assessing regional and remote infrastructure is required, one that combines a monetised assessment with a qualitative one, supported by evidence and data, that encompasses community and social outcomes as well as financial and economic.

There are a range of tools and techniques that are consistently applied to implement this type of integrated approach. Making sure these are known and consistently applied across the whole state is a key element of a more robust and consistent assessment framework.

Further, broadening the considerations of decision making is important to include (but not be limited to) a full breadth of criteria. Although often poorly done (and requiring modification to be suitable for Australia's unique circumstances and conditions), international guidelines can assist such as utilising the United Nations Sustainable Development Goals (noting the relevant targets/metrics) while also referencing relevant Australian guidance (such as the Australian Bureau of Statistics Social Capital and Wellbeing metrics).

Further insights can be gained by using approaches to valuing those aspects not otherwise captured in standard CBA (monetised assessments). For example, estimating the Social Return on Investment (SROI) could be used, walking through a robust process of stakeholder discussions, mapping of outcomes, establishing indicators and monetising where possible.

Infrastructure Australia's Strengthening Communities framework, and the Regional Strengths and Infrastructure Gaps Report, provides a platform both for long-term regional planning and to identify the gaps in data in order to inform contemporary decision-making. This approach would offer SA the opportunity to maximise the contribution of regional communities to the state economy and deliver broader social and economic outcomes.

1.7 Evidence and confidence in decision making

Good data helps remove biases from decision making, minimises risk, supports validation of the course of action and allows for the establishment of pragmatic and realistic goals to support benefits being measured and tracked throughout the project lifecycle. The ability to provide evidence-based decisions is advancing rapidly particularly as access to high quality data is becoming cheaper and more readily available.

The redesign of Infrastructure SA's State Infrastructure Strategy provides an opportunity to coordinate the availability of SA Government with council, industry and other data regarding infrastructure. This coordinated approach could reduce effort in the recollection of data and the associated introduction of errors or omissions.

Data collected for the purpose of creating the State Infrastructure Strategy should be made available to industry and the community to support an informed dialogue and to reduce the costs to provide services to the SA Government and ultimately the community. This approach will deliver long-term benefits to the community and establish leadership in the use of data-led planning.

Infrastructure SA could also explore the opportunity to partner with industry and commercial data providers to supplement existing government insights and to build a reliable and trusted evidence base for future decisions. Using a broader source of data, or big data from third party sources, can help improve decision making by identify patterns and trends that may affect or be affected by the project.

Data

Access to established industry and government datasets provides an accelerated path to enhanced evidence-based decision making. Mott MacDonald utilises an established library of temporal and spatial insights to accelerate infrastructure planning and decision making.

It can further reduce risk and uncertainty. It can validate internally held data or identify the underlying drivers of changes, enabling predictive insights.

1.8 Collaborative delivery

The Australian major project delivery environment has been characterised by challenging cultural practices, declining productivity and emerging constraints.

The traditional transactional model for delivering major infrastructure projects and programs has not substantially changed over many decades. Subsequently the model is now unsustainable. A focus on outputs and lowest price results in low margins and low investment back into the industry and rarely provides the best outcomes or value for money for the community.

The current un-integrated approach locks the supply chain into dysfunctional, conflict-oriented relationships, which hinders collaboration and sharing of knowledge. It also prohibits innovation and holds back the infrastructure sector from embracing the digital transformation that is benefiting other industries. All this results in assets that too often are delivered over budget, behind schedule and perform poorly.

These characteristics are not uniquely Australian and have seen a number of reform practices developed in response. The UK Construction Playbook, Transforming Infrastructure Performance, the Global Infrastructure Hub's Improving Delivery Models, the UK Institution of Civil Engineers From Transactions to Enterprises and the World Economic forum's Shaping the Future of Construction all provide roadmaps for the reform of the sector. Infrastructure Australia's Delivering Outcomes represents domestic leadership in

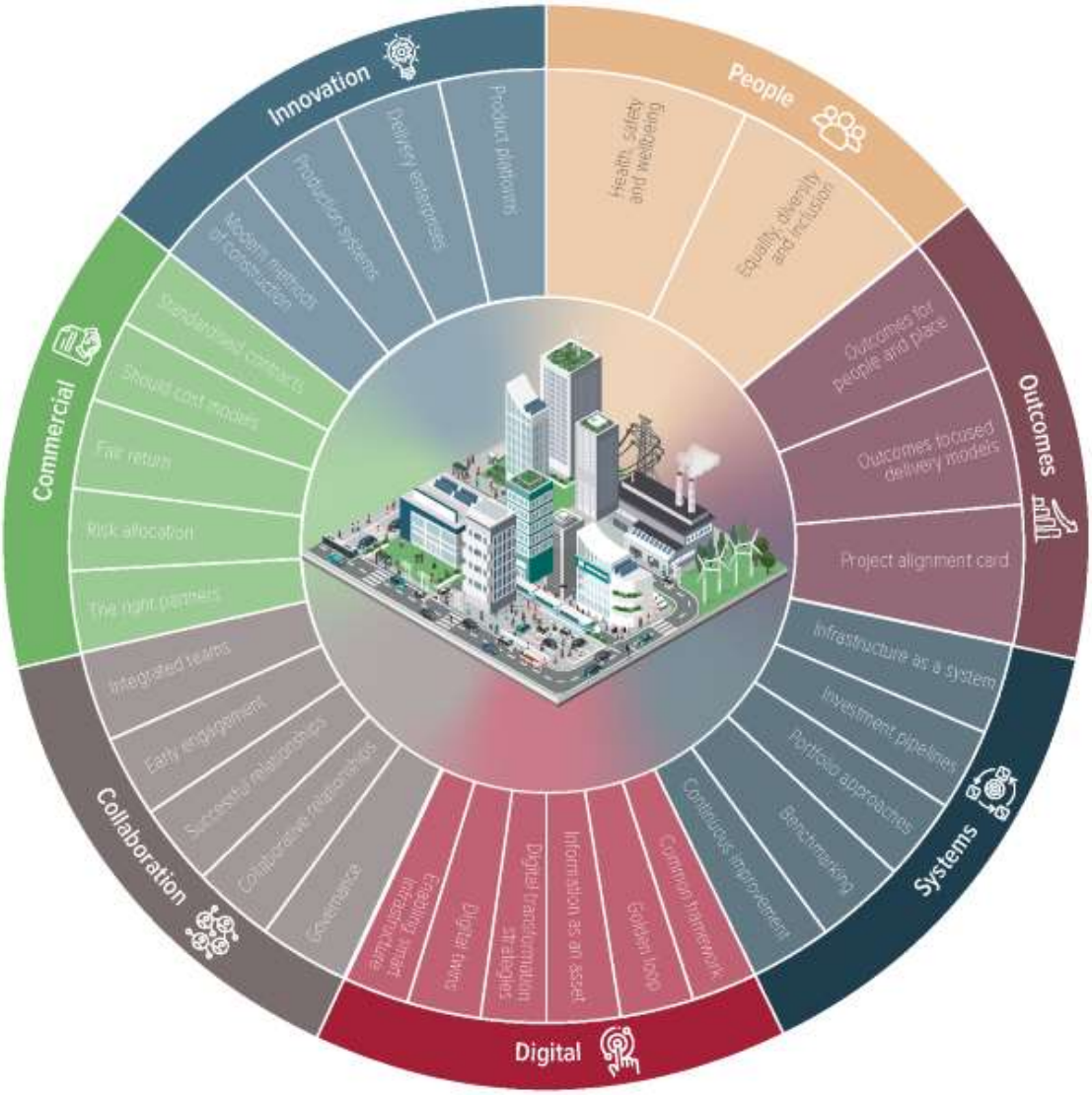


Figure 4 Delivering Outcomes principles for industry reform

Each of these reform roadmaps support a shift in the sector to embrace collaboration as means to support enhanced industry productivity. Collaboration is not an outcome in itself, but rather the platform for the resources of industry to be brought collectively to bear in order to support collective progress. Collaboration is an enabler of more efficient and productive work, with reduced duplication and waste.

Outcomes-led planning and systems of systems thinking structures create the environment to engender collaboration. A focus on outcomes can necessitate the exploration of supply chain partnerships and capability to drive progress.

In this way collaboration can be critical to unlocking innovation. The move to collaborative practices must be supported by corresponding changes in the cultural settings of industry and commercial practices so as to create the enabling environment for change. The culture settings that provide permission for collaboration at an individual level and for digital systems integration are also critical.

1.9 Collaborative delivery is not a synonym for alliance

More collaborative behaviours can offer benefits to infrastructure clients across the spectrum of delivery models, Figure 5. Collaborative models of contracting recognise the shared purpose and focus of client, contractor and consultant to realise project success, or potentially a shared outcome.

Figure 5 The collaborative delivery spectrum

The collaborative delivery spectrum emphasises the potential for industry to take a greater leadership role across the project spectrum including the strategy, planning and delivery of major projects or reforms .This 'two heads are better than one' approach does not reduce the role of government in infrastructure delivery, however provides focus for the contribution of government to focus on areas outcome-setting, governance, decision-making with the role of industry focused on the application of strategy, policy, risk management and innovation within these guardrails, Figure 6.

The Australia Government's 2023 Infrastructure Policy Statement

The 2023 Policy Statement places a greater focus on collaboration stating:

"The Government expects project procurement practices to support the long-term sustainability of the construction industry given its critical importance to infrastructure investment pipeline delivery. Such practices could include adoption of collaborative models of procurement."

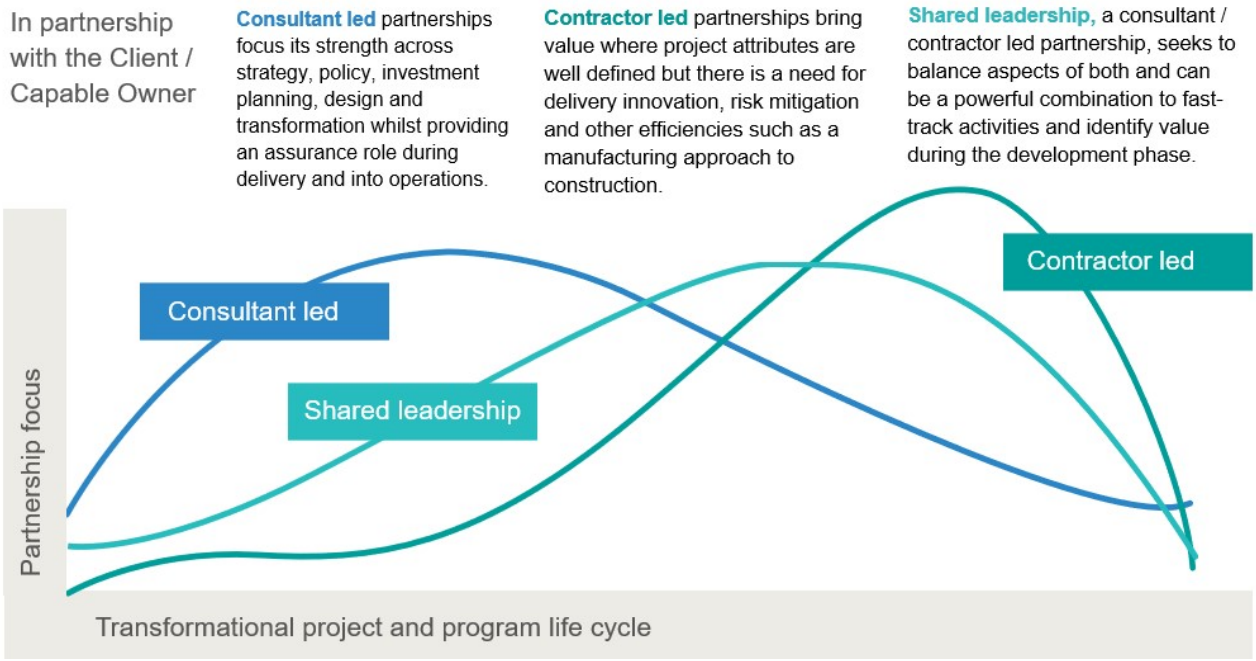


Figure 6 Delivering value through a collaborative partnership focus

The competition for resources within the national major project market is at a high. The elevated level of activity in major projects is at multiples of the long-term average. While project investment is now being reprofiled or delayed, the level of activity that will remain active in the market is well above historical long-term averages and is likely to present long-term challenges to the sector.

The challenges associated with elevated levels of activity will be compounded by the size and scale of transport and energy sector projects. Project size and scale are growing which in turn is presenting new challenges and complexity for industry.

The move to collaborative delivery models presents the opportunity for the SA Government to partner with industry to rapidly build capacity and capability to deliver this elevated level of work, but also to support a delivery culture that is more attractive for people and investment. This could help ensure the most capable organisations and people are available to deliver SA projects. The interstate water sector, notably Sydney Water in NSW, Unitywater, Sunwater and Urban Utilities in QLD have used collaborative deliver model reforms to attract resources to the industry and priority projects.

1.10 Enterprise based models can accelerate reform and capability building

The evolution of collaborative delivery models has led to the development of the Project 13, an industry-led movement to improve the way infrastructure is delivered. It is based on core principles that enable a new operating model for ‘enterprise’ working.

This enterprise-based approach involves the creation of new relationships, resourced through collaboration between supply chain partners and are characterised by government working in deeper partnership with industry to deliver.

Mott MacDonald played a leadership role supporting the development of Project 13 alongside the United Kingdom’s Infrastructure Client Group (ICG), which represents the largest body of infrastructure clients in the UK, alongside the Institution of Civil Engineers.

The vast potential of Project 13 lies in promoting supply chain integration, enabling smart, collaborative working practices and aligning commercial arrangements and incentives with customer and end-user outcomes. It emphasises the need to recognise infrastructure as an information-based industry.

The benefits of Project 13 will be greater certainty, productivity, performance and value in delivery and operation, and a more sustainable, innovative, highly skilled industry.

Switching from a transaction to an enterprise model for infrastructure delivery is fundamental to the Project 13 approach, Figure 7. An enterprise can be defined as being a productive long-term relationship between the owner, integrator, advisors and suppliers. These organisations are commercially aligned and incentivised to deliver better outcomes for the end-users.

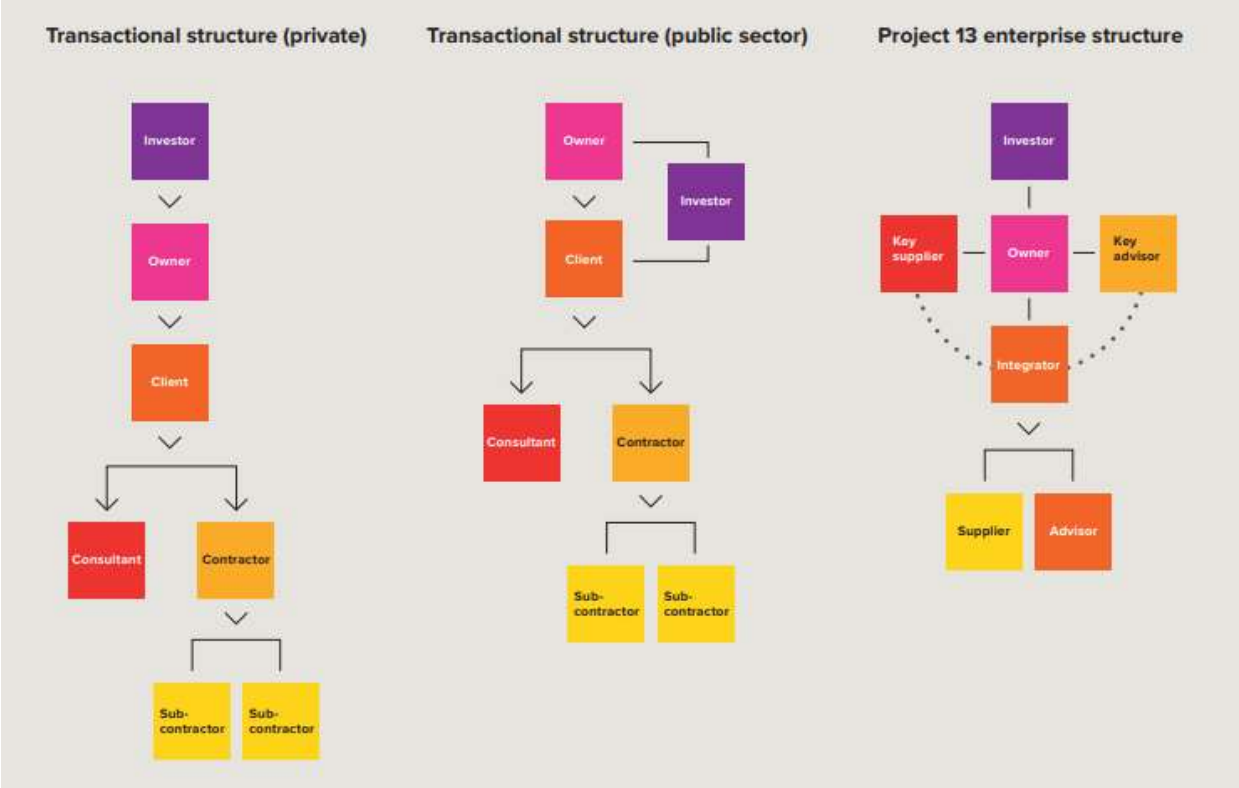


Figure 7 From transaction to enterprise based delivery

The roles, capabilities and behaviours of an enterprise differ from those in much of the construction industry today. The most significant changes to the structure are:

- The asset owner is central and leads the enterprise
- An integrator actively engages and integrates the supplier ecosystem
- The owner, key suppliers, advisors and integrator work as one team
- Suppliers have a more direct relationship with the owner.

The main differences between an enterprise and a traditional construction program are:

- Reward/profit in the enterprise is based on value added towards the overall outcomes
- There is greater understanding of cost drivers and risk across all organisations in the enterprise, with commercial incentives for collaboration to jointly mitigate risk, not transfer it
- Establishing a high-performing enterprise requires a fundamental shift in leadership, governance, behaviours and skills to succeed.

The Project 13 model requires client leadership in five key areas (pillars) in order to ensure the creation of a successful enabling environment:

- **Governance** – clear and consistent rules, processes and practices must be put into place in order to guide the interactions between client organisations, the supply chain and decision makers. The establishment of authority within the enterprise is critical.

- **Organisation** – the enterprise model provides flexibility; however it requires proactivity to ensure the right suppliers, are engaged at the right time, and are integrated into the team.
- **Integration** –the culture, practices and systems must be established by the client and embedded across the enterprise and supply chain.
- **Capable Owner** – mature outcome definition supported by well-articulated technical requirements including a transition, manage stakeholders, put infrastructure into operations, and to work collaboratively with the whole team.
- **Digital Transformation** – Beyond embracing digital approaches, new business models must be devised that use digital approaches to shift operation in the sector.

1.11 Start with digital transformation

The five pillars of Project 13 also present a framework to anchor client maturity in project delivery more broadly. As a foundational approach to the transition to deeper collaboration, digital transformation presents an opportunity to realise significant benefits for modest costs. Digital transformation has at its core the provision of data, and in turn information, to inform decision making.

Sharing data between parties in the supply chain and across operators of similar assets can significantly improve asset performance. The Project 13 approach requires understanding of how to make better use of information to deliver value. Infrastructure owners recognise there is a huge opportunity to make better use of their data to drive better decisions, delivering efficiencies and unlocking value for all stakeholders, including the ultimate customers.

Benchmarking against best-in-class performance will help infrastructure owners to identify priority actions that will deliver value – through better understanding their customers, risks and asset performance, and developing new ways of working built on effective information management. Measuring culture, skills and behaviours will enable the capable owner to shape their enterprises for success. Benchmarking data also provides the basis to evaluate performance and allocate rewards within a new, outcome-driven commercial model. There is significant value in sharing information across the industry, enabling increasing connectivity and common benefit between different asset owners.

Infrastructure SA could examine the role for digital adoption and the targeted removal of data silos to bring together the true whole-life performance of assets identifying more efficient ways to deliver the desired outcomes.

Mott MacDonald Project 13 digital Toolkit

Mott MacDonald provided leadership for the Project 13 Digital Transformation workstream developing an industry benchmarking tool and more recently principles for digital success.

This Infrastructure industry benchmarking report provides a snapshot of the UK infrastructure industry's digital maturity – it's readiness for digital transformation. The purpose is to better understand the ability of asset owners and their supply chains to embrace new digital opportunities. It provides a starting point to inform the development of a national digital transformation strategy for infrastructure. The Industry Readiness Level (IRL) has been developed as a measure of digital maturity across six broad themes – reflecting the impact of digital transformation on all parts of the business: customers; leadership; commercial; capability; asset delivery; and asset management.

The Data and Digital Principles for Project Success are intended as core propositions or 'basic truths', to be used to guide thinking and behaviour in project delivery. They are intended to sit alongside the Infrastructure & Project's Authority Principles for Project Success. Designed as short, memorable headlines unpacked by supporting bullets: a quick guide for practitioners on things to get right for any project to succeed. The eight principles were developed following consultation with project professionals across the Infrastructure Client Group and Project 13 Adopter stakeholders and beyond.

2 Climate & carbon are planning fundamentals

2.1 Mott MacDonald's Carbon Reduction Journey

As an organisation, Mott MacDonald is committed to achieving net-zero emissions by 2040, meaning that we will achieve emissions reductions across our value chain consistent with pathways that limit global warming to 1.5°C above pre-industrial levels.

In 2020 we achieved PAS2060 carbon neutral certification for our 2019 carbon footprint, and we achieved this again for 2020 and 2021. We were the first engineering, management and development consultancy to be certified carbon neutral, globally.

Since then, we have been working hard to develop and submit science-based targets which support our ambition to become net-zero by 2040. We are proud that in April 2023 our targets were validated by the Science Based Targets initiative (SBTi), an independent organisation that provides guidance and standards to drive greenhouse gas (GHG) reductions. This is a major milestone in our carbon reduction journey.

2.2 Carbon Reduction in Infrastructure

Complementing our own organisational commitments, our biggest opportunity to lead on decarbonisation is working with our clients to decarbonise projects.

We recently co-authored the updated international specification for carbon management in the built environment, PAS 2080. It spans the whole lifecycle of buildings and infrastructure. It is a step-by-step guide for organisations across the built environment on reducing carbon emissions from identification of need, optioneering, design, delivery, operation and use of new and existing assets.

The ISA discussion paper rightly points to PAS2080, the world's first specification for managing whole-of-life carbon in infrastructure. The emphasis appears though, to be on reductions in embodied emissions from materials such as steel, concrete and glass.

While these typically make up the bulk of emissions from infrastructure projects, it is critical that we move our thinking to early in the planning phase, particularly addressing 'need' and whether an infrastructure solution is the best approach to fulfilling this need.

Infrastructure NSW, with assistance from Mott MacDonald, has recently developed a consultation draft of 'Decarbonising Infrastructure Delivery Policy – Reducing Upfront Carbon in Infrastructure' for assessing, measuring and managing upfront carbon in infrastructure planning and investment decisions (the Policy). The Policy will complement the existing NSW Treasury business case guidelines and cost-benefit analysis guidelines.

The Policy includes 3 key components:

1. Apply the carbon hierarchy – significantly, including "avoid: build nothing or reuse existing assets"
2. Assess the carbon of the preferred scheme, and including carbon as a criteria in options assessment
3. Track and report on carbon through the lifecycle of the project

A nationally consistent approach to addressing carbon in infrastructure decision making could bring significant efficiencies to the infrastructure sectors and significantly reduce the upfront carbon associated with fulfilling 'needs' for our communities. Avoiding embodied and enabled emissions, particularly by pursuing no-build or adapting existing assets should be given serious consideration during the early project phases.

In addition, it would prove valuable for state leadership to introduce and crystalise codes and regulations regarding carbon reduction and climate resilience in infrastructure projects.

2.3 Environmental, Social and Economic outcomes for all infrastructure projects

Environmental legislation through the Commonwealth Environment Protection and Biodiversity Conservation Act and South Australian Environment Protection Act and the Planning, Development and Infrastructure Act has been embedded in the delivery of infrastructure projects in South Australia since the 1970s. Social and climate related environmental legislation and requirements are not as advanced and as such are not always given full consideration.

For example, the positive carbon reduction impact of renewable energy projects on overall greenhouse gas emissions is a given, we should not overlook the opportunity to ensure that these are delivered in a way that provides both environmental and social outcomes through delivery.

Sustainability rating tools have been utilised globally to deliver more balanced outcomes on infrastructure projects globally. The IS Rating Scheme (IS) is Australia and New Zealand's only comprehensive rating system for evaluating economic, social and environmental performance of infrastructure across the planning, design, construction and operational phases of infrastructure assets. The scheme can assess the sustainability performance of infrastructure at the individual assets level, for portfolios or networks, or even at a regional scale.

Mandating the use of IS Ratings through planning and / or funding approval processes can ensure that the infrastructure delivers balanced outcomes for our state.

3 Summary

Adelaide enjoys an envious lifestyle highlighted by ease of accessibility and a landscape that transitions from a grid-based city, ringed by parklands that transition to suburban communities that flow into the foothills.

In planning the next horizon of the State's infrastructure through this strategy, we need to aim to build on our natural strengths while protecting our unique advantages. This also means better leveraging our clean-green energy supply, building on our sovereign advantages to drive increased employment opportunities and economic outcomes.

Currently, and consistent with national market conditions, SA has a substantial pipeline of projects in the near term. The 2023 State Budget included more than $21 billion on infrastructure spending across the next four years alone.

This includes funding for projects currently either underway (Hydrogen Jobs plan, North South Corridor, Fleurieu Connections and the Adelaide Aquatic Centre) or being planned (Women's and Children's Hospital, Northern Water Supply, River Torrens-to-Darlington, AUKUS defence works and the Port Bonython Hydrogen Hub).

Individually, any of these projects are uniquely complex and challenging. Together they require significant, holistic planning and a coordinated rollout to ensure benefits can be realised through cross-sector harmonisation focussing on material supplies and necessary skills development and retention.

Through this strategy, Infrastructure SA has an ability to demonstrate leadership in the consideration of the integration of community expectations of minimum service levels for regional and remote communities to an outcomes-lead approach for infrastructure planning.

As the environment changes and community expectations regarding service provision and infrastructure development evolve, so should the frameworks upon which decisions are made and projects are designed.

Mott MacDonald would urge Infrastructure SA to consider the above outlined global best practices to offer a holistic change in the way benefits are captured, social licence is maintained, to deliver better integration and utilisation of data and work towards increased collaboration across industry to deliver efficiencies and support skill retention.

Also, consideration of a version of the "vision and validate'' process coupled with a new collaborative delivery format could support unlocking innovative delivery of new and important benefits to deliver sustainable and lasting infrastructure.

Climate resilience and carbon reduction are two things that South Australia has a proud history of leadership in and that can be greatly enhanced through codifying planning and design regulations that measure the value of resilience and carbon abatement through planning and delivery.

By establishing leadership in these areas and embracing innovation, SA will deliver increased, longer-term benefits and better meet expectations of communities, particularly regional communities.

Mott Macdonald would like to thank ISA for the opportunity to contribute to this Strategy. We hope you have found this paper informative, and we are happy to make representatives available for further discussion if useful or if required.

Submission of nbn to

The South Australian Government's Next 20-Year Infrastructure Strategy

4 December 2023

For further information please contact

[redacted]

Disclaimer

1. Introduction

NBN Co Limited (nbn) welcomes the invitation to provide a submission for the 'South Australia's 20-year State Infrastructure Strategy (the Paper). We acknowledge the paper is the opportunity for Infrastructure SA to engage with key stakeholders and the community in the preparation of the 20-year State Infrastructure Strategy. The Paper sets a clear framework for developing a vision and way forward for planning and developing key infrastructure opportunities across multiple time horizons.

Digital connectivity will play a significant role in shaping the 20-year State Infrastructure Strategy. It is key to growing and diversifying the State's economy and ensuring South Australia remains domestically and globally competitive. nbn contributes to the key objective '*lift the digital capability of the country'* through building and operating the nation's wholesale, local access broadband network – delivering access to fast, reliable and affordable broadband services.

The Paper is a strong introduction to how infrastructure can contribute to building a strong, resilient and diversified economy.

About nbn

Established in 2009 as a Government Business Enterprise (GBE), the principle responsibility of nbn is to operate and continue to build and upgrade the nbn network in accordance with the expectations of Government. The nbn network is Australia's digital backbone that helps deliver reliable, resilient and secure broadband across the nation. nbn is committed to responding to the digital connectivity needs of people across Australia, working with industry, governments, regulators and community partners to lift the digital capability of Australia.

nbn works to fulfil the objectives set out by its Shareholder Ministers in a Statement of Expectations (SoE)[1]. On 19 December 2022, the Government issued a revised SoE, which sets out that the Company is expected to continue to deliver improvements to the network while keeping prices affordable.

The revised SoE confirms the Government will retain nbn in public ownership for the foreseeable future, and that it expects nbn to expand full-fibre access to more homes and businesses, and ensure the nbn network delivers for customers and facilitates productivity. This connectivity is essential to enabling access to key services, maximising employment and educational opportunities, and driving productivity and economic growth.

In line with the revised SoE, nbn will focus on upgrading and improving the network to help enable the use of emerging and future technologies which meet future demand and promote innovation.

nbn is delivering high-speed broadband to customers across Australia over an area of more than seven million square kilometres. Working in collaboration with industry partners, nbn is committed to

[1] Statement of Expectations, 19 December 2022, https://www.nbnco.com.au/content/dam/nbn/documents/about-nbn/policies/statement-of-expectations-2022.pdf.coredownload.pdf

connecting Australian homes and businesses so they can access the social and economic benefits that fast broadband enables.

Operating environment

nbn was established to improve wholesale broadband services across the country, while also enabling the provision of reasonably priced services to consumers and businesses via RSPs.

As the network wholesaler nbn provides wholesale-only broadband services and related activities to access seekers, including RSPs, on a non-discriminatory basis. It is through RSPs that customers connect to the nbn network for access to high-speed internet.

This approach seeks to help level the playing field in the Australian telecommunications industry, enhancing competition and innovation and providing greater choice for customers across the country.

nbn operates in a competitive market. As such, the Company must always consider how customers can get the most out of the nbn network and appreciate the difference in service provision between the nbn network and other options for connectivity such as mobile, low earth orbit satellites, and private fibre and fixed wireless networks.

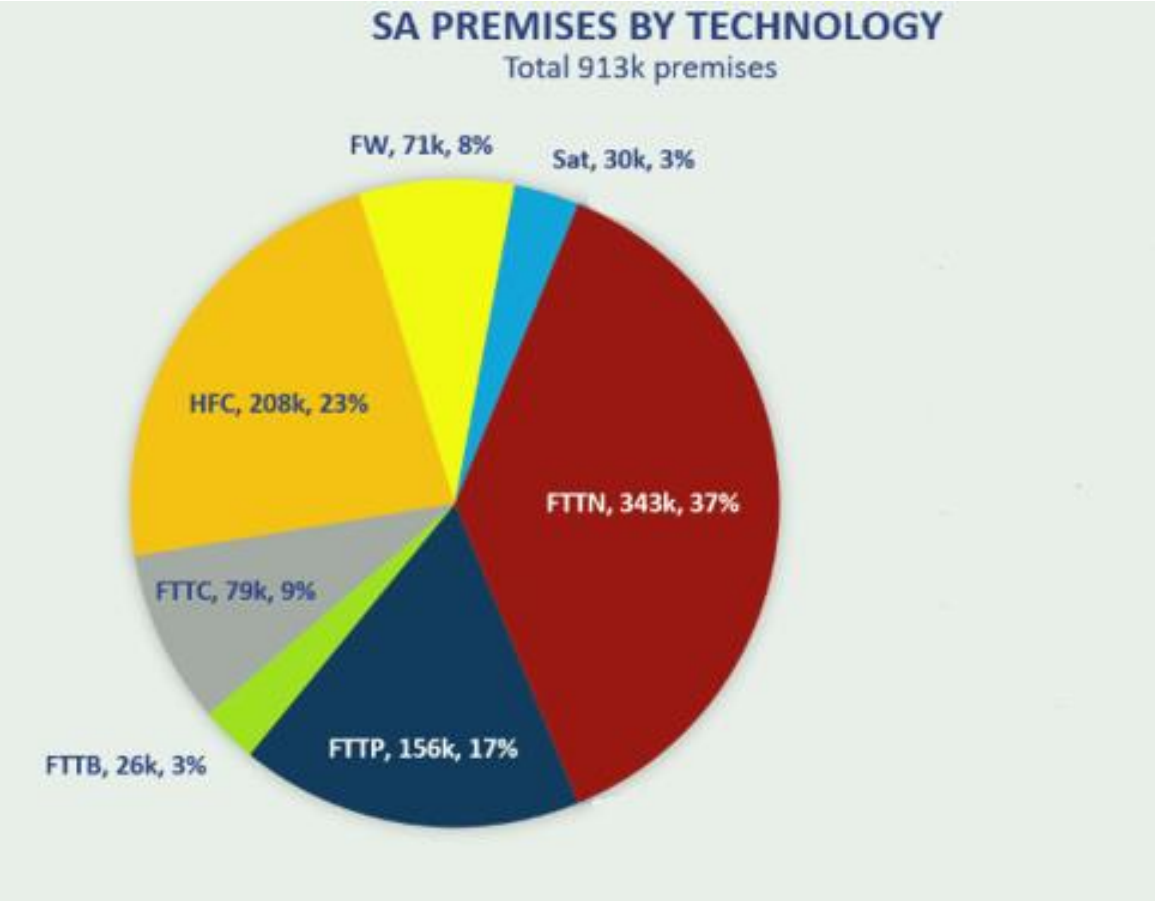
The Company endeavours to support both RSPs and customers, so that customers connected to the network, and those who connect in the future, can do so at a reasonable price and be assured of receiving high-quality broadband over a fast, secure and reliable network.

2. Overview of nbn network in South Australia

Technology Overview

The nbn network offers coverage to premises across the length and breadth of Australia and its surrounding islands, from central business districts and urban residences to regional properties and remote areas.

As at 16 November 2023, over 906,000 South Australian homes and businesses are able to connect to the nbn network, with over 603,000 already connected to the network. South Australian's access the nbn network via a variety of fixed line and non-fixed line technologies, show in the below illustration:



FW = Fixed Wireless, Sat =Satellite, FTTN = Fibre to the Node, FTTP= Fibre to the Premises, FTTB = Fibre to the Basement, FTTC = Fibre to the Curb, HFC = Hybrid Fibre Coaxial. Accurate as of 30 November 2023.

Investment in digital infrastructure

The Company's network investment plan is aimed at taking fibre deeper into communities, extending Fixed Wireless coverage and improving Fixed Wireless and Satellite capabilities, which are designed to deliver faster nbn network speeds and greater capacity, while continuing to deliver excellent customer experience.

Network evolution – Fixed Line

The Company is progressing its efforts to enable more customers to upgrade to FTTP, with close to one gigabit per second[2] residential download speeds and up to nearly 10 gigabit per second[3],[4] symmetrical download and upload speeds for nbn business grade fibre.

nbn is on target to enable 10 million premises, or up to 90 per cent across the fixed line network, to access the nbn Home Ultrafast wholesale speed tier, which is capable of achieving wholesale download speeds of 500 Mbps to close to 1 Gbps[5], by the end of 2025. A full list of eligible SA suburbs and town can be found here One million additional homes and businesses to become eligible for full fibre | nbn (nbnco.com.au). Individual address eligibility can be checked here Upgrade to nbn's full fibre | nbn (nbnco.com.au)

Moving forward, the nbn network will need to deliver faster upload and download speeds and far greater capacity than ever before, which will require continuous innovation and investment in new architecture and new technologies.

An extra 57,248 km of fibre was rolled out across the country this year as part of nbn's fibre upgrades currently underway – that's enough fibre to span from Melbourne to New York and back almost twice.

Network evolution – Fixed Wireless and Satellite

The Company aims to deliver faster speeds for regional Australia, benefitting customers in thousands of homes and businesses.

In partnership with the Australian Government, nbn is investing a further $750 million in the nbn Fixed Wireless network to enhance coverage and deliver faster speeds for regional Australia. This upgrade is being enabled by a $480 million grant from the Australian Government and $270 million from nbn.

[2] Regardless of the retail FTTP service you purchase, the actual wholesale maximum wholesale speeds delivered to RSPs will be less than 1 Gbps due to nbn® equipment limitations

[3] Regardless of the bandwidth profile for the service you acquire from your service provider, it may operate at less than 10,000 Mbps (or, in some circumstances, 1,000 Mbps, if that bandwidth profile is acquired) because of normal equipment and network limitations. In addition, your experience, including the speeds actually achieved over the nbn® network, depends on some factors outside our control (like your equipment quality, software, and how your service provider designs its network). If your service provider has not selected Class of Service High, speeds you experience may be affected by contention on the nbn® network, particularly in busy periods.

[4] Business nbn® Enterprise Ethernet is only available in the nbn® Fixed Line network footprint and at limited premises served by the nbn® Fixed Wireless and Satellite networks.

[5] Regardless of the retail service you purchase, the actual speeds delivered by NBN Co's highest wholesale speed tiers of 500 Mbps to close to 1000 Mbps will be less than 1 Gbps due to equipment and network limitations and the peak information rate may fall anywhere in this range. In addition, the HFC Home Ultrafast bandwidth profile downstream service provided to retail providers is a ranged profile with a maximum sustained information rate of 750 Mbps. Reference to speeds are not end user speeds; they are wholesale layer 2 peak information rate bandwidth provided to retail providers. An end customer's experience, including the speeds actually achieved over the nbn® network, depends on some factors outside our control (like equipment quality, software, and how your retail service provider designs its network) and the NBN Co technology used for your connection.

This will include the deployment of 5G millimetre wave technology and the introduction of two new wholesale higher speed tiers, enabling 100 per cent of the expanded Fixed Wireless coverage area to be capable of delivering a wholesale peak information rate of 100-130 Mbps download speed.[6]

Approximately 85 per cent of the expanded Fixed Wireless footprint is expected to be able to receive a wholesale peak information rate of 200-325 Mbps download speed.

nbn Fixed Wireless infrastructure sites will have their footprint coverage expanded by up to 50 per cent, enabling approximately 120,000 former Satellite-only premises to access nbn Fixed Wireless services.

nbn has 257 Fixed Wireless Towers built and on air in South Australia (and an additional three currently being built), which provides coverage to more than 71,000 homes and business. We expect this number to grow once the upgrades are complete.

In recent years, nbn has focused on delivering co-investment opportunities across Australia to further enhance the capabilities of the network. The company has successfully worked with all levels of government on co-investment initiatives and future opportunities remain open to all states and territories across Australia.

Key upgrade programs across regional South Australia include:

- Fixed Wireless network upgrades are currently underway or are planned to occur in locations across Eyre Peninsula and the West Coast; Yorke Peninsula and the Mid North; the Barossa Valley, Adelaide Hills and Mount Barker; Riverland and Murray River communities; in the Mallee region and across the South East and Limestone Coast.
- Fibre upgrades are planned or underway for eligible premises in locations including Port Lincoln, Ceduna, Whyalla, Roxby Downs, Port Pirie, Moonta, Kadina, Burra, Jamestown, Renmark, Waikerie, Nuriootpa, Tanunda, Mount Gambier, Mount Barker, Mount Compass, Goolwa and Middleton (please refer to the **nbn** website for the latest suburbs)
- SkyMuster Plus Satellite services are available in regional South Australian locations that do not have access to the nbn Fixed Line or Fixed Wireless networks.

Business Fibre Zones

nbn will continue to meet and support the growing demand for high-performance, business-grade broadband connectivity.

[6] NBN Co is a wholesaler and end customers should contact their preferred RSP to ask about availability. The planned wholesale download speeds for Fixed Wireless nbn® Home Fast and Fixed Wireless nbn® Superfast are Peak Information Rates with peak wholesale download speeds of 100-130 Mbps for Fixed Wireless nbn® Home Fast and 200-325 Mbps for Fixed Wireless nbn® Superfast.

The Company's direct fibre Enterprise Ethernet service enables business customers to order broadband based on wholesale speed tiers of close to 10 Gbps[7] [8], which is up to 10 times faster than previously available on the nbn network.

To support business take-up of these services, nbn has created Business Fibre Zones (BFZ). For businesses within these zones, the Company offers Enterprise Ethernet to service providers with no up-front build costs, and at its most competitive wholesale service pricing. There are 29 Business Fibre Zones in South Australia which include 99,000 or 91% of South Australian businesses.

Rollout in SA (snapshot)

- **Over 913,000 homes and businesses ready to connect**
- **~602,000 premises activated**
- **More than 89% of SA is serviced by fixed line**
- **29 Business Fibre Zones,**
- **257 Fixed Wireless Towers**

Data usage in South Australia

In just six years, data use has tripled across Australia. The growing need for broadband will reach even higher levels over the next decade as the internet continues to transform how people live and work, and even how the infrastructure within our cities communicates.

The average Australian household consumes around 423 gigabytes of data a month per average household - an increase of more than 50 per cent compared to three years ago, and uses 21 connected devices. Residents in the City of Playford in Adelaide, lead the nation in terms of data usage with an average of 613 GB used in a month.

In October 2023, there were more than 830,000 terabyte homes and businesses (up 14 per cent on the same period last year) who download at least 1000GB of data a month. The busiest times of the year on the nbn network are during the school holidays. The busiest day is usually a Sunday, and the busiest hour to use the nbn network is usually 9pm-10pm.

As the nbn network carries over 80% of the nation's data, nbn's network investment strategy is designed to keep ahead of national data demand and help unlock social and economic benefits for the nation. In order to successfully execute ongoing investment into the network, nbn needs to be able

[7] Regardless of the bandwidth profile for the service you acquire from your service provider, it may operate at less than 10,000 Mbps (or, in some circumstances, 1,000 Mbps, if that bandwidth profile is acquired) because of normal equipment and network limitations. In addition, your experience, including the speeds actually achieved over the nbn® network, depends on some factors outside our control (like your equipment quality, software, and how your service provider designs its network). If your service provider has not selected Class of Service High, speeds you experience may be affected by contention on the nbn® network, particularly in busy periods.

[8] Business nbn® Enterprise Ethernet is only available in the nbn® Fixed Line network footprint and at limited premises served by the nbn® Fixed Wireless and Satellite networks.

to maintain its ability to earn a reasonable and sustainable commercial rate of return. This will enable the Company to maintain the quantum and pace of investment in the network that will be necessary in the years and decades ahead to support Australia's rapidly growing digital economy and underpin the acceleration of technology advancements.

3. Alignment with the Discussion Paper:

A decarbonised and sustainable environment

nbn's investment into replacing copper with fibre allows the nbn network to offer a better customer experience, contribute to the Company's sustainability targets, and more broadly, help provide an uplift to Australia's digital economy, particularly in eligible regional areas in the nbn Fixed Line footprint (excluding Hybrid Fibre Coaxial (HFC)). Fibre is inherently more capable of delivering faster speeds and greater energy-efficiency, it is also making the network more reliable and resilient. FTTP uses less active network elements, leading to reduced energy demand and reduced vulnerability to weather related events, such as floods.

As a critical infrastructure owner and operator, nbn acknowledges the inherent risks climate change poses to its operations, network continuity and service obligations. The Company strives to operate a climate-resilient and resource-efficient network, that supports Australia's current and future social wellbeing and economic prosperity.

In February 2023, nbn committed to long term greenhouse gas emissions (GHG) reduction targets and achieving net-zero emissions by 2050, or sooner, via the Science Based Targets initiative (SBTi).[9] and the Company's long-term greenhouse gas emissions reduction targets will be consistent with meeting and exceeding the Government's commitment to net-zero emissions by 2050.

Improved resiliency and emergency response

nbn is always looking ahead to deliver a secure, faster, stronger, more resilient network, especially in light of natural disasters. These natural disasters pose potential danger to the nbn network, which is why the Company continues to work hard to mitigate potential risks.

One action nbn is taking involves rolling out more fibre across the country. Fibre optic cables are more resilient, energy efficient and require less maintenance. This means fibre not only delivers faster and more reliable broadband, it also withstands extreme weather much better than copper-based infrastructure.

nbn's determination and actions to safeguard the digital backbone of the country are being documented in its Climate Transition Plan, which will guide the Company through the many challenges created by Australia's changing climate. This strategic planning instrument will be designed to make the network more resilient by managing and mitigating the risks, adapting to the

[9] The Science Based Targets initiative (SBTi) drives climate action in the private sector by enabling organisations to set science-based emissions reduction targets – https://sciencebasedtargets.org/about-us.

new normal, and harnessing potential opportunities. The approach involves monitoring and treating resiliency risks across the network alongside ongoing proactive activities which protect over eight million customers per day, including active network monitoring, proactive fixes, strategic technology upgrades and cyber security activities. In situations where resiliency of the network is challenged,

The nbn network has been built to help withstand potential disruption. If one part of the network is damaged, the rest of it can still operate, however even with the best planning, natural disasters can cause physical damage to parts of the network. It is important to keep in mind that any equipment connected via the nbn network will not work during a power outage. When extreme events damage the network, nbn has assets that can be mobilised quickly to help restore services. Temporary Network Infrastructure (TNI) includes innovative equipment which has been developed in-house at nbn and pre-positioned across Australia, so it can rapidly deploy to support communities during disasters. This TNI equipment replicates the site that was destroyed, allowing customers to be connected while nbn repairs and replaces the permanent infrastructure.

Temporary Network infrastructure includes:

- **Network on Wheels and Wireless on Wheels** A small network exchange in an enclosed trailer that can be towed to where it is needed.
- **Point of Interconnect on Wheels** A semi-trailer sized, towed vehicle which mirrors an **nbn** Point of Interconnect and can be used by internet retailers to access the **nbn** wholesale broadband network.
- **Wireless Mast Trailer** A portable trailer with an extendable 18-metrehigh mast designed to replicate the equipment on a fixed wireless network tower.
- **Hybrid Power Cube** An environmentally friendly, hybrid technology power generation unit combining solar panels, battery, and a compact diesel generator to power fixed wireless hub sites
- **Multi Tech Trailer** A highly versatile, towable enclosed trailer designed for rapid deployment to quickly restore connectivity and power to damaged parts of the HFC, Fixed Wireless and FTTN network. Emergency Response Vehicle An expandable, semi-trailer sized mobile command centre.

nbn's Disaster Satellite Services are used as part of the Commonwealth Government's Strengthening Telecommunications Against Natural Disasters (STAND) program. This allows a temporary back-up connection to the nbn Satellite network during an emergency, with equipment installed at over 1,060 rural and country emergency management sites and evacuation centres across the country, including 49 in South Australia. These fixed locations have been nominated by state and territory governments and relevant emergency service agencies ensuring they exist where they are needed most. The additional connectivity bridges an important gap where land-based communications networks are temporarily impacted due to power loss or damage to communications infrastructure. These assets help emergency services connect and coordinate their efforts during natural disasters. Just as importantly, they provide a vital lifeline to local communities who may have lost online connectivity.

Digital Inclusion

Digital inclusivity is essential to nbn's purpose. It plays a critical part in the Company's role as Australia's digital backbone to improve access for people across Australia to reliable, secure, and high-speed broadband. For this reason, nbn has dedicated resources and capital, and identified commitments, to help address digital inclusion and help remote and regional areas of Australia to connect and stay connected, including low-income, vulnerable, or isolated customers.

The Company initiated and chairs the Low-Income and Digital Inclusion Forum (LIDIF) with the aim of identifying possible targeted initiatives to improve access, affordability, and digital ability for low-income and vulnerable users of the nbn network. At LIDIF, the Company collaborates and consults with more than 20 member organisations, representing not-for-profit organisations, customer advocacy groups, government agencies, Retail Service Providers, and research organisations.

nbn is proud to be supporting the delivery of the Australian Government's School Student Broadband Initiative (SSBI), established to provide free home internet for up to 30,000 unconnected families with school-aged students. nbn is providing internet providers participating in SSBI with a wholesale rebate for nbn network broadband services provided to families under the initiative. The Company has also provided a contribution towards the IT establishment and other operational costs incurred by participating internet providers to support the initiative. The first families were connected during Term 1 of the 2023 school year. In November 2023 the Minister for Communications announced that the duration of the free service would be extended from the original 12 months, to 2025.

Connectivity in First Nations communities

nbn's vision for reconciliation is to be deeply engaged and connected with First Nations cultures and their aspirations for digital inclusion. We recognise that nbn has an important role to play in driving digital capability in partnership with First Nations people and in exploring how access to digital connectivity can enable social, cultural and economic benefits for communities.

We acknowledge that our role extends beyond just connectivity, and that we must also support culturally safe and appropriate use of technology, expand our employment and business pathways with Aboriginal and Torres Strait Islander people, and continue to amplify the success of community-led programs and solutions.

nbn Community Wi-Fi in South Australia

nbn's Community Wi-Fi solutions enable access to free Wi-Fi services, enabling community members to undertake activities such as video calling, telehealth, instant messaging, email, basic web browsing and accessing critical government services, such as myGov. Community members use a portal to login on their device to access the Community Wi-Fi service.

There are two types of Community Wi-Fi available:

- A single Community Wi-Fi connection providing approx. 50 metres of available coverage.
- A meshed Community Wi-Fi solution which provides access across a whole community, piloted in 4 locations nationally.

nbn has deployed single Community Wi-Fi solutions in over 100 communities across Australia. In South Australia, this service is available in the following 8 communities: In the APY Lands – Indulkana, Mimili, Pipalyatjara, Pukatja, Kaltjiti, Kanpi and Amata; and to the township of Raukkan in Southern SA.

nbn's Meshed Community-wide Wi-Fi solution has been delivered in Koonibba on the West Coast of SA, and in Indulkana in the APY Lands. Each of these two communities has an installation of a Community-wide Wi-Fi solution powered by an nbn Sky Muster Plus satellite service, providing ubiquitous outdoor coverage across the community. Connectivity has also been provided to a maximum of three buildings in each community for internal access.

Through these connections and our continued engagement with communities, nbn is enabling more First Nations people to experience firsthand the social and economic benefits that come with greater access to crucial services and participation in the digital economy.

Economic impact of investment in the nbn network

Research undertaken by Accenture on behalf of nbn, details an estimation of the economic benefits from improved connectivity (including access to the nbn network) from 2012 and 2022, and demonstrate how nbn is helping to close the digital divide, particularly in regional Australia.

Initial findings include:

- In 2011, only 55% of householders in regional and remote communities had broadband at home. They experienced average broadband speeds of around 7 Mbps.
- In 2023, the number of households in regional and remote communities with access to broadband at home has jumped to 77%, and average speeds now sit around 40 Mbps – a significant uplift.
- the productivity benefit of increasing broadband speeds is 16 times greater in remote communities and 2 times greater in regional communities relative to our major cities;
- faster broadband has been an equaliser of opportunity for Australian in lower socio-economic communities with the most disadvantaged communities experiencing up to 5 times the productivity benefit of those in more advantaged communities;
- increasing broadband speeds delivered greater economic inclusion – creating around 170,000 jobs across Australia between 2012 and 2022; and
- higher speeds also help boost female workforce participation, with around 101,000 of those jobs being filled by women.

This modelling shows the real-life impact that access to fast, reliable and secure broadband through the **nbn** network can provide, particularly in regional Australia.

These benefits will further be supported by the company's current network upgrade program which is taking fibre deeper into communities, extending Fixed Wireless coverage and improving Fixed Wireless and Satellite capabilities - all designed to deliver faster speeds and greater capacity, while continuing to deliver excellent customer experience.

An initial excerpt of the report was prepared by for the Commonwealth Government and further details are expected to be released in 2024. It was provided under a non-disclosure agreement to the South Australian Government in September 2023.

Liveable and well-planned communities

New Developments

The nbn new developments team is a division of nbn that works with developers, builders, contractors and industry professionals to connect new properties to the nbn network. The team is responsible for expanding the current nbn infrastructure network into metro and regional areas across South Australia, providing access to fast and reliable broadband services for residents and businesses.

The developments team handles applications for new developments, assesses their eligibility, designs and installs the network infrastructure, and coordinates with various other critical utility providers including consulting engineers. The team also provide guidance and support for developers throughout the process, ensuring that the network is delivered on time and meets quality standards.

South Australia is experiencing a surge of new developments in both urban and rural areas, as the State government releases more land for residential and commercial purposes. Over 24,000 new homes will be built on land that will be rezoned as residential at Hackham and Sellicks Beach in Adelaide's south and at Dry Creek and Concordia in the north. The State government has stated that at least 15 per cent of the homes will be designated as affordable housing, to improve housing accessibility and choice for South Australians.

To support these new developments, nbn will be providing fast broadband services to homes and businesses across the state. The network is designed to future-proof the state with high-capacity broadband services and faster speeds, as well as to enable digital inclusion and innovation.

To align with the proposed growth corridors across South Australia, we have undertaken capacity planning to ensure the nbn network can supply new developments with the capability required for future growth and we are pleased to say our current network has sufficient capacity for most areas, where some new projects such as Dry Creek and Concordia will require some minor network upgrades as the housing rollout continues.

Smart Places

nbn is partnering with community makers to expand the nbn network into new suburbs and towns, creating smart cities, and transforming CBDs into technology hubs. One of the ways the Company is achieving this is through a new wholesale product called nbn Smart Places[10] , which is designed to allow customers to connect to smart infrastructure and the Internet of Things (IoT) outside of buildings.

nbn is using innovative new equipment including smaller, more robust, more energy efficient network connection devices, which enable the power of the nbn network to be delivered across outdoor locations that are not serviceable using standard equipment. This allows the nbn network to be connected to eligible locations outside of buildings including digital billboards, public Wi-Fi in parks, traffic lights, and CCTV. A smart place (otherwise referred to as smart cities) integrates technology into the surrounding built or natural environment to increase liveability, sustainability and productivity for residents and businesses.

Under the nbn Smart Places pilot program, nbn collaborated with internet retailers and industry to provide nbn fibre connectivity to 35 locations in four states. Given the trial's success, the product is now being offered across the country through internet retailers.

Research undertaken by International Data Corporation (IDC) on behalf of nbn showed a revolution across industries as they adopt outdoor smart devices and connectivity at non-premises to drive innovation, sustainability and efficiency. It's predicted that momentum will increase exponentially – with today's estimated 204,082 non-premise fibre-based connectivity expected to grow to more than 1 million by the end of the decade – a fivefold increase. Over the same period Traffic will grow 21x to

[10] NBN Co has launched Smart Places as a wholesale access product and is accepting applications for builds to non-premises locations in new developments. Service connectivity availability will depend on phone and internet providers offering NBN Co Smart Places, and timing of product availability will be at provider discretion.

4,411 Gbps, a CAGR of 46%. The top 3 industries for non-premise fixed connections will be Government, Utilities and Transport.[11]

A recent SA Government example, the Department for Infrastructure and Transport (DIT) has ordered Smart Places connectivity for traffic lights via their Retail Service Providers and is one of the first SA government agencies to take advantage of the solution.

Leveraging government procurement investment to extend fibre footprint

nbn are proud of the important role we play in supporting the South Australian Government in delivering essential services and infrastructure to metropolitan, rural and remote South Australia. We do this by providing high-speed, secure and reliable broadband to households, businesses and government agencies such as the Courts Administration Authority (CAA) to support their everyday connectivity needs.

The nbn network can connect to every Government agency across South Australia, either by fixed line (FTTx), fixed wireless or satellite. Current, significant re-investment into our network means that nbn can provide access to high-speed bandwidth across all the listed access technologies to meet and support the needs of a modern Government network.

For Government Agencies requiring high-capacity direct fibre services, nbn 'Enterprise Ethernet' provide a range of high-speed tiers, symmetrical speeds, traffic prioritisation and fault assurance time frames to meet the unique needs of these Agencies. These wholesale products give flexibility to select anything from a standard broadband internet service to a symmetrical enterprise-grade direct-fibre service for the vital data transmission needs of a range of businesses.

Leveraging nbn as the underlying ubiquitous wholesale access network provides;

- Improved transparency of consumption over a wholesale pricing construct
- Increased competition across Retail Service Providers
- Reduced risk and business continuity through redundancy – port, path or provider
- Greater agility for agencies to respond to business needs with scalable bandwidth on demand
- Reliable delivery supported by nbn Enterprise Service Delivery model

[11] https://www.linkedin.com/posts/nbn-co-limited_320k-outdoor-fibre-connections-by-2030-activity-7118445259335888896-9iip?utm_source=share&utm_medium=member_desktop

South Australia's 20-Year State Infrastructure Strategy Response

Plenary Submission

November 2023

Plenary

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1 Overview

Plenary Origination Pty Ltd ("Plenary") is pleased to provide the enclosed response to Infrastructure SA's ("Infrastructure SA") discussion paper ("Discussion Paper") to inform the further development and refinement of SA Government's 20 year State Infrastructure Strategy (the "Strategy").

Plenary was established in Australia in 2004, opening offices simultaneously in Melbourne and Sydney. Plenary's core business is the development of public infrastructure in partnership with Governments and key public sector institutions. It has been a leader in the public private partnership (PPP) and P3 sector for nearly 20 years, across several jurisdictions.

Plenary takes a holistic approach to its projects that embraces finance, design, construction, complementary commercial development, asset management and operations. We believe we have a uniquely long-term partnership model and have been privileged to successfully export Australian resources and expertise to several international jurisdictions; initially Canada, the USA and Asia, and more recently, the Middle East, Europe and the UK. One of our notable and long-standing projects is the South Australia Police and Courts Project; a successful public-private partnership project that has delivered and maintained nine police and courts facilities in locations across South Australia.

Plenary now manages 81 infrastructure assets worth more than US$51 billion across Australia and international jurisdictions. The Governments and agencies we partner with look to Plenary as a trusted and authoritative voice on delivering value-for-money public infrastructure that benefits the communities in which it exists.

Our holistic approach embraces project finance, design and construction, complementary commercial development and ongoing management and operations.

We are pleased to provide our response to the Discussion Paper and look forward to further engagement in relation to the Strategy.

2 The Economic Context

2.1 Our productivity challenge

What opportunities should we consider to improve South Australia's economic growth?

The drive to improve productivity is a key pillar to drive South Australia's economic growth – while controlling inflation and cost of living. This imperative is universal; particularly in light of slowing productivity and the consequent impact on economic growth.

A range of opportunities are available to the State to tackle the challenge. As identified in the Discussion Paper, inadequate infrastructure and connectivity is a brake upon economic growth.

Supporting infrastructure that allows collaboration between the government and industry to convert these opportunities into productivity growth will serve to release these constraints. An example of current project delivery is the North-South corridor to improve the supply chains and intermodal freight to foster economic growth.

Obviously, the project rationale, business case and planning of productivity accretive projects are key primary activities to ensure that the productivity and economic outcomes are delivered, particularly in light of escalating costs of delivery and operations and provision of core government services.

Having regard to the State's key economic growth sectors, some specific opportunities that will contribute to South Australia's economic growth include:

- Training and education: developing the skills, training and education capacity to support the development, infrastructure and key strategic and economic growth sectors, foster innovation and development and attract investment;

- Clusters / precincts: creating centres of excellence, linked with health, education, industry and technology institutions and organisations to remove the friction impeding innovation, productivity and economic growth;
- Transport: across the State, promoting public transport, intermodal integration, congestion reduction and fostering supply chains and freight connections to ease the movement of goods, services, workers and citizens to drive productivity;
- Water: population growth, industrial demand and climate change are expected to place increasing demands upon scarce water resources. Ensuring a safe and reliable supply of water, both through environmental sources and desalination will be necessary to avoid impacts to productivity and growth;
- Housing affordability: an issue that is impacting the economic growth across the world and affects the attraction of a skilled workforce and social inclusion. Providing facilities across the housing spectrum for the workforce that drives productivity and growth is an urgent need. This requirement is not limited to social and affordable housing, but requires consideration of all housing needs; be it for students and graduates, for young professionals, families and older workers in proximate locations to employment centres; and
- Energy transition / decarbonisation: climate risks present a material risk to economic growth. South Australia is well progressed in the shift towards 100% renewable generation and is working to foster the establishment of hydrogen production. This requires continued investment and development in transmission and generation infrastructure and the establishment of hydrogen production infrastructure – particularly as the generation and transmission market dynamic shifts from the basis of fuel cost to capital.

Driving productivity and economic growth while managing the State budget and cost of living is a fundamental purpose of the strategic planning and business case development. Creating capacity to deliver the infrastructure needs, by harnessing private sector capacity, capability and innovation is the only realistic means of delivering the infrastructure requirements.

Fostering the participation of private capital in a manner that preserves public sector service delivery and asset ownership can be an effective means of managing the government's risk exposure, imposing the discipline of private capital to infrastructure delivery and operations and multiplying the impact of the State's investments.

3 Enabling Infrastructure

3.1 Freight and supply networks

What infrastructure constraints are preventing a more efficient, accessible, and productive freight sector?

Plenary suggests that response to this question is best addressed by participants in the freight sector.

3.2 Water supply

How can we enable a sustainable and affordable water supply into the future?

Access to safe, clean water and sanitation is a human right - – fundamental to everyone's health, dignity and prosperity.

The effects of climate change, urbanisation and increasing demand due to population growth and industrial demand are placing pressure upon the natural environmental water sources. Measures, such as the new Murray-Darling Basin Plan deal that return water to increase flows are environmentally necessary to support the health of the river and ecosystem sustainability, but can impact the State's economic output and is an essential trade-off.

As noted in the Discussion Paper, from the breakdown of water used in South Australia it is clear the continued reliance on groundwater and surface water is unsustainable and a focus on wider application of alternative sources such as recycled water and desalination are urgently required. Even by addressing the immediate low-cost opportunities (demand reduction, recycling, etc), the marginal cost of water will inevitably

increase. Not only will this contribute to increases to the cost of goods and services that will assuredly flow into costs of living, but it could also lead to segmentation of water quality and a greater focus on the use of non-potable water where supply is available and the application is appropriate.

Desalination and pipeline projects, such as the Northern Water project, are a crucial step in supporting mining, hydrogen and other industries in the state by breaking the reliance on surface and groundwater but result in a higher marginal cost of water due to both the capital and energy costs necessary to produce it.

Therefore, enabling a sustainable and affordable water supply into the future is essential for continued economic growth and the continued development of mineral resources and agricultural industries. Considering the future hydrogen economy, a sufficient, affordable and sustainable water supply becomes an imperative.

By increasing the diversity and capacity of water supply, potentially with consideration of segmentation of water quality for different applications where supply permits, enables a sustainable and affordable water supply into the future. To achieve this objective, the water supply shifts from predominately low-cost environmental sources to a greater proportion of desalination.

Considerable capital investment will be required to design, construct and operate water reclamation facilities, desalination plants, pipelines and the renewable energy and transmission infrastructure necessary. There is an indisputable role for private capital, where competition, innovation and risk transfer can mitigate the incremental costs associated with desalination and obviate risk and cost exposure for the State Government.

3.3 Energy transmission

How do we realise the opportunities and mitigate risks with transforming our transmission and distribution infrastructure for the future?

South Australia leads the nation in renewable generation– particularly rooftop solar and has broken records with rooftop PV supply 100% of the demand in the State. The early implementation of the Tesla battery (the Hornsdale Power Reserve in 2017 and the subsequent expansion) has transformed the State's transmission network.

While the nation and South Australia is taking positive steps to achieve its emission targets and deliver upon its climate and clean energy ambitions, there remain legacy issues that include:

- the nature of the electricity transmission and distribution network;
- differential jurisdictional approaches to energy policy and renewables development;
- network constraints and impediments to timely renewable generation connections;
- legacy underinvestment in transmission and renewable generation infrastructure;
- Constrained delivery capacity for large scale transmission, distribution and generation infrastructure; and
- an increasing social resistance to the negative impacts of renewable generation and transmission,

are all risks to the achievement of the energy transition.

The planning, environmental and social licence considerations are shaping the timing and delivery of infrastructure essential for the energy transition. Governments across Australia (and globally) are confronting these issues and their impact on achievement of emission reduction targets on one hand, and the escalation of energy costs on the other. These are important enabling functions that State governments, and the applicable agencies can fulfill.

When considering the risks of the increasing reliance upon renewable generation upon the transmission and distribution networks, investing in DSO (Distribution System Operator) capability will be critical to maximising the opportunity of Customer Energy Resources (CER), while maintaining reliability and security of the SA Electricity system. While not physical infrastructure, defining the manner in which it is to be operated requires establishing policies and approaches to managing CER, including both rooftop solar PV and Electric vehicles. This will be critical maximising the value to consumers of these devices and the manageability of the system. Additionally, firming and System Strength infrastructure should be carefully considered, including the potential structure for its procurement. This becomes particularly urgent with the increasing tendency to inverter-based generation. The necessity for inertia and system strength is reinforced across the NEM and with new interconnection (noting Project Energy Connect).

The manner in which transmission, distribution, system strength and other network services are operated, funded, delivered in a timely manner that represents value for the energy consumer is a challenge that governments across the nation are grappling with. The delivery and capital requirements for large scale energy transmission are significant and present a barrier for incumbent transmission network service providers, the contractor market and governments in the absence of a new framework and private sector involvement.

Decarbonisation and the development of a Green Hydrogen industry will necessitate additional transmission and generation capacity, amplifying the delivery challenge. To be able to meet the growth of the hydrogen sector and to respond to the immediate transmission and distribution infrastructure requirements will necessitate the creation of an environment that attracts international contractor participation, investment and supply chain priority in order to achieve timelines. A clear and committed project pipeline that is communicated to industry, investment in skills development, immigration and temporary worker arrangements and a procurement framework that encourages and enables international participants to compete for projects are necessary elements to meet the delivery and operational requirements.

As an infrastructure developer and investor, Plenary has participated in transmission infrastructure procurement processes and continues to engage with State governments and regulators across Australia detailing the contribution that private capital and diversified delivery and operational expertise provides as an alternative to the traditional procurement, delivery and performance by incumbent Network Services Providers. As operating companies, these Network Services Providers are generally constrained in their capacity to meet the significant capital requirements to meet the unprecedented demand for new transmission infrastructure. Plenary has undertaken consideration of alternative models and the legislative and regulatory requirements for Australian project delivery, drawing upon in-house and third-party expertise to help inform emerging policy and procurement methodology.

3.4 Digital connectivity

What are the barriers to increased adoption of digital technology to improve productivity?

Plenary suggests that response to this question is best addressed by participants in the digital technology sectors.

3.5 Resource exports

What investments could unlock the value of South Australia's resources?

The resources and mining sector forms a key pillar of South Australia's economy in the future, and we anticipate those market participants will provide specific feedback in response to this topic.

To unlock and support the export of high-value resources and value-add products in South Australia, investment to support upskilling of existing and new workers and of supporting infrastructure will be important to expand the volume of resource exports in the State.

Adding to the comments above, the supporting infrastructure to enable the export of resources, such as roads, freight and rail transport networks, port capacity, electricity and water infrastructure and, importantly, affordable housing options will be required to support expansion in this sector as well as include water and energy security (which the Northern Water Project will play an important role) in supporting resource production and export.

Common User infrastructure, when well planned, constructed with sufficient capacity and provides equitable access is likely to be beneficial. A planning and coordination role undertaken by government is critical.

4 Liveable and Well-Planned Places

4.1 Coordinated planning

How can South Australia better coordinate infrastructure investment to support a growing population?

Population growth and adequate planning for housing/supporting infrastructure (schools, public transport, hospitals etc.) to support a sustainable growth in population.

All too often, development (particularly housing) has been left with compromised access to public services and facilities, poor transport planning and affected by congestion due to insufficient road capacity. This has an adverse impact on liveability and productivity.

Leaving the detail of planning reform to those involved in the development and application of legislation and process, superior coordinated planning outcomes have been seen where supporting infrastructure, such as schools, transport, childcare, health and hospital infrastructure and other social functions are considered, planned and undertaken in parallel with the primary planning and development process.

4.2 Affordable housing

What can be done to support sufficient, fit-for-purpose housing to improve housing affordability?

The shortage of sufficient, fit for purpose housing is a national issue. Further, affordability is a problem across the spectrum of housing. The details of the Housing Australia Future Fund are obviously an important Federal initiative to address housing affordability across the nation.

From Plenary's experience and analysis of housing markets across the country, the lack of affordable housing specifically is impacted by many factors, including:

- Supply: housing developers having no (or limited) incentive to develop affordable housing products across the spectrum of housing needs and sectors, as these dwellings deliver a lower rate of return (relative to high revenue generating supply). The Bowden project in South Australia is a positive initial step to demonstrate how these incentives can be directed to achieve positive housing outcomes;
- Demand: sustained demand for "unaffordable" housing as those already in the property market transact (upsize/downsize/relocate etc) or new people seek housing (migration). This level of demand is sufficient, at the current level of supply, to keep prices high;
- The supply and demand imbalance can be exacerbated in some areas by the planning environment which inhibits new density in well located areas and keeps the price high for existing dwellings. We note the changes to the planning processes and regulations implemented by the South Australian government towards addressing this issue;
- Viability: without support, affordable housing does not generate sufficient return to repay private sector capital – meaning development of affordable housing is dependent on:
    - government support (which is limited), or
    - not for profit funding (which is also limited).

  This feasibility gap is an impediment to institutional investment in areas or categories where there is a shortage of affordable housing.

- Capacity: Further to above, key providers of affordable housing are not able to deliver substantially more supply and institutional investors (particularly local) are not able to meet investment criteria to support these projects, resulting in:
    - community housing providers having insufficient capital and land, and lack of "project viability support" (i.e., financial support) to compete against developers who can pay more for sites; and

- even with financial support, community housing providers have insufficient capacity and capability to deliver at a scale sufficient to address the supply side failure – we need several thousand new dwellings, vastly outstripping the current rate of delivery by housing providers.
- The large, well-capitalized, deeply resourced, UK housing organisations are a fabulous aspiration for local housing providers, but our housing and funding system needs to be cognizant of what our local housing providers are currently capable of.

These issues require significant Government intervention and response. We note the policies and projects being enabled by Renewal SA in this area. However, there will continue to be a need for continued government focus on housing affordability as economic and population growth continues to drive housing demand. Some measures for further consideration in the context of:

- implementation of policies and initiatives to provide a massive supply intervention to stimulate delivery of more housing. We note the positive steps in relation to planning and zoning regulations and the role of RenewSA in the development of government owned land for potential housing projects. In order to achieve supply at scale, this entity will need to continue to partner efficiently with private market developers and builders to drive the policy outcomes;
- Incorporation of key worker housing as part of government infrastructure projects where land availability permits;
- Foster development of capability and capacity to address bottlenecks, constraints and market failure. Partnerships with experienced and capable members of the private sector enables delivery of housing at scale – and not solely with CHPs who don't have the expertise or capacity to deliver the extent of the program needed;
- Supply side incentives which promote an increased supply of housing, particularly where there are specific market conditions or constraints, thereby reducing competition for housing and pricing. New supply must be economically viable to deliver and compete with market rate supply for developer capacity, land and funding. This feasibility gap can be addressed by:
  - As South Australia is implementing, planning density bonuses offered for inclusion of affordable housing in return for delivering affordable housing allows developers to deliver more housing in a given project. The additional density preserves viability for the developer while ensuring increased supply of affordable housing;
  - Provision of Government land at nil or reduced cost for social and affordable housing projects to reduce input costs;
  - Tax incentives for delivery of social and affordable housing which “levels the field” in terms of relative return. If developers are agnostic as to what product they deliver (i.e. affordable vs market) there will be greater supply of affordable housing; and
  - Financial contributions (such as from HAFF or a State specific program) to eligible projects which deliver social and affordable housing. Again, developer returns are maintained, but with the inclusion of diverse new housing supply.
- Development partnership with the private sector to renew existing Government housing sites, similar to the “Ground Lease Model” program being implemented in other States, where, via a social infrastructure like model, Government will lease land with existing public housing to private sector consortia which will finance, design, redevelop, manage and maintain the housing for the next 40 years, following which the developments are handed back to government. These sites, and capital growth value, remain in public ownership. These sites can be mandated to have a minimum level of social and affordable housing, will benefit from expedited planning pathways, private sector capital funding and will leverage increases in density to improve economic and social outcomes.

4.3 Public transport

How can we improve public transport services across Adelaide and outer metropolitan areas to encourage greater patronage?

Improving public transport services in South Australia, particularly in Adelaide and its outer metropolitan areas, requires a comprehensive approach that addresses various aspects of the system and addresses the

barriers or impediments to wider adoption. Recognising passenger demand and travel patterns and the intermodal connectivity, some considerations for improvement may include:

- Increased Frequency and Coverage: Increase the frequency of buses and trains, especially during peak hours and expand the coverage to include more suburbs and outer metropolitan areas, ensuring that a larger population has easy access to public transport.
- Integrated Transport Network: reinforce an integrated transport network that seamlessly connects buses, trains, trams, and other modes of transport. This allows for easier transfers, broader public transport coverage and a more efficient overall system.
- Real-Time Information: Implement real-time information systems at bus and train stops to inform passengers about arrival times and delays through mobile apps, electronic displays, or announcements.
- Affordable Fares and Discounts: Review and possibly reduce public transport fares to make them more affordable for a wider range of people. Introduce discounts for students, seniors, low-income individuals, and regular commuters to encourage regular use.
- Infrastructure Investments: Invest in modern infrastructure, such as dedicated bus lanes and priority signalling for public transport vehicles. This can help reduce travel times and make public transport more attractive.
- Last-Mile Connectivity: Improve last-mile connectivity by integrating with other forms of transportation like bike-sharing, ride-sharing, and walking paths. Improvement in the last mile / “end of trip” transport solutions encourage active transport / rail commuting (bike lanes, bike storage at commuter stations, ability to charge e-bike or e-scooter, lockers, commercial amenity around stations) makes it easier for people to get to and from public transport stops and increase public transport utilisation.
- Accessibility, safety and security: ongoing improvement of public transport accessibility for people with disabilities. Wheelchair ramps, audible announcements, and other features to accommodate diverse needs are significant in the public transport usage by disabled citizens. Safety and Security Measures complement accessibility and enhance the overall experience for passengers. This may include well-lit stations, visible security personnel, and surveillance systems.
- Community Engagement and Public Awareness: by involving the community in the planning process to understand their needs and preferences, tailoring public transport services to better meet the demands of the local population can foster utilisation and broader adoption of public transport. Public awareness campaigns serve to educate residents about the benefits of using public transport and highlighting the economic, environmental, and personal advantages of choosing public transport over private vehicles.
- Environmental Considerations: Promote the environmental benefits of public transport to encourage eco-friendly commuting. Highlight reduced traffic congestion, lower emissions, and the positive impact on air quality.
- Demand Management: Collaborate with businesses and organizations to promote flexible work policies, such as remote work or staggered working hours. This can help distribute peak-hour demand on public transport.
- Technology Integration: Utilize technology to streamline ticketing and payment processes, making it more convenient for passengers to use public transport.
- Continuous Monitoring and Feedback: Regularly monitor the performance of public transport services and gather feedback from users. Use this information to make continuous improvements and address any issues promptly.

By implementing a combination of these strategies, the South Australian government can continue to work towards creating a more efficient, accessible, and attractive public transport system, ultimately encouraging greater patronage.

In addition, as is currently being adopted in South Australia and other States, another way to increase patronage is through land use policy. Similar to the affordable housing discussion above, higher density development around transport hubs serves to improve patronage.

4.4 Health and wellbeing

What investments would support a more efficient and productive health system that meets our growing and changing needs?

With the effects of population and migration growth into the State, an effective health system is vital for the health and wellbeing of the community. This allows those who are sick to effectively navigate the health, wellbeing and care systems in place to achieve the best outcomes for individuals, prompting a speedy recovery, reduced ongoing healthcare costs and supporting productivity and economic growth.

As the demand for high quality healthcare continues to increase, the need for efficiency and productivity becomes all the more acute. This requires consideration of the healthcare supply chain on one hand and the demand drivers on the other.

To help manage demand, prevention and early intervention are central to encourage access to high-quality care across all services including hospitals, mental health and wellbeing support. This creates broader community wellbeing initiatives, that may be delivered through telemedicine or hospital at home that serve to reduce demand on the healthcare infrastructure. In a similar vein, proactive management of chronic diseases, by emphasizing patient education, regular monitoring, and personalized treatment plans can reduce hospitalizations and improve patient outcomes.

The mental health crisis continues to escalate and place pressure on health services. Continued emphasis on prevention, early intervention, and ongoing treatment permits proactive treatment and can lead to improved overall health and productivity and reduced demand for crisis intervention and inpatient admission.

On the supply side, key healthcare worker demand is a national problem. Attracting and retaining healthcare staff is a challenge being experienced by health care providers across the country. Focus on workforce development, staffing levels, competitive salaries, and supportive working conditions, in addition to affordable housing, are essential for retaining skilled healthcare professionals and maintaining a high standard of care.

Public and private sector collaboration can assist the State of South Australia in addressing the investment and development to support the continuing delivery of an efficient and productive health system through initiatives such as:

- Development of healthcare precincts that serve to provide complementary services to tertiary and quaternary hospital facilities to:
  - Provide alternative treatment pathways to emergency department admission (primary care, allied health, imaging etc);
  - Attract healthcare staff, doctors and specialists by creating the facilities, amenities and services that they value and make their life easier. This may include consulting suites, childcare, gym and fitness facilities, food and shopping outlets; and
  - Develop complementary facilities to foster co-location, education, innovation and social benefits. The clustering of medical training facilities, nursing, allied health or other vocational health functions is a tangible benefit that assists with the attraction, development and retention of staff. Similarly, space for co-location of social agencies can provide meaningful, one-stop support (from charities or government agencies) to patients and staff.
- Whether as part of a healthcare precinct or not, private sector development of healthcare infrastructure has been proven to deliver superior outcomes. Affordability, innovation and long-term performance of privately developed, publicly operated hospitals and healthcare facilities has been demonstrated through many projects throughout the nation and globally. Plenary has delivered many successful examples of leading healthcare facilities under such an approach; and
- Facilities such as SAHMRI shows the importance education and research plays in the effectiveness of the health system. It contributes to the attraction and retention of specialists, creates connections with those tertiary educational facilities and promotes the reputation of the State. Partnerships with educational institutions and the private sector can contribute to their development and establishment of institutions and facilities that amplify the effectiveness of the health system and the leadership of the State in medical research and technology. Plenary's Health Translation Hub is a contemporary example where such an approach has been successfully adopted.

The implementation of digital technologies is also an important contributor to the efficiency and productivity of the health system. Plenary suggests there are others better placed to provide comments in relation to these aspects.

4.5 Education and skills

How can infrastructure support improved education and skills outcomes for South Australia?

To boost economic growth and productivity in South Australia, there is a need to continue to develop the education and training sector. There are forces that are driving demand for an effective education and skills development system in South Australia that demand supporting infrastructure to support the State's key strategic areas of focus. For example, the migration of skilled workers to South Australia has been identified as part of the broader state initiatives to ensure a steady influx of essential skills to support a productive workforce and may, dependent upon the sector, require validation or augmentation of skills and knowledge to respond to local regulations and requirements.

Productivity, workforce utilisation and economic growth are influenced by factors such as:

- Changing demographic trends;
- educational preferences and options;
- skills demand and vocational training;
- workforce development; and
- attraction of workers,

each of which necessitate educational and training pathways and the infrastructure to support the achievement of those necessary skills and education outcomes.

At all levels of education and skills development, the application of contemporary teaching and pedagogy is improved by facilities and infrastructure that reflects the educational practice. From primary through the postgraduate, private sector partnerships can contribute to the educational and vocational systems.

Plenary can point to a range of examples and contribute a wealth of experience partnering with institutions to support their infrastructure needs. Approaches such as development partnership (such as the one Plenary has entered into with Latrobe University), the successful delivery and maintenance of schools and other educational facilities through DBFM structures and the development of supporting infrastructure for educational facilities (student housing, ancillary facilities and complementary functions).

4.6 Cultural, tourism, and recreational facilities

How can we sustainably grow these sectors to realise greater benefits for visitors and residents?

South Australia is known for its events that celebrates the state's world-class food, wine, sport, art, design and culture. Tourism is one of South Australia's key sectors and cultural, tourism and recreational experiences are vital to attract visitors, encourage migration and serve to enhance liveability. Infrastructure and facilities that can support nationally and internationally recognised acts or experiences are necessary. The AFL 'Gather Round' is a great example of the way in which the State enabled and promoted a significant and successful event.

As a significant contributor to the State's economy, employment and tourism means that growth must continue in a sustainable and managed way.

In addition to the continued attraction and promotion of events, concerts and tourism generally, the other requirements for visitors and residents must also continue to be addressed. Replacing aging infrastructure, reflecting contemporary expectations and creating new experiences and attractions will help South Australia maintain the vitality of its cultural, tourism, recreation and sporting sectors.

Given the location and geography, Adelaide is the serves as the starting point for tourism in the State. Most flights arrive at Adelaide airport and facilities for visitors – hotels, restaurants and attractions are concentrated

in and around Adelaide. While there exists the opportunity for a greater regional share of cultural, tourism and recreational activity, the supporting infrastructure is, in many areas outside of the main centres, compromised. Therefore, developing the necessary infrastructure to continue to support cultural, tourism and recreation visitation across the State, that is accessible and caters to the range of budgets and visitor categories will assist the sustainable growth of the cultural, tourism and recreational sectors.

Leaving commentary about the attraction of events, the promotion and advertising of South Australia's tourism attractions, providing the foundation for a compelling and attractive destination for visitors and residents requires ongoing investment. The central location of Adelaide's Exhibition and Convention facilities, cultural institutions and sporting facilities provide an advantage. Notwithstanding, it can be argued there remains gaps in the type, capacity and suitability of existing venues and facilities available for cultural events, concerts, conferences and conventions, sporting events and entertainment.

In addressing the need for facilities and venues provides an opportunity for private sector involvement to partner with government to deliver new and upgraded facilities and, in doing so, provide further complementary development, such as food and beverage outlets, accommodation and linkages to the cultural and educational institutions. In addition, those commercial partnerships can de-risk the utilisation and economics of those facilities, incentivising the achievement of positive cultural, social and economic outcomes. Activation of entertainment precincts, such as the development of attractions to further enhance the Riverbank precinct will augment this central location used for many cultural and recreational activities in Adelaide.

5 Accessible and Inclusive Infrastructure

5.1 Regional and remote areas

How can we think differently about infrastructure investment to support equitable access and a more inclusive society?

Infrastructure investment in South Australia requires a balanced approach between the regions and the greater Adelaide area to foster inclusiveness and equitable access. Taking the opportunity to focus infrastructure investment to enable equitable access, support services infrastructure that attracts residents and migration to move to regional South Australia takes pressure off the cities and creates a more diverse society and economy. Striking a balance between urban and regional infrastructure investments requires a nuanced approach that takes into account the specific needs and characteristics of each area. By adopting a comprehensive and inclusive perspective, infrastructure planning can contribute to a more equitable and harmonious development across both urban and regional landscapes.

Discussion about equitable access should also consider the needs of First Nations people and initiatives to achieve the National 'Closing the Gap' outcomes.

Some considerations include:

- Equitable Distribution of Resources and fair allocation, so that infrastructure investments are distributed fairly between urban and regional areas. This requires a careful assessment of the needs of each area, considering factors such as population density, economic activity, and existing infrastructure;
- Transportation Connectivity and intermodal transport Networks enables investment in infrastructure that connects urban and regional areas efficiently, supports local industry, reduces disparities in accessibility for able and disabled people, regional and urban residents across socio economic groups;
- Digital Connectivity remains an area of disparity in access. Improving broadband access in regional Areas enables for education, employment, and social inclusion;
- Economic Opportunities and Promoting Regional Development can be achieved by Infrastructure investments that supports economic opportunities in both urban and regional areas, through industry support, common use infrastructure, encouraging entrepreneurship, and supporting local businesses;
- Health and Educational Facilities and accessible Services in Regional Areas is critical for 'Closing the Gap outcomes. Equitable and inclusive access to healthcare and education in both urban and regional areas necessitates infrastructure investments in hospitals, clinics, schools, and universities to be strategically distributed to meet the needs of diverse communities. This also supports local industries, helps retain people within the regions and fosters productivity and economic growth;

- Preserving the rich First Nations and European cultural identity, balanced across the regions and the urban areas;
- Environmental Considerations and sustainable development are now the expectation. Consistent approaches across development practices in both urban and regional areas, through planning and environmental assessment, delivery methodology and improvements to the biodiversity of the surrounding area. By investing in green infrastructure, sustainable waste management, renewable energy projects, and involving communities in those conservation efforts will contribute to the overall well-being of those communities;
- Housing Affordability: as discussed earlier, housing affordability is an issue in both urban and regional areas. Enabling development of affordable housing options through planning and infrastructure development will allow residents to live close to employment opportunities and essential services;
- Employment Opportunities are often cited as a contributing factor to the exodus, particularly of younger people, from the regions. Creating diverse economic activities and support of industries to foster job creation and economic resilience; and
- a lack of Climate Resilience has the potential to disproportionately impact the regions. Investments in infrastructure that enhances resilience to climate-related events such as floods, droughts, and extreme weather conditions, that safeguards the viability of local industries and protect housing and infrastructure from damage or degradation.

Through Community engagement and local input in decision-making, communities in both urban and regional areas can be involved in the decision-making process for solutions to the issues that affect them and the associated infrastructure investments. This ensures that projects align with the unique needs and aspirations of each community.

The development of privately financed infrastructure has demonstrated the achievement of successful outcomes, innovatively creating opportunities and relationships between disadvantaged groups, state and federal programs, social organisations and other stakeholders to achieve meaningful and sustainable outcomes. In addition, social procurement and local content outcomes are achievable through embedding these requirements and policy outcomes sought in the procurement model and genuinely incorporating these outcomes in the procurement and evaluation process.

5.2 Closing the Gap

What are the opportunities for infrastructure investment to accelerate attainment of the Closing the Gap targets?

As part of achieving the National Agreement on Closing the Gap commitments, direct infrastructure investment in health, housing and community infrastructure would further enable Aboriginal and Torres Strait Islander people to build individual and business capability in the state through economic participation. Government led support in social procurement, employment or training offer positive outcomes for the wider state.

Please refer to the comments above.

6 A Decarbonised, Sustainable Economy

6.1 Green industries

What infrastructure investments will support industries to transition to a global net zero future?

As referenced in the response to question 4, the decarbonisation will likely be a product of electrification for transport and industry, with the reduction in emissions from the utilisation of renewable energy as the fuel source.

Therefore, transitioning industries to a global net-zero future requires strategic infrastructure investments that promote sustainability, innovation, and efficiency and will require significant investment in the development of transmission, storage and renewable energy infrastructure.

Application of the generation and transmission infrastructure to industrial applications will necessarily include:

- Electric Vehicle Infrastructure, including transition to zero emission public transport;
- Green Hydrogen Infrastructure to decarbonize various industries, including manufacturing and transportation;
- Energy-efficient and decarbonised buildings;
- Circular economy infrastructure to foster increased waste recycling and resource recovery to promote a circular economy;
- Agricultural decarbonisation through improvement resource efficiency and reduce the environmental impact of farming and primary production practices;
- Digital infrastructure for remote work, productivity and supply chain efficiency;
- reducing the need for extensive commuting and associated carbon emissions.
- Water and resource management systems to improve water management and efficiency in industries, particularly where desalination is a component of the water supply; and
- Education and training centres to promote skills development to build a workforce capable of driving the transition to a net-zero future, especially in emerging green industries.

The State will require a coordinated approach that harnesses the capacity, capability and innovation of the private sector to deliver these outcomes. Prioritisation and coordination by government will be critical and necessitates a procurement and development approach considered in the response below.

6.2 Decarbonised energy system

How do we maintain an affordable, reliable and secure energy system through the energy transition?

The National Electricity Market is at an inflection point, where the basis of the market and the assumptions underpinning it no longer hold. Fuel cost is no longer the determinant for market pricing for renewable generation and this means that the investment calculus has been disrupted. This requires clear definition of the role of government in enabling the transition to renewable generation and a means of addressing cost of living pressures compounded by increases in energy costs.

As described in our response above, there is an important role for independent and long-term capital to support the delivery against the decarbonisation agenda.

6.3 Transitioning transport

What are the most significant challenges for decarbonising transport and how do we address them?

While Plenary is aware of many of the challenges from a financing and investment perspective, we would suggest transport operators and providers of low-carbon transport solutions may be petter placed to provide a perspective.

6.4 A circular economy

What action is needed to achieve a circular economy in South Australia?

Please refer to comments about infrastructure procurement approaches to deliver economic, sustainability and social outcomes.

6.5 Infrastructure delivery

What measures can be taken to enable the infrastructure industry to decarbonise?

Please refer to comments below in relation to procurement measures that foster the achievement of specific outcomes.

7 Improved Resilience

7.1 Planned resilience

How do we better account for the impacts of climate change in our infrastructure, to support improved resilience?

Adequate planning of infrastructure and future-proofing infrastructure against longer term risks and hazards will be required in the event of increasing frequency of force majeure events. Interfaces between private industry partners and public infrastructure should be maintained to enable cross collaboration and improve resilience in the supply chain networks and critical infrastructure.

This becomes an important planning function that can be addressed through an appropriate infrastructure development and procurement framework. Establishing an appropriate risk allocation, defining performance requirements and establishing the outcomes sought, privately developed infrastructure can support the critical resilience of infrastructure in partnership with the State.

7.2 Critical infrastructure

What are the critical resilience issues that South Australia needs to address?

Please refer to our response to the preceding question.

The critical resilience issues vary across the State and economy, but information technology networks, electricity transmission underpin the majority of government service delivery. Plenary would suggest that those involved in specific sectors are better able to provide specific feedback.

7.3 Green and blue infrastructure

How can we better realise the resilience benefits of green and blue infrastructure to inform infrastructure planning?

Plenary suggests that response to this question is best addressed by participants in the planning arena but note the opportunities for innovation and complementary development associated with core infrastructure that private capital participation and contracting for outcomes can bring.

8 A Stronger Infrastructure Industry

8.1 Planned pipeline

How can government and industry work together to support the supply of skilled labour needed to deliver a transparent infrastructure pipeline?

The significance of a planned pipeline cannot be understated. A strong and clear infrastructure pipeline whether greenfield, brownfield or augmentations of existing projects provides valuable signals to industry to support the infrastructure industry in South Australia over a longer horizon. Committed funding and assurance in relation to timeframes for infrastructure projects supports private sector investment in the State, enables the planning and mobilisation of resources and fosters international participants' entry into the Australian and South Australian infrastructure sector.

The scale of infrastructure delivery across the region, combined with low unemployment, skills shortages and supply chain constraints means that South Australia is competing with the other States and neighbouring countries for resources, capacity and capability. A transparent and up-to-date infrastructure pipeline is one component that contributes to the attractiveness of South Australia for infrastructure sector participants.

A transparent and assured infrastructure pipeline brings tangible benefits delivering cost savings and helps attract market capacity to South Australia. Infrastructure New Zealand recently completed a report entitled, "Estimating the Costs of an Uncertain Infrastructure Pipeline". The report shows that streamlining delivery by Government committing to a more certain infrastructure pipeline could result in productivity and savings improvements of between 13% - 26.5% on future infrastructure projects.

Through Plenary's regular interaction with international contractors, service providers and financers, the value of a certain infrastructure pipeline is indisputable. Attracting international partners to provide capacity, skills and experience and ensuring their capabilities match with projects in the given pipeline can help close capacity restraints in the market over the medium to long term. To do this, those potential market entrants must justify their investment to establish a local presence. A clear and defined pipeline is valuable in providing support to these business cases.

It is suggested that some consideration be provided to the co-ordination of pipelines and procurement across jurisdictions. This would not be intended to slow things down or restrict the ability for governments to bring projects to market, but to aid visibility and planning on both government and private sector side and avoid resource constraints. Published pipelines should also publish intended procurement approaches, to give visibility on thinking from governments on procurement methods and ensure interest from national and international investors in potentially privately funded projects.

8.2 Digital technology

How can we maximise the productivity benefits of digitising our infrastructure?

With the digital age of technology, leveraging its benefits enable productivity and innovation leading to productivity growth in the economy. The use of BIM, digital twins and the Internet Of Things all aim to drive delivery and operational efficiency in infrastructure development.

While the application of BIM in design and construction is well accepted, the payback of the investment as it applies to operations is less well appreciated.

Plenary suggests that response to this question is best addressed by participants in the digital technology sector.

8.3 Effective procurement

How can government continue to encourage collaboration and innovation in procurement?

Given the scale of infrastructure investment around the country, Governments have recognised the value that private sector investment can bring to the delivery of infrastructure – particularly when contracting to achieve specific outcomes.

Too often the debate is characterised as a contrast between public sector or private sector investment in projects but given the need to invest in significant infrastructure into the future, both public and private sector investment will be needed. Harnessing the benefits of private sector investment while delivering the public sector policy and social outcomes can be achieved by effective procurement methods by government.

While it may be argued that alliances and similar procurement models foster collaboration and innovation, our observation is that this argument disguises shortcomings in the project procurement and development. Recognising there are projects where such an approach is warranted, the advocacy for these procurement models often shortcuts the upfront planning and specification, definition of requirements, stakeholder engagement and competition.

By contrast, we believe there is greater potential to use partnership and similar models (described below) in the delivery of infrastructure projects. While the State has successfully used a range of availability partnership models on a number of occasions, such as with the South Australian Police and Courts project with Plenary, we believe that there is more that could be done by the State to adopt the use of partnership procurement frameworks involving long term and committed private capital where appropriate, particularly where specific and definable project outcomes are required.

Importantly, through the spectrum of partnership models (for example, DBFM), procurement is based on delivering an outcome for the community, rather than just construction of an asset. As such, long term partnership models will package the design, construction, operation, maintenance and financing of an asset into a single procurement. This is the only procurement model that both transfers delivery risk away from taxpayers and offers long-term maintenance of infrastructure on a risk- transfer, whole-of-life basis.

Whether describing PPPs or other similar procurement models, there has been criticism about the risk allocation as a justification for government adoption of alternative procurement models. There have been recent examples where alternative risk allocation frameworks have been successfully implemented (for example, North East Link in Victoria), where prevailing market risks such as escalation and site conditions have been contracted in a manner that more equitably shares the risk.

PPP contracts have proved effective at achieving outcomes specified by governments. As an example, the Toowoomba Second Range Crossing project was jointly funded by Commonwealth and State Governments and delivered as a PPP, with Plenary as project sponsor. Government had identified local economic impact as a key objective for project delivery. This was able to be achieved though the PPP, with around 75% of subcontractors and labour from the greater Toowoomba region, assisting in the creation of up to 1800 full time jobs during construction and maintenance of the project. A similar approach was adopted for Victoria's High Capacity Metro Trains, where a local content of 70% and some 1,100 highly-skilled jobs with at least 15 per cent of the workforce as apprentices, cadets and trainees and seven per cent of jobs for disadvantaged workers. In both examples, international entrants were members of the consortia and contributed to ongoing delivery capacity across Australia.

The benefits of this approach include:

- greater specification and requirements definition up-front reduces the potential for scope creep, ensures considered and disciplined planning and a basis for a competitive procurement process;
- a whole of life approach and ensures value for money over the life of the asset. This can involve careful consideration of the design of the asset to maximise usage of the asset over its life, or investing in higher quality assets up front to minimise operations and maintenance cost over the life of the asset;
- a single integrated party can be responsible for all elements of the project. This means that the challenges involved in interfaces between different elements are not having to be managed by government, and ensures that there is an integrated solution;

- a very strong incentive on all parties to solve problems as they arise. All infrastructure projects are complex and involve uncertainties in delivery. Active involvement from debt and equity is effective at resolving problems, and reduces the likelihood of cost increases or delivery delays; and
- a sustained focus on innovation, excellence, and customer service. By combining construction expertise, operational expertise and investors who are strongly incentivised to deliver outcomes, the partnership procurement models have been consistently shown to deliver.

Infrastructure projects need to increasingly integrate with the precincts and communities around them. Incorporation of a long term private capital solution drives integration and fosters complementary development, whether that is medical suites near a new hospital, or hotel and retail facilities as part of a convention and exhibition centre.

Infrastructure is also an opportunity to put to good use the national pool of savings created through superannuation. There is strong appetite from domestic and international investors for Australian infrastructure assets. This provides a range of complementary benefits including productivity improvements through better quality infrastructure, better assets for the use of the community, and providing stable, long term returns for super fund members and other investors.

We would suggest that any approach needs to consider the need to use world's best practice expertise in delivering complex projects and that any approach does not constrain the competitive environment, or the attractiveness of Australia as a market for international capital and international infrastructure delivery capability. Depending upon the nature of the project, the requirements and bid deliverables, recent experience has seen governments providing a contribution towards bid costs.

8.4 Funding and financing solutions

What are the funding and financing options government should consider in future, to ensure its infrastructure program remains affordable and sustainable?

With the increasing need for infrastructure investment over the long term and capital constraints on public funds, the role of private capital aims to support the pipeline by providing a solution that delivers committed outcomes, supported by private capital, alongside or as an alternative to government funding.

For the past two decades, institutional investors have rallied to the infrastructure sector seeking stable yielding returns attracted by the sector's typically defensive characteristics. Over that time such investments have mainly occurred in the economic infrastructure sub-sector, where projects have tended to be large in scale (e.g. toll roads, airports, power projects) but subject to variability in revenue streams and exposed to economic cycles and downturns. There has also been the emergence of long term and active infrastructure investors, like Plenary and contractor affiliated investors. And whilst such investments have for the most part performed well, some significant and high-profile cases have performed poorly of late, plagued by issues such as over-paying to acquire assets, reliance on leverage and financial engineering and questionable corporate governance (leading, in some cases, to restrictions or limitations of contractor equity participation).

Recognising there is a spectrum of funding and financing approaches for infrastructure projects, it is conditioned by risk appetite, which can shape the achievement of the desired outcomes and the affordability and sustainability of the infrastructure program. Specifically, in relation to equity investment:

- Short term development approach: focussing on the up-front, higher risk phase of infrastructure project delivery, investors with a development strategy will tend to exit once steady state operations are achieved and the risk and return is re-rated. While this is a familiar approach in the property sector and one often adopted by contractor affiliated investors, it can lead to prioritisation of short-term outcomes, ignoring the whole of life considerations;
- Secondary market/ownership approach: generally reluctant to bear development risk, these investors are seeking long term, stable and reliable returns. These investors, often investment and superannuation funds, will often purchase equity holdings in infrastructure projects from contractor affiliated entities or other third parties.
- Long Term investor approach: by taking a balanced view over the term, development and operating returns are considered over a longer duration and on a holistic basis. This approach creates an alignment of interests, as investment returns are earned over the long terms, underpinning a sustainable partnership between the public and private sector.

The risk and return profiles of infrastructure assets depends upon their fundamental characteristics and their relative stage of maturity. Fostering competition is an important means of demonstrating value for money, fostering innovation and delivering meaningful and sustainability infrastructure, social and policy outcomes.

Financing solutions that require the financing of the delivery of the infrastructure will be shaped by the procurement model selected by government based on its policy and the outcomes sought. Specifically:

- Traditional government procurement: limited, if any role for private capital investment. All funding is provided by and risk of cost overruns, delay and so on borne by government. Approaches such as direct D&C procurement, alliances or operating franchises have been traditionally and generally adopted by the State for infrastructure delivery and operations where the benefits of private capital are not recognised;
- Lease: whether it be for a Ground Lease, as has been utilised in some jurisdictions for social and affordable housing development, or for state government accommodation, lease payments are a well-accepted financing structure for certain assets. Subject to the commercial terms, time and cost risk of the base building infrastructure is transferred to the private sector, while the public sector retains some risk in relation to outgoings, availability and functionality. Subject to the land tenure arrangements the infrastructure may or may not revert to State control;
- Availability Concession: structured to deliver outcomes, availability arrangements insulate the State from program and cost overruns and define the required outcomes that extend over the term. Incorporating certain service obligations (at a minimum necessary to underwrite the operational performance requirements), availability payments commence once the infrastructure is completed, and payments are subject to performance deductions. Upon expiry, the concession reverts to State control;
- Revenue Concession: has been historically adopted for economic infrastructure such as toll roads or franchise agreements, revenue risk transfer results in lower gearing (relative to lease or availability models) and has resulted in project insolvency due to cost overruns or ambitious revenue forecasts. Risk transfer extends to service delivery, revenue forecasts and collection, operating and financing costs. Upon expiry of the concession, the asset reverts to State control. In other jurisdictions, potential toll roads have been developed using an availability concession model, with the State retaining the revenue exposure, with a view to later divestment once steady state operations are achieved; and
- Operating Joint Venture: a partnership between the public and private sector structured as a joint venture with defined shareholding, where, in return for an up-front payment, the private sector takes on the management of certain functions or services for government in return for a specified revenue stream. This can drive service delivery and productivity improvements, investment and product development as well as providing the State with alignment (through its shareholding), dividends and potentially, an up-front payment. This is a more complex arrangement that has been used in other jurisdictions, such as Victoria's process for the vehicle and licence registry (VicRoads). Upon expiry of the term of the joint venture, the operations may revert to State control, depending upon the commercial arrangements.

It is important to draw a distinction between 'privatisation' where the infrastructure is sold to the private sector, and the concession type models described above, where ownership and the provision of core services is retained by the State. This means that the State retains control, continues to be the service delivery agency and, upon the expiry of the concession, receives the asset in a specified condition.

The competitive process delivers value for money and the ability for the State to shape its requirements to define the required outcomes, to apply financial incentives to the achievement of these outcomes and for financiers to efficiently value the risk and return to drive affordability and sustainability.

Plenary's experience across the jurisdictions in which it operates is that there is strong investor and financier appetite to invest in and finance Australian infrastructure projects, offering a competitive and value for money financing structure calibrated against the risk and opportunities presented by the project. International infrastructure investors, regardless of their focus, remain interested in investing in quality infrastructure.

The State may wish to monitor the application of long-term project debt. While the current financial market interest rate forecasts and market pricing does not necessarily represent a lower cost option than shorter term bank debt, the trade-off with refinancing risk may lead to evaluation that long tenor debt (USPP or similar) represents superior value for money than traditional funding sources.

Contact

Carl Retschko

Executive Director

[redacted]

[redacted]

10 November 2023

Mr Jeremy Conway
Chief Executive Officer, Infrastructure SA
Sent via email: jeremy.conway@sa.gov.au

Dear Mr Conway

RE: South Australia's 20-Year State Infrastructure Strategy – Submission from SA Power Networks

Thank you for initiating discussions with SA Power Networks regarding our State's Infrastructure Strategy and Infrastructure South Australia's (ISA) broader work. Subsequently, our teams met more recently to discuss SA Power Networks' input to the Strategy.

South Australia's world-leading uptake of Consumer Energy Resources (CER) most notably rooftop solar PV, our vast renewable resources and our significant spare network capacity, mean that our State is well positioned to lead the Nation in accessing clean, reliable and affordable energy. SA Power Networks' Network Strategy is focused on achieving that outcome in the most efficient and equitable way.

ISA has six clear strategic objectives underpinning its 20 Year Strategy and we believe that clean, reliable and affordable energy are critical to each one of those, specifically:

- **Enabling growth** – there will be no growth without electricity – we need to be consulted on the location of and involved in the planning of planning special zones (noting the regulatory approach to investment and capacity constraints in the network)
- **Liveability** – decarbonisation can impact the health and wellbeing of South Australians (particularly getting off petrol/diesel)
- **Access and inclusion**, there are network capacity issues in regional areas which may hinder or delay support for widely available EV charging, economic growth, and electrification of farm machinery
- **Decarbonisation** – we already have moved to significantly decarbonise energy and we have a once in a generation opportunity to decarbonise transport and industry, but it will require tackling the shortage of resources with the right skills
- **Resilience** – electrification (and climate change) requires a strong and robust network foundation and we urge your support for stepping up investment in network resilience as proposed in our plans for 2025-2030 to be lodged with the Regulator in January 2024
- **Stronger infrastructure industry, better asset management and better data** – apart from building network resilience, we need much more systematic sharing of data across the sector and a detailed State Infrastructure plan to support efficient design and construction and a robust supply chain.

Our submission focuses on several key questions posed in the Discussion Paper, where SA Power Networks has an important role in achieving an infrastructure landscape which meets ISA's objectives, through the availability of clean, reliable, affordable energy for every South Australian household and business.

If you or your team would like to discuss this submission in more detail, in the first instance please contact Cecilia Schutz, Manager Policy and Advocacy at [redacted] or on [redacted].

Yours sincerely,

[redacted]

Andrew Bills
Chief Executive Officer

Early Collaboration *(Consultation question 7)*

As noted in the Discussion Paper, ISA works closely with the State Planning Commission to ensure its Strategy is aligned with the Greater Adelaide Regional Plan. Close coordination with SA Power Networks, particularly throughout the conceptual planning phase, is critical for several reasons:

1. Greater visibility of developments enables SA Power Networks to plan the network accordingly, and to factor that planning into critical and time-sensitive processes such as our 5-year Regulatory revenue cycle with the Australian Energy Regulator

2. Early consultation with SA Power Networks could inform more efficient planning and better outcomes for customers (particularly large commercial and industrial customers), given spare capacity and constrained capacity in certain parts of the electricity network.

3. We can contribute to more integrated planning, by identifying infrastructure corridors and critical infrastructure sites, well before development occurs.

An efficient whole-of-energy-system approach *(Consultation question 4 and 16)*

In our response to the *SA Government's Green Paper on the Energy Transition*, we addressed the Government's policy role in meeting SA's energy needs with minimal risk and maximum benefit (see submission attached – *The energy needs of South Australia*).

We believe that, given South Australia's unique opportunities (and risks), we need a State Energy Plan, which provides Government with confidence around the most technically feasible and economic mix of investments in grid, distribution and consumer scale generation and storage, and renewable firming options. That Plan should also consider policy interventions such as improving the energy efficiency of homes and businesses, to achieve the optimal whole-of-energy-system outcome.

For example, South Australia's distribution network has the capacity to host more orchestrated Consumer Energy Resources than the Integrated System Plan contemplates – this is an opportunity for the lowest-cost electricity generation and storage, which could lessen the need for grid-scale investments which are considerably more expensive, have significant impact on local communities and which are often delayed for various reasons. Likewise, relatively simple and cost-effective policy interventions in building efficiency, could have a similar, positive impact on the efficiency of generation, transmission, and distribution network investment.

These issues are discussed in more detail in our Green Paper submission, with specific policy recommendations made.

Enabling demand side flexibility *(Consultation question 16)*

Our energy system is dominated by variable renewable energy generation, and so aligning energy demand with times of renewable generation will be one of the most important aspects of an efficient energy transition. In our submission to the Green Paper, we discuss the key aspects of unlocking demand side flexibility. They are:

1. **Getting the 'behind the meter ecosystem' right**

The volume of electricity through our network will increase by approximately 150% by 2050. If managed poorly, this transition poses the risk of creating a major increase in peak *demand*. An increase in *energy* delivered that is well managed should lead to better utilisation of existing assets, driving down unit costs for all. On the other hand, an increase in peak *demand* requires significant network augmentation, and those would be borne by energy consumers.

Maximising the amount of energy delivered by the *existing* electricity network, whilst minimising the increase to peak demand is the key to efficient electrification. In our submission, we address three key roles the Government can play in this:

- Technology standards
- Compliance
- Encouraging the uptake of smart CER
- Encouraging energy efficiency

2. **Smart meters and cost reflective pricing**

These are addressed in detail in our attached Green Paper submission. Most notably, they will enable customers to access the flow-on benefits of shifting their electricity loads to the middle of the day, maximising the local consumption of solar and subsequently enabling higher levels of solar to be connected and non-solar customers to share in the benefits of lower daytime prices.

While the above issues may not necessarily serve as direct inputs into Infrastructure SA's Strategy, they highlight the cross-agency approach required to achieve a decarbonised energy system which is affordable, reliable and secure.

We believe that the Infrastructure Strategy should note the close interdependencies with the SA Government's energy transition policies (in particular the Green Paper).

Decarbonising Transport *(Consultation question 17)*

The electrification of transport is a profound opportunity for South Australia. If integrated efficiently, South Australia could expect to see significant reductions in the network component of retail bills between 2030 and 2050 because of the additional energy throughput from electric vehicles. This is one part of a much bigger affordability picture, where South Australians could, indicatively, halve their household energy bills by 2050.

With this opportunity comes a commensurate risk (and, in response to the Discussion Paper, the significant challenge for our electricity system). If EV charging occurs frequently during peak times, the transition to EVs has the potential to drive significant new growth in peak electricity demand, requiring significant upgrades to the distribution network.

However, if EV charging is managed to occur mostly outside of the peak periods, our modelling suggests that South Australia has the potential to decarbonise the transport sector largely within our existing network capacity.

Our Green Paper submission addresses the key policy measures to ensure the transition to electrified transport goes well:

- Smart ready charger standards and regulations
- Placement of public charging infrastructure (addressing the gaps)
- Data-sharing and EVSE visibility
- An SA EV sales target

Electrification of transport must be an essential consideration in all public infrastructure projects. For example, traffic *and* energy needs should be modelled for all transport sectors, with identification of major transport routes, heavy haulage recharging locations and tourism centres. Electrical infrastructure will need to be coupled with traffic planning so that it can be integrated with the road network.

The economic significance of the above cannot be overstated – communities which do not have access to appropriate public charging infrastructure will be increasingly less connected, productive and resilient. This is a particular risk for regional and remote communities, which already have network capacity constraints. Many of these communities have the added challenge of electrifying farm machinery and the placement of high-capacity vehicle charging is not yet commercially viable for infrastructure providers.

This is an issue which SA Power Networks has discussed in its submission to the Green Paper.

Network resilience is critical to community resilience and economic stability *(Consultation questions 20 and 21)*

In a decarbonised future, South Australians will become increasingly reliant on the electricity network for their energy needs for their homes, businesses and transport. Therefore, the resilience of the network to the increased threat of climate related weather events becomes ever more critical.

South Australia has the oldest distribution assets in the National Electricity Market, with the lowest replacement rates. Our overhead network is exposed to heightened external threats, especially throughout the summer period, and in the face of extreme and increasing bushfire risk and storm events. This is particularly relevant to the reliability and resilience for regional and remote communities.

SA Power Networks has engaged extensively with South Australians on the resilience of our network. The message from customers and stakeholders has been clear and consistent: they are prepared to fund increased expenditure on network assets to maintain safety and reliability, tackle the ageing asset challenge in a targeted risk-based approach, and to support increasing electrification, while still maintaining the network price path at about the rate of inflation.

Our Regulatory Reset proposal to the Australian Energy Regulator reflects this, and we implore the SA Government and its statutory authorities to support investment in ageing assets, reliability and resilience as critical elements of maintaining an essential State infrastructure and supporting our State's future energy, transport and industrial ambitions.

We know that climate change is contributing to extreme weather events which are increasingly unpredictable. Events which we would term "High Impact, Low Probability Events" are arguably not addressed under the national regulatory framework in a manner which is commensurate with the broader economic impact caused by the loss of power throughout these events. We saw this exemplified in the recent River Murray floods.

This is an area where SA Government intervention should be considered - low probability, high impact scenarios, such as bushfire risk and its impact on supply security, should be considered in planning for the State's future energy needs. Generally, it would be worthwhile for the State to consider funding network resilience elements of major infrastructure projects, over and above that which the AER would permit.

It is also worth noting that the above section *'Getting the 'behind the meter ecosystem' right'* interacts closely with resilience. Properly wired homes and businesses with solar and or batteries can ride through storm events and outages and network faults better and act as part of our State's resilience measures.

The skills and workforce challenge *(Consultation question 23)*

Skills and workforce shortages pose the greatest risk to South Australia not being able to deliver on its infrastructure and decarbonisation objectives. We have presented a range of policy positions to the State Government, aimed at supporting the energy transition. Those are discussed in the attached submission but in summary, they are:

- Development of an Energy Transition Workforce Strategy, which would be a key foundation for advocating at Federal level for the range of policy areas to be addressed, including:
- Harmonising occupational licensing to maximise mobility of workers
- Reforming temporary skilled migration
- Encouraging and supporting workers (particularly at low or medium skill levels) in fossil-fuel industries to transition to clean-energy roles
- Reforming the SA Skills Council Model to better align with the rapidly evolving skills needed to deliver the energy transition

South Australia's Green Paper on the Energy Transition

Submission by SA Power Networks
August 2023

SA Power Networks

Empowering South Australia

13 August 2023

Department of Energy and Mining
DEMenergytransition@sa.gov.au

Dear Sir/Madam,

SA Power Networks' submission to South Australia's Green Paper on the energy transition

South Australia's future prosperity is reliant on delivering clean, reliable and affordable energy, and ensuring every member of our community can share in its benefits. The electricity distribution system that we operate has a central role in this transition.

SA Power Networks is pleased to contribute to the co-design of a comprehensive energy transition policy, to leverage the opportunities and manage the risks associated with the State's journey to net zero by 2050.

South Australia continues to demonstrate its strong credentials in a consumer-led energy transition, with world-leading uptake of rooftop solar and extended periods where our State is being powered entirely by renewables. This has presented opportunities and challenges for South Australia's distribution network, which we have overcome through consistent State policy to support renewables, and through innovation and strong partnership with the SA Government. The SA Government's *Economic Statement* states our mission to 'capitalise on the global green transition' and, through a strong policy framework, we will continue to progress towards meeting our 2050 target.

The social, environmental, and economic issues associated with the energy transition are vast. This submission will focus on those intersecting with South Australia's electricity distribution network and the experience and aspirations of our 900 000 customers in meeting their energy needs.

The key areas of focus in our submission are:

1. South Australia requires an **integrated energy plan** that can manage State-based risks while still accounting for NEM level planning and progress.
2. For the benefit of the State and electricity consumers, we must continue to **unlock the significant economic and environmental benefits of customer energy resources** (CER).
3. The **latent capacity of our distribution network** must be leveraged to transport significant volumes of energy, to support the decarbonisation of homes, businesses, and transport.

4. **Demand side flexibility** will be critical to unlocking this spare network capacity, enabling customers to receive the full benefit from their energy-related investments, and ensuring an efficient transition for all customers.
5. Improving the **energy efficiency of buildings** will improve energy productivity, reduce energy bills and reduce the need to invest in energy infrastructure.
6. Ensuring the **electricity distribution network remains resilient and reliable**, will ensure that it remains a stable foundation for the new energy future.
7. There is **a high risk that some customers will be left** behind in the transition, owing to split incentives, inability to access capital or information to support decision making. Policy should explicitly address, and seek to mitigate, these risks.
8. 'Energy Transition' level **skills and workforce planning** will be needed for South Australia to effectively compete for resources to deliver the net zero target.

Our submission considers these key areas in the context of the 'opportunities and challenges' sections set out in the *Green Paper.* Underpinning each of these aspects are the key principles of safety, equity, affordability, reliability and resilience.

SA Power Networks looks forward to our continued collaboration with Government and industry to develop and deliver an energy policy which reflects and supports the long-term vision of our State.

Should you wish to discuss this submission, please contact Ms Cecilia Schutz, Manager Policy and Advocacy.

Andrew Bills
CEO SA Power Networks

Contents

South Australia's energy transition

The opportunity

Our vision for South Australia's energy transition is to solve the 'Energy Trilemma': To have no trade-off between the three objectives of clean, reliable, and affordable energy. South Australia is uniquely placed to achieve all three of these objectives due to our:

- Abundant renewable resources
- World-leading innovation in energy resource integration
- Significant latent capacity in the electricity distribution network
- Existing strong Government and industry collaboration

As South Australia's sole electricity distributor, our goal is to continue to transform our distribution network and services to support a consumer-led energy transition. We believe that, with the right long-term vision and policy settings, we can maintain electricity reliability while fully decarbonising and dramatically reducing customers' energy bills. Net zero scenario modelling commissioned by SA Power Networks shows that on average, across a range of scenarios, total household energy bills could be reduced by over 50% by transitioning to renewable electricity for their household and transportation energy needs.

While the future of abundant, affordable, clean energy is promising, it doesn't remove the cost-of-living pressures customers are feeling now. We believe that there are significant opportunities to respond to those more immediate challenges, without compromising longer-term goals.

The challenge

Distribution energy volumes are forecast to at least double between now and 2050 as customers continue to move from fossil fuels to electricity to meet their energy needs. The take-up of electric vehicles will be a key driver, but so will fuel substitution in the commercial and industrial sectors. As South Australia decarbonises, the distribution network could ultimately supply up to 80% of the State's end-use energy.

Without intervention, this could double the peak demand on the network and drive billions of dollars of unnecessary investment. However, provided these new applications are encouraged to use energy outside of peak demand periods, this increased energy volume will provide the opportunity to materially reduce electricity network prices and improve energy affordability.

We will also need to meet the challenge of continuing to integrate a world-leading level of customer energy resources such as solar and batteries onto the distribution network, with the capacity of these resources also forecast to at least double over the decade.

Further, as South Australia becomes increasingly reliant on customers energy resources to meet the State's energy needs, the need for a reliable and resilient network also increases. Our distribution network is the oldest on average in the NEM (by asset age) and will require increasing levels of investment to replace our ageing assets and ensure the network remains a stable foundation for the State's energy needs.

Although our business, within its own scope, is seeking to effectively address these challenges, we see the development of a long-term policy framework as a critical enabler for an effective and integrated whole of industry and Government response. We therefore strongly support the Government's Green Paper process.

The energy needs of South Australia

Australia is progressing well in its collaboration on national energy priorities, with a clearer policy framework emerging. Much planning at the NEM level is performed around Step Change as the 'central scenario' (AEMO's Integrated System Plan). The SA Government has stated that the Hydrogen Superpower scenario more closely aligns with its broader economic agenda. This highlights that, while we continue to support national collaboration, it would be highly desirable for South Australia to also have a State plan, which seeks to continue to leverage our unique opportunities, manage State based risks and minimise impacts of market volatility in the NEM.

Energy Transition Roadmap

An *Energy Transition Roadmap*, as canvased in the *Green Paper*, should be a key aspect to support implementation of the State Vision which, as per the second Energy Transition Roundtable (August 4th) is currently under development. To deliver the Vision, we need to forecast a range of potential outcomes and impacts and be able to evaluate our State level policy response, at any point in time. The *Roadmap* should provide the mechanism to do that on a continuous basis.

A feature of the *Roadmap* should be ongoing (and regular) modelling of multiple, plausible scenarios, irrespective of whether one, such as Hydrogen Superpower, is treated as the preferred scenario. It should be used to understand the implications for a range of interdependent energy sources, and the most efficient trajectories for these - as is being undertaken in other jurisdictions such as the UK.

Through this type of planning, the SA Government (alongside stakeholders) would develop a better understanding of the strategic choices to be made to inform our response to those various scenarios. For example, the SA Government would develop clearer visibility of the most technically feasible and economic mix of investments in grid, distribution and consumer scale generation and storage, and renewable firming options. The development of suitable scenarios could also be valuable in determining potential future threats to security of supply, including shortfalls in capacity or underfrequency response, and identifying potential policy levers to address those threats.

The development of a *Roadmap* presents the opportunity to better harmonise supply and demand side policies in South Australia. This submission considers a range of 'no regret' policy decisions, focused on demand flexibility and efficient electrification, which would have a positive and material impact on the

level of investment needed in storage and firming capacity in South Australia. Unlike the ISP, which accounts for a range of energy market trends and their subsequent impact on the ISP scenarios, South Australia must take the additional step of considering demand and supply-side policy interventions which would deliver the best whole-of-energy-system outcome.

Development and implementation

The development, ongoing refinement and implementation of a *Roadmap* would potentially require resources beyond a Taskforce, as contemplated in the *Green Paper.* Consideration should be given to an *Energy Transition Office of Government*, responsible for:

- Development, overarching management and ongoing refinement of the *Roadmap*, including coordination between stakeholders and facilitation of a Taskforce or similar
- Consideration of the interaction between State and Federal Government net zero and related policies and implementation in the South Australian context
- Undertaking scenario modelling to identify a suite of plausible net zero scenarios for South Australia, which would be updated regularly
- Ongoing engagement and consultation to inform policies and initiatives under the *Roadmap*
- Coordination of the *Roadmap* across South Australian government agencies

We also consider that it would be highly desirable if an *Advisory Board* was established, comprising key customer and industry participants, to provide advice and support to the *Energy Transition Office*. Not only would this provide a consultative mechanism, but it would also allow the Government to tap into much broader expertise than may be available in the Office or Government itself.

Recommendations

- Develop an SA *Energy Transition Roadmap* which includes modelling of plausible energy scenarios, their implications for a range of interdependent fuel sources, and the impacts of supply and demand side policy interventions
- Establish an *Energy Transition Office* to manage all work and coordination associated with developing and implementing the *Roadmap*
- Establish an *Advisory Board* of key energy stakeholders that could support the *Energy Transition Office* in undertaking its work

Current and future role of rooftop solar

Rooftop solar PV is the lowest cost source of electricity generation (*Appendix 1*) and, under current Step Change and Hydrogen Superpower scenarios of the ISP, would increase by 235% (5.17 GW) and almost 300% (6.5 GW) by 2050 respectively *(Appendix 2).* As noted earlier, the ISP does not consider a range of potential policy interventions.

The Institute for Sustainable Futures reported in 2019 that South Australia's actual potential rooftop solar PV capacity is approximately 17 GW[1]. Rooftop Solar PV should be considered as another key 'Renewable Energy Zone', but without the significant infrastructure and land requirements to unlock it. Through State level planning and various policy interventions, there could be the potential for rooftop solar PV to satisfy an even greater percentage of the State's energy needs than contemplated in the ISP and SA could hit decarbonisation targets more rapidly and provide additional renewable generation to support green hydrogen production.

Table 5 Installed and potential capacity, by State

State	PV potential (GW)	Annual energy output (GWh)	Installed Capacity (GW)
NT	1	2,375	0.1
NSW	49	65,520	2
ACT	2	3,315	0.1
VIC	45	56,411	1
QLD	37	54,287	2
SA	17	23,516	1
WA	23	34,438	1
TAS	4	5,404	0.1

Image from 'How much rooftop solar can be installed in Australia' – a report prepared for the CEFC and Property Council, by the Institute for Sustainable Futures

We note that the current Federal Renewable Energy Target (RET) is set to expire in 2030. This would have broad negative implications for renewable electricity generation including the continued investment in

[1] HOW MUCH ROOFTOP SOLAR CAN BE INSTALLED IN AUSTRALIA? (cefc.com.au), p 15

rooftop solar. We encourage the SA Government to advocate for an extension of the RET, or replacement via a similar mechanism, to ensure the transition to renewable energy continues to accelerate.

For our State to continue maximising the consumer and broader market benefits of solar, and to fast-track decarbonisation, we must ensure that all South Australians can access rooftop solar. At present, there are around 190,000 rental households (22%) which are less likely to be able to access the benefits of solar and contribute to South Australia's efforts to decarbonise. Similarly, many businesses are locked out of direct access to install rooftop solar due to split incentives between owner and tenants. This issue and possible solutions are visited later in the submission.

SA Government's introduction of Smarter Homes regulations has been effective in developing backstop mechanisms to manage rooftop solar in system emergencies. With the introduction of Dynamic Export Requirements and Flexible Exports as a standard offering for exporting solar customers, some of these regulations are no longer necessary, at least in their current form. The Flexible Exports offering provides a more effective and much more secure solution for these capabilities, and we believe it is now appropriate to plan the retirement of Relevant Agent disconnect methods for *new* installations. We welcome the opportunity to work with the SA Government and AEMO to establish an appropriate retirement plan.

Recommendations

- The SA *Roadmap* should consider policy options which would maximise South Australia's potential installed rooftop solar PV capacity, including policies that would enable more South Australian households and businesses to install and access the benefits of rooftop solar.
- Advocate for an extension of the Federal Renewable Energy Target to support continued installation of rooftop solar beyond 2030.
- Plan the retirement of Relevant Agent disconnect methods for new installations.

Current and future role of storage

There is no question that energy storage, both large scale and in the form of small-scale batteries behind the meter, will play a crucial role in South Australia's future energy mix. As stated in the Energy Efficiency Council's *Clean Energy, Clean Demand Report*, however, 'consuming energy from stationary batteries is, and will remain, much more expensive than consuming energy at the time it is generated by wind and solar … the wholesale cost of using energy generated by solar or wind and stored could be more than double the cost of using renewable energy at the time it is generated'[2].

Rather than addressing the future role of storage in isolation, therefore, we believe that the crucial issue is how South Australia should firm its energy supply in the most economical way. This will require maximising the opportunity to match supply and demand via flexibility in the first instance, to minimise the amount of storage required.

This submission has addressed various issues relating to 'energy management', with strong focus on flexible demand and energy efficiency in the built environment. By making the most of flexible demand and by improving the overall energy performance of buildings, we will be able to materially reduce the need for firming capacity.

Again, this highlights the critical need to use a South Australian *Roadmap* and associated modelling, to understand how investments in the demand-side (chiefly energy management) could radically influence the need for supply-side investment.

The *Roadmap* should also consider the significant opportunity for consumer scale, dispatchable storage. Household batteries, virtual power plants and EV vehicle-to-grid capability have tremendous potential and are areas where South Australia is already leading the Nation. Under the Integrated System Plan, 'orchestrated DER' (which includes the vehicle-to-grid capacity of the EV market), is the largest form of storage under the Step Change Scenario.

[2] *Clean Energy, Clean Demand Report*, Energy Efficiency Council, p47

The *Clean Energy, Clean Demand Report* provides a useful illustration of demand-side policy interventions could dramatically reduce the need for supply-side investment and achieve a far more efficiency whole-of-system outcome.

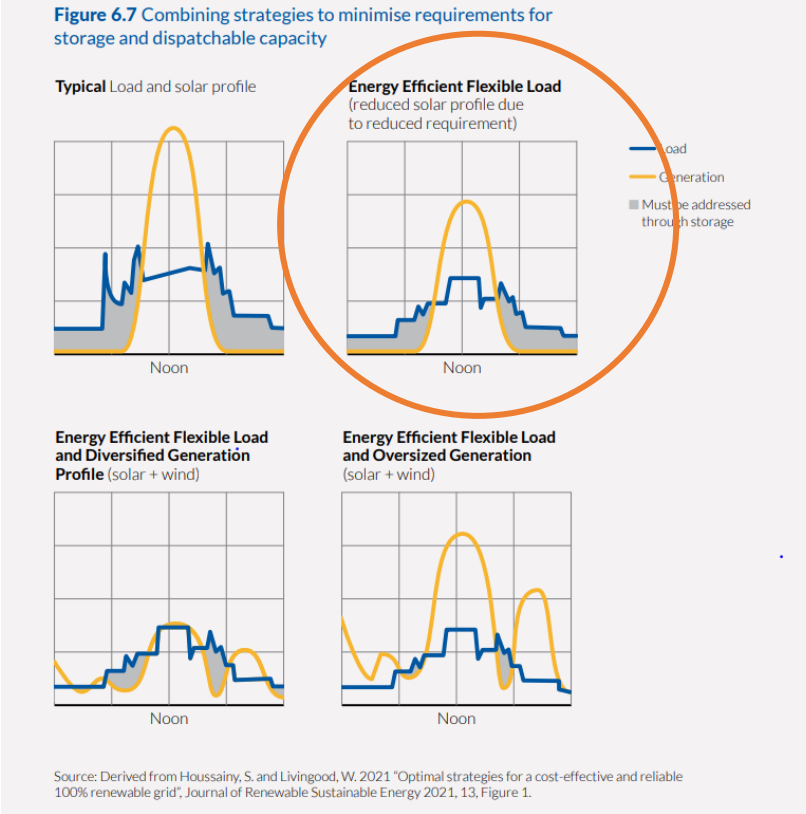


Image from 'Clean Energy, Clean Demand' – a report prepared by the Energy Efficiency Council, p 53

Recommendations

- Ensure that a South Australian *Roadmap* and associated modelling, incorporates policies/budget interventions in demand-side measures and how these would influence the need for investment in storage and firming capacity (and overall energy system cost).
- Ensure that the *Roadmap* has a clear focus on the significant capacity for consumer scale, dispatchable storage and that policy/budget interventions to maximise these opportunities are a key consideration of the overall investment mix.

Enabling demand side flexibility

An energy system such as South Australia's, which is dominated by variable renewable energy generation will rely on significant demand side flexibility for an efficient transition. We believe the following factors will be critical for unlocking demand side flexibility:

1. Enabling an open 'behind the meter ecosystem' through technical standards and compliance
2. Encouraging the uptake of 'smart' energy resources and appliances
3. A considered and coordinated roll-out of smart meters
4. Implementing cost reflective pricing
5. The availability of trusted, unbiased, and tailored advice upon which energy consumers can make informed decisions about their energy use and investments (*discussed in subsequent sections)*

The Behind the Meter ecosystem

Electrification of South Australia's households, industry and transportation will lead to an unprecedented increase in the volume of *energy* delivered by the State's distribution & transmission networks. If managed poorly, this transition also poses the risk of creating a major increase in peak *demand*.

This dilemma represents both a significant challenge and a profound opportunity – an increase in *energy* delivered leads to better utilisation of existing assets, driving down costs for all. On the other hand, an increase in peak *demand* requires significant network augmentation, and those would be borne by energy consumers.

Maximising the amount of energy delivered by the *existing* electricity network, whilst minimising the increase to peak demand is the key to efficient electrification.

Demand side initiatives, particularly those at the household level, are often overlooked as an efficient means of enabling the electrification transition. ARENA has estimated that *demand flexibility* can reduce new generation and storage costs by **$8-18 billion,** whilst other studies have estimated that improved integration of demand side resources may achieve savings of **$11.3 billion** in avoided or deferred distribution and transmission network capital expenditure.

South Australia is already leading the world on pioneering a standard approach to flexibility for solar PV systems, through the Dynamic Export requirements within the Smarter Homes regulations. This

approach has already been adopted in Queensland and Victoria and is under national consultation via the Australian Energy Market Commission (AEMC).

The Dynamic Export requirements have enabled residential solar PV systems to respond in real-time to changing conditions on the distribution network, maximising the quantity of renewable energy utilised in the energy system whilst managing system security and minimising the need for further infrastructure investment.

Looking beyond solar PV, we envision a future energy system based on flexibility, where:

- Customer loads are optimised around their own solar generation and time-of-use pricing
- Customers can opt-in both their load and generation to a flexible connection agreement and be rewarded for response to network limits
- Virtual power plant participation is extended beyond batteries, and customers are rewarded for "whole-of-home" participation in the market

The future is flexible – but there are steps to take before we get there.

Technology standards

Currently, customers are unable to realise the full value of their CER without engaging third-party providers to undertake bespoke integrations with their devices or being "locked in" to a single manufacturer's ecosystem. Having clearly defined standards around device-level interoperability would enable customers to "plug and play" their equipment – ensuring that no matter what brand of equipment or energy retailer they choose, they will be able to maximise their savings and provide value to the network and the market.

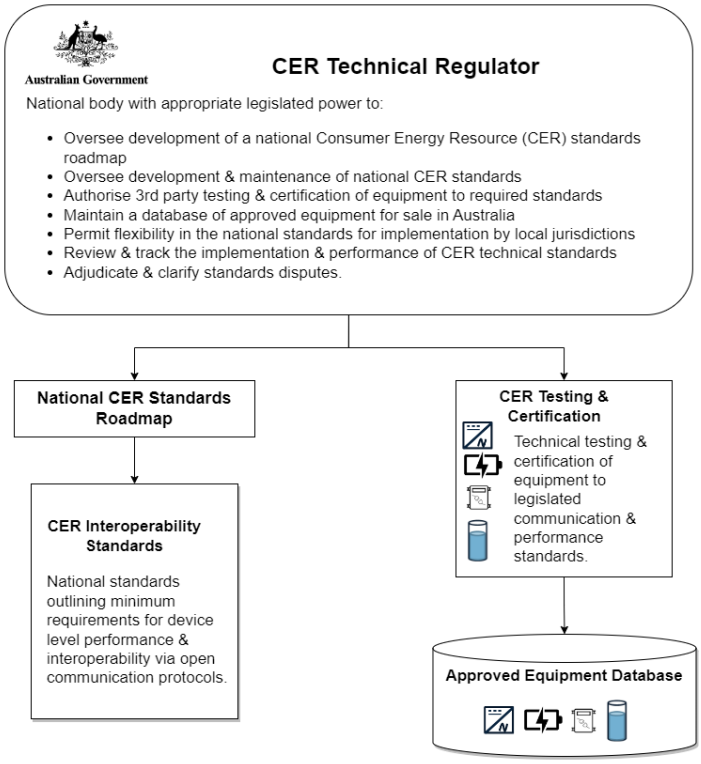
The pathway to this future is via device-level interoperability standards, facilitated by Government via technical regulation and supporting legislation. South Australia should work towards achieving this environment in a way that is consistent with national progress and builds on work done by the Energy Security Board.

South Australia has already demonstrated its ability to positively influence the national direction, through key initiatives such as the Smarter Homes legislation and Dynamic Exports Guideline. We should continue to be a leader and 'model the way' where national policy does not exist, but we should ensure

that these policies are developed in a way that is nationally scalable and coupled with advocacy at the national level.

This approach should involve advocacy for and active development of:

- National standards for CER communication and performance. These standards should cover, at a minimum:
    - Solar PV inverters
    - Battery storage systems
    - Electric vehicle chargers
    - Air-conditioning systems
    - Electric hot-water systems
- Legislation to prescribe compliance, testing and certification to those standards
- An approved equipment database



The implementation of this landscape is best managed nationally via a centralized body.

As per SA Power Networks' submission to the AEMC *Review into Consumer Energy Resources Technical Standards Consultation Paper*, we propose the establish of a National CER Technical Regulator, a body with the appropriate authority to develop, maintain and implement CER standards and associated compliance activities.

Compliance

Compliance to existing and future CER requirements is also of key importance. Without a well-managed compliance framework, the benefits of national CER standards and capabilities will not be fully realised. Areas of current concern for CER compliance will likely be amplified as more requirements are developed. These include:

- Managing the installation of only approved devices certified to relevant standards
- Correct commissioning of CER by electrical installers, including wiring and software configuration
- Ensuring that network connection limits are adhered to from the point of installation

The benefits of compliant CER installations are seen across the energy system – from consumer bills through to system security. Properly installed and commissioned CER, coupled with appropriately developed device standards, will ensure that behind-the-meter generation and load can respond dynamically to cost reflective pricing, conditions on the network and support system security during major disturbances.

SA Power Networks has strategies in place to drive compliance for our own connection requirements, as well as those prescribed via the National Electricity Rules. The task of compliance management however falls beyond the remit of SA Power Networks alone. We believe the Office of the Technical Regulator (OTR) will be critical in supporting a growing list of compliance related activities and will require:

- Stronger regulatory powers to enforce compliant installations and installation providers
- Increased capability for installation auditing
- Integrating requirements for electronic certificates of compliance (eCoC) and network connection/commissioning approvals
- Enhanced consumer protections and dispute resolution capabilities to ensure customers do not bear the costs of non-compliant installations

Encouraging the uptake of smart CER

Given the importance of demand-side flexibility in the future energy system, SA Power Networks recommends the development of policies that will accelerate the adoption of 'smart' CER and energy offers that reward and incentivise flexibility. For example:

- The current Retail Energy Productivity Scheme (REPS) could be modified to provide value for technologies like Home Energy Management Systems and demand response enrolled appliances. These values could be staked onto existing incentives to install more energy efficient appliances.
- Education and general promotion of smart homes should also be considered, along with support for pilots and trials to develop the necessary ecosystem to apply this opportunity at scale.
- SA Power Networks would also support appropriate, well targeted financial incentives to encourage adoption of these technologies.

Recommendations

- Facilitate the implementation of behind-the-meter interoperability standards via technical regulation and supporting legislation.
- Advocate Federally for establishment of a national body and governance model to progressively develop, implement and maintain national CER standards, testing, certification, product listing and associated activities.
- Uplift the capability and resourcing of the OTR to best manage compliance to existing and future CER installations.
- Enhance consumer protections to mitigate the impacts of non-compliant CER installations on customers.
- Consider appropriately targeted incentives for the uptake of 'smart' appliances and energy management systems, including a review of REPS.

Smart meters and cost reflective pricing

Smart meters will have direct consumer benefits, such as access to a wider range of energy services and innovative retail offers, and more timely usage information upon which they can make informed decisions. There will also be benefits for the network, which will flow to customers; Smart meters will enable 'solar sponge' time-of-use tariffs which reward customers for shifting loads into the middle of the day. This helps to maximise the local consumption of solar energy, enabling higher levels of solar to be

connected and enabling non-solar customers to share in the benefits through lower daytime prices. It also minimises network investment by taking pressure off electricity infrastructure at peak times.

Smart meters also provide visibility of local network voltage - data that is extremely valuable in planning and operating the distribution network to accommodate higher levels of rooftop solar at lower cost.

The Australian Energy Market Commission (AEMC) will soon make recommendations about changes to the regulatory framework for metering services, to accompany the accelerated roll-out of smart meters by 2030. In its Draft Report, the AEMC summarises the value of smart meter data to electricity distributors and our customers:

> **2.1.3 Smart meters will also help distribution network businesses to run their networks more efficiently and develop products that support more CER to be connected to the grid**
>
> Smart meters can provide DNSPs with significant opportunities for DNSPs to improve the utilisation of their networks, which could lead to lower average network costs for all customers in the long term. Smart meters can collect more granular data about the condition and capacity of the low voltage (LV) network. Through a combination of smarter network management and customer rewards, spare network capacity can be utilised by flexible CER, thus reducing the potential need for expensive future network augmentation.
>
> DNSPs such as SAPN in SA and Citipower and Powercor in Victoria are beginning to offer 'solar soaker' tariffs in the middle of the day that allows households to consume electricity at very low or even zero cost. These developments have significant customer and stakeholder support across jurisdictions.
>
> Innovative network approaches that support more CER to be connected also require more smart meters. A better understanding of the LV network capacity, through data collected by smart meters, allows some DNSPs to develop flexible export arrangements for customers with CER. Instead of relying on static export limits, DNSPs could offer CER customers significantly higher export capacity when the network has a significant capacity (or need) for electricity exports.

It is anticipated that the AEMC will support the provision of smart meter power-quality data to DNSPs at no cost, and we seek the SA Government's support and facilitation of this, irrespective of the final AEMC determination.

Notwithstanding the critical role of smart meters, policies will be needed to address the justified concerns of many South Australian consumers with regards to their continued roll-out. These include:

1. **Paying for potential associated building and wiring upgrade costs**. The AEMC addresses this in its issues paper and indicates that a State and/or Federal policy and budget response must be consulted on and delivered.

2. **Smart meters enable retailers to disconnect the customer remotely**. SA Power Networks aligns with customer advocates in considering that industry best practice is to increase (rather than decrease) personal interaction, prior to disconnection. We have been advocating federally for retailer-driven 'knock before disconnect' programs and would encourage the SA Government to support this advocacy effort.

3. **Time of use (TOU) tariffs could disadvantage some customers in the short term.** Completing the transition to better tariffs like time-of-use is one of the most important outcomes enabled by the rollout of smart meters. It is a key step in enabling the energy transition and will benefit all customers in the long term. We recognise, however, that TOU tariffs can disadvantage some customers in the short term, including some customers in more vulnerable circumstances who have little opportunity to shift their use out of peak times.

As part of its review, the AEMC will potentially place a requirement on retailers to notify customers, at the time when they communicate on a meter changeover, that they will be changed to a TOU tariff. We believe that this requirement is essential.

Further, it will be important that these customers can access financial support, such as concessions and bill relief, but also financial support for resources which could enhance their ability to shift their energy consumption to off-peak times. In summary, we note that with the roll-out of smart meters, there is an additional layer of consideration to ensure that this financial support is targeted appropriately.

Cost reflective pricing

Cost-reflective network pricing is a key counterpart to smart and flexible buildings, as the critical tool for rewarding customers for demand-side flexibility and better network utilisation. SA Smarter Homes legislation and the roll-out of smart meters has delivered progress in this area. We believe that further progress could be made through joint Government/industry promotion of the benefits of TOU network tariffs (potentially as part of a broader smart/flexible buildings promotion strategy).

Recommendations

- Provide support to the AEMC's direction, through the review into the regulatory framework on metering services, to ensure the no-cost provision of smart meter power-quality data to SA Power Networks.
- Ensure that South Australia places obligations on retailers to inform customers if a meter change results in a change in customer tariffs, irrespective of the outcome of the AEMC review.
- In coordination with Federal Government, determine an appropriate State policy and budget provision for consumers requiring financial support for the installation of smart meters.
- At Federal level, advocate for policies to promote disconnection as a last resort (noting that this is a key policy area under consideration by the AER).
- Ensure that financial supports for customers (both current and future) are suitably adapted to account for the roll out of smart meters and short-term impacts on some customers.
- Consider an SA Government led education campaign, focusing on the consumer benefits of smart CER, TOU network tariffs and other elements of the smart and flexible home.

Decarbonising transport

EVs are likely to become the largest load in a customer's home. As part of our future network planning, we have forecast over 800 GWh of additional energy flowing through our network annually by 2030 – an increase of almost 10% - due to EVs. By 2050, EVs will have increased energy throughput on our network by 50% and our network will be the primary distribution system for transport energy for the State.

If EV charging occurs frequently during peak times, the transition to EVs has the potential to drive significant new growth in peak electricity demand, requiring significant upgrades to the distribution network. If EV charging is managed to occur mostly outside of the peak periods, our modelling suggests that South Australia has the potential to decarbonise the transport sector largely within our existing network capacity.

If integrated efficiently, South Australia could expect to see significant reductions in our average network price between 2030 and 2050 because of this additional energy throughput. All things being equal, a 100% increase in energy throughput would yield a 50% reduction in unit price. This means that ALL South Australians will benefit from the electrification of transport – not just EV owners.

EV charging: a key component of the behind the meter ecosystem

We have discussed the value of progressively shifting to a 'behind the meter ecosystem' approach to regulating appliance types. EV supply equipment (EVSE) is a key component of that ecosystem. We must have 'smart ready' charger standards and regulations to enable customers to incorporate their vehicle charging into a home energy management system and access energy offers that will save them money and integrate well with the electricity network.

In December 2022, the Energy Ministers Meeting agreed that to undertake the following:

- *Deliver nationally consistent and, where possible, internationally aligned standards and communications protocols for EV supply equipment (EVSE), cybersecurity, and smart functionality in Australia*
- *A common mechanism for EVSE data sharing*
- *Nationally align Service and Installation Rules*
- *Streamline network connection processes for consumer energy resources, including EVSE*

We note South Australia's positive work in this space, such as the Smart Charging Trials and enabling vehicle-to-grid connections. As work towards integrating EVSE progresses, it must be coupled with a federal push to harmonise standards. This is essential to give equipment manufacturers the impetus to develop capabilities that will enhance the consumer experience and value of EV ownership and ensure that network impacts of EV charging are minimised.

As noted earlier, we believe that the establishment of a national governance, testing and certification body for CER is a key component which could be advocated for at the Energy Minister's Meeting.

Public charging infrastructure

The South Australian Government has made strong progress with policies and State funding to establish a public charging network. The *placement* of public charging is a critical element in taking advantage of periods of peak solar generation.

A key issue to be considered by the SA Government, is the continued 'gaps' in the network where, until a sufficient EV market emerges, will not present a viable business case for the installation and operation of public charging. We believe it will be essential for SA Government to establish policy that ensures there are no gaps in the EV charging network. As an essential service provider, SA Power Networks can provide a 'charger of last resort' role where needed. We would welcome the opportunity to discuss the role of the distribution network in delivering solutions, including but not limited to the following:

- Fast charging in priority regional and remote sites
- Access to EV charging for South Australians who do not have the capability to charge at home (e.g. customers without off-street parking and rental tenants)
- Workplace and destination charging

As mentioned earlier, a shift to a transport system reliant on electricity as fuel will require the support of a robust and resilient electricity distribution network. As such, SA Power Networks is engaging with the government and community to ensure there is a shared understanding and support for a step up in investment in ageing assets over coming years, to ensure the network remains reliable and robust to meet future electrification requirements.

Data-sharing and EVSE Visibility

Managing the impact of electric vehicle charging on the distribution network is critical to maintaining an affordable, secure and decarbonised energy system. SA Power Networks' ability to access accurate, reliable data on the location and load of EVSE installed on our network is imperative to enabling efficient planning and operation of the distribution network in the future electrified world.

We recommend that the Government works with SA Power Networks to implement data sharing agreements for relevant EV and EVSE data. The focuses should be:

- Working with the Office of the Technical Regulator (OTR) to ensure that EVSE eCoC data be shared at a National Meter Identifier level
- The Department for Infrastructure & Transport (DIT) sharing EV registration data at a postcode level

Providing SA Power Networks access to these two existing datasets would be extremely beneficial in enabling efficient planning for network capacity without introducing any additional overheads on customers or electricians.

In addition to these state-based data sharing agreements, SA Power Networks recommends advocacy by the Government for expansion of AEMO's existing National DER Register to include EVSE data. Many of the processes which could be used to collect and share this data, already exist.

SA EV sales target

South Australia is currently a signatory to the non-binding COP26 declaration to "work towards" all new cars and vans being zero emissions by 2040. We consider that South Australia should consider making a stronger, public policy commitment to achieving this State target by 2035.

The ACT has set an aspirational target of 90% of new vehicle sales to be zero-emissions vehicles (ZEV) by 2030, and a phase-out of internal combustion engines by 2035. Following this is QLD with a 2036 target of 100% ZEV sales, and NSW with an interim target of 52% ZEV sales by 2030.

Our current targets should be reassessed, particularly given the likely implementation of a national fuel efficiency standard and South Australia's resultant ability to compete for the supply of a broader range of EV models.

Recommendations

- Advocate for a nationally consistent approach to EV supply equipment standards (noting that this would be the remit of a national CER standards, testing and certification body).
- In consultation with key stakeholders, including SA Power Networks, investigate the opportunity for SA Power Networks to provide a 'charger of last resort' function for the State's charging network.
- Work with SA Power Networks to establish data sharing arrangements with DIT for EV registrations and the OTR for eCoC data. This should be complemented by a Federal push to include EVSE data in AEMO's National DER Register.
- Make a strong public policy commitment to South Australia's EV sales target, which adequately accounts for the role which transport decarbonisation must play to meet our Net Zero 2050 target.

Efficiency in the built environment

Addressing the energy performance of buildings is one of the key levers to minimising whole-of-energy-system cost and delivering immediate and long-term cost savings to South Australians. While the discussion of smart CER and appliances focused on *shifting* energy use, this section focuses on energy efficiency, which is described as *'using less energy to achieve the same or better outcomes'*[3].

As South Australia continues to electrify, energy efficiency improvements should be considered as a key strategy that can provide immediate cost relief to consumers while at the same time progressing long-term decarbonisation objectives. To some extent, efficiency, particularly thermal efficiency, can also help improve the flexibility of customer energy use by increasing buildings' ability to 'ride-through' particularly hot or cold weather conditions.

To highlight the real consumer impact of energy inefficiency, Better Renting recently reported that approximately 145,000 rental households would get an average benefit of $2800 per year ($4500 for the most inefficient rental properties) through basic energy efficiency upgrades. The total benefit in South Australia would be approximately $410 million per year in rental properties alone[4].

Beyond the consumer impacts, from an energy system perspective, leaky and inefficient housing stock is a big contributor to South Australia's 'peaky' residential load; addressing the basic thermal efficiency of homes would have a material impact on peak summer and winter demand, and a subsequent impact on the need to invest in networks, storage and firming capacity.

As discussed earlier, the *Roadmap* must consider how demand-side policy interventions could influence whole of system planning and investment. Essentially, the *Roadmap* should treat energy efficiency as one of several interdependent energy sources.

[3] Clean Energy, Clean Demand Report
[4] Better Renting, Cost of Complacency analysis, The cost of inefficient rental housing in South Australia - Better Renting

Rental accommodation

As noted above, there are approximately 190,000 rental households in South Australia. In the current environment, landlords are generally not compelled to implement improvements required for tenants to derive benefit from the energy transition, including energy efficiency improvements and access to CER. As a result, rental tenants risk not benefitting from the energy transition, and may in fact be disadvantaged by it, and a high proportion of these are arguably the people who would value that benefit most.

This is an issue of equity, and it is also a major impediment to decarbonisation which is unlikely to be resolved without a targeted policy solution.

Minimum energy efficiency standards

Minimum energy efficiency standards for rental properties must be improved as a matter of urgency. This is a key aspect of the Australian Energy Regulator's current *Gamechanger* consultation and a recent Grattan Institute Report[5]. **South Australia's current *Residential Tenancies Act* reform is the appropriate opportunity to address this issue**. At a minimum, the Act should set minimum requirements for ceiling insulation, air-conditioning and draught sealing.

To complement the above, advocacy at national level for mandatory disclosures at the point of sale/lease is essential, along with further Federal funding for upgrades to social housing. Potential landlord incentives could also be explored and advocated for, such as an 'instant asset write-off' for investments in efficiency upgrades.

Removing split incentives

'Split incentives' are one of the biggest barriers to South Australian energy consumers participating in, and receiving the benefits of, the energy transition. These occur when those responsible for paying for energy bills (the tenant) are not the same entity as those making capital investment decisions (the landlord). Even though upgrades would in many cases provide a significant net benefit for the tenant, the split incentives act as a barrier to unlocking this potential for a significant number of residents and

[5] Insert reference.

businesses. This issue often impacts South Australians in more vulnerable circumstances, who could arguably benefit most from reduced energy bills.

Other jurisdictions, such as the USA, are successfully piloting programs which could finance 'fixed installations' in a way which effectively and equitably assigns the costs and benefits of these installations.

One potential solution is the establishment of a targeted scheme to support rental households experiencing barriers to accessing the benefits of the energy transition. Such a scheme could provide eligible households with access to energy efficiency upgrades or a solar system at their home in exchange for a fixed fee. This could be financed through the financial benefit realised through such upgrades and be added to a property charge paid for by the tenant (such as the distribution component of the electricity bill).

Our initial assessment of similar schemes being applied in other jurisdictions, is that such an arrangement would be likely to benefit a high proportion of existing tenants, if designed well.

SA Power Networks is committed to improving the equity of access to new energy technologies and services for all South Australians and would be pleased to work with the South Australian Government and key industry and community stakeholders to co-design a program that achieves this outcome and provides a best practice model for other Australian jurisdictions.

It should be noted that this financial model could also support *any energy consumer* (ie not just rental tenants) who are experiencing a financial barrier to making these investments. It could potentially cover efficient fixed appliances, CER such as rooftop solar, batteries and EV supply equipment, and potentially other building efficiency upgrades.

Recommendations

- As a matter of urgency, and in consultation with key consumer groups, amend the *Residential Tenancies Act* to implement minimum efficiency standards for rental properties.
- To complement this, advocate at national level for:
  - Mandatory disclosures at the point of sale/lease
  - Further Federal funding for upgrades to social housing
  - Strong consideration of 'instant asset write-off' (or similar) incentives for landlords to invest in efficiency upgrades.
- Progress consultation with SA Power Networks and other key consumer and industry stakeholders on a targeted scheme to support households experiencing barriers to accessing the benefits of the energy transition, through innovative offers that 'unwind' split incentives

Efficiency upgrades to existing housing stock

Improving the efficiency of rental accommodation has unique challenges to be addressed, but similar priority should be placed on measures to improve South Australia's broader existing housing stock. Currently, the Nationwide House Energy Rating Scheme (NatHERS) includes thermal efficiency, but not energy use.

SA Power Networks supports calls by the major banks and peak energy and property bodies to extend NatHERS in such a way as to create a national, standardised star-based rating system, measuring the energy efficiency of homes[6]. This move would help deal with the approximate eight million Australian homes which have not been subject to minimum standards for new builds, implemented in 2005.

To complement these measures, we strongly support consideration of further Federal and State funding support, in the form of subsidies, rebates or low/zero interest loans to stimulate investment in building efficiency upgrades. These should be targeted in a way which reflects the diverse needs of the South Australian community (ie level of financial (and other barriers) to access). This consideration is especially appropriate as Australia contemplates another recession and potential economic stimulus packages which could provide long-term economic benefit, as well as immediate cost of living relief.

[6] CBA, Westpac and NAB want star-based energy efficiency ratings for homes, like white goods (afr.com)

At State level, there is a significant opportunity to reassess the design of the *Retail Energy Productivity Scheme*, with a view to better aligning it with the policy objectives identified through this consultation process. For example, expanding the scheme's objectives from energy efficiency to demand flexibility should be considered, and subsequently the range of technologies/resources which are covered by the Scheme.

Recommendations

- Advocate at national level for the extension of NatHERS to create a national, standardised star-based system, measuring the energy efficiency existing Australian homes.
- Implement further State policy and budget measures (and advocate for the same at national level) to provide financial incentives for building efficiency upgrades (with appropriate targeting towards those with greater barriers to access). These measures should prioritised under long-term economic stimulus packages, rather than only short term policy/budget measures.
- Redesign the current Retail Energy Productivity Scheme to appropriately reflect the State's energy policy objectives (particularly demand flexibility and energy efficiency).

Current and future roles of hydrogen and natural gas

We believe that a *Roadmap* and associated technical and economic modelling is needed to understand the potential value, across a range of scenarios, for natural gas and renewable hydrogen.

Mining, manufacturing and recycling

SA Power Networks supports the principle that SA's abundant renewables should be a unique value proposition in promoting investment in South Australia.

It will be beneficial to encourage large industrial customers to connect to parts of the network with spare capacity. As a regulated distributor, we are unable to make prospective investments in the network in anticipation of the kind of industry growth which the *Green Paper* contemplates. A long-term growth strategy, and the identification of 'growth corridors' (or similar) would assist us in confidently planning and investing in the network.

Recommendation

- Develop a *Green Manufacturing Strategy* (or similar), as the basis for longer-term identification/planning for key infrastructure requirements, upon with SA Power Networks and other utility providers could confidently plan and invest in necessary network developments.

Education and Equity

Trusted, unbiased advice

Throughout SA Power Networks' Statewide consultation on our 2025-2030 Regulatory Proposal, the need for trusted, unbiased energy advice was a key area of focus for the community. While SA Power Networks will aim to continually strengthen the services it can provide to customers under the regulatory framework, the community acknowledged that SA Government partnership is needed to deliver a service which could make a real difference.

The Green Paper acknowledges that the current SA Government Energy Advisory Service will need to evolve to satisfy the needs of consumers in the current and future energy market. With the increasing complexity of the market, it is essential that customers can access a service which they trust, without commercial bias, and which is *tailored to their personal energy needs*. Education and advisory services need to make it much simpler for South Australians to make informed decisions about their energy use and investments.

SA Power Networks has strong visibility of the energy usage patterns of South Australian customers and no commercial interest in the decisions they make about retail plans or technologies. This visibility will only be increased through the roll-out of smart meters and CER which has a much more dynamic relationship with the network.

With SA Government leadership, and through collaboration with consumers and industry, we consider that South Australia could lead Australia in providing a service which:

- Provides customers with a prioritised list of investments or actions that would improve their individual energy outcomes
- Offers a list of pre-qualified vendors who might deliver those products or services
- Potentially makes available low-cost finance to make such investments

We suggest that a working group between the SA Government, SA Power Networks and key consumer and industry stakeholders should be formed to progress this concept.

To encourage consumers to engage and make proactive decisions about their energy use, the SA Government could also consider incentives for customers to compare energy bills to alternative retail offers, as per the Victorian Government's 'Power Saving Bonus'.

The Energy Concession

As discussed throughout this submission, the capability of our State's electricity distribution system to efficiently meet the energy needs of our customers, will contribute significantly to energy affordability. There are many South Australians who will need financial support throughout the transition, and while we do not play a direct role in that, we are acutely interested in ensuring that our customers can afford to use the energy they need to support their well-being.

Engagement with our customers has highlighted that there are opportunities to significantly improve the current energy concession. We note that various consultation processes are underway to reform the broader concession system, but given the growing impact of energy prices on overall cost-of-living, we believe it is justified to expedite consideration and action on the energy concession specifically. Most notably:

- The current energy concession is a flat rate subsidy which has no account for the relative need of a customer, depending on their consumption (*see image below*). We support the shift to a percentage-based subsidy (in Victoria this is 17.5% of energy usage and supply costs).
- Eligibility should be re-assessed to ensure that there is equity of access
- Around 30% of South Australians who are eligible for the concession aren't accessing it. Improved awareness and information, working to reduce associated stigma, and making it easier to apply (especially the process when switching retailers)
- Working towards national alignment

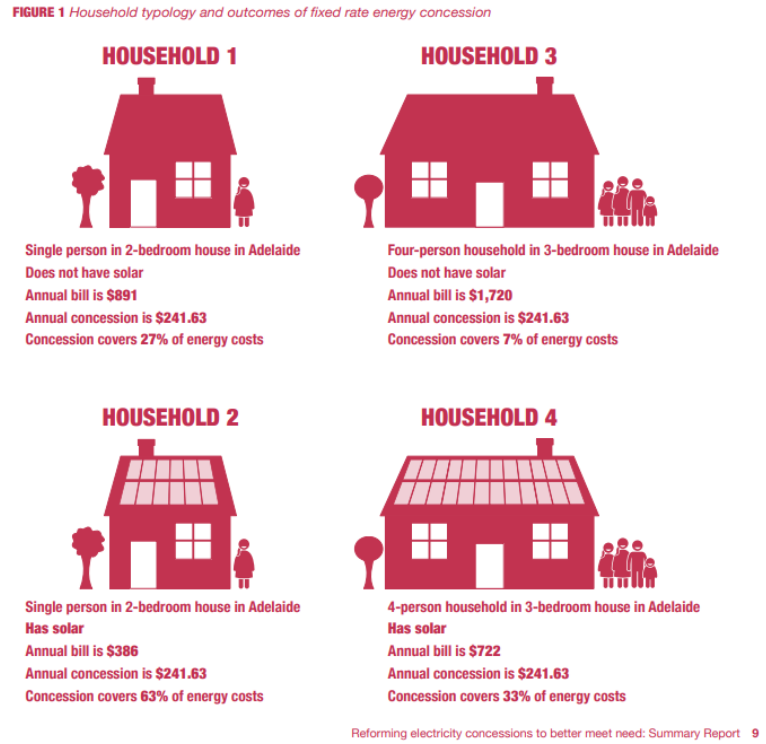


Image from 'Reforming electricity Concessions to better meet need' – a report prepared by SACOSS

Recommendations

- Establish a working group with SA Power Networks and key consumer and industry stakeholders to reform and re-brand the current *SA Government Energy Advisory Service*, with a view to providing South Australians with trusted, un-biased and simple advice upon which they can make much more personalised and impactful decisions about their energy use and investments.
- Consider a 'Power Saving Bonus' type incentive, as implemented in Victoria.
- In parallel to broader concession reform processes underway, work to expedite changes to the SA Energy Concession, in close consultation with consumer representatives.

Workforce

In its 2023 report[7], *RACE for 2030* made key findings which illustrate the scale of Australia's energy transition workforce challenge:

1. Under the ISP Step Change scenario, the combined workforce for renewable generation, storage, and transmission construction needs to increase by 12,000 in just two years to 2025.
2. Overall electricity sector employment grows by 37,000 from 2023 to peak at 81,000 in 2049.
3. Under the Hydrogen Superpower scenario, the workforce needed would be up to twice as high in the 2030s and up to three times higher in the 2040s, with a peak of 237,000.

These projections do not include the workforce needed in energy efficiency, demand-side and energy management, or electrification, which could more than double those workforce projections.

Many of the critical policies need to be addressed at Federal level, including strategies to:

- Harmonise occupational licensing to maximise mobility of workers
- Reform temporary skilled migration
- Encourage and supporting workers (particularly at low or medium skill levels) in fossil-fuel industries to transition to clean-energy roles

Energy Transition Workforce Strategy

South Australia must be well positioned to advocate federally for our State's interests in these and other areas. For this reason, SA Power Networks strongly supports the development of an *Energy Transition Workforce Strategy,* as set out in the Green Paper. Development of the strategy should include consideration of:

- State level modelling of our "whole of energy transition" workforce requirements

[7] ISP2022_Workforce_v1.pdf (uts.edu.au)

- A plan to more prominently and strategically promote career pathways in the energy transition, in much the same way as other "key growth sectors" such as defence and space have been promoted
- The strengthening and revision of fee-free training places and how South Australia should seek to influence Federal/State Skills Agreements to support the energy transition. 'Areas of National Priority' should include the energy sector.
- State level funding boosts for priority apprenticeships and to encourage greater participation of under-represented groups such as females, First Nations and mature-aged people
- Mapping regional and remote workforce needs and ensuring better integration with regional growth policies (in particular, services, infrastructure and affordable housing/accommodation)

Energy Skills Council

As the key advisory body to Government on meeting current and future industry workforce needs, the SA Government should consider changes to the current architecture and membership of the SA Skills Commission Industry Skills Councils. Specifically, the SA Skills Council model is inconsistent with the Federal Government model – the Powering Skills Organisation is specifically for the Energy, Gas and Renewables industries. It would make sense to better align with the National model.

Given the Skills Council's remit around aligning skills and training with workforce needs, a key issue to be addressed by a revised Skills Council would be to prepare the workforce for distributed energy and the quickly changing nature of 'behind the meter' work, to support the growing momentum of smart and flexible buildings.

Other

Areas which the SA Government could also address include:

- Current ring-fencing prevents SA Power Networks (as a Registered Training Organisation) from training third parties unconditionally. Removing this constraint could provide benefit to SA's energy industry. The SA Government should consider this opportunity and engage with SA Power Networks on implementing a change.

- Internationally, there is no clear skills or trade recognition pathway for electrical lines-people to transfer to Australia, despite this skill being listed on the Temporary Skill Shortage List. Further, Trades Recognition Australia (TRA) does not offer the Temporary Skills Shortage Assessment for electrical lines-people. If an offshore technical skills assessment process existed, SA Consumer Business Services could issue a provisional electrical workers' license.

Recommendations

- Develop a *State Energy Transition Workforce Strategy* to properly understand SA's energy workforce needs, better consider (and advocate for) the right Federal and State policy levers to deliver our workforce needs.
- Align the South Australian skills councils with the Federal model, with a particular focus on creating an energy specific council which would have the expertise to advise on the evolving skills and training needs of a distributed energy workforce.
- Assess the future benefit of removing current ring-fencing requirements relating to SA Power Networks' RTO function. Subject to this assessment, SA Government and SA Power Networks should engage on suitable next steps.
- Advocate at Federal level for TRA to implement a technical skills assessment process for electrical linespeople.

Appendices

Appendix 1:

Levelized cost of energy for different generation types:

Summary - LCOE Results	LCOE Result (c/kWh)
5kW Rooftop System	3.29
7kW Rooftop System	3.13
10kW Rooftop System	2.87
100kW Commercial Rooftop	4.33
4.99MW Solar Farm	4.28
50MW Solar Farm	4.05
Wind Farm (120MW)	3.19
Average 2022 SA Wholesale Price	16.03

Prepared by SA Power Networks

Appendix 2: SA specific data from the ISP

Step change	2023 (data is FY22-23 actuals)	2030	2040	2050
GW rooftop solar installed capacity	2.20*	3.34	4.22	5.17
GWh generated from rooftop solar	2,600 (18% of actual generation)	4,117 **(25% of total)**	5,700 **(27% of total)**	6,774 **(20% of total)**
GWh Operational Demand (sent out)	11,541	11,990	15,348	26,640
GWh total all sources	14,141	16,107	21,048	33,414

Hydrogen Superpower	2023 (data is FY22-23 actuals)	2030	2040	2050
GW rooftop solar installed capacity	2.20*	3.85	5.44	6.50
GWh generated from rooftop solar	2,600 (18% of actual generation)	4,726 **(14% of total)**	6,785 **(6.7% of total)**	8,127 **(3.2% of total)**
GWh Operational Demand (sent out)	11,541	30,265	93,907	244,814
GWh total all sources	14,141	34,991	100,692	252,941

**The 2023 rooftop PV installed capacity figure has not yet been reported by AEMO so the step change forecast figure for SA from the ISP is used. Linked in note 1 below.*

Guidance notes:

1. The State-by-state breakdown of rooftop PV installed capacity and generation (rows 1 and 2) come from the AEMO ISP inputs and assumptions workbook https://aemo.com.au/-/media/files/major-publications/isp/2022/2022-documents/inputs-assumptions-and-scenarios-workbook.xlsx?la=en
2. To get the SA-only total consumption, AEMO's forecast data gathering portal was used - located at NATIONAL ELECTRICITY FORECASTING (aemo.com.au) . This portal shows ISP data, but it was only able to show the operational demand forecast out to 2050 – ie scheduled loads only, excluding rooftop PV. Therefore, the grey row has been prepared to show the operational demand forecast and is the sum of rooftop solar generation and operational demand (representing *all* generation).
3. Wherever possible, actual reported data from FY2022-23 was used for the 2023 column. This is consistent with future dates because the ISP is modelled in financial years, and it ends in the financial year *ending* in 2050 (ie FY2049-50).
4. OpenNEM was used for the 2023 generation figures (again going off financial year 2022-23), since the official AEMO reporting lags by a few months and uses the same source data.

SIMEC Mining

Submission to Infrastructure SA
South Australia's 20 Year Infrastructure Strategy
Discussion Paper

November 2023

Contents

1. Introduction

SIMEC Mining welcomes the opportunity to make this submission to the Infrastructure SA (ISA) *South Australia's 20 Year State Infrastructure Strategy Discussion Paper* (Discussion Paper).

SIMEC Mining is a subsidiary of GFG Alliance, a collection of global businesses and investments owned by Sanjeev Gupta and his family.

GFG Alliance employs 35,000 people across 30 countries and has revenues of USD $20bn. Additionally, GFG Alliance is a leader in sustainable industry with a mission to become Carbon Neutral by 2030.

Through its subsidiaries, GFG Alliance is a leading resources operator in South Australia and, as a key corporate stakeholder, has a strong interest in ensuring its views are represented through this consultation process.

SIMEC's continued investment in Whyalla and the Upper Spencer Gulf through expanding our mining operations, transitioning power sources from fossil fuels to renewables and modernising processing equipment are critical to achieving GFG's ambitious plans for GREENSTEEL production and exports of value-added products from South Australia.

SIMEC recognises the importance of ISA's 20-Year State Infrastructure Strategy (the Strategy) in continuing to set a long-term trajectory for infrastructure development consistent with the public policy goals of the South Australian Government.

We acknowledge ISA's responsibility to update the Strategy at five-yearly intervals and note the significant changes to the social, environmental, political and policy landscape since ISA's delivery of the first Strategy in 2020.

Since that time the GFG Alliance has progressed major reforms through SIMEC's Magnetite Expansion Project and LIBERTY Steel's commitment toward electric arc furnaces (EAFs) at the Whyalla Steelworks replacing long serving Blast Furnace technology.

Meeting projected demand for steel and emissions targets set by GFG's Carbon Neutral by 2030 (CN30) initiative necessitates rapid changes to our supply chain, both in terms of feedstock and the energy sources used for processing.

These strategic investment decisions have embedded a pathway of industrial transformation which seeks to harness South Australia's abundant renewable energy resources to enable carbon neutrality across our operations.

SIMEC Mining notes that the South Australian Government has earmarked the Upper Spencer Gulf as a key minerals and renewable energy hub for the State. As a major regional operator we strongly support this measure and are actively working toward its realisation in partnership with our many stakeholders.

We also acknowledge the *South Australian Economic Statement* released by the Malinauskas Government in March 2023 with its mission to 'capitalise on the green energy transition'. This aligns closely with SIMEC's CN30 objectives and industrial transformation goals.

Additionally, we see encouraging consistency between this consultation process and the Department of Energy & Mining's (DEM) *Magnetite Strategy*; *Green Paper on the Energy Transition*; the Office for Hydrogen Power's (OHPSA) *Hydrogen Jobs Plan*; and the Department for Industry, Innovation & Science's (DIIS) *South Australia's Advanced Manufacturing Strategy*.

We believe that SIMEC Mining's operations offer a template for heavy industry transformation in a manner described across these policy agendas and also in ISA's *20 Year State Infrastructure Strategy Discussion Paper*.

SIMEC recognises that continuing investment across a range of infrastructure types and coordination of the many facets of infrastructure development at both macro and micro level is critical to South Australia's decarbonisation, economic transformation and future economic growth.

To this end, SIMEC continues to engage at a state-wide level in providing its feedback to ISA on facilitative regulatory and policy levers; and investment in enabling infrastructure, recognising that these measures strongly align with our own plans to progress strategic infrastructure reforms across our operations.

SIMEC Mining is committed to working collaboratively with ISA and the South Australian Government in progressing these important objectives.

2. Operational Transformation: 2019 - 2023

Since release of the inaugural ISA 20-Year State Infrastructure Strategy and GFG Alliance's previous submission to ISA in 2019, we have progressed from setting the strategic pathway for our operations to achieving significant milestones on the journey to operational transformation.

SIMEC's operations are aligned to ISA's objectives of comprehensive and long term infrastructure planning, particularly as this work relates to the infrastructure inputs applicable to the decarbonisation of our operations and sustainable production of GREENIRON and GREENSTEEL in Whyalla.

This objective is informed by GFG Alliance's CN30 initiative, a global strategy for GFG's operations to be carbon neutral by 2030.

Key to this outcome is implementation of SIMEC's Magnetite Expansion Project which transitions our Whyalla operations from hematite to magnetite as our primary ore source.

Major strategic, operational and investment decisions have been made since 2019 and GFG has set the following transformation goals for our Whyalla operations:

- High purity feed to reduce carbon footprint;
- Energy efficient processing technologies;
- Investment in direct reduction iron technology;
- Powering mining and processing with renewable energy sources; and
- Introducing green hydrogen to replace coal in steel making.

2.1 Mining Operations & Magnetite Expansion Project

SIMEC Mining owns and operates an 8mtpa iron ore mining province in the Middleback Ranges in South Australia, approximately 60 kilometres from the town of Whyalla. The Middleback Ranges have produced mostly hematite as direct shipping ore (DSO) for nearly 120 years

Our operations incorporate the Iron Baron, Iron Knob and South Middleback Ranges mining sites. These mines produce both hematite which is railed to Whyalla; and magnetite which is processed into liquid concentrate and piped to Whyalla.

The majority of this magnetite is pelletised via a pelletising plant at Whyalla and used within the Whyalla steel works. The hematite ore and excess magnetite is exported via transhipping from Whyalla port to a primarily Asian customer base. Total identified reserves

and resources are in excess of 1.5Bt, with further significant magnetite resource potential in the region.

SIMEC has embarked upon the Magnetite Expansion Project to ultimately transition its operations from hematite to magnetite as its primary ore in line with the CN30 target.

The magnetite sourced from the Middleback Ranges generates a high grade concentrate at 68-70% Fe content with relatively low silica, however, it requires processing as a prerequisite for direct shipping and further industrial use.

SIMEC announced construction of a direct reduction Dry Low Intensity Magnetic Separation (DLIMS) plant as a processing and enrichment mechanism in April 2023. DLIMS is designed to reject non-magnetics (particularly silica) from a coarse crushed feed material, thereby upgrading the quality of feed to the magnetite concentrator. This full scale proof of technology will be further complemented with the addition of floatation process to underpin a premium grade concentrate.

Once processed, this magnetite concentrate provides a high-quality energy efficient product as a feedstock for further industrial use, including Direct Reduction Iron (DRI) pellet production. DRI also enables the use of hydrogen as an alternate reductant to fossil fuels, and, when fed by renewable energy, makes GREENSTEEL.

In August 2022 SIMEC produced its first high quality direct reduction grade GREENIRON pellets with the intention for these pellets to ultimately be used at scale as feedstock for decarbonised steel production in Whyalla and as a value-added product for future export.

These key milestones and ongoing project activities will see magnetite concentrate production sustainably producing 2.5Mtpa from the Middleback Ranges mining operations, providing important continuity as SIMEC continues its transition to increased magnetite iron ore production.

As a further step, SIMEC is undertaking work to evaluate a new 5mtpa magnetite concentrate supply chain to supplement the 2.5mtpa facility with the aim to achieve this increased production target by 2026.

The Magnetite Expansion Project is a multi-stage process which commenced in April 2022, with a timeline of progress as follows:

- Stage 1 – 2022:

  Construction of the Dry Low Intensity Magnetic Separation Plant as a full scale demonstration facility, Duchess South Magnetite Resource defined at 636Mt @32.5mass recovery, PFS study undertaken for converting existing concentrator to 2.5Mtpa DR quality concentrate, and PFS for a new 5Mtpa concentrator.

- Stage 2 – 2023:

FS studies complete for 2.5Mtpa concentrator, and the new 5Mtpa concentrator, with update to Duchess South Resource 673Mt @32 mass recovery, 74% of this measured and indicated.
PFS work complete on new Pellet Plant and Direct Reduction Plant

- Stage 3 - 2023 onward:

  Exploration at Chieftain to determine the scale of available magnetite resource to potentially double Stage 2 production capacity from 7.5mtpa to 15-20mtpa, with a longer term goal of 30mtpa by 2030.
  Chieftain inferred resource of 868Mt @34% mass recovery

  Advance the execution phase of ramping up to the 7.5Mtpa of concentrate production from Duchess South

These combined projects will facilitate SIMEC's ramping of production to 30mtpa by 2030.

2.2 Steelworks Transformation

Alongside this work GFG subsidiary LIBERTY Steel announced in April 2023 that it had signed a supply contract with equipment manufacturer Danieli to construct a 150-tonne low carbon emissions electric arc furnace at Whyalla.

This work is expected to be completed in 2026 and will replace the existing coke ovens and blast furnace. The Whyalla Steelworks marked the closure of its coke ovens in September 2023 as part of the transition to DRI and electric arc furnace technology.

The electric arc furnaces will be enabled to take direct feed from renewable power sources which will help to eliminate indirect emissions from Whyalla's new steelmaking facility. It will initially be fed by domestic steel scrap and other iron-bearing materials to deliver an expected 90% reduction in direct CO2 emissions compared with traditional blast furnace production.

LIBERTY have also commenced engagement with global equipment suppliers for the potential installation of a 1mtpa Direct Reduction Plant (DRP) in Whyalla that can process local magnetite ore to produce low carbon iron.

The DRP will initially use a mix of natural gas and green hydrogen as the reducing agent, before fully transitioning to green hydrogen as the State's projected pipeline of renewable projects come online and continuing investment in/construction of large scale hydrogen electrolysers occurs.

The low carbon DRI can then be fed into the electric arc furnace in combination with scrap to produce high quality steel grades for Australian infrastructure projects, and to serve the growing global demand for low carbon DRI pellets.

2.3 Hydrogen Transformation

Expansion of our operations in line with CN30 necessitates that we transition our current energy requirements to emission neutrality and that future capacity is also emissions neutral.

SIMEC supports in-situ use of hydrogen as this allows any 'value adding' to occur in South Australia.

SIMEC is actively progressing a staged hydrogen transition across multiple phases, with Phase 1 comprising development of a pilot plant through purchase and installation of two 5MW electrolysers.

Through this demonstration plant we aim to better understand a range of technical issues including electrolyser efficiencies and power requirements as a precursor to scaling up hydrogen use.

While the production rate of hydrogen from 10MW of electrolyser capacity will not meet our extensive energy requirements, our intent is to demonstrate hydrogen availability and embed a pathway to carbon neutrality for our operations.

Fundamental to this transition is replacing existing fuel sources with new ones, with full hydrogen adoption being SIMEC's ultimate goal.

This presents a range of infrastructure issues that must be resolved to enable transition.

SIMEC Mining presently uses 100-150MW in direct power consumption with up to 4TJ per day of gas at current consumption. We estimate that to replace current natural gas usage with hydrogen would equate to 34 tonnes of hydrogen per day. These requirements are projected to increase with the continuing implementation of the Magnetite Expansion Project.

Gas is presently our primary fuel source for processing, supplied through the Moomba to Adelaide pipeline via the lateral pipeline to Whyalla, with the lateral having capacity of up to 13 petajoules.

Resolving the shortfall in gas pipeline capacity, gas supply and hydrogen supply against our production timeframes is central to scaling up DRP.

We calculate that scaling up DRP production to 2.5mtpa in line with our expansion targets will require an additional ~25 petajoules of gas, which the lateral pipeline to Whyalla does not have capacity to supply. The resulting infrastructure constraint therefore limits SIMEC's possible production levels.

We are now actively examining investment in a 'gas bridge' as an interim option to meet production targets, though we are weighing this option against utilisation of hydrogen. Investment in hydrogen use is dependent on it becoming available on time, at scale and at a commercially viable price point via an offtake from the various renewable and hydrogen producer proponents in the region.

DRP units will create a heavy demand for both renewable generation and electrolysers, with one 2.5Mtpa DRP unit requiring installation of a ~1GW hydrogen electrolyser powered ideally via green energy.

The green industry transition dictates major infrastructure investment across the public and private sectors if the State is to achieve green iron production and decarbonised steel manufacturing at a scale envisaged by the South Australian Government's policy agenda.

SIMEC submits that ISA must consider the volume and scale of energy resources, associated infrastructure and land required to meet the objectives of the South Australian Magnetite Strategy as part of its long-term infrastructure planning.

2.4 Whyalla Magnetite Hub

SIMEC has previously presented the Whyalla Magnetite Hub concept to ISA and submits the concept for consideration in ISA's updating of the 20-Year State Infrastructure Strategy.

SIMEC proposes establishing a centralised magnetite hub model in Whyalla as a vehicle for achieving the South Australian Government's Magnetite Strategy objective of securing *"$10 billion of combined investment by 2022 to unlock magnetite resources and increase South Australia's magnetite production to 50 million tonnes per annum by 2030*".[1]

South Australia possesses well-understood magnetite resources of ~18Bt to the north, east and south of Whyalla, however, these resources are currently stranded due a lack of power, water, rail and port solutions rendering many projects too capital intensive to progress.

SIMEC has identified a shared processing model in Whyalla that relieves the capital-intensive constraints associated with remote projects. Overcoming these constraints would be achieved through co-investment and centralising industry needs in Whyalla where the bulk of project requirements can be met.

With industry collaboration, government involvement and a focus on the state's rail solution, SIMEC aims to implement a 'hub and spoke' model to unlock an additional 30+ mtpa of iron production in South Australia.

Through strategic, targeted partnerships with other magnetite producers, co-investment in the processing facility in Whyalla will lift constraints currently rendering remote projects unviable. This shared investment model combined with a rail solution offers the greatest potential to unlock South Australia's magnetite wealth.

[1] https://www.energymining.sa.gov.au/home/events-and-initiatives/initiatives/magnetite_strategy

The hub and spoke model as a means of delivering the Magnetite Strategy objectives also operates as an investment attraction tool for large international traders and end users of the high quality, decarbonised concentrate as a key ingredient for their own carbon reduction drives in steelmaking.

In operational terms, SIMEC proposes to introduce a shared processing model whereby dry processing of the magnetite ore is implemented at the proponent's mine site to partially upgrade the ore to a level that can be railed to Whyalla. A change to dry, partial processing enables dry tailings management, reducing environmental impacts and reducing the demand for on-site power and water significantly. This technology has been proven at SIMEC's Middleback Ranges magnetite operations and will be shared with partners co-investing in the hub.

The wet process will be completed in Whyalla, through the construction of a hub concentrator and dewatering plant where access to existing infrastructure and utilities is available. This includes water, power and export route to market.

The hub in Whyalla also provides mining services and other OEM providers the scale of activity to look at setting up regional divisions or service centres to improve equipment supplies and repairs, improving the capex and opex offerings to the projects and operations. Further, the Whyalla community provides access to an existing local workforce.

Further value is provided to hub partners through the opportunity to access GFG's GREENSTEEL offering at Whyalla via product upgrades through the direct reduction plant (DRP) and access to the global market for green products.

3. Response to the Discussion Paper

The following section provides responses to questions and themes set out in the Discussion Paper in the context of SIMEC Mining's operations. These responses are guided by the questions and themes posed rather than providing specific answers to each question.

By way of preface, SIMEC acknowledges the use of megatrends by ISA as a backdrop for scoping long-range infrastructure policy, with its own strategic planning being influenced by some of the megatrends identified in the Discussion Paper. 'Climate change mitigation and adaptation'; and 'population, workforce and skills base' megatrends are of particular relevance.

Relevant Objectives

SIMEC sees direct alignment with the following objectives set out in the Discussion paper:

- *Objective 1* *Enabling infrastructure unlocks higher productivity and economic growth to improve our living standards.*
- *Objective 2* *Liveable and well-planned places attract skilled people, support a growing population and create prosperous communities.*
- *Objective 4* *Infrastructure supports a decarbonised, sustainable economy that capitalises on our competitive advantages and opportunities.*

Relevant Consultation Questions

Consultation Question 3 - How can we enable a sustainable and affordable water supply into the future?

Consultation Question 4 - How do we realise the opportunities and mitigate risks with transforming our transmission and distribution infrastructure for the future?

Consultation Question 6 - How can South Australia better coordinate infrastructure investment to support a growing population?

Consultation Question 15 - What infrastructure investments will support industries to transition to a global net zero future?

Consultation Question 16 - How do we maintain an affordable, reliable and secure energy system through the energy transition?

Consultation Question 17 - What are the most significant challenges for decarbonising transport and how do we address them?

Consultation Question 18 – What action is needed to achieve a circular economy in South Australia?

3.1 Operational Transition & Decarbonisation

SIMEC Mining supports decarbonisation of the South Australian economy in line with both our CN30 targets and the South Australian Governments net-zero by 2050 target; and transition to renewable sources of energy to power our mining and processing activities.

In this respect we have set a goal of fundamental transition in total energy source usage for our activities, rather than simple electrification of current processes.

For SIMEC this has already seen major investment in new plant and equipment, demonstrating the capital-intensive nature of transitioning heavy industry away from its traditional use of fossil fuels and toward renewable power and greater process efficiency.

While this is unquestionably an investment in the future of our business, it creates cost pressures additional to those encountered in the ordinary course of operation.

The closure of the coke ovens at Whyalla and their replacement with direct reduction iron (DRI) plant and electric arc furnaces capable of being fed by hydrogen fuel demonstrates this point. SIMEC has committed to new expenditure in pursuit of our decarbonisation goals despite incurring losses due to the retirement of old plant.

The Discussion Paper notes that the 'electricity and water infrastructure required to achieve the state's green industrial ambitions will be on a scale far beyond anything previously seen in South Australia'.

Affordable and reliable power remains critical to the economic viability of commercial and industrial operations and we submit that this must remain a central policy tenet.

As a broad statement of future policy development, economy-wide decarbonisation must be considered in conjunction with industry and economic growth policy so as to better mitigate adverse impacts for entities that have made major capital and investment in South Australia, and to better support future investment in the State.

SIMEC supports the 'energy technology path' adopted by the South Australian Government, noting that this pathway has a strong focus on wind, solar and hydrogen. The abundance of these natural resources and the embedded nature of wind and solar projects play a significant role in determining the trajectory of future project development.

While SIMEC recognises the logic of this trajectory, it remains power source agnostic (subject to its CN30 objective) and suggests that the South Australian Government maintain a flexible policy approach to enable the prompt uptake of energy sources to best support decarbonisation of the State's economy.

We note advice from the International Atomic Energy Agency that fifth and sixth generation 250/350MW small modular reactors (SMRs) offer options for existing fossil fuel power station sites to be repurposed while retaining and utilising existing transmission infrastructure.[2] Additionally, smaller 50MW SMRs could be utilised to provide baseload power to remote operations without the need for major investment in transmission infrastructure.

3.2 Energy Infrastructure

While the State's high penetration of renewable energy creates a competitive advantage for transitioning to net-zero, South Australia's high volume of distributed energy resources (DER) presents a whole-of-system engineering challenge centred on firming capacity.

Fundamental to meeting this challenge are decisions about generation, storage and transmission infrastructure.

The key issue is resolving the problems created by renewable energy oversupply and mitigating the intermittency of renewable generation in periods of undersupply. While South Australia has seen significant investment in generation capacity, investment in storage and firming capacity is still catching up.

Ongoing large scale battery development; construction of electrolysers and power generation via the Hydrogen Jobs Plan; and construction of synchronous condensers will help to manage excess renewable generation.

Addressing the renewable supply gap raises questions about the type of firming capacity to be used in a transitioning system and the pace at which gas is replaced by battery storage, hydrogen storage or hydrogen as a feedstock to formerly gas fired power stations.

Ensuring that development of new renewable generation projects are coordinated with development of new energy storage projects will assist in maintaining system balance and in maintaining security of supply during periods of intermittency. This also applies for projects that could utilise excess generation presently within the grid

SIMEC supports the continuing development of utility scale firming capacity. We suggest that coordinated project development in a manner that maintains system balance; addresses the problems of both oversupply and intermittency; and meets projected energy needs is key to realising the decarbonisation of the State's economy.

SIMEC submits that the 20 Year State Infrastructure Strategy should incorporate a consolidated energy infrastructure component to provide a whole-of-state understanding of generation infrastructure (power plant, electrolysers); connective infrastructure (transmission lines, water and gas pipelines, roads and rail) relative to their centres of usage; and land access considerations relevant to development.

[2] https://www.iaea.org/newscenter/news/repurposing-fossil-fuel-power-plant-sites-with-smrs-to-ease-clean-energy-transition

This could be incorporated as a component of strategic regional planning as flagged at 3.6 below.

3.3 Hydrogen

SIMEC is a strong supporter of hydrogen given the central role it plays in decarbonising the steel supply chain.

SIMEC supports in-situ use of hydrogen as this allows any 'value adding' to occur in South Australia. SIMEC submits that this should be a principle focus and hydrogen export should follow, consistent with a staged approach to supply chain development and resolution of complexities around storage and transport.

The most immediate challenge is to scale up green hydrogen production sufficient to meet industrial needs and to do so at competitive 'dollar per kilogram' price. In doing so, the question of hydrogen's cost as an energy source must be settled.

Timeframe is a critical consideration as the sooner green hydrogen is available for wide scale use by industry, the sooner emissions reductions targets can be achieved. As such, the timely implementation of policy measures, planning and investment decisions relevant to the hydrogen supply chain is critical.

3.3.1 Water and Power as inputs to Hydrogen

Noting that water and renewable power are critical inputs to production of green hydrogen, ensuring the timing and alignment of these inputs as enablers to the rapid development of hydrogen production and supporting the efforts of commercial operators must be a key consideration.

We recognise that the Northern Water Supply Project continues to be progressed by ISA and the broader South Australian Government. We commend the South Australian Government's efforts to date in advancing this major infrastructure project, recognising that it will play a fundamental role as an economic and regional growth enabler.

The Northern Water Supply Project has potential to support a range of industrial and civic activities in the Upper Spencer Gulf and notably providing a crucial input to production of green hydrogen in Whyalla. SIMEC submits that completion of the Northern Water Supply Project should be a key outcome of the 20-Year State Infrastructure Strategy.

SIMEC is currently exploring options for the use seawater versus purified water as an input to hydrogen production. This will determine investment decisions for procurement of desalination infrastructure and renewable energy options needed to power it.

3.4 Mobile Fleet

SIMEC is actively considering how to transition and decarbonise its mobile fleet. While some manufacturers are developing electrically powered fleet, this equipment is not presently at a size required for our future expansion.

The question of whether to use battery powered vehicles or hydrogen fuel cell powered vehicles remains unresolved, recognising that both options are still progressing to commercial scale and that both offer benefits and drawbacks.

Parallel to this is the question of moving renewables-powered vehicle fleets to remote areas and supporting them while remote. This necessitates consideration of supporting infrastructure for a renewables-powered fleet along with transition of the associated supply chain.

While transitioning transport to net zero requires major investment in charging infrastructure or hydrogen fuel cells, developing requisite infrastructure in regional and remote areas presents an additional set of challenges.

Noting Whyalla's significance as a green industry hub for the State, SIMEC submits that mapping future transport infrastructure requirements for key regional areas against industrial activity, freight movements, carbon reduction goals, and energy requirements to support renewable-powered fleets would be a valuable long-term planning exercise.

3.5 Circular Economy

SIMEC strongly supports development of a circular economy in South Australia and sees opportunity to situate a 'cradle to grave' circular economy hub at Whyalla.

With the advent of large scale solar and wind farms, solar PV and electric vehicles, end-of-life recycling embeds sustainable practices while also presenting new commercial opportunities. Critically, South Australia has no facilities for recycling of solar panels and wind turbines, nor for disposal of lithium batteries.

SIMEC submits that development of such a facility could form part of the State's green economy supply chain, with potential for South Australia to become a national 'circular economy hub'.

The Whyalla Port could be used to support circular economy activity, providing capacity for the import of waste materials from a range of waste streams for processing.

The Whyalla steelworks also have the ability to use scrap metal as a feedstock for GREENSTEEL production, providing an end market for recovered metals in a manner envisaged by the Discussion Paper.

Noting that Whyalla has been earmarked as a key industrial and renewable energy hub for the State, also designating it as South Australia's 'circular economy hub' leverages existing

infrastructure and further builds economies of scale complementary to activities occurring elsewhere within the region. Additionally, it facilitates the development of specialist operational expertise that can compensate for Whyalla's distance from major urban centres.

3.6 Civic Infrastructure, Regional Development & Future Workforce

The Discussion Paper paints the State's regions as '*the cornerstone to our transition to a greener, decarbonised economy*' and states that the State's '*ability to unlock economic growth in regional areas is dependent on understanding the strengths and competitive advantages of our regions and having the enabling infrastructure in place to leverage opportunities*' (p.31).

Given this ambition, SIMEC submits that major regional centres like Whyalla must be enabled to support projected levels of activity and growth.

SIMEC has planned to increase its workforce by 500-600 personnel in the short term. We note that the government has estimated workforce growth in the region at an additional 5000-6000 additional personnel over a similar timeframe, per targets set by the *Hydrogen Jobs Plan*.

Regional growth of this scale necessitates investment in a broad range of infrastructure to support increased population.

In addition to power, water and transport infrastructure to underpin civic growth, investment in sporting, community, hospitality, tourism, housing and educational infrastructure is required to ensure that Whyalla is an attractive place to live and work.

Currently SIMEC has very few FIFO workers, relying primarily on locally based personnel to fill our ongoing workforce requirements. In line with our CN30 objective SIMEC is assessing the future viability of Fly-in Fly-out (FIFO) as a means of supplying our expanded workforce requirements noting the demands for a much larger localised workforce and an the infrastructure investment to support it.

Civic infrastructure investment is fundamental to attracting and retaining the diverse workforce necessary for SIMEC's future vision.

SIMEC notes that the South Australian Government has recently commenced work on the Greater Adelaide Regional Plan (GARP), with the *Planning Development and Infrastructure Act 2016* also requiring Regional Plans to be prepared for each planning region within South Australia.

Given the importance of the Upper Spencer Gulf to the State's economic growth and decarbonisation objectives, ensuring coordination between ISA's long-term strategic planning and the GARP/Regional Plan development is key. SIMEC notes that planning and infrastructure requirements for development and growth of green industries in Whyalla present new challenges and complexities and is committed to ongoing stakeholder engagement to support a regional green industry transformation.

Finally, the Upper Spencer Gulf will require a skilled workforce and associated facilities to enable high quality education in the region.

SIMEC strongly supports the Upper Spencer Gulf Skills Solution as a skills and training initiative and, as a major regional employer, is committed to working collaboratively with the South Australian government in its implementation.

3.8 Whyalla Port

SIMEC's Whyalla Port is a strategic asset with significant expansion opportunities and capacity for third party usage. It is South Australia's only deep-water capable port via transhipping and provides the best, most efficient deep-water port option among all existing land-side infrastructure options in the State.

Whyalla Port presently has an installed transhipping capacity of 16mtpa with SIMEC's current high-use scenario being ~10mtpa. The port's current capacity can be increased to ~30mtpa through changes to transhipping arrangements such as increases in vessel numbers and modification of present design, thus presenting opportunities to accommodate expansion of our own activities, as well as greater third-party access.

While the port benefits from direct rail linkage, the national network that links to the port does not have significant capacity to accommodate large volumes of bulk commodity freight. SIMEC believe work is required to evaluate and establish a strategic plan to enhance the rail capability to handle bulk commodity transport to the Whyalla Port through additional passing loops, and consideration to longer term axle load capacity.

SIMEC is actively assessing options to resolve this issue, including the role Whyalla Port could play as part of the Whyalla Magnetite Hub, and welcomes further discussions with ISA and the South Australian Government about optimising its use.

4. Conclusion

SIMEC Mining welcomes the opportunity to once again contribute to ISA's 20-Year State Infrastructure Strategy consultation process and commend its ongoing long-range infrastructure planning work.

Since 2019, SIMEC Mining has made significant investment in infrastructure that will allow us to achieve decarbonisation of our operations and facilitate a 'green transition' of our industrial activities.

Transformation of our operations offers major economic growth potential for the region and the State and will require ongoing investment in infrastructure to underpin this growth.

We further recognise that SIMEC's operations being based in Whyalla place us at the centre of the green energy transition as set by the *South Australian Economic Statement*.

SIMEC reiterates that major investments in industrial and civic infrastructure will be required in Whyalla to accommodate new activities and projected workforce growth. Ensuring coordination across major policy initiatives is fundamental to achieving both SIMEC Mining's strategic ambitions and the economy-wide transformation envisaged by the South Australian Government.

SIMEC is committed to working with the ISA and the Government of South Australia to identify shared action which will support our commercial objectives and bring public value to the people of Whyalla and South Australia.

TELSTRA GROUP LIMITED

Telstra submission to the South Australian 20-Year Infrastructure Strategy Review

Confidential version

17/11/2023

[CIC begins] = information not to be released without a confidentiality undertaking

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Introduction

The Telstra Group welcomes the opportunity to provide a submission to the review of South Australia's next 20-year state infrastructure strategy.

At Telstra we understand the importance of investing in long term infrastructure and the benefits it brings to the South Australian economy, particularly in rural and regional South Australia where we can help bridge the digital divide.

Telstra supports the objectives identified through the new Strategy and believe that collaboration across all three levels of government and industry sectors will be key to achieving them.

General Comments

Connectivity:

Telstra has invested more in its mobile network than any other Australian mobile carrier and covers 99.6% of the South Australian population. Telstra is committed to providing improved and new mobile coverage for its customers in rural and regional areas, including in South Australia where we have invested in over 200 projects including Greenfield Macros, co-investments and network upgrades and augmentations over the last three years. These investments have seen 5G delivered in over 40 South Australian cities and towns, and improved coverage in many other locations.

The development of South Australia's state infrastructure strategy presents an opportunity to set ambitions for connectivity and improvements to this area in the coming years. We anticipate potential focus areas including underserved communities, tourism destinations, major roads and highways, and areas which are susceptible to natural disasters.

At present, Commonwealth Government co-investment programs (such as the Mobile Black Spot Program (**MBSP**), the Regional Connectivity Program (**RCP**) and the Peri Urban Mobile Program (**PUMP**)) are a key vehicle for delivering new and improved coverage in regional areas where the investment economics can be marginal. Under the MBSP for example, 86 sites have been delivered to date in South Australia.

The effectiveness of co-investment programs is maximised where co-contributions are delivered across different levels of Government, including state governments, and the private sector. However, ultimately the effectiveness of co-investment programs are delivered when we take a truly place-based approach that incorporates a consideration of delivering the best connectivity for a region. Program guidelines are therefore best structured to change or evolve over time to account for different ways in which connectivity can be delivered, depending on the best technology available. In addition, it is important to recognise that technology is rapidly evolving, so flexibility is important to take account of new technology developments. For example, the emergence of Low Earth Orbit (**LEO**) satellite technology and the potential of Direct-to-Handset (**DTH**) services in the next few years, could influence the scale and geographic distribution of future infrastructure rollout in regional and remote areas.

There are also Commonwealth Government programs which are focussed on resilience, such as the Mobile Network Hardening Program and the Telecommunications Disaster Resilience Innovation program. Again, the capacity for such programs to be beneficial to South Australia will be maximised

where the State government (and in some cases local governments) are able to make financial co-contributions to any proposed resilience solutions / improvements.

There may also be scope for future, targeted investments in South Australia outside Commonwealth Government co-investment programs where the economics of these investments are challenging. We anticipate some degree of State Government funding would be required for these to progress.

In parallel to our ongoing investments in mobile coverage, Telstra has also commenced building the backbone for Australia's future digital economy with investments in our intercity fibre network that will see two separate sheathed cables laid across Australia (including Woomera, SA). This investment is connecting all capital cities with Ultra-Fast ULL fibre and National fibre with regional access points enabling economic growth and investment.

The fibre project includes an Adelaide to Darwin link which unlocks pathways to subsea infrastructure, providing new options for data centre locations, including in Asia.

The benefits of these backbone investments often include improved coverage, increased user throughput speeds and better-quality mobile service for local communities, and improved resilience. In turn, these support socioeconomic benefits such as investment attraction for tourism and agribusinesses, the ability to address digital inclusion, and greater access to emergency and essential services, educational resources and telehealth.

As an example, a sector looking to benefit from regional connectivity investments is the agriculture sector. The National Farmers Federation (**NFF**) launched their 2030 roadmap[1] in 2018, which was developed with support from Telstra, that outlines a vision of exceeding $100bn of farmgate value nationally by 2030. One of the five pillars of this strategy is 'Unlocking Innovation'. Part of this pillar is digital technologies, which could add an estimated $20.3 billion to farmgate output with the full uptake of digital technologies[2].

Digital Inclusion:

The Australian Digital Inclusion Index (ADII)[3] tracks and reports on digital inclusion in Australia across the three dimensions of Access, Affordability and Digital ability. Using a score of 0 to 100 it compares the degree to which individuals can be considered more or less digitally included than others, with a score close to 100 indicating a higher level of inclusion. The information it provides about critical barriers to digital inclusion for cohorts and geographic locations can help shape initiatives to improve digital inclusion across Australia.

[1] Source: NFF_Roadmap_2030_FINAL.pdf

[2] Perrett, E., Heath, R., Laurie, A. and Darragh, L. (2017). Accelerating precision agriculture to decision agriculture – analysis of the economic benefit and strategies for delivery of digital agriculture in Australia. Australian Farm Institute and Cotton Research and Development Corporation

[3] Thomas, J., McCosker, A., Parkinson, S., Hegarty, K., Featherstone, D., Kennedy, J., Holcombe-James, I., Ormond-Parker, L., & Ganley, L. (2023). *Measuring Australia's Digital Divide: Australian Digital Inclusion Index: 2023*. Melbourne: ARC Centre of Excellence for Automated Decision-Making and Society, RMIT University, Swinburne University of Technology, and Telstra.

The ADII tells us that digital inclusion in SA is improving, however with a score of 72 (2023) it still rates lower than the national average (73.2), and lower than most states and territories (except for Tasmania and the Northern Territory). Those with lower levels of education, income and employment are considerably less digitally included, as are those who are older. There is also a metro / regional divide with those living in capital cities and larger towns receiving higher scores than those who don't. In fact, regional and remote parts of SA fall up to 18.1 points behind the state average, and 19.3 points below the national average. The lowest scoring LGA's are in some of the most remote parts of the state, including in APY Lands in the remote north-west (53.9), Maralinga Tjarutja in the Western Desert (54.4) and Coober Pedy in the north (61.4). This disparity is mainly due to lower levels of Access.

There is a noteworthy divide within Adelaide, where a number of metro LGAs sit below the state average, including Gawler (70.8), Salisbury (71.0), Playford (71.3), Port Adelaide Enfield (71.9).

There is also a divide between Greater Adelaide and the rest of the state in terms of mobile-only access. In general, mobile-only use is associated with lower levels of digital inclusion. 10.4% of Australians are reliant on mobile-only access. In Adelaide this figure is 8.9%, while in the rest of SA is almost double this rate (16.4%).

There remains work to be done to measure digital inclusion within and across First Nations communities. However, available data indicates digital inclusion levels well below the national average, especially for those living in remote and very remote areas (Figure 1). [4]

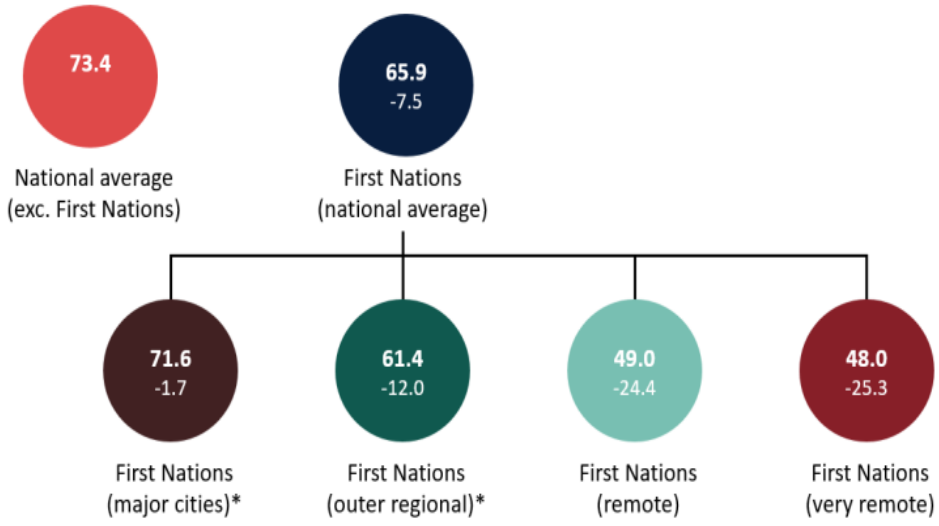

Figure 1. Digital Inclusion Index scores for First Nation communities across major cities, regional and remote locations.

[4] Source: Figure 4.Australian Digital Inclusion Index 2023,

We believe infrastructure improvements can play a role in closing these digital divides in South Australia, as outlined in our responses to the Consultation questions.

Consultation questions

Our submission does not address all questions in the discussion paper, but we have focussed on these questions relevant to our role in supporting the SA economy and communities.

Section 4.4 Our productivity challenge

Question 1: What opportunities should we consider to improve South Australia's economic growth?

Telstra response: We don't want to see any Australian regional town or city left behind. Enabling economic growth requires ongoing investment in network infrastructure that helps enable productivity gains, and we envisage co-investment programs having an important role to play in this activity. To this end, South Australia's state infrastructure strategy presents an opportunity to set ambitions for connectivity and improvements to this area in the coming years.

Recent investments in new mobile sites and our intercity fibre network are important enablers for connectivity and greater economic investment. In 2017, before the full roll-out of nbn was complete, small businesses located in regions with nbn connectivity saw revenue grow by two-thirds and employment grow by one-third more than businesses in regions without the nbn[5].

Telstra's intercity fibre network investment is another enabler that will allow for local businesses and industries to expand their markets, reach a wider customer base and engage in global trade. This ultimately leads to job creation, increased productivity and overall economic growth across Australia. We foresee this network becoming the digital backbone of Australia's future economy, helping attract new businesses, facilitate entrepreneurship and foster innovation, productivity and growth.

Some examples of how this will support industry includes:

- **Industrial automation:** new technologies from autonomous machines and robots are optimising industry practices in mining, agriculture, manufacturing and healthcare.
- **Big data analysis:** high capacity and low-latency connectivity are necessary to enable access to real-time big data that allow for immediate decision making.
- **AI and the IoT:** industries utilising AI and the IoT to improve productivity, sustainability and economic growth. These rely on high-speed, low latency fibre networks.
- **Optimising healthcare delivery:** high capacity, low latency connectivity is required to meet demand for remote and virtual healthcare reliant on access to real time medical and imaging data.

Section 5.4 Digital connectivity

Question 5: What are the barriers to increased adoption of digital technology to improve productivity?

[5] Xero 2018, From little things big things grow: How digital connectivity is helping Australia small businesses thrive, Xero, p 1, available via: www.xero.com/small-business-insights/wp-content/uploads/2018/10/from-little-things-big-things-grow-how-digitalconnectivity-is-helping-australian-small-businesses-thrive.pdf.

Telstra response: Telstra is committed to provide improved and new mobile coverage for its customers in rural and regional areas, however in some instances the economics of building new mobile coverage are becoming ever more challenging. Therefore, the role of Government through co-investment programs, such as MBSP and RCP, are important as a way to address these barriers to expanding new coverage and connectivity.

These barriers can be addressed by:

1) **Continued recognition of the importance of government co-investment, ensuring that this is focussed on areas where investment would be otherwise uneconomical:**
    - Because of the challenging economics, there are likely to be few new economically viable sites in regional and remote areas, without support from government co-funding.
    - Continued private investment will also be essential. Deployment costs in regional and remote areas are typically higher than in metropolitan areas, while direct revenues from site coverage are typically lower. What *drives* continued investment by mobile network operators in regional mobile infrastructure and services in these conditions is the opportunity to generate returns on their investments through competition in the national mobile market.
2) **Funding for connectivity upgrades in addition to black spots:**
    - RCP provides a degree of flexibility in the solution types which can be eligible for funding, and this can allow for a range of options to be considered that best meet the needs of regional and remote communities. We believe this flexibility is an important feature of Government programs and should be continued into the future as the technology types continue evolving.
    - Some of the benefits of the RCP include support for upstream build (in particular, transmission upgrades and or resiliency, not just downstream coverage. This means carriers can undertake works that improve capacity, resilience and end customer experience, as well as basic connectivity. This is important as the demand for data grows on regional networks, placing stronger need for continued investment in building additional capacity.
3) **Early planning by the State Government with Telstra can maximise South Australia's share of both Commonwealth co-investment funding and Telstra co-investment funding.**
    - This planning takes time and a high degree of collaboration with relevant parties but should ultimately provide better outcomes for the communities being targeted. For example, the Limestone Coast Project (see Case Study 2 on page 8) was a project 8 months in development, much of it in consultation with local government and industry before it was submitted to Round 3 of RCP in 2023.

These programs bring positive economic and social impacts to communities in regional and remote parts of South Australia. Some example include;

- **Case Study 1- Far North SA Project:**
    - Under Round 1 of RCP, Telstra was awarded two projects in South Australia – Hawker to Leigh Creek Upgrade, including seven 4G Satellite Small Cells in APY Lands, and a project delivering an upgrade to Ernabella Tower.

- In partnership with the South Australian Department of Education, Telstra is upgrading key transmission infrastructure between Hawker and Leigh Creek and expanding the available core network capacity into Leigh Creek and Marree.
- This will facilitate the provision of fixed broadband services to the Leigh Creek Area School and Marree Aboriginal School. The project will also upgrade the transmission capacity at Telstra's Mount Scott and Leigh Creek base stations, enabling improved 4G access.
- Completion of these projects will:
  - Provide improved coverage, user throughput speeds and quality of mobile service for local communities.
  - Enable diverse socioeconomic benefits in far north South Australia, including efficiencies and investment attraction for tourism and agribusinesses.
  - Open up greater access to emergency and essential services, educational resources, telehealth and support for communities on the APY Lands.
  - Foster digital inclusion and increase opportunities to share the region's Indigenous culture with the world.

4) Other recommendations to achieve the best returns from co-funding programs (mobile infrastructure)

We think that to get the best returns on mobile infrastructure co-funded investments, the sequencing and timing of programs is critical. The design of co-funding programs should include staged processes to allow carriers to express early interest in co-location on sites to be developed by another party. This means that there are resources available to best participate in programs. Specifically:

(a) **better co-ordination between various governments** (Federal, State, and potentially Local) is important. The 2021 Regional Telecommunications Independent Review Committee (**RTIRC**) report recommended a longer term investment and planning framework for infrastructure and digital capability in regional Australia, including between co-ordination across Governments and sectors.[6] We support this recommendation as it helps ensure that programs are timed in a way that avoids unnecessary overlap in terms of bid deadlines and maximises the delivery of projects that meet the specific needs of a region, matching the right technology investments with the needs of a region. It also fosters a greater capacity to leverage co-contributions from a range of relevant stakeholders (both public and private);

(b) Government should provide industry with early **warning of anticipated future programs**. This will assist with providing internal resourcing to respond to tenders, particularly where multi-carrier outcomes are preferred which can require extended negotiations. A long-term planning framework would assist with this recommendation; and

(c) to realise efficiencies, it is important that co-funding programs **do not disincentivise co-location on existing infrastructure.** For example, when co-funding opportunities arise for specific locations, existing mobile infrastructure should be considered to allow for efficiencies to be realised by way of co-location on that infrastructure under commercial arrangements (as opposed to co-funded new builds). With the emergence of the tower operators, we have seen examples of some parties choosing not to co-locate on Amplitel mobile infrastructure, as this requires an opex commitment from them (as opposed to what would have previously been a capex cost for an integrated operator). Where capex funding is offered under a government funding program at a location close to existing infrastructure, carriers may choose to use the funded capex instead of spending opex. This may not result in the greatest efficiency as existing infrastructure is not fully utilised.

5) Importance of digital connectivity, inclusion and disaster preparedness in new developments and expanding suburbs

So that mobile end users in new developments and expanding suburbs receive all the benefits of digital connectivity, inclusion and disaster preparedness, we recommend that all levels of government require developers to consider mobile connectivity and network capacity as part of the

[6] 2021 Regional Telecommunications Review – A step change in demand. Source: 2021 Regional Telecommunications Review - A step change in demand | Department of Infrastructure, Transport, Regional Development, Communications and the Arts

overall development process with a similar level of importance to other fixed line infrastructure and utilities such as fixed broadband, water and power.

Government should also link literacy and awareness program funding to awarded co-investment locations to support and better leverage the improvements made to connectivity in a specific region.

Section 6. Liveable and well-planned places

Question 7: How can South Australia better coordinate infrastructure investment to support a growing population?

Telstra response: Co-ordination of investment in telecommunications infrastructure will help ensure that maximum efficiencies can be realised from government and private investments.

In addition to our recommendations above in relation to the benefits and necessity of government co-funding of telecommunications infrastructure, we recommend:

1) Co-location on mobile infrastructure

Co-location through passive mobile infrastructure sharing can offer a number of benefits to Mobile Network Infrastructure Providers (**MNIPs**), mobile carriers, and the public and as a result, we recommend that government policy should encourage co-location. Amplitel is the Telstra Group MNIP and operates the Telstra Group mobile phone towers and other mobile infrastructure. Further information on Amplitel is set out in **Annexure A**. In our view, the benefits of mobile infrastructure co-location include:

(a) **more efficient use of land and increased access to favourable locations** - In our experience, the location of a site and the benefit that the site will deliver to the overall networks of our customers is often the most important factor in determining the best location for the installation of a new telecommunications site. Amplitel's customers will specify a search ring within which to secure a new site, and that location and the size of the ring will depend upon expected network demand, spectrum to be used, distance to the core network (backhaul distance), distance to power and topology of the surrounding region. Often the best location for a tower is an elevated position. Site location must maximise benefit to a carrier's network, which limits the availability of suitable sites. In geographic locations where there is a lack of availability for suitable sites, passive mobile infrastructure which supports co-location can allow multiple carriers to gain access to these sites;

(a) **economic efficiencies** – In general terms, it can be less costly to build a single tower that will accommodate multiple mobile carriers, than it is to build multiple structures that only support a single mobile carrier; and

(b) **increased choice for end users –** If multiple carriers co-locate on a tower, this can improve the choice of service providers available in that location, with the corresponding benefits that increased competition brings.

2) Efficiencies in planning laws is critical

The challenges that we face in rolling out mobile infrastructure greatly impact the costs and feasibility of the deployment of this infrastructure. An area where such challenges can be readily

addressed by regulatory reform is the cost and time of obtaining approvals to install telecommunications towers.

There are several potential changes to increase efficiency in the development of infrastructure by MNIPs, to enable the fast and cost-effective rollout of new infrastructure. This would in turn lead to achieving better mobile connectivity across South Australia. In our view, the following regulatory changes may lead to more efficiency in rolling out infrastructure and encourage co-location on mobile infrastructure:

(a) the **harmonisation of State and Territory planning and development approval processes** would improve the efficiency, and could reduce the cost, of developing telecommunications infrastructure. Currently the planning and development approval process for mobile infrastructure varies between States and Territories. This adds uncertainty in planning new infrastructure and can increase the costs of the site selection, acquisition and planning approvals during the development phase. **Annexure B** sets out further comments on current South Australian planning laws;

(b) currently, certain telecommunications facilities are exempt from certain State and Territory laws for carriers. For example, low-impact facilities as defined in the Telecommunications (Low-impact Facilities) Determination 2018 (**LIFD**) are exempt from a range of planning and development approval requirements. This is critical to the efficient deployment and maintenance of telecommunications networks as exemptions minimise the regulatory burden on carriers so they can quickly and cost-effectively meet the community's need for access to affordable, fast and reliable telecommunications services in a nationally consistent way. However, the LIFD does not apply to non-carriers or telecommunications towers. We recognise that some exemptions already apply under South Australian planning laws for telecommunications infrastructure. However, at a minimum the exemptions should apply for:

(i) towers built under a co-funding program;

(ii) towers under specified heights;

(iii) towers in certain development zones (e.g. industrial zones); and

(iv) towers that are designed to support multiple mobile carriers in regional and remote areas.

(c) **the required lot size for telecommunications towers should be reconsidered in planning and development requirements**. Currently, planning rules in South Australia may mean that an MNIP purchases more land than is required for a tower site particularly when considering minimum allotment sizes that apply under the Planning and Design Code (**the Code**) in South Australia under some rural and peri-urban zoning controls. When purchasing freehold land for a tower, Amplitel typically seeks to secure a site that can accommodate at least two tenants. For a standard pole location, this can be achieved in an 80-100 sqm plot, increasing to 10,000 sqm for a large guyed-mast. Minimum lot sizes may mean that Amplitel purchases more land than is required for a standard pole (e.g. for a minimum lot size of 1,000 sqm, Amplitel will only need 100 sqm of the lot). These requirements are inefficient and

unnecessarily increase an MNIP's costs in developing and maintaining infrastructure. We recommend that the minimum allotment size provisions in the Code be reviewed and that where appropriate, exemptions be applied where an allotment will be used for the purpose of a telecommunications facility, to avoid the current inefficiencies outlined above.

In the Report of its Inquiry into co-investment in multi-carrier regional mobile infrastructure, tabled in Federal Parliament on 15 November 2023 (**HOR Report**[7]), the House of Representatives Standing Committee on Communications and the Arts recognised the importance of these issues by making recommendations that the Australian Government (i) facilitate the harmonisation of planning and environmental regulations for new mobile infrastructure across regional, rural and remote Australia[8], (ii) reform the powers and immunities in Commonwealth legislation, such as the *Telecommunications Act 1997 (Cth)* to enable mobile infrastructure to be deployed in regional, rural and peri-urban areas more swiftly[9] and (iii) work with state and territory governments and industry to negotiate smaller minimum lot sizes that can safely host new mobile infrastructure[10].

3) Early consultation between key stakeholder is critical.

We recommend that MNIPs, carriers, developers and all levels of government be included:

(d) as early as possible in the development process and preferably prior to or at the 'urban design' or 'master plan' phase and as government is developing planning schemes;

(e) in relation to the mobile telecommunications requirements of the development, including the most appropriate sites for future telecommunications infrastructure to address both mobile coverage and mobile capacity.

4) Role of local councils and government

The role of local councils and other government authorities is critical as areas are developed (either as greenfield or in-fill areas) as these entities have ultimate planning approval authority for the development. Some local councils have existing telecommunications facilities planning rules that are not consistent with the design of a new development. For example, where a local council planning scheme requires a 400 metre minimum setback for a telecommunications facility from residential land use, this can be impossible to achieve in a new development. In addition, the planning and development approval processes for telecommunications facilities varies between States and Territories and across local councils. This adds uncertainty in planning new infrastructure and can increase the costs of the site selection, acquisition and planning approvals during the development phase.

As a result, we recommend that:

(a) local councils (Property and Planning departments) and other government authorising bodies should be included in early consultations and these entities should be encouraged to

[7] Connecting the country: Mission critical

[8] HOR Report Recommendation 15

[9] HOR Report Recommendation 12

[10] HOR Report Recommendation 14

design planning requirements and schemes that support and facilitate telecommunications facilities in developments;

(b) State and local council planning processes should be fit for purpose in the context of new developments (for example, by way of special zoning for telecommunications facilities and relaxation of design and notice requirements), reflecting the special design and needs of these areas.

5) **The role of the State Government as landlord**

Impact of Crown Land rentals on incentives to invest in regional infrastructure and in new developments

The commercial incentives for investing in regional Australia remain challenging and the commercial returns from sparsely populated areas are generally low, which makes the commercial case for extending networks generally a difficult one to make.

In addition, investment in mobile infrastructure in new developments and expanding suburbs is generally required prior to these locations becoming economic for carriers. This is due to the ramp-up in consumer demand being dependent on the time taken to bring the new development to full occupancy, which can be in the order of 10 years. As such, it is important that developers and government realise that how they price rentals for telecommunication facilities will impact when and whether a carrier chooses to co-locate on a site. This in turn impacts the timing of availability of mobile coverage for end user consumers in these areas.

Government landowners are in a unique position to reduce the cost of providing new telecommunications infrastructure in regional and remote regions by reducing and maintaining reasonable rents on government lands.

In considering the appropriate rents, government land agencies should explicitly consider:

(a) the maximisation of social welfare outcomes;

(b) the positive externalities generated by mobile towers; and

(c) where mobile infrastructure is government funded, the self-defeating effect of increasing rents while at the same time providing co-funding from public funds which in part goes back to the Crown in the form of increased rents for sites in these areas.

Amplitel welcomes the current approach of the South Australian government land agencies to set rents at a level which does not make it harder to establish a business case for mobile telecommunications infrastructure.

In the overall public interest, a whole-of-government and consistent approach should be maintained to promote the availability of accessible and affordable carriage services that enhance the welfare of Australians in accordance with the main object of the *Telecommunications Act 1997* (Cth).[11]

Co-User Fees

Some landowners have a rent seeking approach to telecommunications sites and levy additional fees (**co-user fees**) on carriers co-locating on a tower site, thereby increasing total rental returns from a mobile infrastructure site. These charges have the impact of increasing the total cost of the infrastructure and have the risk of disincentivising investment at impacted locations.

As they currently stand, co-user fees do not reduce when additional operators are co-located on a site- this reduces the feasibility of co-location.

This issue has been highlighted by the NSW Independent Pricing and Regulatory Tribunal (**IPART**),[12] which identified that co-users of telecommunications towers on Crown lands are currently required to pay rents (in addition to the primary user), even where they occupy no additional land.[13] This practice amounts to double dipping and is out of step with commercial practice and inconsistent with Commonwealth legislation which encourages co-location. Accordingly, IPART recommended that co-users should only pay rent to government land agencies for the additional land they occupy, so for co-users wholly within the fenced areas of the primary user's site IPART recommended that the government land agency charge no annual rent.[14]

While this recommendation has not yet been adopted, we welcome these recommendations and consider they should be implemented across all Federal and State government owned lands. Co-user rents are inconsistent with Commonwealth legislation which encourages co-location, such as the *Telecommunications Act 1997*. Co-location should be encouraged as it can offer a range of benefits including more efficient use of land and deployment of expanded coverage, and increasing the uptake of emerging technology for communication purposes such as small cell technology as required for 5G mobile telecommunications.[15]

In the HOR Report, the House of Representatives Standing Committee on Communications and the Arts also recognised the importance of this issue by making a recommendation that the Australian Government prohibit its agencies from charging additional co-user rental fees above the rent a principal tenant pays to lease Commonwealth crown land for the purpose of providing telecommunications services.[16]

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[11] *Telecommunications Act 1997* (Cth), section 3(1).
[12] IPART's (**Independent Pricing and Regulatory Tribunal**) November 2019 report on 'Rental Arrangements for Communication Towers on Crown Lands'
[13] IPART report, page 77
[14] IPART report, page 77.
[15] IPART Report, pages 85-86.
[16] HOR Report Recommendation 13.

We recommend that co-user fees relating to co-location of MNIPs and carriers on telecommunications infrastructure should be removed, in order to encourage investment in mobile infrastructure in regional, rural and remote areas as well as in new developments and peri-urban areas.

Reform in these areas would encourage co-location and in turn lead to achieving better mobile connectivity across the State.

6) **Streamlined engagement with Power Authorities**

Power authorities and electricity distributors (**Power Authorities**) such as SA Power Networks (**SAPN)** are responsible for the connection of power to telecommunications sites. MNIPS and carriers submit applications for power connections to Power Authorities and they are assessed, and connections are completed in accordance with the Power Authorities processes. Without the power connection, the equipment located on or at the telecommunications infrastructure will not commence transmission and as a result, it forms a critical part of the delivery of telecommunications services.

We have recently observed examples of power connection delays which have materially impacted and continue to impact the delivery and transmission of telecommunications services. These are sites at which the infrastructure build and / or telecommunications equipment installation has been completed but the power connection has not. In these cases, we have seen delays of up to 6, 8, 9 and 10 months from the date of our application. Locations in SA where we have seen such delays include Coulta, Colebatch, Geranium, Narrung, Greenways, Gum Creek and Stokes Bay. We also have various other projects where the expected power connection date has been advised by SAPN as being after the expected date of completion of the telecommunications works. Some sites are bush fire prone. We are happy to provide further information to government on the specifics of these projects.

As a result, we welcome and recommend a closer and more streamlined engagement with Power Authorities to help us complete power connections to telecommunications sites in a safe and timely manner to best meet public and risk mitigation expectations.

Section 7.2 Regional and remote areas

Question 13: How can we think differently about infrastructure investment to support equitable access and a more inclusive society?

Telstra response: This is not an exhaustive list of recommendations, but rather a starting point for further discussion. These points should be considered in the development of infrastructure to support digital access that contains measurable goals and partnerships for delivery.

- **Changes in technology are creating new connectivity options and changing the economics of investment**
    - While satellite technology has existed for many years, we are now at an inflection point with this technology in terms of capacity, speed and latency, which is improving existing use cases and facilitating new ones as well.

- The emergence of LEO satellite technology (which can support voice and broadband services, and also the backhaul requirements from remote base stations) and the emergence of DTH services could influence the scale and geographic distribution of future mobile infrastructure rollout in rural and remote areas. In some cases, especially in very remote and sparsely populated areas, connectivity solutions utilising LEO technology may be an economic way for pursuing digital inclusion objectives more than existing terrestrial based services.

- **Infrastructure (closing the final gap in nbn availability)**
  - Many federal, state or local government owned, managed or funded facilities do not have the infrastructure to enable ready access to the nbn for residents or public usage. This includes social housing, aged care facilities, hospitals, libraries and neighbourhood houses. There also appears to be some confusion regarding whose responsibility and cost the final in-dwelling connection should fall.
  - As an example, a check of a Melbourne estate (during COVID outbreak) with two high-rise apartment blocks found that around 80% of apartments had never been connected to fixed broadband, despite availability as fibre-to basement for over 18 months.
  - To address this Government could collaborate with nbn co to ensure all social housing residences, aged care facilities, hospitals, libraries and neighbourhood houses, both existing and proposed, are wired / connected to the nbn to the network termination point, ready for in-dwelling access (i.e. just need to plug in a router) and / or in-room access to fast and secure Wi-Fi.
  - Libraries and neighbourhood houses are key examples of public infrastructure that would benefit from an upgrade in connectivity. They have evolved into key digital access points for the community, particularly for those who are digitally excluded. Government could add value to community access by providing additional funding to ensure all libraries and neighbourhood houses are connected to fast nbn infrastructure.

- **Comprehensive local digital inclusion solutions**
  - The COVID-19 pandemic and the associated lockdown of communities has accelerated the digital transformation agenda of many organisations and services, resulting in a stark contrast in experience between those who are digitally included and those that are digitally excluded. The 2 million people who are highly excluded are facing the very real consequences of exclusion as essential education, health and social services have moved, and are likely to remain, online.
  - Our community partners tell us that libraries are inundated with demand for access to “connectivity” + “device” + “real-time digital skills support” from people needing to pay bills online, access government services, attend telehealth appointments and do online job interviews. Many libraries do not have the capacity to meet the demand and nor does their current computer set up meet the privacy needs of some of these transactions.
  - Libraries have long been community hubs, especially for those in vulnerable circumstances. Government could provide further funding to support libraries in transitioning to become “digital” community hubs where those most at risk of digital exclusion can go to access a free, comprehensive and safe digital inclusion solution, when they need it.

- Ongoing investment is also needed in more formalised training programs to build digital capability for those aged over 45 years and those who live regionally.
  - The Being Digital Program delivered by SA Public Library Services should be further supported, especially to provide community outreach to meet those who do not or unable to come into libraries. It builds on the Tech Savvy Seniors program which SA Libraries delivered in partnership with Telstra over about 5 years[17].
  - SACOSS have also been working with the Local Government Association through its Keys to the Digital World project to understand what further digital inclusion support is needed by those in regional communities. They plan to release their findings shortly.

Section 7.3 Closing the Gap

Question 14: What are the opportunities for infrastructure investment to accelerate attainment of the Closing the Gap targets?

Telstra response: Telstra is closely involved, through the First Nations Digital Inclusion Expert Panel, to the First Nations Digital Inclusion Advisory Group (FNDIAG) which has been established to focus on Outcome 17 of the National Agreement on Closing the Gap. Outcome 17 is about ensuring First Nations people are able to access information and services to make informed decisions about their own lives. Outcome 17 is underpinned by Target 17, which is for Aboriginal and Torres Strait Islander people to have equal levels of digital inclusion compared with other Australians by 2026. Telstra has been and will continue to work in partnership with the Advisory Group and with First Nations people and communities to achieve Target 17.

In October 2023, the Advisory Group published their Initial Report[18]. The Initial Report makes a number of important recommendations regarding how government investment in infrastructure can support Closing the Gap Target 17. We encourage you to have regard to these recommendations when developing South Australia's 20 Year Infrastructure Strategy. Relevant recommendations by the Advisory Group include:

FNDIAG Recommendation 1.1 Improve program design and delivery to support First Nations needs and priorities: We agree with the Advisory Group that more work needs to be done to ensure the needs and priorities of First Nations people are being heard, and are central to the design and delivery of future state and federal co-investment programs. This should include initiatives such as:

- Running cultural awareness training for delivery partners;
- Awarding tenders using mechanisms other than the Business Grants Hub (as overly complex grant processes can impact on the ability of First Nations communities to participate)
- Providing tailored support for grant applications from First Nations communities to help them with barriers they may face in terms of awareness of grant opportunities/resources to apply/"how-to" knowledge/language and cultural barriers/connectivity and IT challenges.
- Considering specific targets, such as at least 10 per cent of available funding be provided to projects which benefit First Nations people and communities, in appropriate cases; and

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18 first-nations-digital-inclusion-advisory-group-initial-report.pdf (digitalinclusion.gov.au)

- Recognising in government funding programs that digital inclusion will not be solved purely through investments in connectivity. Affordability and digital ability are also critical. It is essential not only the relevant infrastructure is built, but also that First Nations people and communities can afford to make use of it, know how to understand and navigate online services (digital literacy) and understand their connectivity needs and the options available to them (connectivity literacy).

FNDIAG Recommendation 1.3 Explore alternative technologies beyond traditional terrestrial solutions: Where it is not feasible for telecommunications providers to build new towers, we agree with the Advisory Group that new technologies should be considered as an alternative for providing reliable internet and phone connections in rural and remote First Nations communities. This includes LEO satellite technology.

FNDIAG Recommendation 1.7 Improve alignment across Government on First Nations digital inclusion policy and the delivery of relevant programs: Currently there is overlap between digital inclusion initiatives taken by the Department of Communications, the NIAA, the Department of Education, the Department of Social Services, and state and territory government agencies. We agree with the Advisory Group that aligning these efforts to improve digital inclusion for First Nations people and communities will be vital in reducing the duplication of policies and programs and will help ensure that effort and funding is allocated efficiently. This alignment should also include improved data sharing between agencies and between the Commonwealth and states and territories. We would encourage the South Australian Government to collaborate with its counterparts when settling its Infrastructure Strategy.

FNDIAG Recommendation 1.11 Upgrade broadcasting and digital infrastructure to meet current industry standards and work health and safety requirements: Broadcast and VAST direct-to-home satellite infrastructure in many First Nations remote communities is ageing or inoperable. As a consequence, this can put undue strain on mobile communications networks, as the only source of news and entertainment. Forward looking Infrastructure Development Strategies need to consider these interrelated factors.

FNDIAG Recommendation 1.14 Partner with telcos to provide grants for community Wi-Fi: There are currently 670 First Nations communities and homelands nationally that do not fall within areas of mobile coverage. Community Wi-Fi, accessible from central community locations such as a community office or store, can help alleviate issues associated with accessing and affording an internet connection in the home. We agree with the Advisory Group that Government partnerships with telecommunications operators and local communities to roll out community Wi-Fi could be a very effective mechanisms to improve First Nations digital inclusion.

Section 9.2 Critical Infrastructure

Question 21: What are the critical resilience issues that South Australia needs to address?

Telstra response: Telecommunication networks can be affected by a number of factors – for example, natural disasters, power outages and/or faults. While we do many things to prepare for, and recover from, the network threats we face, a common issue is the availability or otherwise of

local mains power supply. Indeed, most outages are caused by a failure of mains power, noting in some cases physical damage from natural disasters can also be an issue.

While back-up power sources can be helpful for mitigating the impacts of short duration power outages, they cannot compensate for all power disruption scenarios. This reality means it is important to have constructive information flows between energy providers and telecommunications providers, which can help telecommunications providers to better manage and predict disruptions to their networks. This will lead to better coordination of the deployment of limited resources such as generators across their networks when required. For example, timely access to information regarding power status, plans to de-energise parts of the power network, or power restoration priorities during bushfire events can avoid wasted effort transporting and connecting a generator at a site just as power resumes. This also avoids tying up emergency service organisation resources in providing escorts into affected areas. If the South Australian Government is able to support the sharing of information between energy providers and telecommunications providers that would be useful.

Further discussion

Telstra would welcome the opportunity to discuss any aspect of our submission in further detail. Please contact Nick Stacpoole, Rural and Regional Affairs, on [redacted] or [redacted].

Annexure A

About Amplitel

Amplitel is a Mobile Network Infrastructure Provider and was established on 1 September 2021 following the transfer of the towers business of Telstra Corporation Ltd (Telstra) to Amplitel and sale of a 49% interest in that business to a consortium of investors. This consortium includes the Future Fund, Australian Retirement Trust, Commonwealth Superannuation Company and Morrison & Co IP. The Telstra Group continues to hold 51% in Amplitel.

Amplitel's mission is to be Australia's leading provider of towers infrastructure to support customers to deliver wireless communications. Amplitel operates over 8,000 towers, masts, poles, and other structures. Amplitel also has access to Telstra's equipment building rooftops and approximately 160,000 of Telstra's street side poles. Amplitel's tower locations are available at https://www.amplitel.com.au/tower-locations.

Amplitel serves a broad range of customers including mobile carriers, public emergency networks, private wireless providers, major corporations, and not-for-profits. Amplitel is not a mobile network operator, not a carrier and does not supply carriage services. As a provider of passive tower infrastructure, Amplitel is well placed to comment on the costs, feasibility and public benefits associated with the deployment of passive mobile infrastructure.

Annexure B

Specific comments on the current South Australian planning regime

Amplitel has considered the impact of the South Australian planning laws on the deployment of telecommunications infrastructure. We welcome the planning law reforms that were made with the commencement of the Planning, Development and Infrastructure Act 2016 (SA) (**PDI Act**) and the Planning and Design Code (the **Code**) in South Australia in 2021, which provided significant reform to third party notification and planning merits appeal rights for telecommunications facilities. However, we consider that further improvements can be made, particularly in relation to the application of existing exemptions to 'development' and streamlined approval pathways under the PDI Act.

Third party notification and appeal rights

It is important to ensure that telecommunications facilities are not classified as a 'restricted' development under any zoning controls in the Code, in recognition of the essential role of such facilities and infrastructure and the need to for efficient assessment and approval pathways for these facilities.

Similarly, whilst we welcome that third party notification rights for telecommunications facilities were generally limited with the introduction of the Code in 2021, in appropriate circumstances, we consider that telecommunications facilities should be subject to either:

(a) more flexible exemptions to the definition of 'development', or the need to obtain planning consent under the PDI Act; or

(b) made subject to the streamlined planning pathways that already apply to similar infrastructure, as outlined below.

Exemptions and streamlined planning pathways

It is our view that the general exemptions to the definition of 'development' and the need for planning consent under the PDI Act for telecommunications facilities could be broadened, to bring such infrastructure more in-line with other forms of essential infrastructure, such as electricity and communications networks.

Some limited exemptions to the definition of 'development' (which do not require development approval) currently exist under Schedule 4 and 5 of the Planning, Development and Infrastructure (General) Regulations 2017 (SA). These include, for example:

(a) excavation and filling or installation or alterations of buildings necessary for, or incidental to the installation of a telecommunications service (including appliances and fittings) (Schedule 4, clause 4);

(b) the grant of a lease or licence for a telecommunications facility (which will not require approval as a 'land division' by lease) (Schedule 4, clause 3);

(c) certain types of 'prescribed infrastructure' (such as certain aerials, antennas, masts, towers an similar structures) and 'prescribed subscriber connection telecommunications infrastructure', which are defined by reference to particular heights and setbacks, floor areas and other prescriptive parameters (Schedule 4, clause 13); and

(d) very limited works for a telecommunications facilities in relation to a local heritage place, State Heritage Place or a State Heritage Area (Schedule 5, clause 4).

However, in general, these exemptions to the definition of 'development' are far more limited compared to the exemptions that apply to 'essential infrastructure' such as electricity infrastructure under Part 8 of the PDI Act. Part 8 of the PDI Act provides a facility for streamlined planning assessment pathways for 'essential infrastructure', which includes 'communications networks', but does not expressly apply to 'telecommunications facilities'. These exemptions and alternative assessment pathways should be amended to expressly apply to telecommunications facilities, to recognise the close connection of these facilities to communications networks and similar forms of infrastructure. The definition of 'essential infrastructure' in the PDI Act could be amended to include 'telecommunications facilities' of certain types, to facilitate this.

Similarly, the streamlined 'Crown development' pathways under Part 9 of the PDI Act will only currently apply where a person is undertaking development (sponsored by a State Agency) for the purposes of 'essential infrastructure'. As above, there is no reason in principle why telecommunications facilities cannot be included as 'essential infrastructure' to allow appropriate facilities to be sponsored and take advantage of the streamlined Crown development assessment pathways in Part 9 of the PDI Act, as do other forms of similar infrastructure. This could be achieved by appropriate additions to the definition of 'essential infrastructure' in the PDI Regs, as is already the case for many forms of electricity infrastructure (see PDI Regs, regulation 3CA and Schedule 4A).

VITERRA THE AGRICULTURE NETWORK

Infrastructure SA
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13 November 2023

20 year state infrastructure strategy discussion paper – submission

As recognised in the Discussion Paper, appropriate investment in long term, sustainable, and efficiently run infrastructure is a key to ensuring the South Australian economy reaches its potential. Maximising the value of existing assets and evidence based prioritisation of infrastructure needs in regional South Australia is extremely important to the future of the state's grain industry and broader economy.

Viterra welcomed the view of Infrastructure SA in its previous 20 year State Infrastructure Strategy where it stated that, rather than building new ports where there is already excess capacity, *"a more efficient response is to focus on improving landside access to ports and maximising the utilisation of existing assets until there is an economic case for new capacity".*

Viterra invests in infrastructure

Access to reliable and efficient infrastructure is critical for the competitiveness of the South Australian grain industry. The global grain industry is extremely competitive and South Australian grain competes with other grain exporting states and nations into international markets.

Viterra has made significant investments in our South Australian supply chain infrastructure and services over a long period. This provides an efficient and cost effective service to growers and exporters, which enables them to access international and domestic markets and achieve maximum value for their grain.

We are continuing to invest approximately $40 million each year ($60m in 2023) in capital expenditure and maintenance to ensure our supply chain meets the needs of our customers now and into the future.

Given Viterra's investment in South Australia, this submission focusses on Viterra's view of regional South Australia and the grain industry.

About Viterra

Viterra operates a storage and handling network for a range of agricultural commodities, connecting growers across South Australia and western Victoria with end-use customers in Australia and around the world.

We are a significant contributor to the South Australian economy and especially the South Australian regional economy through employment, engagement with local businesses, payment of taxes and continuous investment in our supply chain, a majority of which is in regional South Australia.

Viterra has approximately 1,000 permanent and ongoing employees with around 1600 seasonal employees joining the company during the harvest period each year.

In the 2022/23 season Viterra contributed over $1.5b to the South Australian economy by purchasing grain from growers and investing in our grain supply chain.

Viterra runs an open-access grain supply chain that is currently used by 5000 grower customers and 45 buyers including 18 exporters. In the past 12 months over 7.6m tonnes of grain was loaded onto vessels heading to 35 different countries including China.

We are proud of the significant contribution we make to the South Australian grain industry, helping growers access premium prices supported by our consistently high standards of quality, safety, reliability and sustainability .

In September 2023, Viterra was announced as the winner of the South Australian Large Business Award, and the Regional Exporter Award at the 2023 South Australian Premier's Business and Export Awards.

Viterra is a long term supporter of South Australia. A recent example is Viterra's global CEO, David Mattiske accompanying the South Australian Premier on a trade mission to China to promote South Australian exports in September 2023.

Viterra's infrastructure projects

Viterra is considering three major infrastructure projects that all tie into the key criteria of maximising the value of existing assets and supporting the South Australian economy. These projects will make significant economic, social and environmental contributions to South Australia.

The projects are:

1. The expansion of storage at Port Adelaide Outer Harbor port terminal from 65,000 to 120,000 tonnes. This will require an investment by Viterra of approximately $100m.

2. The upgrading of the rail loading facilities at Wolseley near the Victorian border to leverage the expansion of the Outer Harbor facility. An investment of $35m.

   Projects 1 and 2 will bring enormous economic benefits to South Australian growers along with significant social and environmental benefits. We estimate the economic benefits to the State to be approximately $40m per annum, with 60% of South Australian growers potentially benefitting from the extra shipping and storage capacity. We also estimate around 400 jobs will be created during the construction of the facility.

3. Repair of the Eyre Peninsula rail lines from Port Lincoln to Cummins and Cummins to Wudinna and Kimba.

The benefits of reintroducing rail on Eyre Peninsula include:

- assisting Eyre Peninsula growers to achieve significant premiums due to export sales occurring before northern hemisphere harvest commences
- reduction of 20,000 tonnes of CO_2-e emission per annum
- reduction in freight costs of up to 25% which we will pass back to growers
- social benefit of approximately 43,000 less truck movements on Eyre Peninsula roads.

We now respond to what we consider are the most relevant questions in the State Infrastructure Strategy Discussion Paper relating to the grain industry:

Section 4.4 Question 1. What opportunities should we consider to improve South Australia's economic growth?

- Increased research and development into higher volume production and drought resistant grain to mitigate the impact of weather variability
- More efficient transport of grain by rail on Eyre Peninsula (Wudinna to Port Lincoln and Kimba to Port Lincoln (Project 3.)).
- Expansion of storage at Outer Harbor and faster rail out-loading at Wolseley (Projects 1 and 2 above) will increase volumes of Victorian grain being exported through Outer Harbor, increasing efficiencies, reducing costs for growers and exporters and increasing the attractiveness of Outer Harbor to exporters. This will bring significant economic benefits to the State and we anticipate up to 60% of South Australian growers could benefit.
- Viterra will work with government to investigate canola crush plants and biofuel usage and potential plant protein manufacture.

Section 5.1 Question 2. What infrastructure constraints are preventing a more efficient, accessible and productive freight sector?

- Current port infrastructure has excess grain export capacity. The constraint on this capacity is getting the grain to port.
- There is a lack of truck drivers and trucks in regional areas which is being experienced across many sectors, while demand for transport is growing.
- Investment in rail is critical. In Western Australia and Victoria we have seen significant rural rail projects. In Western Australia some of these rail projects have been solely for grain transport. We have also seen Government funding of $14.5b committed to inland rail in NSW and QLD.
- Rail investment provides broad economic, social and environmental benefits and will leverage the excess port capacity to enable more grain exports on behalf of growers before the northern hemisphere harvest commences.
- There are limitations on vehicle mass depending on the specific route, including last mile access. Viterra works closely with the Department of Planning, Transport and Infrastructure on identifying transport initiatives for higher productivity vehicles along key routes. Government support for these initiatives would assist in the timely realisation of cost-savings and efficiencies.

Section 5.4 Question 5. What are the barriers to increased adoption of digital technology to improve productivity?

- The biggest limitation is poor mobile coverage and internet access in regional South Australia.
- Viterra has invested in and produced apps for growers to use to facilitate more efficient grain deliveries and sales. Growers generally transact online and need data connectivity to increase their likelihood of capturing the best prices for their products.
- Viterra's storage and handling facilities are reliant on network connectivity to successfully operate and provide some of our value adding services to grower customers.

Section 5.5 Question 6. What investments could unlock the value of South Australia's resources?

Projects 1, 2 and 3 above will all contribute to increasing the value of grain exports from South Australia. Given the community benefit from the Eyre Peninsula rail project it makes sense that this is predominantly State and Federal Government funded. Viterra does not own the rail infrastructure but will invest in our own infrastructure to leverage the benefits of rail for growers and the Eyre Peninsula communities.

Deepening of the Thevenard shipping channel.
Thevenard is a significant South Australian port that handles multiple commodities and large volumes of minerals and grains. However, the Thevenard channel is relatively shallow and is only able to handle small vessels. This constraint has been recognised by InfrastructureSA in its 20-Year Infrastructure Strategy:

"*…exports via Thevenard – the second largest port by volume in South Australia, which plays an important role in providing access to market for local grain, gypsum and mineral sands – are restricted by a shallow channel and single ship loader that must undergo a labour intensive washdown prior to loading a different commodity. Options for improved productivity should be explored*."[1]

Deepening of the Thevenard channel would enable larger vessels to load minerals and grains at this port. Larger grain vessels would have access to a wider range of international markets and increase the number of exporters bidding to buy grain at that port, and potentially increase the price paid to growers.

Section 8.1 Question 15. What infrastructure investments will support industries to transition to a global net zero future?

The transition of grain transport from road to rail will immediately mean a reduction in greenhouse gas emissions. There is also the potential for electric diesel locomotives to transport grain.

Globally, Viterra has set an ambition to be carbon net zero by 2050 for scope 1 and 2 emissions, with a 2032 reduction target of 25% in emissions intensity. To support this goal, within our Australian storage

and handling network, 40 of our sites are now powered by 100% renewable electricity accredited by the government led GreenPower programme, with additional sites also receiving a portion of their electricity through the programme. Viterra is also investing in our own solar farms.

Viterra agrees with Infrastructure SA's observation in the Discussion Paper that road freight has higher emissions compared to rail and that Australia's road freight fleet is aging. As stated in the discussion paper, in 2022, 14% of freight trucks on Australian roads were built before 1996. These are vehicles which emit 60 times the particulate matter of a new truck and eight times the nitrogen oxides.

Viterra is attempting to transfer as much grain as possible from road transport to rail. Government funding is being sought for the reinstatement of the Eyre Peninsula rail and Viterra's proposed investment in our Wolseley rail outloading facilities would make a significant reduction in emissions in grain freight.

Section 8.3 Question 17. What are the most significant challenges for decarbonising transport and how do we address them?

See response to Question 15 above.

Section 8.5. Question 19. What measures can be taken to enable the infrastructure industry to decarbonize.

See response to Question 15 above.

Section 9.1. Question 20. How do we better account for the impacts of climate change in our infrastructure, to support improved resilience?

Over-reliance on road freight can be overcome by investment in rail which creates flexibility in the grain freight supply chain.

Rail is also less susceptible to flooding and fire risk.

Section 9.2. Question 21. What are the critical resilience issues that South Australia needs to address?

Over-reliance on road freight can be overcome by investment in rail which creates flexibility in the grain freight supply chain.

Rail is also less susceptible to flooding and fire risk.

Investment in regional services –housing, health and education

Access to accommodation and services and the quality of those services are very important to attract and retain people to live and work in rural and regional South Australia.

Viterra invests in short term accommodation for local seasonal workers where it is harder to fill roles which is a combination of working with local accommodation providers and temporary purpose built humanihut accommodation.

In operating our business, we rely on health and medical services. We have regular need for these services for pre-employment medical screenings when recruiting staff and for medical clearances to determine individuals' fitness for work. This is generalist medical care, not high-level specialist care. This is often not available in smaller regional areas and therefore requires employees to travel to larger regional centres to access services.

Providing training and development opportunities for our employees is one of our main strategies to attract and retain employees. Viterra is about to commence the second year of a traineeship program offering twelve traineeship opportunities across Viterra's Western region (Eyre Peninsula), Central region (mid and lower northern areas and Yorke Peninsula) and Eastern region (Murray Mallee and south east area).

We have a strong focus on safety and customer service and promote training to develop these skills. We promote development, and value employees creating innovative and safe working systems to improve the workplace.

Viterra is a strong supporter of the South Australian grain industry and invests heavily in our supply chains and people to provide an efficient, safe and sustainable supply chain for growers for the future. Close collaboration with existing stakeholders will ensure that limited resources are applied for optimal outcomes.

Thank you for the opportunity to make a submission to the development of the 20-Year State Infrastructure Strategy. Please contact me if you would like to discuss the submission further.

Yours sincerely

[redacted]

Damian Fitzgerald
Company secretary

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