





FROM THE MINISTER

The State Government's strong plan to mitigate and suppress the spread of COVID-19 has allowed businesses large and small to transition safely and confidently towards the restoration of full productivity.

The fundamentals remain strong across the energy and mining industries. Continued cooperation with both industries will provide a solid foundation to achieve a sustained recovery.

The Marshall Liberal Government is focused on responding to industry's suggestions on what steps should be taken to underpin the growth of the sector. The success of this response will elevate South Australia's international profile and drive continued investment and jobs growth.

Growth State: Our Plan for Prosperity emboldens the energy and mining sector to continue to play a key role in the state's economic activity.

This Energy and Mining Strategy gives the sector the tools, support and confidence to grow jobs and exports, and demonstrate South Australia's attractiveness as a world-leading destination for energy and mining investment.

Unarguably, South Australia is amongst the global frontrunners leading the transition to a modern energy system complemented by greater grid integration through the Project EnergyConnect interconnector.

We boast a remarkable portfolio of renewable generation assets that deliver affordable, reliable, and secure energy through the transition of Australia's energy network.

These assets include large-scale renewable energy generation and storage, such as wind, solar, bioenergy, battery and thermal storage. A range of innovative trials designed to enhance the benefits of rooftop solar, bioenergy, distributed storage, energy efficiency and

demand management technologies will better support our transition to a modern energy system.

Our renewable assets not only provide us with affordable clean energy, but also with new opportunities to expand our trade markets and stimulate economic growth. The state is making exciting strides in renewable hydrogen technology that could decarbonise heavy industry and power zero emission heavy vehicles.

Moreover, the State Government is resolute that in the not-too-distant future South Australia will be one of the world-leading hydrogen producers, consumers and exporters.

South Australia is in a strong position to emerge from both the statewide bushfires of last summer and the COVID-19 emergency in a safe and responsible way and realise the economic, environmental and social benefits that the energy and mining sector brings to our state.

This Energy and Mining Strategy comes at a critical time for South Australia, and will provide a roadmap to recover from the greatest economic challenge of our time.

Hon Dan van Holst Pellekaan MP **Minister for Energy** and Mining Government of **South Australia**



FROM THE CHIEF EXECUTIVE

South Australia and the world have collectively experienced an unprecedented global health emergency.

Throughout the coronavirus response, the Department for Energy and Mining (DEM) has kept open the channels of communication with the state's peak mining and energy bodies. This exchange of ideas has been critical on the road to recovery.

Just as South Australia began planning for a recovery from the bushfires that swept

across the state last summer, we suddenly faced an even greater challenge. Our combined resilience will ensure we emerge from both of these shocks.

Energy and mining industries were designated as essential during the COVID-19 response and they remain so. Undoubtedly, their contributions will be fundamental to achieving

the long-term prosperity aspired to in Growth State.

Importantly, the economic fundamentals remain strong in the energy and mining industries. This Energy and Mining Strategy identifies the issues and roadblocks along this path to recovery that impact on the sector's capacity to contribute to our state's prosperity and sets out an action list to overcome them.

The department's aim is to assist industry to contribute to a reinvigorated economy in the near term and into the post-pandemic future.

Dr Paul Heithersav PSM Chief Executive Department for Energy and Mining

FROM THE MEAC CHAIR

The energy and mining industries in South Australia have a history of being agile, flexible and quickly able to respond and adapt to changing conditions. Their responses to COVID-19 and the oil price shock has been no different.



COVID-19 outbreaks at any industrial or regional sites in South Australia.

The Marshall Liberal Government reached out to industry and asked us to help shape its Energy and Mining Strategy. We have taken this opportunity to highlight to the government the areas within Growth State's four enablers that

would best facilitate an acceleration in economic activity in our sector.

The government correctly identified Energy and Mining as one of nine priority sectors that would most likely contribute to the pickup in activity. By maintaining open channels of communication, such as the role played

by the Minerals and Energy Advisory Council (MEAC), I am confident policymakers will have the information and support they need to address any impediments to achieving our sector's long-term success.

Pauline Carr Chair Minerals and Energy **Advisory Council**

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EXECUTIVE SUMMARY

South Australia's Energy and Mining Strategy is a confident statement of the potential for this key sector to build on their enduring strengths, world leadership and capacity for innovation to power a speedy recovery from the unprecedented setbacks of the past year.

The combination of last summer's bushfires, the COVID-19 pandemic response and the recent collapse in oil and gas prices has challenged the resilience of our community, economy and energy and mining industries.

Yet their resilience in the face of these combined challenges has reaffirmed their capacity to support the state through extraordinary times and offer a pathway to recovery and prosperity. The rapid and significant sector adjustments in response to the COVID-19 pandemic has ensured safe worker operating environments, contributed to containing the virus spread, and resulted in maintained essential energy supplies and mineral production.

Attention is turning to economic recovery and our longer-term economic growth. Industry began providing its suggestions for improving the productive capacity of the energy and mining sector in 2019 in response to the Growth State: Our Plan for Prosperity and its ambition to accelerate economic activity towards a sustainable three per cent annual growth rate. DEM has distilled that response, captured initially in the feedback received on the Energy and Mining Consultation Paper then further refined in the aftermath of the COVID-19 pandemic into South Australia's Energy and Mining Strategy. The work of Infrastructure SA in developing a 20-year Infrastructure Strategy and the ongoing market reforms of the Energy Council and the Energy Security Board have also informed this strategy.

The strategy identifies the areas that industry believes the government needs to strengthen to achieve the increase in economic activity that will put South Australia firmly on a growth trajectory. The strategy also sets out the actions the government has already begun to roll out in response to industry and develop further policies and programs.

Recent policy and program developments such as South Australia's Energy Solution, the Accelerated Discovery Initiative, Battery and Emerging Minerals Strategy and the Electric Vehicle Action Plan foreshadowed in the 2019-2020 State Budget are included in this strategy. Existing industry initiatives include the Copper Strategy, Magnetite Strategy, South Australian Hydrogen Action Plan and the Roundtable for Oil and Gas.

Energy and mining is one of nine sectors identified as key contributors to the Growth State ambitions. The Marshall Liberal government will respond to sector strategies developed to support Growth State with carefully considered commitments under the growth enablers of trade and investment, skills and innovation, infrastructure, and land, water and environment.

The core strategic aims are to improve the productive capacity of our resource exporting companies and the supply chain businesses they support, while creating a modern energy system that lowers costs, encourages efficiency and assists in delivering Australia's targets for reducing greenhouse gas emissions.



Energy and mining is a diverse and significant sector of the South Australian economy. It contributes \$9.2 billion or 8.3 per cent of our economic output through energy generation, storage, distribution and retail services, mineral resources, extractive materials, oil and gas, value-added processing and products from resources, equipment, technology and services, and direct construction of new projects. The sector contributes \$299 million in royalties, \$5.32 billion in exports and employs more than 43,900 people.

The government will focus on:

- Trade and investment promoting the state's energy and resource potential to overseas audiences, growing South Australia's hydrogen economy and developing critical minerals for a sustainable economy
- Infrastructure facilitating infrastructure to unlock energy and resource sector growth, including coordinated infrastructure corridors, sealing the Strzelecki Track, an electric vehicle action plan and a smart energy storage program
- Land, water and environment water supplies for mining, carbon capture, utilisation and storage and other contributions to a state climate change strategy, fostering a better relationship between industry, traditional landowners and other land users, and contributing to the circular economy
- **Skills and innovation** connecting industry with opportunities to innovate, developing our workforce capabilities through both the Industry Skills Council and the Resources and Engineering Skills Alliance, and supporting science, technology, engineering and mathematics scholars through high school and university.









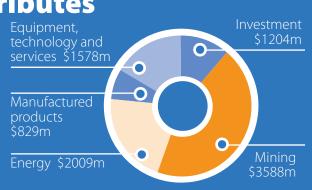
AN ECONOMIC SNAPSHOT

Energy and Mining contributes

\$9.2bn

or 8.3 per cent

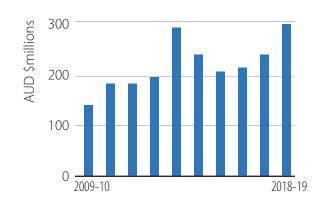
Of South Australia's economic output¹





\$299m

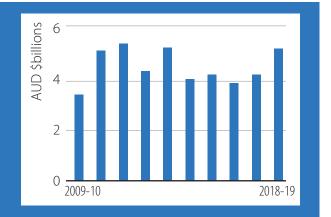
For future state growth in 2018–19²



EXPORTS

\$5.3bn

In commodities exported to global trading partners in 2018–193

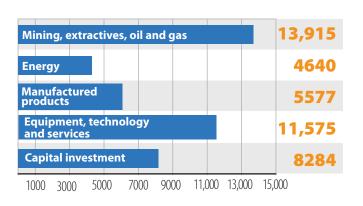




JOBS

43,991

People employed across South Australia in 2018–19¹

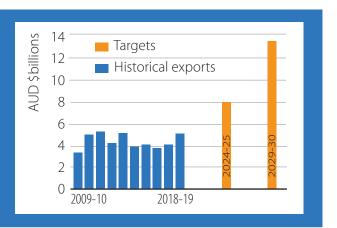


OUR STRATEGIC TARGETS

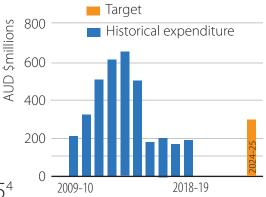


513bn

Export target by 2029-30 \$8bn export target by 2024-253



Sustainable exploration target for petroleum and minerals by 2024-254



MODERN ENERGY SYSTEM

By 2030

Up to 50 per cent of new car sales in South Australia are electric vehicles

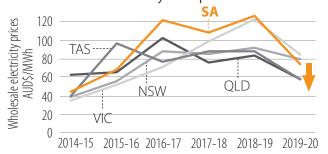
By 2030

Hydrogen exports contribute \$1.7 billion and **2800 jobs** nationally

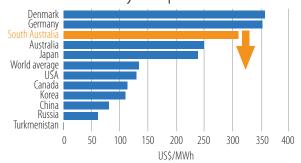
The 2030s

Net 100 per cent renewable energy generation in South Australia

Nationally competitive before 2025⁵



Internationally competitive in 2030⁶



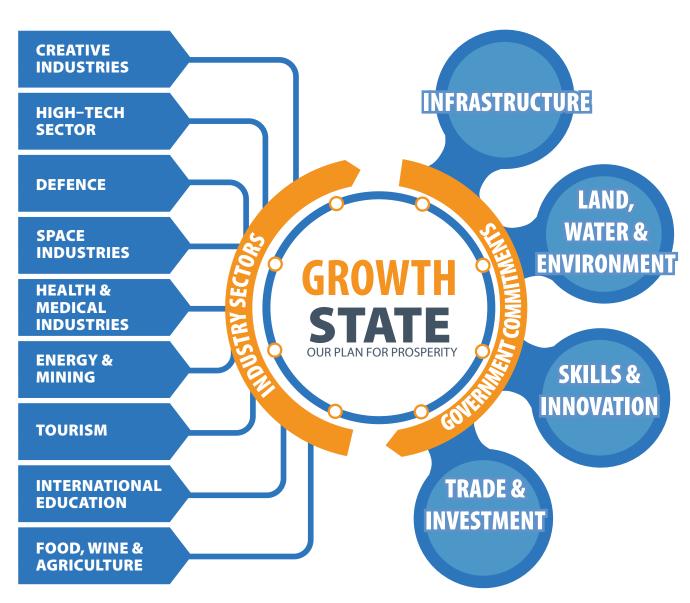
GROWTH STATE OUR PLAN FOR PROSPERITY

Growth State: Our Plan for Prosperity is the South Australian Government's work plan to promote economic growth in nine focus sectors by responding to industry needs and leveraging the state's competitive advantages. The government has identified energy and mining as one of the nine key sectors with strong growth prospects to support Growth State.

The sector comprises energy generation, storage, transmission, distribution and network management, as well as mineral, petroleum and extractives exploration, development and production. It also includes the equipment, technology and service providers these sectors require to operate. Infrastructure, skills and innovation, trade and

investment, land, water and environment are enablers to assist the nine focus sectors to overcome restrictions to their growth potential and deliver on the Growth State's ambitious vision.

The Energy and Mining Strategy sets out targets and describes new actions industry has requested to build on existing initiatives and guide the state toward responsible and sustainable expansion. The strategy also commits to ensuring our communities share the benefits of a stronger sector through improved economic opportunities for traditional owners, effective procurement policies for local contractors and support for all students to find pathways to highskilled, well-paid professions.



OUR RESILIENCE CHALLENGED

Last summer's bushfires, the COVID-19 pandemic and the recent collapse in oil and gas prices collectively have significantly affected our communities, economy, and environment.

While these combined events challenged the state's resilience, the energy and mining sector throughout played a lead role in maintaining South Australia's economic stability. For policy makers and industry, they

have also been a timely reminder of the critical importance of ongoing vigilance and coordinated efforts to prevent, prepare, respond and recover from emergencies, wherever they arise.

BUSHFIRES

Preventing bushfires minimises the social and economic costs of these disasters. SA Power Networks is obliged by state law to clear vegetation from power lines and regulators annually audit compliance with tree pruning regimes to minimise the risk of power infrastructure causing fires.

Energy and mining's efforts in the aftermath of last summer's devastating bushfires include SA Power Networks'

significant effort to restore the network in the Adelaide Hills and Kangaroo Island. Energy and mining have donated to recovery relief and supported employee volunteers.

Under an arrangement with an Adelaide-based manufacturer, home batteries are being offered to those rebuilding homes lost in the fires. This is an opportunity for homeowners in high risk fire areas to reduce power bills and gain backup power.

COVID-19

South Australia implemented a strong plan to prepare, protect and ultimately save lives in response to the Coronavirus pandemic. In response the energy and mining sector immediately reduced employee movements and infection exposure pathways. A massive change in operations, including a 90 per cent reduction in inbound fly-in fly-out workers, enabled safe, essential mining and energy supplies.

South Australia has so far weathered the storm. Travel restrictions have been eased in anticipation of a post-pandemic business environment that adjusts to social distancing, testing and contact tracing. Exploration, mining services and oil and gas producers have endured more severe impacts and deferral of costs linked to licence fees has alleviated some of the impact of the containment measures.

Attention is now turning to recovery. Easing of restrictions will drive a short-term economic rebound. However longer-term energy and mining sector growth needs worldwide success in pandemic containment to restore demand for products and services and a recovery in business investment.

By building on enduring strengths – our natural resources, capable workforce and supportive policies and regulation – the Energy and Mining Strategy is a confident statement of the sector's longer-term growth potential. Its key actions can enable these industries to contribute to a speedy rebuild and also seize opportunities created by the COVID-19 response for an even more resilient energy and mining sector.





SHIFTING THE DIAL ON GROWTH

South Australia's key opportunities to grow its energy and mining sector include mineral resources and oil and gas exploration that leads to new discoveries, and securing investment for expanded production and exports from our existing resource base. Innovation and productivity growth in exploration, production and processing is a priority.

More competitive energy supplies will support the growth of energy intensive sectors and lower residential customers' household annual expenditure. South Australia's wind and solar resource advantages and our lead in the clean energy transition can be leveraged for further investment and development of renewable energy generation and storage. It also can be applied to potential new export industries such as hydrogen and ammonia.

Within this context, the Energy and Mining Strategy has adopted the following economic growth targets:

- Sustained exploration expenditure of \$300 million a year by 2025
- Increased sector exports from the current \$5 billion to \$8 billion by 2025 and \$13 billion by 2030
- Nationally competitive energy supplies before 2025 and internationally competitive energy supplies by 2030
- Net 100 per cent renewable energy generation in the 2030s.

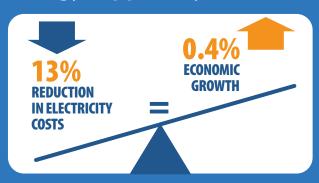
Achieving these targets will be a significant contribution to the Growth State ambition of a sustained three per cent growth in gross state product.

It has been assessed⁷ that achieving the export and competitive electricity components of the above targets would add about **0.55 percentage** points to annual state economic growth by 2030, with most growth attributed to increased mineral and petroleum exports. This is significant considering economic growth has averaged about 1.3 per cent a year across all sectors in South Australia in the last 10 years. Analysis indicates wage increases will attract workers to South Australia, with an estimated additional 50,000 people residing in the state by 2030.

South Australia's transition to a modern energy system can support additional growth through the establishment of new industry sectors. The successful development of a national hydrogen export industry could be worth \$1.7 billion and provide 2800 jobs in Australia by 20308.

The growth targets in this strategy are intentionally ambitious. Their intent is to help identify constraints to growth and the development of actions-government policies, programs and projects—to facilitate industry investment and output for significantly stronger and sustained economic growth.

The strategy targets national competitive energy supplies before 2025 and internationally competitive energy supplies by 2030.

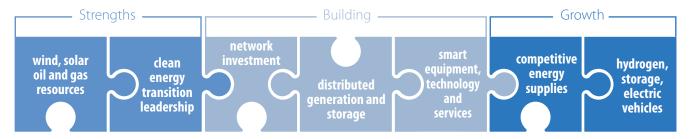


Exploration expenditure of \$300 million a year by 2025 and increased sector exports from the current \$5.3 billion to \$8 billion by 2025 and \$13 billion by 2030 is targeted in the strategy. This accelerated growth would deliver an additional 39 per cent to annual state exports and add 5.1 per cent to state economic growth by 2030.



ENERGY SECURE, RELIABLE & AFFORDABLE

A modern energy system will deliver cleaner and more affordable, reliable and secure energy by transitioning to new generation and storage technologies supported by world-class electricity systems.



KEY CHALLENGES

- SYSTEM RELIABILITY AND **SECURITY**
- INTEGRATED, **INTERCONNECTED SYSTEM**
- HIGH ENERGY COSTS

ACTIONS

INTERCONNECTION AND THE INTEGRATED SYSTEM PLAN

By adopting a strategic approach, South Australia can improve interconnection with the rest of the National Electricity Market (NEM) and the reliability and security of local transmission. This approach also aligns with the Australian Energy Market Operator (AEMO) Integrated System Plan (ISP) to minimise costs and meet the physical requirements of the NEM, as aging generators retire and new generation enters the system. The State Government has funded early works for Project Energy Connect that will link South Australia to New South Wales through a new 330-kilovolt transmission line. The ISP has identified Energy Connect as a priority project. Project EnergyConnect's 800 MW capacity will be able

to deliver enough energy to power 240,000 homes and is critical to reduce the likelihood of South Australia being separated from the rest of the NEM. The Australian Energy Regulator has also approved Electranet's \$240-million Eyre Peninsula Electricity Supply Options Project to build a new double circuit line from Cultana to Port Lincoln. A transmission connection agreement between Electranet and OZ Minerals is delivering a new transmission line to Prominent Hill in the state's far north. These projects will make South Australia an attractive place to build new large projects in identified renewable energy zones.

HOME BATTERY SCHEME

The State Government is overseeing a world-leading rollout of residential storage systems through the Home Battery Scheme. South Australian residents can access government subsidies as well as low interest loans through a \$100-million Clean Energy Finance Corparation investment. The subsidy is available to all South Australians connected to the grid, with a higher subsidy available to energy concession holders. As well as enabling households to reduce their costs and have greater control over their energy consumption, home

storage reduces demand on the network, especially during peak periods, and in turn lowers energy prices for all South Australians. All batteries installed will be capable of joining virtual power plants, providing additional value for customers and greater provision of network security services. The scheme is also supporting a growing local industry with three battery manufacturers now established in South Australia and hundreds of jobs created or sustained.

GRID SCALE STORAGE FUND

The fund supports the development of new storage technologies which address the intermittency of the state's electricity system. The expansion of Australia's biggest battery - the Hornsdale Power Reserve - was supported through a \$15 million grant from the fund. A further \$10 million has been awarded for the expansion of Tesla's Virtual Power Plant, to deliver additional grid security benefits for South Australia.

FLECTRIC VEHICLE PLAN

South Australia's \$4.9 million Electric Vehicle Action Plan aims to accelerate the uptake of battery electric vehicles and bring forward the benefits of this shift for all South Australians. The plan is expected to deliver lower power bills and transport costs for consumers, improved air quality and associated public health outcomes as well as address driving range anxiety and access to smart charging infrastructure.

GOVERNMENT POWER SUPPLY

The State Government is seeking a new, competitive supplier for 100 per cent of its electricity demand. Through an innovative procurement approach the government is seeking to deliver increased innovation and competition in South Australia's wholesale and retail energy markets. The successful supplier will also need to demonstrate their contribution to the government's commitment to cleaner, more affordable, reliable and secure electricity for all South Australians.

VIRTUAL POWER PLANT

After the successful delivery of two trial phases in partnership with the State Government, Tesla is expanding South Australia's Virtual Power Plant to deliver additional grid security benefits with solar PV and battery installations on 4100 South Australian Housing Authority homes. The SA VPP has been a pioneering project in the National Electricity Market, as one of the first VPPs to be registered with the Australian Energy Market Operator to provide Frequency Control Ancillary Services in its trials, demonstrating the value and benefits possible through virtual power plants. The government's \$10 million investment through the Grid Scale Storage Fund will support the SA VPP to continue to scale in size and complexity to trial new ways of utilising technology to help the grid operate more efficiently.

ENERGY ECONOMIC CONTRIBUTION

\$2 billion across electricity and gas supply¹

4640 people employed directly in electricity and gas supply¹

Renewable energy investment pipeline of \$20 billion



Renewable electricity generation in 2018-19, the second highest penetration of variable renewables in the world behind Denmark



Households with solar PV and accelerating adoption by businesses



ENERGY GRID DEVELOPMENTS

FUTURE GRID AUGMENTATION PROJECTS



PRIORITY GRID PROJECTS



INDICATIVE WIND FARM



INDICATIVE SOLAR FARM

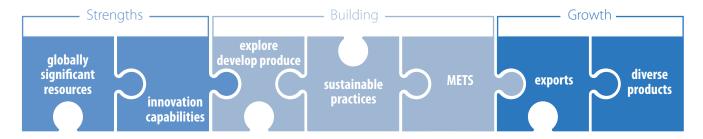


SYSTEM STRENGTH REMEDIATION



MINERALS UNCOVERING NEW DISCOVERIES

Mineral resources support sustained economic growth and initiatives must assist in unlocking their potential value.



KEY CHALLENGES

- EXPLORATION INVESTMENT
- COORDINATED INFRASTRUCTURE
- **ENGAGED STAKEHOLDERS WATER SUPPLY**

 TRANSFORMED PROCESSING **OPPORTUNITIES**

ACTIONS

ACCELERATED DISCOVERY INITIATIVE

The Accelerated Discovery Initiative (ADI) follows in the tradition of South Australia's pioneering history of supporting exploration through the provision of precompetitive data, co-investment in drilling programs and support for research into new drilling equipment and technologies.

The ADI supports the potential discovery of new mineral and groundwater resources through grant criteria that aims to foster economic and social benefits such as data to support development of regional and rural communities, Aboriginal training and

employment opportunities, and the development and application of innovative exploration technologies. The three-year initiative comprises \$10 million for approved co-funding exploration activities in single and multiple drilling programs in frontier terrains using collaborative

> innovation and technologies to generate new exploration ideas and test new concepts in geophysical programs. The first round recipients were announced at the online Copper to the World, South Australia's marquee international resources conference.



EXPLORESA: THE GAWLER CHALLENGE

Open innovation platform, Unearthed, and the South Australian Government are partnering in a worldwide call for geologists and data scientists to uncover new exploration targets in the state's highly prospective Gawler Craton region. Unearthed has a vast community of data scientists, developers and startups seeking to solve the challenges of the energy

and mining sectors. Contestants will have access to the world-class data sets generated by DEM through its major geoscientific surveys including the Gawler Craton Airborne Survey, the largest of its kind in the world, the AusLAMP magnetotelluric program and the Olympic Domain in-fill survey. Over 2000 competitors are contesting for a share in a \$250,000 prize pool.

EXISTING AND DEVELOPING COMMODITY STRATEGIES

Copper Strategy

Discover Gold

Critical Minerals Strategy

Magnetite Strategy

IMPROVED INFORMATION FOR LANDOWNERS

Information is a great enabler and easy access to reliable information can help to improve the quality of discussions about our state's economic potential. DEM, in conjunction with Rural Business Support (RBS), are working to set up a new Landowner Information Service (LIS). The new service reflects the government's support for respectful working relationships across all sectors of the state's economy.

STRONGER PARTNERS, STRONGER FUTURES

Stronger Partners, Stronger Futures seeks to build relationships between Aboriginal communities, explorers and the State Government to guide mutual understanding of the exploration process and Aboriginal culture and heritage. The partners in the program have been asked to consider reform options for improving the operation of native title for exploration activity, building better relations through cultural respect and strengthening cultural heritage management during the exploration process. The program has become an important forum for information sharing and helping DEM to formulate policies that take into account the concerns of traditional owners and explorers.

CORF INNOVATION AT LOT FOURTFEN

Core Innovation at Lot Fourteen co-locates engineering, technology and services providers in the city to support innovation, research and development within the energy and mining sectors. Core Innovation is a common point for operators, suppliers, researchers, entrepreneurs and startups to connect and collaborate on innovative challenges across oil and gas industries, mining and mining equipment, technology and services (METS) sectors, space industry and defence. Lot Fourteen on North Terrace is being transformed into Australia's first innovation neighbourhood where hundreds of people will work, study and visit on Adelaide's major boulevard.

MINERAL ECONOMIC CONTRIBUTION

PRODUCTION 2018-19

Production value driving economic development⁹



EXPLORATION 2018-19

Spent on exploration for new developments4



ROYALTIES 2018-19

Royalties for future state growth²



EXPORTS 2018-19

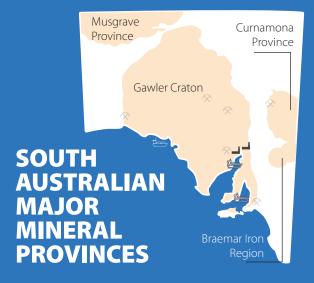
Commodities exported to global trading partners³

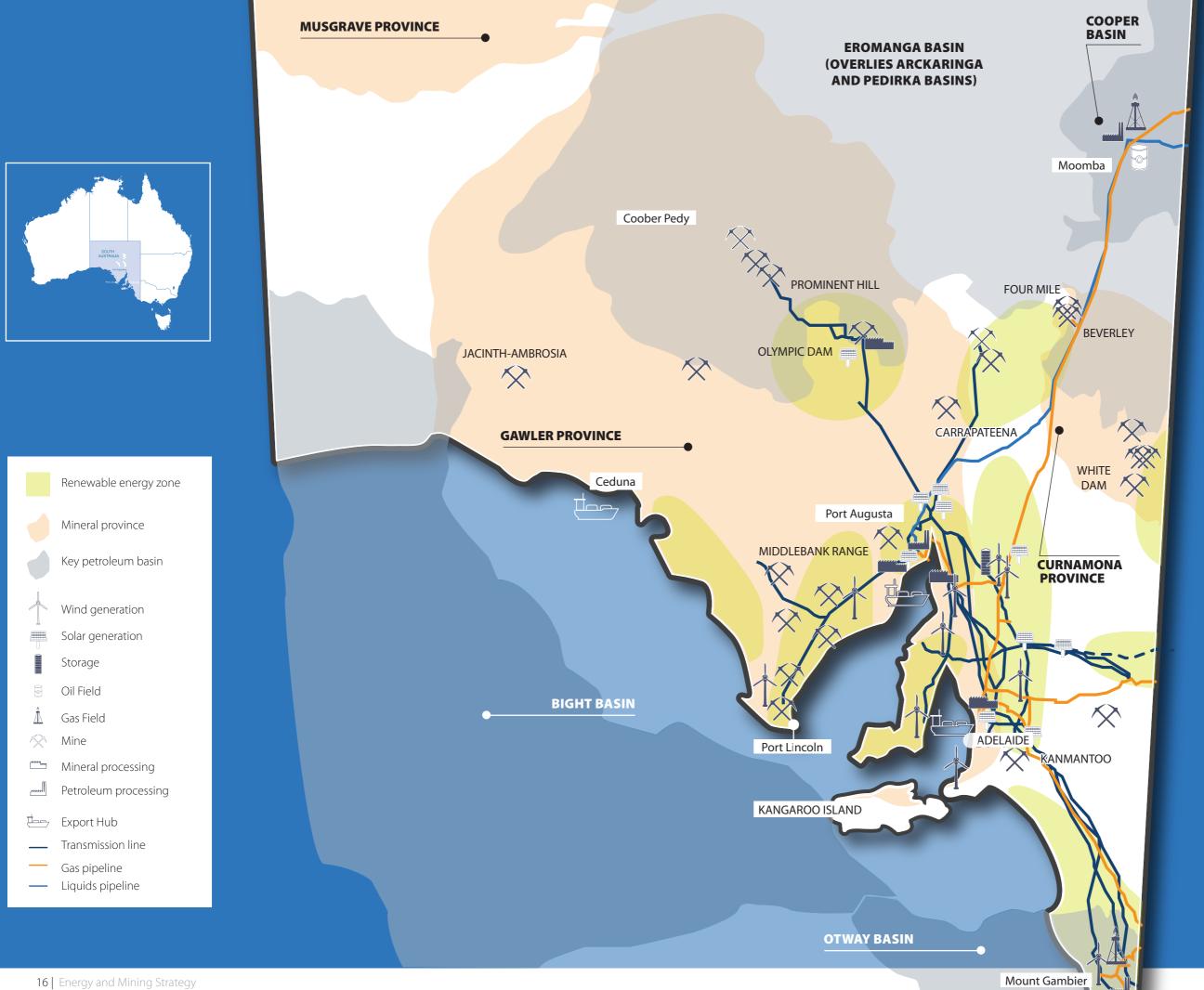


EMPLOYMENT 2018-19

People directly employed in the mining sector¹







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EXTRACTIVE INDUSTRIES

GROWTH OF EXPORTS

Extractive industries provide essential materials for construction and infrastructure projects. Growth State provides the opportunity for South Australia to investigate options for growing exports.



KEY CHALLENGES

SUPPLY CHAIN EFFICIENCIES

STREAMLINED PLANNING

ACTIONS

CONSTRUCTION AND INFRASTRUCTURE DRIVE DEMAND

The extractives industry includes hard rock, sand and gravel extraction and secondary processing operations, and is vital to the provision of construction materials used in infrastructure and building projects across South Australia. The construction sector is a significant employer and economic driver of the state, contributing \$7.7 billion or 7.1 per cent of

the state's economic output in 2018-19. The South Australian government has released the 20-Year State Infrastructure Strategy and is investing \$11.9 billion in infrastructure spending in the next four years, which will drive demand for extractives to provide valuable community assets, economic growth and provide jobs for South Australians.

PRODUCTIVITY COMMISSION REVIEW

Major extractives construction material sites are located throughout the Greater Adelaide region and some local councils also operate borrow pits. Adelaide Brighton, Australia's second largest supplier of cement and clinker products, also uses limestone and gypsum to produce cement at its Birkenhead and Angaston sites. The SA Productivity Commission

review of the extractive industries has investigated reforms that will improve the capacity for the State Government to extract value for money by aligning infrastructure projects with locally-sourced materials. Its recommendations will help guide the development of initiatives that can contribute to Growth State: Our Plan for Prosperity.



RESOURCE MANAGEMENT AND PLANNING

The Resource Area Management Plan (RAMP) aims to balance development within the planning system with maintaining ongoing access to long-life valuable extractive mineral resources. Developed by DEM and the Department for Planning, Transport and Infrastructure, the plan seeks to provide security for the extractives sector to support housing and construction affordability for urban development. The RAMP also aims to provide a one-stop shop for mining-related referrals within the new planning system, maintain access to strategic mineral resources, support extractive industry operators to meet the conditions of approvals under the Mining Act and reduce operating costs generated by the encroachment of incompatible land uses on existing operations.

Mineral **Exploration & Discovery** Claim Resource **EML** Reduced Risk-Increased Value Company Investment Decisions Reserve **PEPR** (Defined value-certainty) Build Compliance & Reviw Operate (Production) Close (Future Asset Value & Utility)

Source: South Australia Productivity Commission



EXTRACTIVE INDUSTRIES ECONOMIC CONTRIBUTION

PRODUCERS 2018-19

247
Active produ

Active producers across 1068 leases



PRODUCTION 2018-19

\$241m

Sales value9



CONSTRUCTION 2018-19

17m tonnes



Materials⁹

EMPLOYMENT 2018-19

2183

People directly employed in the extractives sector¹



IN DETAIL⁹

\$60 million

4.3 million tonnes of limestone

\$49 million

3 million tonnes of dolomite

\$37 million

3.3 million tonnes of sand

\$34 million

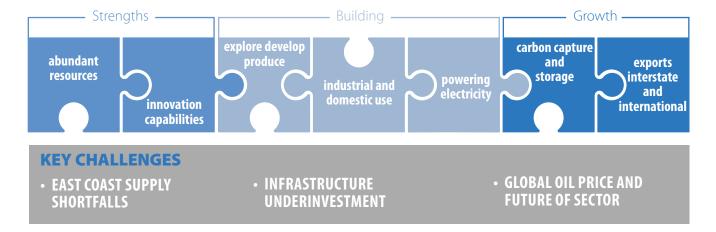
2 million tonnes of quartzite

\$21 million

1 million tonnes of sandstone and meta-siltstone

OIL AND GAS EXPORTS, INNOVATION

The state's oil and gas sector is responding to the global oil price collapse and market changes affecting global primary energy sources post-COVID-19.



ACTIONS

ROADMAP FOR OIL AND GAS PROJECTS IN SOUTH AUSTRALIA

The State Government designed the Roadmap for Oil and Gas Projects in South Australia to set a course for the environmentally sustainable development of the state's large natural gas endowment and encourage the uptake of new technologies to extract its gas from onshore basins. A Roundtable for Oil and Gas Projects in South Australia with a broad-based industry and

community membership was established in 2010 to provide initial and ongoing feedback and guidance on the development and implementation of the Roadmap. The Roundtable meets annually to share information about the latest developments in the upstream natural gas sector and agree priorities for government to consider.

PACE GAS

PACE Gas, the \$48-million Plan for Accelerating Exploration for Gas, is expanding gas supplies and increasing competition between gas suppliers in South Australia. Grant recipients are required to offer new supplies of natural gas on commercial terms to local consumers in a priority ranking, beginning with electricity generators then industrial users and finally

retail consumers. PACE Gas has helped support a renaissance of natural gas production in the onshore Otway Basin and Cooper Basin projects, which have the potential to deliver new supplies of about 10 terajoules a day into a 250 terajoule a day market. PACE Gas aligns with the Commonwealth's Gas Acceleration Program.

GOOD STANDING AGREEMENTS TO DRIVE EXPLORATION

Global energy companies BP and Chevron have committed to invest \$60 million in exploration activities in South Australia as part of Good Standing Agreements (GSA) reached with the Commonwealth and state governments. BP and Chevron were required

to negotiate GSAs after their decisions to walk away from agreed offshore exploration programs in the Great Australian Bight. South Australia would have benefited from the economic activity generated by the two exploration programs. BP agreed to invest

& AFFORDABILITY

\$40.6 million by October 2022 and Chevron agreed to invest \$75.9 million by September 2022, with half of that spending directed to South Australia, contributing to a step up in the sort of industry-led economic activity being targeted by Growth State. Equinor is also expected to negotiate a GSA after withdrawing from its exploration program in the Bight.

COOPER-EROMANGA BASIN ABORIGINAL CONFERENCE INITIATIVES

The Cooper-Eromanga Basin Aboriginal Conference (CEBAC) brings together the Dieri, Wangkangurru/ Yarluyandi and Yandruwandha/Yawarrawarrka Aboriginal land corporations and their communities and energy resource companies in the Cooper and Eromanga basins to explore opportunities to support Aboriginal employment and business opportunities. Aboriginal jobseekers have already taken up 10 new jobs in the oil and gas sector identified by DEM working through CEBAC and its CEBAC Hub social media platform. CEBAC meets annually to bring together industry participants and the leadership of the traditional owner groups including a conference held in the State's Far North.

ACREAGE RELEASES

South Australia regularly offers onshore acreages for petroleum exploration. Despite a drop in oil prices, South Australia has successfully attracted investment in four new petroleum exploration licences (PELs) in the Cooper Basin and one PEL in the Otway Basin with a guaranteed five-year work program valued at \$58.85-million. DEM determined the winning bids based on five-year work programs and the financial capacity and technical expertise of the applicants. Since 1998, South Australian acreages releases have generated exploration investment worth more than \$600 million with discoveries leading to oil and gas production and state royalties.

OIL AND GAS ECONOMIC CONTRIBUTION

PRODUCTION 2018-19

\$1.7bn



EXPLORATION 2018-19

\$108.8m

Spent on exploration for new developments⁴



ROYALTIES 2018-19

\$128m

For future state growth²



EXPORTS 2018-19

\$642m

In commodities exported to global trading partners³



EMPLOYMENT 2018-19

2878

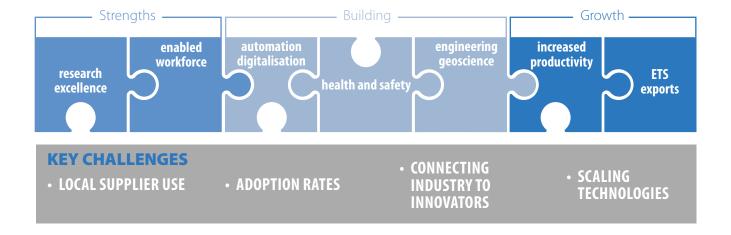
People directly employed in the oil and gas sector¹





ETS EQUIPMENT TECHNOLOGY & SERVICES

As the energy and mining sectors grow, it is essential that the benefits of the increased economic activity are captured by South Australian equipment, technology and service providers.



ACTIONS

INDUSTRY CAPABILITY NETWORK

For more than 30 years, the Industry Capability Network SA has provided purchasers with a free sourcing service to identify South Australian businesses capable of supplying materials and services that otherwise might have been imported. ICN SA is staffed by professionals with industry experience in

engineering, logistics and procurement. ICN SA's track record of working with the energy and mining sector in South Australia includes the Solar River Project in the State's Mid-North and GFG Alliance's iron ore mining and steelmaking operations in the Upper Spencer Gulf.

SOUTH AUSTRALIAN STEEL INITIATIVE

South Australia has mandated the use of certified Australian Standard steel in taxpayer-funded projects. The Office of the Industry Advocate, through the South Australian Steel Initiative, provided grants to support steel manufacturing businesses to develop their capability to meet Australian Standards.

The Office of the Industry Advocate continues to monitor compliance with the state government's Steel Procurement Policy and conduct audits on steel purchases to ensure local industry continues to have a competitive advantage against imports that do not meet the Australian Standard.

MFTS IGNITED

METS Ignited is the Commonwealth government-led initiative focused on growing the Australian METS Sector. It is bringing together the various industry bodies, membership associations, industry research and domain expertise and delivering collaborative

project investments to drive the transformation of the Australian METS sector as it adapts to the next generation of skills, technologies and opportunities across the global mining supply chain.

MINEX CRC

Geological survey partners support MinEx Cooperative Research Centre's industry-led research to develop equipment technologies advancing innovation in the exploration industry. Its work includes implementing the National Drilling Initiative (NDI), a world-first collaboration of geological surveys, researchers and industry that will undertake drilling in under-explored areas of Australia.

TONSLEY AND DRILL CORE LIBRARY

Tonsley has become a hub for mining and energy innovation and is home to a number of businesses leading the way in supporting growth in the sector and building capability in South Australia. The Australian Hydrogen Centre has been launched at Tonsley, further strengthening it as an industry and research hub for the renewable energy sector. Tonsley is also home to the Onshore Petroleum Centre of Excellence, a TAFE SA and industry collaboration focused on skills and training. Working within the connected and collaborative environment, businesses and organisations have greater opportunities to translate and apply new thinking in many of the world's future industries. The world-class South Australia Drill Core Reference Library at Tonsley is operated by the Geological Survey of South Australia and is the home of South Australia's entire collection of representative drill cores from 120 years of exploration. It also provides mineral and oil and gas explorers with state-of-the-art sample analysis equipment including digitising equipment and a 3D visualisation room. Core Innovation Hub at Lot Fourteen also has a satellite office at Tonslev.

ETS IN SOUTH AUSTRALIA

REVENUE 2018-19

\$3.2bn
Sale revenue¹



EMPLOYMENT 2018-19

11,575

People employed in the Equipment, Technology and Services sector¹



A NATIONAL &
INTERNATIONAL
OPPORTUNITY
GROWING AT 7 PER CENT
A YEAR NATIONALLY

GROSS VALUE ADDED 2018-19

\$92bn

To the national economy¹⁰



EXPORTS 2018-19

\$15bn

Products and services exported globally¹⁰



INVESTMENT 2018-19

\$4bn

In research and development¹⁰



GROWTH STATE FURTHER OPPORTUNITIES

Opportunities exist across the growth areas of trade and investment, skills and innovation, infrastructure, and land, water and environment to address climate change and reduce waste while contributing to economic activity. Reform opportunities also exist in effective and efficient regulation and collaborative national approaches.

TRADE AND INVESTMENT

There are opportunities for increased foreign investment, international partnerships and exports based on our resources strengths, innovative processing and value added products.

New international trade offices

Engagement with overseas bodies

Trade missions

Tradestart

International conferences: PDAC, Copper to the World, Hydrogen Safety

ACTIONS

GROWING SOUTH AUSTRALIA'S HYDROGEN ECONOMY

Modelling for the National Hydrogen Strategy¹⁰ forecast that an Australian hydrogen industry could contribute \$11 billion and 7600 jobs to the national economy by 2050. The jobs created will include technicians, tradespeople, engineers and professionals. Many of the jobs will be in regional areas, especially around ports and industrial clusters where development is most likely to occur. The State Government aims to position South Australia as a hub to attract a substantial share of that potential activity,

with a particular focus on regional communities and jobs through its South Australia's Hydrogen Action Plan. A key action in that plan is a landmark pre-feasibility study into exports of large-scale clean hydrogen production to prospective markets in Asia. Key findings will inform an online modelling tool and detailed prospectus that will be made available to international customers, infrastructure developers and investors later in 2020.

CRITICAL MINERALS FOR A SUSTAINABLE FUTURE

The importance of critical minerals has escalated in recent years due to their importance in high technology applications, including electric vehicles and renewable energy technologies that will enable our low carbon future. For this reason, critical minerals in low-risk, resource-rich jurisdictions such as South Australia are gaining the increased attention of governments, industry and investors around the world. South Australia has significant global and national resources of critical minerals including 65 per cent of Australia's graphite resources and zircon, including the world's largest zircon mine, Jacinth-Ambrosia, as well as cobalt, rare-earth elements and magnesium, manganese and gallium. South Australia's Lot Fourteen and Tonslev innovation precincts, university critical minerals leadership, and the Geological Survey of South Australia offer advanced thinking and potential in the development of technology and processing. There are increasing opportunities to grow a sustainable supply-chain that leverages the state's natural resource endowment and research innovation to become a global leader in the processing and export of these vital minerals.

INVESTIGATE NATURAL STONE AND OTHER EXTRACTIVES FXPORT OPPORTUNITIES

South Australia produces granite from quarries on northern Eyre Peninsula, the Mount Lofty Ranges and the Limestone Coast region. Advances in processing technology and computer control systems have reduced the relative cost of granite for use in domestic applications such as tiles and benchtops, making South Australian stone an international commodity. High value natural stone products, along with specialised aggregates and high-value concrete for architectural purposes, have been identified by industry as potentially significant export growth opportunities for South Australian producers.

PREMIER'S ENERGY AND MINING AWARDS

The Premier's Awards in Energy and Mining recognise the significant contribution the sector makes to SA's economic, social and environmental outcomes. 2019 recipients included:

BIOENERGY: Teys Australia Naracoorte

This beef processing facility captures biogas from their plant's covered anaerobic lagoon waste treatment plant to generate electricity in a new combined heat and power plant.

CIRCULAR ECONOMY: CDE Meta

This overburden beneficiation project turns century-old mining waste into high-grade iron ore using a wet processing solution. They're applying the solution at the Iron Monarch, Iron Princess and Iron Baron mines near Whyalla.

RENEWABLE TECHNOLOGY: Hydrostor

Hydrostor's Angas Project is Australia's first Advanced Compressed Air Energy Storage (A-CAES) facility, which converts the Adelaide Hills mine into a clean energy, grid scale storage system. It will dispatch energy, stored as compressed air, into the national electricity market as well as provide synchronous inertia and frequency regulation to support grid stability.



INFRASTRUCTURE

South Australia's 20-year Infrastructure Strategy recognises infrastructure is critical to ensure consumers and businesses are enabled to access secure, reliable and affordable energy. This is essential to ease cost of living pressures and ensure South Australia can remain competitive place. The strategy also recognises water, energy and transport infrastructure have key roles in unlocking energy and mining growth. It includes:

Infrastructure Australia priority projects register

Infrastructure SA 20-year Strategy and Five-year Capital Intentions Statement

Priorities: Joy Baluch Bridge duplication, regional road improvement program, seal Strzelecki Track

ARTC rail upgrade Adelaide to Tarcoola

NSW-SA Interconnector and Eyre Peninsula, Far North Pimba to Prominent Hill

Water strategy

Port strategy

Infrastructure Corridors study

Remedying infrastructure constraints to South East gas

"Sealing of the Strzelecki
Track will provide significant
productivity gains for the
oil and gas sector and
underpin wider economic
benefits including for primary
industries and tourism."

INFRASTRUCTURE TO UNLOCK ENERGY AND MINING GROWTH

Enhanced water infrastructure has the potential to unlock mining opportunities in the Far North and Braemar regions of South Australia. Facilitating corridor developments for energy, water and transport infrastructure with multi-user access can provide greater certainty to de-risk mining projects.

Sealing of the Strzelecki Track will provide significant productivity gains for the oil and gas sector and underpin wider economic benefits, including for primary industries and tourism. There are pipeline opportunities to unlock gas supplies from the Otway Basin for South Australian use.

ELECTRIC VEHICLE ACTION PLAN

South Australia's Electric Vehicle Action Plan aims to encourage the uptake of battery electric vehicles and optimise the benefits of this shift for all South Australians. The plan will address key barriers to electric vehicle uptake, including driving range anxiety, access to smart charging infrastructure, community awareness and regulation.

SMART ENERGY

Demand management and distributed energy resources (DER) optimise demand and behind-the-meter responses to make the grid more efficient. The \$30-million Demand Management and DER Integration Trials program aims to accelerate the use of both these tools to reward

consumers. Projects underway target efficiencies from the advanced control of voltage in the distribution network, and automated control of residential air conditioning, hot water systems, swimming pool pumps and filters, and household batteries.





RECOMMENDATIONS

- Develop detailed investment cases for private sector investment in water infrastructure to expand production to meet global demand for produce from the Barossa Valley, and copper and other minerals in the Far-North.
- Liaise with industry to identify and prioritise incremental improvements to key transport corridors that make the greatest contribution to economic growth.
- Complete an updated business case that incorporates wider economic benefits derived from upgrades to the Strzelecki Track.

LAND, WATER AND ENVIRONMENT

By investing in our natural assets, we invest in our export economy while making South Australia a more liveable and sustainable place.

CIRCULAR ECONOMY IN ACTION IN SOUTH AUSTRALIA

The energy and mining sector can be the catalyst for broadening the circular economy that keeps material resources in use for as long as possible. The transformation of South Australia's major mineral processing facilities could create opportunities in e-waste recycling, scrap metal recycling, ship breaking and overburden beneficiation, where iron ore waste can be transformed into a high-value product.

Incorporating renewable energy into recycling processes can entrench a green-powered circular economy. As a global leader in renewable energy generation and waste resource recovery, South Australia is well positioned to capture significant value from providing low carbon, sustainable second-life and end-of-life supply chain solutions for critical mineral reprocessing.

CARBON CAPTURE, UTILISATION AND STORAGE

The International Energy Agency has identified carbon capture, utilisation and storage (CCUS) as a critical technology in the sustainable transformation of industry and the most cost-effective solution to reduce carbon emissions for some industry and fuel production processes. Similarly, international energy companies are pursuing enhanced oil recovery (EOR) techniques as a method for improving production in mature oil fields. South Australia's oil and gas fields provide an opportunity to investigate the potential for CCUS and EOR to create more efficient use of the state's onshore basins.

ACROSS GOVERNMENT CLIMATE CHANGE STRATEGY

Energy and mining play a role in achieving the outcomes of the soon-to-be completed whole of government Climate Change Strategy and the Directions for a Climate Smart South Australia. Practical action to deliver a more Climate Smart South Australia includes support for wind, solar, hydrogen and storage projects. It also includes opportunities to source, process and supply clean technology resources,

support carbon capture, use and storage, and to work with the resources sector on other opportunities for climate smart development in the transition to modern energy system. The Renewable Technology Fund assists innovative renewable energy storage projects such as Hydrogen Park SA, which is on track to blend green hydrogen into the local gas distribution network.

ENHANCED LAND ACCESS FOR MINERAL EXPLORATION

In its response to the Energy and Mining consultation paper, the exploration sector requested the government look at alternative solutions to improving relationships between their companies and landowners, including native title holders. An area identified as having potential for developing a

more innovative approach was the use of Indigenous Land Use Agreements (ILUAs) between explorers and Aboriginal groups. As part of the Energy and Mining Strategy, the government will further investigate this request as well as other opportunities for encouraging productive partnerships.

SKILLS AND INNOVATION

Targeted skilling will generate the responsive workforce needed to continue driving innovation, research and commercialisation.

ABORIGINAL **ECONOMIC PARTICIPATION INITIATIVES**

The Energy and Mining Strategy aims to align the economic activity generated in these key sectors with the aims of the government's Aboriginal Economic Participation Strategy. The strategy enables government agencies to procure up to \$220,000 directly from businesses listed on Aboriginal Business Connect, South Australia's online Aboriginal business register. The industry-led program encourages employers to collaborate to build their capacity to increase and sustain Aboriginal and Torres Strait Islander employment and connect job seekers with specific employment opportunities. The Accelerated Discovery Initiative also seeks to increase Aboriginal economic participation in the exploration sector, while the online CEBAC Hub links Aboriginal job seekers with opportunities in the oil and gas sector.

EXCITE STRATEGY

The EXCITE Strategy, led by South Australia's Chief Scientist, highlights the role of STEMM Research and Innovation in driving economic transition across key sectors including energy and mining, food, wine and agribusiness, defence, space, high-tech sectors, creative industries, health and medical industries, international education and tourism. The strategy focusses on enhancing and aligning industry performance of the key enablers of the STEMM Research and Innovation Value Chain: Excellence, Collaboration, Innovation, Translation and Enabled Future Workforce.

INDUSTRY SKILLS **COUNCILS**

The construction, mining and energy Industry Skills Councils (ISC) are providing an efficient and effective source to gather workforce industry intelligence and engage with the Department for Innovation and Skills and industry on skills policy needs. It also creates, develops and maintains strong links with business and regional industry stakeholders through regular engagement activities.

PLAYFORD TRUST

Industry, in partnership with the state government and Playford Memorial Trust, are providing more than \$2 million to encourage students to enroll in mining and petroleum engineering degrees at the University of Adelaide. The 20 two-year scholarships are a response to the looming shortfall in highly trained engineering graduates.

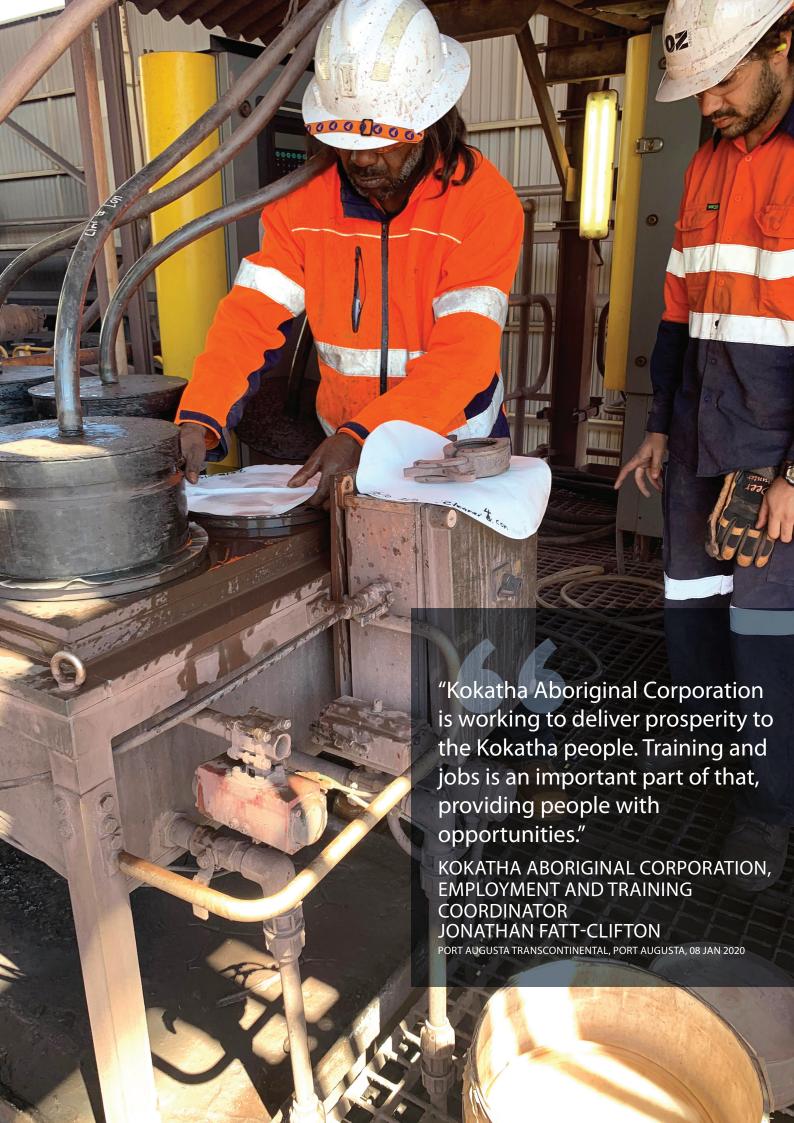
RESOURCES AND ENGINEERING SKILLS ALLIANCE

Resources and Engineering Skills Alliance (RESA) is an advisory and consulting agency providing organisational and workforce development services for the mining and resources sector in South Australia. RESA builds capability and productivity for improvement of the mining and resources sector and its supply chain. RESA provides the dedicated Hot Rubble website for those seeking careers in mining. The website contains searchable information specifically tailored to school leavers, graduates and workers in other industries looking for a foothold in the resources sector.



"Now is the time for us to build a stronger and more secure training system, and to ensure South Australia's workforce is suitably skilled to meet the future needs of industry."

The Hon David Pisoni MP Minister for Innovation and Skills



EFFECTIVE REGULATION

Effective, efficient and transparent regulation provides industry with clear obligations and underpins the community expectations of high standards for workplace and environmental safety.

ACTIONS

MINING ACT REFORMS: RED TAPE REDUCTION

Reforms to the *Mining Act* 1971 aim to bring South Australia's exploration and mining laws into the 21st century. These amendments initiated a process to

the Mining Regulations 2011. DEM committed to further community consultation on the revised regulations. This also creates an opportunity to streamline internal processes in line with the government's commitment to improved departmental efficiencies, by moving toward digital by default practices.

DIGITAL TOOLS AND INNOVATION

DEM embraces digital tools to improve service delivery, responsiveness and productivity. Our policy teams provide proactive, responsive and leading policy advice, adopt lean

practices and ensure continuous performance improvement. Regulators offer businesses a "one window to government" by closely collaborating with other government agencies. Through these

endeavours, committed public servants can support business to maintain high sustainable development standards for workplace safety and environmental protection.

PETROLEUM GEOTHERMAL ENERGY ACT REFORM

Our Energy and Mining Strategy supports the responsible management of the state's petroleum, geothermal and gas storage assets through world-class regulation and compliance

monitoring. Work on drafting a major update of the Roadmap for Oil and Gas Projects in South Australia has uncovered opportunities to further refine the existing Petroleum and

Geothermal Energy Act. Consultation with industry, the community and other stakeholders will reform the process of identifying options for potential amendments to the Act.

ELECTRICITY, GAS AND WATER

The safe use of electricity, gas and water in homes and businesses underpins confidence in our utilities. Enforcement, compliance and promotion of technical and safety regulation of electricity, gas and

plumbing ensures low levels of accidents and failures. Striking a balance between enforcement and education assists industry to understand and meet regulatory requirements. Regulators monitor and

manage energy-related emergencies. South Australia is also the lead legislator for Energy National Cabinet Reform Committee and provides policy advice and coordination of energy market reforms.

WORKING WITH THE COMMONWEALTH NATIONAL FEDERATION REFORM **AEMO INTEGRATED ENERGY SECURITY BOARD'S NEM25 REVIEW CLEAN ENERGY FINANCE CORP EFIC TRADESTART** MINEX CRC **FUTURE FUELS CRC** NATIONAL HYDROGEN **STRATEGY REVIEW OF THE EPBC ACT** NATIONAL RESOURCES **STATEMENT METS IGNITED** NATIONAL ENERGY **RESOURCES AUSTRALIA** NOPSEMA CSIRO TECHNOLOGY INVESTMENT ROADMAP

HOW TO GET INVOLVED

growthstate.sa.gov.au

FIND OUT MORE ABOUT THE GROWTH STATE

energymining.sa.gov.au dti.sa.gov.au

REGISTER INTEREST IN DEM OR DTI STRATEGY INITIATIVES

DEM.Petroleum@sa.gov.au

SIGN UP TO OIL AND GAS ROUNDTABLE





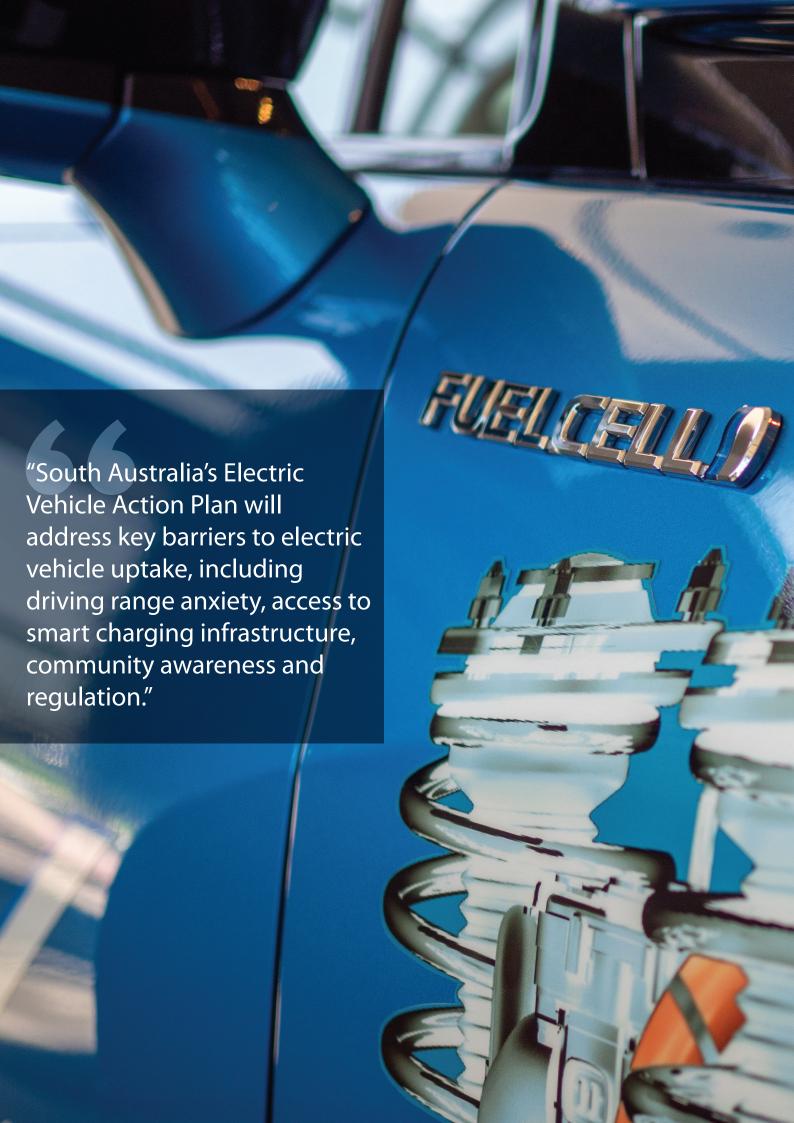


SUBSCRIBE TO DEM'S SOCIAL CHANNELS

REFERENCES:

- 1. BDO EconSearch 2020
- 2. Department for Energy and Mining (DEM) Annual Report 2018-19)
- 3. Australian Bureau of Statistics 2020
- 4. Australian Bureau of Statistics 2020
- 5. Australian Energy Regulator 2020

- 6. International Energy Agency 2020
- 7. South Australian Centre for Economic Studies 2020
- 8. ACIL Allen Consulting 2018
- 9. Department for Energy and Mining 2019
- 10. METS Ignited 2020



Acknowledgement of Country

We acknowledge and respect the Traditional Custodians whose ancestral lands we live and work upon and we pay our respects to their Elders past and present. We acknowledge and respect the deep spiritual connection and the relationship that Aboriginal and Torres Strait Islander people have to Country.

We also pay our respects to the cultural authority of Aboriginal and Torres Strait Islander people and their nations in South Australia, as well as those across Australia.

Further information

Department for Energy and Mining

Level 4, 11 Waymouth St,

GPO Box 320,

Adelaide SA 5001

T: +61 8 8463 3000

E: DEM.customerservices@sa.gov.au

www.energymining.sa.gov.au

South Australia Trade and Investment Offices

Japan and Korea

Sally Townsend, Commissioner, SouthAustralia - Japan and Korea

T:+81-3-52323570

China

Xiaoya Wei, Country Director - China

T:+86-138-0197-2961

Singapore

Sonya Madramootoo, A/Manager, SouthEast Asia

T:+61(0)477-386-958

United Kingdom

James Mraz, Agent-General for SouthAustralia

T:+44-20-7520-9100

MENA & India

Sidharth Mehta, Regional Director South Australia- Middle East, North Africa and India

T: +971-4-5087130



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