



Government of
South Australia

South Australia's Green iron and steel strategy

*Partner of choice to
decarbonise global steel*

energymining.sa.gov.au

With our magnetite, renewable energy and a burgeoning hydrogen economy, South Australia brings together all the elements demanded by a decarbonising world.

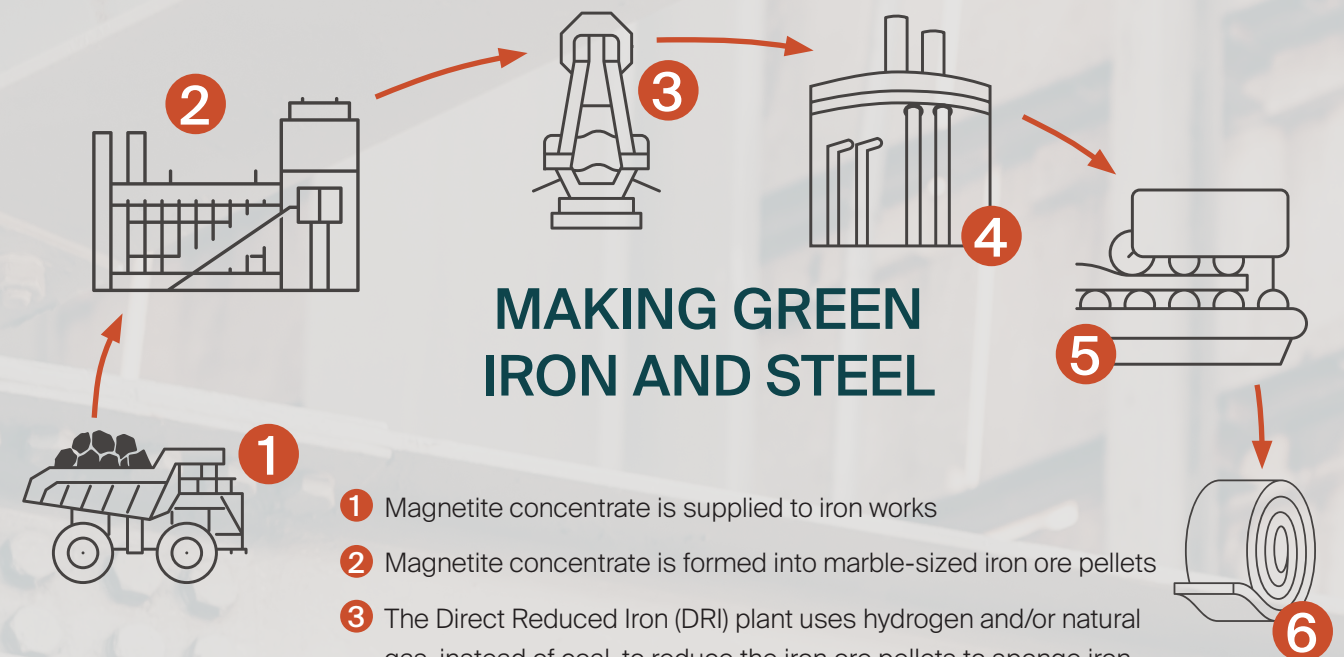
Peter Malinauskas, Premier of South Australia

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Vision

South Australia is a partner of choice for decarbonised steelmaking. We will be a key contributor of the minerals, green iron and green steel required to support the global energy transition.



Premier's foreword



Right now, South Australia's unique combination of sun, wind and iron ore provides us with a once-in-a-generation opportunity to lead the world in green iron and steel.

My government is determined to seize this opportunity and capture the thousands of jobs and environmental benefits offered by South Australia's natural advantage.

I am convinced this is South Australia's moment. The investments we have made, and the strategies that we have pursued in the 21st century, have led us to this point.

To ensure this state's leadership in renewable hydrogen energy, green iron and steel production, South Australia needs to take decisive and coordinated action.

These actions are set out in *South Australia's Green Iron and Steel Strategy*.

At a Major Economic Summit in the Upper Spencer Gulf in February 2024, I outlined the massive scale of this opportunity and urged these regional communities to back us in.

We also need to continue the two-way conversation this government initiated with the

South Australian Aboriginal Renewable Energy Forum. Hard-wired into the strategy will be processes to ensure a wider discussion about using the transition of this sector as a vehicle for Aboriginal economic advancement and self-determination.

South Australia led the nation in adopting Industry Participation Plans to support the steel industry. Our aim is to do the same again with Australian standards for green iron and steel.

I am determined to lead a government that not only makes the big decisions to set up the state for the long term, but backs up those decisions with concrete initiatives.

We all know South Australia is already a great state. Together we can deliver an even better future for generations to come.

Peter Malinauskas MP
Premier of South Australia

Minister's foreword



The global economy is on an inevitable trajectory to decarbonisation. As a foundation for almost all economic infrastructure and output, decarbonised iron and steel is essential to this change.

With its abundant magnetite resources, extensive renewable energy and significant investment in hydrogen production and water, South Australia is ideally placed to meet the decarbonisation challenge.

Australia's iron and steel industries were born in South Australia's Upper Spencer Gulf, and once again we are poised to be innovators in a new century of low carbon steelmaking.

South Australia's Green Iron and Steel Strategy is part of a suite of initiatives that support the state's ambition to forge a smart, sustainable and inclusive economy.

These initiatives play a role in achieving three of our government's key economic ambitions - to capitalise on the global green transition, become a partner of choice in an insecure world and build on the state's talents.

Our investment will create new jobs in large-scale industries, increase business activity across the state and bring new skills to South Australia that can prepare our next generation for careers in a clean energy economy. It will help ensure a state that is fit for the future.

Alongside this, early and meaningful participation of our Aboriginal peoples, local communities and industry will maximise the social, economic and environmental benefits of this burgeoning industry for all.

South Australia continues to build strong trade links with leading and emerging economies. These links complement the strategy and provide a genuine opportunity to forge long-term international partnerships.

We look forward to partnering with you in this world-leading transformation.

Tom Koutsantonis MP
Minister for Energy and Mining



“ We are poised to be innovators in a new century of low carbon steelmaking. ”

Tom Koutsantonis, Minister for Energy and Mining

Introduction

The steel industry worldwide is one of the biggest global carbon emitters. Decarbonising this industry will have a significant impact on international ambitions for tackling climate change.

As the world decarbonises, green iron demand is forecast to surge. South Australia has a unique combination of plentiful solar and wind resources, abundant high-quality magnetite iron ore, an emerging green hydrogen fuel supply and significant steel manufacturing capability - all the key elements needed to make green iron. We will use this advantage to proactively build a local green iron and steel industry and become a trusted global supply partner.

Whyalla transformation

Our green iron and steel ambition requires a long-term, coordinated strategy. It starts with a complete transformation of the Whyalla Steelworks, commencing with the installation of a low-emission electric arc furnace. A South Australian government commitment of \$50 million and an additional \$63.2 million from the Commonwealth will enable direct CO₂ emissions to be reduced by up to 90%. The transformation will increase steelmaking capacity from one million tonnes per annum (mtpa), to 1.5 mtpa and protect 3,000 jobs.

A new green iron plant

Through an open call to industry, we will establish new, high-value production facilities in the Upper Spencer Gulf. Forecasts predict that a new 2.5 mtpa direct reduction green iron plant would add 2,500 jobs during its construction, at least 800 more ongoing operational jobs and \$3 billion per annum to South Australia's gross state product.

Taking rapid action

We need to move quickly so we don't miss the window of opportunity. Global supply chains are shifting. Government and industry are making long-term investment decisions on where and how to cost-effectively produce green iron by 2030. We must create the environment to attract private investment in new industries that will allow South Australians to prosper.

An inclusive and sustainable transition

The substantial economic, social, environmental and reputational advantages of a local green iron and steel sector will directly and indirectly benefit our communities. There will be employment opportunities, emissions reductions, royalties and tax revenues that improve education, health and regional growth.

We must not leave anyone behind. Our Aboriginal peoples and regional communities in particular must be partners in the journey and share the benefits of the state's prosperity.

We will provide certainty to the community, industry and investors by :

providing a leading regulatory framework

supporting access to land, water and supporting infrastructure

planning for economically and environmentally suitable common user infrastructure, corridors and precincts

ensuring appropriate environmental standards and community expectations are met.

We are determined to respond to the climate change emergency. Successfully delivering this strategy will help us do so and create a modern infrastructure network, decarbonised manufacturing sector and a highly skilled workforce. It will cement South Australia's reputation as a leader in the world's clean energy transition and a critical contributor to global carbon emissions reduction.

Delivering our vision

Objective 1

Enhance our comparative advantage

Actions

1 Demonstrate the magnitude, quality and development potential of South Australia's iron ore deposits.

2 Confirm South Australian green iron export viability through a Green Iron Supply Chain Study with the Port of Rotterdam.

3 Work with industry and the education sector to address technological and workforce challenges.

Objective 2

Establish local green steel industry foundations

Actions

4 Partner with the Federal Government to support the Whyalla Steelworks low carbon transformation.

5 Deliver a commercial de-risking study, in partnership with industry, to plan for development of a direct reduced iron (DRI) plant and supporting value chain.

6 Support establishment of specialised industrial precincts and common user infrastructure corridors to de-risk and expedite projects across the value chain.

Objective 3

Ensure a sustainable, long-term industry and shared prosperity

Actions

7

Find solutions for Aboriginal advancement and community autonomy by sharing project benefits with communities, Aboriginal peoples and Native Title groups.

8

As production capacity emerges, phase in the purchasing of Australian green steel for infrastructure projects.

9

Through targeted support, facilitate delivery of a new hydrogen-based green iron plant in South Australia by 2030 or earlier.



Green iron and steel snapshot

Whyalla green transformation

3,000
jobs
protected



1.5
mpta
green steel
production
per annum

New 2.5 mtpa DRI plant forecasts

2,500
jobs
construction



800
jobs
ongoing

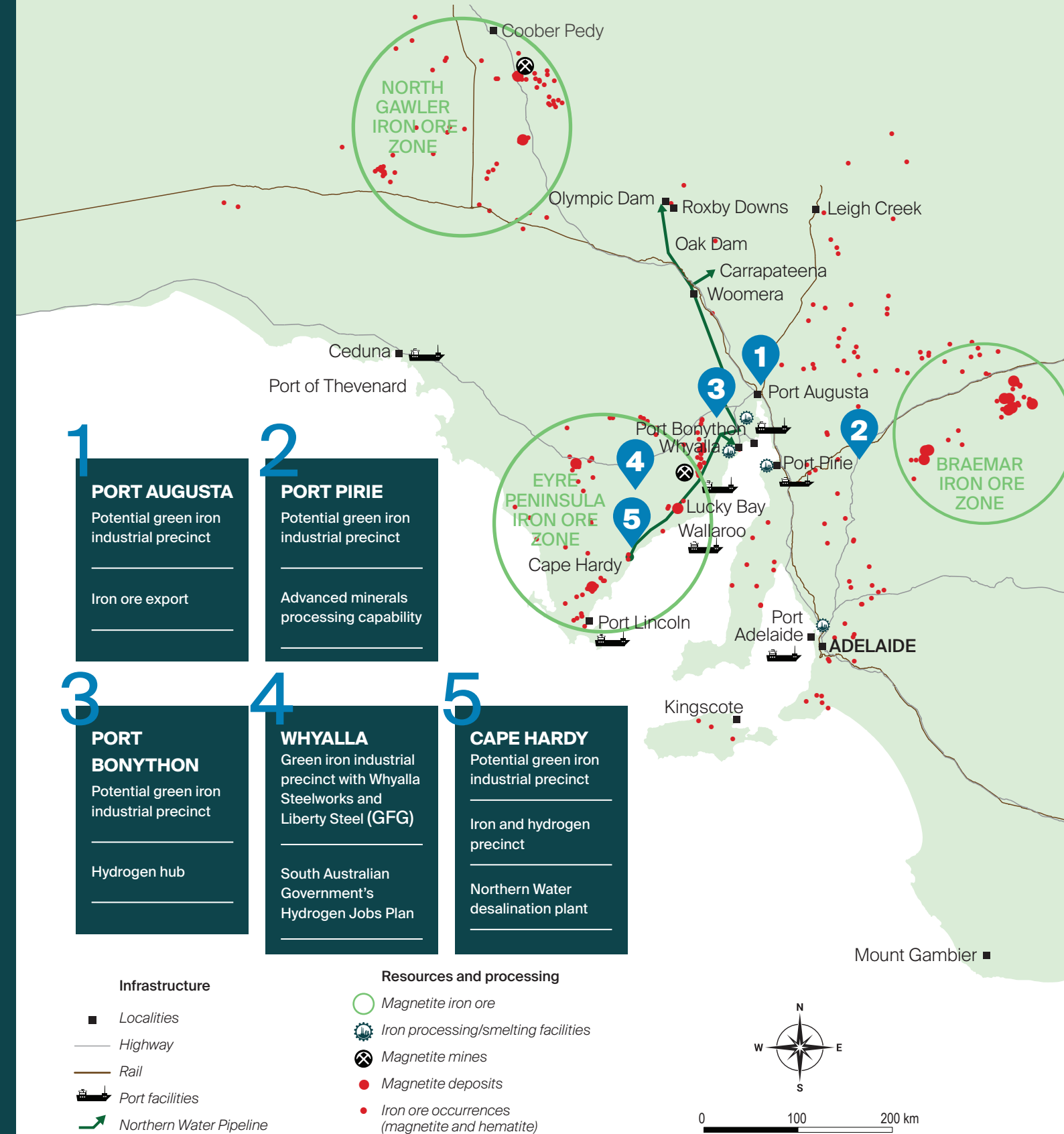


\$3 BILLION
gross state product per annum
during construction and plant's
24-year operational lifecycle

\$20 BILLION
potential state contribution of
new green industry that uses
green steel

90% lower carbon emissions for
green steel versus traditional steel

South Australia's green iron and steel ecosystem





South Australia's Eyre Peninsula, Braemar and North Gawler iron ore provinces are globally significant, with more than seven billion tonnes of economically demonstrated resources.

Limestone cliffs and rocky shoreline of Cape Bauer on the Eyre Peninsula South Australia.

Objective 1

Enhance our comparative advantage

South Australia is an ideal location for a decarbonised steel industry. The co-location of abundant, high-quality magnetite and world-class renewable energy resources provides the state with a distinctive advantage to spearhead a hydrogen-based steel transformation.

Our substantial reserves of magnetite are ideal feedstock for direct reduced iron with significant deposits within reach of established processing and supporting infrastructure.

South Australia has already removed coal from our energy mix. We lead the world in renewable energy supply, with a pipeline of more than 55 projects that could add a further 15.3 GW.

The South Australian Government's priority Hydrogen Jobs Plan will deliver a world-leading hydrogen power plant, 250 MWe of electrolysers, 200 MW of power generation and a renewable hydrogen storage facility.

The state's Northern Water Supply Project will deliver a new, sustainable water supply to project developers in the Far North and Upper Spencer Gulf regions.

Our one-window-to-government licensing and regulatory system facilitates the concurrent development of renewable energy, hydrogen, mining and green iron projects through the *Hydrogen and Renewable Energy Act 2023* and *Mining Act 1971*. The South Australian Government is recognised for our transparent and consistent regulatory framework.

We are committed to fostering an environment that meets international environmental, social and governance (ESG) expectations through stringent environmental management consistent with community expectations.

We will build on our significant mineral and renewable energy advantages in South Australia to underpin our ability to supply magnetite, green iron and green steel to global steel producers.

Action 1

Demonstrate the magnitude, quality and development potential of South Australia's iron ore deposits.

South Australia has three globally significant iron ore provinces in the Eyre Peninsula, Braemar and North Gawler regions. They contain a total resource of more than eighteen billion tonnes of magnetite ore, including more than seven billion tonnes of economically demonstrated resources.

Our low impurity magnetite enables beneficiation to greater than 67% iron, using significantly less energy.

The Government of South Australia will deliver an iron ore study that demonstrates the potential of our minerals as the basis for both local and global decarbonised steel production. This enhanced understanding of our magnetite reserves and potential resources will provide a solid foundation for green iron investment.

Action 2

Confirm South Australian green iron export viability through a Green Iron Supply Chain Study with the Port of Rotterdam.

South Australia, together with Monash University and the Port of Rotterdam, are conducting a joint pre-feasibility study that tests the commercial viability of a green iron supply chain between South Australia and the Netherlands. The study will confirm the economic potential of various local iron production/export scenarios, optimum export volumes for maximum economic benefit, and the impact of various funding options.

Action 3

Work with industry and the education sector to address technological and workforce challenges.

The South Australian government will cultivate research and development alliances between local and international industry and research institutions. We will deliver programs with industry, training providers and universities to build the workforce the sector needs.

We will collaborate with research institutions, industry and universities to address the technological challenges faced by a new industry.



Objective 2

Establish local green steel industry foundations

We will deliver staged foundational activity to support the scaling of mining, renewable energy, hydrogen and green iron industries.

We will build on our state's distinguished history of steelmaking that started in the 1800s. The integrated steelworks at Whyalla, built in the 1950s to ensure the value of steel processing stayed in South Australia, now produces 1 million tonnes per year (mtpa), and supports around 3,000 jobs in the local community.

Whyalla has an operational deep-water port and access to the abundant Eyre Peninsula and Far North magnetite resources. Its location, existing industrial ecosystem and steel-skilled workers provide a strong foundation on which to build an expanded steel industrial precinct.

With South Australia's high-grade magnetite deposits considered more suitable for alternative steel processes like DRI, there are considerable opportunities to significantly expand production and local prosperity.

Action 4

Partner with the Federal Government to support the Whyalla Steelworks low carbon transformation.

Liberty Steel, a member of the GFG Alliance, is replacing coal-based steelmaking with a low carbon electric arc furnace (EAF) and DRI production. When this transformation is completed, steel production will increase to 1.5 mtpa and carbon emissions will drop by up to 90 per cent.

The Australian Government granted \$63.2 million to support the furnace's installation and develop Liberty's billions of tonnes of high-quality magnetite ore. The South Australian government has committed \$50 million for the transformation. We are committed to working with the Commonwealth and owners of Whyalla steelworks to transition our nationally significant capability to green steel in a way that delivers globally leading green steel capability, early, and with maximum benefits to workers, communities and the environment.



Action 5

Deliver a commercial de-risking study, in partnership with industry, to plan for development of a DRI plant and supporting value chain.

The government will partner with industry to ensure a coordinated approach to capturing green iron opportunities.

This will begin with an expression of interest (EOI) process to allow comparative assessment of prospective projects and establish critical information on risks and opportunities.

The EOI will establish how government and industry can best maximise the opportunity across the steelmaking value chain. It will allow strategic planning that leverages our existing and future resources, renewables and manufacturing capability – and their co-location – to drive growth and cost efficiencies for all related sectors.

The EOI will inform a commercial de-risking study that will determine specialised industrial precincts with supporting value chain and infrastructure planning, to de-risk the green iron investment opportunity and establish plans for developing a DRI plant.

Action 6

Support establishment of specialised industrial precincts and common user infrastructure corridors to de-risk and expedite projects across the value chain.

South Australia's world-leading *Hydrogen and Renewable Energy Act 2023* paves the way for gigawatt-scale renewable energy generation on state release areas. This energy will be most efficiently used when it's generated near to the green industries it powers, such as green iron and steel. To drive the construction of a new DRI plant by 2030, the South Australian government will work with stakeholders to identify and de-risk suitable land for co-locating new green iron facilities, renewable energy generation, hydrogen production facilities, infrastructure and ports.

The state is investigating an approach that enables multiple proponents to use common corridors for shared infrastructure, such as road, rail, telecommunications, power and water. This can create cost savings and result in reduced timeframes for project approvals.





Whyalla jetty
Credit: Isaac Forman

Objective 3

Ensure a sustainable, long-term industry and shared prosperity

We will ensure South Australia is a partner of choice, embedded in international steel industry decarbonisation plans. By capturing this value here in the state and creating local partnerships, we can share the benefits with all South Australians, particularly our Aboriginal peoples and regional communities.

Action 7

Find solutions for Aboriginal advancement and community autonomy by sharing project benefits with communities, Aboriginal peoples and Native Title groups.

Our green steel strategy will continue the two-way conversation initiated between Aboriginal People, local communities and the government during development of the Hydrogen and Renewable Energy Act. It will facilitate a wider discussion about how the renewable transition for iron and steel can also be a vehicle for Aboriginal self-determination.

The Upper Spencer Gulf region will drive a new era of prosperity for South Australia and this prosperity will be shared through local partnerships and Aboriginal enterprise.

Action 8

As production capacity emerges, phase in the purchasing of Australian green steel for infrastructure projects.

South Australia will advocate to give weight to locally produced steel procurement that meets Australian standards. We will advocate for the Australasian Certification Authority for Reinforcing and Structural Steels to contemplate the availability of green steel and a pathway to certification so that it can be built into an updated Industry Participation Policy.

The government will phase in purchasing of decarbonised and low emissions Australian steel for major infrastructure projects, in consultation with industry and other stakeholders.

Action 9

Through targeted support, facilitate delivery of a new hydrogen-based green iron plant in South Australia by 2030 or earlier.

South Australia will seek to build partnerships with the Australian Government to support and enable the green transition of our nationally significant industrial capability – one of only two significant steelworks in the country.

The South Australian Government will further consider participation in partnerships that align with and attract investment from global investors and Australian Government programs such as the National Reconstruction Fund.

A lasting legacy

Creating a decarbonised steel industry is a complex, long-term project and a key building block of our state's green industrial transformation.

Successful implementation of this strategy will mean:

By **2030**

A new magnetite mine has started production

Our hydrogen plant is operating and able to supply to industry

Construction has begun on a new DRI plant

Our first shipment of green iron has been exported

New technical colleges are open in the Upper Spencer Gulf

All coal shipments into South Australia have stopped

By **2050**

We are leaders in green steel innovation, production and export

We are a trusted partner for green iron and steel products, made using our world class renewable energy and local minerals

We have a decarbonised steel industry with multiple processing hubs in the Upper Spencer Gulf, shared infrastructure and common user frameworks

Significant economic value has been added to the state, resulting in improved government services

Our regional communities are thriving and have industrial skills sought by the world



Further information

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Acknowledgement of Country

We acknowledge and respect Aboriginal peoples as the state's first peoples and nations, and recognise them as traditional owners and occupants of land and waters in South Australia. Further, we acknowledge that the spiritual, social, cultural and economic practices of Aboriginal peoples come from their traditional lands and waters, that they maintain their cultural and heritage beliefs, languages and laws which are of ongoing importance, and that they have made and continue to make a unique and irreplaceable contribution to the state.

We acknowledge that Aboriginal peoples have endured past injustice and dispossession of their traditional lands and waters.

Cover image: Steel forged balls used in the mining industry.

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