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**HyENERGY**  
ZERO CARBON HYDROGEN™

# Important Notice

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## Technical Information

This presentation includes disclosure of scientific and technical information. The information in this document is based on, and fairly represents information and supporting documentation reviewed by Mr David Frances, a Competent Person who is a Member of the Australian Institute of Geoscientists. Mr Frances is a Director of the Company. Mr Frances has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Frances has approved this document as a whole in the form and context in which it appears.

## Forward-looking statements

Certain information contained in this presentation may contain "forward-looking statements". Forward-looking statements may include, but is not limited to, information with respect to the future financial and operating performance of Province, its subsidiaries and affiliates, the estimation of Mineral Reserves and Mineral Resources, realization of Mineral Reserve and Mineral Resource estimates, costs and timing of development of Province's projects, costs and timing of future exploration, timing and receipt of approvals, consents and permits under applicable legislation, results of future exploration and drilling and adequacy of financial resources. Forward-looking statements are often characterized by words such as "plan", "expect", "budget", "target", "project", "intend", "believe", "anticipate", "estimate" and other similar words or statements that certain events or conditions "may" or "will" occur.

Forward-looking statements are subject to known and unknown risks, uncertainties and other factors that may cause actual results to be materially different from those expressed or implied by such forward-looking statements, including: risks associated with investments in publicly listed companies; risks associated with general economic conditions; fluctuations in commodity prices; the inherent risks and dangers of mining exploration and operations in general; the possibility that required permits may not be obtained; environmental risks; uncertainty in the estimation of Mineral Resources and Mineral Reserves; general risks associated with the feasibility, development and production of each of Province's projects; the risk that further funding may be required, but unavailable, for the ongoing exploration, development and production of Province's projects; changes in laws or government regulations, policies or legislation; unforeseen expenses; fluctuation in the exchange rate of the Australian dollar; litigation risk; risks of being unable to sell production resulting from the development of a project; uninsured hazards; disruptions to Province's supplies or service providers; reliance on key personnel; retention of key employees; absence of dividends; and competition.

Forward-looking statements are based on the reasonable assumptions, estimates, analysis and opinions of management made in light of their experience and their perception of trends, current conditions and expected developments, as well as other factors that management believes to be relevant and reasonable in the circumstances at the date that such statements are made, but which may prove to be incorrect. Province believes that the assumptions and expectations reflected in such forward-looking statements are reasonable.

Readers are cautioned that the foregoing list is not exhaustive of all factors and assumptions which may have been considered by Province. Although Province has attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking statements, there may be other factors that cause results not to be as anticipated, estimated or intended. There can be no assurance that such information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such information. Accordingly, the forward looking information contained in this release is expressly qualified in its entirety by this qualifying statement and readers should not place undue reliance on forward-looking statements. Province does not undertake to update any forward-looking statements, except in accordance with applicable securities laws.

# Navigating society towards a decarbonised future supported by Green Hydrogen



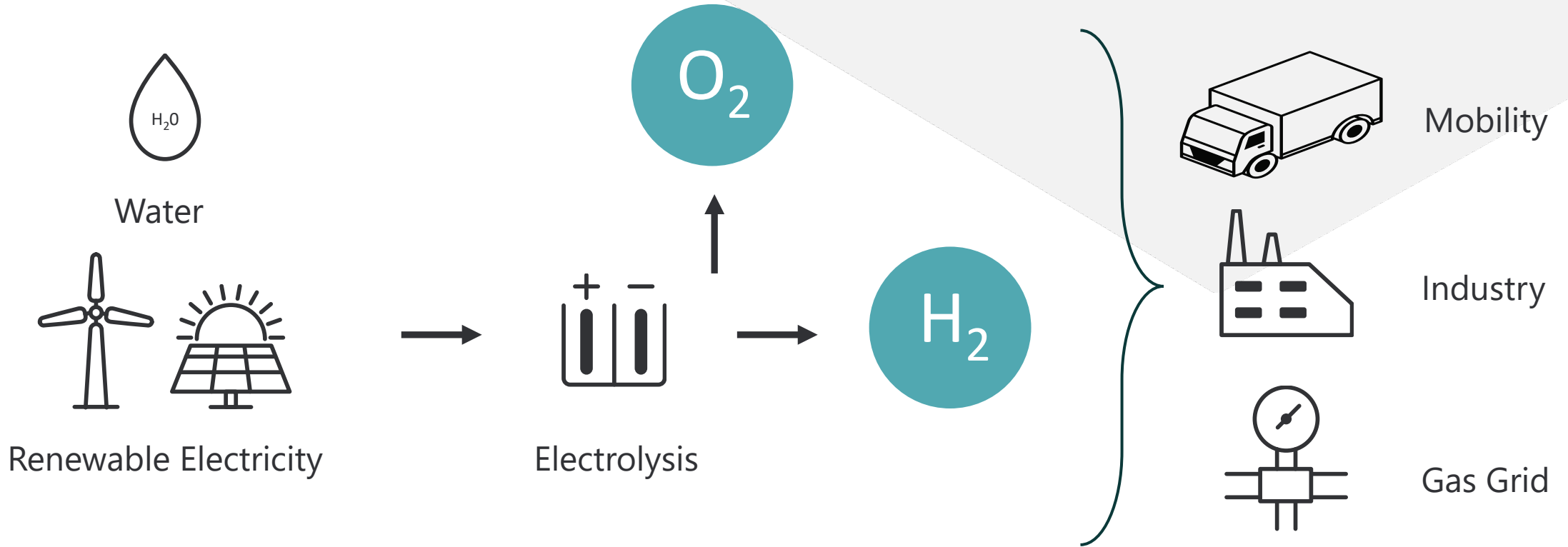
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# How Do You Make Green Hydrogen?

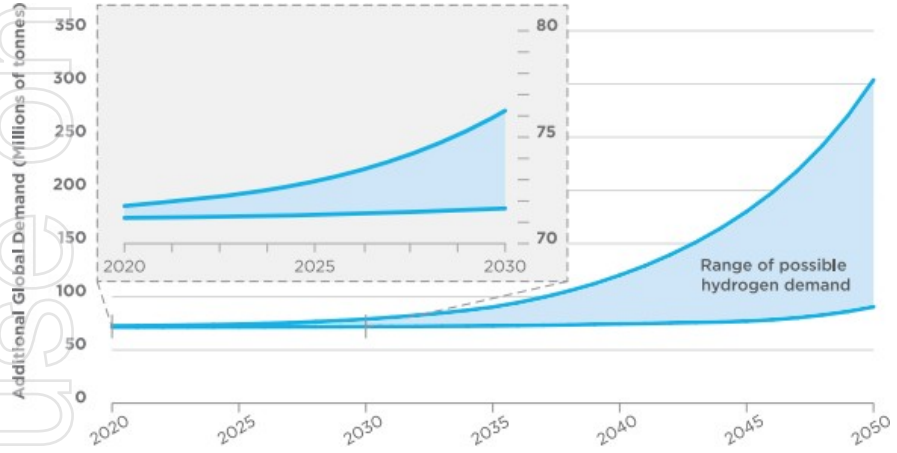
Aiming to be a **significant truly zero carbon green hydrogen project**

Renewable (green) hydrogen is hydrogen produced using energy from renewable energy sources and water.  
**A clean zero carbon Gas or Liquid Hydrogen Fuel**



# The Opportunity

Range of possible hydrogen demand over the next three decades.



Source: The International Energy Agency and International Renewable Energy Agency

01

## Growing Demand

Australia's potential zero carbon hydrogen exports could reach \$2.2 billion by 2030 and \$5.7 billion by 2040<sup>1</sup>

02

## Global Decarbonisation

Western Australia to support international decarbonisation efforts, while also supporting Australia's commitments to the Paris Agreement

03

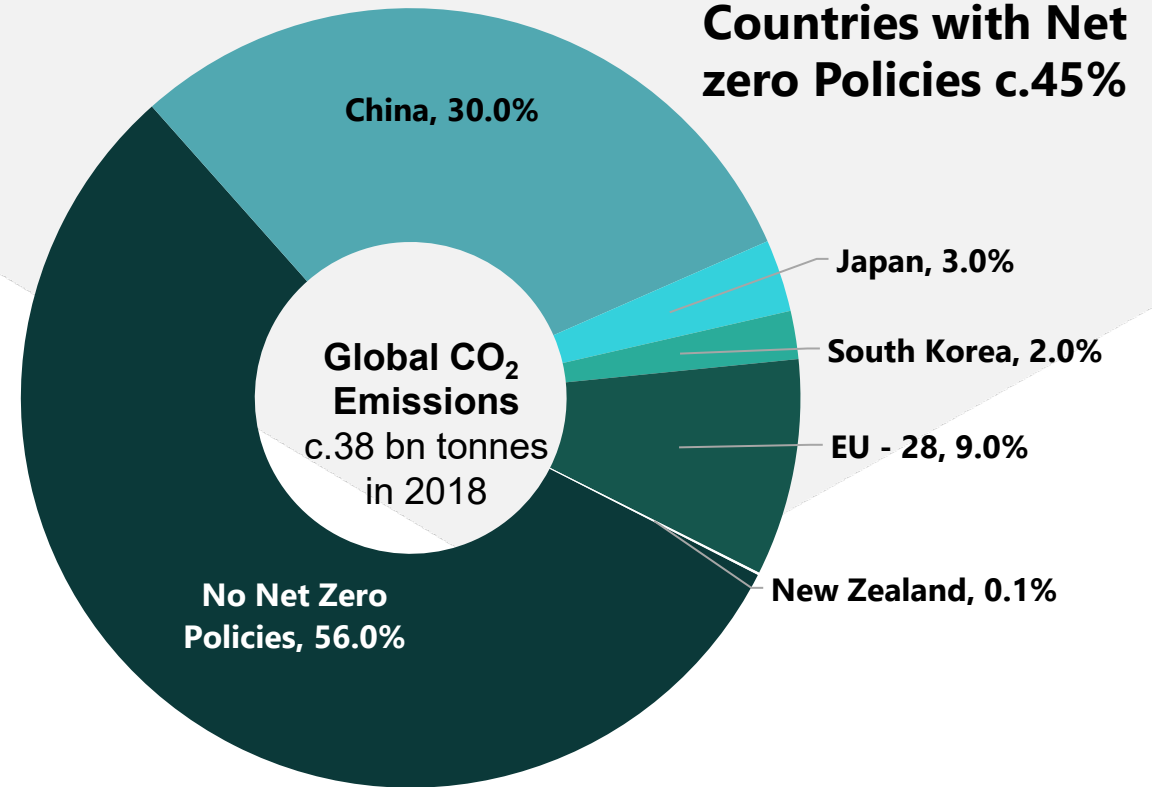
## Supportive Government

The COAG Energy Council has approved the development of a National Hydrogen Strategy

<sup>1</sup> Western Australian Renewable Hydrogen Strategy 2021 Update

# Net Zero Policy is Going Global

- On the back of climate commitments in Europe and Asia, nearly half of the globe has already embraced net zero CO<sub>2</sub> emission policies; further, the USA has reentered the Paris Agreement
- The globalisation of net zero policies could imply a c.200% capex acceleration for global utilities (c.€40 trn of investment in renewables and power grids to 2050; €1.3 trn pa)
- Green Energy Ministerial – 10-10-10 by 2030
- For climate experts, green hydrogen is indispensable to climate neutrality. It features in all eight of the European Commission's net zero emissions scenarios for 2050 <sup>1</sup>



Sources: Emissions Database for Global Atmospheric Research, Goldman Sachs Global Investment Research

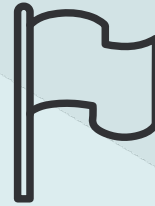
<sup>1</sup> A Clean Planet for all: A European Long-term Strategic Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy (European Commission, 2018)

# Vision, Mission and Goals



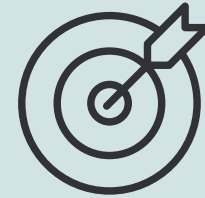
## Vision

Be a significant West Australian producer and exporter of 100% renewable green hydrogen and/or ammonia.



## Mission

Contribute to global decarbonisation and decarbonising the State's economy.



## Goal

Establish and expand Western Australia's market share in global hydrogen exports to be comparable to its share in LNG today.

# Local, State, & Federal Government Accelerating Greening Economy



"Hydrogen provides a means to harness our world-class solar and wind resources for energy export, and help our international partners meet emissions reduction goals."

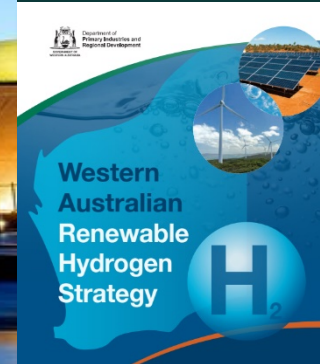
Hon Alannah MacTiernan MLC Minister for Regional Development; Agriculture and Food; Hydrogen Industry;

\$300m



AUSTRALIA'S  
NATIONAL  
HYDROGEN  
STRATEGY

\$10m



\$70m



**ARENA**

Australian Government  
Australian Renewable  
Energy Agency

"Now as the world moves to a lower carbon future, we have the ability to once again be a key player in value chains of new energy technologies, through our exports, expertise, technology and renewable potential. The government is actively pursuing this vision, which will diversify our economy and create new, long term job opportunities for Western Australians."

The Honourable Mark McGowan MLC Premier of Western Australia and Minister for State Development





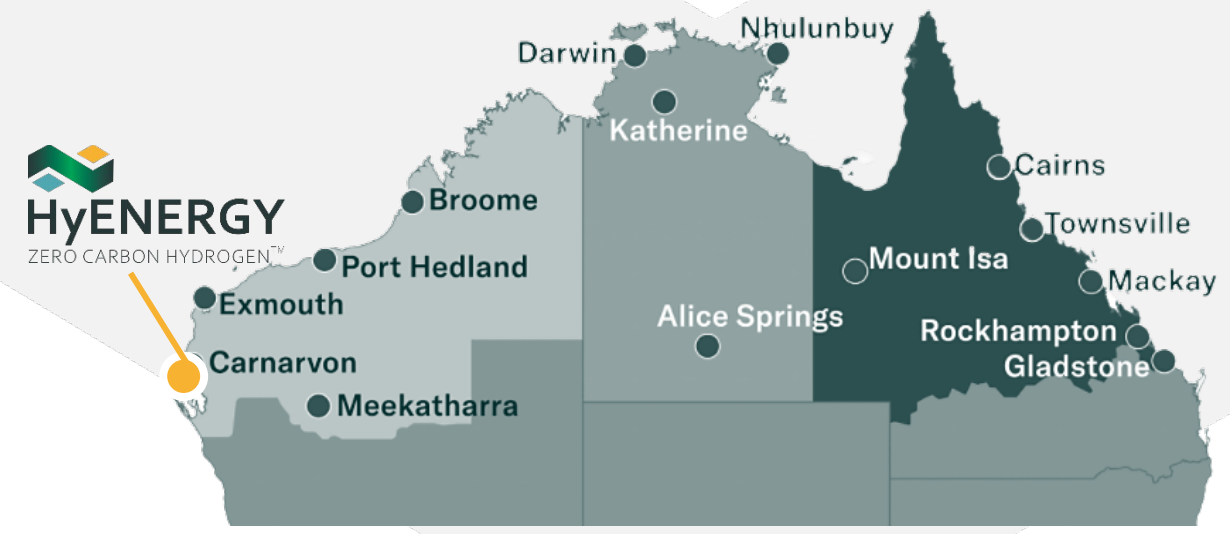
# \$5B Northern Australia Infrastructure Fund



A \$5B development financier that provides loans to infrastructure projects in the Northern Territory, Queensland and Western Australia, in the last financial year, NAIF has made Decisions worth more than \$14billion.

**NAIF's mission**  
 to be an innovative financing partner in the growth of northern Australia. A key focus of any financing is to drive public benefit, economic and population growth and Indigenous involvement in northern Australia.

NAIF can lend up to 100% of the debt and has a higher tolerance for the unique risks of investing in northern Australia including but not limited to, distance, remoteness and climate.



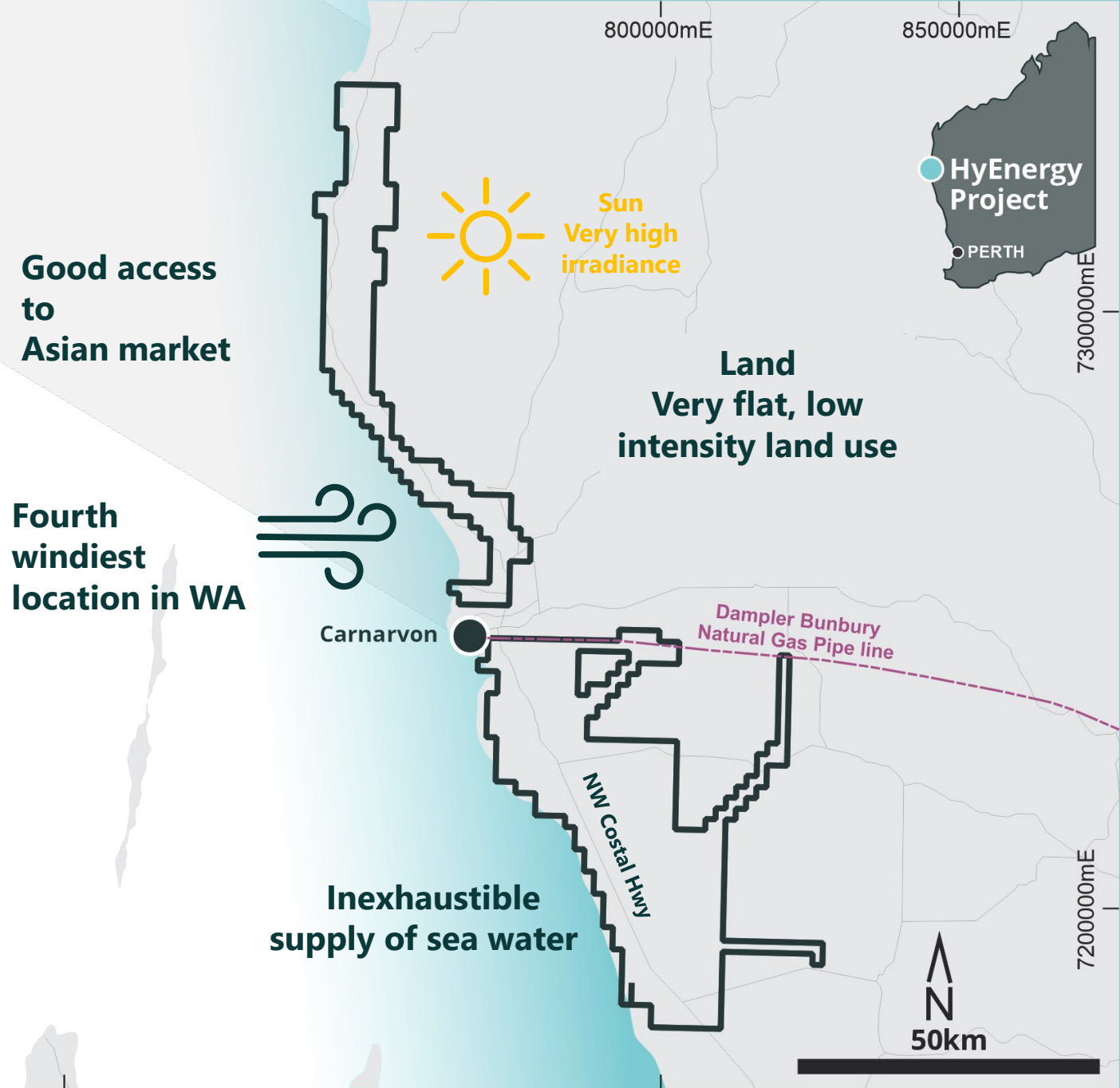
**NAIF has announced investment decisions for projects across a range of sectors and regions. They include the following:**

Mardie Salt & Potash Project	\$450m
Strandline Resources' Coburn Project	\$150m
Chichester Solar Gas Hybrid Project	\$90m
Onslow Marine Support Base	\$16.8m
Kalium Lakes' Beyondie SOP Project	\$74m + an additional \$10m facility
AAMC	\$12.5m
Sheffield Resources' Thunderbird Mineral Sands Project	\$95m

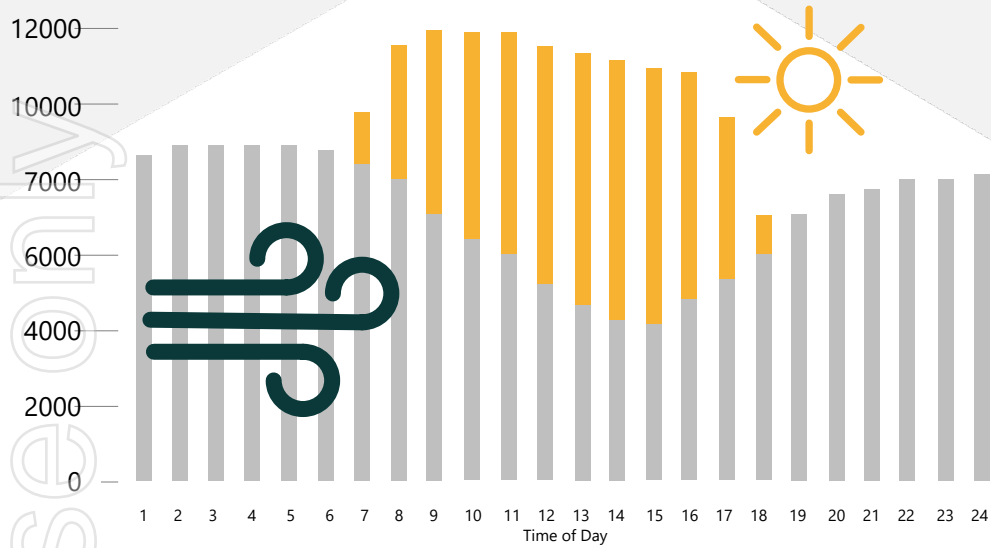


# Why Carnarvon?

- **Sun:**  
very high irradiance
- **Wind:**  
4th windiest location in WA
- **Water:**  
sea water
- **Infrastructure:**  
Dampier to Bunbury gas pipeline
- **Landuse:**  
very flat, low intensity landuse
- **Market:**  
good access to domestic and Asian market
- **Regulatory:**  
existing runway, strong local, state and federal support for green Hydrogen



# HyEnergy - World Class Wind and Solar Resources



HyEnergy Carnarvon Basin project site in the Gascoyne region in Western Australia has world class solar and wind resources.

Significantly, those resources are complementary and provide reliable **zero carbon power**

High incidence of sun



High wind speeds in the morning, evening and night





# Wind Resource

## CARNARVON

**Annual Mean Windspeed of 25.5 km/h**  
4th windiest location in Western Australia<sup>1</sup>

**Existing windfarms** at Denham and Coral Bay

**operating proof of concept**  
in the Gascoyne region.

With the Gascoyne's climate and wind pattern, renewable energy is an attractive and viable option<sup>2</sup>

**CARNARVON REGION**  
Not affected by Southern cold fronts  
Little affect from Northern tropical thunderstorms or cyclones



<sup>1</sup> Bonzle Digital Atlas of Australia

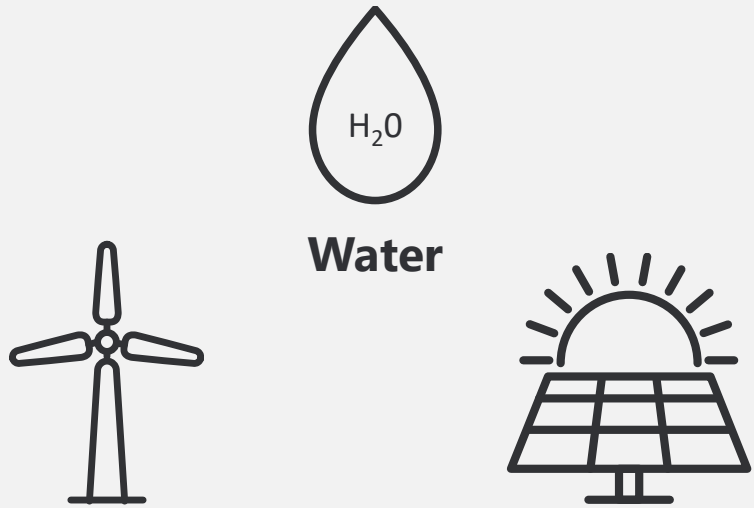
<sup>2</sup> Gascoyne Regional Development Plan – 2010-2020 (Feb 2010)



# Memorandum of Understanding



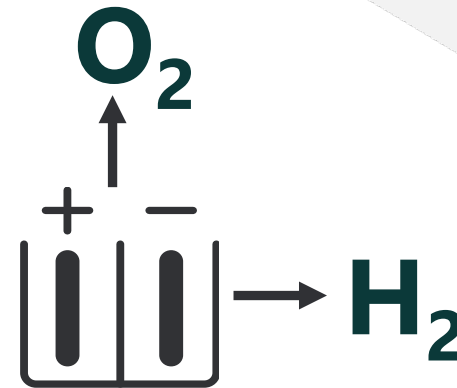
Fund, Build, Own & Operate  
Upstream Power Generating Facility



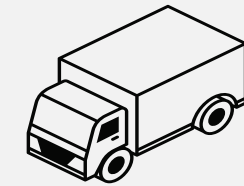
Renewable Electricity



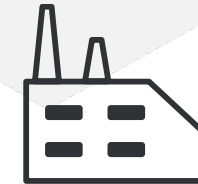
Fund, Build, Own & Operate 50:50 all down stream  
hydrogen/ammonia production and distribution  
infrastructure



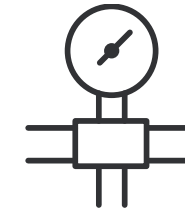
Electrolysis



Mobility



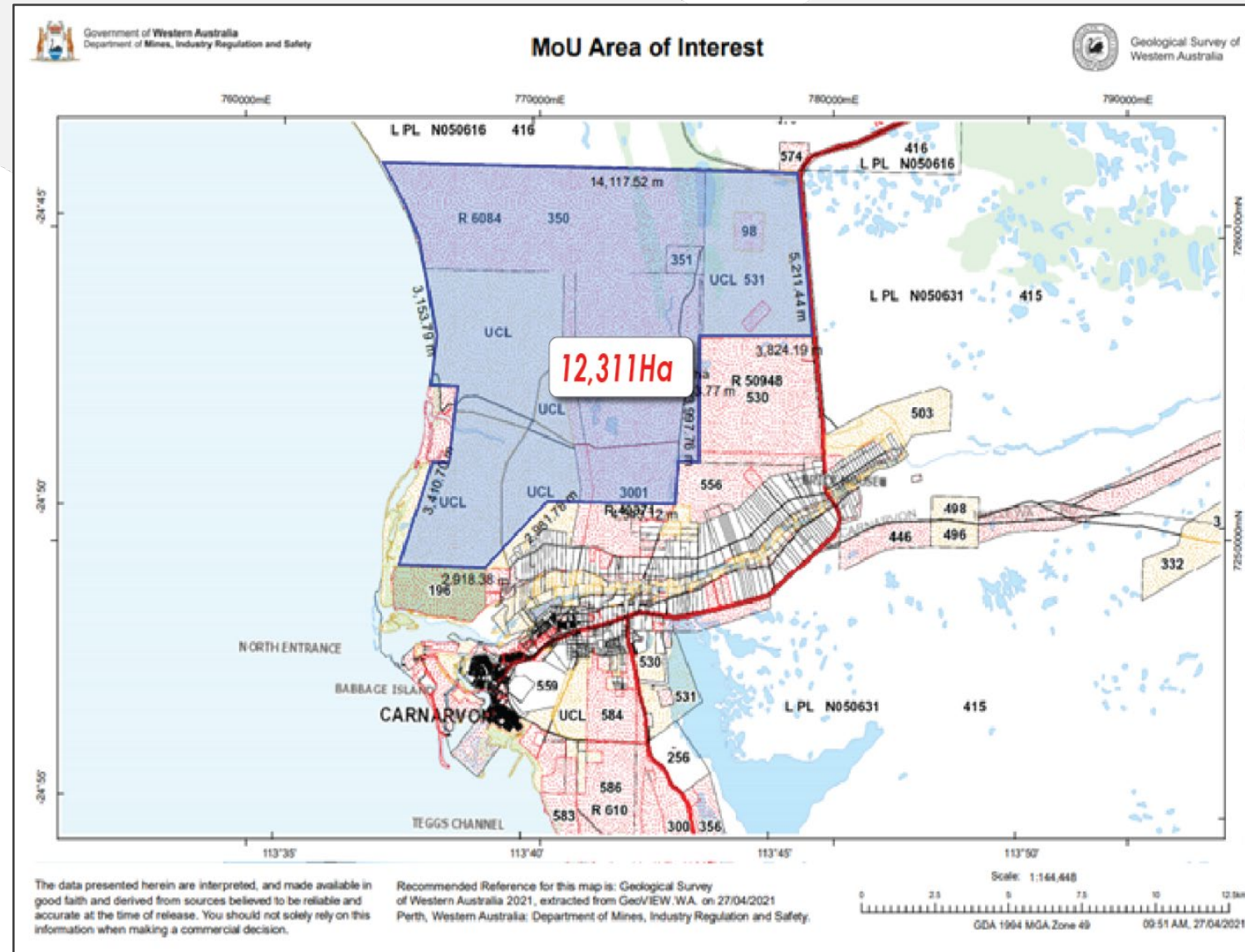
Industry



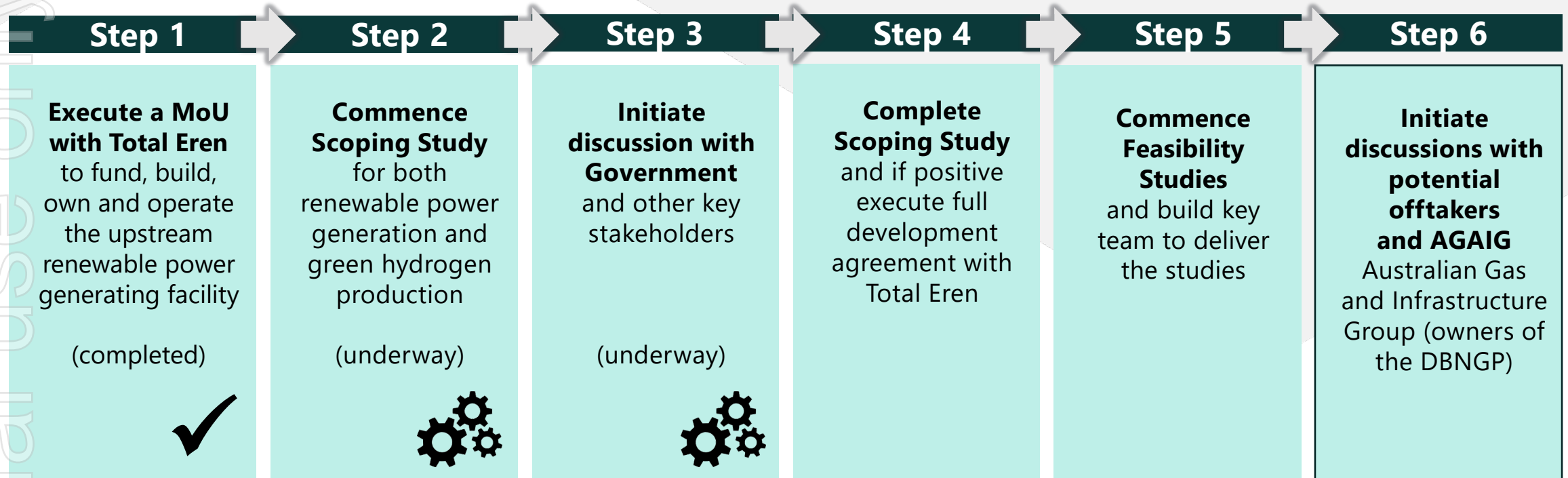
Gas Grid

# MoU Signed with Shire of Carnarvon - Infrastructure

- MoU to assess 12,311Ha "Town Common" for suitability to develop part of the project infrastructure
- Access to the DBNGP
- Access to potential export hub
- Access to operational "Live in" workforce
- Potential to supply renewable power to Carnarvon



# Next Six Months



# HyEnergy ZERO CARBON HYDROGEN™ Project - Stages

1

Foundations and Demonstration, advance priority trial of green hydrogen/ammonia production in Carnarvon region and investigate potential gas blending into the Dampier Bunbury Natural Gas Pipeline (DBNGP).

2

Gas blending - scale up project to supply into the nearby Dampier Bunbury Natural Gas Pipeline. With the aim of helping meet the State Governments objective of up to 10% green hydrogen in the DBNGP by 2030. **c. 3GW**

3

Export, full scale production to supply domestic and Asian markets. Develop a hydrogen/ammonia loading facility in the Carnarvon area. **Up to 8GW**

A key element of Australia's approach will be to create hydrogen hubs – clusters of large-scale demand. These may be at ports, in cities, or in regional or remote areas, and will provide the industry with its springboard to scale. Hubs will make the development of infrastructure more cost-effective, promote efficiencies from economies of scale, foster innovation, and promote synergies from sector coupling. These will be complemented and enhanced by other early steps to use hydrogen in transport, industry and gas distribution networks, and integrate hydrogen technologies into our electricity systems in a way that enhances reliability <sup>1</sup>

<sup>1</sup> Executive Summary, Australia's National Hydrogen Strategy (November 2019)



# HyEnergy ZERO CARBON HYDROGEN™ Project - Benefits

**The ZERO CARBON HYDROGEN™ Project is proposed to generate:**

**STAGE 1 – c. 3GW (c. 180kt hydrogen/annum)**

**STAGE 2 – up to 8GW (c. 480kt hydrogen/annum)**

We believe that the HyEnergy ZERO CARBON HYDROGEN™ project will contribute significantly to the national, state and local objectives by:

- attracting new investment
- creating new jobs
- developing renewable energy sources
- establishing the state government's goal of 10% green hydrogen in the DBNGP by 2030
- opening new domestic & export markets
- meeting our decarbonisation goals as a Nation

With our partners, we look forward to working with government, local communities and other stakeholders to realise this exciting new project

# CORPORATE OVERVIEW

## Directors

Patrick Burke	Non-Executive Chairman
David Frances	Managing Director - CEO
Kylah Morrison	Non-Executive

## Key Management

<b>David Frances</b>	Managing Director - CEO
<b>Tom Langley</b>	Chief Operating Officer
<b>Starts 17/05/21</b>	Manager – Access & Approvals
<b>Ian Hobson</b>	Company Secretary

## Capital Structure at April 2021

ASX Code	PRL
Shares on issue	0.98bn
Options \$0.016	16.5m
Options \$0.04	29.8m
Perf Rights <sup>(1)</sup>	22.5m
Perf Shares <sup>(2)</sup>	50m
<i>Perf Shares <sup>(3)</sup></i>	<i>56.25m</i>
Fully Diluted	1.1bn
Share price (29/04/21)	\$0.21
Market Cap (29/04/21)	\$205m
Enterprise Value	\$198m
Cash	\$7.0m

<sup>1</sup> Performance Rights issued to Board and Management several milestone hurdles (see Appendix)

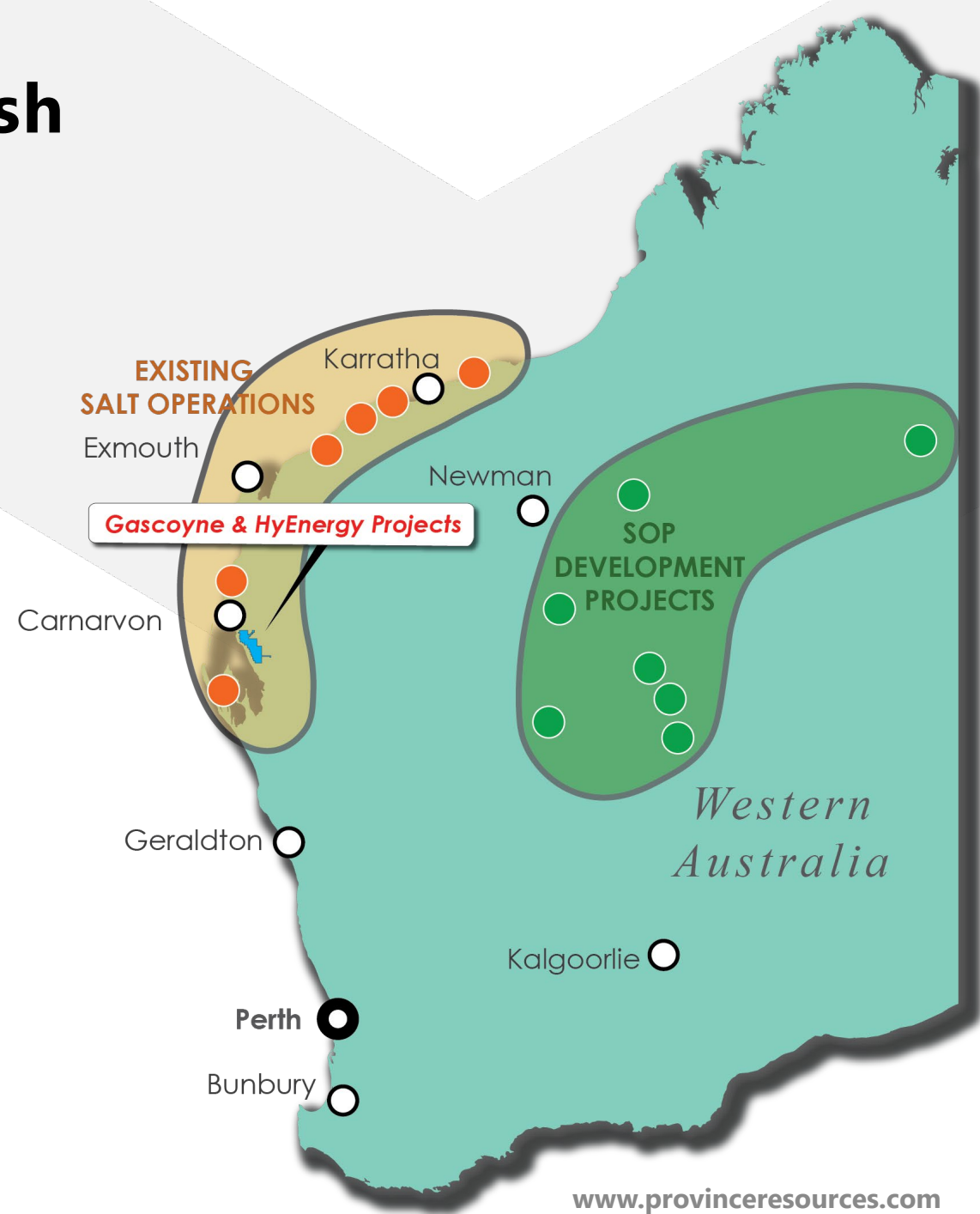
<sup>2</sup> Performance Shares issued in connection with the acquisition of Ozexco Pty Ltd

<sup>3</sup> Performance Shares issued in connection with the acquisition of Scandivanadium Australia Pty Ltd (see Appendix)

# Gascoyne Project - Salt and Potash

- The Gascoyne Region is located in NW Western Australia with Carnarvon as its administrative centre. The project area covers 1,408 km<sup>2</sup> and is south of Carnarvon
- Carnarvon's population of 5,300 adjoins the property with first class infrastructure in place including the Dampier Bunbury Natural Gas Pipeline (DBNGP) and the North West Coastal Highway
- Carnarvon's central location within the broader salt producing region of the North West demonstrates the inherent potential of the project area
- Initial exploration and evaluation will investigate the salt and potash, mineral sands and renewable hydrogen potential over the extensive tenement area
- The region also boasts the world class Coburn mineral sands deposit with an Ore Reserve of 523Mt @ 1.11% Total Heavy Mineral (THM) and initial mine life of 225 years<sup>1</sup>

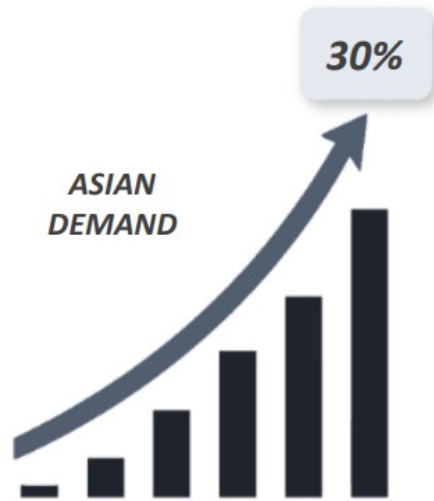
<sup>1</sup> "Building a significant Mineral Sands Business, Company Overview, Strandline Resources, November 2020"



# Why Salt and Potash

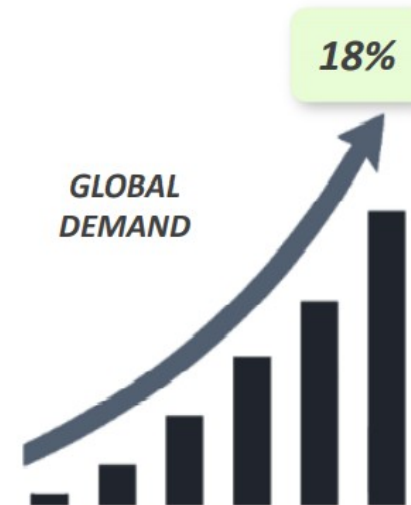
## SALT

- >10,000 products derived from salt (PVC, alumina, glass, paper, water purification)
- Asian market size of ~160Mtpa salt (annual value of US\$6.5B)
- >50Mtpa additional demand over next decade<sup>1</sup> – (growing population, requiring more industrial and consumer products)



## SOP<sup>2</sup> (Sulphate of Potash)

- Premium fertiliser used on high value crops
- Global market size of ~7Mtpa (annual value of ~US\$3.5B)
- ~1Mtpa additional demand over next decade<sup>3</sup> – (growing population, changing dietary habits and declining arable land)





# Western Australia's Salt and Potash Advantage

- Gascoyne and Pilbara has ideal climate to produce high purity salt
- High temperature, high wind, low rainfall and low humidity

Proven salt production region since the 1960's

- Five large WA Solar Salt Operations (12-13Mtpa), controlled by Rio Tinto and Mitsui No

new large Australian salt project in 20 years

- No current SOP production in Australia, other development projects all based on inland lake brines with >800km road transport to third party ports
- Carnarvon Basin Project will use an inexhaustible seawater resource to be concentrated through solar and wind evaporation to sustainably produce salt and potash ready to meet growing global demand

# Attractive Financials - Mardie

## BCI Minerals Mardie Salt and SOP Project<sup>1</sup>

- DFS released July 2020 confirmed Mardie can become a globally significant Tier 1 salt and sulphate of potash (SOP) project located equidistant between Onslow and Karratha on the Pilbara coast
- Attractive financial returns for more than 60 years, potentially making it one of the longest life projects developed in Australia for decades
- An inexhaustible seawater resource will be concentrated through solar and wind evaporation to sustainably produce 4.4 million tonnes per annum (Mtpa) of high purity sodium chloride (NaCl) salt and 120 thousand tonnes per annum (ktpa) of sulphate of potash (SOP or K<sub>2</sub>SO<sub>4</sub>) fertiliser for supply to the growing chemical and agricultural industries in Asia
- NPV of \$1,197M (pre-tax real), annual steady state EBITDA of \$197M, total revenue of \$22 billion and total net cash flow of \$10 billion over 60 years, with total capital cost of \$779M
- Expected attractive long-term salt and SOP prices based on strong demand growth in the Asian region
- Thirteen non-binding salt offtake memoranda of understanding (MOUs) and two SOP non-binding offtake MOUs secured with credible Asian buyers, accounting for 100% of Mardie's three-year salt production and 75% of five-year SOP production
- Benefits to Western Australia and Australia<sup>2</sup> include; Corporate taxes: >\$6Bn, State royalties: >\$600M, Native title payments >\$150M

<sup>1</sup> Developing the Multi-Generational Mardie Salt & Potash Project, Corporate Presentation, BCI Minerals Limited, November 2020

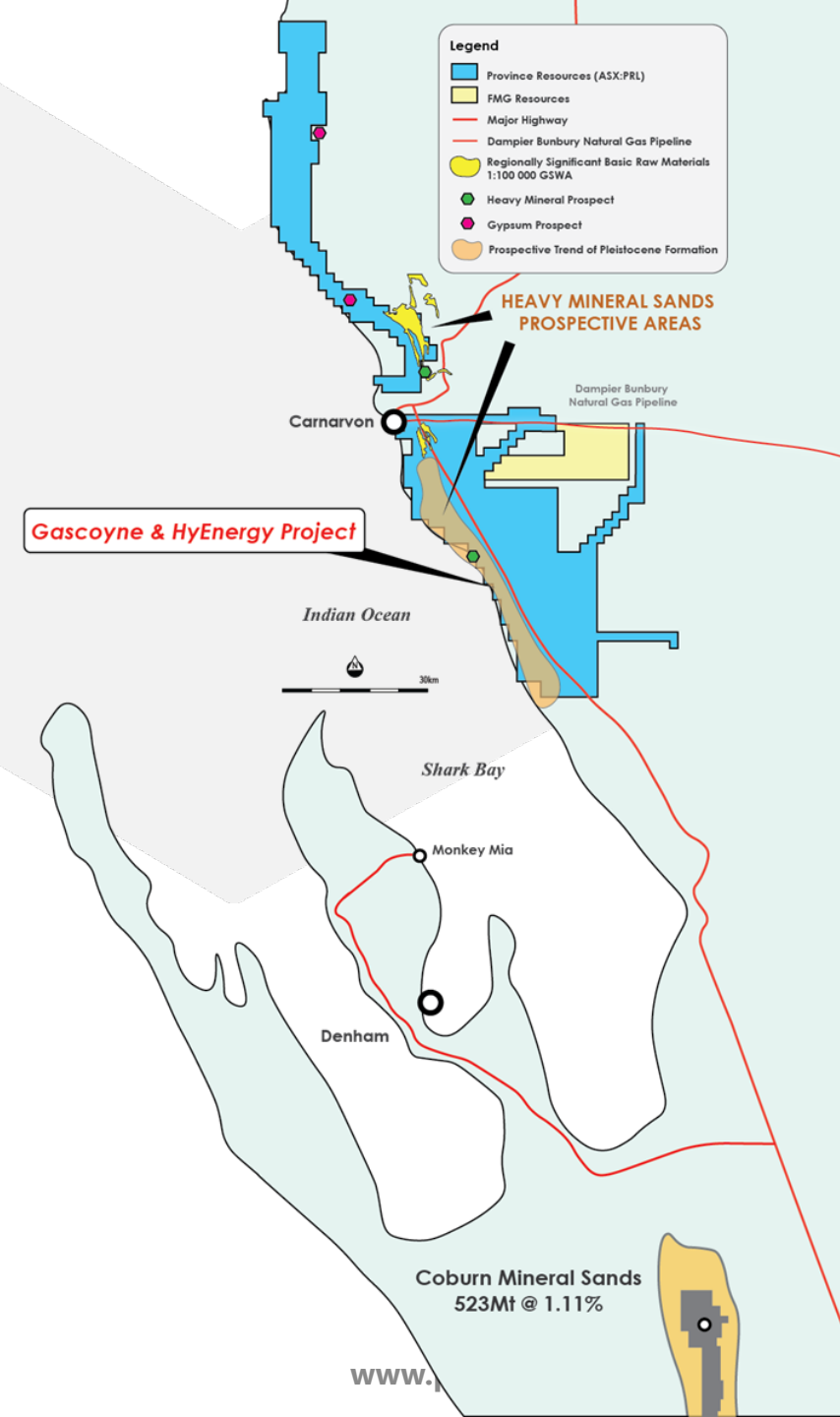
<sup>2</sup> NPV of value add to Northern Australian GRP over 60 years, as per KPMG Public Benefit Report (October 2020)

# Gascoyne Project - Heavy Minerals

- The region boasts the world class Coburn mineral sands deposit with an Ore Reserve of 523Mt @ 1.11% Total Heavy Mineral (THM) and initial mine life of 22.5 years<sup>1</sup>
- Regional aircore drilling nearby has confirmed the presence of commercially important heavy minerals in the northern Gascoyne coastal region<sup>2</sup>
- Limited historic work completed in the project area
- Heavy minerals, such as zircon, titanium dioxide minerals, garnet, sillimanite, kyanite, and staurolite, are eroded from their parent igneous or metamorphic rocks and are transported by water and/or wind action over long periods of geological time, often ending up in the same locations as placer deposits. Most of the commercially attractive mineral sand deposits occur along old coastlines, particularly where high energy wave action and strong winds have prevailed over long periods of time

<sup>1</sup> "Building a significant Mineral Sands Business, Company Overview, Strandline Resources, November 2020"

<sup>2</sup> WAMEX A29292, Gascoyne Mineral Sands Project, Annual report to WA Department of Mines, September 1989



# Global Mineral Sands Market

## Heavy Minerals (Zircon and Titanium)

- Zircon and high grade titanium feedstocks; producing products used in everyday life such as ceramic tiles, refractory, paint, titanium metal and welding rod applications
- Zircon is resistant to water, chemicals, heat and abrasion, ~1.1 million tonnes per annum global market TiO<sub>2</sub> pigment imparts whiteness, is UV resistant and inert, ~7.0 million tpa global market
- Increasing demand driven by urbanisation, rising living standards, global growth and extensive array of applications 'Critical Minerals', vital to the economic well-being of the world's major and emerging economies
- Supply restricted by mine closures, declining grades and depleting stockpiles. China chloride pigment consumption increasing, driven by higher environmental standards and technology advancement
- Strong long-term market fundamentals -demand growth outpacing supply, new projects required to meet future demand
- Forecast structural supply gap, with demand for zircon increasing year on-year at 2.5-3.0% pa and existing production decreasing at average of 5% pa<sup>1</sup>

<sup>1</sup> TZ Minerals International, Global Zircon Supply/Demand Balance to 2035 (February 2020)



# Attractive Financials - Coburn

## Strandline Resources Coburn Mineral Sands Project<sup>1</sup>

- DFS released June 2020 confirmed the strong outlook for the Coburn mineral sands project. High margins and strong, long-term cash flows are the result of low operating costs and an exceptional, high-value zircon and titanium product suite
- Large Ore Reserve of 523Mt @ 1.11% Total Heavy Mineral (THM) underpins an initial mine life of 22.5 years at the planned mining rate of 23.4Mtpa of ore. First ore delivered to process facilities ~78 weeks after project development commences
- Pre-tax (real) NPV of A\$705 million and IRR% of 37%, with total capital expenditure estimated to be A\$260 million
- Experts forecast attractive long-term Zircon and Titanium prices based on strong demand growth in the Asian region
- Binding offtake agreements have been secured with major global consumers for 66% of revenue for the first 5-7 years, with further offtakes pending
- The project is a long life, multi decade operation and will generate a host of socio-economic benefits including capital inflows to regional Australia, significant job creation, indigenous engagement, training and job diversity as well local business opportunities and community partnership programs

<sup>1</sup> "Building a significant Mineral Sands Business, Company Overview, Strandline Resources, November 2020"

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**PROVINCE**  
RESOURCES LIMITED

  
**HyENERGY**  
ZERO CARBON HYDROGEN™



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**Suite 8, 110 Hay Street, SUBIACO WA 6008**

**www.province resources.com.au**

# Appendix

"The potential to export clean hydrogen is substantial, with the International Energy Agency and the World Energy Council both identifying Australia as a potential hydrogen production powerhouse. We can become a leader in the new industry I call 'shipping sunshine', with our hydrogen exports being additional to our other energy exports."

**Dr Alan Finkel AO**  
*Australia's Chief Scientist  
Chair, COAG Energy Council  
Hydrogen Working Group  
22 November 2019*



# COMPANY CAPITAL STRUCTURE

ASX security code and description	Total number of securities on issue
PRL Ordinary Shares	976,609,811

Type of Security	Total number of securities on issue		
Options	29,830,000	Exercise Price	Expiry Date
Options	16,500,000	\$0.04	13 November 2022
		\$0.016	21 January 2024
Performance Shares	56,250,000 <sup>(1)</sup>		
	50,000,000 <sup>(2)</sup>		
Performance Rights	22,500,000 <sup>(3)</sup>		

<sup>(1)</sup> Performance shares issued in connection with the acquisition of ScandiVanadium Australia Pty Ltd ACN 626 278 153 and re-listing of the Company on ASX in November 2018.

Shares to be issued to the Scandivanadium Vendors, the conversion of which into ordinary shares is subject to and conditional upon the following event occurring, within the time limit set out below (**Milestone**):

(i) Performance Milestone

Upon publication of a pre-feasibility study demonstrating the viability of a proposed mine at the Skane Project.

<sup>(2)</sup> Performance shares issued in connection with the acquisition of Ozexco Pty Ltd ACN 641 816 971.

Shares to be issued in three (3) tranches to the Ozexco Vendors, the conversion of which into ordinary shares is subject to and conditional upon the following events occurring (in broad terms), within the time limits set out below (each a **Milestone**):

(i) **Class A Performance Shares – 16,666,666**

Upon the Company announcing to ASX completion of a positive scoping study in relation to the Ozexco Project, to the reasonable satisfaction of the Independent Directors of the Company, as evidenced by a decision to proceed to a prefeasibility study on the project, within 18 months of the date of issue of the Class A Performance Shares.

(ii) **Class B Performance Shares – 16,666,667**

Upon the Company announcing to ASX completion of a positive preliminary feasibility study in relation to the Ozexco Project (**PFS**) which demonstrates a net present value for the Ozexco Project of at least \$500 million or with an internal rate of return of at least 25% (in each case using a 10% discount rate), within 30 months of the date of issue of the Class B Performance Shares.

(iii) **Class C Performance Shares – 16,666,667**

Upon the Company announcing that it has:

- (A) secured an offtake partner for a minimum of 30% of production proposed under the PFS; or
- (B) outright sale of the Ozexco Project for a value of at least \$100 million, within 42 months of the date of issue of the Class B Performance Shares, (together, the **Performance Shares**)

<sup>(3)</sup> Performance Rights have the same vesting milestones as **Performance Shares**<sup>(2)</sup>



# Hydrogen Colour Spectrum

## GREEN

Produced by electrolysis of water, using electricity from renewable sources like hydropower, wind and solar. Zero Carbon emissions are produced.

## GREY

Produced using fossil fuels such as natural gas. This accounts for roughly 95% of the hydrogen produced in the world today.

## BROWN

Extracted from fossil fuels and created through coal gasification.

## BLUE

Grey or brown hydrogen with CO<sub>2</sub> sequestered or repurposed.

## PINK

Obtained by electrolysis through an atomic current using nuclear power.

## YELLOW

Made through electrolysis with solar power.

## WHITE

Produced as a by-product of industrial process.

## TURQUOISE

Produced from natural gas using the molten metal pyrolysis technology.

H<sub>2</sub>  
HYDROGEN

# ARENA - Accelerating Renewable Green Hydrogen

What do we look for in hydrogen energy projects

- Feasibility studies for projects involving 100+ MW electrolysers
- Commercial-scale deployments involving 10-40+ MW electrolysers focused on industries and applications with large potential demand for hydrogen (eg, ammonia production, power to gas, etc.) to drive the commercialisation of key component technologies
- Demonstration-scale projects involving 1-10 MW electrolysers demonstrating new applications such as transport or remote area power systems with onsite hydrogen production and fuel cells/turbines replacing diesel generation, to drive the commercialisation for key component technologies
- Projects or activities that support the implementation of the National Hydrogen Strategy
- Projects that demonstrate or address issues with the use of hydrogen in industrial processes currently using fossil fuels (eg, hydrogen as a fuel in boilers, kilns or other process heating applications, hydrogen as a reducing agent in steel manufacture).



# WA Projects Attracting Funding

## Renewable Hydrogen Fund

The WA Government's initial \$10 million Renewable Hydrogen Fund will drive a new job-creating industry harnessing the state's renewable resources.

### 1. Ord Hydrogen Feasibility Study

Feasibility study for hydrogen production facility near Kununurra utilising existing hydro generation.

**Applicant:** Pacific Hydro Australia Developments  
**Grant amount:** \$370,000

### 2. Hyer Penetration

Feasibility study for the integration of renewable hydrogen production with isolated power stations.

**Applicant:** Energy Developments Limited  
**Grant amount:** \$370,000

### 3. Hybrid PV-Battery-Hydrogen System for Microgrids

Feasibility study for 100% renewable energy standalone power system for an indigenous community in the Pilbara.

**Applicant:** Murdoch University  
**Grant amount:** \$75,000

### 4. Christmas Creek Renewable Hydrogen Mobility Project

This project will develop and deploy onsite renewable hydrogen generation (via electrolysis) and refuelling infrastructure to support a fleet of fuel cell coaches at Fortescue's Christmas Creek mine.

**Applicant:** Fortescue Future Industries  
**Grant amount:** \$2 million

### 5. Denham Hydrogen Microgrid Demonstration Project

This pilot project will test and demonstrate the suitability of hydrogen generation in Horizon Power's systems, before executing a full renewable system.

**Applicant:** Horizon Power  
**Grant amount:** \$1 million

### 6. Preparing the Dampier to Bunbury Natural Gas Pipeline for Hydrogen

Feasibility study examining the compatibility of the transmission pipeline with blended hydrogen.

**Applicant:** DBNGP (WA) Nominees  
**Grant amount:** \$216,000

### 7. Clean Energy Innovation Park

Feasibility study for a 10 MW electrolysis hydrogen production plant.

**Applicant:** ATCO Gas Australia  
**Grant amount:** \$375,000

### 8. Green Hydrogen for the City of Cockburn

Feasibility study for solar hydrogen production for waste collection and light vehicle fleets.

**Applicant:** City of Cockburn  
**Grant amount:** \$149,000

### 9. Hydrogen Refueller Station

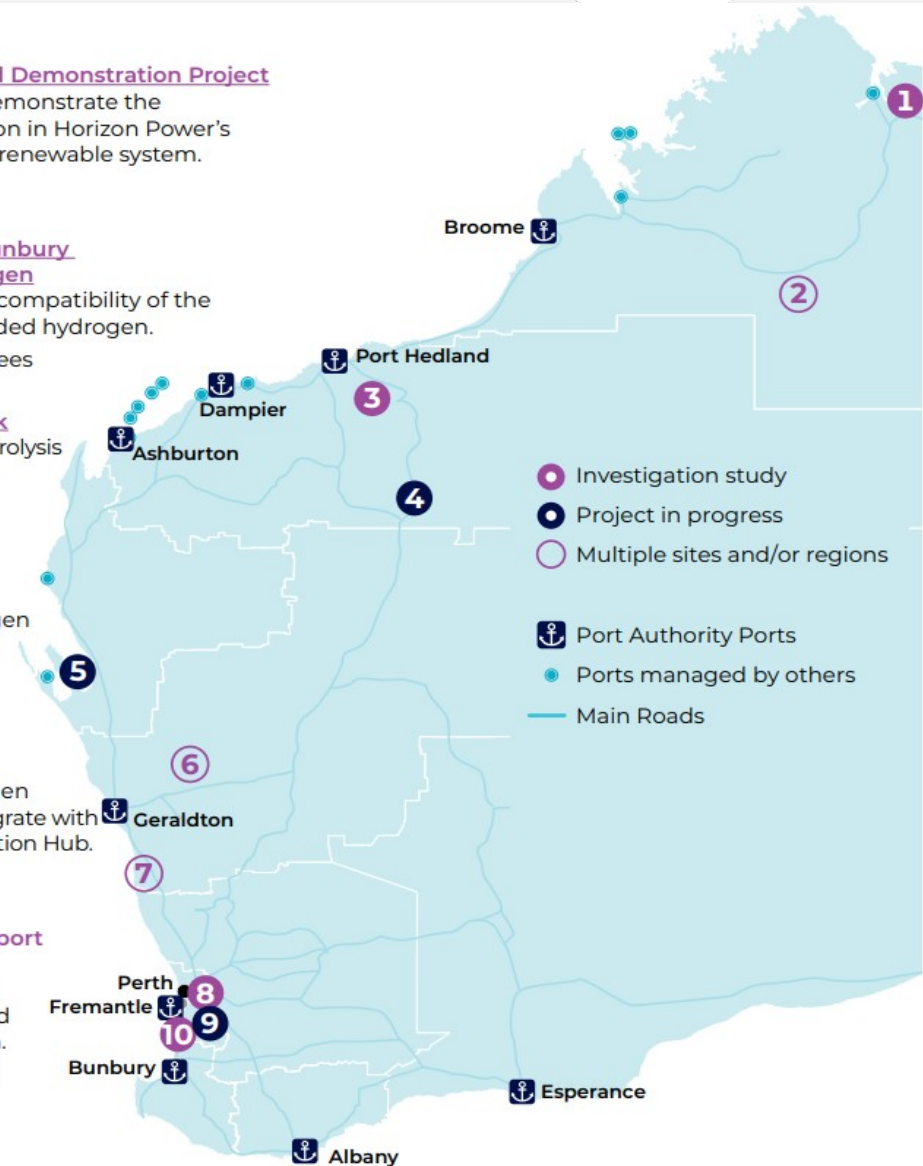
This project will deliver a hydrogen refuelling station in Perth to integrate with the existing Clean Energy Innovation Hub.

**Applicant:** ATCO Gas Australia  
**Grant amount:** \$1 million

### 10. Renewable Hydrogen Transport Hub in the City of Mandurah

Feasibility study for a hydrogen refuelling infrastructure hub and associated transport application.

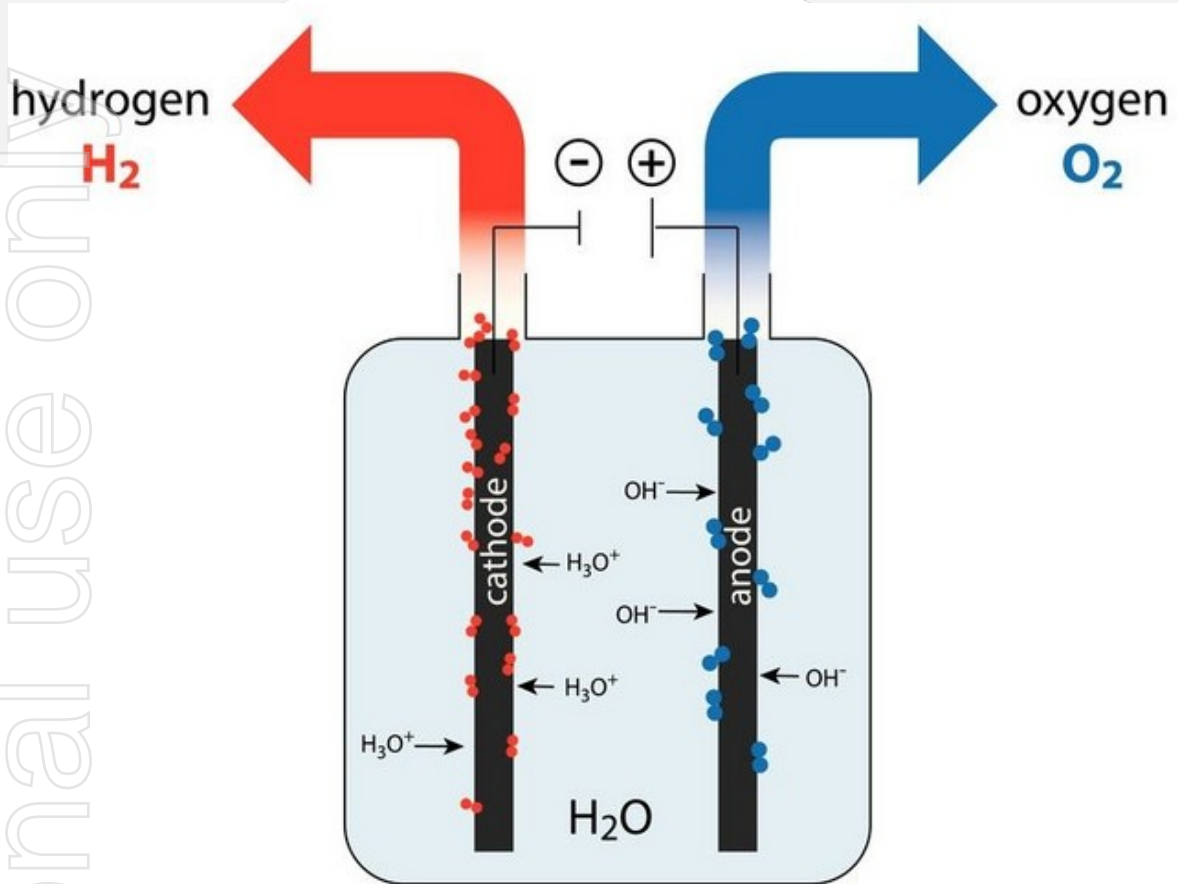
**Applicant:** Hazer Group Limited  
**Grant amount:** \$250,000



Personal use only



# Water Electrolysis – How It Works?



In a water electrolysis plant, electricity is passed through water, thereby initiating the splitting of the water molecules into their two components, hydrogen and oxygen.

Oxygen accumulates at the positive (anode) pole, rises and escapes into the atmosphere. Hydrogen accumulates at the negative (cathode) pole, from where it can be captured and stored.



# How Much Hydrogen Is That?



**1 kg** of hydrogen is enough to travel up to **100 km** in a **Hyundai Nexo**



Travelling in a **Hyundai Santa Fe** uses **7.5 L** of diesel or **9.3 L** of petrol



Driving a **Hyundai Nexo** compared to a diesel **Hyundai Santa Fe** avoids **0.2 kg CO<sub>2</sub>-e / km** driven or **20 kg CO<sub>2</sub>-e per kilogram** of hydrogen used



**1 kg** of hydrogen in a fuel cell could power a **1,400 watt** electric split-cycle air conditioner for **14.5 hours**

Replacing Australian grid electricity with electricity from **hydrogen** avoids **0.75 kg CO<sub>2</sub>-e / kWh**, or **15 kg CO<sub>2</sub>-e per kilogram** of hydrogen used



**1 tonne** of **hydrogen** is equivalent to around **3.4 times** the average annual consumption of an Australian house with **gas heating**



Replacing **natural gas** with **hydrogen** avoids **0.052 tonnes CO<sub>2</sub>-e / GJ** of **natural gas** or **6.2 tonnes CO<sub>2</sub>-e per tonne** of **hydrogen**

# Hydrogen Fuel Cell – How It Works?

- A fuel cell is an electrochemical energy conversion drive – it utilises hydrogen and oxygen to generate electricity, heat and water.

1

The hydrogen atoms enter at the anode.

2

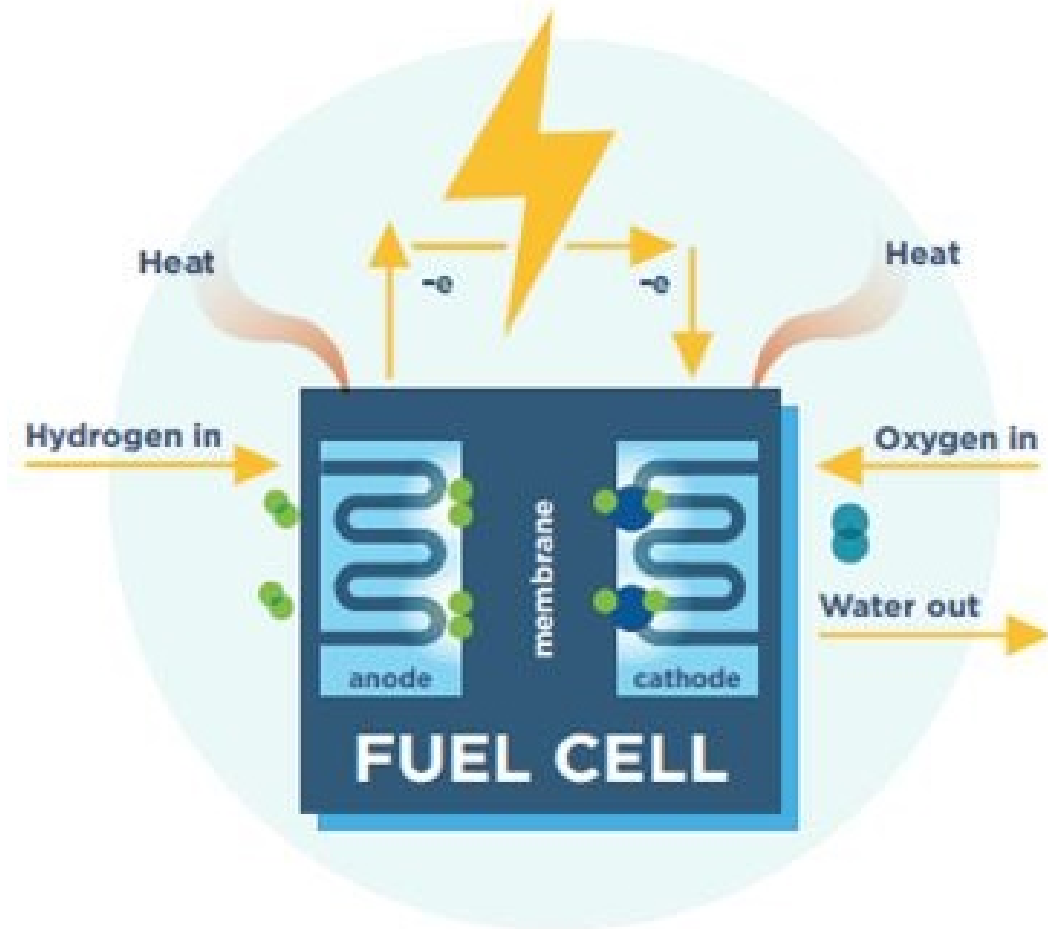
The atoms are stripped of their electrons in the anode.

3

The positively charged protons pass through the membrane to the cathode and the negatively charged electrons are forced through a circuit, generating electricity.

4

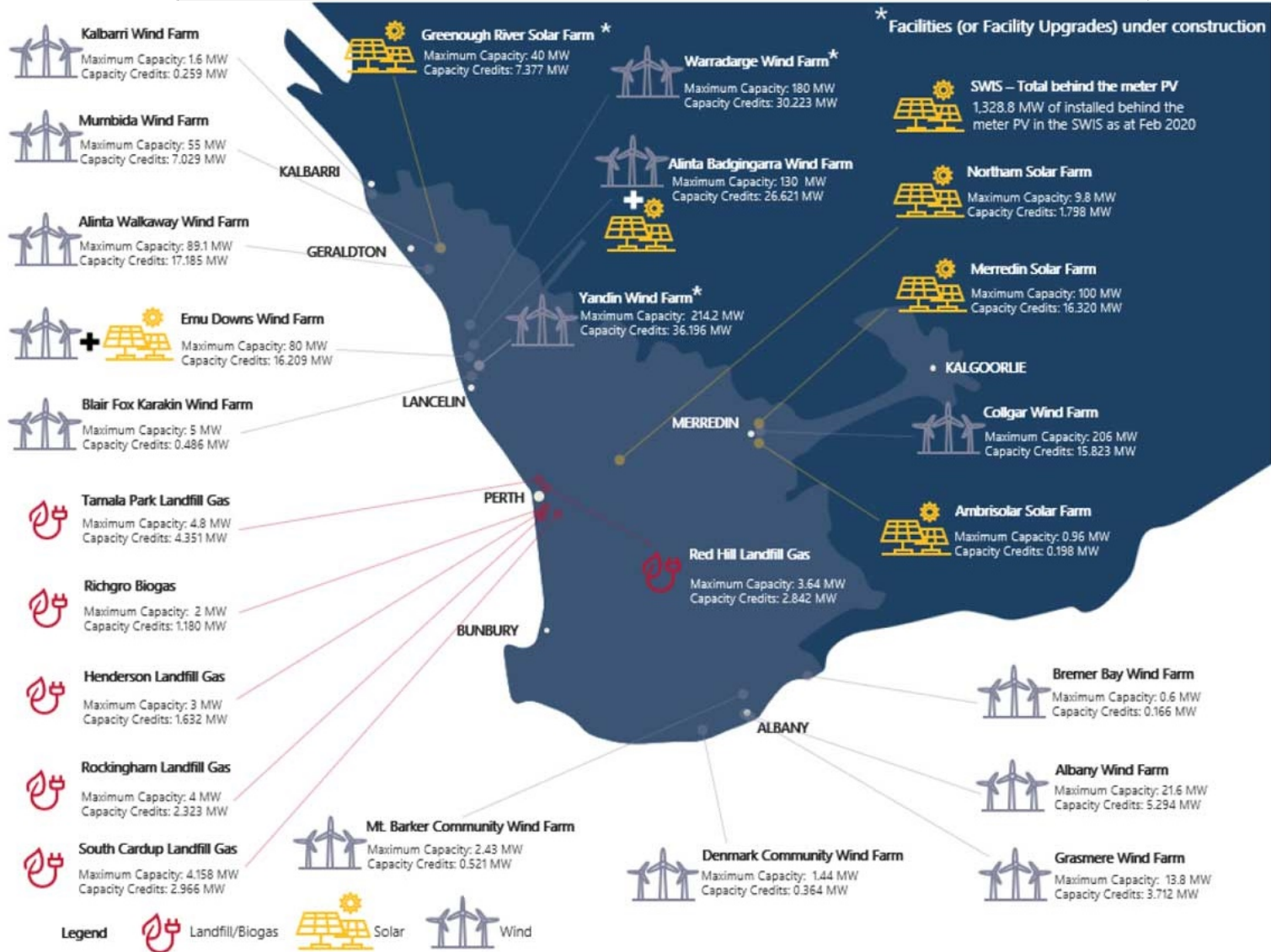
After passing through the circuit, the electrons combine with the protons and oxygen from the air to generate the fuel cell's byproducts: water and heat.



Source: Fuel Cell & Hydrogen Energy Association

PROVINCE RESOURCES

# Non-Schedule Generation Map



Non-scheduled generators map for the SWIS, 2021-22

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