Building a Central Queensland renewable hydrogen powerhouse

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About Stanwell

Stanwell is a Queensland Government owned energy company.

We are a major provider of electricity to Queensland, the National Electricity Market and our large commercial and industrial customers.

We own and operate Stanwell Power Station, west of Rockhampton, and the Tarong power stations and Meandu Mine near Kingaroy.

While providing reliable and affordable energy for today, we are also building a diversified portfolio of new generation and storage technologies that will help reduce emissions for tomorrow.

Our hydrogen journey

Feasibility study: 10 MW H_2 electrolysis demonstration plant

July 2019 – October 2020

- 10 MW hydrogen demonstration plant at Stanwell Power Station

Study received funding from ARENA as part of ARENA's Advancing Renewables Program

Concept study: hydrogen at scale in Central Queensland

July 2020 – October 2020

- investigation into the potential for developing a large-scale renewable hydrogen industry in Central Queensland

Study received funding from ARENA as part of ARENA's Advancing Renewables Program

Joint planning study with Iwatani Corporation: CQ-H_2 project

November 2020 – August 2021

- planning for a proposed large-scale renewable hydrogen export facility in Gladstone

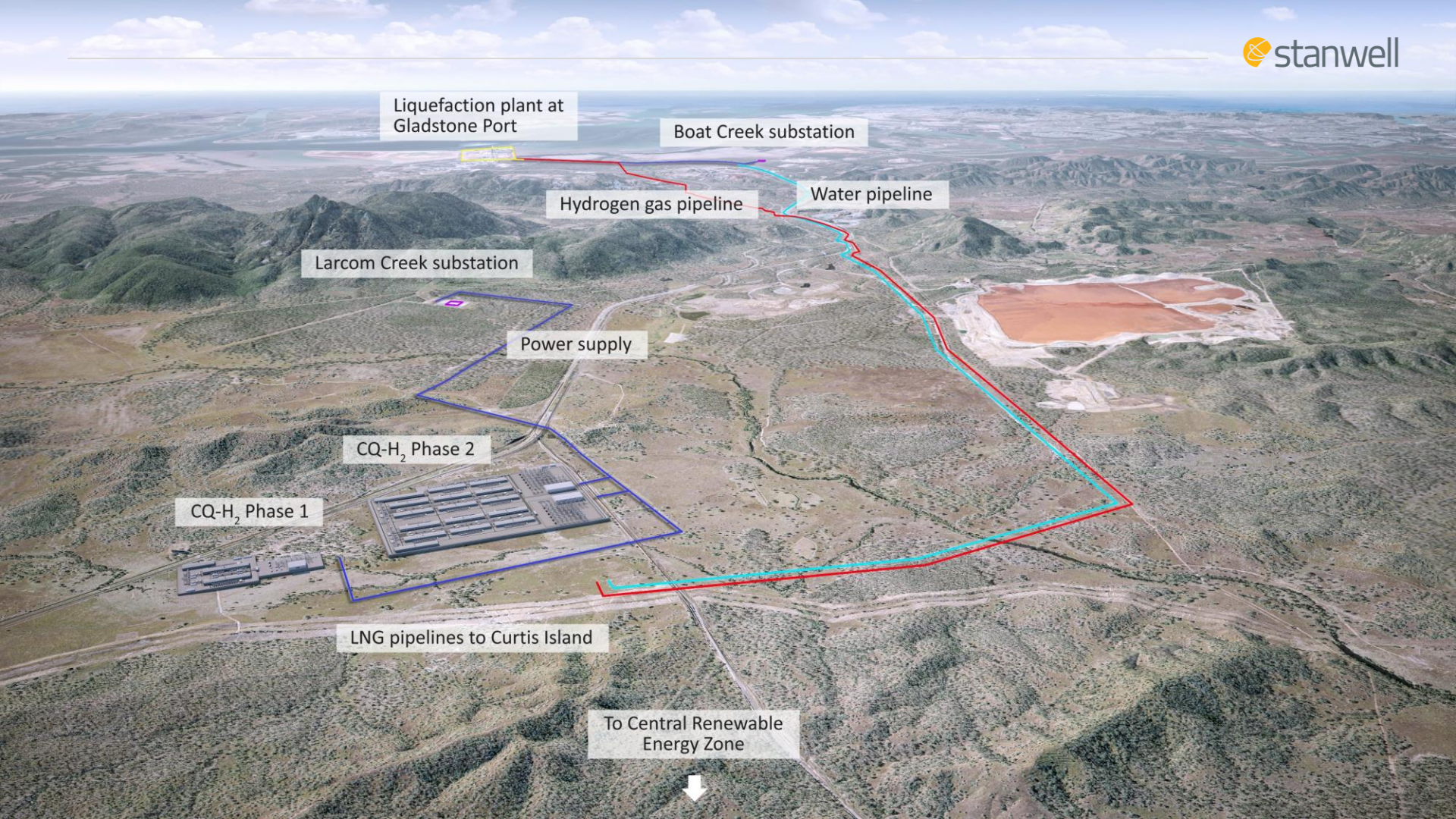
Joint feasibility study with Consortium: CQ-H_2 project

September 2021 – ongoing

- Detailed feasibility study into the development of a large-scale renewable hydrogen project in Gladstone

Study has received confirmation of funding from ARENA and METI

- Hydrogen industry participation
- Pathway to net zero carbon emissions
- Central Queensland as a renewable hydrogen hub
- High quality jobs
- Local manufacturing opportunities
- Integrated supply chain between CQ and Japan
- Target hydrogen pricing set by off-takers


Liquefaction plant at Gladstone Port
Boat Creek substation
Hydrogen gas pipeline
Water pipeline
Larcom Creek substation
Power supply
CQ-H2 Phase 2
CQ-H2 Phase 1
LNG pipelines to Curtis Island
To Central Renewable Energy Zone

Scale of the CQ-H_2 opportunity in context

	Phase 1 2026	Phase 1+2 2030	Phase 1+2+3 2030+	2030 Japan Target*
				3 million tpa
H_2	36,500 tpa 330 MW	330,000 tpa 3,500 MW	~600,000-800,000 tpa ~6,500-8,000 MW	
	1,080 MW	9,000 MW	~20,000 MW	

Stanwell – Iwatani consortium project

Theoretical maximum based on Fitzroy and Isaac REZ capacity in 2020 ISP

*Japanese 2030 target for green hydrogen and ammonia

2050 Global H_2 Demand
90-300 million tpa

Source: Deloitte Access Economics, National Hydrogen Strategy

Consortium: strategic partnerships across the supply chain

The consortium members have a unique mix of competitive advantages to harness the commercial and strategic potential of this opportunity. An MOU was executed between the parties in mid September 2021.

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apa

Kawasaki

Marubeni

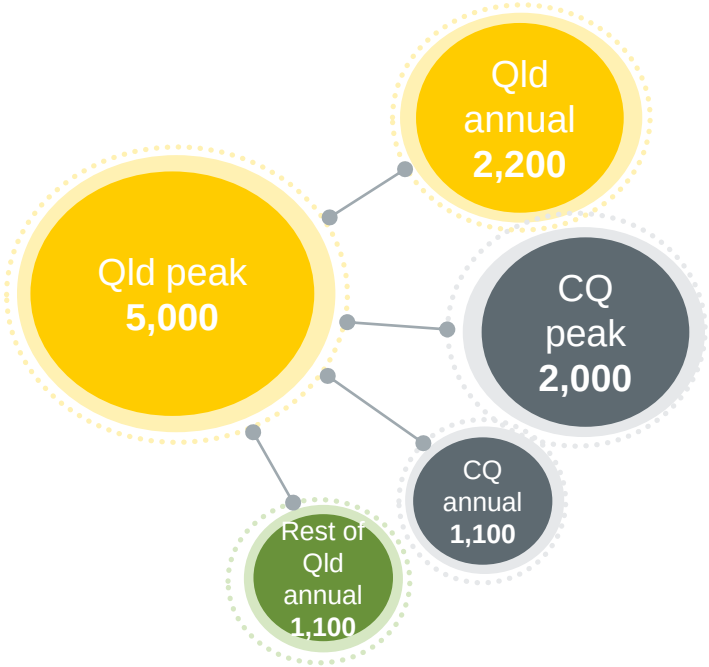
Kansai Electric Power

power with heart

Iwatani

The hydrogen opportunity

Employment impacts, FTEs



Total economic impacts

$7.9b
Additional Central Queensland GRP

$4.2b
Total value of hydrogen exports

$10b
Additional Queensland GSP

Challenges and opportunities

Water availability

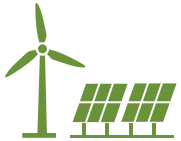
Increase water availability

- Phase 1 water requirements to be met from existing supplies
- Phase 2 will require new supply solutions
- Other water options
- Water re-use and disposal approach

Skills

Develop workforce / skills working with universities, projects and unions

- Technical skills and capability
- Timing of skills delivery
- Operations and Manufacturing
- Legislation and Regulation
- Redeployment and re-training



Energy

Facilitate expansion of renewable energy capacity

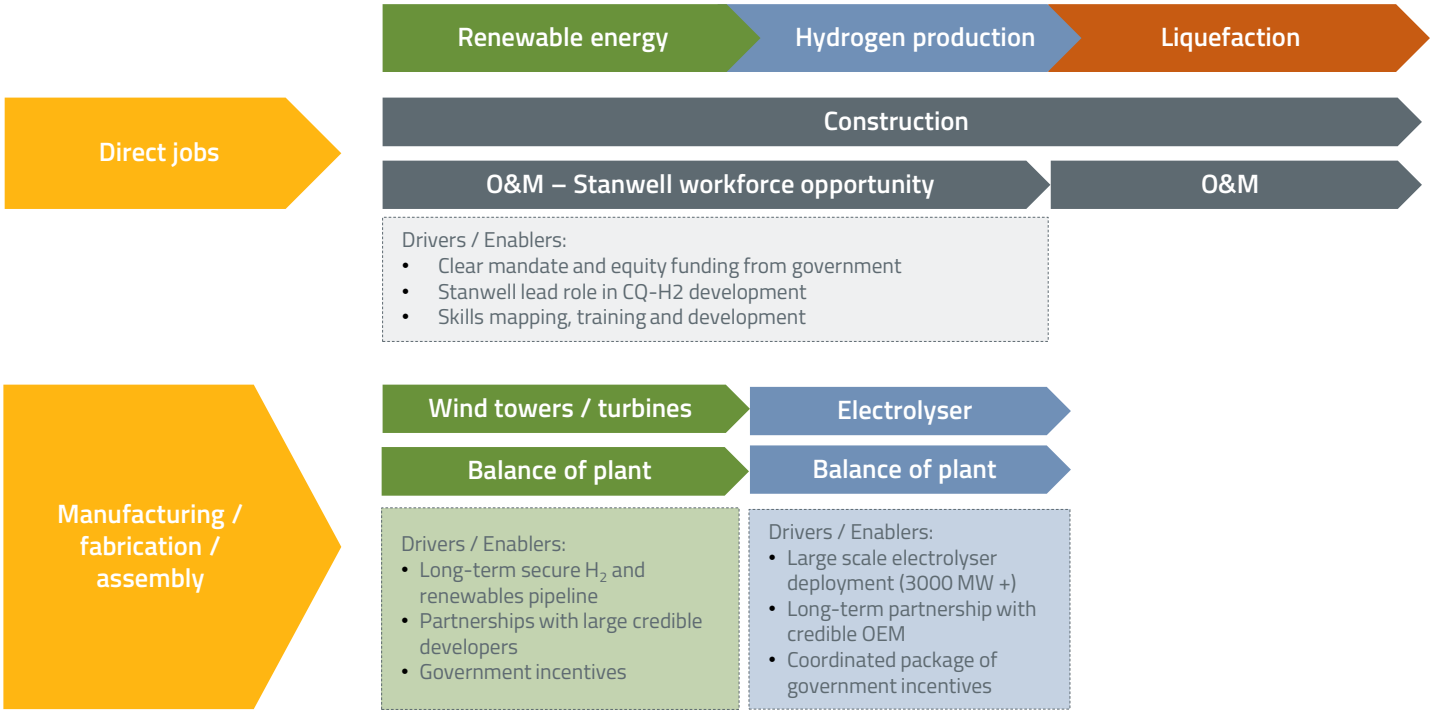
- Phase 1 renewable energy (~1,000 MW) and transmission infrastructure to align to project timing to maximise scale and minimise cost
- Phase 2 CQ-REZ needs to be developed

Social impact

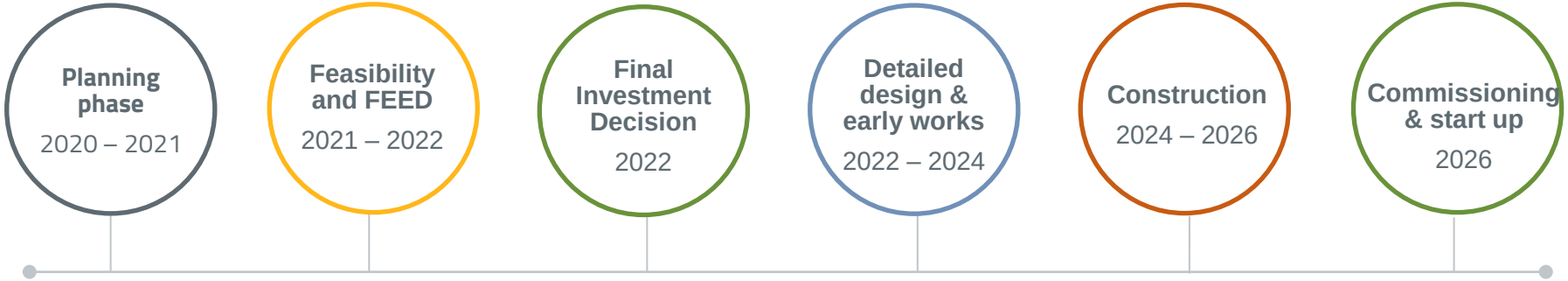
Maximise local content and manufacturing

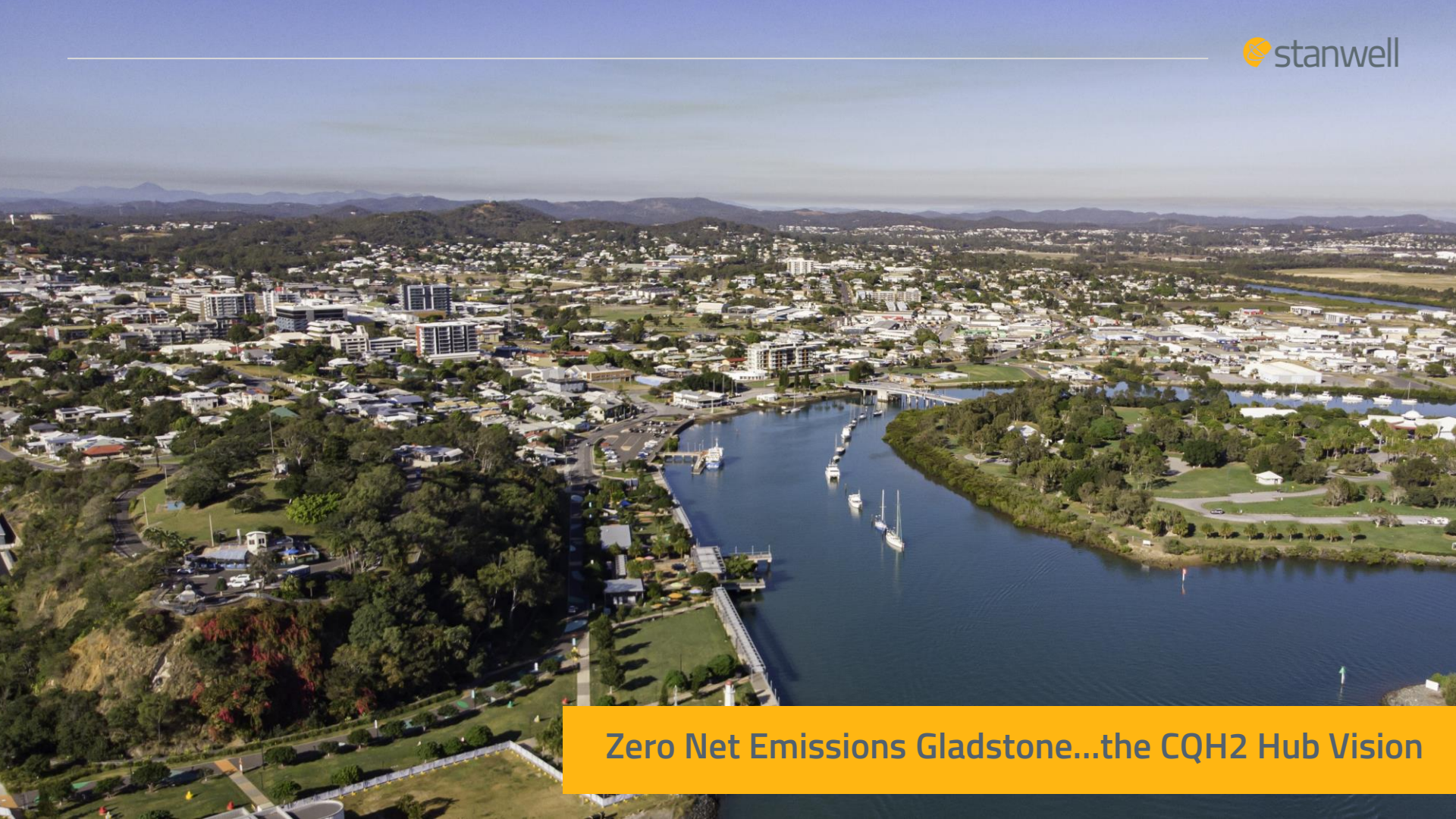
- Local manufacture of main and auxiliary plant
- Opportunity for export once skills are developed locally
- Incentives for business to set up locally
- Skills and adaptability

Large-scale, long-term pipeline will drive the CQ jobs and manufacturing opportunity



Next steps: pathway to exporting renewable energy from Queensland





Zero Net Emissions Gladstone…the CQH2 Hub Vision

Clean Hydrogen Industrial Hubs program

- The Australian Government is investing $464 million in hydrogen hubs as part of its $1.2 billion commitment towards building a hydrogen industry.
- The grant program provides up to $70 million towards the roll-out of projects (Hub Implementation Grants).
- Seven (7) priority prospective hub regions have been identified:
  - Bell Bay, Tasmania
  - Pilbara, Western Australia
  - La Trobe Valley, Victoria
  - Eyre Peninsula (Whyalla), South Australia
  - Hunter Valley, New South Wales
  - Darwin, Northern Territory
  - **Gladstone, Queensland**

CQ Hydrogen Alliance hub funding application

- ✓ Brings together **key players** who will be vital for the development of the hydrogen ecosystem in Australia.
- ✓ Focusses, in the short term, on implementing key projects to deliver **hydrogen for domestic use for households, industrials and mobility** establishing social acceptance and critical learnings for scaling hydrogen production.
- ✓ Puts in place key foundational building blocks in the **supply chain for the export of hydrogen** anticipated to commence post 2026 by establishing common user infrastructure such as hydrogen pipelines, water production and port facilities.
- ✓ Establishes key relationships between the University and industry to **build skilling pathways and research eminence** through collaboration with global research expertise to ensure that Gladstone is built on the best global technological innovation.
- ✓ Commits to including the community from the outset to ensure that benefits are shared through **employment and integration of community values** and strengths.

Gladstone / Central Queensland is the most prospective Queensland region for hydrogen development due to its infrastructure and potential for aggregated domestic and export demand.

Queensland Government support will be critical to Central Queensland being selected as a national hydrogen hub.

Hub applicants

ARDENT UNDERGROUND HYDROGEN STORAGE

Australian Gas Infrastructure Group

CQUniversity AUSTRALIA

ENEOS

GEA
GLADSTONE ENGINEERING ALLIANCE INC

GPC Gladstone Ports Corporation

GLADSTONE REGIONAL COUNCIL

origin

Queensland Government

RioTinto

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Sumitomo Australia Pty Ltd

Queensland Government

TRADE + INVESTMENT QUEENSLAND

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