



Leading the Energy Transition through delivering Low-cost, Clean Ammonia to Korea

Australia-Korea Business Council

Critical Minerals and New Energy Forum

Sydney - 30 October 2023

PILOT ENERGY LIMITED
ASX:PGY



Compliance Statements



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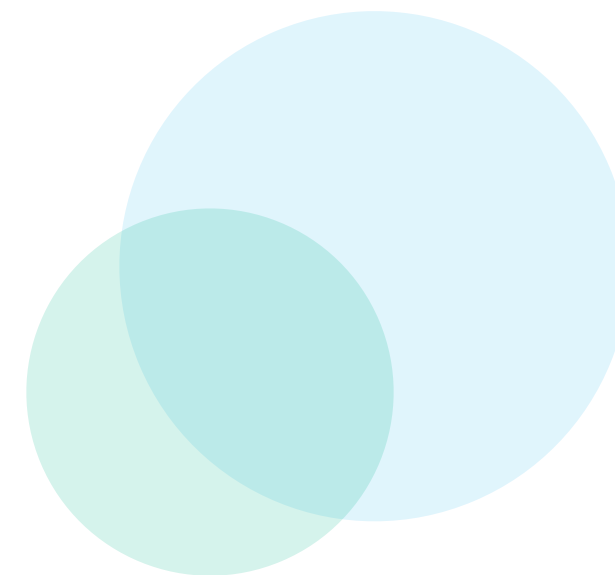
This announcement contains information on conventional petroleum and CO₂ Storage resources which is based on and fairly represents information and supporting documentation reviewed by Dr Xingjin Wang, a Petroleum Engineer with over 30 years’ experience and a Master in Petroleum Engineering from the University of New South Wales and a PhD in applied Geology from the University of New South Wales. Dr Wang is an active member of the SPE and PESA and is qualified in accordance with ASX listing rule 5.1. He is a former Director of Pilot Energy Ltd and has consented to the inclusion of this information in the form and context to which it appears.

Authorisation

This presentation has been authorized by the Chairman and Managing Director on behalf of the Board of Directors of Pilot Energy Limited

Mid West Renewable Energy Reporting Conditions

Pilot has agreed to certain conditions with the ASX in respect its renewable energy activities in relation to nature of activities and expenditure limits. Proceeding beyond the conditions will constitute a change in the nature and scale of the Company’s activities in terms of Listing Rule 11.1 and as such the Company will be required to comply with all of the requirements of Chapters 1 and 2 of the Listing Rules before it proceeds beyond the agreed limits.



Key messages



Mid West Clean Energy Project an integrated CO₂ storage to Clean Ammonia export project

- Pilot is a producing oil and gas company *transitioning to produce Clean Ammonia supported by permanent CO₂ storage*
- The Mid West Clean Energy Project (MWCEP) is Pilot's *flagship clean energy transition Clean Ammonia production* project
- Existing operations are *ideal for transitioning to low-cost Clean Ammonia production* with full carbon capture
- Pilot has signed *MOU with Samsung C&T as cornerstone JV project development partner* and Clean Ammonia customer
- Targeting production of *1 million tpa of low-cost Clean Ammonia for export to Korea* from late 2027/early 2028
- Clean ammonia production will have *ultra-low carbon-intensity* substantially beating EU, Japan, Korea & US standards
- Low-cost, low carbon-intensity Clean Ammonia production is made possible through *integrated CO₂ capture and storage*
- Significant *potential to increase both Clean Ammonia production and CO₂ storage capacity* through additional development
- Aiming to increase *low-cost Clean Ammonia production to up to 3 million tpa*

2023 Hydrogen Levelized Cost Update



Cost of capital and inflation take hold

Adithya Bhashyam

July 10, 2023

BloombergNEF

Drivers of low-cost Hydrogen – the Bloomberg NEF view*



The key inputs for both blue and green Hydrogen

Blue*

Natural gas prices

The lower the gas price, the lower the LCOH₂ for blue hydrogen. In Australia, the location of the project can be a key determinant of gas price.

Power prices

The lower the power costs, the lower the LCOH₂.
Connecting to the grid vs behind the meter.

Technology selection

ATR has slightly lower capital costs when high rates of CO₂ capture is required, and ATR also uses less natural gas. However, ATR uses more electricity.

CCS costs

CCS costs are driven by electricity and natural gas prices and accessibility of storage facilities/infrastructure.

Green*

Capacity factors

Higher capacity factors lead to lower LCOH₂.
Projects with both solar and wind can increase overall capacity factor which increases electrolyser efficiency.

Power prices

The lower the power costs, the lower the LCOH₂.
Connecting to the grid vs behind the meter.

Technology selection - electrolysers

Currently, Chinese alkaline electrolysers are the cheapest on market but is difficult to procure and has long lead times.

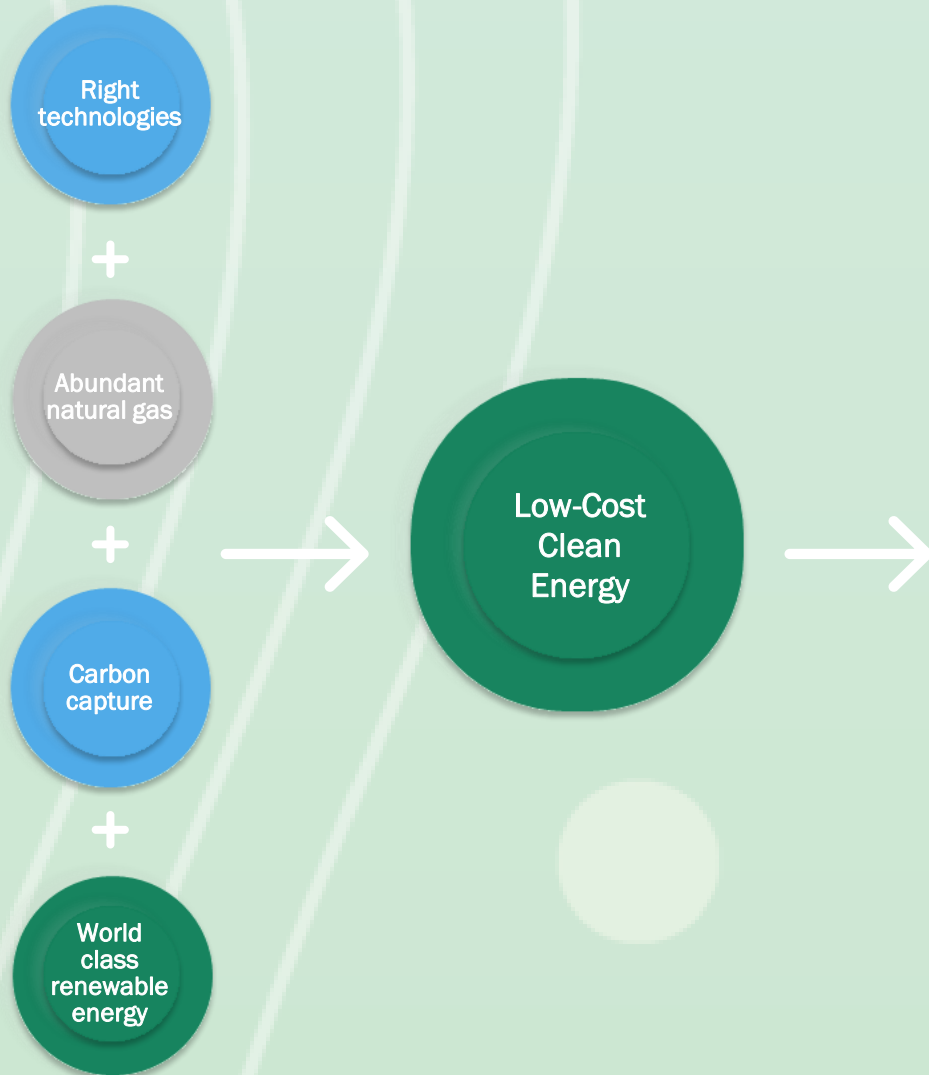
Western alkaline electrolysers are a more costly alternative to Chinese Electrolysers.

Proton exchange membrane electrolysis is a newer technology and currently the most expensive.

*Source: Bloomberg New Energy Finance Report 2023 Hydrogen Levelized Cost Update: Cost of Capital and inflation take hold, July 10, 2023

Strategy

Deliver low-cost clean energy by building off natural competitive advantages



Western Australia - a natural partner of production and supply of Clean Ammonia



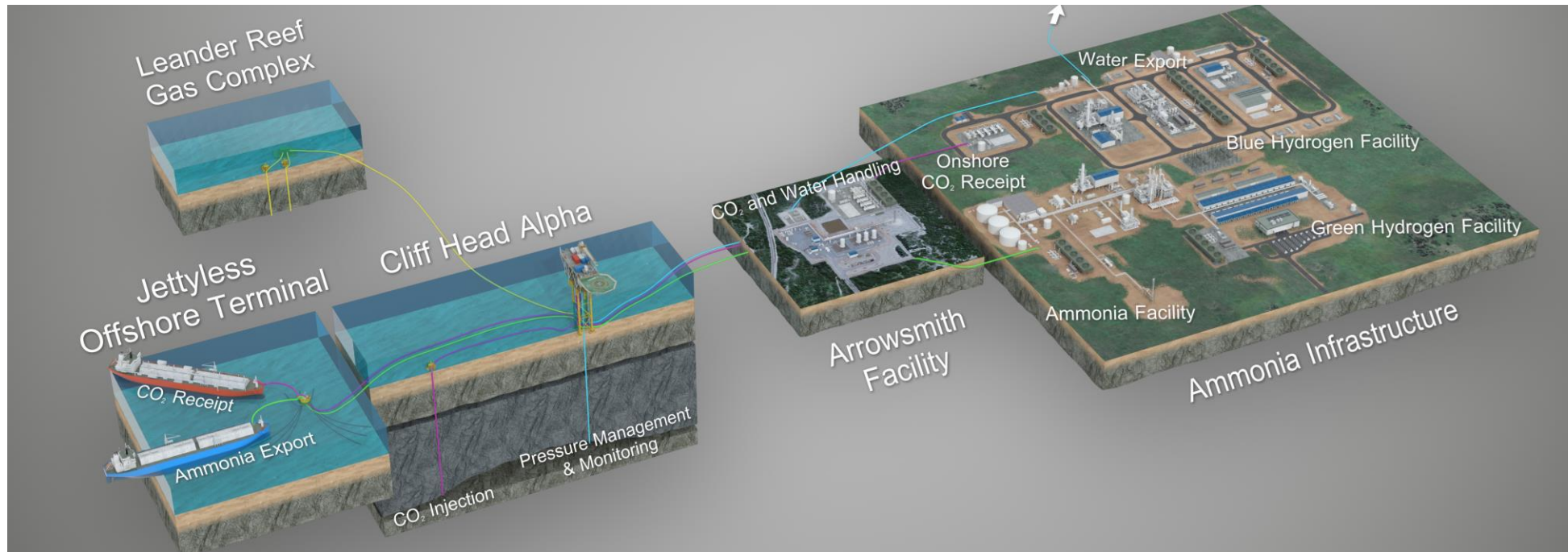
Australia
Western, South, Queensland, Tasmania etc.

- Natural gas
- Renewables
- Mid West Clean Energy Project

The Four Pillars - Building from a firm foundation

The Deliverables - Clean, Low-Cost and Achievable

Mid West Clean Energy Project



A Clean Ammonia export project with full carbon capture through integrated CCS

Carbon Storage

Timing: ~2026

- Conversion of Cliff Head Offshore oil field to CCS
- Permanent CO₂ storage in depleted offshore oil field
- Offshore facilities to include direct offshore LCO₂ receipt capability
- Over 1 million tpa CO₂ injection to third parties from 2026
- Targeting continuous CO₂ injection through to 2050

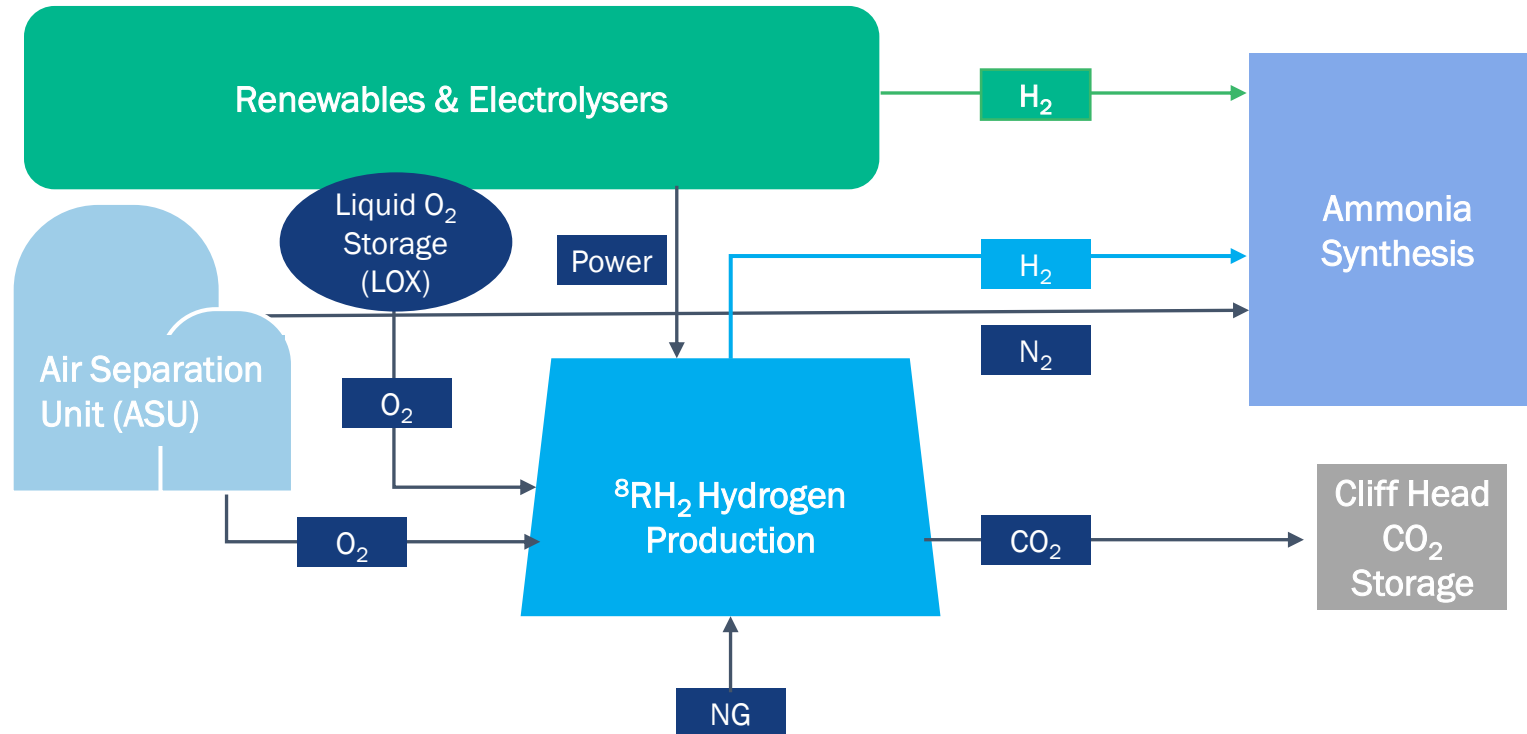
Clean Ammonia Production

Timing: ~2027/2028

- Targeting Clean Ammonia production of over 1 million tpa
- Clean Ammonia produced from combined Blue & Green Hydrogen Plant
- Blue H₂ with full carbon capture through integrated Cliff Head CCS
- Green H₂ from self-sourced industrial water supply + low-cost, behind-the-meter renewables
- Estimated levelized cost of ammonia (LCOA) of A\$400/tonne

Pillar 1 - The right technologies

Unique integration of CCS, renewables and proprietary technology enables production of low-cost Clean Ammonia



Integration of CCS and low-cost renewables through 8 Rivers technology delivers clean cost-competitive power, Hydrogen and Ammonia

8 Rivers ⁸RH₂ technology

- Proven technology
- High hydrogen production efficiency while requiring minimal capital costs compared to over conventional power cycles
- Minimal water consumption

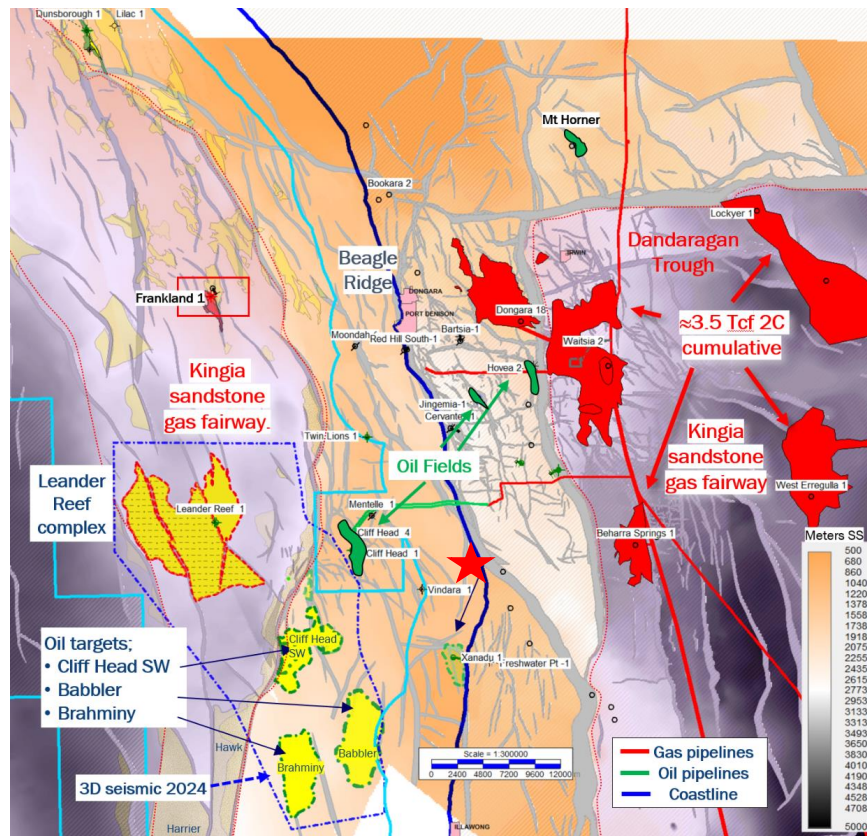
A unique opportunity

- Blue Hydrogen only possible with CCS
- Integration of low-cost renewables delivers operational and capital cost synergies across both Blue and Green Hydrogen
- Compelling Low Carbon Hydrogen-to-Clean Ammonia solution with clear cost advantage

Pillar 2 – Abundant feedstock gas supply

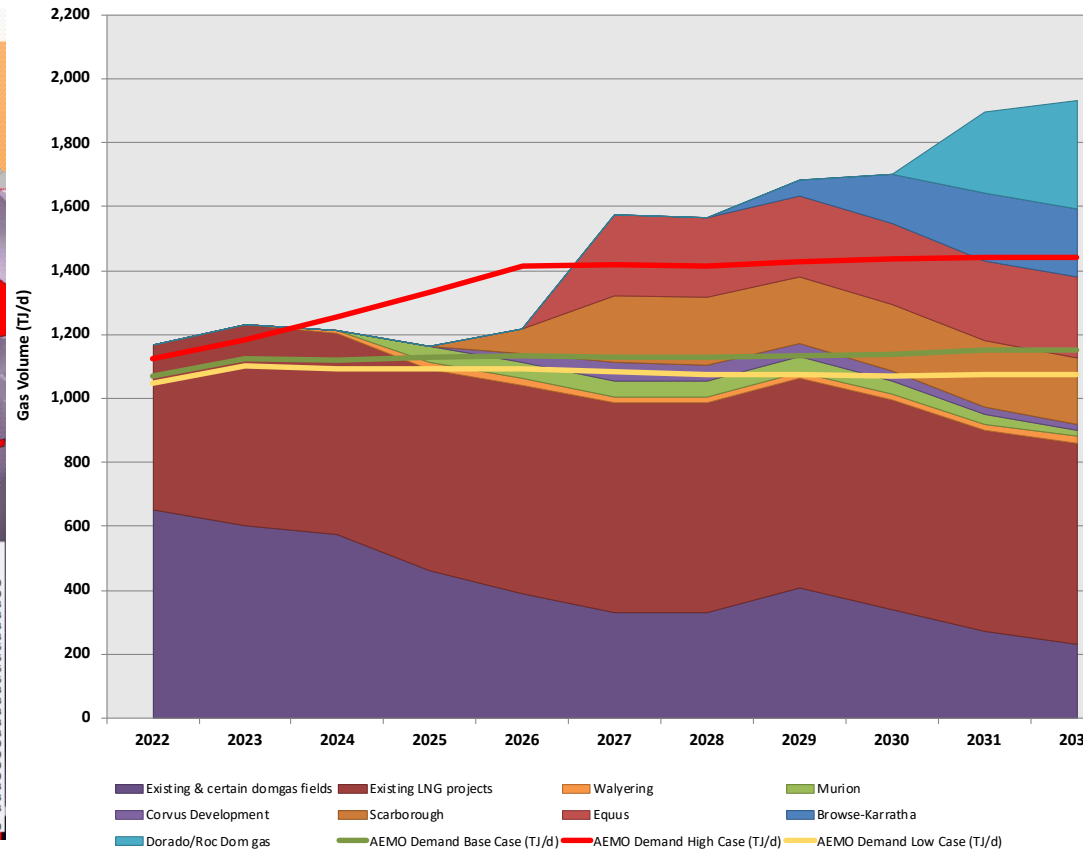
Multiple and abundant gas supply sources and Western Australian gas policy keep feedstock prices competitive with US

Gas Discoveries of the North Perth Basin



★ Mid West Clean Energy Project

WA domestic gas supply - Supply High Case *



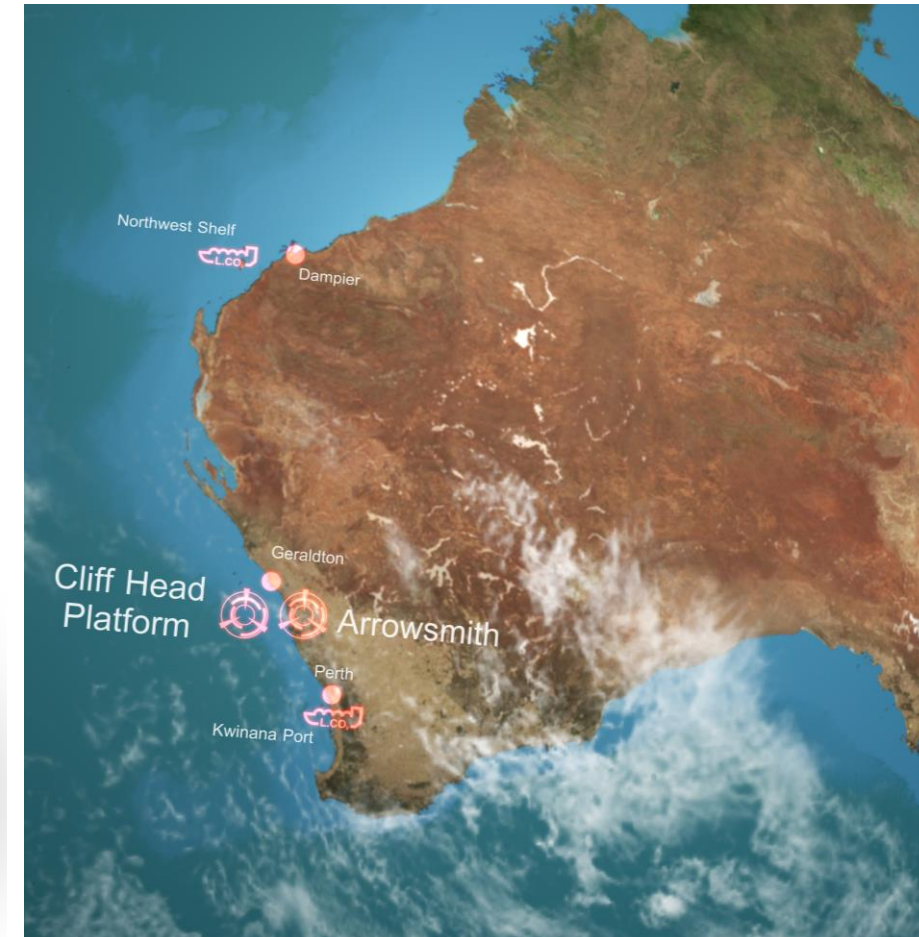
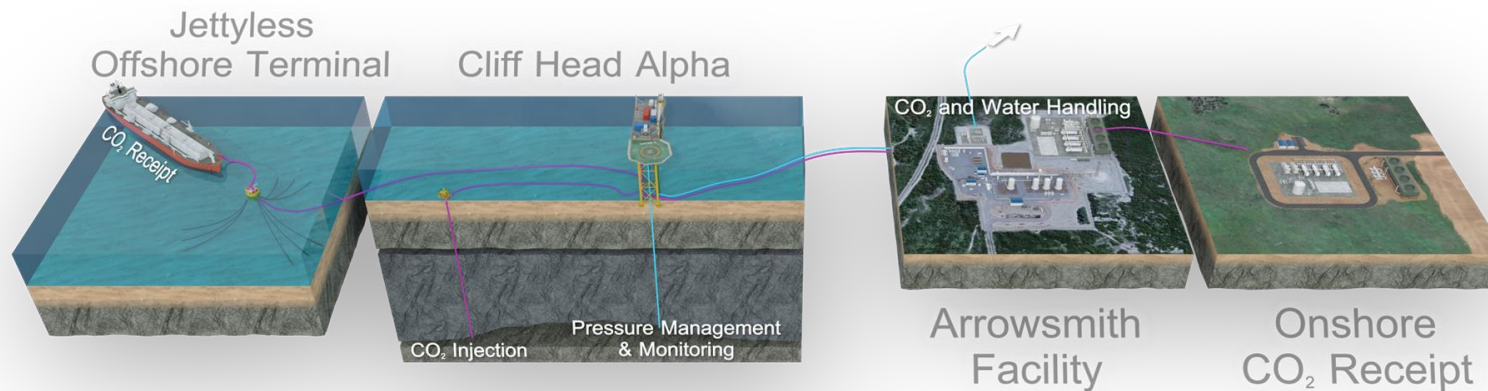
★ Mid West Clean Energy Project

*Source: Gas supply and pricing outlook for Western Australia- Energy Quest Confidential Report February 2022 prepared for - Pilot Energy as part of Mid West Clean Energy Project Feasibility Study

Pillar 3 - CO₂ Storage Facility

Cliff Head CO₂ Storage Facility is a key enabler of low-cost Clean Ammonia production

- Foundation for development of Clean Ammonia production
- Brownfield re-development utilizing existing Cliff Head Oil Field facilities
- Clear Commonwealth regulatory pathway with application lodged with NOPTA
- Minimal risk and capex requirements through re-use of existing reservoir & facilities
- Aiming to provide over 1 million tpa of CO₂ storage continuing through 2050
- Levelized cost of storage (LCOS) of less than A\$20/tonne of CO₂ (excluding transport)
- Targeting first CO₂ injection from onshore CO₂ receiving facility 2026



See Pilot Energy website for CCS Project video at <https://www.pilotenergy.com.au/videos-webcasts>

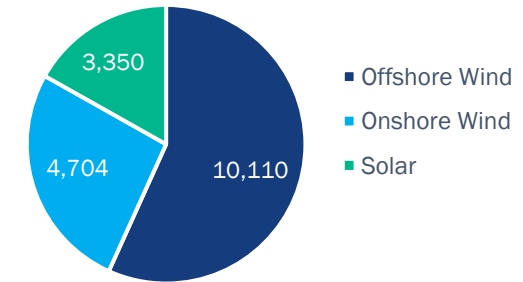
Pillar 4 – Globally competitive renewables provide growth platform



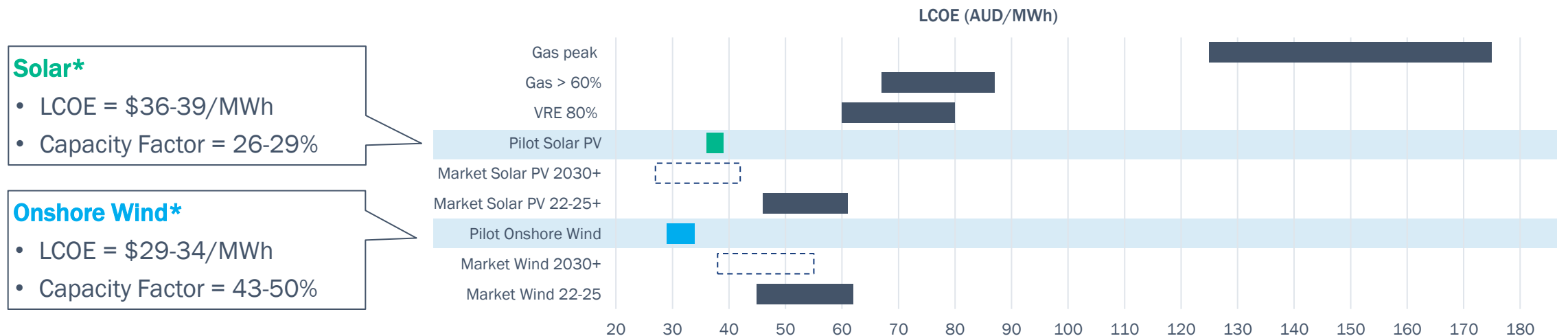
Large-scale, cost-competitive renewables provide platform for Green Hydrogen-to-Clean Ammonia production

- Over 18 GW of renewable resource potential in the area identified from feasibility studies*
- Renewable resources include onshore wind, offshore wind and solar
- Behind-the-meter, low-cost renewables for Green Hydrogen-to-Clean Ammonia production
- Low-cost renewables also provides runway for significant Green Hydrogen expansion
- Self-sourced industrial water supply from CCS operation combined with low-cost renewables provides ideal opportunity for Green Hydrogen-to-Clean Ammonia production
- Development sites for onshore wind and solar sites identified and site acquisition underway

**Mid West Clean Energy Project
Total Identified Renewable Energy
Technical Resource Potential-By Type (MW)***

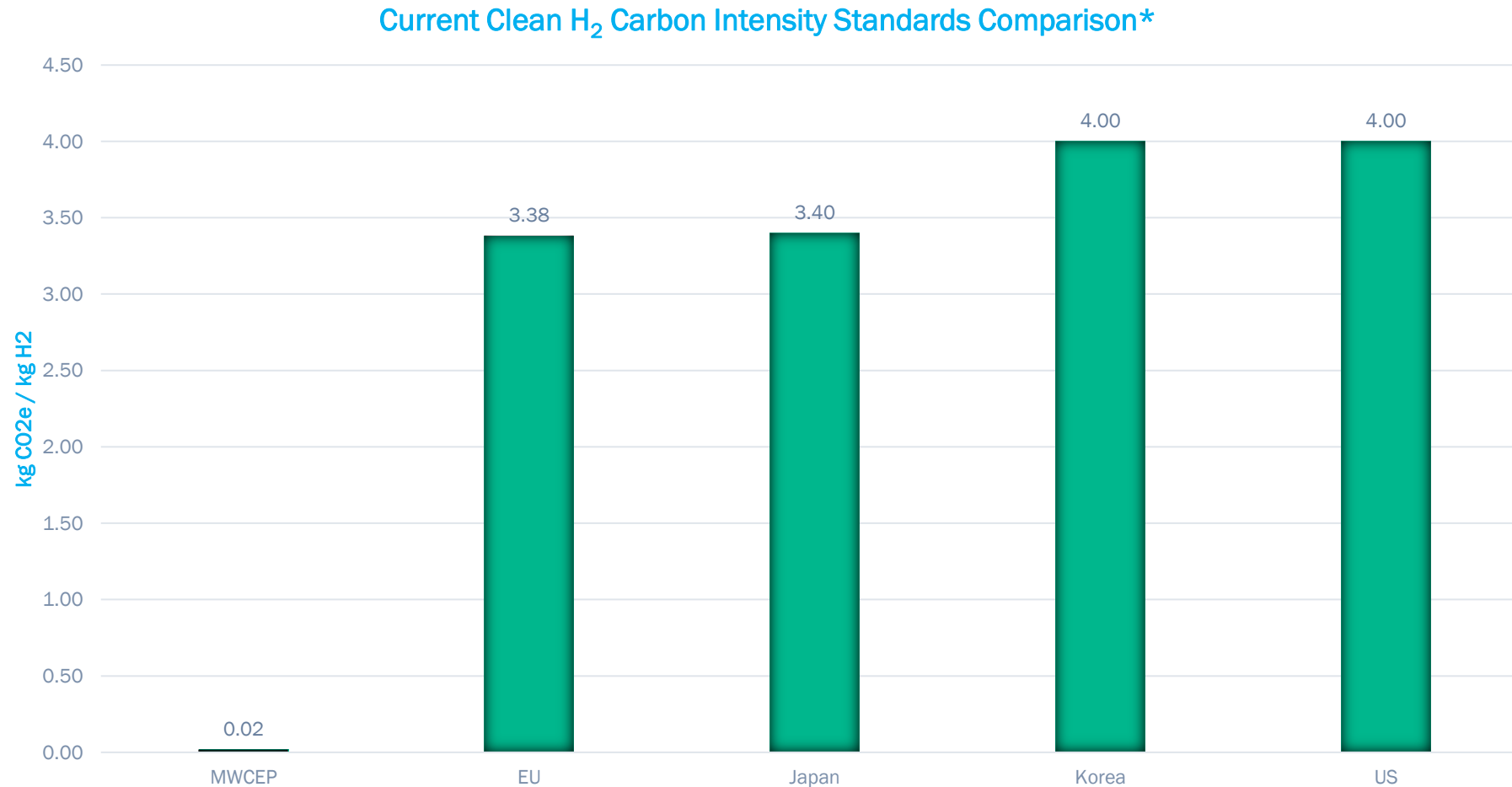


Mid West Renewable Energy Projects Feasibility Study Results on a Levelized Cost of Energy (LCOE) Comparison to CSIRO 2021 GenCost Report



Deliverable 1 – Clean: The carbon intensity comparison

Mid West Clean Energy Project exceeds current Clean H₂ Carbon Intensity standards for EU, Japan, Korean & US



Combination of breakthrough 8RH2 Gen 2 technology with integrated CCS and behind-the-meter renewables delivers low Carbon intensity

Deliverable 2 – Low-cost: Cost competitive Clean Ammonia



Cliff Head CCS enables cost competitive industrial scale Blue Hydrogen production

Blue hydrogen production only possible with direct/integrated CCS

- Production capacity of Blue Hydrogen with 98% of CO₂ capture

Produced through proven and well established, scalable technologies

- Blue Hydrogen production has been in commercial operation since 1982

Hydrogen from natural gas is the primary input for vast majority of ammonia

- 95% of 190mmtpa of global ammonia production of hydrogen from natural gas

Ammonia from blue hydrogen is both a low cost and clean energy source

- Blue hydrogen and ammonia expected to be lowest-cost clean option¹

Excellent solution for transport and supply of hydrogen

- Ammonia excellent “vector” and lowest cost form of H₂ transport and supply

Established market and supply chain

- Well established, large-scale production and global supply chain

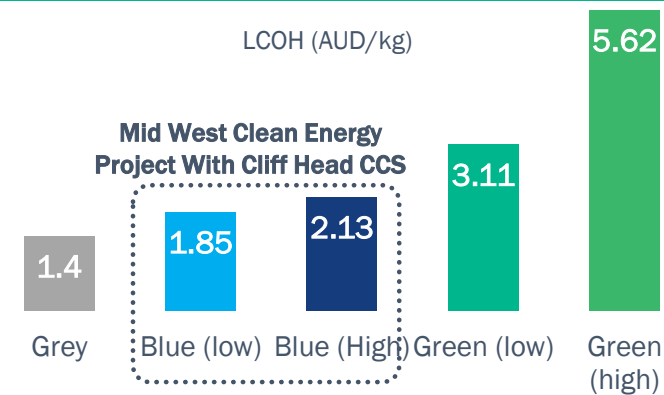
Clean Ammonia is a CO₂-free energy source

- Proven CO₂-free fuel can be produced from either Blue or Green Hydrogen

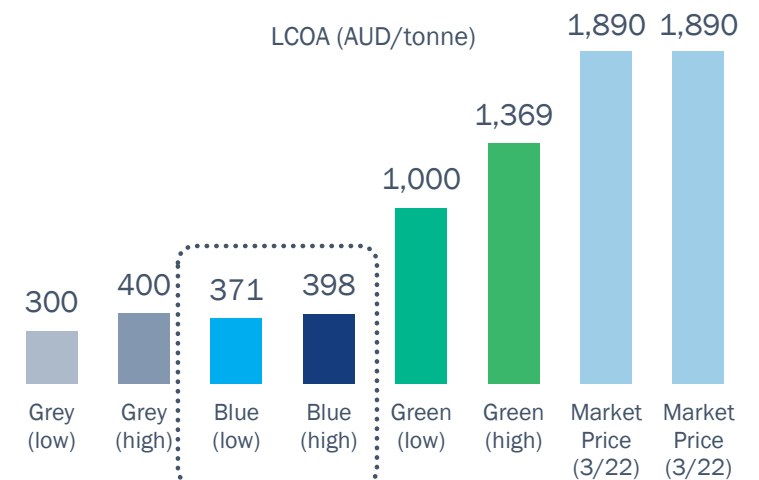
Sources

1. Global CCS Institute Blue Hydrogen Report April 2021. Figure 6 (RHS of slide) taken from the same report.
2. CE Delft Feasibility Study into blue hydrogen July 2018 estimates that blue hydrogen production with 95% direct/integrated carbon capture and storage will produce 0.64/kg of CO₂ process emissions per kg of hydrogen produced resulting in total annual CO₂ process emissions of ~25.6 kTonnes of CO₂
3. Global CCS Institute 2021.

Levelized cost of hydrogen (LCOH) in the range of A\$1.85 to A\$2.13 leveraging the Cliff Head CCS



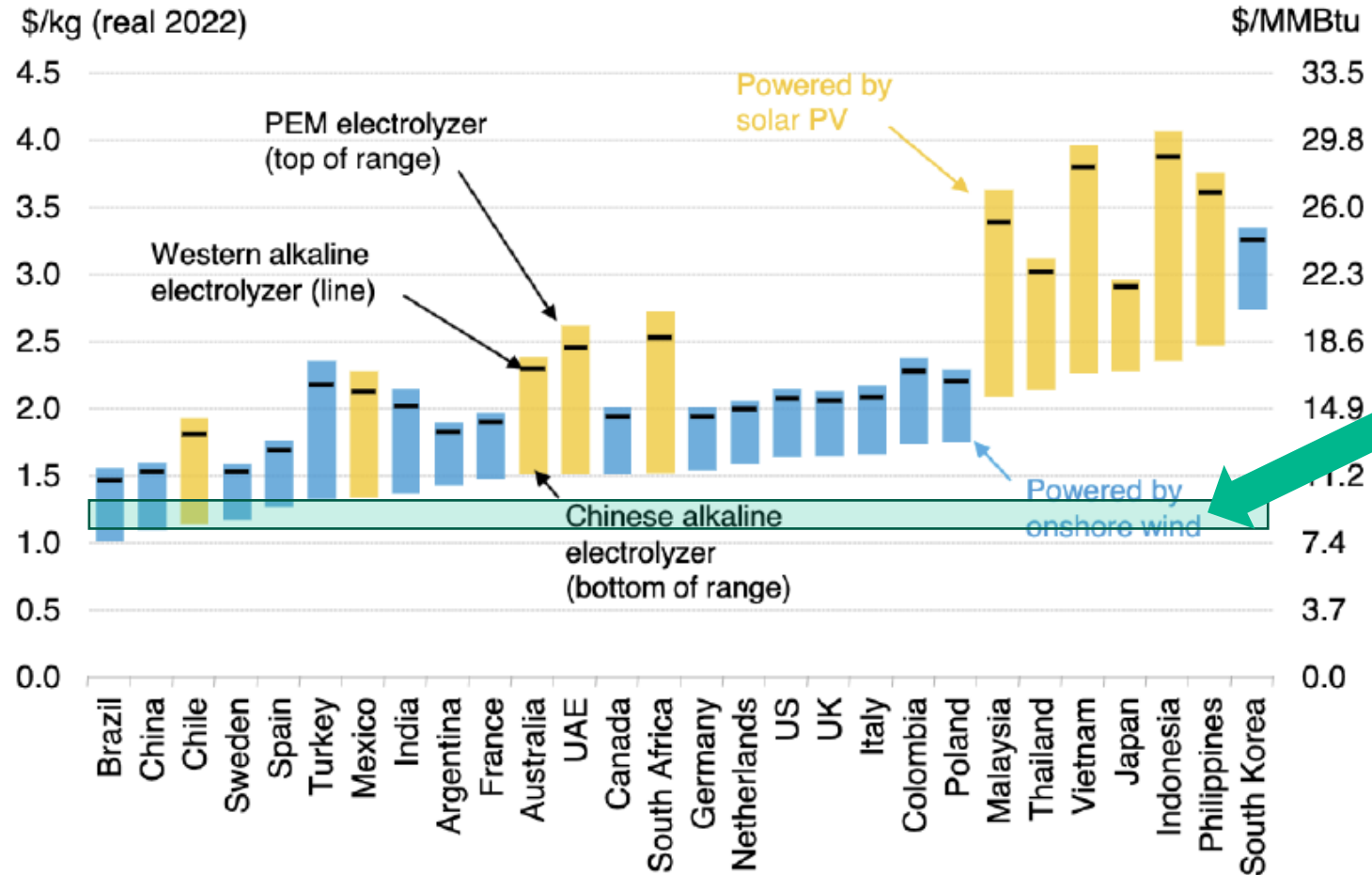
Levelized cost of ammonia (LCOA) in the range of A\$370 to A\$400 per tonne, leveraging CCS and renewables



Sources: SP Global, Cost, logistics offer “blue” hydrogen market advantages over “green” alternative 19 March 2020 and Pilot Feasibility Study ASX release 28 March 2022

Deliverable 2 – Globally cost competitive production cost

LCOH₂ from cheapest available renewable power in 28 markets, 2030*



MWCEP Clean H2 cost (real)
USD 1.20/kg – USD 1.38/kg**

Makes MWCEP competitive with projects from the cheapest 5 regions, Brazil, China, Chile, Sweden and Spain

*Source: Bloomberg New Energy Finance Report 2023 Hydrogen Levelized Cost Update: Cost of Capital and inflation take hold, July 10, 2023

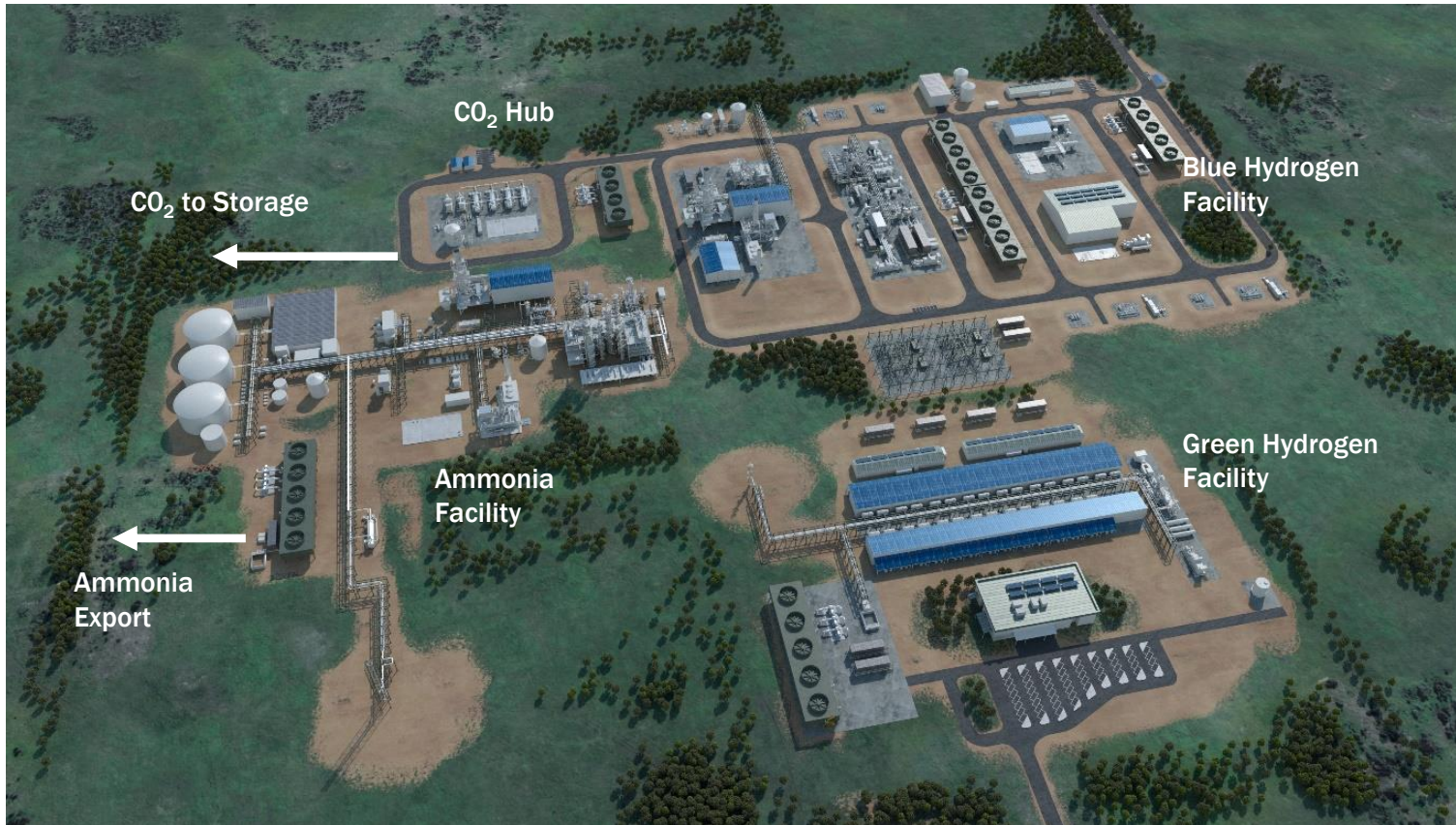
** Source: Refer to Feasibility Results per ASX release on 28 March 2022, 7 June 2022 and 23 September 2022. 65 cent exchange rate applied to feasibility study results that delivered AUD 1.85 to 2.13/kg Blue H2 LCOH

Deliverable 2 – Significant transport cost advantage

Western Australia - a natural partner of production and supply of Clean Ammonia



Deliverable 3 – Achievable: Bringing it all together



Ammonia production

- Targeting ammonia production of up to 1 million tpa of cost competitive clean ammonia for export
- Blue Hydrogen production utilising 8 Rivers $^8\text{RH}_2$ technology integrated with Cliff Head CO_2 Storage
- Abundant nearby low-cost conventional gas supply for Blue Hydrogen production + potential self-supply
- Low-cost, behind-the-meter renewables provides power for CO_2 Storage through to Clean Ammonia production
- CO_2 Storage operation provides long-term industrial water for Blue and future Green Hydrogen production
- Future Green Hydrogen electrolysis system will be fully integrated with $^8\text{RH}_2$ Blue Hydrogen technology.
- Oxygen produced from Green Hydrogen electrolysis used for Blue Hydrogen production

Integrated production system maximises use of all production streams – Power, Heat, Water, Hydrogen, Oxygen & Nitrogen – No waste

Corporate Overview



ASX Code: PGY

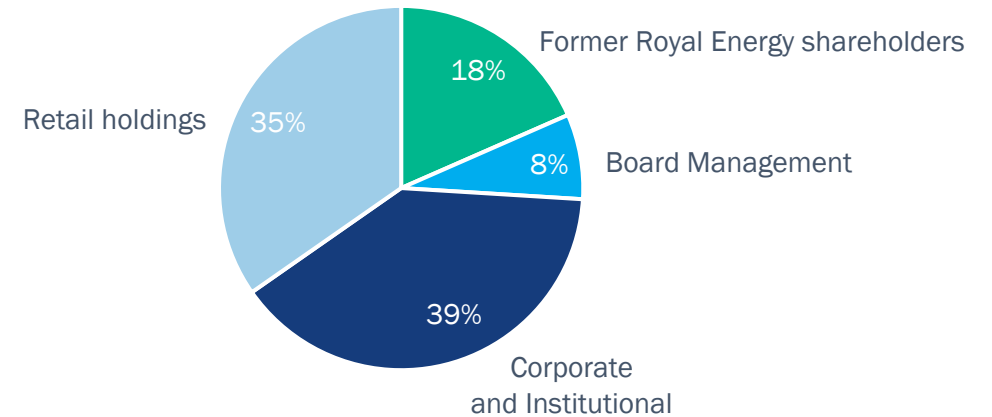
Capital Structure

Issued shares	1,017.7 million
PGY share price	~\$0.030 (9/08/23)
• 52-week range	~\$0.010 to \$0.033
Market Capitalisation	~\$34 million
• 52-week range	~\$10 million to ~\$34 million

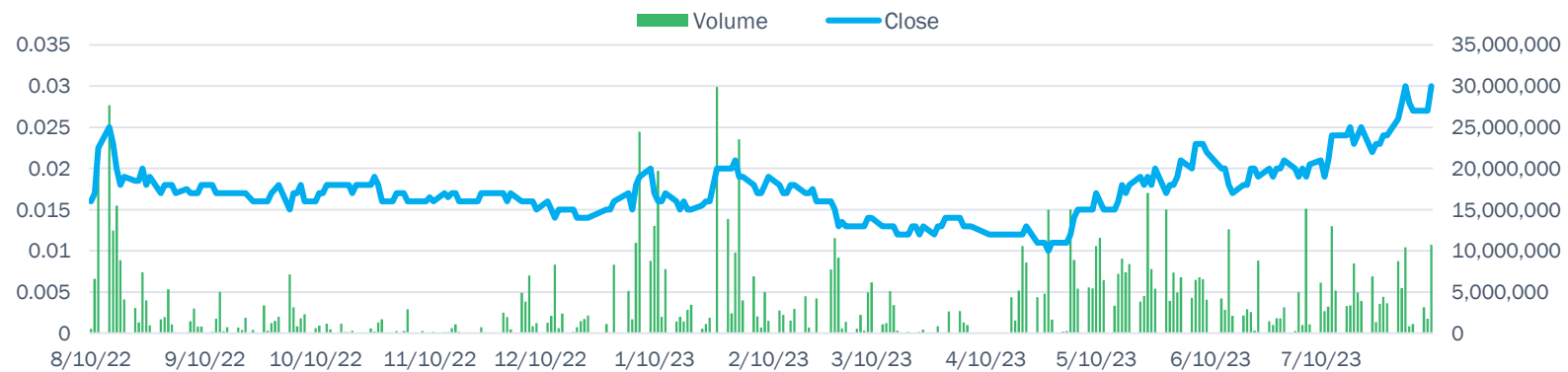
Development Pipeline

Stage 1	Carbon Management	over 1 million tpa
Stage 2	Clean NH3 Production	1.2 million tpa

PGY Shareholder Analysis



Share Price



On-going project partnering and Clean Ammonia offtake process



MOU signed with Samsung C&T to become equity JV development partner and cornerstone Clean Ammonia customer

- Upon completion of the Cliff Head acquisition from Triangle¹ and closing the Samsung MOU², Pilot will hold 80% of the MWCEP
- Pilot has been conducting an on-going project partnering and Clean Ammonia and CCS customer offtake process and multiple parties are continuing to undertake detailed due diligence on the project
- Expressions of interest for over 2 mmtpa of Clean Ammonia offtake and 700,000 tpa of CO2 storage have been received as part of the ongoing partnering and customer offtake process,
- Pilot intends to bring in additional project development partners and Clean Ammonia and CCS customers targeting further reducing its overall interest in the MWCEP to approximately 40%
- Pilot has communicated to interested parties that preference will be given to Clean Ammonia and CCS offtakers who also participate in the overall project on an equity basis
- A condition of project equity participation is that all equity participation will be on the basis that Pilot will receive base consideration equivalent to the historical cost basis of the assets and infrastructure that make up the Cliff Head CO2 Storage Project³

1. Refer to the joint Pilot Energy and Triangle ASX release dated 27 July 2023

2. Refer to the Pilot Energy ASX release dated 31 October 2023

3. The historical cost base of the assets and infrastructure of that make up the Cliff Head CO2 Project is approximately AUD 330 million and is reflected in the historical annual PRRT returns lodged by the Cliff Head Oil Field JV

Key next steps

Over the next 12-18 months Pilot will be focused on the activities to deliver the Cliff Head CCS Project



Corporate

- Active engagement with prospective project partners & customers
- Formulation of development funding plan



Next 12 - 18 months aimed at securing necessary regulatory approvals, securing commercial off-take arrangements and completing a FEED to enable final investment decision (FID) for the Cliff Head CCS Project.



Project implementation

- Permitting
- Site Acquisition
- Commercial Offtake
- Front End Engineering and Design (FEED) for CCS and Pre-FEED for Blue Hydrogen
- Begin prospective Engineering Procurement, Construction and Maintenance (EPCM) contractor engagement

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