Gold Hydrogen

Committed to developing naturally occurring Hydrogen and Helium in Australia

The Gold Standard in Green Energy

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Prospective Resource Statements

The Prospective Resource Statements for Natural Hydrogen and for Helium have been included in presentation under the approval of Mr Billy Hadi Subrata, Chief Engineer for Gold Hydrogen, who is a Qualified Petroleum Reserves and Resources Evaluator. Mr Hadi Subrata confirms that, as at the date of this announcement, there is no change to information or additional information, since the effective dates, that would materially change the estimates of prospective resources quoted.

QPRRE Statement – Natural Hydrogen

The Prospective Resource Statement for Natural Hydrogen in this presentation is based on, and fairly represents, information and supporting documentation prepared by independent consultants "Teof Rodrigues & Associates" with an effective date of 30 September 2021, and which forms part of the Company's Replacement Prospectus dated 29 November 2022. The Prospective Resource Statement, together with all relevant notes, also appears in the Company's ASX release of 13 January 2023.

QPRRE Statement - Helium

The Prospective Resource Statement for Helium in this announcement is based on, and fairly represents, information and supporting documentation prepared by independent consultants "Teof Rodrigues & Associates" with an effective date of 21 February 2024, and which was announced by the Company on that date together with the accompanying assumptions and notes.

Investor Snapshot

Current Capital Structure

Total shares on issue	159.7m
Options on issue (75c / $1.00 / $1.75)	5.1m
Fully-diluted capital	164.8m
Market cap at $1.60 / share	**$255m**
Cash on hand	$16m

12 Month Share Price Performance

Executive Summary – Natural Hydrogen and Helium

Title over certified prospective resources

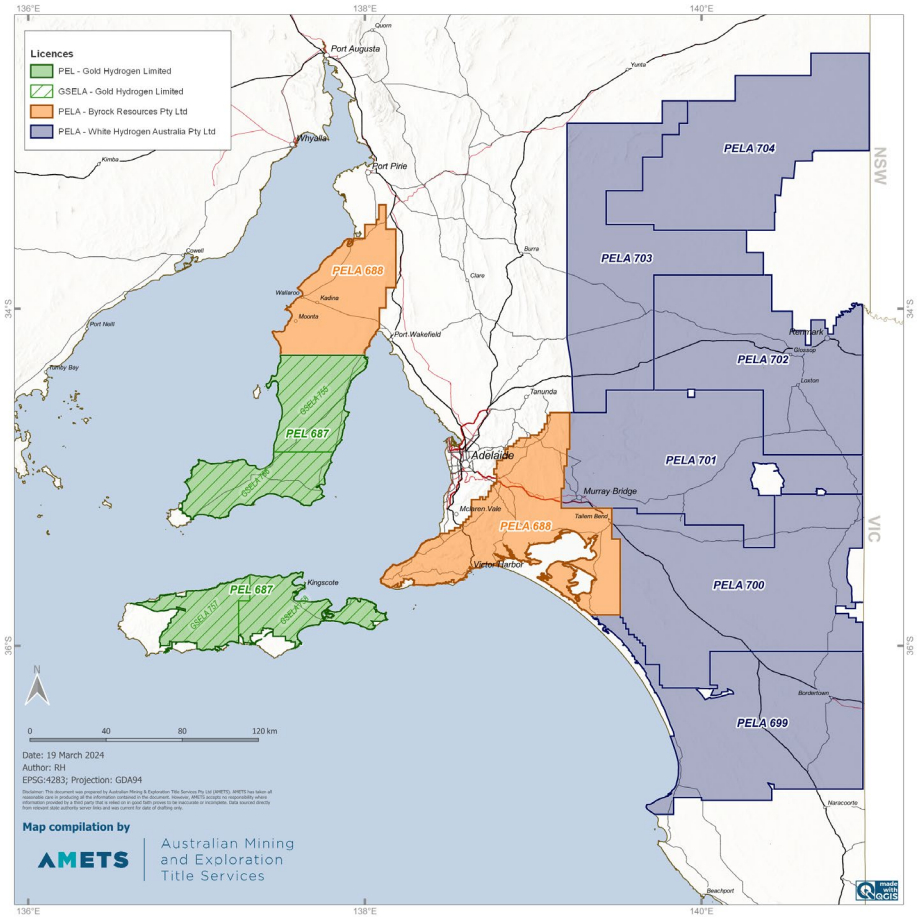
1.3 billion kg of natural Hydrogen[1]
41 Bcf of Helium[1]
(with a mean of 96 Bcf)

Ramsay Project 100% owned

7,820 km²
plus a further **67,512 km²** under exclusive application

High purity gas sample levels

95.8% Hydrogen[2]
17.5% Helium[2]



Engagements to date with leading global experts and contractors

CSIRO, Schlumberger, Total Seismic, Xcalibur, Savanna Energy Services

Commercial and environmental competitive advantages

Natural hydrogen provides **cost and emission advantages** over other production sources

Global gas projects are **commercial with must lower concentrations** of helium (<1% helium)

[1] *Resources are based on un-risked Best Estimate. Refer Slide 14 for full details.*
[2] *Preliminary gas sample analysis - air corrected*

Hydrogen and Helium to date in PEL687

Extensive regional play across 7,400 km^2 permit area

H_2

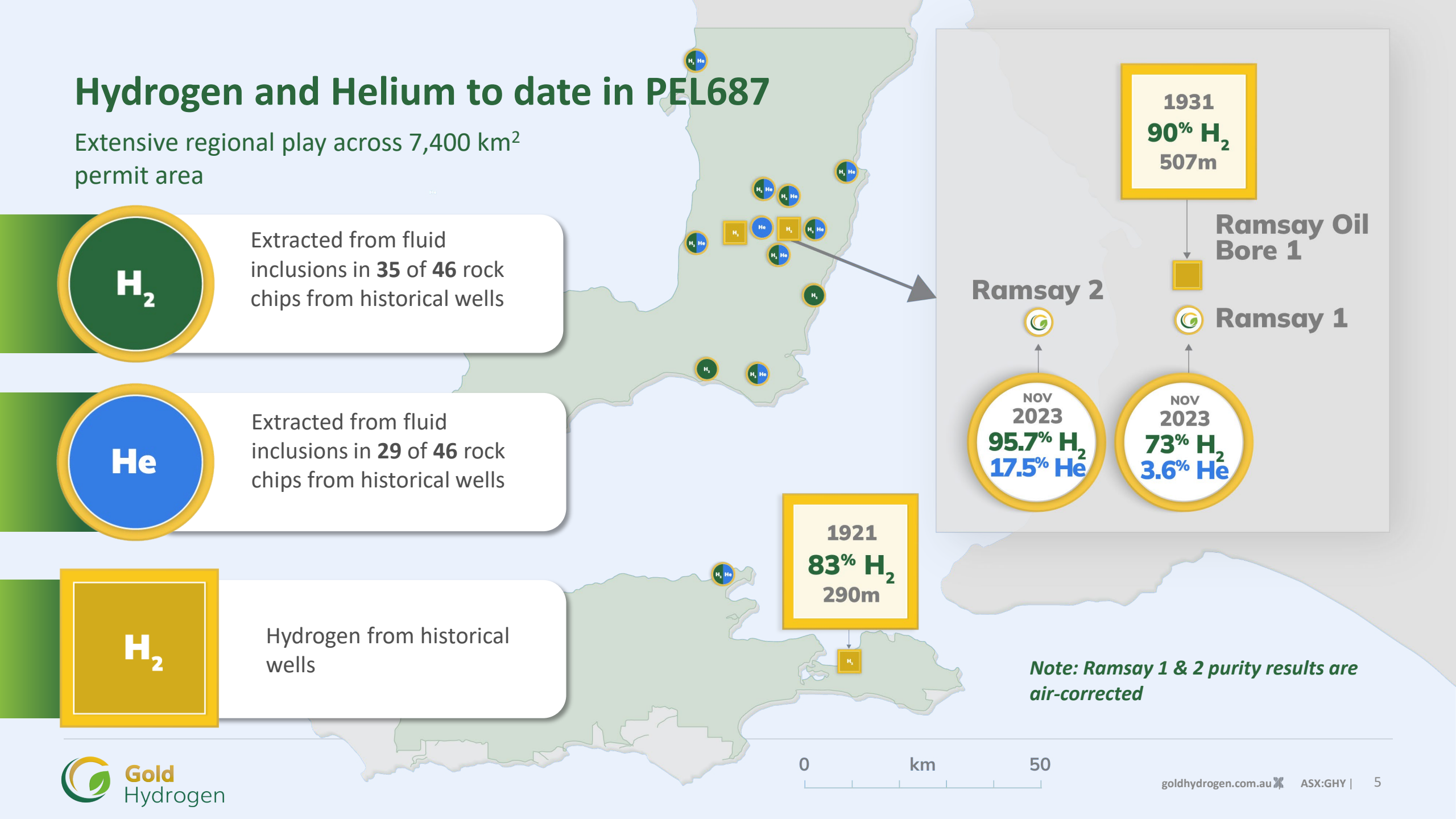
Extracted from fluid inclusions in **35** of **46** rock chips from historical wells

He

Extracted from fluid inclusions in **29** of **46** rock chips from historical wells

H_2

Hydrogen from historical wells



Note: Ramsay 1 & 2 purity results are air-corrected

Industry Overview

Gold Hydrogen

Key Trends: Hydrogen

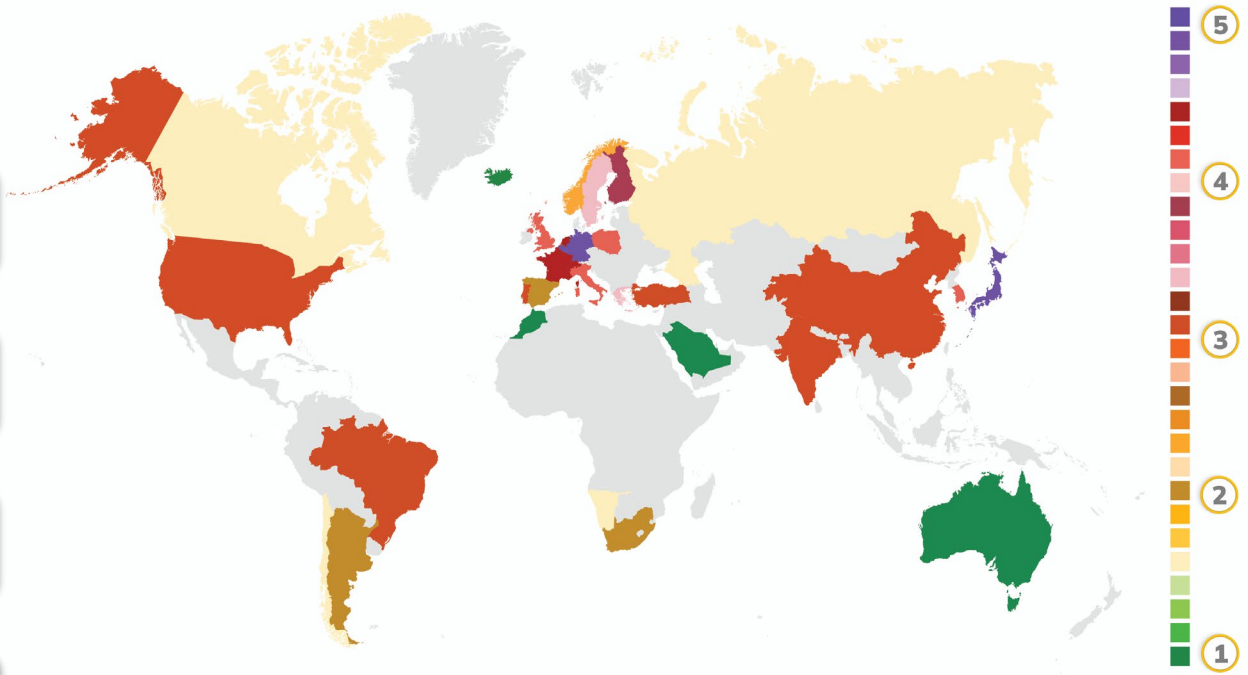
Hydrogen demand is forecast to include heavy transportation, ammonia production, steel manufacturing, and various energy uses. Future growth will be driven by key adoption trends and the drive towards decarbonisation.

Key drivers for Hydrogen adoption trends

- ESG investment and decarbonisation policies
- Hydrogen as an energy, industry & transport source
- Advances in hydrogen technology
- Hydrogen boosts grid and industrial flexibility

Likely exporters / importers[1]

Australia has been identified as a likely exporter of natural hydrogen given its undeveloped land and renewable energy strategies

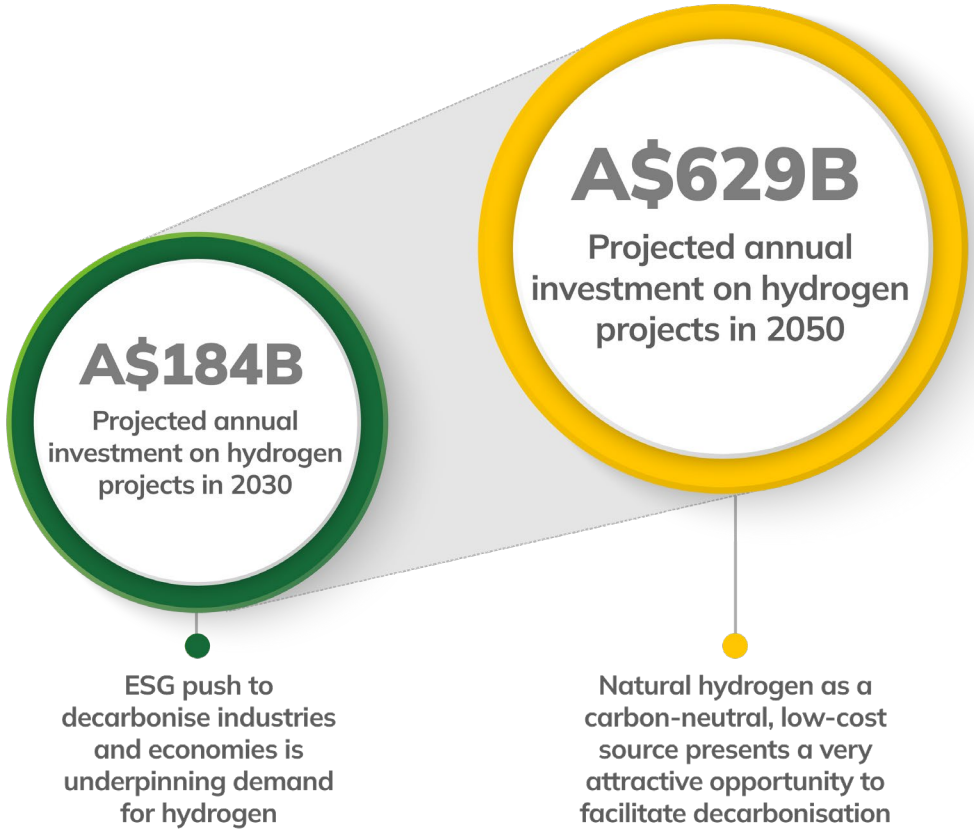


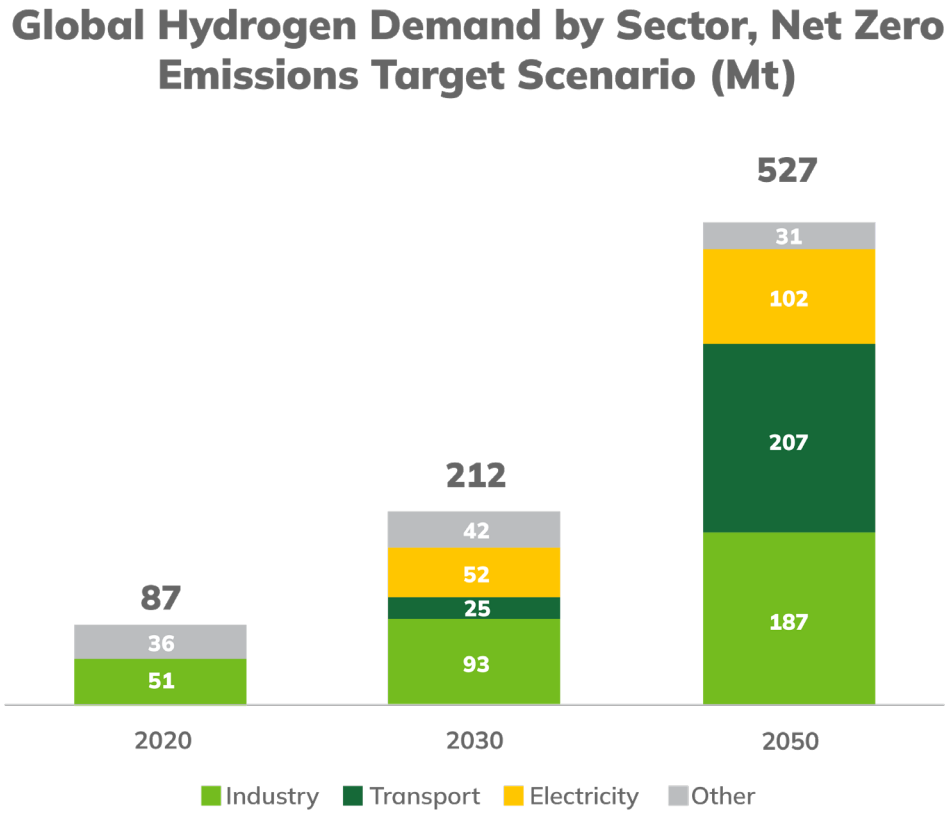
1 = Strongly export-oriented, **2** = Slightly export-oriented,
3 = Neutral, **4** = Slightly import-oriented, **5** = Strongly import-oriented

[1] Source: PwC, https://www.pwc.com/gx/en/industries/energy-utilities-resources/future-energy/green-hydrogen-cost.html

Global Hydrogen Forecast

Substantial investment laying the foundation for Hydrogen use





Source: Frost & Sullivan Report - Page 29 of Gold Hydrogen Prospectus

Source: International Energy Agency, Oct-2021 1. Other includes buildings, agriculture and refineries

Types of Hydrogen Production

Today, ~95% of all hydrogen produced is from natural gas

Naturally occurring Hydrogen offers significant cost and / or carbon advantages relative to other Hydrogen production (manufacturing) processes

Gold Hydrogen is exploring for 'gold' or 'white' (natural) Hydrogen

	Gold / White (natural)	Grey	Black/Brown	Blue	Green
Energy source	Natural hydrogen	Natural gas	Coal	Natural gas / coal	Renewables / biomass
Environmental impact	Low	High	Very High	Low	Low
No thermal process	✓	✗	✗	✗	✗
Production cost (A$/kg)[1,2]	$1.00	$5.60	$6.20-$6.40	$10.20-$10.30	P: $6.40-$25.50 A: $4.70-$23.20
Cost comparable to existing power generation[3]	✓	✗	✗	✗	✗

Source: Frost and Sullivan, Sep-2022 (Refer Gold Hydrogen Replacement Prospectus dated 29 November 2022)

1. Source: Christophe Rigollet1, Alain Prinzhofer2,3, Natural Hydrogen: A New Source of Carbon-Free and Renewable Energy That Can Compete With Hydrocarbons, First Break, Volume 40, Issue 10, Oct 2022, p. 78 – 84 DOI: https://doi.org/10.3997/1365-2397.fb2022087; "The Bourakébougou field, in Mali, represents the first natural hydrogen deposit studied both scientifically and industrially. Available on the Gold Hydrogen website.
It gives us information on its renewability, on the natural flows involved and therefore on its sustainable exploitation. It is possible to estimate that the cost of operating hydrogen would be less than $1/kg, which is significantly cheaper than any manufactured hydrogen, whether green, grey, or blue. Equivalent work is in progress in other continents, in order to be able to compare our knowledge of this Malian field with other fields in the world, which will make it possible to better ensure the industrial and societal interest of R&D for this new field."

2. P = Polymer electrolyte membrane electrolysis. A = Alkaline Electrolysis. Gold Hydrogen cost is an estimate

3. For industrial buyers, a hydrogen offtake price of €3 ($4.50) per kg would be required to incentivise hydrogen production over power generation

Key Drivers for Helium

The global wholesale helium market is expected to grow from an estimated **US$5bn in 2023** to over **US$8bn in 2030**

There are commercial global gas projects with significant lower helium concentrations (>1%)

Indicatively pricing is currently approximately **USD400-500 per Mcf** (thousand cubic feet)

[1] Source: USGS, 2023: https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-helium.pdf

Results

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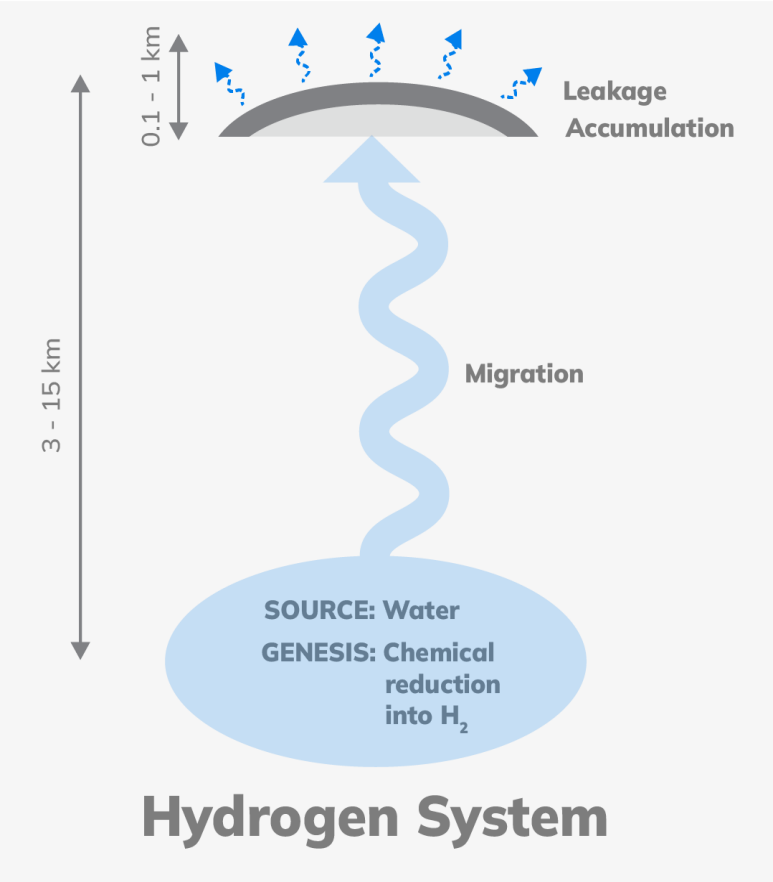
Ramsay Project Milestone Snapshot

Key Success Factors Exploration – Update post stage 1 well tests

Ramsay Project ticks the boxes in respect of the key attributes for the formation and accumulation of Natural Hydrogen and Helium

Key Success Factor		Results of Exploration Activities Since IPO
Source & Generation	**Via hydrolysis and / or radiolysis reactions in old rocks**	The presence of Natural Hydrogen at **95.8% purity and Helium at 17.5% purity** (both air-corrected) has been confirmed at the Ramsay Project location via mud gas measurements, MDT samples and stage 1 testing. Results are air-corrected. Refer ASX release of 27 May 2024.
Seals & Traps	**Required to enable accumulations of naturally formed hydrogen**	The presence of retained Natural Hydrogen and Helium indicates that the stratigraphy includes valid seals and traps at the location of the Ramsay Project.
Structure	**Major structural boundaries in an extensional geological regime where natural fractures exist**	The airborne gravity and magnetic geophysical survey and the FMI (image log) data from the wells supports the interpretation that the Ramsay Project is located in a structurally favourable position for a large scale Natural Hydrogen and Helium accumulation.
Reservoir	**To be commercial, a reservoir of adequate volume, accessibility, flow rate and quality is required**	The FMI data from the wells and results of the stage 1 testing has demonstrated that the fractured limestones, dolomites and basement acts as suitable reservoir for accumulating extractable Natural Hydrogen and Helium.



Source: SPE Hydrogen Section, online. November 2, 2023 (Ref: Prinzhofer, 2021)

Gold Hydrogen Prospective Resources (Using PRMS guidelines)

Certified Prospective Hydrogen Resources, existing discoveries and drill ready hydrogen prospects (calculated volume not determined)

Unrisked Prospective Hydrogen Resources, PEL 687			
SPE-PRMS Sub-Class Category	**Low Estimate (kTonnes)**	**Best Estimate (kTonnes)**	**High Estimate (kTonnes)**
Prospect	165	1135	8050
Lead	42	178	770
Total	**207**	**1313**	**8820**

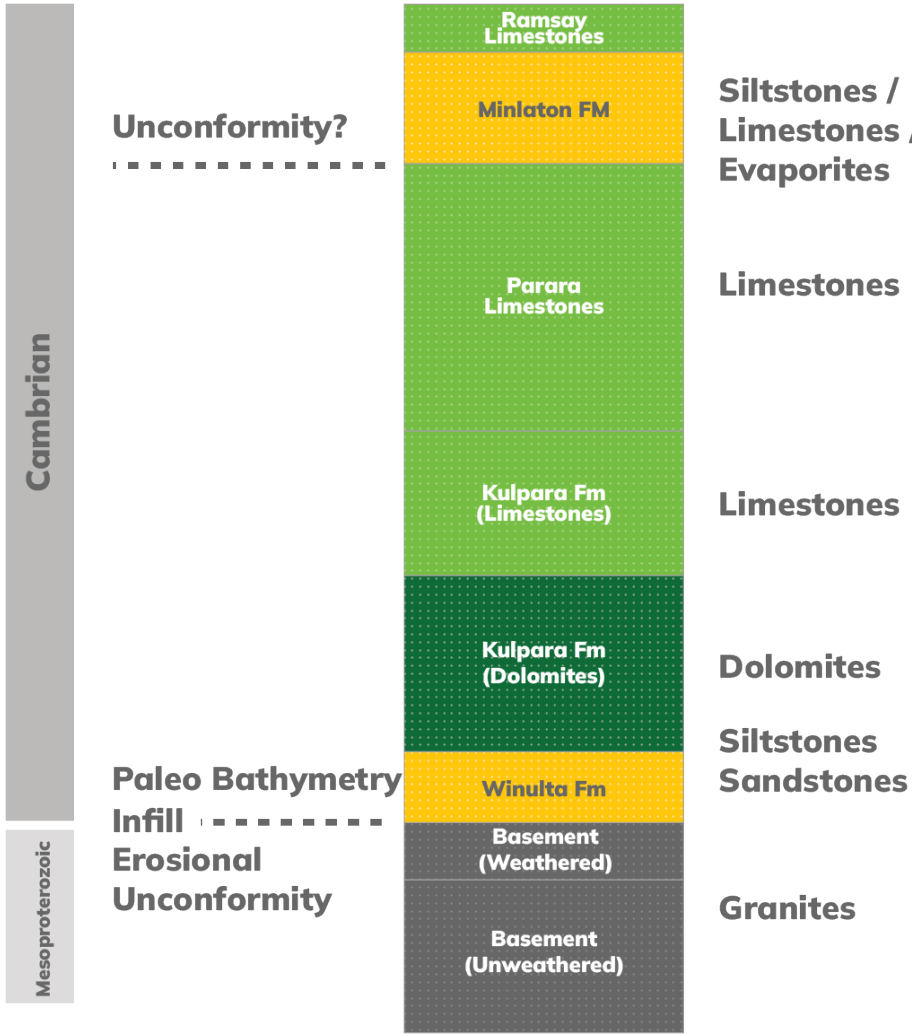
Certified Prospective Helium Resources, Ramsay Field (PEL 687 Yorke Peninsula)

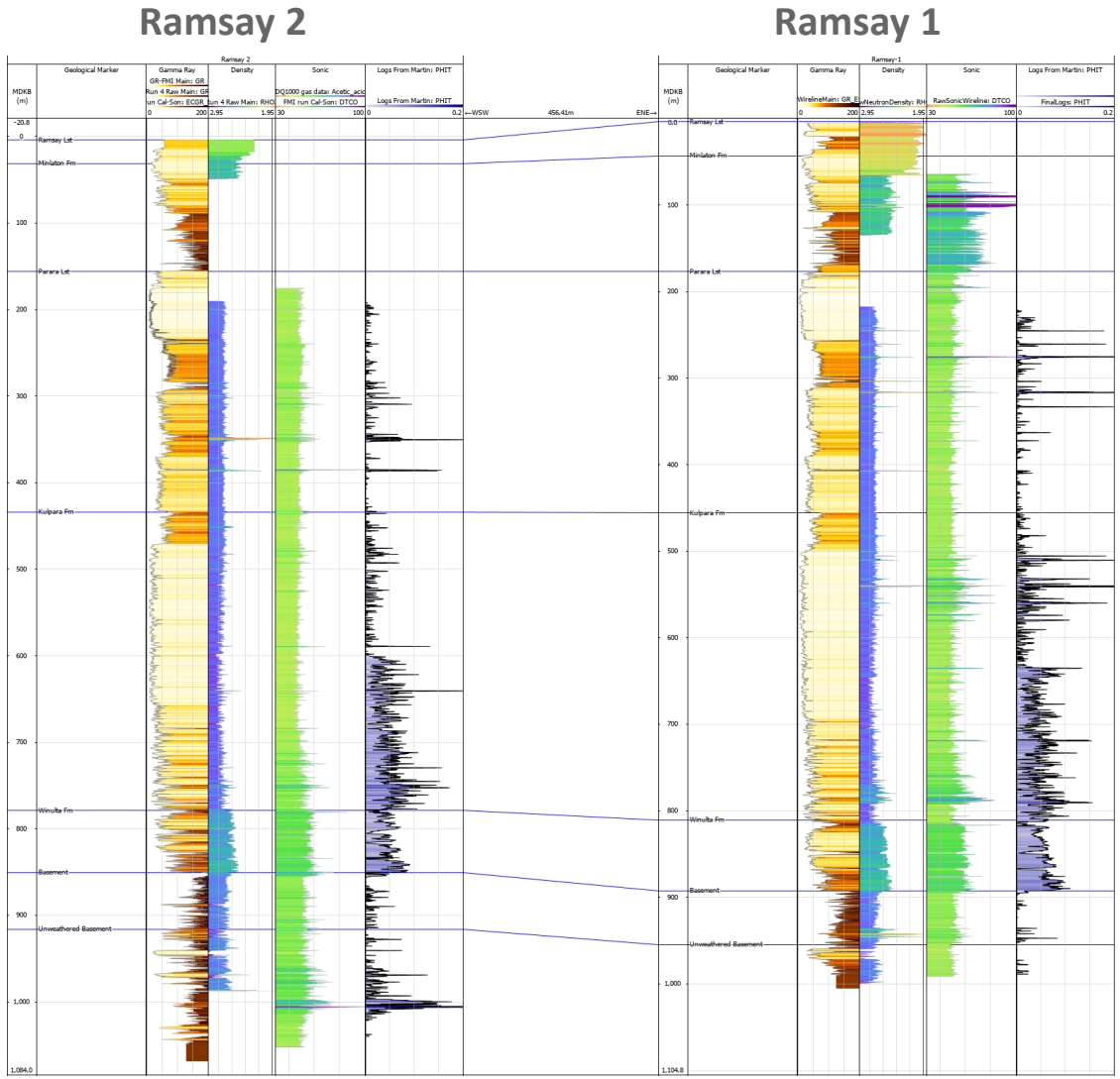
Unrisked Prospective Helium Resources, PEL 687			
SPE-PRMS Sub-Class Category	**Low Estimate (Bscf)**	**Best Estimate (Bscf)**	**High Estimate (Bscf)**
Prospect Ramsay Fault Block	2	8	38
Prospect South of Ramsay Fault Block	5	33	205
Total	**7**	**41**	**243**

See ASX releases of 13 January 2023 (Hydrogen) and 21 February 2024 (Helium) for full details and notes

NOTE - All estimates are unrisked and aggregated arithmetically by category, hence caution that the aggregate low estimate maybe a conservative estimate and the aggregate high estimate maybe very optimistic estimate due to the portfolio effects of arithmetic summation. The estimated quantities of hydrogen and / or helium that may potentially be recovered by the application of future development project(s) relate to undiscovered accumulations. These estimates have both an associated risk of discovery (Pg), risk of development (Pd) and risk of commercialization (Pc). Further exploration, appraisal and evaluation is required to determine the existence of a significant quantity of potentially recoverable hydrogen and / or helium.

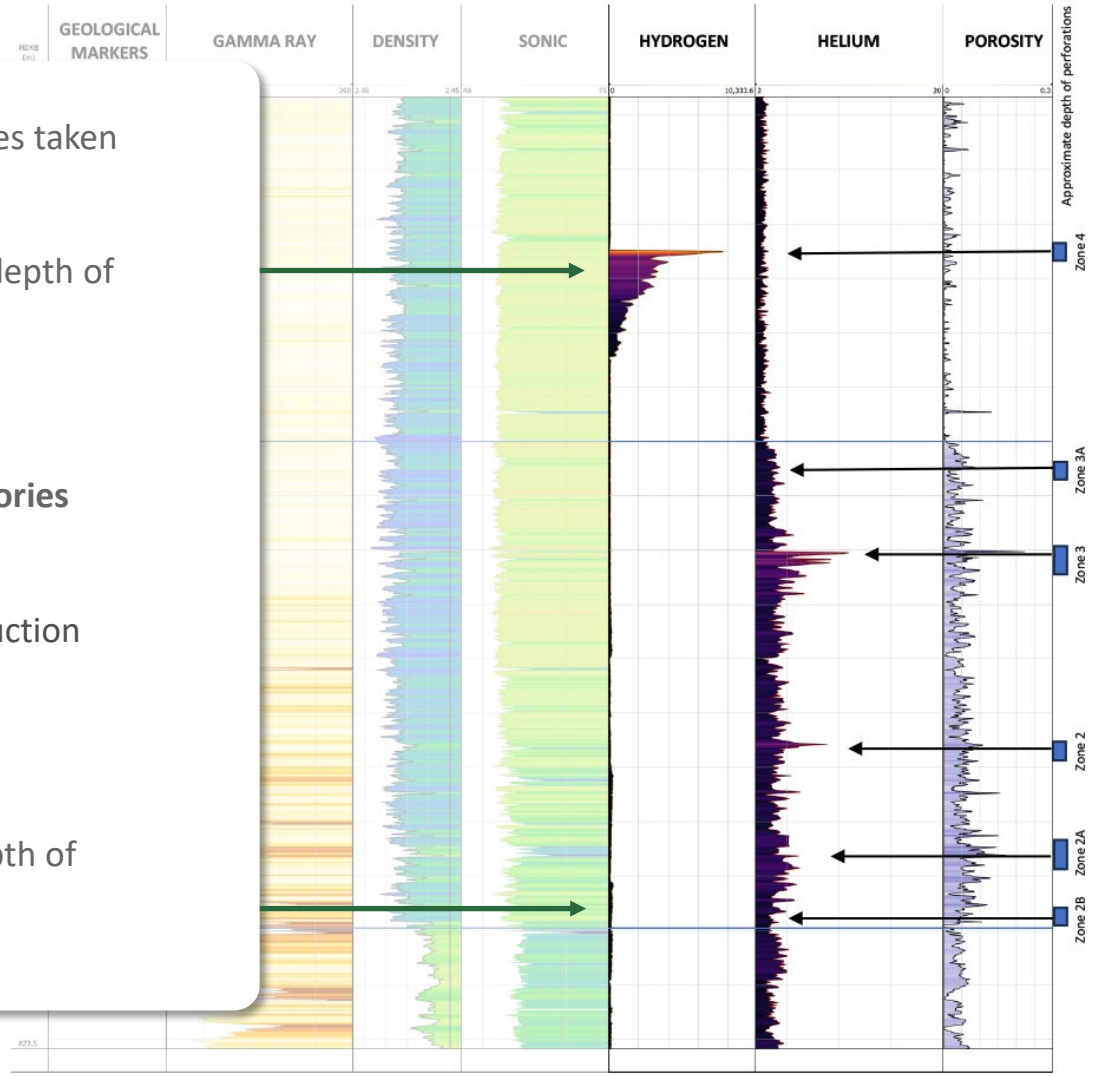
Ramsay 1 & 2 – Drilling Australia's First Natural Hydrogen Wells



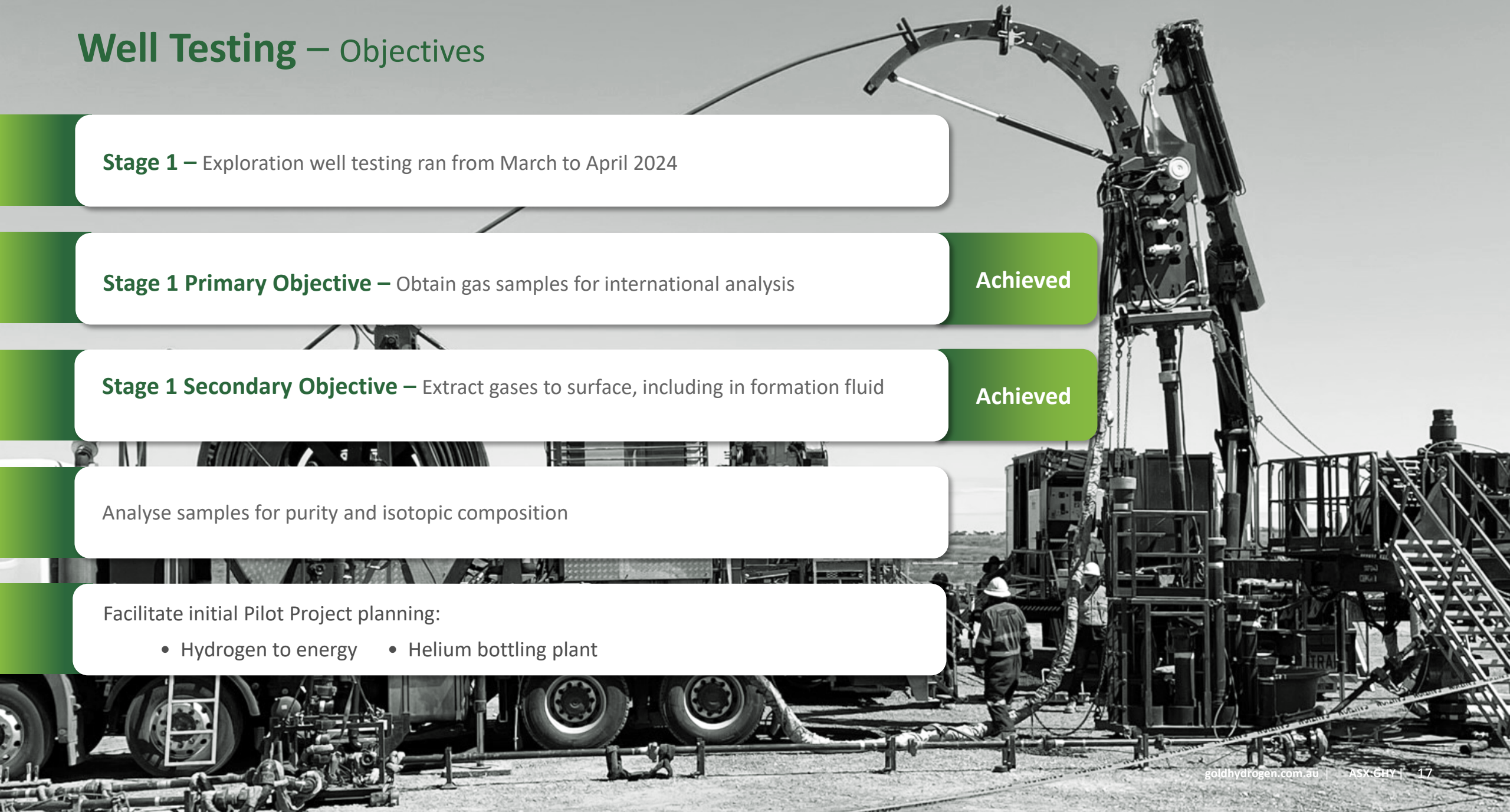


Well Testing – Stage 1 Interim Results

- Gas successfully flowed to surface, numerous zones identified, and samples taken for analysis
- Air-corrected **hydrogen** result of 95.8% confirmed for Ramsay 2 well at a depth of 531m. Refer ASX release of 27 May 2024 for full details
- Permeability of structures confirmed
- Isotopic results for hydrogen and helium **from specialist overseas laboratories pending**
- Key learnings designed to assist with future well design, drilling and production techniques, and will ultimately assist with pilot plant concept design
- 180m thick **helium** pay zone identified
- Air-corrected **helium** result of 17.5% confirmed for Ramsay 2 well at a depth of 778m. Refer ASX release of 27 May 2024 for full details



Well Testing – Objectives



Stage 1 – Exploration well testing ran from March to April 2024

Stage 1 Primary Objective – Obtain gas samples for international analysis

Achieved

Stage 1 Secondary Objective – Extract gases to surface, including in formation fluid

Achieved

Analyse samples for purity and isotopic composition

Facilitate initial Pilot Project planning:

- Hydrogen to energy
- Helium bottling plant

Next Steps

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Key Success Factors Appraisal – Work program next steps

Further appraisal activities are focused on establishing the commerciality of the Ramsay Project

Key Success Factor		Results from exploration activities since IPO
Hydrogen Flow Rate and Composition	**Establish sustained flow rate to surface of hydrogen and associated gas components**	**Stage 2 well testing scheduled for July 2024** is designed to allow a sustained flow of hydrogen from the hydrogen-bearing reservoir units to surface and measure the uncontaminated composition of the produced gas.
Size of the Hydrogen and Helium Accumulations	**Determine the likely lateral extent of the hydrogen and helium accumulations**	**The Ramsay 2D seismic survey scheduled to commence late June 2024** is designed to establish the lateral extent of the hydrogen and helium-bearing stratigraphic units and determine the large-scale trapping geometry of the accumulations at the Ramsay Project location.
Helium Extraction Rate	**Establish the sustained extraction rate for the helium**	**Stage 2 well tes**ting is designed to establish a sustained flow of helium and associated fluids from the helium-bearing reservoir to determine the uncontaminated gas composition and the helium extraction rate from the produced products.
Development Sweet Spot	**Determine the likely development sweet spot for hydrogen and helium extraction**	The **next wells to be drilled being planned for Q4 2024 or Q1 2025** are designed to confirm the hydrogen and helium development sweet spots, established from the integration of the Ramsay 2D seismic data and results from the stage 2 testing of Ramsay 1 and Ramsay 2 wells.

Well Testing – Stage 2 Objectives

Scheduled to commence mid-July 2024

Removal of formation fluid to encourage free gas flows

Ramsay 1 – Open hole testing

Ramsay 2 – Isolated zone testing

Further sampling and laboratory analysis to be undertaken

Key learnings to assist with future well design, drilling and production techniques, and will ultimately assist with pilot plant concept design

Post Well Testing Objectives

Resource reporting review

2D seismic survey interpretation & analysis

Site and well type selection – **Ramsay 3 & 4**

Review of wider Yorke Peninsula exploration plays

Pilot plant analysis and concept selection

Progress Byrock / White Hydrogen application areas

Key Team

Gold Hydrogen

Key Management

Neil McDonald
Founder & Managing Director

Neil McDonald, with over 20 years of experience in the energy and minerals sectors across Australia, has worked on major exploration projects from greenfield to early development. He is a graduate of the Australian Institute of Company Directors.

Roger Cressey
Director - Commercial & Operations

Roger Cressey has over 35 years of experience in the resource industry, mainly in gas exploration and production. He has held CEO, COO, and other executive roles in Australia (Queensland and NT), PNG, Indonesia, and Uganda. Roger excels in managing multi-disciplinary teams, strategy development, and stakeholder engagement.

Karl Schlobohm
Company Secretary & CFO

Karl Schlobohm, a Chartered Accountant and Fellow of the Governance Institute of Australia, has over 30 years of experience across various industries. He is a Non-Executive Director of the Australian Shareholders Association and has held multiple executive roles with listed companies on the ASX, LSE, AIM, and TSX in the natural resources sector.

Josh Whitcombe
Chief Operating Officer

Dr. Josh Whitcombe, a Chartered Chemical Engineer and RPEQ, has over 20 years of Oil and Gas experience. He has held senior roles with Australian gas producers, worked offshore with Shell International, and has expertise in greenfield exploration and brownfield operations, focusing on technical challenges, HSE, and community outcomes.

Frank Glass
Chief Exploration Adviser

Frank Glass is a respected geologist with over 30 years of experience in oil, gas, and natural hydrogen exploration, including a decade with Shell. He holds a Master's in Structural Geology from the University of Amsterdam and memberships in the Petroleum Exploration Society of Australia and the European Association of Geoscientists and Engineers.

Board of Directors

Neil McDonald
Founder & Managing Director

Neil McDonald, with over 20 years of experience in the energy and minerals sectors across Australia, has worked on major exploration projects from greenfield to early development. He is a graduate of the Australian Institute of Company Directors.

Alexander Downer
Independent
Non-Executive Chair

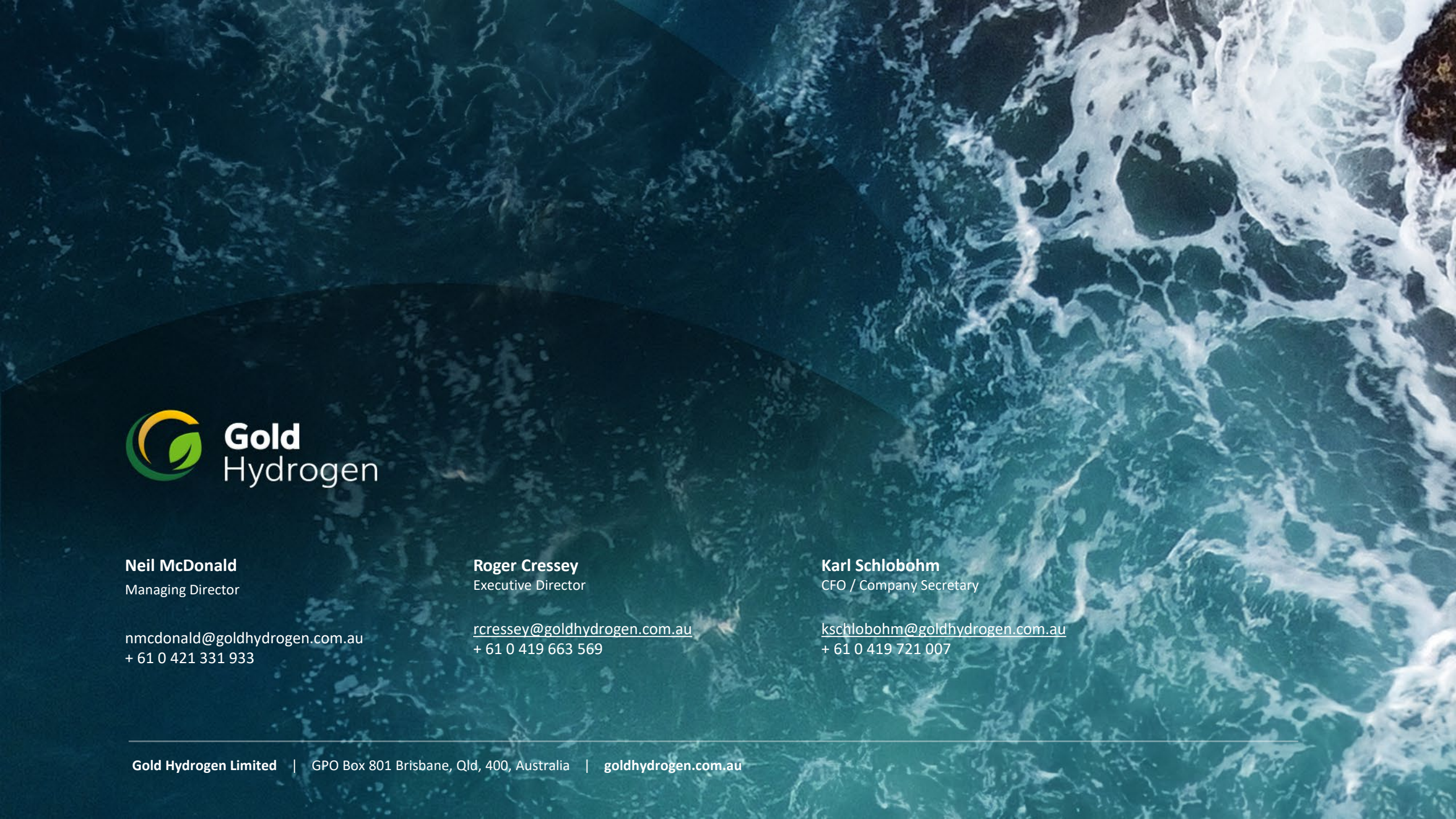
Alexander Downer, a prominent Australian politician and diplomat, has held top roles including Leader of the Liberal Party and Minister for Foreign Affairs. Before politics, he was an executive director at the Australian Chamber of Commerce. He currently serves on boards like Hakluyt & Company and Yellow Cake Plc, and writes for the AFR, holding the Companion of the Order of Australia title.

Katherine Barnet
Independent
Non-Executive Director

Katherine Barnet, a Chartered Accountant with 25+ years of experience, is a partner at Olvera Advisors in Sydney. She specializes in financial transactions, sustainable growth, and value optimization, with recent work in renewable energy, retail, property, and construction. She is a Fellow of CAANZ and ARITA and a member of the Australian Institute of Company Directors.

Roger Cressey
Executive Director
Commercial Operations

Roger Cressey has over 35 years of experience in the resource industry, mainly in gas exploration and production. He has held CEO, COO, and other executive roles in Australia (Queensland and NT), PNG, Indonesia, and Uganda. Roger excels in managing multi-disciplinary teams, strategy development, and stakeholder engagement.



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