



Gold Hydrogen

**Aiming to Develop Naturally
Occurring Australian Hydrogen
and Helium**

February 2024

Important Notice & Disclaimer

This presentation is not a prospectus, disclosure document or offering document under Australian law or under any other law. It is for informational purposes only. This document does not constitute, and should not be construed as, an offer to issue or sell or a solicitation of an offer or invitation to subscribe for, buy or sell securities in Gold Hydrogen Limited ABN 74 647 468 899 (**Gold Hydrogen**).

Any material used in this presentation is only an overview and summary of certain data selected by the management of Gold Hydrogen. The presentation does not purport to contain all the information that a prospective investor may require in evaluating a possible investment in Gold Hydrogen nor does it contain all the information which would be required in a disclosure document prepared in accordance with the requirements of the Corporations Act and should not be used in isolation as a basis to invest in Gold Hydrogen. The information contained in this presentation is not investment or financial product advice and has been prepared as general information only, without consideration for your particular investment objectives, financial situation or particular needs. Recipients of this presentation must make their own independent investigations, consideration, and evaluation of Gold Hydrogen. Gold Hydrogen recommends that potential investors consult their professional advisor/s as an investment in Gold Hydrogen is considered to be speculative in nature.

Statements in this presentation are made only as of the date of this presentation unless otherwise stated and the information in this presentation remains subject to change without notice. Reliance should not be placed on information or opinions contained in this presentation.

To the maximum extent permitted by law, Gold Hydrogen disclaims any responsibility to inform any recipient of this presentation on any matter that subsequently comes to its notice which may affect any of the information contained in this document and presentation and undertakes no obligation to provide any additional or updated information whether as a result of new information, future events or results or otherwise.

To the maximum extent permitted by law, no representation or warranty, express or implied, is made as to the fairness, accuracy, completeness or correctness of the information, opinions or conclusions contained in or derived from this presentation or any omission from this presentation or of any other written or oral information or opinions provided now or in the future to any person.

To the maximum extent permitted by law, neither Gold Hydrogen nor, any affiliates, related bodies corporate and their respective officers, directors, employees, advisors and agents (Relevant Parties), nor any other person, accepts any liability as to or in relation to the accuracy or completeness of the information, statements, opinions or matters (express or implied) arising out of, contained in or derived from this presentation or any omission from this presentation or of any other written or oral information or opinions provided now or in the future to any person.

This presentation includes information regarding the past performance of Gold Hydrogen. Recipients of this presentation should be aware that past performance should not be relied upon as being indicative of future performance.

This presentation contains statistics, data and other information pertaining to Gold Hydrogen's business and operations. Recipients of this presentation should note that industry and market data and statistics are inherently predictive and subject to uncertainty and not necessarily reflective of actual industry or market conditions. There is no assurance that any of the estimates or projections in this presentation will be achieved. Gold Hydrogen has not independently verified, and cannot give any assurances to the accuracy or completeness of, this market and industry data or the underlying assumptions used in generating this market and industry data.

This presentation contains "forward looking statements" concerning the financial condition, results of operations and business of Gold Hydrogen. All statements other than statements of fact or aspirational statements, are or may be deemed to be "forward looking statements". Often, but not always, forward looking statements can generally be identified by the use of forward looking words such as "may", "will", "expect", "intend", "plan", "estimate", "anticipate", "continue", "outlook", and "guidance", or other similar words and may include, without limitation, statements regarding plans, strategies and objectives of management, future or anticipated production or construction commencement dates and expected costs, resources or reserves, exploration results or production outputs. Forward looking statements are statements of future expectations that are based on management's current expectations and assumptions and known and unknown risks and uncertainties that could cause the actual results, performance, or events to differ materially from those expressed or implied in these statements. These risks include, but are not limited to price fluctuations, actual demand, currency fluctuations, drilling and production results, commercialization, reserve estimates, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal, and regulatory developments, economic and financial market conditions in various countries and regions, political risks, project delay or advancement, approvals, and cost estimates. More detail on the risks relevant to Gold Hydrogen's business and operations is set out in Risks section of this presentation.

Statements in this presentation as to gas and mineral resources has been compiled from data provided by Gold Hydrogen's Chief Engineer, Mr. Billy Hadi Subrata. Mr. Hadi Subrata's qualifications include a Bachelor and Master of Engineering Science from University of New South Wales, Sydney, Australia, and he is an active member of Engineers Australia and SPE. Mr. Hadi Subrata has 18 years of relevant exploration, development and production experience in petroleum, conventional and unconventional hydrocarbons, and hydrogen. Mr. Hadi Subrata has sufficient experience that is relevant to Gold Hydrogen's resources to qualify as a Reserves and Resources Evaluator as defined in the ASX Listing Rules 5.11. Mr. Hadi Subrata consented to the inclusion in this report of the matters based on his information in the form and context in which it appears.

Contents






Executive Summary	4
-------------------	---

Industry Overview	5
-------------------	---

Company Overview	11
------------------	----

Key Team	17
----------	----

Executive Summary - Low Cost, Natural Hydrogen

	Title over natural hydrogen occurrences and a certified prospective resource	Certified Prospective Resource for natural hydrogen with an unrisks Best Estimate of 1.3 billion kilograms (Refer Slide 13 for details)
	Flagship 'Ramsay Project', exploration permit granted, plus application permits	Ramsay Project 7,820 km ² (green on map) is 100% owned by Gold Hydrogen. Other locations under exclusive application to Gold Hydrogen are a further 67,512 km ²
	Ramsay 1 & 2 exploration well results indicate Hydrogen and Helium	Preliminary gas sample analyses have yielded high purity levels of up to 86% hydrogen plus helium in high purity levels at up to 6.8%
	Enabling engagements with leading global experts and contractors	Strategic engagements to date with CSIRO, Schlumberger, Total Seismic, Xcalibur, Savanna Energy Services
	Significant commercial and environmental competitive advantage	As a replacement for carbon-based fuels, naturally occurring hydrogen offers significant cost and emission advantages relative to other sources of hydrogen production. Global helium projects may be commercial from 1% purity or less

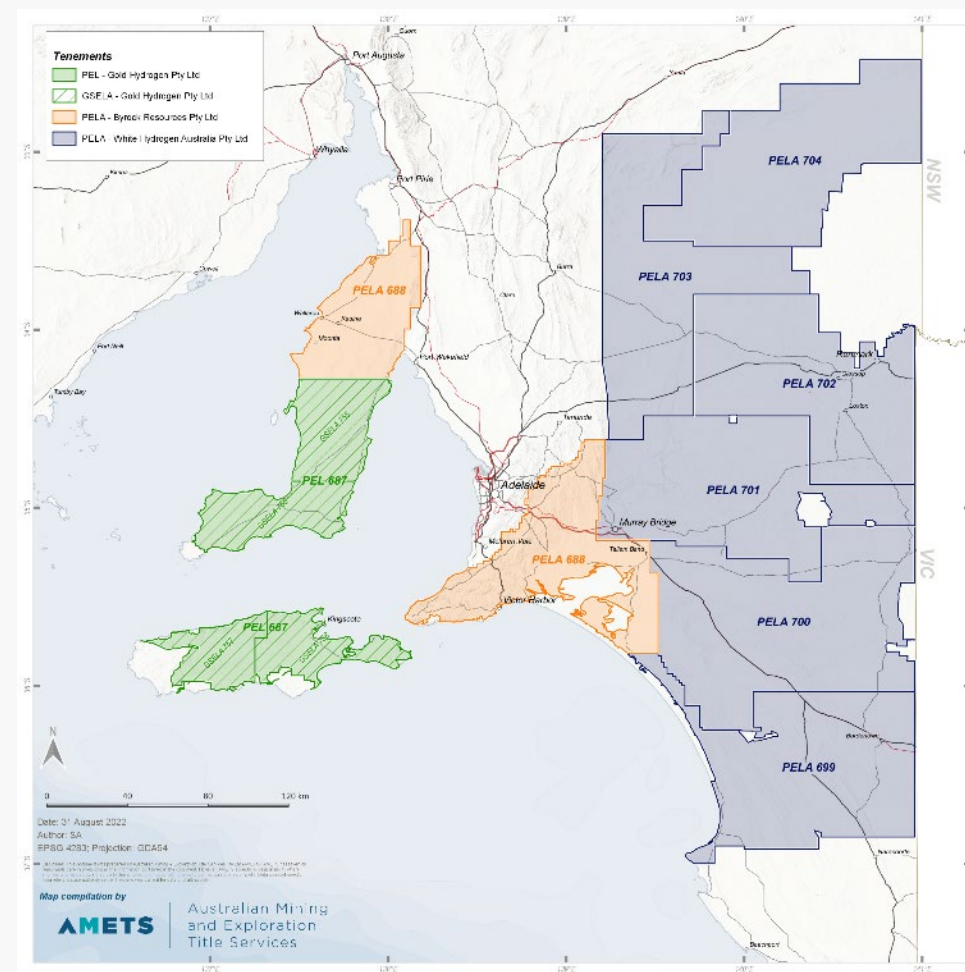


Figure: Overview of Gold Hydrogen tenements

Investor Snapshot

Capital Structure

Total shares on issue	159.7m
Shares escrowed (to Jan 25)	83.0m
<i>Free-float</i>	<i>76.7m</i>
Options on issue (75c / \$1.00 / \$1.75)	5.1m
Fully-diluted capital	164.8m
Market cap at 70 cents	\$112m
Cash on hand	\$21m

Share Price Performance Since IPO (Jan 2023)



In December 2023, the Australian Financial Review ranked Gold Hydrogen as one of the best performing IPOs of 2023

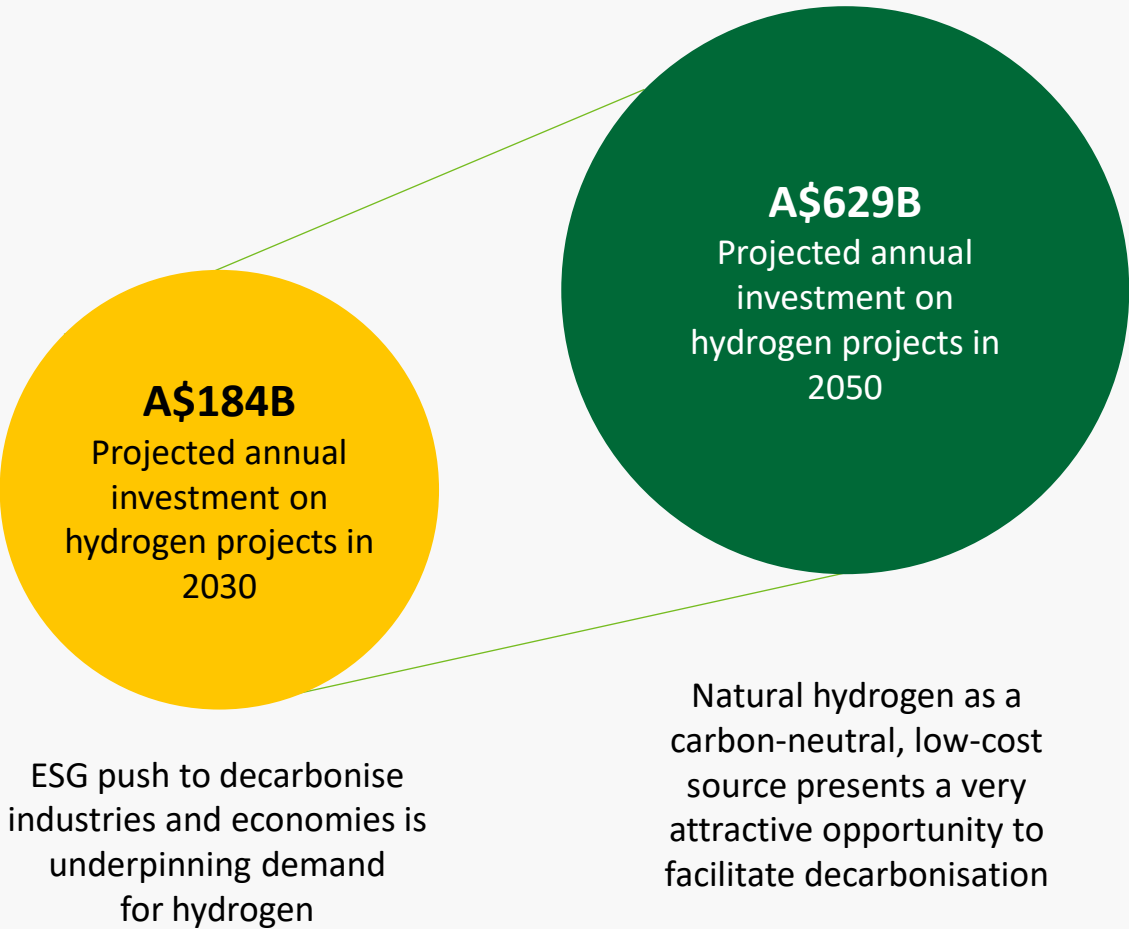


Industry Overview



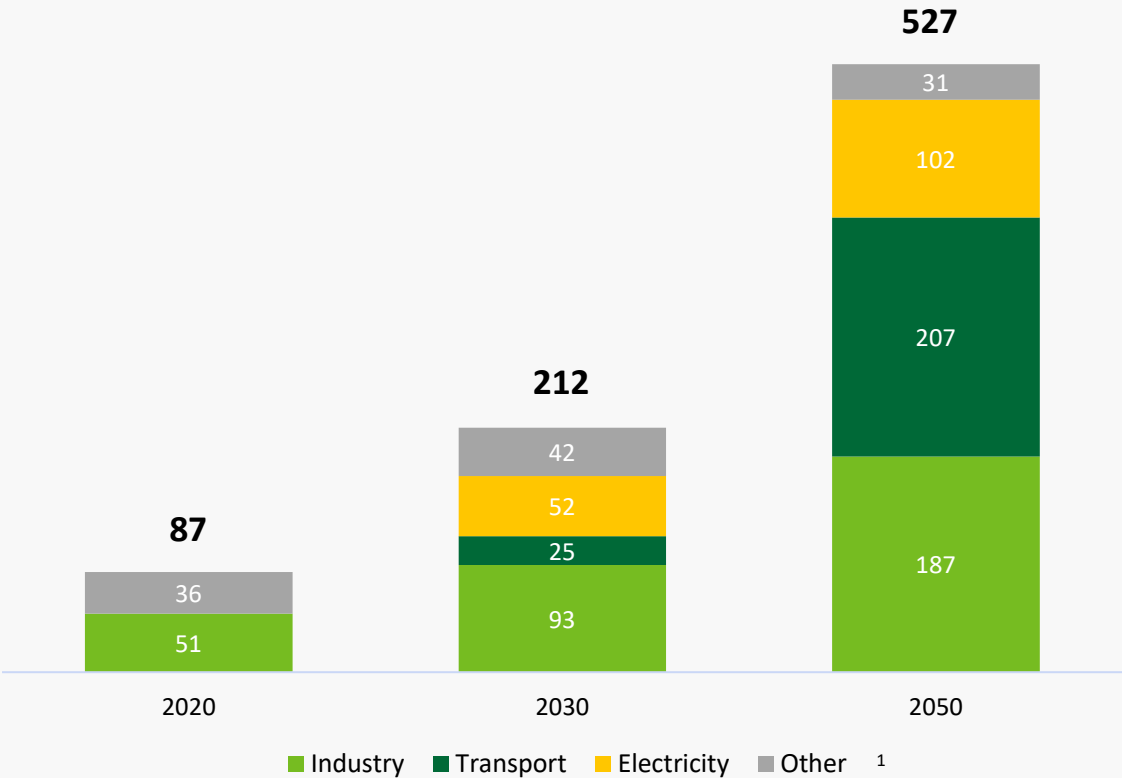
Global Hydrogen Forecast

Substantial investment laying the foundation for Hydrogen use



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

Global Hydrogen Demand by Sector, Net Zero Emissions Target Scenario (Mt)



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

Key Trends Driving Hydrogen Adoption

Most hydrogen used today is in the production of ammonia and steel, or by oil refineries

Future growth projections are based on a number of key trends that are driving adoption



ESG investment and country policies push to decarbonise



Technological advances across the hydrogen value chain



Hydrogen enhances flexibility of grids and industrial applications



Use of hydrogen as transport fuel or heat source alternative

Types of Hydrogen Production

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	✓	✗	✗	✗	✗

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

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

1. Source: Christophe Rigollet¹, Alain Prinzhofer^{2,3}, 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.

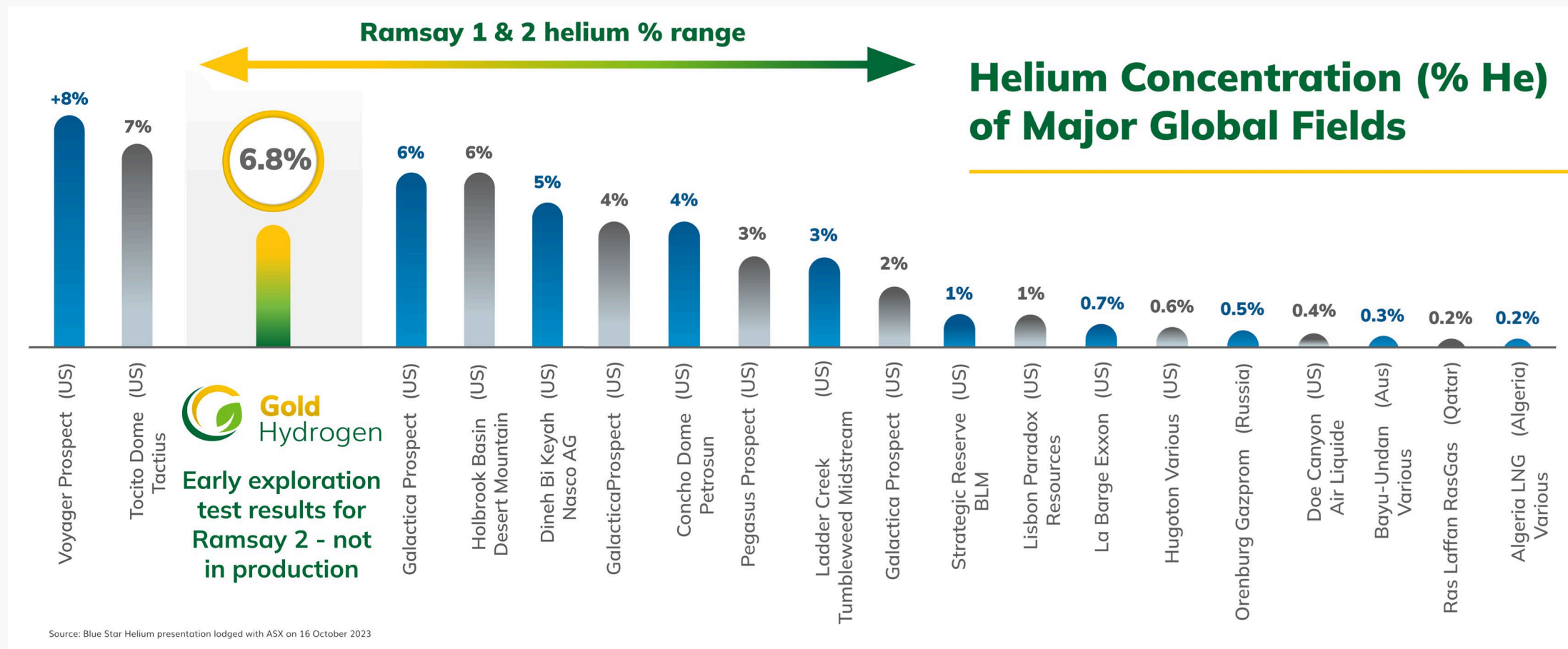
It gives us information on its renewability, on the natural flows involved and therefore on its sustainable exploitation. It is possible to estimate that the cost of operating hydrogen would be less than \$1/kg, which is significantly cheaper than any manufactured hydrogen, whether green, grey, or blue. 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

Global Helium Projects

Gold Hydrogen's Ramsay 1 & 2 exploration wells found Helium at up to 6.8% (in addition to the 86% Hydrogen identified)



Gold Hydrogen currently has insufficient data to publish of a prospective resource for Helium, but is aiming to establish a maiden prospective resource report in the first quarter of 2024.



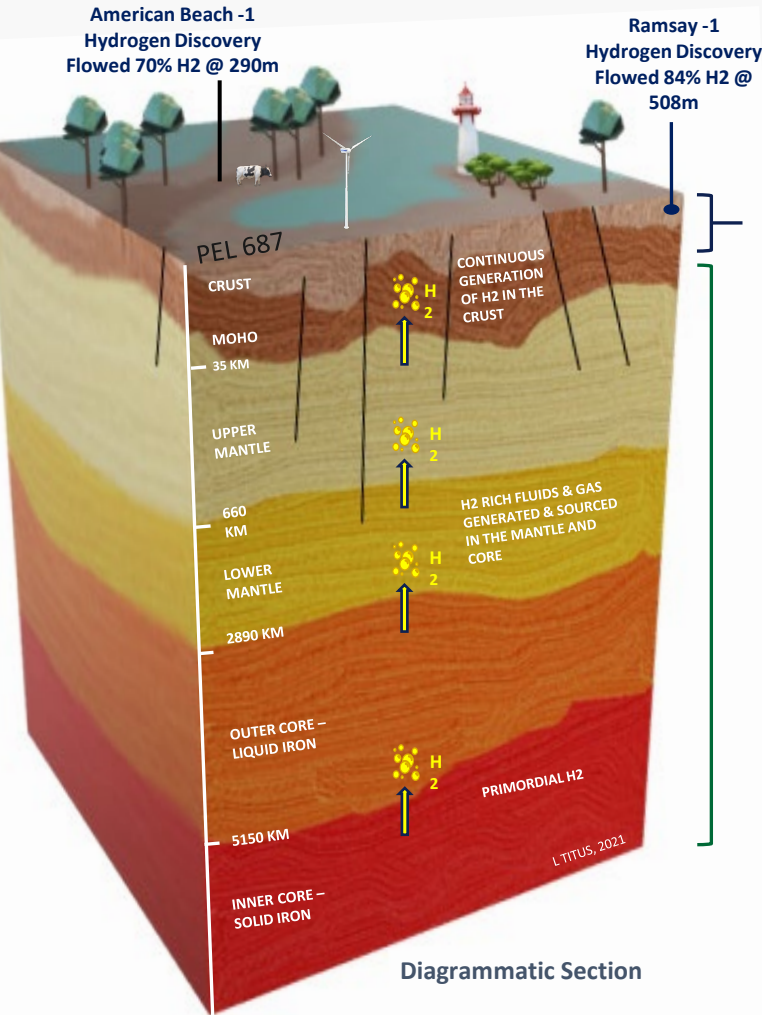
Company Overview

Historical Drilling Found Hydrogen: Ramsay 1 Confirmed it


- In the 1920s and 1930s, Natural Hydrogen occurrences in PEL 687 were reported during unsuccessful ventures looking to discover oil
- Gases from the Ramsay Oil Bore were sampled by the State of South Australia at the rig site and after lab analysis was found to have a very high Natural Hydrogen content between 66% and 89% (air corrected)
- Gold Hydrogen successfully twinned the Ramsay Oil Bore in October 2023 (Ramsay 1) and also drilled Ramsay 2 and found up to **86% Hydrogen and 6.8% Helium** (refer ASX releases from 31 October 2023 to 19 December 2023)

	<i>Historical drilling</i>		<i>2023 Program</i>	
	American Beach	Ramsay Oil Bore 1	Ramsay 1	Ramsay 2
Depth (m)	289.5	240	220 - 1005	220 – 1064
H2 (%) air corrected values	83.3	76	73.3% H2	86% H2 (6.8% He raw gas)

Gold Hydrogen Prospective Resources



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

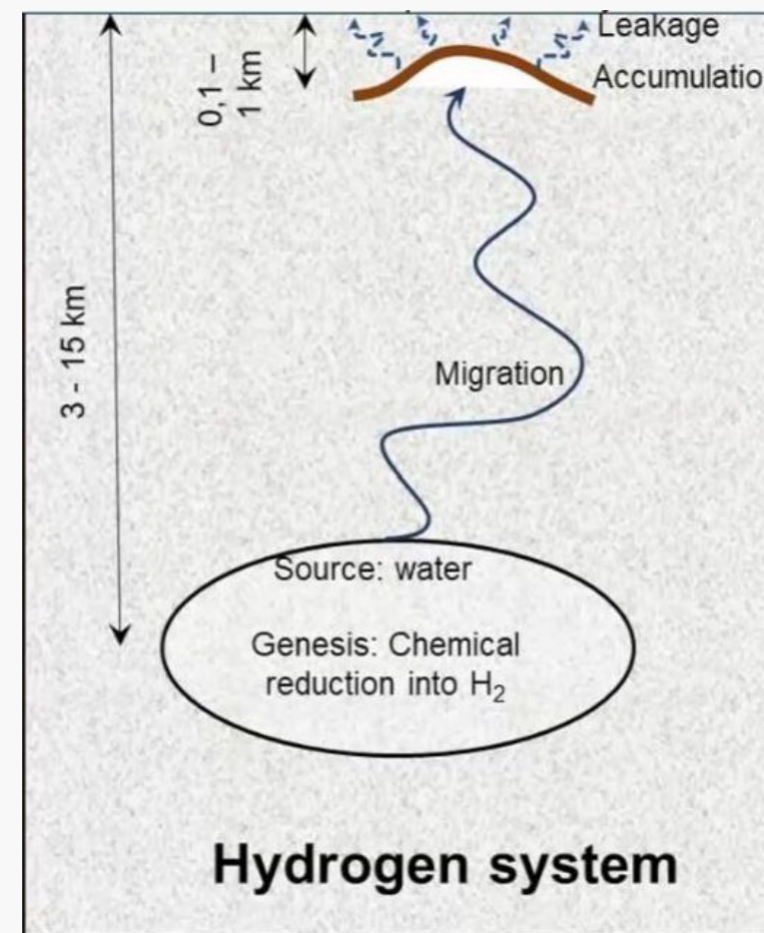
NOTE - All estimates are unrisked and aggregated arithmetically by category, hence caution that the aggregate low estimate may be a conservative estimate and the aggregate high estimate may be very optimistic estimate due to the portfolio effects of arithmetic summation. The estimated quantities of hydrogen 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, risk of development and risk of commercialization. Further exploration, appraisal and evaluation is required to determine the existence of a significant quantity of potentially recoverable Natural Hydrogen.

See ASX release of 13 January 2023 for full details and notes

Key Success Factors

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

Key Success Factor		Ramsay Project
Source & Generation	<i>Via hydrolysis and radiolysis reactions in old rocks</i>	Located at the Gawler craton of South Australia, where radiolysis and hydrolysis reactions of iron-rich rocks are ongoing creating naturally occurring hydrogen 
Seals & Traps	<i>Required to enable accumulations of naturally formed hydrogen</i>	The Cambrian stratigraphy including tight limestones that overlie the basement source rocks provides likely seals that were penetrated by the historic wells that found hydrogen 
Structure	<i>Major structural boundaries in an extensional geological regime where natural fractures exist</i>	Ramsay Project located on major lithospheric boundary and bend in the Tasman line of the Delamerian orogeny. Additionally, it is within the setting of the tectonically active horst-graben Adelaide extensional rift 
Reservoir	<i>To be commercial, a reservoir of adequate volume, accessibility, flow rate and quality is required</i>	Ramsay Project Reservoir may extend to 5km depth (with only 50-150m thickness assumed in the Technical Expert Report) with historical occurrences of up to 84% Natural Hydrogen (up to 89% air-corrected) from rocks which overlie the Basement Source rocks 



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

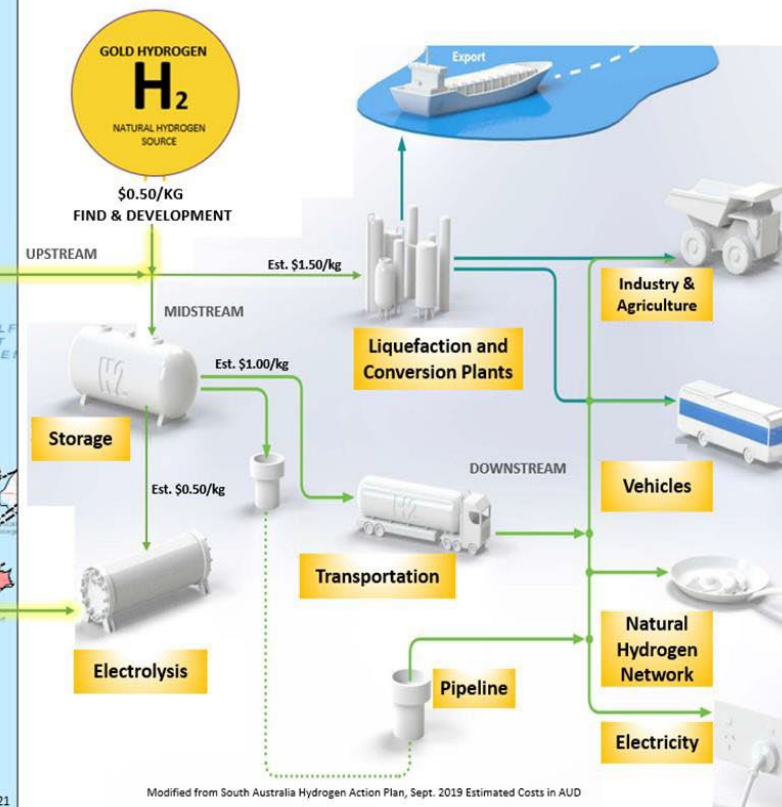
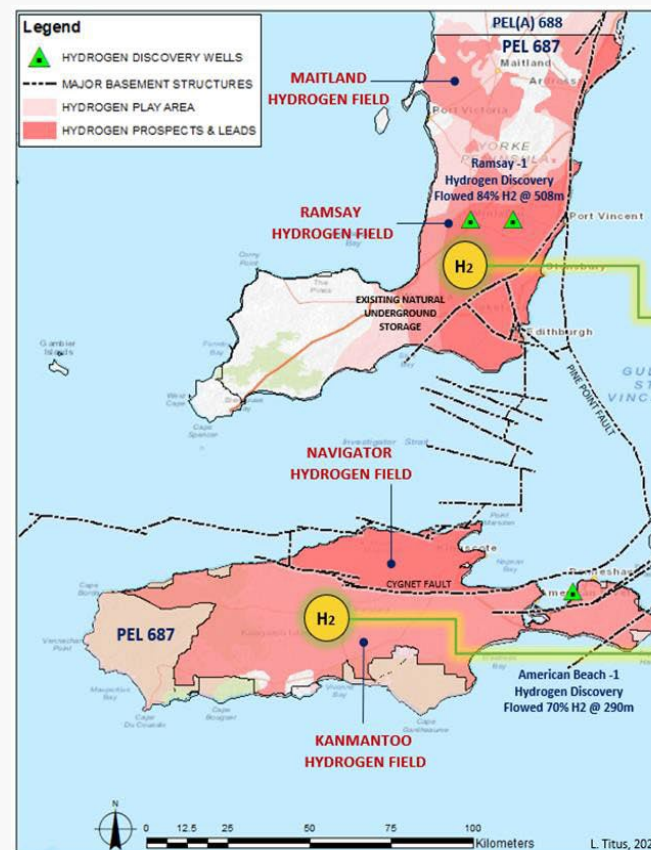
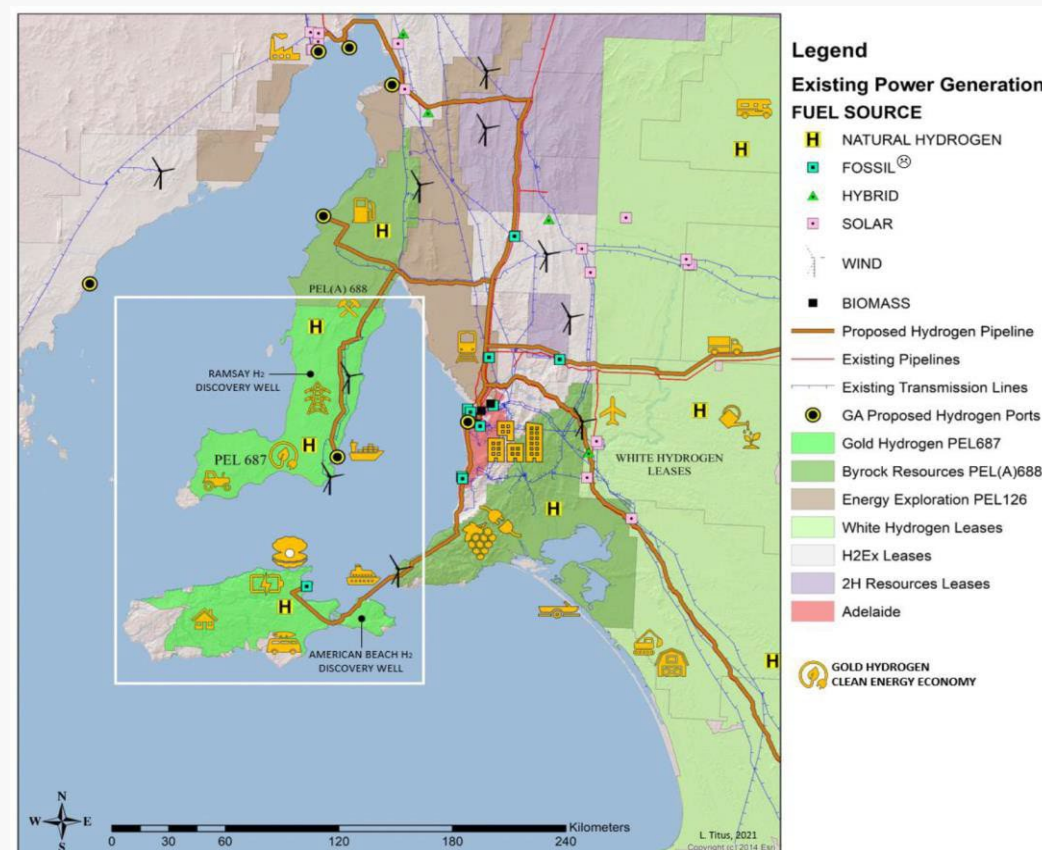
Gold Hydrogen 2024 Activities

- March 2024 – Maiden Prospective Resource Report for Helium
- March 2024 – Commence flow testing technical program Ramsay 1 & 2
- May 2024 – Update to Prospective Resource Report for H2 and He
- May 2024 – Begin Ramsay pilot feasibility study
- June 2024 – 2D seismic program
- August 2024– Proposed drilling of Ramsay 3 & 4
- October 2024 – Well test Ramsay 3 & 4
- November 2024 – Decision on Ramsay pilot

Ramsay 1 drill site and Savanna Energy drill rig



Large Scale Potential Commercialisation Opportunities





Key Team

Key Management



Neil McDonald
Founder & Managing Director

Neil McDonald has more than 20 years of extensive commercial experience across the energy and minerals sectors in multiple Australian states. He has been involved from greenfield exploration to early development in projects across Queensland, Northern Territory and South Australia. He has worked on and helped commercialise some of Australia's largest exploration projects for private and public companies.

As a commercial lawyer, Neil has a strong legal grounding in commercial and regulatory compliance in the resources industry. Areas of focus in his career have been: acquiring new assets for business growth, monetisation of existing assets, engaging domestic and international investors, new partnerships to maximise commercialisation of assets, developing non-partisan relationships at the highest political levels, both Federal and State.

Neil is a graduate of the Australian Institute of Company Directors.



Roger Cressey
Executive Director, Commercial & Operations

Roger Cressey has more than 35 years of experience in the resource industry, predominantly in gas exploration and production.

Roger has held CEO, COO and other executive roles within upstream and downstream operations across Australia, most recently in Queensland, NT and before that PNG. He has also held senior roles with companies active in Indonesia and Uganda.

Roger's strengths lie in managing multi-discipline teams, strategy development and delivery.

He has a strong focus on engagement with both external and internal key stakeholders.



Karl Schlobohm
Company Secretary & Chief Financial Officer

Karl Schlobohm is a Chartered Accountant and Fellow of the Governance Institute of Australia, with over 30 years experience across a range of businesses and industries.

Karl has extensive listed company experience spanning the ASX, LSE, AIM and TSX exchanges, and has acted as CFO and / or Company Secretary for a number of publicly-listed companies in the resources industry including SolGold plc, Atlantic Lithium Ltd, DGR Global Ltd, and Meridian Minerals Ltd.



Josh Whitcombe
Chief Operating Officer

Dr Josh Whitcombe is a Chartered Chemical Engineer and RPEQ with over 20 years of experience in the Oil and Gas industry, both offshore and onshore.

Josh has held a number of Senior Management roles with small to mid-sized gas producers in Australia. After completing a PhD in oil refining he worked offshore with Shell International before returning to Australia 15 years ago.

Prior to joining Gold Hydrogen he has had extensive experience in both green field exploration and brown field conventional gas operations. He has demonstrated an ability to manage diverse technical challenges, while focusing on HSE and community outcomes.

Board of Directors



Neil McDonald
Founder &
Managing Director

- Neil McDonald has more than 20 years of extensive commercial experience across the energy and minerals sectors in multiple Australian states. He has been involved from greenfield exploration to early development in projects across Queensland, Northern Territory and South Australia. He has worked on and helped commercialise some of Australia's largest exploration projects for private and public companies.
- Neil is a graduate of the Australian Institute of Company Directors.



Alexander Downer
Independent
Non-Executive Chair

- Alexander Downer is one of the country's best-known politicians and diplomats. Leader of the Liberal Party, Minister for Foreign Affairs and High Commissioner to the UK. Before entering politics he was an executive director of the Australian Chamber of Commerce.
- Since departing Canberra and the diplomatic service, he holds or has previously held board appointments including the Advisory Board of British strategic intelligence and advisory firm Hakluyt & Company, merchant bankers Cappello Capital Corp. the Adelaide Symphony Orchestra, Huawei in Australia, as well as ASX-listed Lakes Oil NL and Ironbark Zinc Ltd.
- Alexander is currently a Non-Executive Director of Yellow Cake Plc, is a columnist for the AFR and is Companion of the Order of Australia.



Katherine Barnet
Independent
Non-Executive Director

- Katherine Barnet is a Chartered Accountant with over 25 years' experience in the provision of professional services. Katherine is currently a partner at Olvera Advisors, a boutique Sydney-based consultancy, and has worked on some of Australia's largest corporate matters and achieved success in developing, evaluating and understanding complex financial transactions, optimising sustainable growth and increasing value to corporate entities. Her recent corporate expertise has been focused on the renewable energy / mining, retail, property and construction industries.
- Katherine 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 more than 35 years of experience in the resource industry, predominantly in gas exploration and production.
- Roger has held CEO, COO and other executive roles within upstream and downstream operations across Australia, most recently in Queensland, NT and before that PNG. He has also held senior roles with companies active in Indonesia and Uganda.
- Roger's strengths lie in managing multi-discipline teams, strategy development and delivery.
- He has a strong focus on engagement with both external and internal key stakeholders.

Gold Hydrogen Summary

	Title over reported natural hydrogen occurrences and a prospective resource	Certified Prospective Resource for natural hydrogen with an unrisks Best Estimate of 1.3 billion kilograms (Refer Slide 13 for details)
	Flagship project, exploration permit granted	Ramsay Project 7,820 km ² (green on map) is 100% owned by Gold Hydrogen. Other locations under exclusive application to Gold Hydrogen are a further 67,512 km ²
	Exploration results	Stage One exploration drilling program of Ramsay 1 and Ramsay 2 on the Yorke Peninsula. Preliminary gas sample analyses have yielded high purity levels of up to 86% hydrogen plus helium in high purity levels up to 6.8%
	Enabling engagements with leading global experts	Strategic engagements to date with SLB (Schlumberger), CSIRO, Total Seismic, and Xcalibur Multiphysics, Savanna Energy Services
	Significant commercial and environmental competitive advantage	As a replacement for carbon-based fuels, naturally occurring hydrogen offers significant cost and emission advantages relative to other sources of Hydrogen production

... and we have a potential Helium play as well



Neil McDonald
Managing Director
neil@goldhydrogen.com.au
+61 0 421 331 933

goldhydrogen.com.au