



Gold Hydrogen

**Aiming to Develop Naturally
Occurring Australian Hydrogen**

November 2023 Investor Conferences

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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's 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 10

Key Team 16

Executive Summary - Low Cost, Natural Hydrogen

	<p>Title over natural hydrogen occurrences and a certified prospective resource</p>	<p>Certified Prospective Resource for natural hydrogen with an unrisks Best Estimate of 1.3 billion kilograms (Refer Slide 12 for details)</p>
	<p>Flagship ‘Ramsay Project’, exploration permit granted, plus application permits</p>	<p>Ramsay Project 7,820 km² (green on map) is 100% owned by Gold Hydrogen. Other locations under exclusive application to Gold Hydrogen are a further 67,512 km²</p>
	<p>Ramsay 1 exploration well results indicate Hydrogen and Helium</p>	<p>Preliminary gas sample analyses have yielded high purity levels of up to 73% hydrogen plus helium in high purity levels at 3.6%</p>
	<p>Enabling engagements with leading global experts and contractors</p>	<p>Strategic engagements with CSIRO, Schlumberger, Total Seismic, Xcalibur, Savanna Energy Services</p>
	<p>Significant commercial and environmental competitive advantage</p>	<p>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</p>

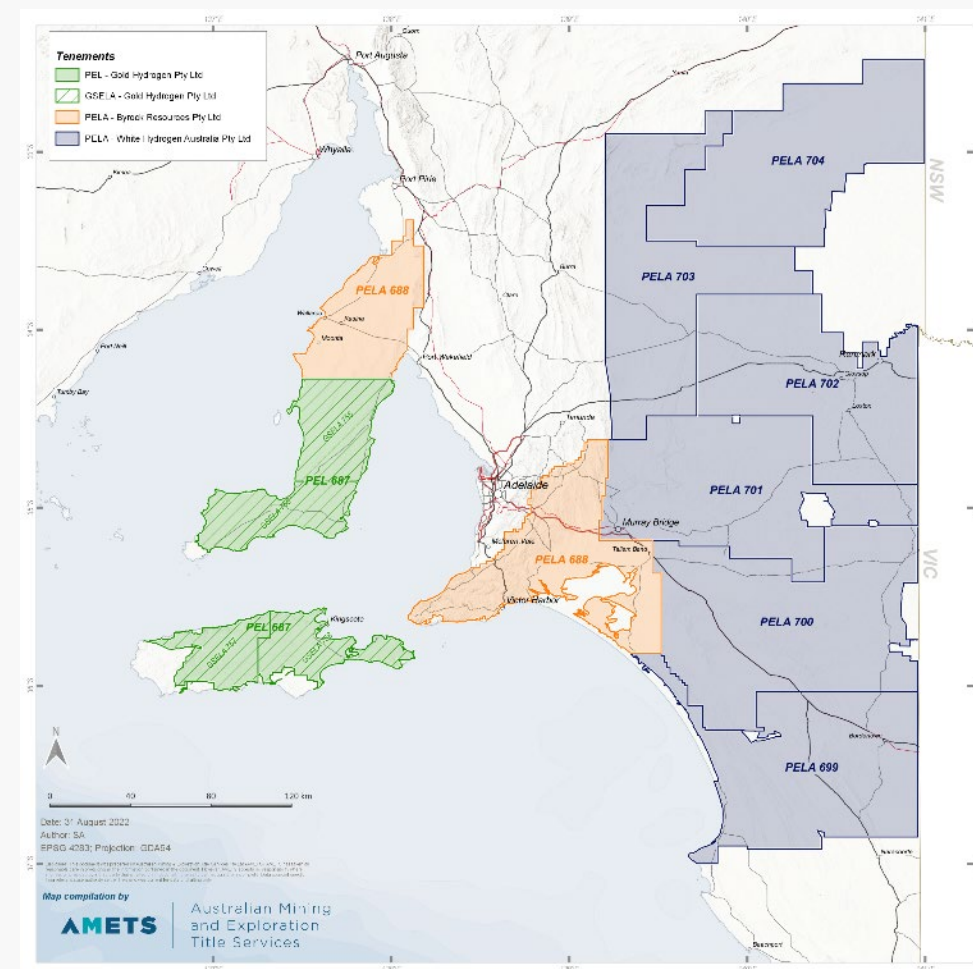


Figure: Overview of Gold Hydrogen tenements

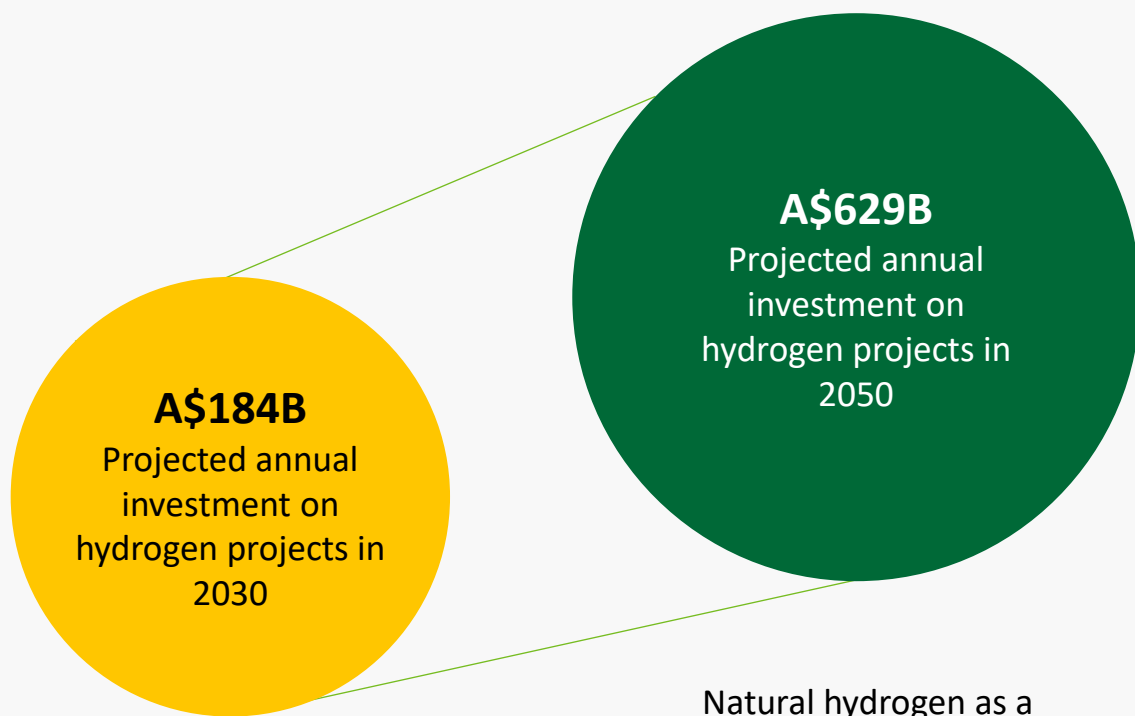


Industry Overview



Global Hydrogen Forecast

Substantial investment laying the foundation for Hydrogen use

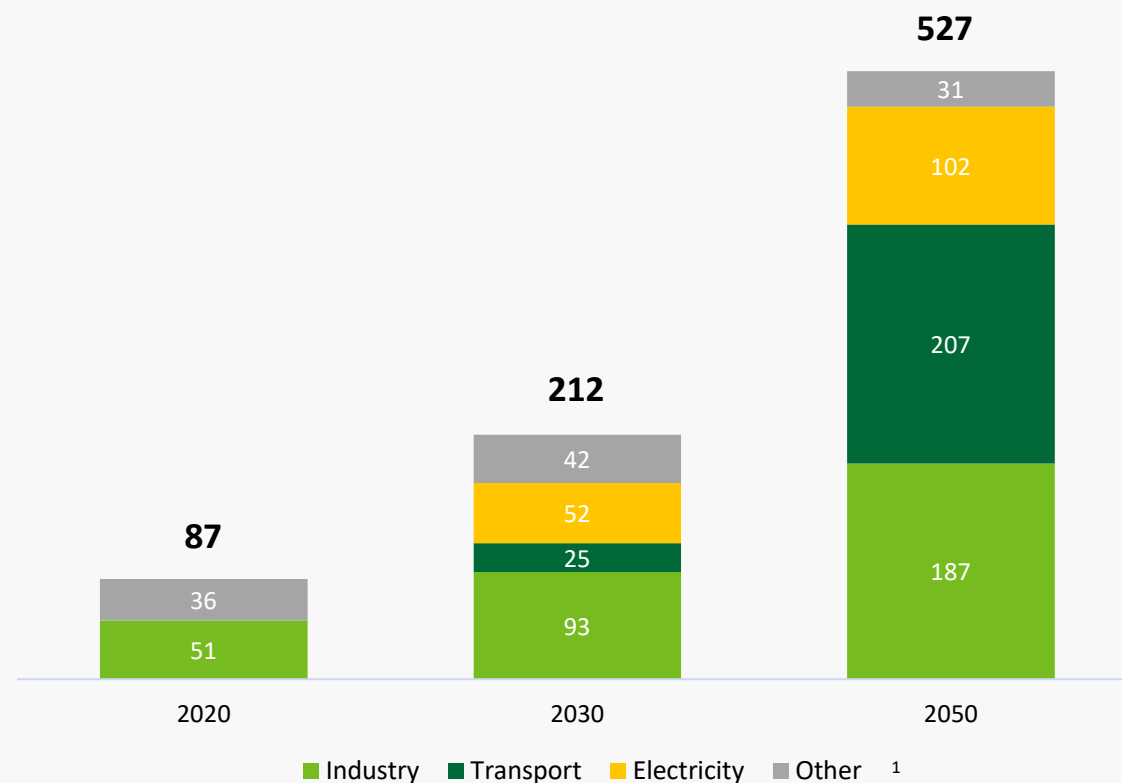


ESG push to decarbonise industries and economies is underpinning demand for hydrogen

Natural hydrogen as a carbon-neutral, low-cost source presents a very attractive opportunity to facilitate decarbonisation

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

		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

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

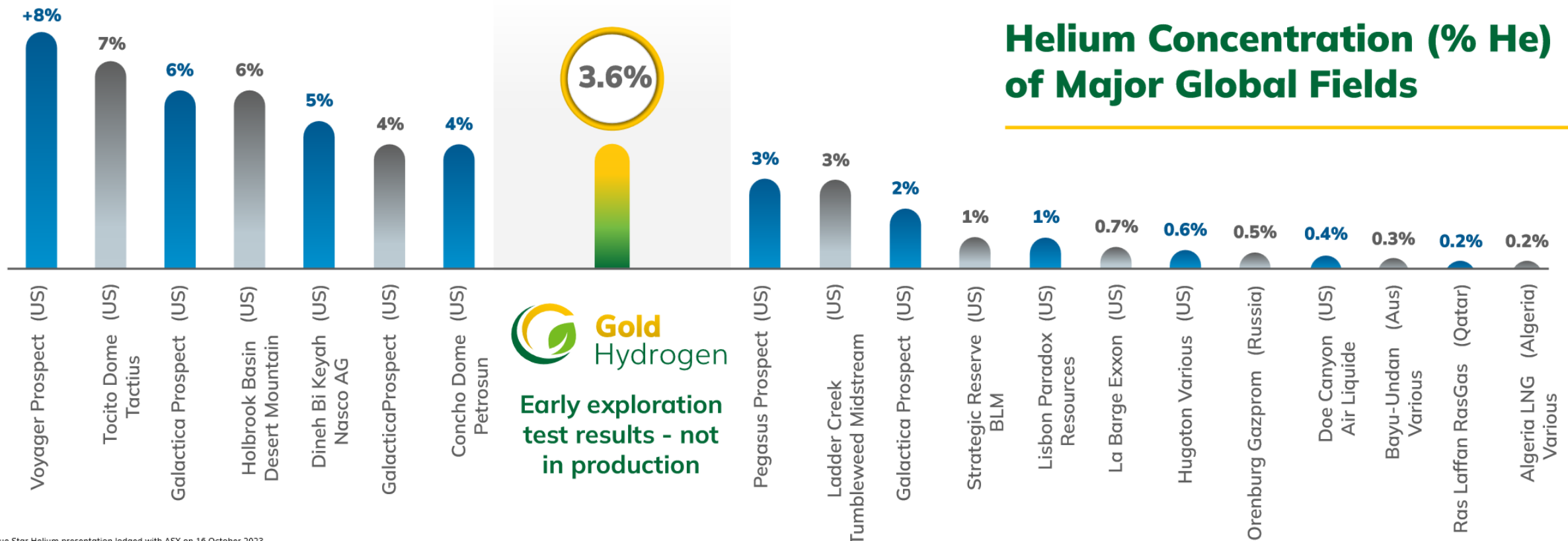
manufactured hydrogen, whether green, grey, or blue. Equivalent work is in progress in other continents, in order to be able to compare our knowledge of this Malian field with other fields in the world, which will make it possible to better ensure the industrial and societal interest of R&D for this 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 exploration well found Helium at up to 3.6% (in addition to the 73% Hydrogen identified)



Source: Blue Star Helium presentation lodged with ASX on 16 October 2023

Gold Hydrogen currently has insufficient data for the generation of a prospective resource for Helium. This will be an ongoing focus of exploration and development initiatives if Helium continues to be encountered.



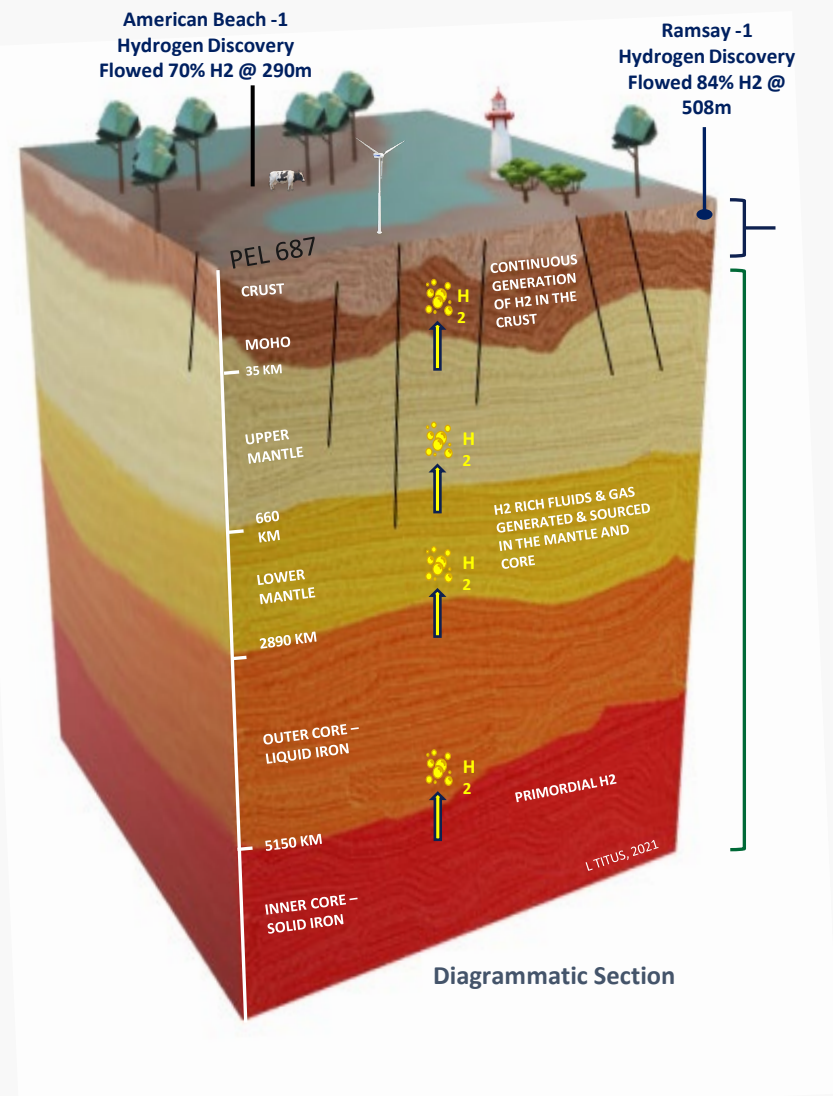
Company Overview

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 twined the Ramsay Oil Bore in October 2023 and found up to 73.3% Hydrogen and 3.6% Helium (both air corrected values)

	<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	TBC
H2 (%) air corrected values	83.3	76	Up to 73.3 (3.6% He)	TBC

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

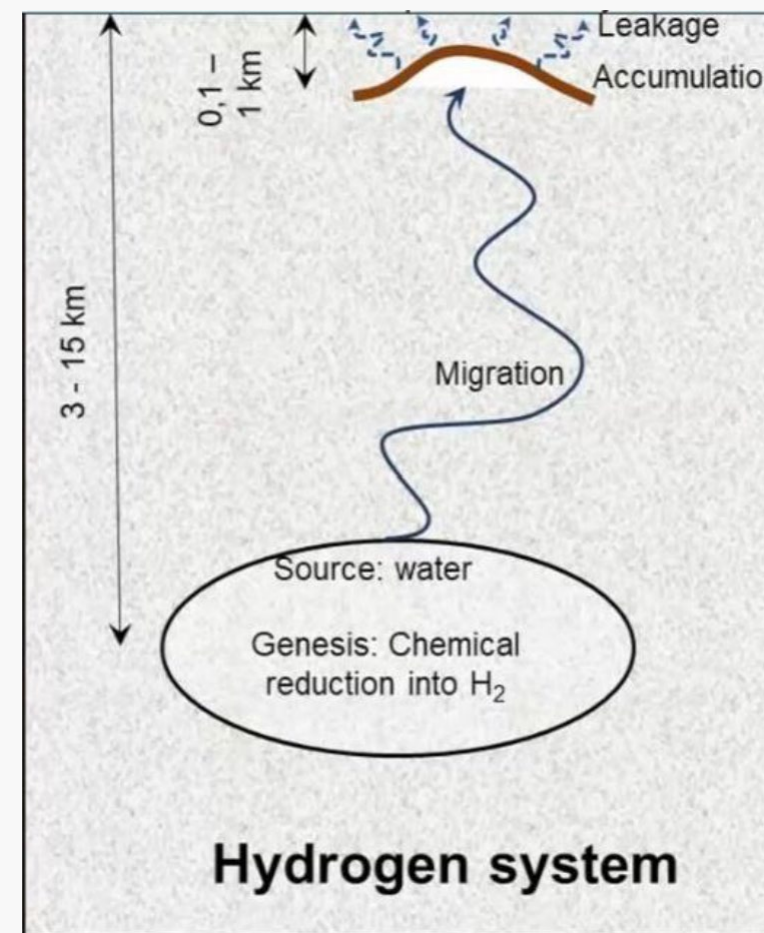
NOTE - All estimates are unrisked and aggregated arithmetically by category, hence caution that the aggregate low estimate maybe a conservative estimate and the aggregate high estimate maybe very optimistic estimate due to the portfolio effects of arithmetic summation. The estimated quantities of hydrogen 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)

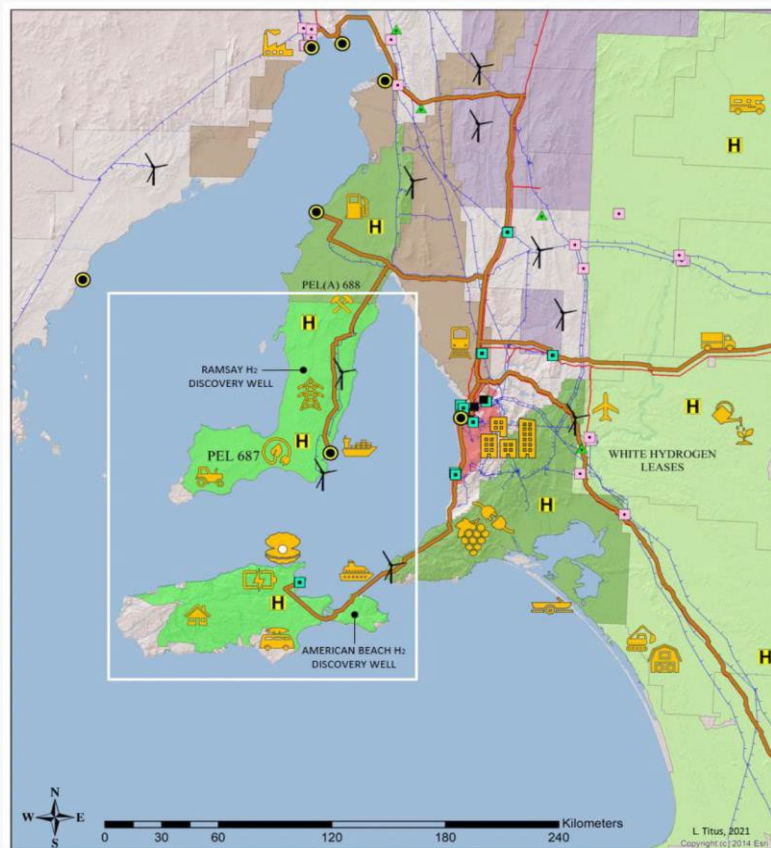
Gold Hydrogen activity since inception

- *1920s - 1930s: Before Gold Hydrogen was formed, natural Hydrogen reported at 66% and 89% (air corrected) while drilling for oil*
- 2020-2021: Gold Hydrogen formed, leases obtained
- 2020-2022: ongoing G&G desk- top work including seismic reprocessing, static modelling; planning and approvals processes for field exploration activities
- Jan 2023: Gold Hydrogen IPO; ongoing G&G
- Mar 2023: Airborne Gravity Gradiometer (AGG) Survey
- Apr 2023: Soil-gas sampling by CSIRO
- Jun-Jul 2023: Interpretation of airborne data
- Sep 2023: Drilling approvals received
- Oct 2023: Ramsay 1 exploration well spuds (11 Oct)
- Next: Analysing data from Ramsay 1 and Ramsay 2 wells and determine next steps;
 - Potential activities 2024: seismic, exploration drilling ...

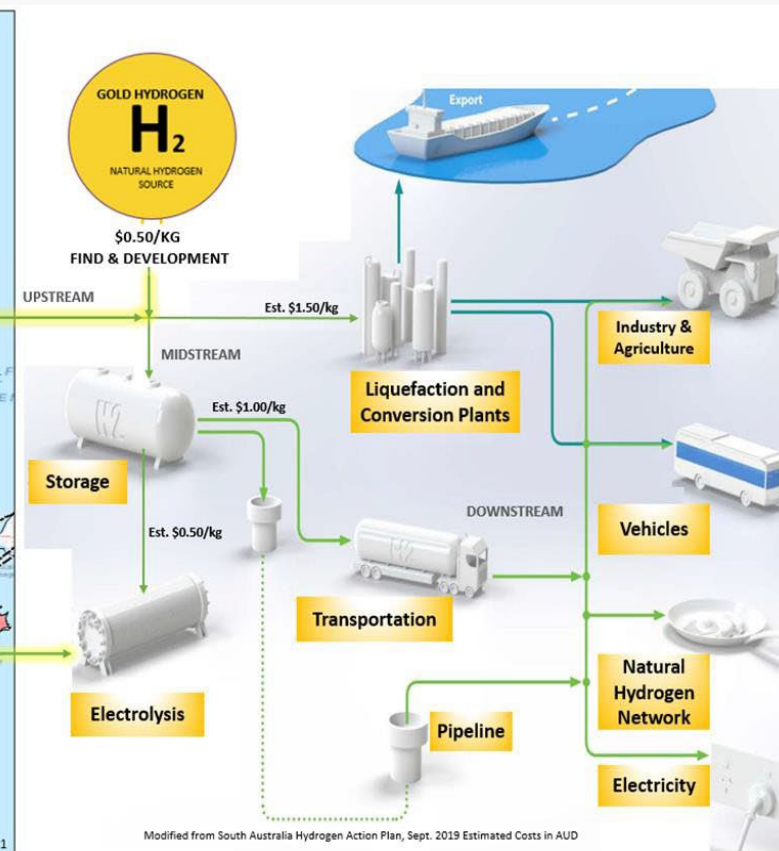
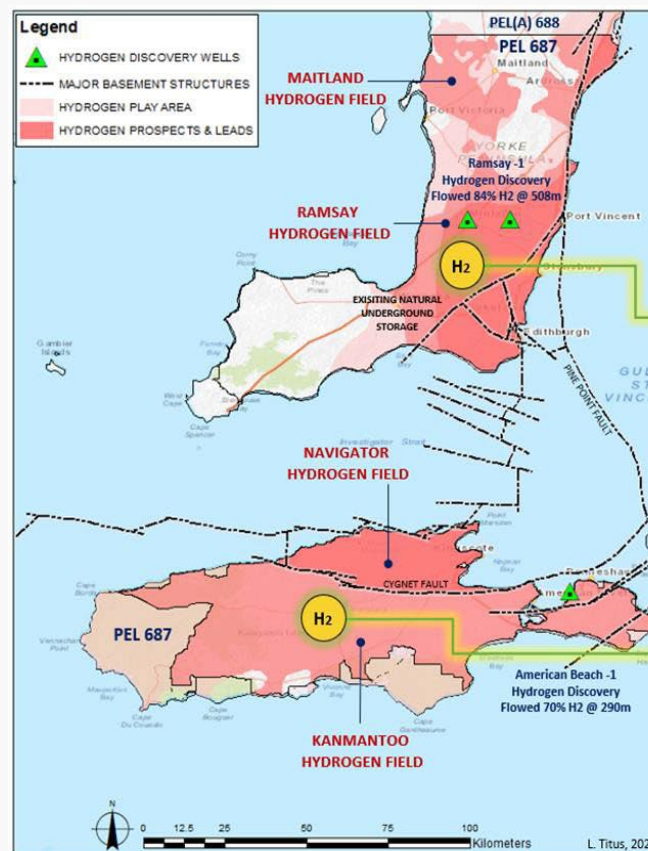
Ramsay 1 drill site and Savanna Energy drill rig



Large Scale Potential Commercialisation Opportunities



- Legend**
- Existing Power Generation FUEL SOURCE**
- H** NATURAL HYDROGEN
 - FOSSIL
 - HYBRID
 - SOLAR
 - WIND
 - BIOMASS
 - Proposed Hydrogen Pipeline
 - Existing Pipelines
 - Existing Transmission Lines
 - GA Proposed Hydrogen Ports
 - Gold Hydrogen PEL687
 - Byrock Resources PEL(A)688
 - Energy Exploration PEL126
 - White Hydrogen Leases
 - H2Ex Leases
 - 2H Resources Leases
 - Adelaide
- GOLD HYDROGEN CLEAN ENERGY ECONOMY





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, Meridian Minerals Ltd and Tombola Gold 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 Barnett
**Independent
 Non-Executive Director**




- Katherine Barnett 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.



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**Executive Director,
 Commercial & Operations**

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Gold Hydrogen Summary

	<p>Title over reported natural hydrogen occurrences and a prospective resource</p>	<p>Certified Prospective Resource for natural hydrogen with an unrisks Best Estimate of 1.3 billion kilograms (Refer Slide 12 for details)</p>
	<p>Flagship project, exploration permit granted</p>	<p>Ramsay Project 7,820 km² (green on map) is 100% owned by Gold Hydrogen. Other locations under exclusive application to Gold Hydrogen are a further 67,512 km²</p>
	<p>Near term value inflection point</p>	<p>Stage One exploration drilling program commenced in October 2023 on the Yorke Peninsula, with Ramsay 2 exploration well to spud in November 2023</p>
	<p>Enabling engagements with leading global experts</p>	<p>Strategic engagements with SLB (Schlumberger), CSIRO, Total Seismic, and Xcalibur Multiphysics, Savanna Energy Services</p>
	<p>Significant commercial and environmental competitive advantage</p>	<p>As a replacement for carbon-based fuels, naturally occurring hydrogen offers significant cost and emission advantages relative to other sources of Hydrogen production</p>

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



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