

## Quarterly Activities Report for the Period Ended 31 December 2024

### GOLD HYDROGEN LTD (ASX:GHY)

Shares on Issue  
159.7 million

Market Capitalisation  
A\$80m (at A\$0.55 per share)

#### Directors

Rt Hon Alexander Downer (Chair)  
Neil McDonald (Managing Director)  
Roger Cressey (Executive Director)  
Katherine Barnett (Non-Executive Director)

Company Secretary / CFO  
Karl Schlobohm

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### HIGHLIGHTS FOR THE DECEMBER QUARTER

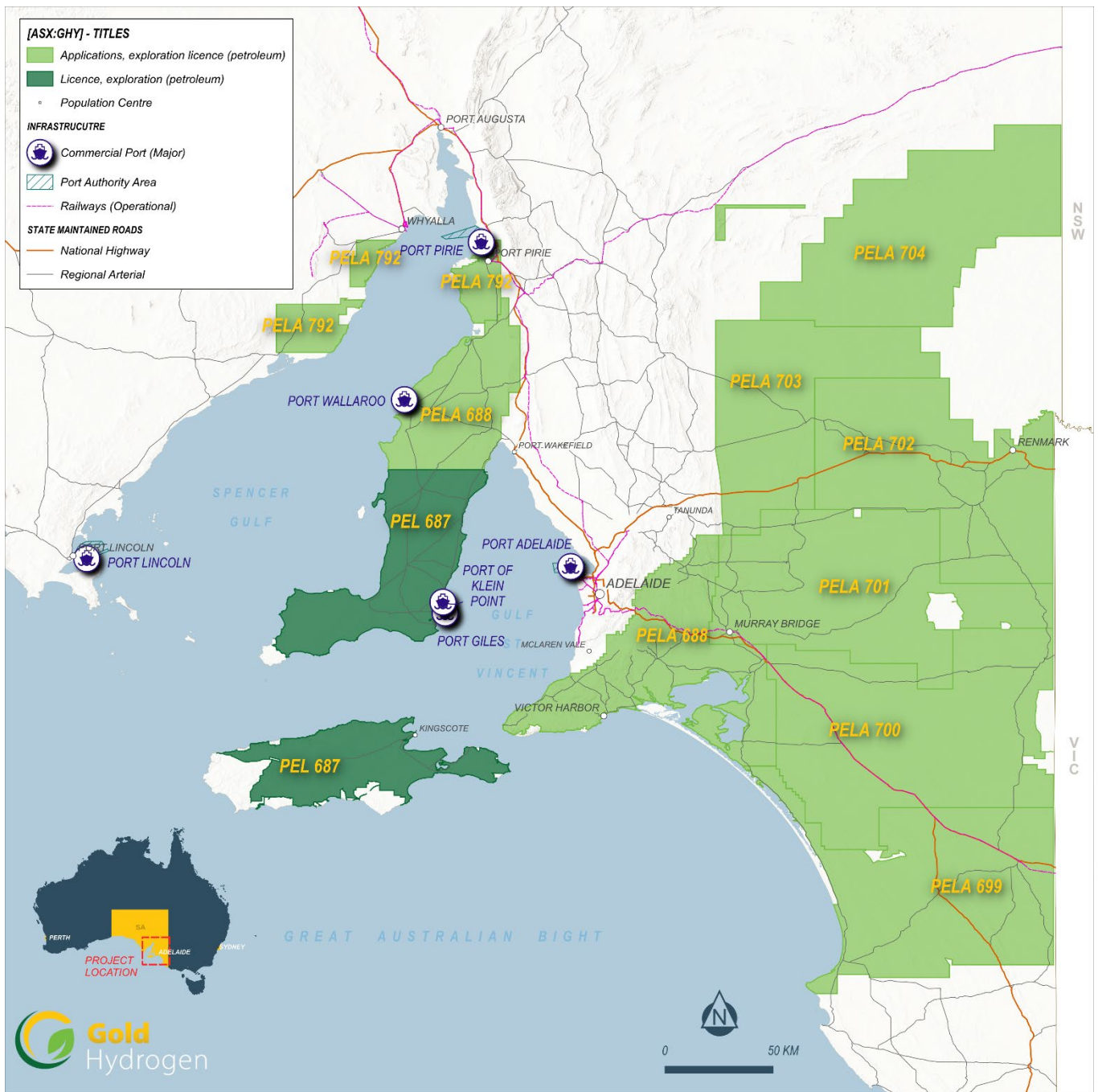
- Helium-3 detected in Ramsay Project gas samples by Oxford University laboratory testing. Helium-3 is an extremely rare and valuable commodity, and is expected to play a pivotal role in the development of nuclear fusion as a future source of energy. Current pricing for Helium-3 is approximately USD18.7m per kilogram.
- Helium purities of up to 36.9% (air-corrected) measured during the Company's Stage 2 well testing program. This is currently reported to be amongst the highest purities for Helium discoveries in the world.
- Stage 2 exploration well testing demonstrated promising and increasing purities of both Natural Hydrogen and Helium being brought to and measured at surface as the Ramsay 1 and 2 wells were dewatered (refer Figures 2 and 3).
- Analysis of the Company's drilling and testing campaign identified a potential 180m thick and extremely high-purity Kulpara Dolomite zone which featured positive Helium shows in the exploration well testing of Ramsay 2.
- Expansion of Gold Hydrogen's South Australian project footprint, with the award of petroleum exploration licence application PELA792, as displayed in Figures 1 and 5.
- Technical team strengthened by the appointment of Peter Bubendorfer as Chief Geologist to work with the existing geological team of Frank Glass and Julien Bourdet as well as with the Company's Chief Technical Officer Billy Hadi-Subrata.

## EXPLORATION AND TECHNICAL ACTIVITIES

### General Background

Gold Hydrogen is focused on the discovery and development of Natural Hydrogen and Helium gases in a potentially extensive and world class Natural Hydrogen and Helium province in South Australia. The domestic and global demand for Hydrogen, combined with new Natural Hydrogen exploration techniques and experienced personnel, provides Gold Hydrogen with an extraordinary opportunity to define and ultimately develop a new Natural Hydrogen gas province. Further to this, Helium is extremely rare and expensive, there is limited world-wide production, and no production of Helium in Australia at present. Gold Hydrogen is well placed to potentially prosper from this opportunity.

**Figure 1 – Gold Hydrogen PEL 687 and PELA's located in South Australia**



The combined permit area of the Gold Hydrogen group exceeds 75,000km<sup>2</sup>. Gold Hydrogen holds one granted exploration license (the Ramsay Project - PEL 687) and one application area, whilst its two 100% owned subsidiary companies (White Hydrogen Australia and Byrock Resources) hold an additional seven (7) applications for Natural Hydrogen and Helium exploration within South Australia. Gold Hydrogen is also the preferred applicant for four (4) gas storage exploration licenses applications (GSELA) covering an area approximating 8,000km<sup>2</sup> within the Yorke Peninsula portion of PEL 687 in South Australia. These storage licence applications are in addition to the granted exploration licence and application licences.

A summary of the status of the group's petroleum and storage licence tenure at the end of the Quarter is outlined in **Appendix A**.

### **Detection of Helium-3 in Ramsay Project Gas Samples**

As reported in detail by the Company on 30 October 2024, Oxford University's specialist noble gas research laboratory within its Department of Earth Sciences, measured and confirmed the presence of Helium-3 (<sup>3</sup>He) in gas samples taken from the Ramsay 2 well, at depths from 280 meters to 1,000 meters. The Oxford University Department of Earth Sciences analysis confirmed that:

- the Ramsay Project Helium purity levels of up to 36.9%<sup>1</sup> rank among the highest ever recorded globally;
- levels of Helium-3 have been confirmed up to the magnitude of 901 ppt (atmospheric <sup>3</sup>He is 7.2 ppt); and
- the isotopic analysis results from samples tested suggest up to 3.47ppb <sup>3</sup>He within a 36.9% Helium sample.

Refer also to Tables 1 - 3 for further information in accordance with Listing Rule 5.30.

To assist shareholders and interested investors better understand the Helium-3 market and its potential future growth opportunities, additional information outlined in detail in the Company's 30 October 2024 announcement on Helium-3 included:

#### *Helium-3 is an Extremely Rare and Valuable Gas*

Helium-3 (<sup>3</sup>He), is an extremely rare gas to be found on Earth (7.2 parts per trillion (ppt) within the atmosphere) and represents only a tiny fraction of the planet's Helium production, and is primarily captured from the decay of Tritium in nuclear weapons. Information on naturally occurring Helium-3 (<sup>3</sup>He) on Earth is extremely limited. The largest known source of Helium-3 is the Moon, with its surface soil containing Helium-3 (<sup>3</sup>He) due to solar wind accumulation over billions of years. In contrast, Earth's Helium-3 (<sup>3</sup>He) concentrations found in natural gas and volcanic emissions are extremely scarce.

Commercial supplies of Helium-3 (<sup>3</sup>He) could significantly impact the global energy market by providing a clean, efficient fuel for nuclear fusion, potentially revolutionizing energy production. Based on existing fusion technology (e.g. Tokamak fusion reactors developed by companies such as Commonwealth Fusion Systems<sup>2</sup>), Helium-3's use in fusion reactors could generate vast amounts of energy with zero or minimal radioactive waste, providing a sustainable alternative to current energy sources.

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<sup>1</sup> All Natural Hydrogen and Helium sample results have been corrected for air contamination

<sup>2</sup> Foreign Policy News article (21 September 2021). Available at:

<https://foreignpolicynews.org/2021/09/21/with-the-fusion-breakthrough-by-commonwealth-fusion-systems-helium-3-is-becoming-a-national-security-issue-for-the-united-states/>

The scarcity of Helium-3 on Earth as the fuel source for Tokamak reactors has been the major constraint on their scale-up and commercial use. This has led to a number of companies from countries including the USA, China and Russia pursuing plans to extract Helium-3 ( $^3\text{He}$ ) from lunar regolith in the coming decade.

### *The Strategic Value of Helium-3<sup>3</sup>*

In addition to nuclear fusion energy, Helium-3 is a highly valuable and rare isotope, indispensable in advanced fields such as quantum computing, cryogenics, medical imaging, and nuclear material monitoring. With its neutron absorption capability, Helium-3 plays an essential role in neutron detection and future technologies:

- current prices for Helium-3 exceed \$2,500 per litre (USD 70.8 million per McF or USD 18.7 million per kg), over 140,000 times the value of Helium-4; and
- this isotope is vital for nuclear fusion, a field seeing rapid advancements, especially through projects like Commonwealth Fusion Systems, backed by major stakeholders including the US Energy Department, Khosla Investments, and the Bill Gates founded Breakthrough Energy Ventures<sup>2</sup>.

### *How is Naturally Present Helium-3 ( $^3\text{He}$ ) in the Subsurface Derived?*

Naturally present Helium-3 in the subsurface derives from rock that interacted with the deep Earth interior, the lower mantle being a primordial and undegassed material. For example, Mid-Ocean Ridge Basalts (MORBs) are mafic rocks derived from larger mantle domains that appear to sample deep mantle  $^3\text{He}$  transported to the melting domain in the upper mantle by large-scale mantle convection.  $^3\text{He}$  enrichment is quantified by  $^3\text{He}/^4\text{He}$  ratios relative to the  $^3\text{He}/^4\text{He}$  ratio in air (R/RA). Granitic basement rocks are formed by melting at the base of the continental crust and have very low range of 0.01-0.1 R/RA due to their high content of radioactive elements (U, Th) generating  $^4\text{He}$  only and lack of mantle material interaction. Enrichment in  $^3\text{He}$  in granitic basement can be a marker for intrusions of deep magmatic material or interaction with deep mafic rocks.

### *Further Background Information and Articles on Helium-3*

<https://www.edelgasgroup.com/helium-3-market-report>

<https://foreignpolicynews.org/2021/09/21/with-the-fusion-breakthrough-by-commonwealth-fusion-systems-helium-3-is-becoming-a-national-security-issue-for-the-united-states/>

<https://www.forbes.com/sites/roberthart/2022/12/13/nuclear-fusion-breakthrough-can-the-quest-for-clean-energy-finally-help-tackle-the-climate-crisis/>

<https://www.techno-science.net/en/news/china-considers-catapulting-helium-from-the-moon-to-earth-N25636.html>

<https://english.elpais.com/science-tech/2024-05-12/helium-3-mining-the-fuel-of-the-future-on-the-moon.html>

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<sup>3</sup> Edelgas public article (22 October 2024). Available at: <https://www.edelgasgroup.com/Helium-3-market-report>

### Exploration Well Testing Summary – Ramsay 1 & 2 Exploration Wells

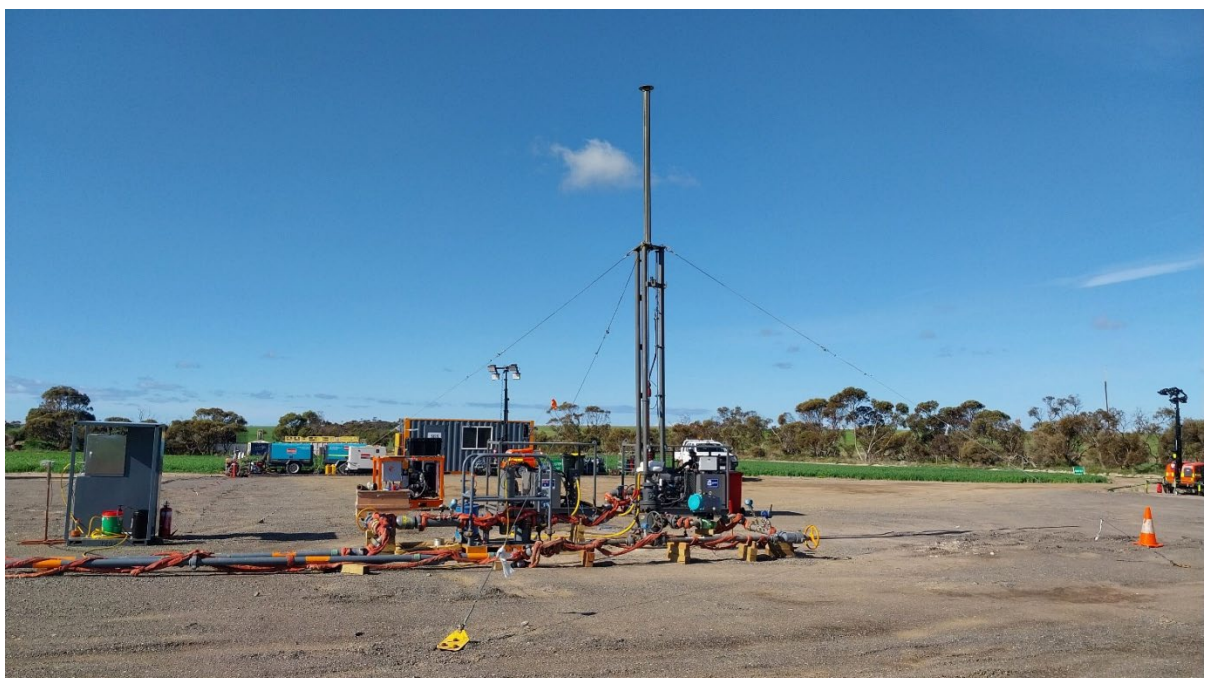
Stage 2 exploration well testing results received during the third and fourth quarters of 2024 indicated increasing levels for purities of both Natural Hydrogen and Helium measured by equipment at surface. As depicted in **Figure 3** for Natural Hydrogen from the Ramsay 2 well, the shallow Hydrogen zone showed an increasing trend for daily recorded levels of Natural Hydrogen (corrected for air contamination) at surface. As previously reported, the Company measured Natural Hydrogen of purities up to 95.8%<sup>4</sup> across seven (7) zones within Ramsay 2, with the highest recorded at 531m depth. Refer also Tables 4 and 5 for further information in accordance with Listing Rule 5.30.

Testing on Ramsay 1 commenced seven (7) days after Ramsay 2, with the Company focussing on the Helium zone deeper in the formation. As reported by the Company after the end of the Quarter, the recorded Helium concentrations measured during the Stage 2 well testing of Ramsay 1 showed a consistent increase, and did not appear to have reached a stable maximum value at the end of the testing period, as depicted in **Figure 4**. Refer also Tables 3 - 5 for further information in accordance with Listing Rule 5.30.

The overall results of the exploration well testing program identified a 180m thick and potentially prolific Helium zone within the Kulpara Dolomite formation, commencing at approximately 612m depth. Furthermore, the testing program proved that Helium can be extracted to surface, and that although the Ramsay 1 location showed water ingress during testing, the analysis indicated that it could flow up to 100 MScf/day with water on an unconstrained basis. This conclusion has been reached on the basis of a narrow preliminary exploration well, and it is expected that higher rates could be achieved in the future from production-style wells.

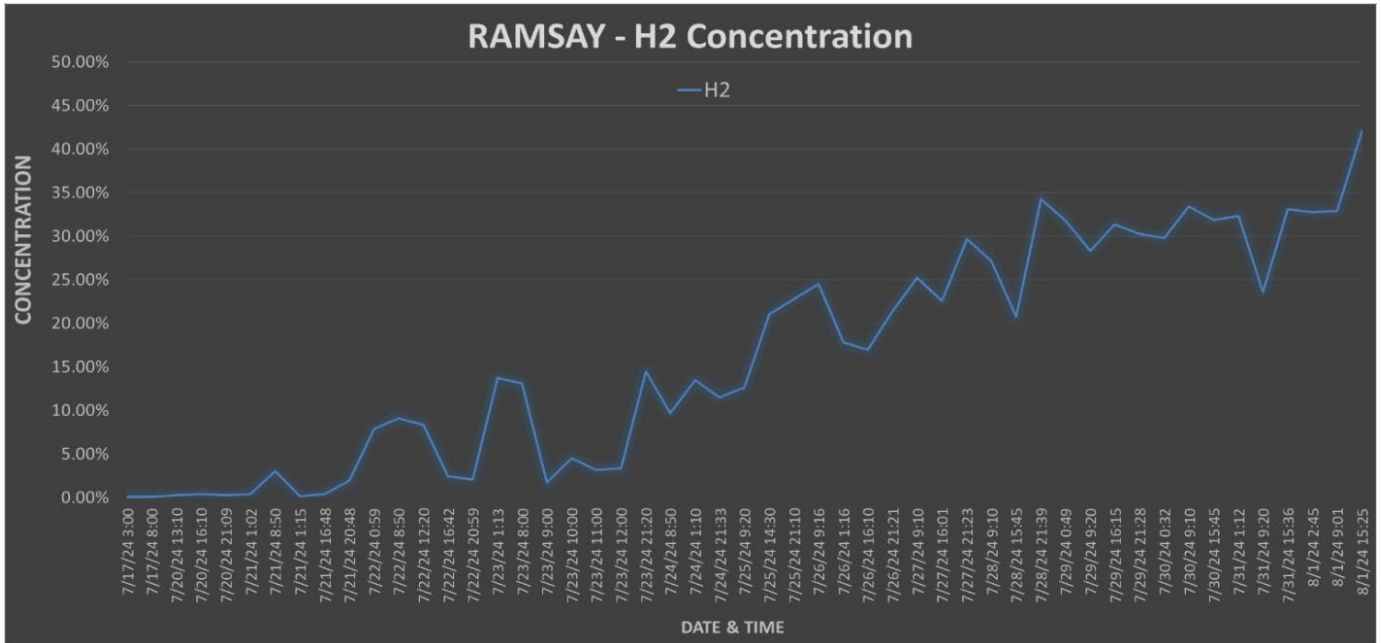
The Company is now studying 2025 exploration and development options to extract free Natural Hydrogen and Helium from new wells to be drilled in up-dip locations based on the interpretive results of the 2D seismic survey.

**Figure 2 – Stage 2 Exploration Well Testing – Ramsay 1**

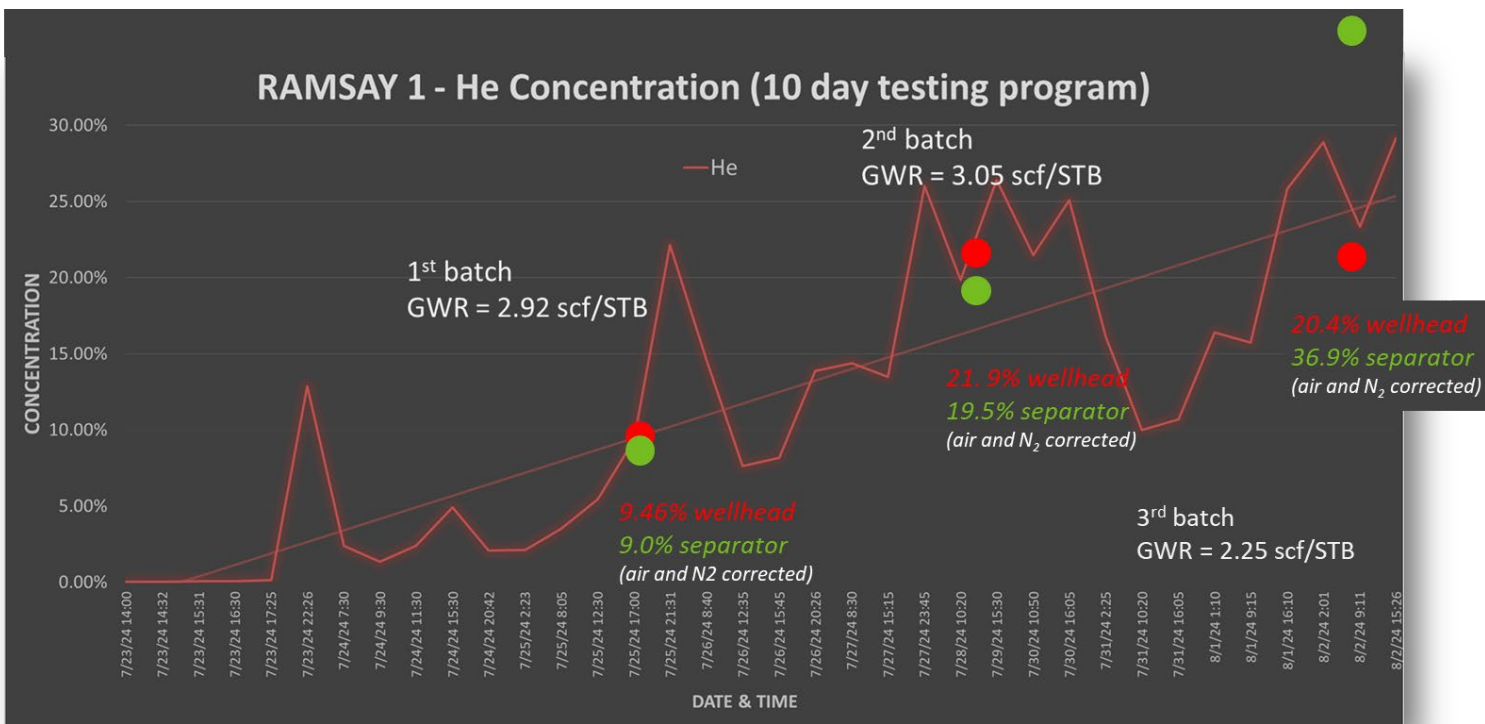


<sup>4</sup> All Natural Hydrogen and Helium sample results have been corrected for air contamination

**Figure 3 – Ramsay 2 Testing 200m to 350m Shallow Hydrogen Zone 7 & 8 – Hydrogen concentrations increasing as testing continues as measured from the annulus (corrected for air and Nitrogen contamination).**



**Figure 4 - Ramsay 1 He concentrations (air and nitrogen corrected) measured during the testing of the open Helium zone. The concentrations consistently increase over the testing period, with wellhead sample laboratory analysis confirming the separator measurement.**



### **Expansion of South Australian Footprint**

During the Quarter, the Company was awarded a further petroleum licence application (PELA 792) with an area of approximately 1,960km<sup>2</sup>, split into three (3) areas, as shown below in **Figure 5**. The eastern-most portion of PELA 792 is contiguous with PELA 688 held by Gold Hydrogen's 100% owned subsidiary Byrock Resources Pty Ltd. The western portions of PELA 792 are located on the Eyre Peninsula and are close to the State Government's proposed hydrogen power plant facility at Whyalla, and their Hydrogen Hub proposed for Port Bonython, both of which are initiatives of the Office of Hydrogen Power SA, established by the Department for Energy and Mining in 2022.

#### **About the Whyalla Hydrogen Power Plant Facility<sup>5</sup>**

The South Australian Government has committed more than half a billion dollars to its Hydrogen Jobs Plan to build a world leading hydrogen power plant, electrolyser and storage facility near Whyalla by early 2026.

The facility includes a 200MW renewable hydrogen power plant which will be a new source of flexible power, providing additional grid stability for homes and businesses around the state by using excess renewable energy generated from large-scale wind and solar farms to provide a consistent output of supply.

#### **About the Port Bonython Hydrogen Hub<sup>6</sup>**

The South Australian Government and the private sector are collaborating to deliver the Port Bonython Hydrogen Hub as a multi-user precinct leveraging the state's renewable energy opportunities and enabling export from a clean hydrogen industrial hub. The Port Bonython Hydrogen Hub is proposed to be South Australia's first large-scale clean hydrogen production precinct for both export and domestic markets and is an integral part of South Australia's first-mover strategy to enter the global hydrogen market.

Located in the Upper Spencer Gulf, Port Bonython has:

- an existing deep-water liquid hydrocarbon export terminal; and
- over 2000 hectares of developable land.

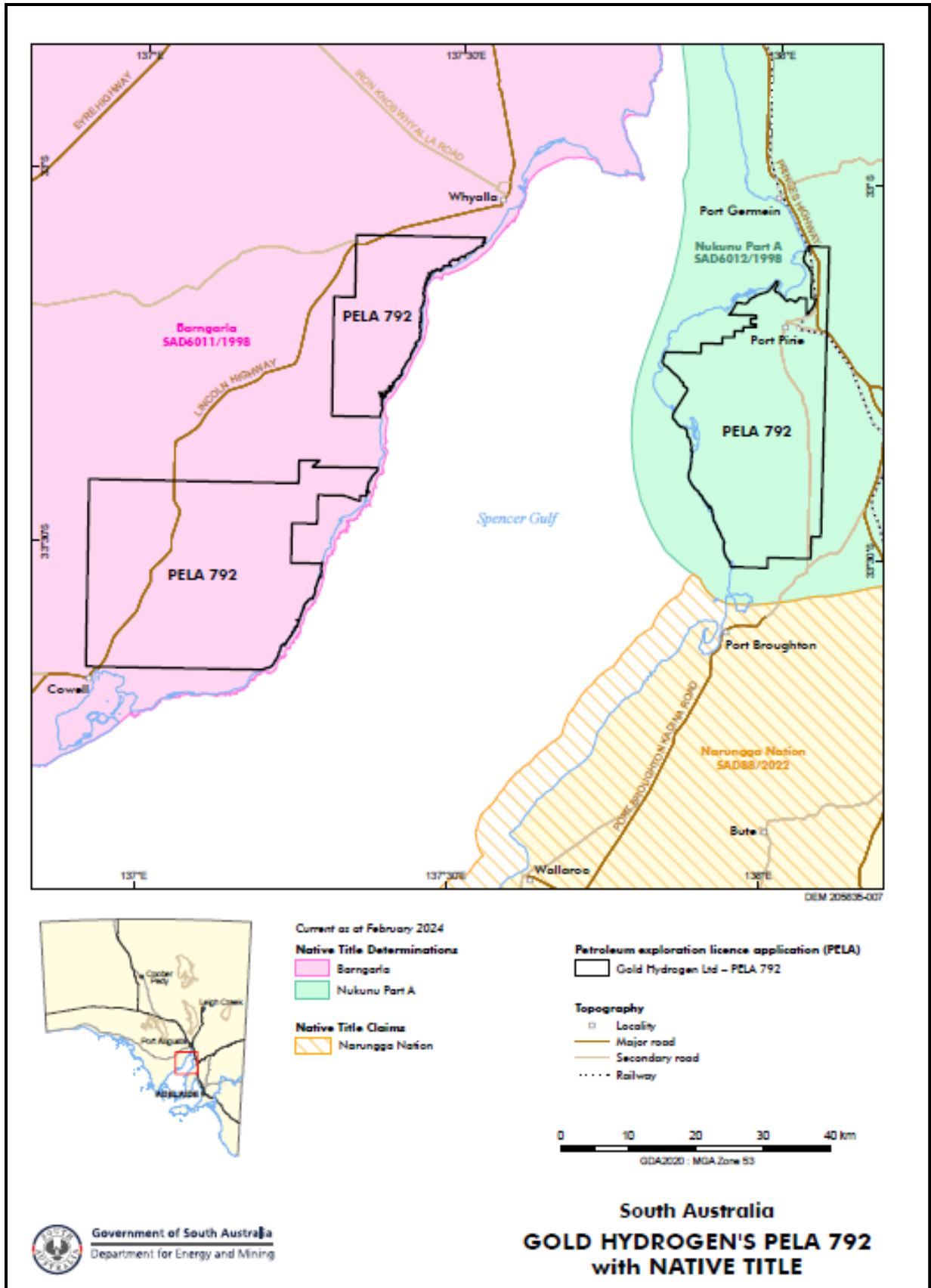
This export facility is intended to enable South Australia to ship hydrogen products made using renewable energy offshore while creating regional jobs.

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<sup>5</sup> <https://www.hydrogenpowersa.sa.gov.au/projects/hydrogen-jobs-plan/whyalla-hydrogen-power-facility>

<sup>6</sup> <https://www.hydrogenpowersa.sa.gov.au/projects/port-bonython-hydrogen-hub>

Figure 5 – PELA 792 areas straddling the Spencer Gulf in South Australia





### **Future Activities**

Based on the integration of the drilling and testing results with the Ramsay 2D data acquired in the second half of 2024, Gold Hydrogen is in the process of planning its 2025 drilling and data acquisition campaign to delineate the Ramsay Natural Hydrogen and Helium accumulation.

This will involve a number of wells, specifically targeting the different pay zones within the identified structure and using a modified well design to enable testing of the different zones with zonal specific testing configurations. The data from these wells will constrain the pilot project area and design, with the aim of demonstrating the commercial production potential of both Natural Hydrogen and Helium from the Ramsay Project.

In parallel, an extensive 3D seismic survey is being considered over the Ramsay Project area, to illuminate the stratigraphic and structural subsurface complexities, in order to facilitate detailed resource assessments and to optimise drilling locations for future exploration and appraisal wells.

The Ramsay 2D regional seismic data has revealed several Natural Hydrogen and Helium prospects, some of which will be tested with dedicated exploration wells. Selection and timing of these wells will be done in conjunction with the delineation drilling activities, in order to take advantage of the presence of the drilling rig and experienced crew.

### **Groundbreaking Exploration Testing for Both Natural Hydrogen and Helium**

The Ramsay Project well testing program was the first dedicated Natural Hydrogen and Helium well test operation conducted in Australia, and to the Company's knowledge, it is likely one of only a few in the world. The Company considers this to represent the initial steps of an exciting journey, which is not dissimilar to that undertaken by various world-renowned and ultimately successful oil and gas projects, such as the early days in the CSG and shale industries. For those particular resources, the exploration and completion techniques were developed and optimised over time, improving project economics and ultimately leading to major projects being developed. The Company anticipates a similar path forward for its Natural Hydrogen and Helium prospective resources, although the timeframe may be quicker as drilling and completions technologies developed for other gas resources may be applicable to its Natural Hydrogen and Helium projects.

### **First Key Step on the Journey to Future Potential Development**

The Company is of the view that the Ramsay Project contains significant prospective resources of both Natural Hydrogen and Helium, with large scale potential that it is aiming to be potentially developed over time.

There is very little data available for dedicated Natural Hydrogen wells anywhere in the world due to the lack of analogue wells. To the Company's knowledge, the only Natural Hydrogen field currently in production is located in Mali, West Africa, where Natural Hydrogen production is used to power the small town of Bourakébougou. It has been reported that the Natural Hydrogen wells in Mali do not have any decline in production and are continually regenerating and producing at the same rate.<sup>7</sup>

Helium is extremely valuable and indicatively, longer-term bulk pricing is expected to approximate USD450 per Mcf (thousand cubic feet).<sup>8</sup>

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<sup>7</sup> "Natural Hydrogen: a new source of carbon free and renewable energy that can compete with hydrocarbons", First Break Volume 40, October 2022 (available via [www.goldhydrogen.com.au/technical-articles/](http://www.goldhydrogen.com.au/technical-articles/))

<sup>8</sup> February 2024, [www.noblehelium.com.au](http://www.noblehelium.com.au), quoting Konbluth Helium Consulting.

### Important Risk Commentary

It is important to note that there remain both geological and potential development risks associated with the Ramsay Project and the Company's commercial and business objectives. These risks relate to the presence, recovery, and potential volumes of Natural Hydrogen and Helium, but also due to the location of the current and potential project sites within agricultural areas and proximal to National Parks on both the Yorke Peninsula and Kangaroo Island, requiring significant landholder and community engagement. The worldwide, Federal and South Australian Government and industry efforts to secure Hydrogen as an alternative energy source provides confidence that any technical and social concerns may be overcome.

## FINANCIAL REPORTING

Exploration expenditures that were capitalised relate to the Company's flagship Ramsay Project (PEL 687) over the Yorke Peninsula / Kangaroo Island.

### Exploration Expenditures – Item 1.2(a) of Quarterly Cashflow Report

Nature of Expenditure	Amount
Airborne and seismic surveys and sub-surface studies	\$267,438
Environmental and permitting costs	\$33,009
Native Title, land access and licence fees	\$36,614
Drilling and related activities	\$437,944
<b>Total</b>	<b>\$775,004</b>

### Payments to Directors – Item 6.1 of Quarterly Cashflow Report

Payments consisted of fees paid for Executive Director and Non-Executive Director services, pursuant to written agreements and employment contracts, totalling \$173,443 for the December 2024 Quarter (although some payments made during the Quarter related to prior periods).

### Reporting Against IPO Use of Funds

The Company remains on track with regard to its forecast spending and activities as outlined in its 29 November 2022 Replacement Prospectus. The amount of funds expended on exploration expenditure as originally forecast will be partially offset or supplemented via access to R&D offset funding.

Use of Funds Figures Reported Net of GST	Prospectus 2-year period	FY23 Total	FY24 Total	Sep-24 Quarter	Dec-24 Quarter	Cumulative Total
<i>Native Title, Land Access and Licence Fees</i>	\$ 1,490,223	\$ 78,702	\$ 325,882	\$ 46,372	\$ 36,614	\$ 487,570
<i>Environmental and Permitting Costs</i>	\$ 690,250	\$ 192,477	\$ 457,475	\$ 6,205	\$ 33,009	\$ 689,166
<i>Airborne and Seismic Surveys and Sub-surface Studies</i>	\$ 2,747,120	\$ 1,678,066	\$ 1,239,312	\$ 2,199,990	\$ 267,438	\$ 5,384,806
<i>Drilling and Related Activities</i>	\$ 10,303,493	\$ 538,164	\$ 12,479,068	\$ 3,003,376	\$ 437,944	\$ 16,458,552
<i>Less: R&amp;D Refund Received from Australian Taxation Office</i>	\$ -	\$ -	\$ (1,912,083)	\$ -	\$ -	\$ (1,912,083)
<b>Total Exploration, Field Development and Drilling Related</b>	<b>\$ 15,231,086</b>	<b>\$ 2,487,409</b>	<b>\$ 12,589,653</b>	<b>\$ 5,255,944</b>	<b>\$ 775,004</b>	<b>\$ 21,108,010</b>
<i>Corporate and Administrative Costs</i>	\$ 3,523,500	\$ 1,384,533	\$ 2,112,986	\$ 556,622	\$ 373,410	\$ 4,427,550
<i>IPO Related Costs</i>	\$ 1,351,129	\$ 1,052,072	\$ -	\$ -	\$ -	\$ 1,052,072
<b>Total Use of Funds</b>	<b>\$ 20,105,715</b>	<b>\$ 4,924,013</b>	<b>\$ 14,702,640</b>	<b>\$ 5,812,565</b>	<b>\$ 1,148,414</b>	<b>\$ 26,587,632</b>

*This report has been authorised for release by the Board.*

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Twitter: [@GHY\\_ASX](#)  
Contact: [info@goldhydrogen.com.au](mailto:info@goldhydrogen.com.au)

**QPRRE Statements**

The Prospective Resource Statements for Natural Hydrogen and Helium have been included in this report under the approval of Mr Billy Hadi Subrata, Chief Technical Officer for Gold Hydrogen, who is a Qualified Petroleum Reserves and Resources Evaluator. Mr Hadi Subrata confirms that, as at the date of this report, there are no changes to information or any additional information, since the effective date of each prospective resource report (refer below), that would materially change the estimates of prospective resources quoted.

**QPRRE Statement – Natural Hydrogen**

The Prospective Resource Statement for Natural Hydrogen in this report 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 report 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 (as well as on 30 October 2024) together with the accompanying assumptions and notes.

**Forward Looking Statement / Future Performance**

This announcement may contain certain forward-looking statements and opinion Forward-looking statements, including projections, forecasts and estimates, are provided as a general guide only and should not be relied on as an indication or guarantee of future performance and involve known and unknown risks, uncertainties, assumptions, contingencies and other important factors, many of which are outside the control of the Company and which are subject to change without notice and could cause the actual results, performance or achievements of the Company to be materially different from the future results, performance or achievements expressed or implied by such statements. Past performance is not necessarily a guide to future performance and no representation or warranty is made as to the likelihood of achievement or reasonableness of any forward-looking statements or other forecast. Nothing contained in this announcement, nor any information made available to you is, or and shall be relied upon as, a promise, representation, warranty or guarantee as to the past, present or the future performance of Gold Hydrogen Limited.

**Table 1: Summary of Helium-4 (<sup>4</sup>He) and Helium-3 (<sup>3</sup>He) Results (Oxford University) in Ramsay 2 (originally released on 30 October 2024)**

<b>Name:</b>	<b>Ramsay 2</b>					
<b>Location</b>	UTM zone 53 GDA2020					
<b>X</b>	747,707.85					
<b>Y</b>	6149385.46					
<b>Permit</b>	PEL687					
<b>Entity holders</b>	Gold Hydrogen 100%					
<b>Zones tested</b>	Zone 1_sample 11	Zone 2-3_sample 19	Zone 4_sample 32	Zone 5_sample 46	Zone 6_sample 62	Zone 7_sample 79
<b>Resources</b>	Hydrogen-Helium	Helium	Hydrogen	Hydrogen	Hydrogen	Hydrogen
<b>Formation</b>	Basement	Kulpara Fm	Kulpara Fm	Parara Limestone	Parara Limestone	Parara Limestone
<b>Gross thickness and net pay thickness</b>	>200m Gross	180m Gross	155m Gross	406m Gross	406m Gross	406m Gross
<b>Geological rock type</b>	Basement	Dolomite	Limestone	Limestone	Limestone	Limestone
<b>Depth of the zones tested</b>	1002 mMD	712mMD	530 mMD	384 mMD	343 mMD	289 mMD
<b>Type of test</b>	Noble gas abundance and isotopic quantification					
<b>Phase recovered</b>	Gas	Gas	Gas	Gas	Gas	Gas
<b>[<sup>4</sup>He], ccSTP/ccSTP</b>	1.44E-07	6.52E-04	4.21E-08	5.54E-07	3.05E-08	1.59E-07
<b><sup>3</sup>He/<sup>4</sup>He</b>	3.23E-07	9.26E-09	1.72E-06	6.84E-08	1.55E-06	7.57E-07
<b>R/Ra</b>	0.23	0.0066	1.2306	0.0489	1.11	0.5408
<b><sup>3</sup>He ppt</b>	0.05	6.04	0.07	0.04	0.05	0.12
<b>Flow rates, choke size, volumes recovered</b>	TBA					
<b>Fracture stimulation</b>	Yes	None	Yes	None	None	Yes
<b>Material non-hydrocarbons</b>	N <sub>2</sub> , H <sub>2</sub> , He, CO <sub>2</sub>	N <sub>2</sub> , H <sub>2</sub> , He, CO <sub>2</sub>	N <sub>2</sub> , H <sub>2</sub> , He, CO <sub>2</sub>	N <sub>2</sub> , H <sub>2</sub> , He, CO <sub>2</sub>	N <sub>2</sub> , H <sub>2</sub> , CO, CO <sub>2</sub>	N <sub>2</sub> , H <sub>2</sub> , He, CO <sub>2</sub>

**Table 2: Summary Table of Helium-4 (<sup>4</sup>He) and Helium-3 (<sup>3</sup>He) results (Oxford University) in Ramsay 1 (originally released on 30 October 2024)**

<b>Name:</b>	<b>Ramsay 1</b>		
<b>Location</b>	UTM zone 53 GDA2020		
<b>X</b>	748,208.07		
<b>Y</b>	6149545.7		
<b>Permit</b>	PEL687		
<b>Entity holders</b>	Gold Hydrogen 100%		
<b>Zones tested</b>	Zone 1_sample 8	Zone 2-3_sample 109451	Zone 2-3_sample 109477
<b>Resources</b>	Hydrogen-Helium	Helium	Helium
<b>Formation</b>	Basement	Kulpara Fm	Kulpara Fm
<b>Gross thickness and net pay thickness</b>	>200m Gross	180m Gross	180m Gross
<b>Geological rock type</b>	Basement	Dolomite	Dolomite
<b>Depth of the zones tested</b>	970 mMD	900 mMD	900 mMD
<b>Type of test</b>	Noble gas abundance and isotopic quantification		
<b>Phase recovered</b>	Gas	Gas	Gas
<b>[<sup>4</sup>He], ccSTP/ccSTP <sup>3</sup>He/<sup>4</sup>He R/Ra <sup>3</sup>He ppt</b>	3.42E-04 9.65E-09 0.0069 3.30	5.34E-02 9.31E-09 0.0067 497.39	9.59E-02 9.39E-09 0.0067 900.51
<b>Flow rates, choke size, volumes recovered</b>	TBA		
<b>Fracture stimulation</b>	None	None	None
<b>Material non-hydrocarbons</b>	N2, H2, He, CO2	N2, H2, He, CO2	N2, H2, He, CO2

**Table 3: Sample Analysis Table – Ramsay 1 Well – Stage 2 - Helium (originally released on 17 October 2024)**

<b>Name:</b>	<b>Ramsay 1</b>
<b>Location (UTM zone 53 GDA2020)</b>	
<b>X</b>	748,208.07
<b>Y</b>	6149545.7
<b>Permit</b>	PEL687
<b>Entity holders</b>	Gold Hydrogen 100%
<b>Zones tested</b>	Zone 2 and 3
<b>Resources</b>	Helium
<b>Formation</b>	Kulpara Dolomite
<b>Gross thickness and net pay thickness</b>	180m Gross
<b>Geological rock type</b>	Dolomite
<b>Depth of the zones tested</b>	900 mMD
<b>Type of test</b>	Commingled pressure test
<b>Phase recovered</b>	Water
<b>Corrected H2 and He concentration in gas recovered from downhole sample</b>	36.9% He
<b>Flow rates, choke size, volumes recovered</b>	1 Mscf/day gas constraint by pump capacity and flow intermittently with water; choke size 20/64 inch; volumes recovered 0.55 Mscf
<b>Fracture stimulation</b>	None
<b>Material non hydrocarbons</b>	Nitrogen, Hydrogen

**Table 4: Sample Analysis Table - Ramsay 2 Stage 1 Testing (Originally published on 27 May 2024)**

<b>Name:</b>	<b>Ramsay 2</b>	
<b>Location (UTM zone 53 GDA2020)</b>		
<b>X</b>	747,761.61	
<b>Y</b>	6149371.41	
<b>Permit</b>	PEL687	
<b>Entity holders</b>	Gold Hydrogen 100%	
<b>Zones tested</b>	MDT zone, Zone 2 and 3	Zone 4 to 8
<b>Resources</b>	Helium	Hydrogen
<b>Formation</b>	Kulpara Dolomite	Kulpara/Parara Limestone
<b>Gross thickness and net pay thickness</b>	180m Gross	406m Gross
<b>Geological rock type</b>	Dolomite	Limestone
<b>Depth of the zones tested</b>	612m, 642m, 712m, 754m, and 777.5mMD	197m, 289m, 346.5m, 385m, and 531mMD
<b>Type of test</b>	Commingled test on zone 2 and 3 for few hours followed by overnight build up	Pressure test on single zone for few hours followed by overnight build up
<b>Phase recovered</b>	Gas/Water	Gas/Water
<b>Corrected H2 and He concentration in gas recovered from downhole sample</b>	Up to 17.5% He	Up to 95.8% H2
<b>Flow rates, choke size, volumes recovered</b>	TBA in next extended flow test in Q2/Q3 2024	
<b>Fracture stimulation</b>	None	None
<b>Material non hydrocarbons</b>	Nitrogen, Hydrogen	Nitrogen, Helium

**Table 5: Summary of Preliminary Results on Additional Helium Samples (originally released on 2 August 2024)**

<b>Name:</b>	<b>Ramsay 2</b>		
<b>Location (UTM zone 53 GDA2020)</b>			
<b>X</b>	747,707.85		
<b>Y</b>	6149385.46		
<b>Permit</b>	PEL687		
<b>Entity holders</b>	Gold Hydrogen 100%		
<b>Zones tested</b>	Zone 1	Zone 2 and 3	Zone 7 and 8
<b>Resources</b>	Helium	Helium	Hydrogen
<b>Formation</b>	Granite Basement	Kulpara Dolomite	Parara Limestone
<b>Gross thickness and net pay thickness</b>	>200m Gross	180m Gross	406m Gross
<b>Geological rock type</b>	Granite	Dolomite	Limestone
<b>Depth of the zones tested</b>	1002mMD	712 mMD	197mMD and 289mMD
<b>Type of test</b>	Pressure test	Commingled pressure test	Commingled pressure test
<b>Phase recovered</b>	Gas/Water	Gas/Water	Gas/Water
<b>Corrected H2 and He concentration in gas recovered from downhole sample</b>	20% to 25% He	20% to 25% He	42% H2 (still increasing)
<b>Flow rates, choke size, volumes recovered</b>	TBA		
<b>Fracture stimulation</b>	None	None	None
<b>Material non hydrocarbons</b>	Nitrogen, Hydrogen	Nitrogen, Hydrogen	Nitrogen, Helium



**Table 6 – Prospective Resource Statement for Natural Hydrogen**

Gold Hydrogen’s Ramsay Project: Prospective Resources* of Hydrogen in ‘000 Tonnes – 30 Sept 2021										
PEL	Prospects	SPE PRMS Sub-class	1U Low Estimate	2U Best Estimate	Mean	3U High Estimate		Pg	Pd	Pc
PEL 687	All Prospects and Leads		207	1313	4187	8820		22%	48%	10%
Yorke Peninsula										
PEL 687	Ramsay FB	Prospect	124	931	2712	6989		22%	50%	11%
PEL 687	Ramsay Lst	Prospect	10	70	191	492		26%	50%	13%
PEL 687	Maitland	Lead	7	26	40	92		17%	35%	6%
Kangaroo Island										
PEL 687	Navigator	Lead	34	152	280	678		19%	40%	8%
PEL 687	Kanmantoo	Prospect	32	134	237	569		25%	40%	10%

**\*This estimate of Natural Hydrogen Prospective Resources must be read in conjunction with the notes in the Company’s ASX release of 13 January 2023.**

The Company confirms that it is not aware of any further new information or data that materially affects the estimates of Natural Hydrogen Prospective Resources (as originally estimated on 30 September 2021), and that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed.

It should be noted that the estimated quantities of Natural Hydrogen that may potentially be recovered by the application of a future development project(s) relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration, appraisal and evaluation is required to determine the existence of a significant quantity of potentially recoverable Natural Hydrogen.

**Table 7 – Prospective Resource Statement for Helium**

<b>Gold Hydrogen Prospective Resources* of Helium in Bcf - Ramsay Project (PEL 687 Yorke Peninsula) 21 February 2024</b>											
PEL	Prospects	SPE PRMS Sub-class	Formation	1U Low Estimate	2U Best Estimate	Mean	3U High Estimate		Pg	Pd	Pc
PEL 687	All Prospects		All Formations Total	7	41	96	243		17%	60%	10%
PEL 687	Ramsay Fault Block	Prospect	Kulpara Formation	0.8	3.6	7.0	17.1		29%	60%	17%
			Winulta Formation	0.1	0.6	1.6	4.0		12%	60%	7%
			Fractured Basement	0.7	3.8	6.9	16.7		13%	60%	8%
			<b>Total</b>	<b>2</b>	<b>8</b>	<b>15</b>	<b>38</b>		<b>20%</b>	<b>60%</b>	<b>12%</b>
PEL 687	South of Ramsay Fault Block	Prospect	Kulpara Formation	2.1	12.8	30.5	77.6		23%	60%	14%
			Winulta Formation	0.3	2.4	7.7	19.8		8%	60%	5%
			Fractured Basement Hilbata Suite	1.6	10.3	25.5	65.2		12%	60%	7%
			Fractured Basement Yorke Peninsula Heel	1.4	7.7	17.0	42.7		12%	60%	7%
			<b>Total</b>	<b>5</b>	<b>33</b>	<b>81</b>	<b>205</b>		<b>16%</b>	<b>60%</b>	<b>10%</b>

**\*This estimate of Helium Prospective Resources must be read in conjunction with the notes in the Company’s ASX release of 21 February 2024 and repeated on 30 October 2024.**

**It should be noted that the estimated quantities of Helium that may potentially be recovered by the application of a future development project(s) relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration, appraisal and evaluation is required to determine the existence of a significant quantity of potentially recoverable Helium.**

## Appendix A

### Overview of the Gold Hydrogen Group's PEL, PELAs, GSELAs and EL

Permit	Project Name	Gold Hydrogen Interest	Applicant	Geologic Area & Basin	Size (km <sup>2</sup> )	Term	Grant Date	Application Date	Expiry Date	Status	Act
PEL 687	Ramsay	100%	Gold Hydrogen Limited	Stansbury Basin & Kanmantoo Trough	7,820	5 years	22/7/21	-	21/07/26	Granted	PGEA 2000
EL 6988	Warooka	100%	Sustainable Minerals Group Pty Ltd	Stansbury Basin & Kanmantoo Trough	542	6 years	10/4/24	-	9/4/30	Granted	MA 1971
PEL(A) 688	Kanmantoo	100%	Byrock Resources Pty Ltd	Stansbury Basin & Kanmantoo Trough	9,962	5 years	-	12/5/21	-	Pending	PGEA 2000
PEL(A) 699	Robe	100%	White Hydrogen Australia Pty Ltd	Padthaway Ridge-Kanmantoo Platform & Otway Basin	9,624	5 years	-	19/7/21	-	Pending	PGEA 2000
PEL(A) 700	Padthaway	100%	White Hydrogen Australia Pty Ltd	Padthaway Ridge-Kanmantoo Platform & Troubridge Basin	9,748	5 years	-	19/7/21	-	Pending	PGEA 2000
PEL(A) 701	Troubridge	100%	White Hydrogen Australia Pty Ltd	Kanmantoo Platform & Troubridge Basin	9,750	5 years	-	19/7/21	-	Pending	PGEA 2000
PEL(A) 702	Renmark	100%	White Hydrogen Australia Pty Ltd	Kanmantoo Platform & Renmark Trough	9,563	5 years	-	19/7/21	-	Pending	PGEA 2000
PEL(A) 703	Boucat	100%	White Hydrogen Australia Pty Ltd	Kanmantoo Platform & Renmark Trough	9,833	5 years	-	3/8/22	-	Pending	PGEA 2000
PEL(A) 704	Baratta	100%	White Hydrogen Australia Pty Ltd	Kanmantoo Platform & Renmark Trough	9,850	5 years	-	19/7/21	-	Pending	PGEA 2000
GSEL(A) 755	Maitland	100%	White Hydrogen Australia Pty Ltd	Stansbury Basin	2,470	5 years	-	28/4/22	-	Pending	PGEA 2000
GSEL(A) 756	Yorke town	100%	White Hydrogen Australia Pty Ltd	Stansbury Basin	2,272	5 years	-	28/4/22	-	Pending	PGEA 2000
GSEL(A) 757	Flinders	100%	White Hydrogen Australia Pty Ltd	Kanmantoo Trough	1,780	5 years	-	28/4/22	-	Pending	PGEA 2000
GSEL(A) 758	Penneshaw	100%	White Hydrogen Australia Pty Ltd	Kanmantoo Trough	1,585	5 years	-	28/4/22	-	Pending	PGEA 2000
PEL(A)792	Pirie	100%	Gold Hydrogen Limited	Torrens Hinge Zone & Gawler Province	1,960	5 years	-	5/11/24	-	Pending	PGEA 2000

Areas stated for applications are based on the Company's submissions. These are subject to change by the Department without notification for boundary re-alignments, exclude areas and competing applications (if applicable).

The only change for the current Quarter was the addition of PELA792.

## Appendix 5B

### Mining exploration entity or oil and gas exploration entity quarterly cash flow report

Name of entity

Gold Hydrogen Limited

ABN

74 647 468 899

Quarter ended ("current quarter")

31 December 2024

Consolidated statement of cash flows	Current quarter \$A'000	Year to date (6 months) \$A'000
<b>1. Cash flows from operating activities</b>		
1.1 Receipts from customers	-	-
1.2 Payments for		
(a) exploration & evaluation *	(775)	(6,031)
(b) development	-	-
(c) production	-	-
(d) staff costs *	(239)	(557)
(e) administration and corporate costs	(362)	(601)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	190	315
1.5 Interest and other costs of finance paid	-	-
1.6 Income taxes paid	-	-
1.7 Government grants and tax incentives	-	-
1.8 Other (provide details if material) – net GST	41	(85)
<b>1.9 Net cash from / (used in) operating activities</b>	<b>(1,145)</b>	<b>(6,958)</b>

<b>2. Cash flows from investing activities</b>		
2.1 Payments to acquire or for:		
(a) entities	-	-
(b) tenements	-	-
(c) property, plant and equipment	(3)	(3)
(d) exploration & evaluation	-	-
(e) investments	-	-
(f) other non-current assets	-	-

## Mining exploration entity or oil and gas exploration entity quarterly cash flow report

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (6 months) \$A'000
2.2	Proceeds from the disposal of:		
	(a) entities	-	-
	(b) tenements	-	-
	(c) property, plant and equipment	-	-
	(d) investments	-	-
	(e) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (provide details if material)	-	-
<b>2.6</b>	<b>Net cash from / (used in) investing activities</b>	<b>(3)</b>	<b>(3)</b>
<b>3.</b>	<b>Cash flows from financing activities</b>		
3.1	Proceeds from issues of equity securities (excluding convertible debt securities)	-	-
3.2	Proceeds from issue of convertible debt securities	-	-
3.3	Proceeds from exercise of options	-	-
3.4	Transaction costs related to issues of equity securities or convertible debt securities	-	-
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings	-	-
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other (provide details if material)	-	-
<b>3.10</b>	<b>Net cash from / (used in) financing activities</b>	<b>-</b>	<b>-</b>
<b>4.</b>	<b>Net increase / (decrease) in cash and cash equivalents for the period</b>		
4.1	Cash and cash equivalents at beginning of period	9,787	15,600
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(1,145)	(6,958)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(3)	(3)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	-	-

## Mining exploration entity or oil and gas exploration entity quarterly cash flow report

<b>Consolidated statement of cash flows</b>		<b>Current quarter \$A'000</b>	<b>Year to date (6 months) \$A'000</b>
4.5	Effect of movement in exchange rates on cash held	-	-
<b>4.6</b>	<b>Cash and cash equivalents at end of period</b>	<b>8,639</b>	<b>8,639</b>

<b>5.</b>	<b>Reconciliation of cash and cash equivalents</b> at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	<b>Current quarter \$A'000</b>	<b>Previous quarter \$A'000</b>
5.1	Bank balances	2,762	3,911
5.2	Call deposits	-	-
5.3	Bank overdrafts	-	-
5.4	Other (provide details) - term deposit(s)	5,000	5,000
5.4	Other (provide details) - SA DEM security	845	845
5.4	Other (provide details) - bank guarantee	31	31
<b>5.5</b>	<b>Cash and cash equivalents at end of quarter (should equal item 4.6 above)</b>	<b>8,639</b>	<b>9,787</b>

<b>6.</b>	<b>Payments to related parties of the entity and their associates</b>	<b>Current quarter \$A'000</b>
6.1	Aggregate amount of payments to related parties and their associates included in item 1	173
6.2	Aggregate amount of payments to related parties and their associates included in item 2	-

*Note: if any amounts are shown in items 6.1 or 6.2, your quarterly activity report must include a description of, and an explanation for, such payments.*

## Mining exploration entity or oil and gas exploration entity quarterly cash flow report

<b>7. Financing facilities</b>	<b>Total facility amount at quarter end \$A'000</b>	<b>Amount drawn at quarter end \$A'000</b>
<i>Note: the term "facility" includes all forms of financing arrangements available to the entity. Add notes as necessary for an understanding of the sources of finance available to the entity.</i>		
7.1 Loan facilities	-	-
7.2 Credit standby arrangements	-	-
7.3 Other (please specify)	-	-
<b>7.4 Total financing facilities</b>	<b>-</b>	<b>-</b>
<b>7.5 Unused financing facilities available at quarter end</b>		<b>-</b>
7.6 Include in the box below a description of each facility above, including the lender, interest rate, maturity date and whether it is secured or unsecured. If any additional financing facilities have been entered into or are proposed to be entered into after quarter end, include a note providing details of those facilities as well.		

<b>8. Estimated cash available for future operating activities</b>	<b>\$A'000</b>
8.1 Net cash from / (used in) operating activities (item 1.9)	(1,145)
8.2 (Payments for exploration & evaluation classified as investing activities) (item 2.1(d))	-
8.3 Total relevant outgoings (item 8.1 + item 8.2)	(1,145)
8.4 Cash and cash equivalents at quarter end (item 4.6)	8,639
8.5 Unused finance facilities available at quarter end (item 7.5)	-
8.6 Total available funding (item 8.4 + item 8.5)	8,639
<b>8.7 Estimated quarters of funding available (item 8.6 divided by item 8.3)</b>	<b>7.545</b>
<i>Note: if the entity has reported positive relevant outgoings (ie a net cash inflow) in item 8.3, answer item 8.7 as "N/A". Otherwise, a figure for the estimated quarters of funding available must be included in item 8.7.</i>	
8.8 If item 8.7 is less than 2 quarters, please provide answers to the following questions:	
8.8.1 Does the entity expect that it will continue to have the current level of net operating cash flows for the time being and, if not, why not?	
Answer:	
8.8.2 Has the entity taken any steps, or does it propose to take any steps, to raise further cash to fund its operations and, if so, what are those steps and how likely does it believe that they will be successful?	
Answer:	
8.8.3 Does the entity expect to be able to continue its operations and to meet its business objectives and, if so, on what basis?	
Answer:	
<i>Note: where item 8.7 is less than 2 quarters, all of questions 8.8.1, 8.8.2 and 8.8.3 above must be answered.</i>	

## Compliance statement

- 1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
- 2 This statement gives a true and fair view of the matters disclosed.

Date: 31 January 2025

Authorised by: Karl Schlobohm, Company Secretary and CFO  
(Name of body or officer authorising release – see note 4)

## Notes

1. This quarterly cash flow report and the accompanying activity report provide a basis for informing the market about the entity's activities for the past quarter, how they have been financed and the effect this has had on its cash position. An entity that wishes to disclose additional information over and above the minimum required under the Listing Rules is encouraged to do so.
2. If this quarterly cash flow report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, *AASB 6: Exploration for and Evaluation of Mineral Resources* and *AASB 107: Statement of Cash Flows* apply to this report. If this quarterly cash flow report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standards apply to this report.
3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.
4. If this report has been authorised for release to the market by your board of directors, you can insert here: "By the board". If it has been authorised for release to the market by a committee of your board of directors, you can insert here: "By the [name of board committee – eg Audit and Risk Committee]". If it has been authorised for release to the market by a disclosure committee, you can insert here: "By the Disclosure Committee".
5. If this report has been authorised for release to the market by your board of directors and you wish to hold yourself out as complying with recommendation 4.2 of the ASX Corporate Governance Council's *Corporate Governance Principles and Recommendations*, the board should have received a declaration from its CEO and CFO that, in their opinion, the financial records of the entity have been properly maintained, that this report complies with the appropriate accounting standards and gives a true and fair view of the cash flows of the entity, and that their opinion has been formed on the basis of a sound system of risk management and internal control which is operating effectively.