

## 24 June 2024 ASX Announcement

### Ramsay Project Update Commencement of 2D Seismic Survey

#### Highlights:

- Ramsay 2D regional seismic survey commenced over the Company's flagship Ramsay Project, within PEL 687 on the Yorke Peninsula in South Australia.
- The seismic survey will be over approximately 650 line kilometres, and is being undertaken by Terrex, one of Australia's leading onshore seismic survey acquisition specialists. Total Seismic has been contracted to assist the Company with the project management and interpretation of survey data.
- The aim of the seismic survey is to delineate an extensive and regional Natural Hydrogen and Helium system, which was penetrated by the Ramsay 1 and Ramsay 2 wells.
- The analysis and interpretation of the Ramsay 2D seismic survey data– together with the results from its stage 1 and stage 2 exploration well testing program – will assist the Company to optimize future drilling locations and well designs across the Yorke Peninsula.
- Stage 2 of the exploration well testing program is planned to commence in early-July 2024.

The Directors of Gold Hydrogen Limited (**Gold Hydrogen**, ASX: **GHY**, the **Company**) are pleased to provide an operational update on the Company's groundbreaking Ramsay Project on the Yorke Peninsula, prospective for both Natural Hydrogen and Helium.

#### Commencement of Seismic Survey

Data acquisition has commenced on the Company's regional Ramsay 2D seismic survey, scheduled to cover approximately 650 line kilometres on the Yorke Peninsula, as outlined below in **Map 1**. The survey is being undertaken by Terrex on public roads and is expected to take approximately six (6) weeks. This will be followed by analysis and interpretation of the survey data over a further period of approximately six (6) weeks.

The results of the Ramsay 2D seismic survey when combined with the Company's other data sets, such as the airborne survey data, soil-gas survey data, historical offset well data, and the Ramsay 1 & 2 drill log data and flow test data, will assist the Company in planning future well locations and well designs.

The main objectives of the acquisition of a modern regional seismic program are to assist in the delineation of Ramsay Natural Hydrogen and Helium project, identify potential other Natural Hydrogen and Helium accumulation(s), to support the identification of future drilling targets and to assist in the transition of prospective resources to contingent resources of discovered accumulations.



**Map 1: Gold Hydrogen 2D Seismic Survey Lines**

Gold Hydrogen's Chief Exploration Advisor, Frank Glass said:

*The seismic data will be the first modern regional seismic data set acquired over the Yorke Peninsula and will provide essential input into unraveling some of the geological complexities associated with the Natural Hydrogen and Helium occurrences in the area.*

*The seismic data, in combination with the historic and recent well data, will underpin the building of a consistent regional geological model and will assist with the selection of the drilling locations for the Company's next drilling campaign. With the ongoing support of Terrex and Total Seismic, I am confident the Ramsay 2D acquisition project will result in quality subsurface data, acquired safely and within all technical and environmental constraints.*



**Photo 1: Terrex Seismic Survey Equipment mobilising on the Yorke Peninsula**



### **Stage 2 of Exploration Well Testing**

As previously reported, Stage 1 of the well testing program was a successful building block for the determination of the Company's future activities, confirming the Natural Hydrogen and Helium purity results encountered during drilling, and proving that Natural Hydrogen and Helium are capable of being brought to surface.

Stage 2 of the Company's exploration well testing program is currently planned to commence in early-July 2024, and is expected to take approximately 4 weeks. The Stage 2 program will involve the mobilisation and installation of a pump to lift formation water from each well through tubing to the surface with the intention to facilitate free gas flow to surface via the annulus. The gas from both the tubing (ie. the formation water) and the annulus will be recombined downstream of a separator, with combined volume and flow rate measurement being recorded.

If successful, the Stage 2 testing program will assist with the determination of potential flow rates and accumulation metrics of the Natural Hydrogen and Helium reservoirs at the location of the Ramsay Project. It should be noted that any detection of free hydrogen flowing to the surface would be highly encouraging for the future of the Ramsay Project, and that it is likely future wells will be drilled in locations more optimal for improved flow parameters.

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

The Company considers itself to be at the start of an exciting journey, which is not dissimilar to that undertaken by various world-renowned and ultimately successful oil and gas projects, like the early days in the CSG and shale industries. For those particular resources, the exploration drilling and well 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 our 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. Accordingly, there is inherent uncertainty with regard to the expected outcomes of the Ramsay 1 and Ramsay 2 exploration well testing program. 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 Bourakebougou.



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>1</sup>

Helium is extremely valuable and indicatively, longer-term bulk pricing is expected to approximate USD\$450 or AUD\$675 per Mcf (thousand cubic feet).<sup>2</sup>

Natural Hydrogen has a high energy content, and extracting it even in small quantities may prove commercial for localised applications. Furthermore, given that Helium was also found within both the Ramsay 1 and Ramsay 2 wells, being able to extract and process both gases in small quantities may provide potential short-term commercial and / or proof of concept opportunities to help progress the Ramsay Project.

### **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 both Hydrogen and Helium, but also due to the location of the resource within agricultural areas and the proximity to National Parks on both 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.

### **About Gold Hydrogen**

Gold Hydrogen is focused on the discovery and development of world class Natural Hydrogen and Helium gases in a potentially extensive province in South Australia. This region has recently had its Natural Hydrogen and Helium potential confirmed by the Company via its maiden drilling campaign. The domestic and global demand for Hydrogen and Helium, combined with new exploration techniques and experienced personnel, provides Gold Hydrogen with an extraordinary opportunity to define and ultimately develop a new Natural Hydrogen and Helium gas province.

The combined permit area of the Gold Hydrogen group is approximately 75,332km<sup>2</sup>. Gold Hydrogen holds one granted exploration license (the Ramsay Project - PEL 687) and 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 of 8,107km<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.

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<sup>1</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>2</sup> February 2024, [www.noblehelium.com.au](http://www.noblehelium.com.au), quoting Konbluth Consulting.



The group's permit areas are characterised by low population densities, cooperative stakeholders and aspects of the natural environment suited to the exploration and development of a future Natural Hydrogen and Helium gas province. Gold Hydrogen places considerable importance on close liaison with landholders, traditional owners and all other stakeholders, and this approach has led to the grant of its key tenement PEL 687 in South Australia. The Company intends to continue to invest in these efforts.

#### **Further Information**

Further information on the Gold Hydrogen group, its projects, and its Board and Management can be found on the Company's website ([www.goldhydrogen.com.au](http://www.goldhydrogen.com.au)) together with a copy of the Company's Replacement Prospectus of 29 November 2022.

Gold Hydrogen also has accounts on LinkedIn and Twitter ([@GHY\\_ASX](https://twitter.com/GHY_ASX)), and copies of market releases will be emailed to all interested parties who register via [info@goldhydrogen.com.au](mailto:info@goldhydrogen.com.au)

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This announcement has been authorised for release by the Managing Director.

On behalf of the Board  
Karl Schlobohm  
Company Secretary

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### **Prospective Resource Statements**

The Prospective Resource Statements for Natural Hydrogen and for Helium have been included in this announcement 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 announcement, there is no change to information or additional information, since the effective dates, that would materially change the estimates of prospective resources quoted.

### **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.

### **QPRRE Statement – Natural Hydrogen**

The Prospective Resource Statement for Natural Hydrogen 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 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.

**Table 1 – 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	1,313	4,187	8,820		22%	48%	10%
Yorke Peninsula										
PEL 687	Ramsay FB	Prospect	124	931	2,712	6,989		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. 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 2 – Prospective Resource Statement for Helium

Gold Hydrogen Prospective Resources* of Helium in Bcf - Ramsay Project (PEL 687 Yorke Peninsula) 21 February 2024											
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%	
			Total	2	8	15	38	20 %	60 %	12 %	
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%	
			Total	5	33	81	205	16 %	60 %	10 %	

\*This estimate of Helium Prospective Resources must be read in conjunction with the notes in the Company's ASX release of 21 February 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.