5 March 2024

ASX Announcement

Ramsay Project Operational Update

Exploration Well Testing Operations to Commence

Highlights:

- **Exploration well testing operations, which are pioneering for both Natural Hydrogen and Helium in a non-petroleum system, are set to commence today at the site of the Company's successful Ramsay 1 and Ramsay 2 exploration wells.**
- **This is very much a new energy and resource play that Gold Hydrogen has confirmed with historical data, and with its recent exploration and drilling results.**
- **The Company's Ramsay 1 and Ramsay 2 wells drilled late last year found Natural Hydrogen at up to 86% purity, and Helium at up to 6.8% of raw gas, as previously reported.**
- **The independent best estimate Prospective Resource for Natural Hydrogen on the Company's 100% owned PEL 687 is 1.3 billion kilograms, and for Helium the mean estimated Prospective Resource is 96 billion cubic feet (Bcf) over approximately 25% of the tenement. Refer Tables 1 and 2 for full details.**
- **The Company has significant prospective resources with large-scale potential.**
- **This is the start of a very exciting technical journey, and is not dissimilar to the eventual success of existing world-renowned oil and gas energy projects, which took time to reach their full potential.**
- **The objectives of the exploration well tests are to obtain more samples of both Natural Hydrogen and Helium for further specialist analysis in world-leading laboratories, and to extract both Natural Hydrogen and Helium to surface.**
- **Testing operations are expected to take most of March, with preliminary technical results from the overall testing of both the Ramsay 1 and Ramsay 2 exploration wells program expected by April, with further detailed laboratory analysis ongoing.**
- **Results from the testing program will provide the Company with valuable information for future drilling and well completion designs, for the future pilot program, and longer-term commercialisation planning.**
- **Planning continues on the Company's broader 2024 work program, including a regional 2D seismic program and the drilling of additional wells.**

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.

Further Detail:

1. Overview of exploration testing operations on Ramsay 1 and Ramsay 2 wells:

Exploration well testing operations on the Ramsay 1 and Ramsay 2 wells are set to commence today. Well testing experts, SGS Australia have supplied the flow back testing package which includes all pressure and flow sensors and gas sampling equipment. Experienced gas contractors Well Pro and MPK have supplied the coil tubing unit, plus the nitrogen pumping and wireline operations for the work. Well testing operations are expected to take 2 to 3 weeks with extensive gas sampling to be conducted by SGS together with Petro Lab and CSIRO. Gas samples will be sent to various local and international laboratories to have full gas composition and noble gas isotope tests conducted. It is expected that these technical tests could take several months to fully complete. Well testing experts ERCE have been engaged to provide an independent review of the testing program, utilising experts in Perth and London.

2. Groundbreaking exploration testing for both Natural Hydrogen and Helium

This well testing program is 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 be the start of an exciting journey, which is not dissimilar to that undertaken by 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 and completion techniques were developed and optimised over time, improving project economics and ultimately leading to major projects being developed. We anticipate a similar path forward for our Natural Hydrogen and Helium 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 resources.

3. First key step on the journey to future commercialisation

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 commercialise over time.

There is very little data available for dedicated 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.[1]

Helium is extremely valuable and indicatively, longer-term bulk pricing is expected to approximate USD450 per Mcf (thousand cubic feet).[2]

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.

4. Objectives of exploration flow testing

The primary objective of the Ramsay 1 and Ramsay 2 well testing program is to obtain gas samples for compositional and technical analysis, which will be undertaken in third-party laboratories.

Secondary objectives of the well testing program are to extract both Natural Hydrogen and Helium to surface, and to obtain formation fluid samples for analysis.

From the well testing data obtained, Gold Hydrogen will better understand the characteristics of the Natural Hydrogen and Helium reservoirs, including an understanding of potential wellbore skin damage from drilling. The data obtained will assist the Company in gaining technical insights into how the Ramsay Project area could be further explored and appraised, including future well designs and testing designs, as well as providing input for the future pilot plant design.

Although the final results of the well testing program may take several months to be received and analysed, initial results around gas composition from the combined testing of the Ramsay 1 and Ramsay 2 exploration wells are expected to be available by April.

Gold Hydrogen Managing Director, Neil McDonald said: *"We have found both Natural Hydrogen and Helium in our Ramsay 1 and 2 wells at world class purities, and our prospective resource estimates indicate the potential for very large quantities. We know the gases are there, and the start of exploration well testing operations is a good first step to the potential future commercialisation of both Natural Hydrogen and Helium in this region. We look forward to obtaining more samples and extracting the gases to surface, which will be very valuable data and information for the future appraisal and further development of the project".*

[1] "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/)
[2] February 2024, www.noblehelium.com.au , quoting Konbluth Consulting.

Ongoing Activities

To progress the Ramsay project area and to further explore PEL 687, a large scale regional 2D seismic project is being designed and costed. The objectives for the seismic program will be to help delineate the size of the potential Hydrogen and Helium accumulation(s) and support the identification of future drilling targets on the Yorke Peninsula.

Planning is also underway for further drilling activity later in 2024.

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 only 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^2. 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^2 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.

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) 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), and copies of market releases will be emailed to all interested parties who register via 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 Engineer for Gold Hydrogen, who is a Qualified Petroleum Reserves and Resources Evaluator. Mr Hadi Subrata confirms that, as at the date of this announcement, there is no change to information or additional information, since the effective dates, that would materially change the estimates of prospective resources quoted.

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 – 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.

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.

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.

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.