26 September 2023

ASX Announcement

Ramsay Project Update

Independent Reservoir Rock Characterisation Study Results

Highlights:

- **Historical well chip samples from the legacy wells on the PEL 687 permit (Ramsay Project) were obtained from archive storage and tested in laboratory conditions by an independent scientific organisation.**
- **The geological parameters appear to have all the necessary ingredients for the generation and accumulation of hydrogen gas.**
- **Porosity and permeability were found across offset wells, supporting the belief that the Ramsay area has capacity to flow hydrogen gas.**
- **Offset well chip samples and lab rock analysis also indicate that there is microfracture and a fracture network in both Cambrian limestone and fractured basement, supporting the Company's theory for hydrogen gas migration potential.**
- **The fluid inclusion study showed that the mineralogy in the Ramsay area has a high iron bearing formation which potentially helps hydrolysis (ie. the generation of natural hydrogen gas).**
- **Independent mapping of the iron bearing formation is aligned with the magnetic results from the Company's airborne survey (refer ASX release of 9 August 2023).**

Further to the Company's previous market release of 9 August 2023 relating to the airborne survey results, the Directors of Gold Hydrogen Limited **(Gold Hydrogen, ASX: GHY, the Company)** are pleased to provide an update on the recently completed and independent reservoir rock characterisation research, as part of the Company's flagship Ramsay Project.

The source / reservoir and seal rock characterisation study was recently completed on legacy well samples and available historical core material from within the Company's flagship permit area (PEL 687). Using historical rock samples, representative of the basement material in PEL 687, a series of laboratory tests using imaging and geomechanics test were conducted to identify key geological parameters for rock strengths, hydrogen generation, hydrogen storage, and reservoir characteristics for hydrogen gas.

Properties of the rock samples were analysed, and found that **porosity** (storage capacity for hydrogen) and **permeability** (ability for hydrogen to flow), coupled with microfractures present in both Cambrian limestone and granite basement, provided a favourable setting for hydrogen production. Fluid inclusion work was also conducted on 34 samples, finding the presence of hydrogen in 31 of the historical rock samples, which indicates that hydrogen can be transported and stored in the matrix of the rock samples.

This fluid inclusion work has also demonstrated that under laboratory conditions, the mineralogy of the granite basement (iron rich) is capable of generating hydrogen gas in the presence of water.

This work further supports the Company's theories on the hydrogen generation model. That is, through a hydrolysis process natural hydrogen is generated sub-surface, and is potentially able to flow from the source of its generation into other formations. This supports the decision to twin the historic Ramsay Oil Bore 1 in mid-October. This new well, Ramsay 1, will test for hydrogen shows in the upper Cambrian limestone as seen in the Ramsay Oil Bore 1 well.

The location of the samples is shown in **Figure 1** below. Samples were collected based on regional mapping of the believed location of iron rich granite rocks. This independently derived map is very similar to the aerial survey results that indicated similar locations for iron rich rocks.

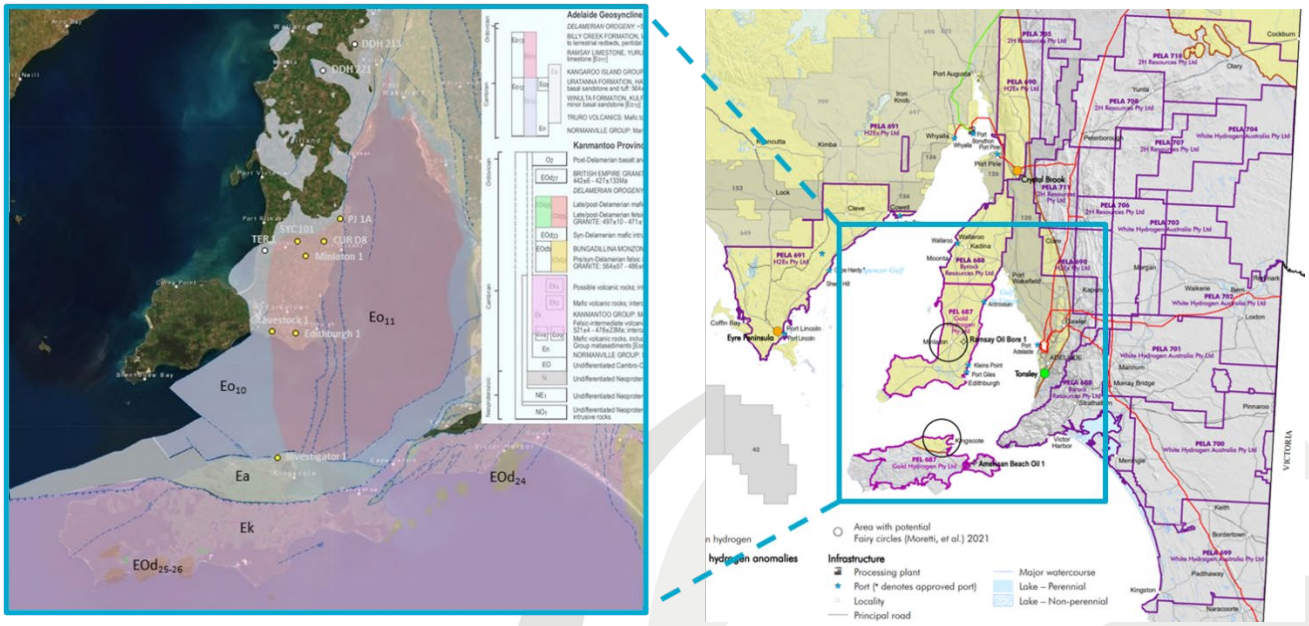

Figure 1: Regional basement map and sample locations

About Gold Hydrogen

Gold Hydrogen is focused on the discovery and development of world class natural hydrogen gas in a potentially extensive natural hydrogen province in South Australia. This region has only recently had its natural hydrogen potential identified by the Company. 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.

The combined natural hydrogen permit area of the Gold Hydrogen group is approximately 75,332km^2. Gold Hydrogen holds one granted petroleum 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 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 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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The Board looks forward to providing regular updates to the market as preliminary exploration efforts commence on the Company's flagship Ramsay Project.

This announcement has been authorised for release by the Board.

On behalf of the Board
Karl Schlobohm
Company Secretary

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QPRRE Statement

The Prospective Resource Statement 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.

The Prospective Resource Statement has 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 date of 30 September 2021, 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.