21 February 2024

ASX Announcement

Ramsay Project
Helium Prospective Resource Report

Key Highlights:

- **Drilling results confirmed world-class helium concentrations of up to 6.8% in raw gas, as previously reported.**
- **Prospective Resource Report for helium obtained for a 2,000km^2 area of the Company's flagship Ramsay Project on the Yorke Peninsula (refer Figure 1).**
- **Mean estimate of 96 billion cubic feet (Bcf) of helium over approximately 25% of the Ramsay Project area (PEL 687), which, if replicated across the tenement, would potentially make this a world-class helium project. See Table 1 below for full details, including the high, low and best estimates. The Company notes 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.**
- **Helium is extremely rare, valuable and cannot be man-made.**
- **Future exploration flow testing and sample analysis planned for March 2024.**

Further Detail:

1. **November drilling results – world-class helium concentrations of up to 6.8% in raw gas:**
   - GHY reported the November 2023 drilling results from MDT samples revealed very high helium concentrations, reaching up to **6.8% in raw gas** from the Kulpara Formation (refer ASX release of 6 December 2023).
   - The purity values encountered in the Company's maiden drilling program potentially make the Ramsay Project a world-class helium project if they are able to be replicated across the tenement.
2. **Helium Prospective Resource Report:**
   - Post-drill analysis of the helium results and the further data collected, which included the results of fluid inclusion analysis of 31 core samples from historic wells across PEL 687 confirming the presence of helium, has enabled independent certifiers to prepare a prospective resource report for helium on Gold Hydrogen's Ramsay Project.

- The helium prospective resource report includes a Mean estimate of 96 Bcf of Helium (refer Table 1 below for full details, including the high, low and best estimates) calculated in accordance with SPE-PRMS guidelines. The Company notes 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.

3. Potentially World-Class Helium Project:

- Extracting helium from an area that has no petroleum system is potentially ground-breaking, as currently 95% of helium is produced from petroleum and fossil fuel environments, making "green" helium (ie. not derived as a by-product of a hydrocarbon development) an emerging opportunity.[1]
- Exploration flow testing will provide valuable data and assist with confirming helium concentrations and flow rates.

4. Current and future testing:

- Samples were meticulously collected during drilling of the Ramsay 1 and Ramsay 2 wells. Schlumberger (now SLB) collected the samples, and independent validation by a specialised third-party laboratory ensured the credibility of results via analysis. Testing of those samples is ongoing, and the collection of new data and samples during flow testing of the wells will help the Company better understand the components that make up the helium bearing gas.
- Well testing for both Ramsay 1 and 2 is scheduled for March 2024, with the objective to collect fluid and gas samples, measure gas compositions, pressures and flow rates, to support a future appraisal and development strategy, as well as the potential proof-of-concept facility design.

5. Commercial analysis:

- Helium is extremely rare and expensive, with markets generally determining pricing on a contract by contract basis. Indicatively, longer-term bulk pricing is expected to approximate USD450 per Mcf (thousand cubic feet).[2]
- Global helium demand was estimated to be around 6 billion cubic feet (Bcf) in 2023, with annual demand expected to increase at a rate of 3% to 5% per annum.[3]

6. Exploration Potential:

- Despite only two wells being drilled in the Ramsay Project area, multiple data points indicate the potential for a laterally extensive hydrogen reservoir and a prolific helium system at the Ramsay Project site. Subsequent exploration, analysis and future flow testing will provide a clearer picture of this promising opportunity.

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[1] "About Helium" www.noblehelium.com.au
[2] February 2024 www.noblehelium.com.au, quoting Kornbluth Consulting.
[3] "The 2023 Worldwide Helium Market" Gasworld US Edition, October 2023.

In response to the helium prospective resource report, Gold Hydrogen's Managing Director Neil McDonald said:

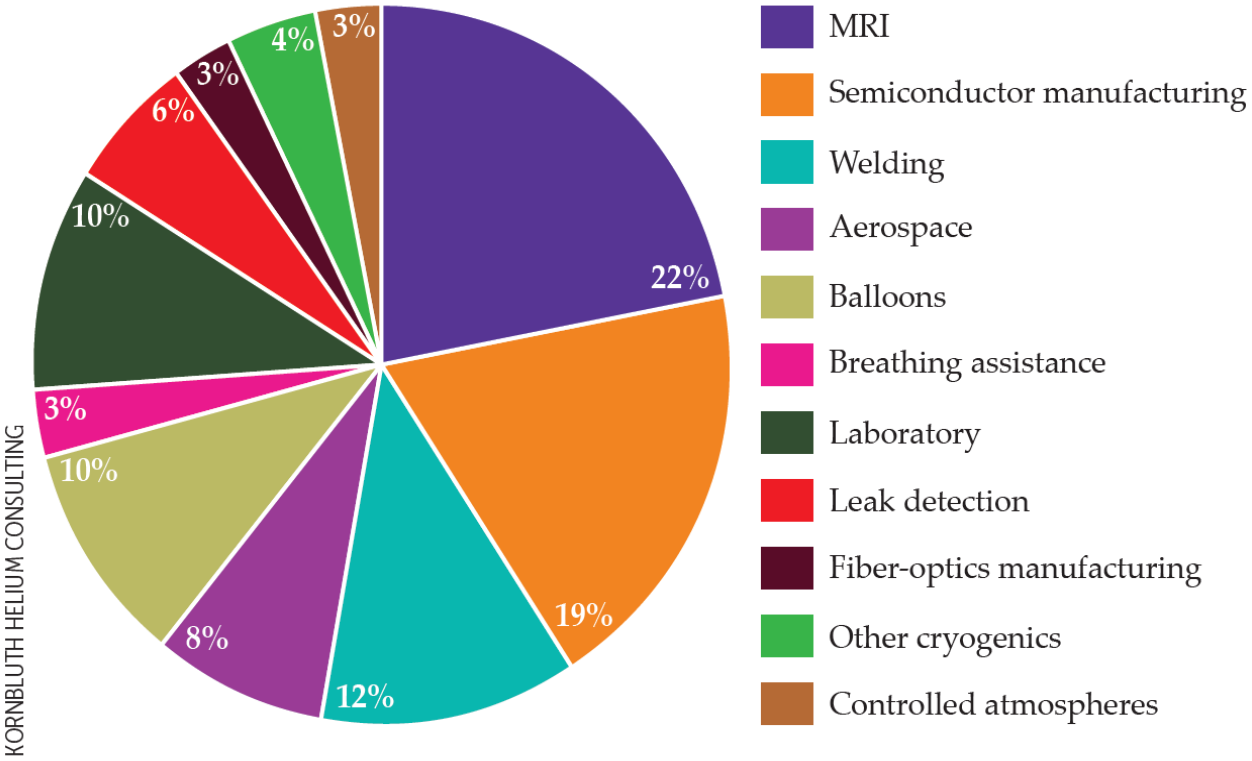
"The world-class results for the Ramsay Project continue with Gold Hydrogen being able to obtain this prospective resource report for helium. Our independent certifiers have been able to review all the historical and current data. To have them assess and report that we have 96 Bcf of helium (Mean) on the Ramsay Project, which only covers an area which is 25% of this granted permit, is an exceptional result and a huge value add to our Company.

Considering that helium projects are commercial around the world from 1% purity and we have 6.8% purity raw gas from recent exploration results, combining this with a market where helium is expected on a longer term basis to sell for approximately USD$450 per Mcf, we may very well have a world-class helium project, and one with scale.

We are incredibly pleased with the helium results, as we consider they can only further enhance the Ramsay Project, which has identified multiple target zones for both hydrogen and helium."

Helium Uses

Helium has many industrial, medical and technical uses, as outlined below:



Although Gold Hydrogen is in the early stages of its exploration program, the Company considers its Ramsay Project has the potential to become a world-class natural hydrogen and helium development. As previously reported, the real time mud gas analysis in Ramsay 2 recorded the presence of high helium concentrations within the mud gas while drilling the Kulpara Formation, the Winulta Formation, and the Fractured Basement (see Figure 2). Two MDT samples recovered from 778mMD at the base of the Kulpara Formation contained 6.8% and 6.1% helium as part of the raw gas composition.

Gold Hydrogen engaged Teof Rodrigues and Associates (TRA) as independent certifiers to estimate the Prospective Helium Resources within the Ramsay Project area on the Yorke Peninsula based on the results of Ramsay 1 & 2 and other regional data points suggesting a regional helium source. Table 1 shows the results of application of the industry standard assessment method (SPE-PRMS) to estimate the helium resources.

Table 1 – Helium Prospective Resources within the Ramsay Project area and PEL 687

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%**

*** These Helium Prospective Resources are 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 (Pg) and a risk of development (Pd). Further exploration, appraisal and evaluation is required to determine the existence of a significant quantity of potentially recoverable helium.**

Notes to Table 1

(1) This table presents Gold Hydrogen's Prospective Resources for Helium in the Ramsay Field of Yorke Peninsula only. Gold Hydrogen currently has no Reserves and no Contingent Resources.

(2) Estimates are assessed to comply with the ASX Listing Rules for Prospective Resources and SPE-PRMS 2018. SPE have provided guidance regarding the Extension of PRMS Principles to Non-Hydrocarbon/Non-Traditional Situations including Helium (and Hydrogen).
Refer: *https://www.spe.org/en/industry/reserves/non-hydrocarbons/*

(3) Per ASX LRs 5.28.4&5 estimates are unrisked and aggregated arithmetically by category, hence caution that the aggregate low estimate may be a very conservative estimate and the aggregate high estimate may be a very optimistic estimate due to the portfolio effects of arithmetic summation.

(4) Probabilistic methods are used to prepare the estimates. The distribution of the estimates is the "full distribution" and has not been truncated by application of the MEPS (minimum economic pool size) concept.

(5) The Reference Point is at the wellhead/edge of lease (ie. wellhead facilities) so the estimates have no deduction for flare, vent or fuel consumed in operations.

(6) Pg (Chance of geologic Discovery), Pd (Chance of Development) and Pc (Chance of Commerciality = Pg x Pd) are calculated as a weight average of the P50's of the Helium Bcf (Billion Cubic Feet) of the prospect formations.

(7) Pg incorporates Play Risk and Prospect Risk.

(8) Pd incorporates an assessment across all SPE-PRMS Commerciality Criteria (ie. not just economics).

(9) Information in the table and throughout the Report is rounded. Some totals in the tables may not add due to rounding.

(10) Gold Hydrogen owns 100% of PEL 687 which has been issued under South Australian legislation.

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” (Mr Teof Rodrigues, Mr Paul Strong and Mr Greg Horton) and Mr Billy Hadi Subrata, Chief Technical Officer for Gold Hydrogen, with an effective date of 21 February 2024.

The Prospective Resource Statement has been included in this announcement:

(1) under the approval of Mr Billy Hadi Subrata, Chief Technical Officer for Gold Hydrogen, who is a Qualified Petroleum Reserves and Resources Evaluator; and

(2) with the prior written consent of Mr Billy Hadi Subrata and “Teof Rodrigues & Associates” (Mr Teof Rodrigues, Mr Paul Strong and Mr Greg Horton) as to the form and context in which the helium prospective resource statement and supporting information are presented.

The employment and professional organisation membership details of Mr Billy Hadi Subrata, Mr Teof Rodrigues, Mr Paul Strong and Mr Greg Horton are as follows:

Name	Employer	Professional organisation
Billy Hadi Subrata	Gold Hydrogen	SPE
Teof Rodrigues	Teof Rodrigues & Associates	SPE, PESA
Paul Strong	Teof Rodrigues & Associates	GSL, AAPG, PESA
Greg Horton	Teof Rodrigues & Associates	SPE

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.

Forward Looking Statement / Future Performance

This announcement may contain certain forward-looking statements and opinions. 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.

Figure 1 – Map outlining the on-shore location of the Prospective Resource Report for Helium

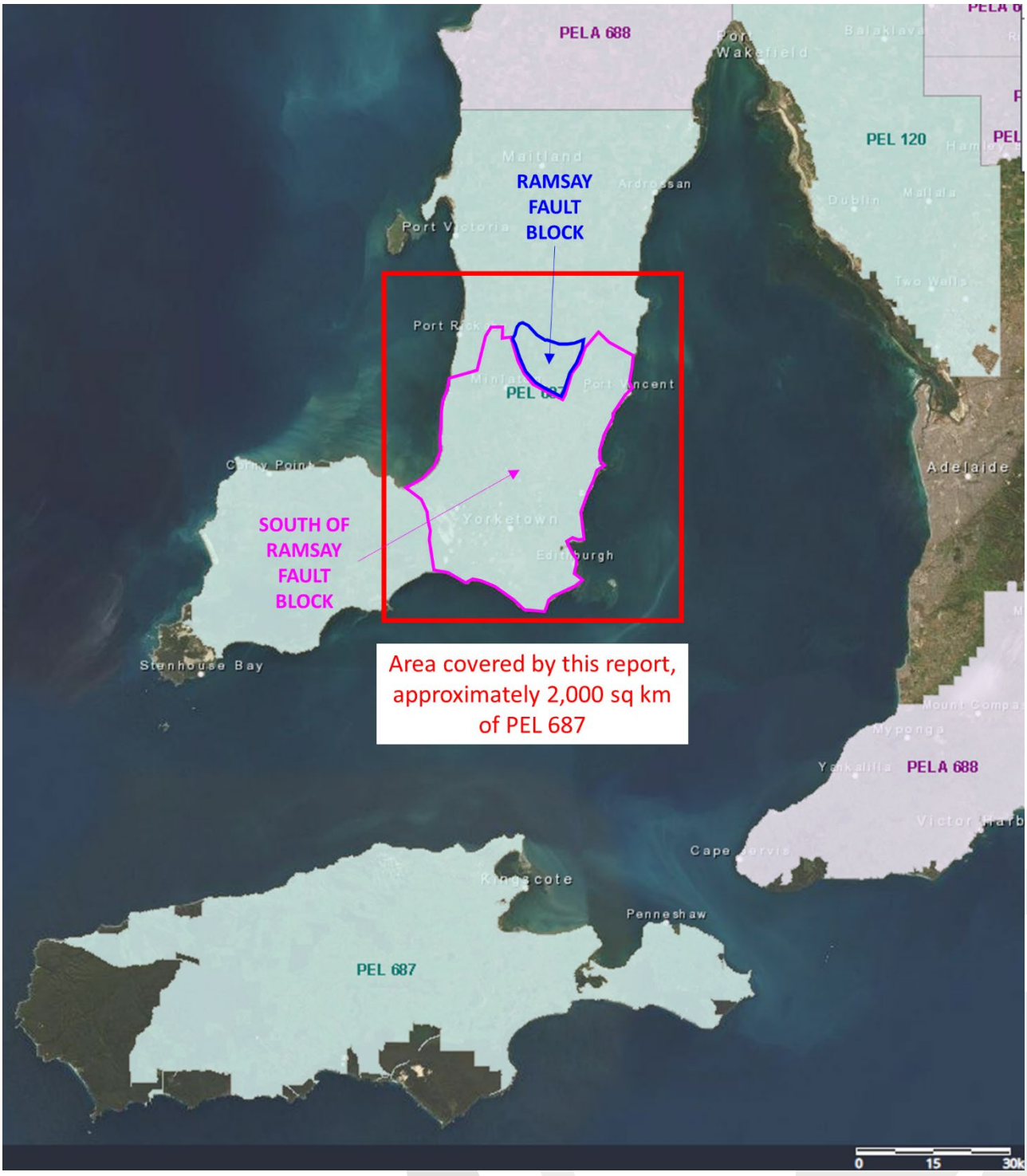
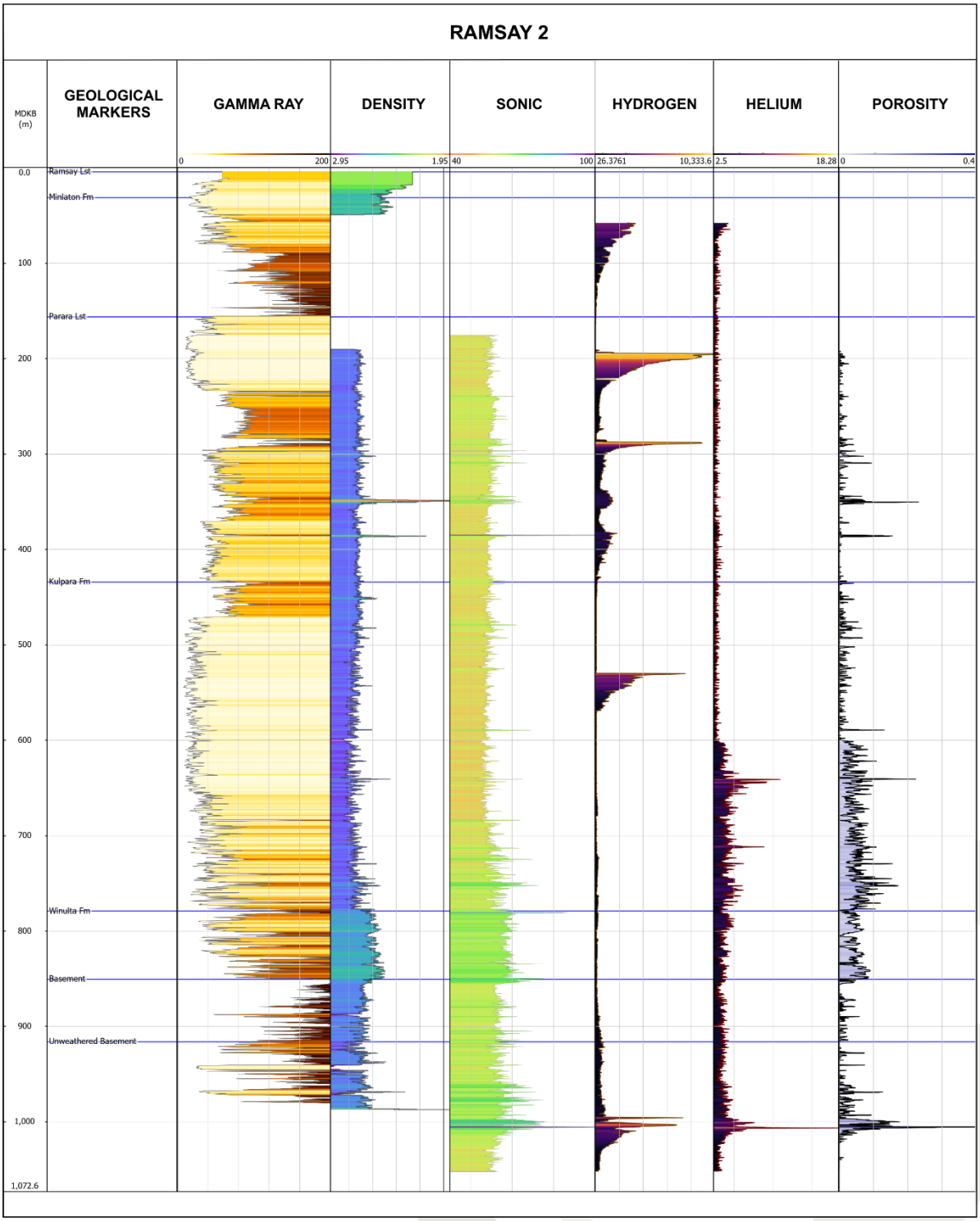


Figure 2 – Ramsay 2 well with the helium and hydrogen continuous mud gas logs



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 as a result of its successful 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 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 gas 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 Board of Directors.

On behalf of the Board
Karl Schlobohm
Company Secretary

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