18 April 2023

ASX Announcement

Project Ramsay Soil-Gas Survey Commenced

Highlights:

- **The first stage of Gold Hydrogen's (GHY) soil-gas survey, being conducted by Commonwealth Scientific and Industrial Research Organisation (CSIRO), has commenced on schedule on the mainland component of the 100% owned Ramsay Project (PEL 687).**
- **Up to 80 locations identified for soil-gas sampling based upon recently completed reprocessed 2D seismic, generation of subsurface static model, near existing occurrences of natural hydrogen from historic wellbores, and distributed over various subsurface hydrogen source rocks, basement faults and possible seeps or fairy circles.**
- **This Stage 1 soil-gas survey is part of GHY's research and development activities, and is being undertaken to determine whether hydrogen gas can be detected in soils at surface above potentially prospective natural hydrogen locations, noting that historical drilling activities recorded occurrences of up to 90% hydrogen in PEL 687 from depths >240-meters.**
- **This research and development activity may provide valuable data that could assist in providing a guide for future exploration activities, supporting the generation of additional drilling inventory leads for maturation to prospects. However, whilst the soil-gas survey may provide a guide, drilling is required to validate the extent of hydrogen in the subsurface, and this is planned for late 2023.**
- **The approved non-invasive airborne survey covering 10,529-line km is proceeding to plan and has currently acquired approximately 58% of the survey data.**
- **Gold Hydrogen controls a commanding position in South Australia with a combined natural hydrogen permit and application area of approximately 75,332 km^2. GHY's granted permit PEL 687 has an independently assessed Best Estimate Prospective Resource of 1.3 billion kilograms of natural hydrogen gas (refer Table 1).**
- **Gold Hydrogen believes significant upside potential exists for deeper hydrogen sources and reservoirs throughout the Ramsay Project at untested depths from approximately 500m to 4,500m. It is Gold Hydrogen's intention to drill at these untested depths in due course and create a pathway to commercial extraction.**

The Directors of Gold Hydrogen Limited (Gold Hydrogen, ASX: GHY) are pleased to confirm that the Commonwealth Scientific and Industrial Research Organisation (CSIRO) has commenced the Stage 1 non-invasive soil-gas reconnaissance survey across the mainland component of Ramsay Project (PEL 687) in South Australia **(refer Figure 1).**

In early April 2023, the Company received approval for the conduct of the survey from the South Australian Government Department for Energy and Mining under Section 74(3)(a) of the South Australian Petroleum and Geothermal Energy Act 2000, and has also completed all necessary compliance requirements to commence the survey.

The Stage 1 soil-gas reconnaissance survey is estimated to take two weeks, subject to weather interruptions, and has been designed to gather instantaneous gas measurements from approximately 80 pre-determined survey points that are located in the road reserves of public roads on the Yorke Peninsula. The soil-gas survey points **(refer to Figure 1)** have been located geologically along the recently reprocessed 2D seismic lines, above various potential natural hydrogen source rocks and Cambrian stratigraphy, near existing occurrences of natural hydrogen from historic wellbores, recently mapped static model faults and subsurface structures and possible fairy circles.

The CSIRO team will be using a hand-held hammer drill to create a hole in the soil approximately 1 to 2 cm in diameter to a depth of a up to 1 m **(see Figure 2-A)**. The sampling target will be first tested with a GA-5000 multi-gas analyser coupled with an 80 cm stainless steel tube inserted in the hole **(see Figure 2-B)**.

This instantaneous measurement will test for concentrations of hydrogen and other gases to determine the presence / concentration of hydrogen in near surface settings **(see Figure 2-C)**. If small concentrations of hydrogen, methane or carbon dioxide is detected, another instantaneous measurement will be repeated in the immediate proximity (less than a metre from the first hole) with the addition of a helium detector (Argilent PHD4 leak detector – **see Figure 2-D**) to confirm and potentially improve the first total gas content screening measurement.

For a hydrogen measurement greater than 100 ppm (parts per million), an isotube gas sample will be taken for total gas content analysis. Where hydrogen values exceed 200 ppm, an isotube gas sample will be taken to perform an isotopic analysis (C and H from the hydrogen, carbon dioxide, methane, ethane). Soil will be put back in place following each measurement, and the area reinstated as far as practically possible. Negligible disturbance is expected.

For each positive reading during the instantaneous measurement step, a soil gas sampling probe will be set up and left in place for 24 hours **(see Figure 3)**. This mid-term measurement set up consists of the burial of a probe about 80 cm long. Any voids around the probe are filled with natural clay (bentonite). The signal from the probe will be measured with the GA-5000 after two hours. If hydrogen is detected, the probe will be left in place for a further 24 hours and measurements recorded and checked. After each measurement, the soil will be put back in place, and the area reinstated as far as practically possible. Negligible disturbance is expected. If positive results are recorded, the target will be selected as candidate for the in-situ long term soil-gas monitoring Stage 2.

The results of the Stage 1 gas data will be primarily qualitative, and will require further works to quantify in the Stage 2 soil-gas survey that is tentatively scheduled for late 2023 - early 2024. Stage 1 results will help guide Stage 2 workflows and scheduling which involve setting up ground-based detection systems that will take long-term in-situ measurements from positive results discovered during Stage 1. This long-term measurement technique will likely occur over several weeks at a given location to support further quantification of any potential subsurface natural hydrogen fluxes or areas of seeps in a given area.

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

The Board looks forward to providing regular updates to the market as preliminary exploration efforts continue on the Company's flagship Ramsay Project.

This announcement has been authorised for release by the Board.

On behalf of the Board
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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 Luke Titus, Executive Director of Gold Hydrogen, who is a Qualified Petroleum Reserves and Resources Evaluator. Mr Titus 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.

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.

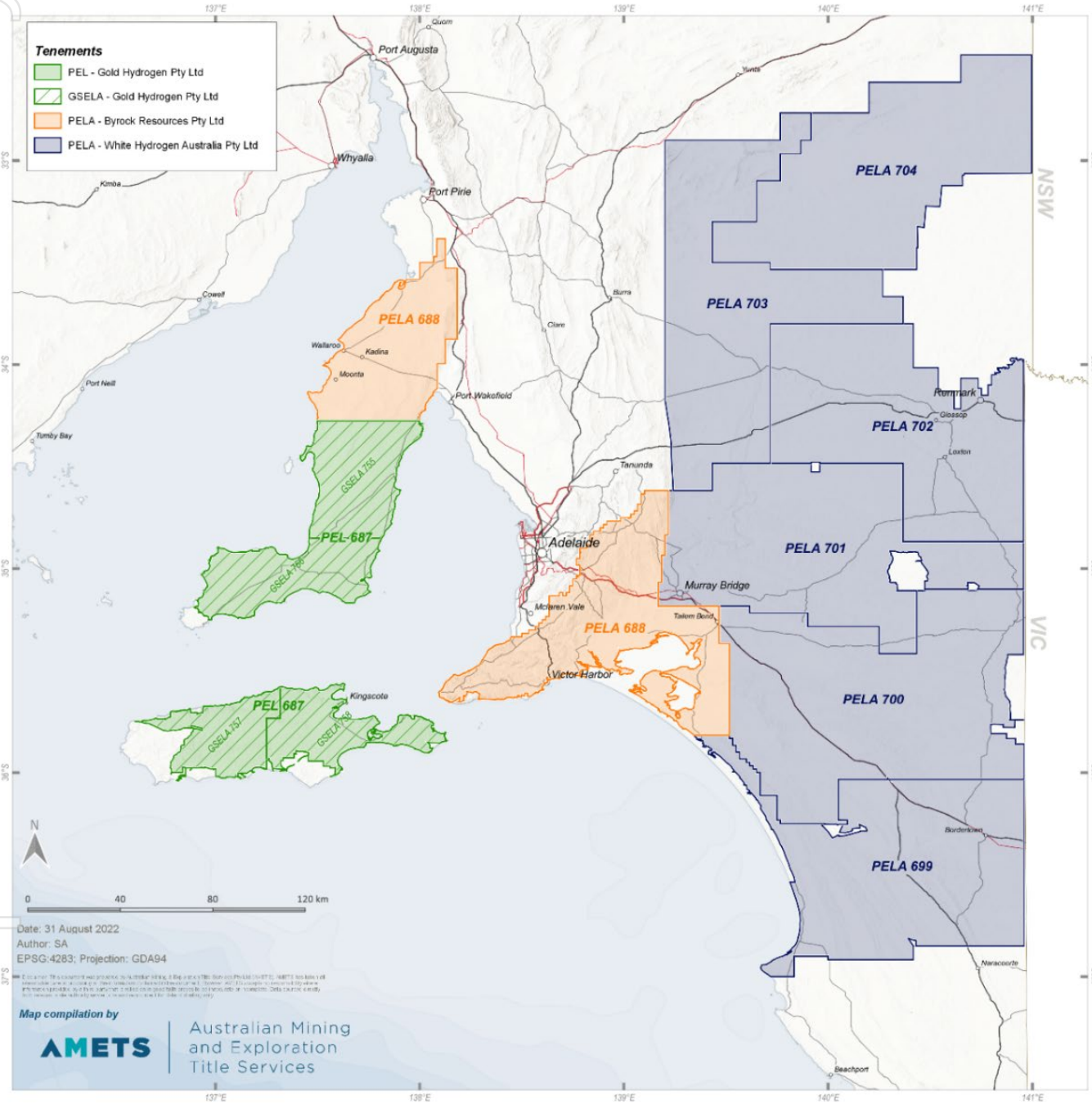
Table 2 – Key Activities and Milestones

Activity	Timeline	Objectives / Opportunities

Reprocessed seismic data	Completed	• Results to date confirm:
		  ○ the existing Ramsay Project discovery is in a good geological setting, i.e. potentially good reservoir
		  ○ existing iron rich source rocks and identification of further natural hydrogen targets
		• Now integrating data with static and dynamic models to identify additional prospects

Airborne Survey & Soil-gas Survey	March-April 2023	• Assist in identifying, prioritising, and refining natural hydrogen targets by highlighting areas of higher prospectivity • Supports and guides ongoing work program activities
Drilling	Scheduled for Sep 2023	• 'Twinning' the historic Ramsay Well to confirm hydrogen is present as identified in 1920's-30's • Hydrogen is anticipated but we will test for all gases including helium
Application tenements, PEL(A) 688 and six other tenements	Progressing to grant over the next 12 months	• PEL(A) 688 adjoins PEL 687 • Independent expert assessment indicates possible future prospective resources can be booked once it is granted
Storage licences	Applications pending	• Provides opportunity to store gas (hydrogen or other) in natural underground reservoirs should they be identified

Commercial relationships	In discussion	• Looking to implement MoU's with:
		  ○ Manufacturers (H2 as energy for heating)
		  ○ Electricity producers (H2 fuel cells)
		  ○ Infrastructure companies (pipelines etc)
		• Interest received from world major oil and gas companies



Location Map – Gold Hydrogen Group tenement and areas under application located in South Australia.

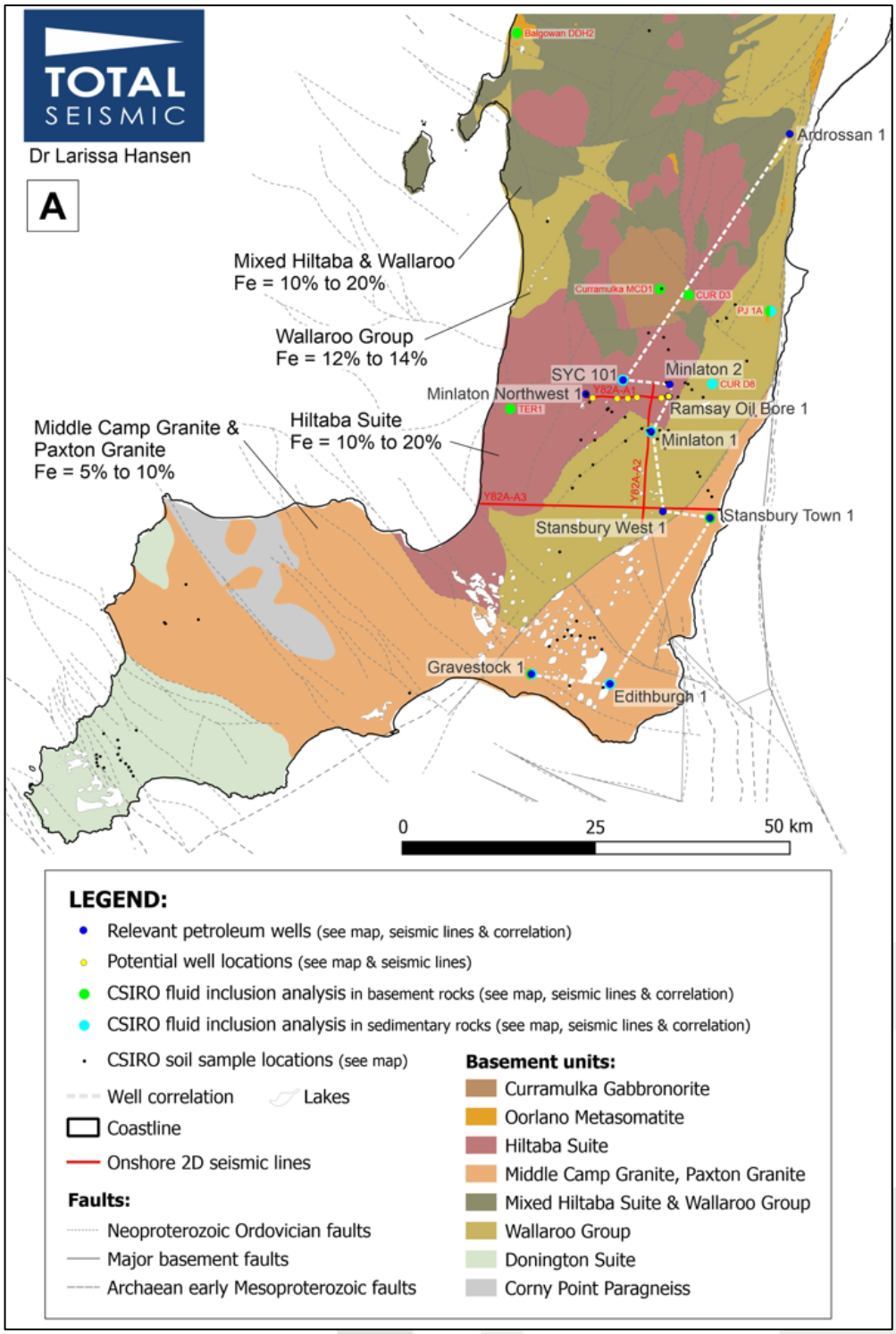


Figure 1 - Location Map of Gold Hydrogen Ramsay Project Stage1 soil-gas survey April 2023.

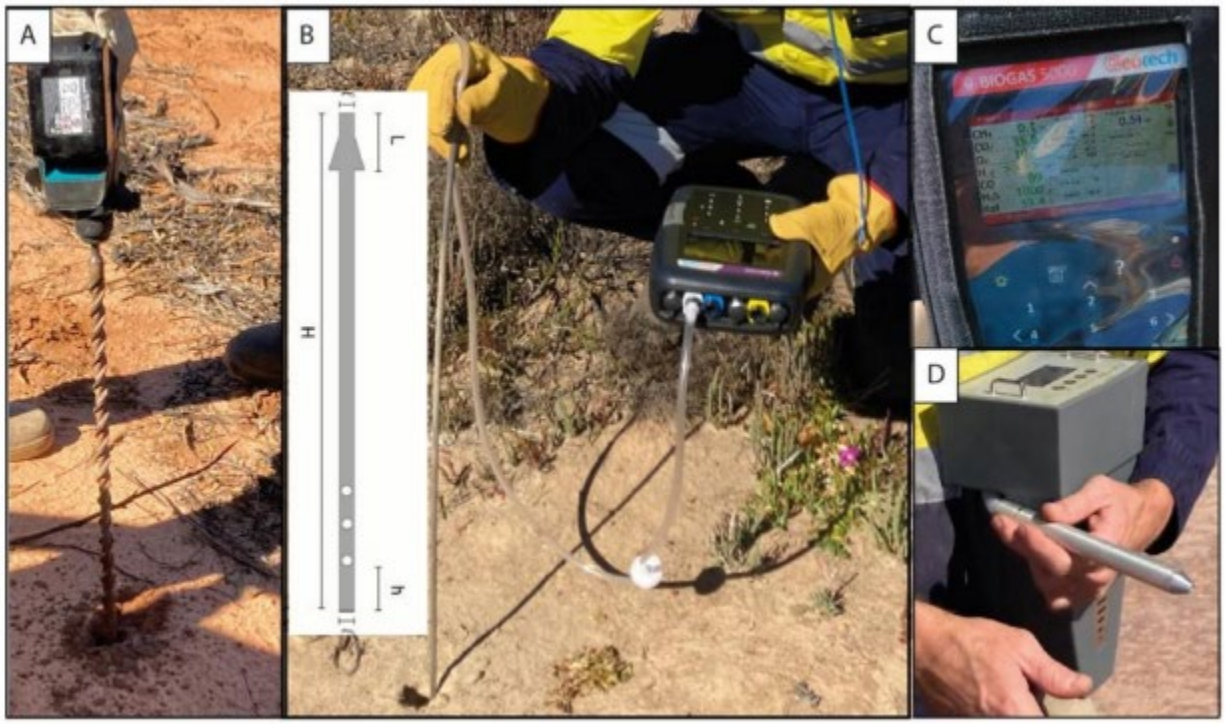


Figure 2 - Instantaneous measurement instrumentation.
A = Hand-held hammer drill; B = GA-5000 coupled with a stainless-steel tube; C = GA multi-gas analyser instantaneous readings; D = PHD-4 portable helium detector (at ppm level)

Figure 3 – Mid-term measurement showing monitoring probe.