15 March 2023

ASX Announcement

New Technical Data Further Derisks Natural Hydrogen Play in PEL 687, South Australia

Highlights:

- **Additional drilling leads identified, with works underway to convert to prospects upon completion of static model and integration of reprocessed 2D seismic data.**
- **Drilling of the Company's first exploration well (Stage One drilling) remains on track for spud in September 2023 with work commencing on well engineering which will support drill rig selection and all procurement activities.**
- **Detailed preparation works including well site selection, land access arrangements, cultural heritage clearances, environmental and hydrological studies are progressing well to ensure the Company is positioned to execute its drilling program.**
- **The soil-gas survey (Stage 1 on Yorke Peninsula) application has been submitted to the South Australian Department for Energy and Mining (DEM), and field activities are currently scheduled to commence in mid-April 2023, subject to approval.**
- **Natural hydrogen gas fluid inclusion lab analysis underway using selected historic core located in PEL 687, with results expected by May 2023.**

The Directors of Gold Hydrogen Limited (Gold Hydrogen, the Company, ASX: GHY) are pleased to advise that the Company has completed its 2D seismic workflows that commenced in August 2021 in collaboration with Schlumberger subsurface. The Company has completed and generated a static model, which includes all relevant historic subsurface data in PEL 687 using Petrel geological software (see **Figure 1**). The Company believes significant upside potential exists for deeper hydrogen sources and reservoirs throughout the Ramsay Project at untested depths from ~500m to 4,500m. It is the Company's intention to drill at these untested depths and create a pathway to commercial extraction.

With this workflow complete, the Company is now progressing with the detailed well engineering design and planning procurement of drilling services for our first exploration drilling program to commence in September 2023. The well design phase has commenced together with rig sizing requirements. A hydrology and environmental assessment study is nearing completion. This will also support the well design workflow. In addition, detailed preparation works including well site selection, land access arrangements, cultural heritage clearances, environmental and hydrological studies continue to progress to ensure the Company is positioned to execute its drilling program.

Further subsurface quality assurance and quality control under a collaborative workflow between Gold Hydrogen and Total Seismic has identified additional drilling leads along certain 2D reprocessed lines (**see Figure 2**). This QA / QC workflow, located on the Yorke Peninsula of PEL 687 (see **Location Map**), is underway with a view to potentially convert the various leads to prospects. These prospects can then be ranked and considered for future exploration and appraisal drilling activities and building upon the current Prospective Resources and geology around the documented natural hydrogen occurrences in the Ramsay Oil Bore 1 and American Beach Oil 1 wells located in PEL 687. Gases were sampled by the State of South Australia at the rig sites of these wells at the time, and by later laboratory analysis it was determined that these gases had a very high natural hydrogen content of between 66% and 89%.

Additional workflows with CSIRO are also progressing, with approximately 75 non-invasive soil-gas survey locations selected for acquisition, and to trial the technique that will identify and measure the amount of natural hydrogen should it be present (see **Figure 2**)**.** The approvals process is underway with the Company's South Australian based contractor, JBS&G, having submitted the application to DEM. Field activities are planned to commence in mid-April 2023. Stage 1 locations have been selected based on proximity to potential fairy circles, faults/structures, underlying basement source rocks, along 2D reprocessed seismic lines and in proximity to known occurrences of natural hydrogen in historic wells.

CSIRO has also completed the final selection and sampling of historic core in PEL 687. This workflow is designed to trial a technique that samples fractures in historic core and test for natural hydrogen that could be trapped in fluid inclusions in a given fracture (see **Figure 2**). The core samples were taken across the various iron-rich basement source rocks to test whether natural hydrogen may be more common to certain basement rock types in the area (see **Figure 3**). Similar sampling has also been undertaken in the overlying Stansbury Basin stratigraphy (see **Figure 4**). Lab analysis is underway to determine if natural hydrogen is present in the samples, and the results are expected to be ready in May 2023.

When combined, these subsurface workflows (the new airborne survey data, static model, reprocessed 2D seismic, trialling of the soil-gas survey and natural hydrogen fluid inclusion techniques and results) could all contribute to highlighting areas of higher prospectivity. The combined work streams will also support guiding the Company's future work program activities for the maturation of the independently accessed Best Estimate Prospective Resources 1.3 billion kilograms of natural hydrogen gas in PEL 687 (see **Table 1** for full details). Importantly, the work also supports prioritizing the potential high prospectivity areas and will guide future exploration activities to be less impactful to surface owners and the community.

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 additional 8,107km^2 within the renewable energy zone of PEL 687 of the Yorke Peninsula region of South Australia.

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 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 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

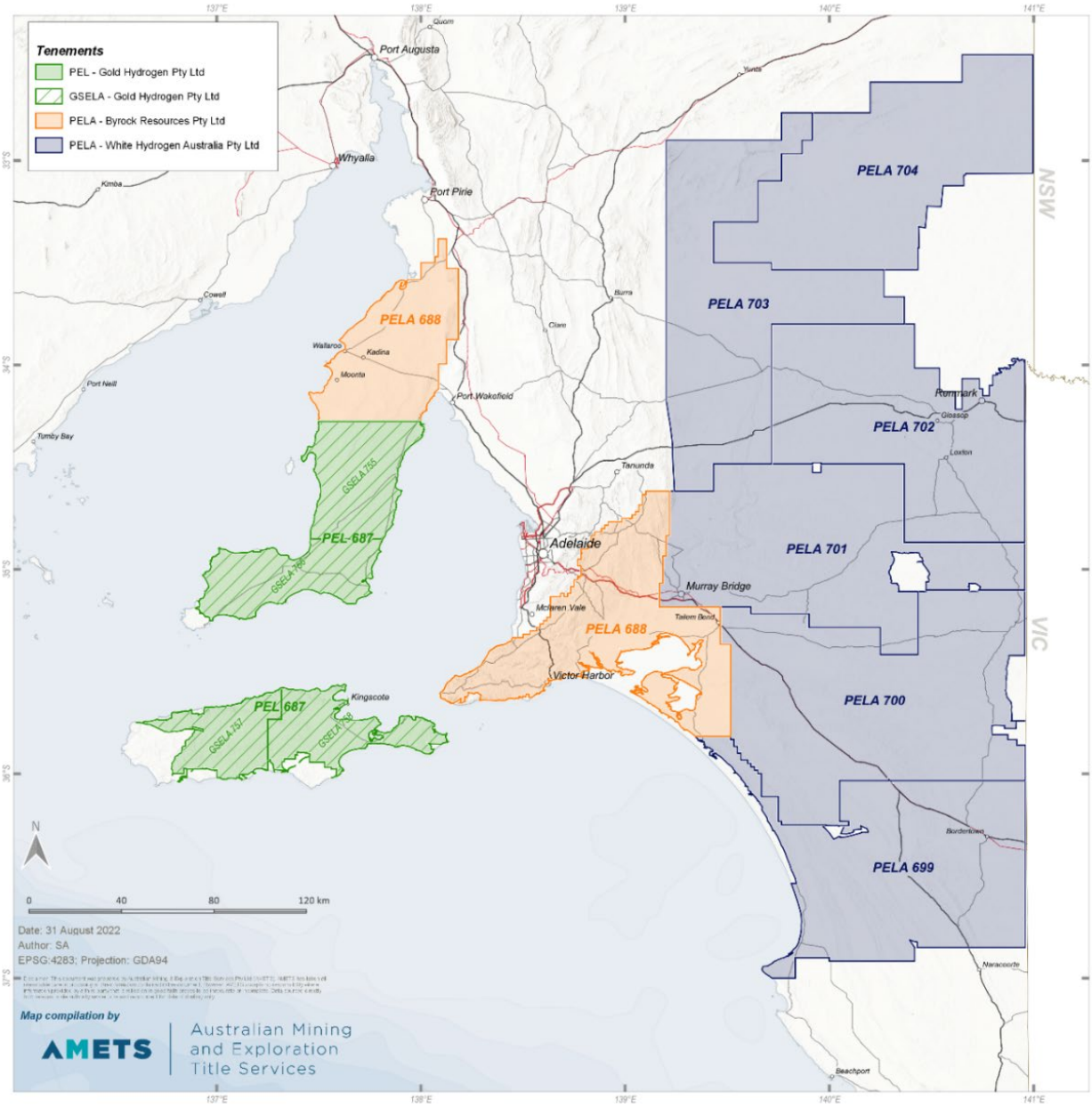
This announcement may contain certain forward-looking statements and opinion Forward-looking statements, including projections, forecasts and estimates, are provided as a general guide only and should not be relied on as an indication or guarantee of future performance and involve known and unknown risks, 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.



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

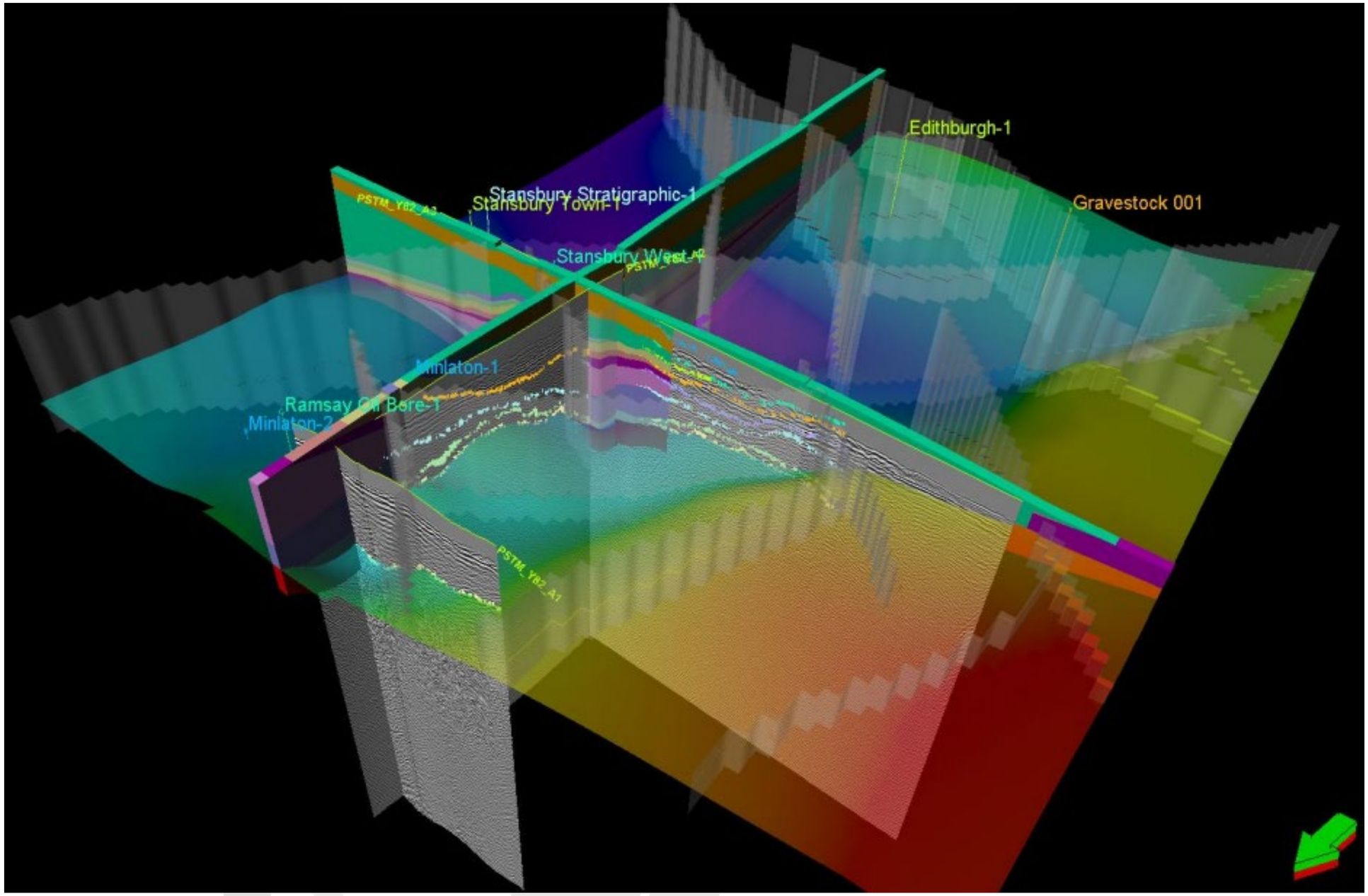


Figure 1 – GHY 3D static model generated using historical datasets and newly reprocessed 2D seismic. This workflow allowed for the generation of stratigraphic formation/horizon tops with associated uncertainties using velocity survey data from the Stansbury West-1 well. Additional petrophysical modelling, horizon thickness, faults, historic magnetic and gravity survey data has also been integrated and harmonized. This first generation model will allow the subsurface team to expand the drilling inventory and update the model with new data, including, the Phase 1 magnetic and gravity airborne survey, CSIRO Stage 1 gas-soil survey data results, natural hydrogen gas fluid inclusion lab analysis results and new data generated from new drills that are planned to commence in September 2023.

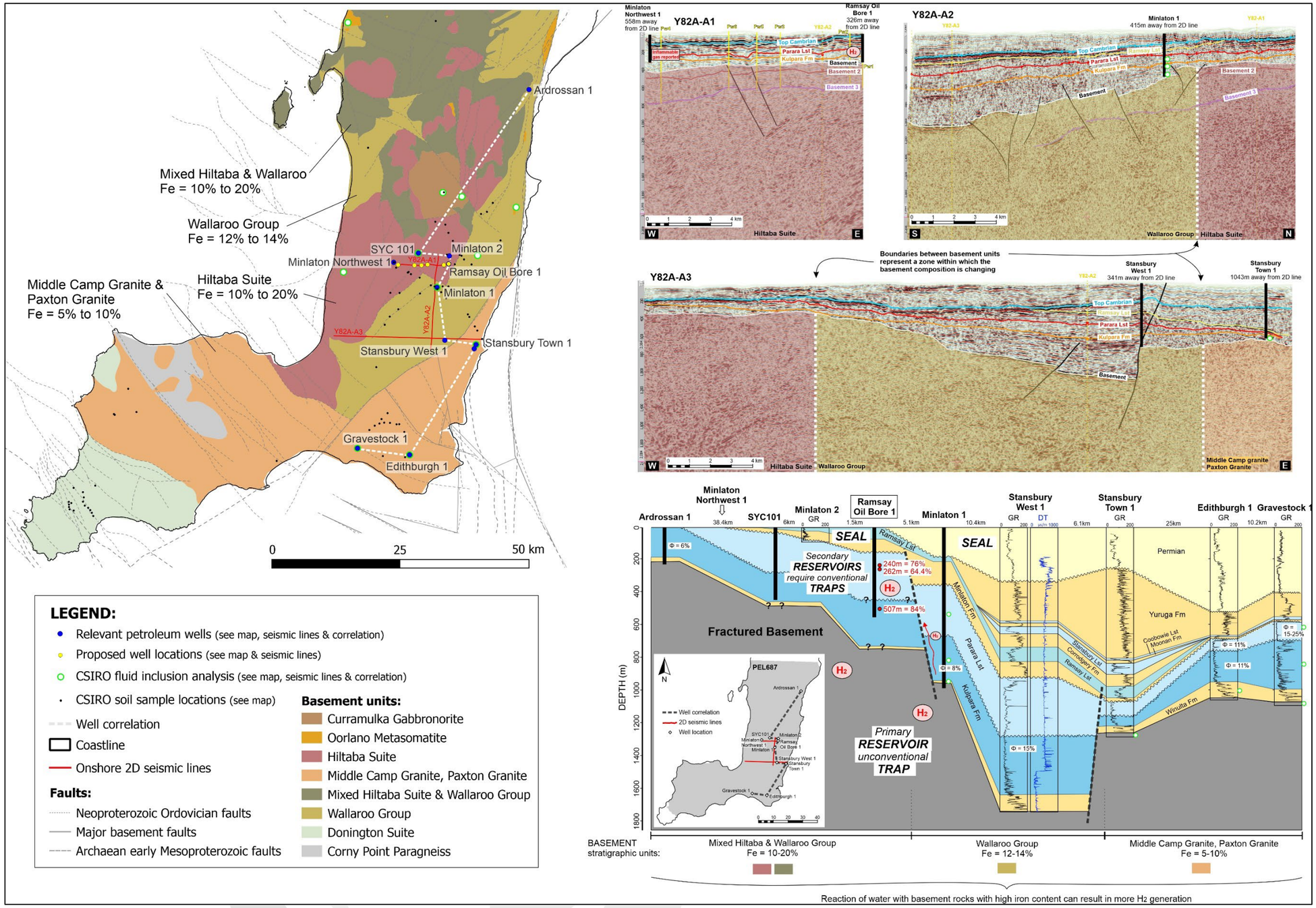


Figure 2 – GHY PEL 687 Yorke Peninsula subsurface overview documenting location of recently reprocessed 2D seismic, locations of CSIRO natural hydrogen gas fluid inclusion studies, proposed locations for Stage 1 gas-soil survey acquisition.

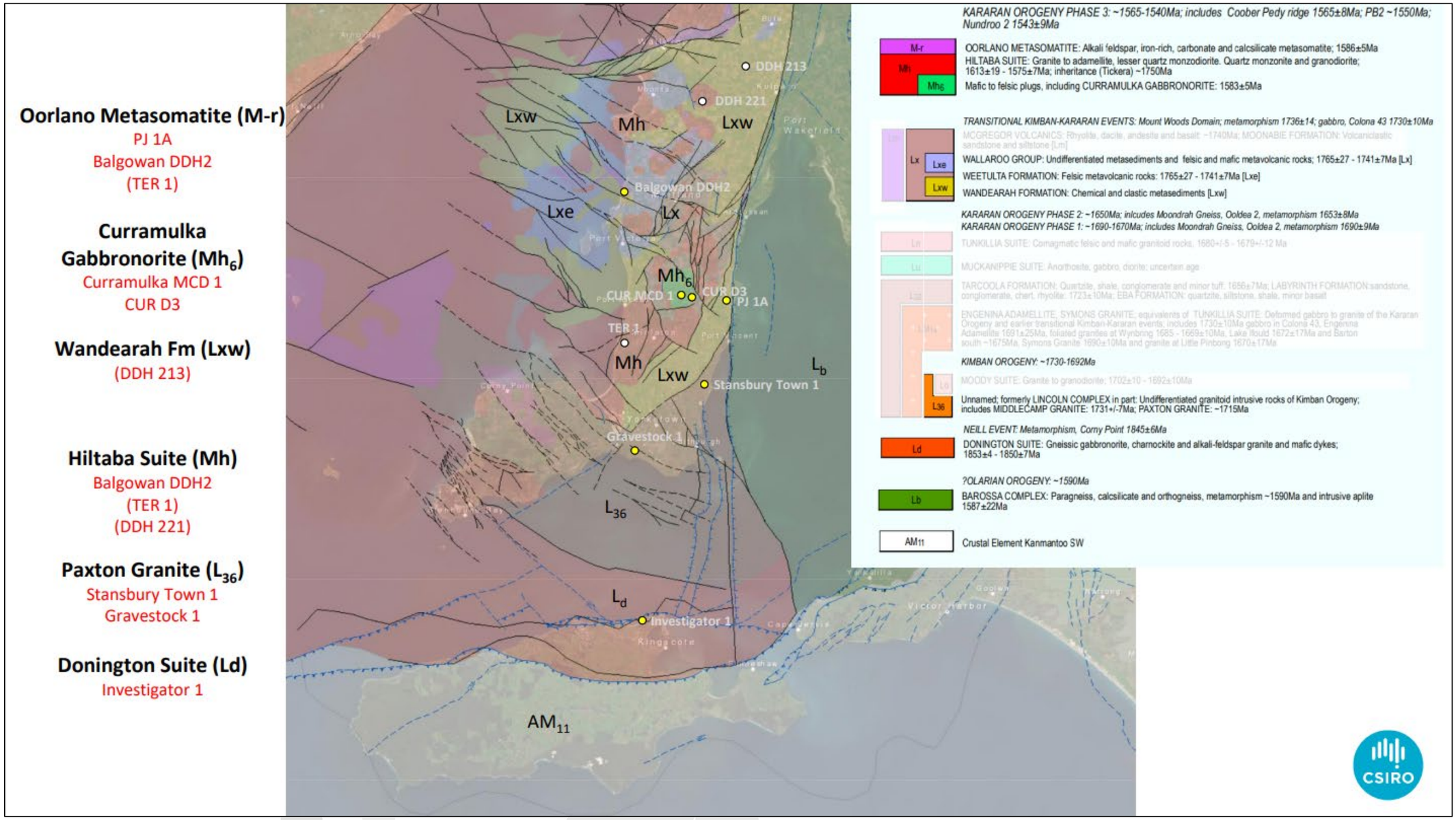
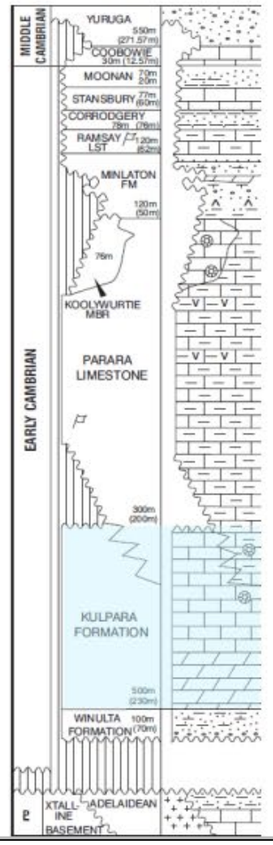
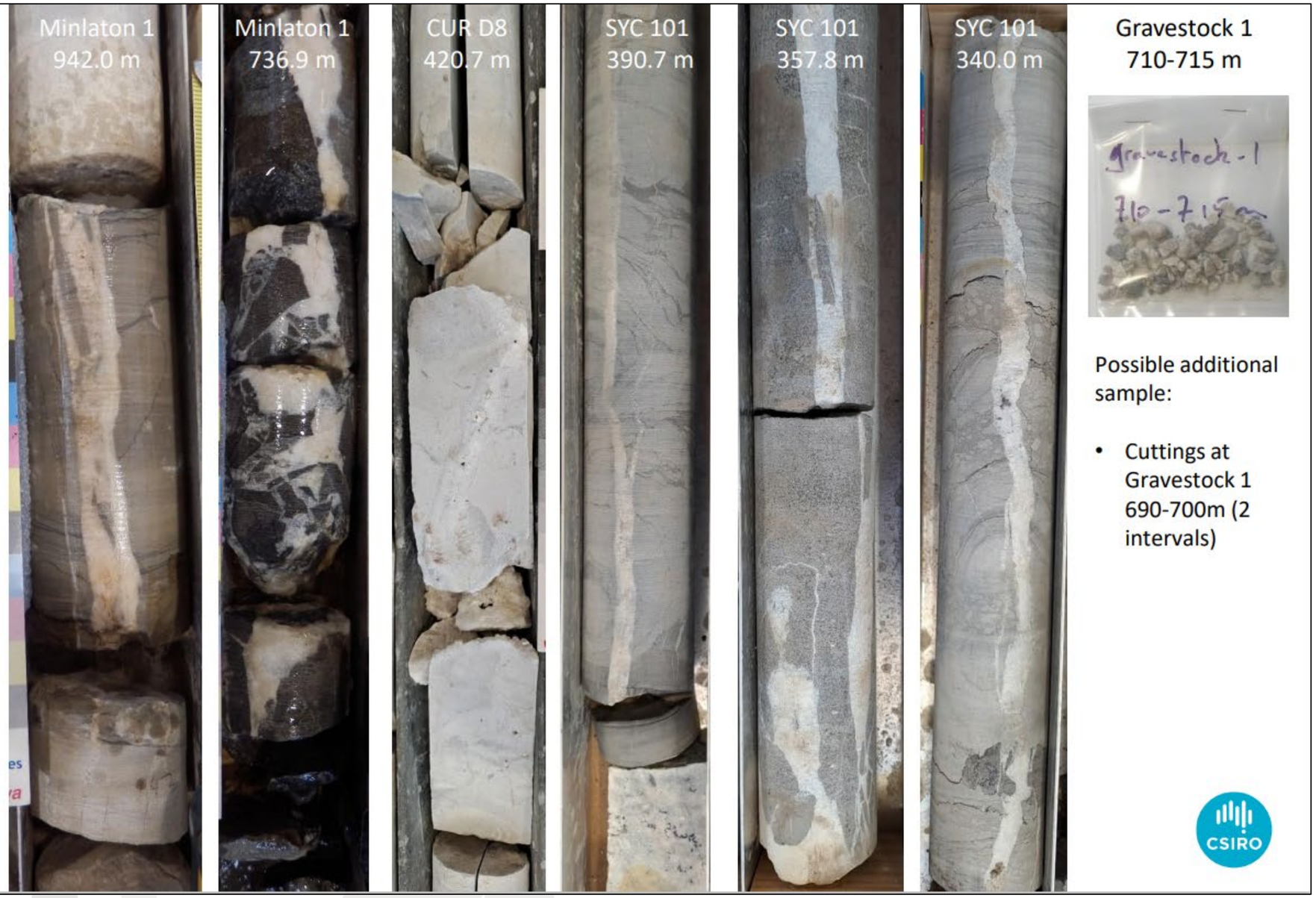


Figure 3 – Location map of selected historic core sample points that have been included in the natural hydrogen fluid inclusion lab analysis and from which source rocks that core was acquired. The lab analysis is designed to test for trapped gases that are in fluid inclusions and if there is a correlation between the various basement source rocks.

Kulpara Fm (Eo_{10})
Gravestock 1
Minlaton 1
CUR D8
SYC 101





Gravestock 1
710-715 m

Possible additional sample:

- Cuttings at Gravestock 1 690-700m (2 intervals)

Figure 4 - Additional samples were also taken for fluid inclusion analysis from the overlying Cambrian Stansbury Basin carbonate stratigraphy. The samples from the historic wells have significant fractures with visible porosity that could be charged with natural hydrogen under certain structural or stratigraphic subsurface conditions. Occurrences of natural hydrogen were observed in the overlying Parara Limestone and Minlaton Formation in the historic Ramsay Oil Bore -1.