Exploration well test and groundwater reinjection program

Information sheet

About Gold Hydrogen

Gold Hydrogen Ltd is an Australian company seeking to verify the existence of commercial quantities of natural hydrogen and helium in its Petroleum Exploration Licence 687, covering portions of the Yorke Peninsula.

Since 2023 Gold Hydrogen has completed the following exploration activities:

- A **soil gas survey** to detect natural hydrogen generated from various geological processes that could be occurring in the survey area.
- An **aerial gravity-magnetic survey** to measure and capture natural variations in the strength and other characteristics of the earth's gravity and magnetic fields.
- A **2D seismic survey** using public roads on the southern Yorke Peninsula.
- **Exploration drilling and initial testing** to prove and appraise the natural hydrogen and helium resource.

These exploration efforts and initial testing have confirmed the presence of natural hydrogen and helium gases in the Ramsay-1 and Ramsay-2 wells near Minlaton. During Q4 2025 the company undertook a second phase of exploration drilling and subsequent flow testing is expected to commence in July 2026 to acquire additional data about these gases.

Why hydrogen is important

The global demand for hydrogen is accelerating as the world rapidly transitions to a decarbonised economy.

Hydrogen has the potential to be the fuel of the future – it's light, storable, energy-dense, and can be developed to provide clean energy.

Hydrogen could play a key role in decarbonising our essential, but energy-intensive, heavy industries like steel production, shipping, heavy transport and aviation.

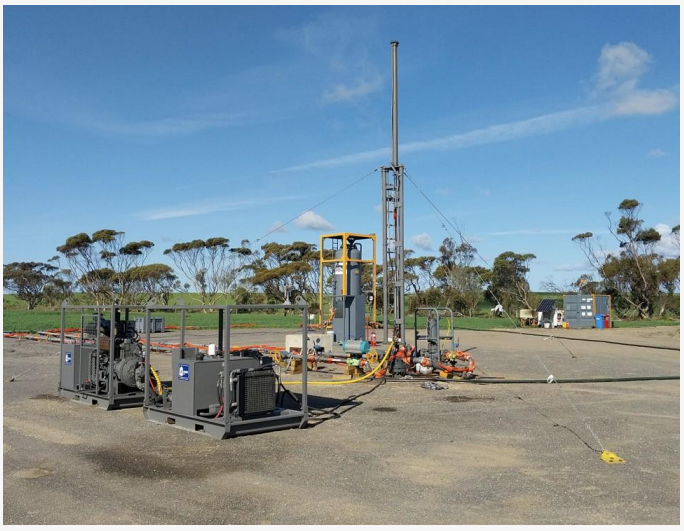
What is exploration flow testing and groundwater reinjection?

Exploration flow testing is a method used to understand the flow of gas vertically from underground rock formations through exploration wells to surface facilities. Testing measures and collects data on flow rates and gas concentrations and pressures in the well. The data collected in this testing process will provide information on the commercial potential of the underground hydrogen and helium resources at the Ramsay Project.

Data collected to date, including results from the Ramsay-1 and Ramsay-2 wells, indicates that some of the hydrogen and helium resources may co-exist with groundwater in deep underground reservoirs.

The exploration well testing program is expected to require pumping groundwater from the geological formation being tested through the exploration well to the surface, so the hydrogen and helium gases can be captured and measured.

The groundwater that will come to the surface during testing of the Ramsay 1, 2 and 3 wells will then be transported through temporary surface-laid pipelines to the Ramsay-1 well where it will be reinjected down the well into underground aquifers.



Example of well site flow testing – photo taken from Ramsay-1 well test operations during Gold Hydrogen's 2024 testing campaign

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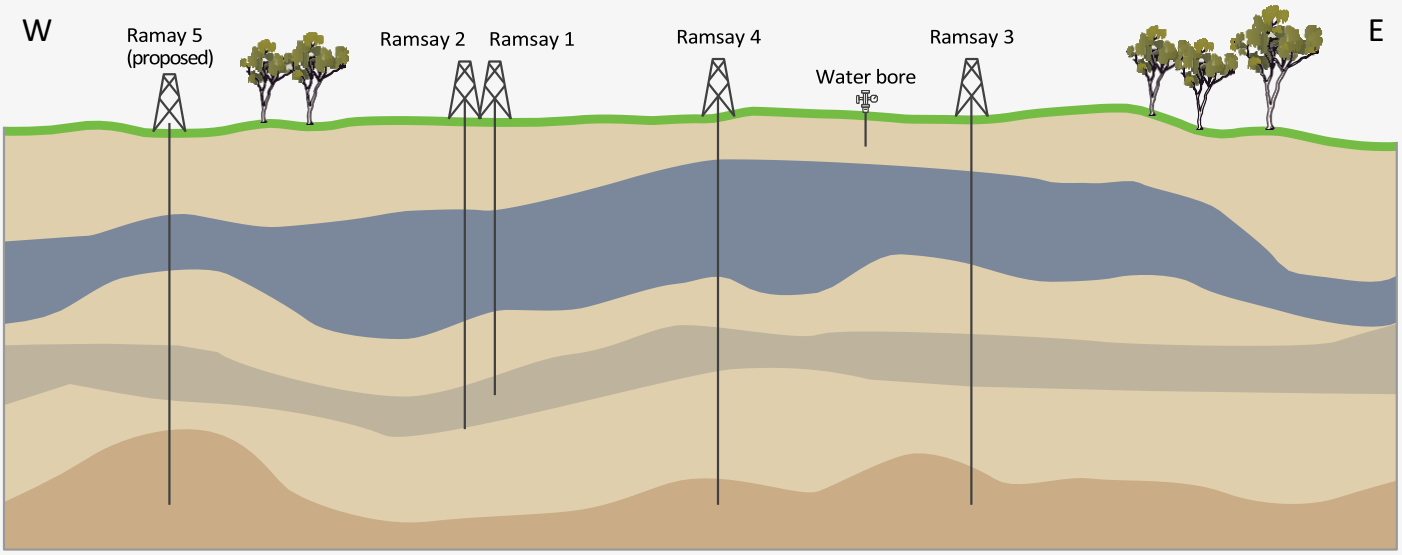

Cross section showing relative depths of Ramsay Project exploration wells (~1000m) and a water bore (~100m).

Local impact

The Ramsay exploration well test and groundwater reinjection program has been carefully designed and planned for minimal impact on people and the environment and complies with regulatory standards and processes. It will be conducted primarily around existing well site locations with permission from landowners obtained in accordance with regulated permit access requirements.

Temporary 'lay flat' pipelines will transfer groundwater from the well being tested to the Ramsay-1 re injection site. Pipelines will be laid mainly on the surface within existing well lease and access corridors where possible. In some locations (e.g. public or access road crossings) the poly pipe will be sleeved or buried in a trench with protective bollards and signage. The program will be undertaken without the need for any vegetation clearing.

The well testing campaign is expected to take up to 3 months across multiple sites and once completed the temporary pipelines will be disconnected and removed, and any soil disturbance will be rehabilitated.

Exploration well test and groundwater reinjection program key information

Timing: Q3 2026, 24-hour operations (subject to obtaining necessary approvals) over a 3 month campaign period

Location: Existing well sites associated with the Ramsay Project on the Southern Yorke Peninsula. Approximately 10km east of Minlaton townsite. (see map)

Visibility: You may see the exploration well test crew at work at existing Ramsay well sites from public roads in the area.

Sound: If you are very close to the well test operation you may hear some noise associated with the well site equipment including generators and pumps.

Yorke Peninsula section of PEL 687 showing location of groundwater re-injection site

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Groundwater Re-injection

Reinjecting groundwater to the aquifer it came from is the most suitable way of managing the water that will come to the surface. Data collected during the rejection program will also provide valuable information about the hydrogeology and aquifer behaviour of the Southern Yorke Peninsula, adding to existing scientific knowledge.

Groundwater will be reinjected into the Ramsay-1 wellbore through the existing wellhead using a pump at the surface. The groundwater will be able to be injected into rock formations between 218m and 1,000m in Ramsay-1. Analysis and modelling demonstrate that most of the injected groundwater will preferentially flow into a highly porous limestone rock formation at a depth of 316m. In comparison, water bores in the vicinity do not extend to depths beyond 100m and therefore do not access the deeper geological formations receiving the reinjected groundwater. The groundwater at 316 m has high salinity (approximately 10,000 mg/L) and has very limited value as a groundwater resource due to its depth and requirement for treatment before it could be used.

Reinjection activities at Ramsay-1 will include both surface and downhole monitoring programs. These programs will monitor injection rates, volumes and pressures.

Two groundwater monitoring bores have also been installed, one approximately 7 km west-southwest and the other 6.5 km north-east of Ramsay-1 with sensors and fluid sampling systems to measure groundwater quality. Existing shallower water bores in the immediate area will also be sampled periodically (subject to landholder permission) to measure and monitor groundwater quality.

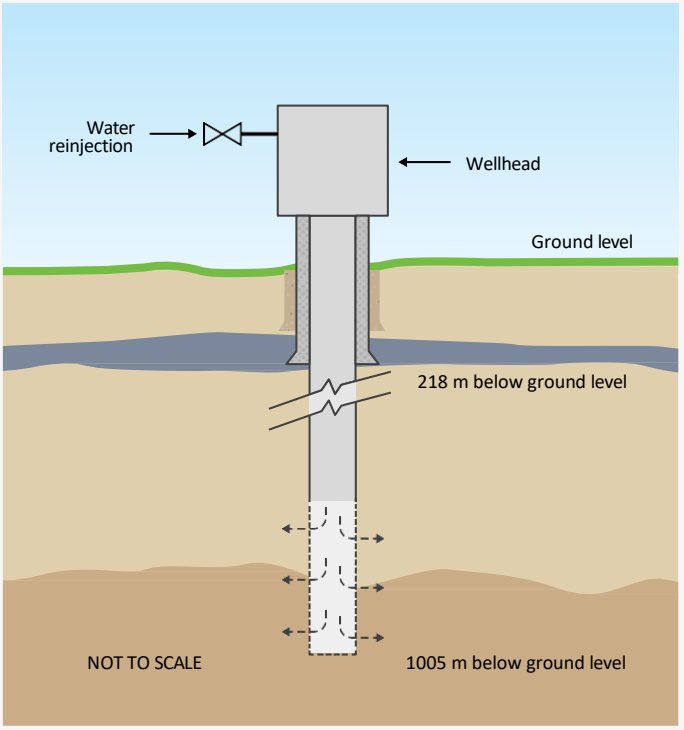

Diagram of typical well head to indicate re-injection process ~1000m below surface level.

For further information

More information about the Gold Hydrogen well test and groundwater reinjection program can be found on our website:

goldhydrogen.com.au/ramsay-project/

If you want to contact Gold Hydrogen about the well test and groundwater reinjection program you can email us at

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