Australia's National Science Agency

GREENHOUSE GASES AND AIR QUALITY

GISERA | Gas Industry Social and Environmental Research Alliance

Surveying emissions from coal seam gas water holding ponds in QLD

CSIRO scientists will survey coal seam gas (CSG) water holding ponds in Queensland's Surat Basin to evaluate their methane emissions potential.

Conducted through CSIRO's Gas Industry Social and Environmental Research Alliance (GISERA) this research project will provide data on methane emissions from CSG water holding ponds.

This will fill critical knowledge gaps, and improve the community's understanding of the potential methane emissions from CSG production in Queensland.

Key points

- Surat Basin communities are concerned about greenhouse gas emissions from CSG activities.
- Over 80 CSG water holding ponds are operational in Queensland, and there are critical gaps in our knowledge about potential methane emissions from these ponds.
- CSIRO scientists will measure the methane contributions of CSG water holding ponds in the Surat Basin to fully evaluate their GHG emissions potential.
- Scientists will select up to 20 representative CSG water holding ponds where they will measure methane emissions in summer and winter, in 2024 and 2025.
- This study will provide information for future planning. Quantifying and managing methane emissions from holding ponds is important to communities, regulators and CSG operators.

Research objectives

This study aims to comprehensively survey methane emissions from CSG water holding ponds. CSIRO scientists will select a range of representative holding ponds (up to 20) for the direct measurement of methane emissions. CSIRO scientists will consult with the CSG industry, which will provide access to sites for representative sampling of holding ponds.

The scientists will then comprehensively survey methane emissions from selected CSG water holding ponds in winter and summer. All surveys will use a floating chamber to determine flux: the rate of methane emission from the water surface.

With accurate measurements of methane emissions from the holding ponds, scientists can then estimate the CSG industry's emissions from holding ponds, and improve community understanding of potential methane emissions from CSG operations.

Improved data will address community questions and assist industry and regulator efforts to better understand and mitigate potential emissions from these sources.

The Surat Basin, southern Queensland

South-east Queensland hosts the largest CSG producing fields in Australia; the number of wells in Queensland is expected to reach 22,000 by 2050. The Surat Basin is one of two key CSG basins, and the focus area for this study.

CSIRO | Australian Government Department of Industry, Science and Resources | NSW Government | Supported by Government of South Australia | Queensland Government | Northern Territory Government | origin | Australia Pacific LNG | QGC | Santos

CSG water holding ponds and methane

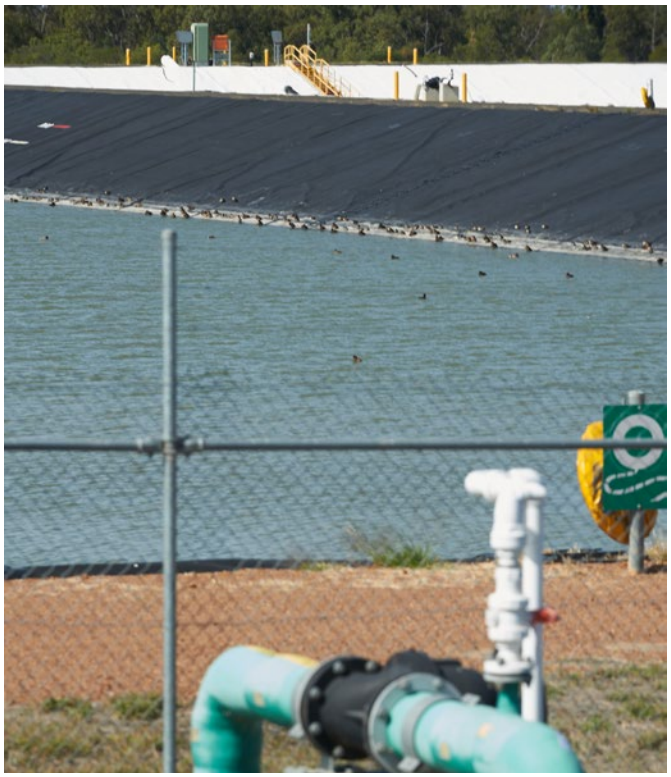
CSG water holding ponds are used by industry to hold water from various stages of gas production, prior to treatment and beneficial re-use. CSG water holding ponds can produce methane, a known greenhouse gas (GHG).

In Queensland, there are more than 80 CSG water holding ponds operated by the gas industry. There is currently little data on GHG emissions from Queensland CSG water holding ponds, and existing information is limited and highly variable.

Previous studies

The 2023 GISERA project 'Methane contributions from holding ponds' (Phase 1) indicated CSG water holding ponds in the Surat Basin may be a source of GHG emissions. CSIRO scientists also found limited data available on CSG water holding ponds' emissions - few measurements are reported in regions where CSG operations occur. Existing data is also highly variable, and not sufficient to estimate overall GHG contributions from water holding ponds.

This project is one of two follow-up (Phase 2) projects. The other project will focus on the key controls and contributors to the ponds' methane emissions.



Above and top right: coal seam gas water holding ponds in the Surat Basin, Queensland.

Project activities

CSIRO scientists will:

- Engage with regional community and government stakeholders.
- Liaise with CSG industry operators in the Surat Basin to select up to 20 representative ponds, which will be used for directly measuring emissions. Ponds will be selected based on accessibility, type of held water, size, water chemistry and location.
- Directly measure the flux of methane by continuous monitoring of methane from the holding ponds. Scientists will use a floating chamber that will be deployed on the pond surface. The survey will involve two field trips (one in winter and one in summer) to assess the effect of season/temperature on emissions.
- Analyse the concentrations of methane in the samples by using a portable trace gas analyser. This machine is designed for environmental and emissions monitoring.

More information

Read about the project

Find out about other GISERA research projects in Queensland

Further information | 1300 363 400 | gisera@csiro.au | gisera.csiro.au

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