



Geoscience Australia Greenhouse Gas Storage Projects

Geological storage of greenhouse gases is one approach that the Australian Government is pursuing to assist Australia, and the world, to reduce greenhouse gas emissions into the atmosphere. Understanding the geology of Australia's sedimentary basins and their potential for greenhouse gas storage is an important component of Geoscience Australia's work in supporting emission reductions.

In 2009 this work led to the world-first offshore acreage release by the Australian Government for exploration for greenhouse gas storage sites. A nationwide analysis and ranking of Australia's sedimentary basins was completed in 2009–10 based on their potential for CO₂ storage.

Monitoring

Monitoring is an important aspect in verifying the integrity of the geological storage of greenhouse gases. Geoscience Australia is working with the CSIRO, the CO₂CRC, the Australian National University, the University of Adelaide and the University of Wollongong to develop and evaluate new techniques to detect and quantify greenhouse gas emissions above baseline levels in the atmosphere.



Figure 2: Installation of equipment at the Arcturus atmospheric greenhouse gas monitoring station, Central Queensland.

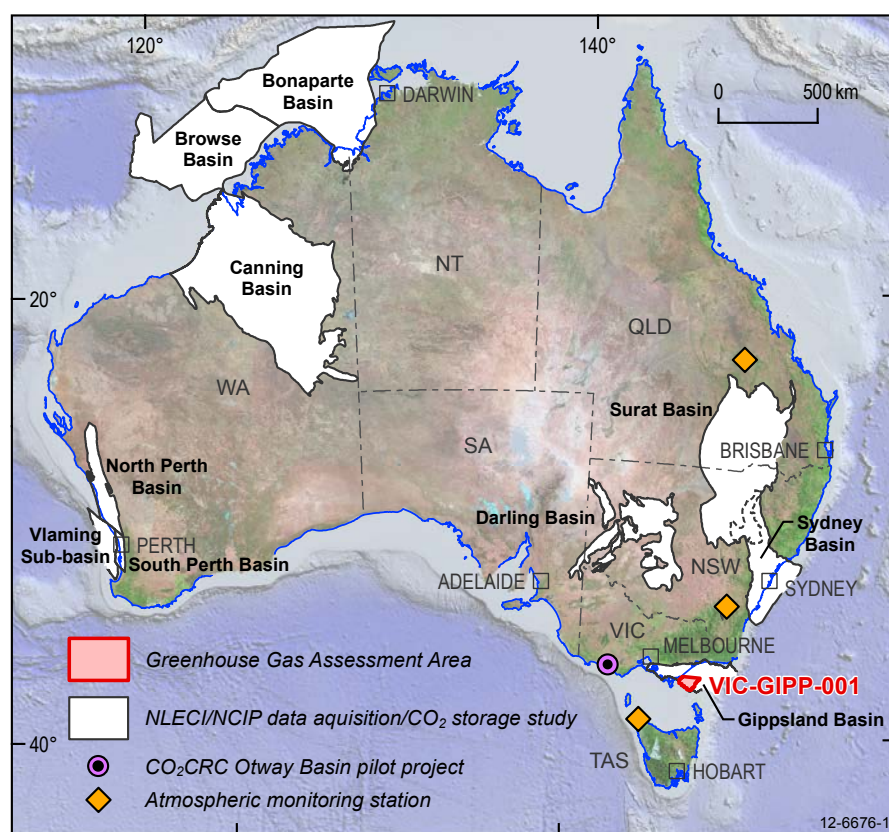


Figure 1: Map showing areas being studied for CO₂ storage potential.

Pre-Competitive Data Acquisition

The Australian Government through Geoscience Australia and State Governments are undertaking a four-year program (2011–2015) of pre-competitive data acquisition and regional geological studies to assess highly-ranked onshore and offshore basins for their potential to store CO₂. This work, which is being completed under two major Australian Government funded programs – the National Low Emissions Coal Initiative (NLECI) and National CO₂ Infrastructure Plan (NCIP) – is designed to accelerate the assessment of storage potential and to support the take up of CO₂ storage exploration blocks by stakeholders.



Understanding CO₂ Storage Capacity and Impacts

Geoscience Australia is working in partnership with the CO₂CRC undertaking experimental and modelling studies assessing fluid-rock interactions and rock mechanical behaviour under different CO₂ storage conditions. Our researchers are leading projects investigating the impact of reservoir rock reactivity for the injection and containment of CO₂. Work is also being undertaken to better understand the geomechanical properties of seal rocks and their potential for CO₂ containment. This has included a major field experiment assessing the CO₂ storage capacity in capillaries and pores within a reservoir at the CO₂CRC storage demonstration site in the Otway Basin, Victoria.



Figure 3: The Geoscience Australia-CSIRO team behind the injection well CRC-2 at the Otway demonstration site during the CO₂ storage capacity test (September 2011).

International Collaboration and Capacity Building

Geoscience Australia also provides advice on international projects and activities for the geological storage of CO₂ to the Department of Resources, Energy and Tourism. We are technical representatives to the Carbon Sequestration Leadership Forum and are engaged in a range of other international collaborative activities and expert panels.

Our major international project is a bilateral capacity building program between Australia and China on geological storage of CO₂.

The aim of this work is to build capacity, through training and research, in China in geological storage of CO₂, to facilitate China's assessment of its potential for geological storage of CO₂, and to raise awareness of CO₂ storage as a mitigation technology.

Phase I of this program has been completed (2009–2012), with Phase II to run from 2012–2014.



Figure 4: Representatives at one of the China Australia Geological Storage technical workshops, Canberra 2010.

For Further Information:

Email: ghg@ga.gov.au

Web: www.ga.gov.au/ghg