
**GISERA** | Gas Industry Social and Environmental Research Alliance

# Northern Perth Basin subsurface resources conflicts

CSIRO scientists are developing a framework to help communities, government and industry identify and resolve potential resource conflicts in the northern Perth Basin in Western Australia.

## Key points

- The northern Perth Basin is seeing a significant increase in subsurface resources development and energy-related industrial activities.
- That includes subsurface development such as natural gas, geothermal energy, carbon capture and storage (CCS) and mining, and above-ground renewable energy developments.
- There is some community concern about impacts on groundwater resources and agricultural land.
- This CSIRO research project will provide objective and comprehensive information about the distribution and impacts of resource development and land use.
- The results of the study will help communities, regulators and industry to make informed decisions about development in the region.

This project, conducted through CSIRO's Gas Industry Social and Environmental Research Alliance (GISERA), seeks to address community concerns about the impacts of energy-industry activities on groundwater resources and land use in the northern Perth Basin.

With a significant increase in industrial activities in the northern Perth Basin, and many different decisions, investments and timeframes to consider, there is an urgent need for a comprehensive framework to help identify potential conflicts.

This framework needs to account for the unique physical, chemical, and geological characteristics of the region, as well as any environmental or social impacts that may result from resource conflicts.

Through this study, CSIRO researchers will provide objective, evidence-based information that will support all relevant stakeholders in the region to make informed decisions.

## The northern Perth Basin

The northern Perth Basin makes up the northern half of the Perth Basin in Western Australia. It is a north to north-northwest trending, onshore and offshore sedimentary basin that extends about 1300 km along the southwestern margin of the Australian continent.

The aquifers of the northern Perth Basin currently supply about 95 per cent of all water used for town water supplies, irrigated agricultural activities, mines and industries across the region.

There is varied land use and industry in the region, including agriculture and renewable energy developments (wind and solar farms) above ground; and resource development such as natural gas, carbon capture and storage, geothermal energy, hydrogen exploration and storage, and sediment-hosted mineral deposits in the subsurface.

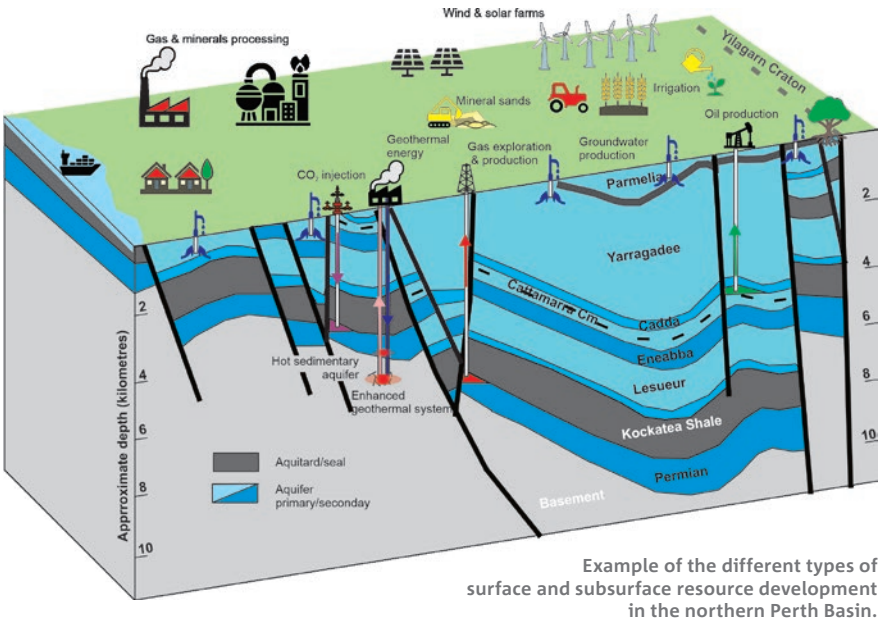
CSIRO | Australian Government Department of Industry, Science and Resources | NSW Government | Supported by Government of South Australia | Queensland Government | Northern Territory Government
origin | Australia Pacific LNG | Shell | QGC | Santos | tamboran Resources | Empire Energy

## Community concerns

The expansion of renewable energy development and the resurgence of natural resource exploration in the northern Perth Basin both provide important economic opportunities for the region.

This project will help address community concerns regarding groundwater resources and land access. With the aquifers of the basin currently supplying 95 per cent of water for towns and agricultural activities, continued availability of water is essential.

A second issue of concern is the competition for land access between subsurface resources, agricultural use and renewable energy projects such as wind and solar farms.




**Example of the different types of surface and subsurface resource development in the northern Perth Basin.**

## Research objectives

The key objective of this project is to provide a comprehensive framework for data-driven decision making and for managing economic, environmental and social aspects of developing subsurface resources in the northern Perth Basin. Scientists will focus on four key aspects:

- the cumulative impacts of current and future natural gas extraction, carbon capture and storage, geothermal energy production and mining on groundwater resources
- potential subsurface conflicts between various resource development activities
- how these activities affect future development of surface facilities, and
- how these activities affect the availability and quality of groundwater for other essential uses.

By determining the distribution, overlap, and relationships between subsurface resources, as well as the timing of different decisions and investments into industry activities, the results of the project will allow community groups and regulators to understand and prioritise future projects in the region.

**Onshore gas facilty in the northern Perth Basin.**

## Research tasks

In developing the framework, scientists will identify any potential conflicts between onshore gas development (along with any associated carbon capture and storage) and groundwater usage, other subsurface activities like mining and geothermal, and land use for agriculture and renewable energy.

There are four components to the project:

- identifying and characterising the most significant or likely resource conflicts
- understanding the cost benefits, environmental and social impacts where conflicts occur
- proposing resource management strategies to help determine the sequence of development for overlapping or conflicting resources, and
- developing a Geographic Information System to visualise and analyse spatial data that will help with regulatory decision-making and stakeholder communication.

Project outcomes will help communities, regulators and industries adopt a balanced approach to resource development in the region.

## More information

Find out more about this project

Read about other GISERA studies in Western Australia

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