



Studying groundwater systems in the Canning Basin in Western Australia

This project will review existing knowledge about groundwater systems in the Canning Basin. Results will help guide planning and investment in future investigation and monitoring, identify information gaps, and provide recommendations for further research.

KEY POINTS

- Numerous groundwater studies across multiple geographic locations have been undertaken in the Canning Basin.
- This project will develop an inventory of previous studies to help develop a more complete understanding of what geological and hydrogeological information exists for the Basin.
- The main outcome of the project will be a written report which summarises the findings and provides recommendations for future work.
- **More information is available** about this project online.

Once a shallow inland sea, the Canning Basin in Western Australia is a potential source of natural gas. Photo courtesy of Arthur Mory, WA Geological Survey and Resource Strategy Division, Department of Mines, Industry Regulation and Safety.

Addressing community concerns

During the Independent Scientific Panel Inquiry into Hydraulic Fracture Stimulation in Western Australia, one of the largest concerns raised by stakeholders was the sustainable development of water resources.

Groundwater resources across the Canning Basin are an essential requirement for local communities, culturally significant for Aboriginal and Torres Strait islander people, and critically important for industry.

More information is needed about groundwater systems across the Canning Basin in order to evaluate potential impacts from regional development. This project will bring together existing studies and identify key knowledge gaps.

The Canning Basin

The Canning Basin is located in Western Australia, approximately 1500 kilometres northeast of Perth. It is the largest sedimentary basin in Western Australia with an onshore area of about 530,000 square kilometres and an offshore area of about 110,000 square kilometres.

The small towns of Broome and Derby provide shipping, air support and services for the Canning Basin. Broome serves as the shipping terminal for crude oil, while minor pipeline grids are located mainly near Derby.

The search for shale gas resources in the Canning Basin is in the early exploratory stage. However, in 2013 the US Energy Information Agency reported that the Canning Basin has the largest shale gas potential in Australia.



A timely initiative

There is increasing focus on the Canning Basin's potential for developing groundwater resources for use by shale gas and other industries. However, exploration and investigations across the basin have, to date, focused on the geology and its prospectivity for oil and gas, rather than groundwater investigation and quantification.

While numerous groundwater studies have been undertaken in parts of the Canning Basin, generating vital knowledge about the groundwater resource potential of specific aquifers, their geographic locations are highly dispersed and the findings remain segregated.

There is a need to conduct an inventory of these studies to understand the current status of groundwater knowledge for the Canning Basin before further development occurs.

First steps

The initial work will develop a framework that defines exactly what data the project team are seeking as they work towards 'groundwater baseline characterisation'.

This framework will be based on regulators' requirements and best practice established elsewhere. It is likely to include factors such as hydrogeological setting, groundwater balance, flow and interaction between aquifers, groundwater quality, environmental function and current use.

Data collection and integration

The project team will source, systematically review and evaluate data that is currently available to help characterise groundwater systems in the Canning Basin.

Much of this data is held by other organisations, such as the Geological Survey of Western Australia, Government Departments, other departments of CSIRO, and industry stakeholders.

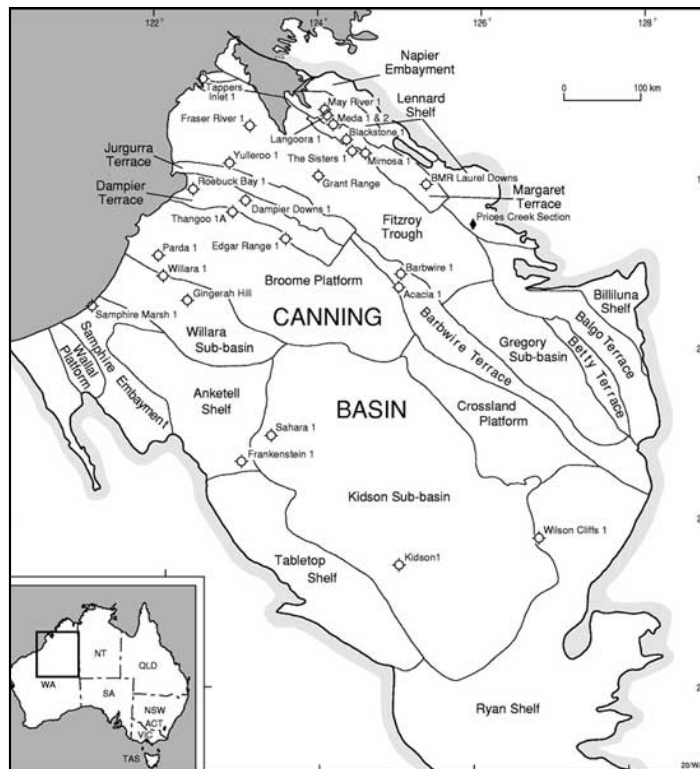
The team anticipate that much of the data will need to undergo a quality control process, but the types of record they expect to consider include:

- geological and geophysical data
- groundwater infrastructure
- surface water features, such as wetlands and springs
- groundwater dependent assets, such as vegetation and marine environment
- current water uses, including cultural or ecological values.

Recommendations for future work

In a final report, due to be published in early 2021, researchers will summarise the main findings of the project, identify the critical gaps in our knowledge of the Canning Basin's groundwater systems, and provide recommendations for future work.

The report will be useful for numerous stakeholders, including Governments, regulators and policy makers, and will help inform decision making should plans for oil and gas development in the Canning Basin progress.



Location Map: Image Jones and Young, 1993.

FREQUENTLY ASKED QUESTIONS

What is the timeline for the project?

July 2020 to February 2021.

When will the results be available?

A final report will be available in February 2021.

Who is funding the project?

This project is co-funded by the Federal Government (75%) and CSIRO (25%).

ABOUT GISERA

The Gas Industry Social and Environmental Research Alliance (GISERA) is a collaboration between CSIRO, Commonwealth and state governments and industry established to undertake publicly-reported independent research. The purpose of GISERA is to provide quality assured scientific research and information to communities living in gas development regions focusing on social and environmental topics including: groundwater and surface water, biodiversity, land management, the marine environment, and socio-economic impacts. The governance structure for GISERA is designed to provide for and protect research independence and transparency of research. Visit gisera.csiro.au for more information about GISERA's governance structure, projects and research findings.

FURTHER INFORMATION: 1300 363 400 | gisera@gisera.org.au | gisera.csiro.au