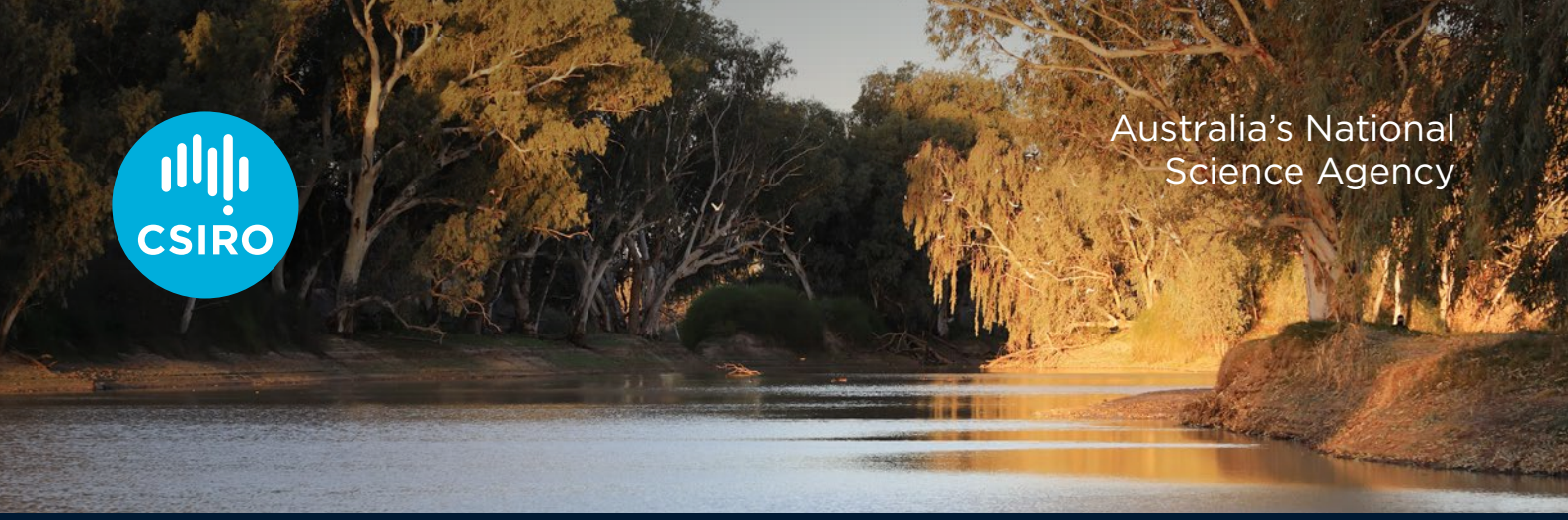


Australia's National Science Agency

GROUND AND SURFACE WATERS

GISERA | Gas Industry Social and Environmental Research Alliance

Developing flood model scenarios for Cooper Creek

This project will enable a better understanding of flooding in the Cooper Creek catchment in south-west Queensland – including potential changes due to development and climate change.

Key Points

- GISERA is developing detailed flood modelling to better understand how resource development and climate change could impact on Cooper Creek.
- Flood modelling was identified as a high priority by the user panel for the Cooper region in the Geological and Bioregional Assessment (GBA) program.
- A range of flood modelling scenarios will be developed through a process of stakeholder engagement.
- The results will provide an evidence base to help community, industry and government make decisions about future gas developments.

Flooding is a complex issue. It is an essential process for wetland ecosystems, but can be devastating for agricultural production, leading to the loss of stock, fodder, topsoil and crops.

Communities including conservationists, graziers and traditional owners are concerned that future unconventional gas development in Cooper Creek could impede flows and contaminate water in the Cooper Creek and surrounding floodplain.

CSIRO's Gas Industry Social and Environmental Research Alliance (GISERA) is undertaking research to evaluate how resource development and climate change could impact on Cooper Creek and its floodplain.

Detailed flood modelling will enable careful design of roads and other infrastructure on the floodplain, and will also allow researchers to explore potential changes to water availability and persistence of critical waterholes.

Cooper Creek

Cooper Creek is part of one of the world's last major free-flowing desert river systems.

It flows for 1,500 kilometres and has a vast floodplain that spans a large area of south-west Queensland along with a smaller area of north-east South Australia.

In 2017, the Cooper GBA region was announced as the first region selected for assessment under the GBA program.

This GISERA project builds on existing flood inundation models developed for the GBA program.

There has been a high level of public interest in those models, but their size and complexity mean that stakeholders are unable to access the necessary computing resources to run their own scenarios.

Minkie Waterhole, Cooper Creek near Innamincka, SA. Credit: CSIRO, Geological and Bioregional Assessment Program

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

Addressing a community need

The user panel for the Cooper GBA region included representative from oil and gas companies, state government departments, local councils and traditional owners.

The panel noted the positive economic and social contributions the petroleum and gas industry had made in the region.

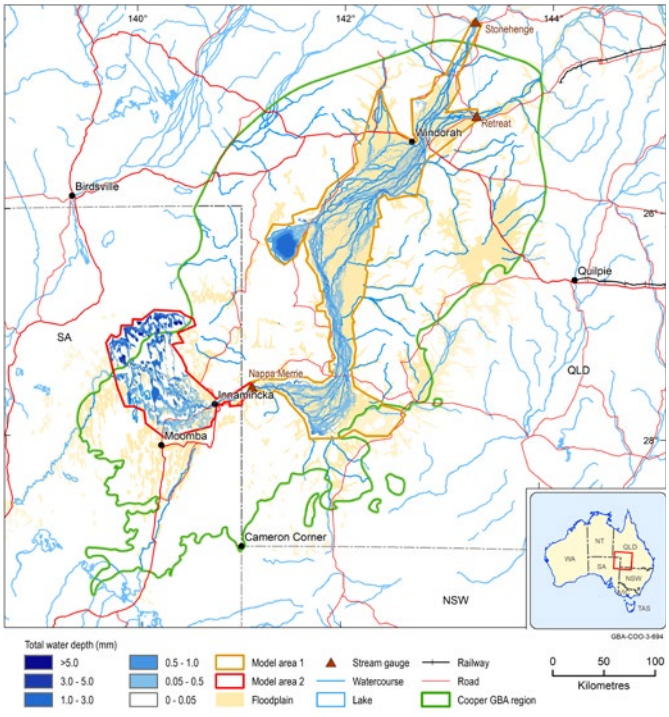
The panel also noted that careful management would be required to protect the unique environmental and cultural values of the Cooper Creek and its floodplain.

Detailed flood modelling to drive better understanding of flood inundation patterns and management in the region was identified by the panel as a high priority.

Project methods and objectives

The GISERA Cooper Creek project represents an important opportunity to strengthen and develop the positive stakeholder relationships that were built during the GBA Program.

It's vital that any flood modelling scenarios developed through the project are relevant to the people who live and work in the region, and this can only be achieved through genuine stakeholder engagement.



Source: Geological and Bioregional Assessment Program (2021) bioregionalassessments.gov.au/gba/cooper-gba-region-synthesis

Researchers will hold an initial workshop to engage with members of the regional community, traditional owners, industry and all levels of government. Their advice and concerns will be used to define two or three different flood modelling scenarios.

It is anticipated that the models will consider:

1. Flood risk and flood characteristics under future climate scenarios
2. Flood characteristics due to floodplain infrastructure, extraction, or diversions needed for future gas industry development.

Once the models have been developed, they will be used to evaluate how flood characteristics in the complex Cooper Creek floodplain may change under future development and climate change scenarios.

Outputs from the models will include estimates of spatial flood extents, along with water depth and velocities.

A second workshop will be held to finalise the modelling scenarios and provide an opportunity for stakeholder feedback.

Outcomes of the project

The outputs of the flood modelling scenarios will improve knowledge and understanding of the hydrology of Cooper Creek floodplain. Additionally, they will improve our ability to predict environmental risks associated with changes to flooding scenarios.

The findings will be presented and made accessible in a range of ways, including:

- flood modelling scenarios published as a comprehensive dataset including supporting methods report
- two-page factsheet summary in plain English
- a third workshop to communicate project findings with stakeholders who work and live in the region
- a digital, interactive, publicly accessible visualisation platform to explore flood model outputs.

These project outcomes will help decision makers in communities, industry and government to better manage flooding on the Cooper Creek floodplain.

More information

Find out more about the Cooper Creek Flood Modelling Scenarios

Learn about other ground and surface water research

Read more about the Cooper GBA Region

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

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