Australia's National
Science Agency

GISERA | Gas Industry Social and Environmental Research Alliance

Progress report

Review of potential environmental impacts of shale gas related wastewater disposal options

Progress against project milestones

Progress against milestones/tasks are approved by the GISERA Director, acting with authority in accordance with the GISERA Alliance Agreement.

Progress against project milestones/tasks is indicated by two methods: Traffic light reports and descriptive Project schedule reports.

1. Traffic light reports in the Project Schedule Table below show progress using a simple colour code:

- **Green**:
  - Milestone fully met according to schedule.
  - Project is expected to continue to deliver according to plan.
  - Milestone payment is approved.
- **Amber**:
  - Milestone largely met according to schedule.
  - Project has experienced delays or difficulties that will be overcome by next milestone, enabling project to return to delivery according to plan by next milestone.
  - Milestone payment is withheld.
  - Milestone payment withheld for second of two successive amber lights; project review initiated and undertaken by GISERA Director.
- **Red**:
  - Milestone not met according to schedule.
  - Problems in meeting milestone are likely to impact subsequent project delivery, such that revisions to project timing, scope or budget must be considered.
  - Milestone payment is withheld.
  - Project review initiated by GISERA Director.

2. Progress Schedule Reports outline task objectives and outputs and describe, in the 'progress report' section, the means and extent to which progress towards tasks has been made.

Project schedule table

TASK NUMBER	TASK DESCRIPTION	SCHEDULED START	SCHEDULED FINISH	COMMENT
1	Scenario development and impact assessment scoping	2 Jun 2025	30 Aug 2025	
2	Assessment of potential impacts and uncertainties	1 Sep 2025	31 Oct 2025	
3	Project reporting	1 Oct 2025	28 Feb 2026	
4	Communicate project objectives, progress and findings to stakeholders	2 Jun 2025	31 Mar 2026	

Project schedule report

TASK 1: Scenario development and impact assessment scoping

BACKGROUND

To evaluate the potential environmental impacts of shale gas wastewater management it is important to first understand the water management and treatment options that are available. Water and wastewater management can be complex with a range of approaches available. Previous assessments have tended to focus on specific technologies and have oversimplified the overall water and wastewater management systems. Development of a set of scenarios that consider overall approaches to water and wastewater management that consider the waste management hierarchy. These scenarios will form the basis for the assessment of environmental impacts.

TASK OBJECTIVES

This task will develop scenarios for life cycle shale gas water use, wastewater management, treatment and disposal in the Beetaloo region. To get a broad range of perspectives on the scenarios, the project will engage with stakeholders from the regulator, industry, and technical experts through a workshop. The workshop will endorse the scenarios to be taken through to Task 2 and provide input into the scope of the assessment of potential environmental impacts. A scan of recent literature on wastewater management for shale gas (building on the work conducted by Kumar et al 2023) and waste and wastewater management practices in other industries in the Northern Territory will be conducted as part of this task.

TASK OUTPUTS AND SPECIFIC DELIVERABLES

Technical Reference Group established and terms of reference agreed. Workshop with key stakeholders. Scenarios for water and wastewater management from shale gas, identifying key characteristics for each scenario. Scope for the assessment of potential environmental impacts of

the scenario. These outputs will be used in Task 2 and will be incorporated into the project's final report.

PROGRESS REPORT

This task will be completed August 2025.

TASK 2: Assessment of potential impacts and uncertainties

BACKGROUND

The potential environmental impacts of wastewater, including during treatment and disposal of residual waste continues to be one of the main concerns held by communities regarding development of shale gas resources. The ultimate disposal of residual wastewater, or other waste material that remains after wastewater is treated, is an important aspect to the community. Assessing the potential impacts of water and wastewater management from shale gas requires the life cycle of water use to be considered and the potential impacts will vary depending on the options chosen. Comparing the potential impacts of the different scenarios will allow the potential strengths and weaknesses of the scenarios to be considered. The potential environmental impacts of wastewater reinjection will be a focus area for this task. Other impact pathways will be drawn from existing studies, including the Geological and Bioregional Assessments.

TASK OBJECTIVES

The objectives of this task are to:

1) Establish the framework to assess the potential environmental impacts of the scenarios identified. This framework will be informed by the GBA Causal Network for the Beetaloo GBA region.
2) Review of the potential environmental impacts from wastewater reinjection.
3) Assess the potential environmental impacts of the scenarios for the management of water and wastewater from shale gas identified in Task 1.

TASK OUTPUTS AND SPECIFIC DELIVERABLES

An assessment of the potential environmental impacts of the scenarios for the management of water and wastewater from shale gas. The results of this assessment will be incorporated into the final report.

PROGRESS REPORT

This task will be completed October 2025.

TASK 3: Project Reporting

BACKGROUND

The final report for this project will collate the outputs from Tasks 1 and 2, and compare the strengths and weaknesses of the options that have been assessed. The report will also include a section on wastewater reinjection and how it is used in other jurisdictions, the potential environmental impacts and the mitigation measures that are used. Any knowledge gaps will be highlighted along with suggestions for future research.

TASK OBJECTIVES

Synthesize the outputs of tasks 1 and 2.

TASK OUTPUTS AND SPECIFIC DELIVERABLES

A final report bringing together the outputs from all tasks.

PROGRESS REPORT

This task will be completed February 2026.

TASK 4: Communicate project objectives, progress and findings to stakeholders

BACKGROUND

Communication of GISERA's research is an important component of all research projects. The dissemination of project objectives, key findings and deliverables to relevant and diverse audiences allows discourse and decision making within and across multiple stakeholder groups.

TASK OBJECTIVES

Communicate project objectives, progress and findings to stakeholders through meetings, Knowledge Transfer Session, fact sheets, project reports and journal article/s, in collaboration with the GISERA Communication Team.

TASK OUTPUTS AND SPECIFIC DELIVERABLES

Communication of project objectives, progress and results to GISERA stakeholders according to standard GISERA project procedures which may include, but is not limited to:

1) Knowledge Transfer Session with relevant government/gas industry representatives.
2) Preparation of an article for the GISERA newsletter and other media outlets as advised by GISERA's communication team.
3) Two project fact sheets: one developed at the commencement of the project, and another that will include peer-reviewed results and implications at completion of the project. Both will be hosted on the GISERA website.
4) Peer-reviewed scientific manuscript ready for submission to relevant journal.

PROGRESS REPORT

This task will be completed March 2026.

Variations to Project Order

Changes to research Project Orders are approved by the GISERA Director, acting with authority, in accordance with the GISERA Alliance Agreement. Any variations above the GISERA Director's delegation require the approval of the relevant GISERA Research Advisory Committee.

The table below details variations to research Project Order.

Register of changes to Research Project Order

DATE	ISSUE	ACTION	AUTHORISATION

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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, greenhouse gas emissions, 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.