Australia's National
Science Agency

GISERA | Gas Industry Social and Environmental Research Alliance

Progress report

North Perth Basin Subsurface Resources Conflicts

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	Data integration for the existing North Perth Basin's resources and future development plans	March 2024	June 2024	Completed
2	Mapping of resources and infrastructure	March 2024	June 2024	Completed
3	Resources conflict evaluation	July 2024	January 2025	Completed
4	Resource management strategies	July 2024	January 2025	Completed
5	Communicate project objectives, progress, and findings to stakeholders	March 2024	March 2025	Final delivery may be delayed by up to 3 months

Project schedule report

TASK 1: Data Integration for the Existing North Perth Basin's Resources and Future Development Plans

BACKGROUND

This task will consolidate the existing knowledge and data to provide a comprehensive overview of the North Perth Basin's subsurface resources, industrial and renewable energy developments, land and groundwater use, and historically and environmentally sensitive areas.

TASK OBJECTIVES

1. Conduct a thorough literature review and engage with stakeholders to access non-public data.
2. Validate and perform quality control on collected data.
3. Analyze and discuss data in the context of government strategies, policies, and community concerns.

TASK OUTPUTS AND SPECIFIC DELIVERABLES

1. A draft report that comprehensively reviews data and literature detailing existing and future resources, developments, and land use in the North Perth Basin.
2. A list of pertinent data sources for mapping and assessing resource conflicts.

PROGRESS REPORT

This task is completed.

A comprehensive draft technical progress report was prepared to be submitted to the Technical Reference Group at the beginning of July. The draft report includes results from the following:

- A detailed literature review describing the geological framework of the northern Perth Basin and the basin's subsurface resource developments, e.g. groundwater, petroleum, geothermal, underground gas storage and CO_2 geological storage.
- Data for resource characterisation collected from government websites (e.g. Geoscience Australia, Department of Energy, Mines, Industry Regulation and Safety - WAPIMS, and Department of Water) for the difference resource developments and maps showing the distribution of various resources. This has been compiled, analysed and discussed in the context of legislative and regulatory frameworks.
- Mapping of petroleum and geothermal titles overlain with potential areas for CO_2 geological storage identified general areas with high potential for resource conflicts to be investigated in more detail in the following project tasks.

TASK 2: Mapping of resources and infrastructure

BACKGROUND

This task aims to identify and characterise the resources and infrastructure, and to map the geographic overlap of these elements in the North Perth Basin to assess potential resource interactions and conflicts.

TASK OBJECTIVES

1. Conduct a comprehensive resource assessment, including geophysical data interpretation and geological modelling.
2. Develop a Geographic Information System (GIS) for visualizing and analysing spatial data.

TASK OUTPUTS AND SPECIFIC DELIVERABLES

1. A GIS database containing mapped resources and infrastructure.
2. A report detailing the economic, environmental, and technical aspects of identified resources and their potential interactions.

PROGRESS REPORT

This task is completed.

- Data from online databases and published maps have been reviewed in the draft report with respect to the resource potential of the various subsurface resource operations.
- Resource-specific data have been compiled in a GIS system (ArcPro) together with other relevant data layers (e.g. national parks, roads, pipelines, mining operations etc.).
- The draft report also contains a discussion of the environmental, economic and technical aspects of each subsurface resource.

TASK 3: Resources conflict evaluation

BACKGROUND

This task will identify and evaluate potential interactions, both adverse and beneficial, between resources and potential environmental impacts in the North Perth Basin.

TASK OBJECTIVES

1. Conduct basin-scale and site-scale assessments to understand potential interactions between different resources.
2. Identify potential resource conflicts and environmental impacts.
3. Assess migration and vertical leakage pathways and their potential effects on other resources or the environment.

TASK OUTPUTS AND SPECIFIC DELIVERABLES

A report detailing potential resource conflicts and environmental impacts and outlining general risk management strategies and monitoring schemes to mitigate potential impacts from resource interactions.

PROGRESS REPORT

This task is completed.

- Potential resources interactions and leakage pathways were evaluated resulting in a series of GIS maps including the a) assessment of potential interactions between resources in three geological layers, b) assessment of potential interactions between resources across all geological layers, c) identification of areas with increased leakage potential, and d) identification of areas with high, medium and low groundwater production.
- All map products, intermediate grids and data layers are stored in an ArcGIS Pro project including a map layout for presentation output.
- A final draft report was provided for comment to the Technical Reference Group on 20 March 2025. The draft report is currently also under review in CSIRO's internal publication system.

TASK 4: Resources management strategies

BACKGROUND

This task will develop specific comprehensive management framework for regions of the North Perth Basin identified as having potential resource conflicts; it will prioritise resources based on their economic, environmental, and social values.

TASK OBJECTIVES

1. Formulate a management strategy for areas with potential resource conflicts.
2. Develop risk management and mitigation strategies to address potential conflicts and impacts on groundwater resources.

TASK OUTPUTS AND SPECIFIC DELIVERABLES

A comprehensive management strategy report for regions identified as having potential resource conflicts.

PROGRESS REPORT

This task is completed.

- Resource management strategies in other jurisdictions were reviewed.
- Relevant WA legislation was reviewed.
- Resource management options were provided in the final draft report based on lessons learned from other jurisdictions and the current WA regulations.

TASK 5: 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, a Knowledge Transfer Session, fact sheets, project reports and journal article/s, in collaboration with the GISERA Communication Team.

TASK OUTPUTS AND SPECIFIC DELIVERABLES

Communicate project objectives, progress and results to GISERA stakeholders according to standard GISERA project procedures, which may include but are not limited to:

1. Knowledge Transfer Session with relevant government/gas industry representatives.
2. Presentation of findings to community stakeholders such as identified business and/or community groups in a workshop (virtual or face-to-face).
3. A web-based GIS map for visualisation of assessment results and data distribution.
4. Preparation of an article for the GISERA newsletter and other media outlets as advised by GISERA's communication team.
5. 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.
6. Following CSIRO ePublish review, the consolidated report will be submitted to the GISERA Director for final approval.
7. Peer-reviewed scientific manuscript ready for submission to a relevant journal.

PROGRESS REPORT

This task is due for completion March 2025. However, due to delays in Task 3 and Task 4 reporting and in contracting of a consultant for creating a web-based GIS and story map, Task 5 outputs and

deliverables are postponed to the end of June 2025. A contract with a suitable consultant was signed in early April and a kick-off meeting conducted on 10 April 2025.

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