Australia's National
Science Agency

GISERA | Gas Industry Social and Environmental Research Alliance

Progress report

Sources of methane emissions from the Western Downs Region

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	Sampling logistics, industry, and community consultation	1 Nov 2023	30 Jun 2024	Complete
2	Field survey and sampling campaign	1 Jul 2024	28 Feb 2025	Complete
3	Isotopic fingerprinting and data analyses	1 Mar 2025	25 Oct 2025	
4	Project leadership and reporting	1 Nov 2023	30 Dec 2025	
5	Communicate findings to stakeholders	1 Nov 2023	30 Dec 2025	

Project schedule report

TASK 1: Sampling logistics, industry and community consultation

BACKGROUND

During this task, the project team will consult with representatives from industry and local communities in the Western Downs Region within the Surat Basin, Queensland to select sites and facilities which potentially represent different sources of methane emissions. This task will prepare the field survey vehicle fitted with a CRDS instrument for monitoring methane plumes and develop safe and environmentally sensitive plans for the provisioning and logistics of the field survey and sampling campaign.

TASK OBJECTIVES

1. Establish contact with representatives from industry and local communities to guide the selection of representative sites and facilities for the field survey and sampling campaign.
2. Select sites and facilities which potentially represent different sources of methane emissions in the Western Downs Region within the Surat Basin.
3. Identify the accessibility of the selected sites / facilities and seek required permits.
4. Prepare ground-based mobile survey vehicle fitted with a CRDS instrument.
5. Establish sampling requirements, e.g., volume, numbers, locations.
6. Prepare for remote sampling fieldwork including accommodation, vehicle hire and HSE considerations.
7. Establish logistics of transporting equipment and samples between CSIRO laboratory in Sydney and collection sites in Queensland.

TASK OUTPUTS AND SPECIFIC DELIVERABLES:

This task will yield a series of documents describing sampling equipment, sampling details, field trip details and HSE considerations.

PROGRESS REPORT

1. **Establish contact with representatives from industry and local communities to guide the selection of representative sites and facilities for the field survey and sampling campaign.**
   - Contacts have been established with key local community members during the workshop held on Chinchilla on 30 April 2024. The contacts established include representatives from Feedlots, Agforce, local farmers and Western Downs Council.
   - A meeting was also held with Origin to discuss sampling from CSG ponds and adjacent to wellheads.
2. **Select sites and facilities which potentially represent different sources of methane emissions in the Western Downs Region within the Surat Basin.**
   - Potential sites were discussed with above-mentioned community and company representatives and specific sites for sampling have been identified.
3. **Identify the accessibility of the selected sites / facilities and seek required permits.**
   - Access requirements for National Parks and State Forests in the Western Downs regions were identified as notification for air sampling 2 weeks prior by contacting QPWSresearchpermits@des.qld.gov.au. For drone sampling from a device >2kg an application is required to be lodged with 40+ day processing period.
   - Contact was made with local industry figures for feedlot and farm sampling, with permission and timeline of sampling agreed.
   - The administrative approvals for flying a UAV under the CSIRO ReOC (the remote operating certificate from CASA) have been completed.
4. **Prepare ground-based mobile survey vehicle fitted with a CRDS instrument.**
   - CRDS recommissioned and operational, with power and transport for field use configured. Data processing LabView code to be written. A weather station with logging was acquired and is to be fitted to field vehicle. Gas sampling trolley in final stages of assembly. Canister fit-out planned to start from July 1st 2024 on high priority.
5. **Establish sampling requirements, e.g., volume, numbers, locations.**
   - A document on possible site selection for this project with potential sampling sites and locations was identified including feedlots, landfill sites, wastewater treatment sites, recycling centre for composting, ground seeps, termite mounds, swamps, forest. The final list of sampling locations is to be confirmed depending on the accessibility of the sites. At least one air sampling from the ground and/or from a drone from each site are to be collected using the 4L air canisters.
6. **Prepare for remote sampling fieldwork including accommodation, vehicle hire and HSE considerations.**
   - Chinchilla has been identified previously as the ideal basis for fieldwork in the region due to proximity to the sampling sites and access to a local washdown station. Two dual cab utes with canopies are to be hired and utilised as field vehicles to haul the sampling equipment. A fieldwork register will be prepared identifying HSE considerations and appropriate controls relevant to fieldwork in the region.
   - A Bremer Mk4-40 was selected for UAV assisted air sampling at 30m, selected for its high MTOW of 10kg from a 4kg payload drone. A UAV sampling holder is being developed with servo disconnect in case of an emergency. The sampling tube will have a ‘Parachute’ connected near the top to allow for a slow decent in case of disconnect.

7. **Establish logistics of transporting equipment and samples between CSIRO laboratory in Sydney and collection sites in Queensland.**
   - All project field equipment to be delivered from both Sydney and Melbourne to Pullenvale CSIRO site for fieldwork team to pickup, fit-out and safety check before proceeding to the Western Downs Region.

TASK 2: Field survey and sampling campaign

BACKGROUND

This task will involve two staff travelling to Queensland with the purpose of carrying out the ground-based mobile survey and drone survey at the selected sites and facilities, monitoring methane plumes and collecting air and gas samples for isotope analyses.

TASK OBJECTIVES

1. Ground-based mobile survey at the selected sites and facilities identified in Task 1 and monitoring methane plumes.
2. Collect air samples at ground level and at 30 m above ground level by drone from locations with methane plumes.
3. Compile methane measurement data from past CSIRO surveys conducted in the study area.

TASK OUTPUTS AND SPECIFIC DELIVERABLES:

Methane measurements from field survey. Collection of air samples from selected sites and facilities in the study area.

PROGRESS REPORT

This task is complete. The field work and sampling from the selected sites have been completed. The location of the samples collected include termite mounds, national park, feedlot, CSG well, water holding pond in a CSG field, air sample (above tree line) from a drone. The samples have been brought to the geochemistry lab in Linfield and the C and H isotopic composition of the gases (methane and carbon dioxide) will be analysed during the next couple of months. Ground-based mobile survey at selected sites were also monitored using a Picarro instrument housed in a vehicle.

TASK 3: Isotopic fingerprinting and data analyses

BACKGROUND

This task will analyse the collected air samples (Task 2) using the Atmospheric Concentrator interfaced with a GCIRMS to determine carbon and hydrogen isotope data. Additionally, gas composition of samples will be analysed.

TASK OBJECTIVES

1. Perform carbon and hydrogen isotope analysis of collected air samples using the Atmospheric Concentrator interfaced with a GCIRMS.
2. Perform gas composition of collected air samples using a natural gas analyser.
3. Data analysis of methane concentrations measured during the field survey.

TASK OUTPUTS AND SPECIFIC DELIVERABLES

This task will provide isotopic fingerprinting of methane (carbon and hydrogen) in air samples collected in Task 2, as well as gas composition and will analyse methane concentrations measured during the field survey.

PROGRESS REPORT

This task will be completed in October 2025.

TASK 4: Project leadership and reporting

BACKGROUND

Information from this project is to be made publicly available after completion of standard CSIRO publication and review processes.

TASK OBJECTIVES

To ensure that the information generated by this project is documented and published after thorough CSIRO internal review.

TASK OUTPUTS AND SPECIFIC DELIVERABLES

1. Provide 6 monthly progress updates to GISERA office.
2. Preparation of a final report outlining the scope, methodology, and findings of the project.
3. Following CSIRO Internal review, the report will be submitted to the GISERA Director for final approval.
4. Provide 6 monthly progress updates to GISERA office.

PROGRESS REPORT

This task will be completed in December 2025.

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 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 results to GISERA stakeholders according to standard GISERA project procedures, which will include but are not limited to:

1. Knowledge Transfer Session with relevant government/ gas industry representatives.
2. Presentation of findings to community members/groups with two workshops held in Chinchilla (one in the early stage of the project and one at the end of the project).
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. Project reporting.
5. Preparation of an article for the GISERA newsletter.
6. Peer-reviewed scientific manuscript ready for submission to relevant journal (optional).

PROGRESS REPORT

This task will be completed in December 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
17/09/2025	Due to technical issues in finishing the instrument, the team cannot meet the analysis requirements by the required date.	Milestone 3 extended from 31 August to 25 October 2025	

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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.