Australia's National
Science Agency

GISERA | Gas Industry Social and Environmental Research Alliance

Progress report

Fate of hydraulic fracturing fluids/chemicals and geogenic hydrocarbons in surface facilities and in the subsurface

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

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 and field trip planning	Jul-21	Aug-21	
2	Literature Review	Jul-21	Sept-21	
3	Commissioning laboratory equipment and developing experimental program	Jul-21	Oct-21	
4	Sampling campaign	Aug-21	Oct-21	
5	Chemical degradation of hydraulic fracturing fluids under reservoir conditions	Oct-21	Sept-22	
6	Profiling microbial communities from flow-back tanks and treatment ponds	Oct-21	Feb-22	
7	Microbial degradation trials of target chemicals used in hydraulic fracturing associated with shale gas production	Oct-21	May-22	
8	Geogenic hydrocarbons in flow-back water	Oct-21	Aug-22	
9	Migration behaviour of hydraulic fracturing fluids under reservoir conditions	Nov-21	Aug-22	
10	Modelling the fate of residual hydraulic fracturing chemicals	May-22	Oct-22	
11	Project Leadership, Task Leadership and Report Writing	Jul-21	Jan-23	
12	Communicate findings to stakeholders	Jul-21	Jan-23	

Project schedule report

TASK 1: Sampling logistics and field trip planning

BACKGROUND

During Task 1, consult with Santos and Origin representatives in the Northern Territory to prepare for sampling of drill site/sites (up to a maximum of two sites), flow-back water, holding tanks, treatment ponds. Task 1 will establish the potential sampling site/sites from Santos and Origin, and the nature of the samples (i.e. sample type, volume, size, depth and number). This task will also include the safe and environmentally sensitive planning, provisioning, and logistics for the sampling campaign.

TASK OBJECTIVES

1. Establish contact with representatives in Santos and Origin to guide the sampling campaign.
2. Establish water and sampling site/sites within the Beetaloo sub-basin.
3. Identify suitable core samples from within the Northern Territory Core repositories.
4. Establish sampling requirements, i.e., type, volume, size, sampling depth, number, availability of initial fracturing fluids before injection etc.
5. Identification of any permits, permission or consultation required for sampling.
6. Preparation of sampling equipment/reagents.
7. Preparation for remote sampling fieldwork including accommodation, vehicle hire and OH&S considerations.
8. Logistics of transporting equipment and samples between CSIRO laboratories in Sydney/Melbourne and collection sites in the Northern Territory.
9. Confirm the list of chemicals being investigated in this study with key stakeholders.
10. Detail the analytical requirements from external labs, to inform design of the degradation and migration experiments.

TASK OUTPUTS AND SPECIFIC DELIVERABLES:

This task will yield a series of documents describing the contacts, sampling site/sites, relevant permissions, sampling equipment and OH&S considerations.

PROGRESS REPORT

The W26 team has had discussions with Origin and Santos about our requirements for sampling for W26. These are being finalised this week. On completion (by the end of this week), the project team will be organising a meeting of the Technical Reference Group to relay our plans for sampling to stakeholders and confirm the chemicals being examined in the project and their relevance to operations occurring in the Northern Territory. We have prepared microbial preservation solutions, sample bottles for collection of tank, treatment pond and flowback samples for chemical analyses. These will be shipped to Origin and Santos to organise collections on site in the next two weeks, after the Technical Reference Group meeting. At present, due to the lockdown

there are some challenges (staff from NSW and Victoria are unable to travel to the Northern Territory) and we have limited access to our Sydney and Melbourne laboratories. We are in the process of developing contingencies to allow for collections to be undertaken in consultation with third-party providers in the Northern Territory.

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
16/07/2021	Unavailability of a key resource due to their relocation to another state, as well as a delay in the engagement with the engineering contractor due to the disruption of the relocation of this key project member.	Variation requested from end June 2021 to end July 2021.	

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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.