



Australia's National  
Science Agency

**GISERA** | Gas Industry Social and Environmental Research Alliance

# Progress report

Understanding and managing impacts to biodiversity from  
roads and pipelines in the Beetaloo



# 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	Identify sampling sites	1 Jul 2021	30 Sep 2021	Completed
2	Map connectivity in the study area	1 Sep 2021	17 Dec 2021	Completed
3	Investigate patch mosaics and edge effects	1 Apr 2022	30 Sep 2022	Completed
4	Investigate movement ecology, road mortality and dust effects	1 Apr 2022	30 Sep 2022	Completed
5	Analysis of field data	1 Oct 2022	16 Dec 2022	Completed
6	Develop mitigation measures	1 Nov 2022	16 Dec 2022	Completed
7	Communication activities	1 Jul 2021	16 Dec 2022	Completed

## Project schedule report

### TASK 1: Identify sampling sites

#### BACKGROUND

Suitable field sites need to be located within the Beetaloo Sub-region where studies on patch mosaics and edge effects and movement ecology, road mortality and dust effects can be undertaken. This task involves carrying out desktop assessments using GIS to locate potential areas and then to ground truth site suitability. A critical aspect of the task is to begin establishing a relationship with land managers and traditional owners through face-to-face visits.

#### TASK OBJECTIVES

Undertake preparations for the field component of the project including:

- Identification of suitable sites at which to undertake research on the impacts on biodiversity of fragmentation
- Permission from landowners and traditional custodians to undertake the work
- Necessary ethics approvals and wildlife permits.

#### TASK OUTPUTS AND SPECIFIC DELIVERABLES

A list of suitable study sites including geospatial data and knowledge of the land managers and traditional owners of each site

#### PROGRESS REPORT

This milestone is complete.

## **TASK 2: Map connectivity in the study area**

### **BACKGROUND**

The information gathered during the fieldwork undertaken in tasks 2 and 3 and processed during task 4 will be combined with existing mapping for the study area to develop a mapping product that shows habitat linkages, wildlife corridors and areas 'at risk' from road and pipeline development.

### **TASK OBJECTIVES**

To develop a habitat connectivity map for the study area that uses the latest mapping technology to identify connectivity corridors and linkages that are 'at risk' from roads and pipelines. The intention is that the map serves as both a decision-support tool and a basis for prescribing site-specific interventions.

### **TASK OUTPUTS AND SPECIFIC DELIVERABLES**

A map of the study area that provides information on location of corridors of critical habitat and existing and future roads and pipelines. A scientific paper that describes the approach used in this task.

### **PROGRESS REPORT**

The milestone is complete.

The four areas within the Beetaloo sub-basin that are the focal areas for the current study were assessed using a combination of remote sensing approaches. Mapping has been completed. A series of fragmentation metrics were calculated. The task was undertaken in collaboration with CSIRO's Space FSP (i.e. Space Technology Future Science Platform).

## **TASK 3: Investigate patch mosaics and edge effects**

### **BACKGROUND**

This task will examine how key components of the region's biodiversity (vascular plants, lizards, birds, microbats) are influenced by the size and degree of isolation of patches of habitat (referred to as 'patch mosaics') and by the amount of habitat that shares a boundary with open vegetation (referred to as 'edge effects'). The work will be undertaken in a concentrated time period during the transition from the wet season into the early dry season.

### **TASK OBJECTIVES**

To study the occurrence and composition of key components of biodiversity, that is considered 'at risk' from fragmentation, in patches of habitat of differing size and spatial isolation.

## **TASK OUTPUTS AND SPECIFIC DELIVERABLES**

The main output will be data on occurrence and relative abundance of species of vascular plants and animals (microbats, birds, lizards) in patches of vegetation of differing area and degree of spatial isolation.

The deliverables will be a database, a short report (following completion of task 4) and then a scientific research paper.

## **PROGRESS REPORT**

This milestone is complete.

The timing of sampling changed during the life of the project. The original intention was to sample during a concentrated time period during the transition from the wet season into the early dry season (March to June). However, sampling was undertaken during the transition from the late dry season into the wet season (September to December). The change resulted from issues regarding the availability of personnel to undertake the fieldwork. Sampling has been completed for birds, microbats, reptiles (including lizards) and vegetation (vascular plants).

## **TASK 4: Investigate movement ecology, road mortality and dust effects**

### **BACKGROUND**

To study how roads and pipelines influence the movements of and act as sources of reduced growth and increased mortality for key components of the biodiversity.

### **TASK OBJECTIVES**

This task has three key objectives.

- To examine the movement ecology of several focal species of wide-ranging terrestrial animals in relation to potential barriers.
- To assess the level of mortality of macropods (kangaroos and wallabies) and medium to large-sized reptiles on roads of differing width and traffic volumes.
- To assess whether the levels of dust created by roads impacts the growth of focal species of plants.

## **TASK OUTPUTS AND SPECIFIC DELIVERABLES**

The main output will be data on: (a) movement patterns of focal species of animals in relation to roads and pipelines, (b) mortality of macropods and reptiles on roads of differing size and usage, and (c) growth rates of focal species of plants beside roads with differing amounts of dust production. The deliverables will be databases for each of these three outputs, a short report (following completion of task 4), and at least one scientific research paper.

## **PROGRESS REPORT**

This milestone is complete.

## **TASK 5: Analysis of field data**

### **TASK OBJECTIVES**

To summarise and statistically analyse the data obtained during tasks 2 and 3 to understand the underlying patterns and trends in the data.

### **TASK OUTPUTS AND SPECIFIC DELIVERABLES**

Scientific understanding of the patterns and trends in the data obtained during tasks 2 and 3. This information will be appropriately summarised and displayed as part of a short report outlining the results and conclusions from the field research. It will also be included in scientific research papers covering tasks 2 and 3.

### **PROGRESS REPORT**

This milestone is complete. The data analysis has been done and a short report has been prepared. However, this report will be expanded and included in the final project report which is currently being compiled as part of Task 6.

## **TASK 6: Develop mitigation measures**

### **BACKGROUND**

Task 6 brings together all the tasks undertaken to date and addresses the relevant recommendations from the Inquiry Report. Mitigation measures will be developed based on an assessment of existing research worldwide.

### **TASK OBJECTIVES**

Task 6 brings together all the tasks undertaken to date and addresses the relevant recommendations from the Inquiry Report. Mitigation measures will be developed based on an assessment of existing research worldwide.

### **TASK OUTPUTS AND SPECIFIC DELIVERABLES**

The main output and deliverables will be (a) a map and response matrix that recommends site-specific interventions for each site within the study area considered to be 'at risk' of negative impact from road and pipeline development, and (b) a final report for the project.

### **PROGRESS REPORT**

This milestone is complete, the final report now publicly available on the GISERA website via this [link](#).

## **TASK 7: Communication activities**

### **TASK OBJECTIVES**

Preparation of a variety of communication tools with assistance from the GISERA Communications team including factsheets, media releases and communication outputs specifically designed for Indigenous communities (these will focus on results related to bush foods).

## **TASK OUTPUTS AND SPECIFIC DELIVERABLES**

Five communication items; one each at onset of project, month 6, month 12, month 18 and at completion of project.

## **PROGRESS REPORT**

This milestone is complete.

The Knowledge Transfer session was completed in June 2023.

An Understanding and managing impacts to biodiversity from roads and pipelines in the Beetaloo Sub-basin, in the NT fact sheet detailing research results has been finalised and uploaded on the GISERA website.


While undertaking this project, the team obtained information and photos on a wide range of plants and animals. A number of these species have cultural significance to the local Indigenous people. This information is contained in a series of books that have been co-ordinated by Glenn Wightman, an ethno-botanist at the Northern Territory Herbarium (Department of Environment, Parks and Water Security). The research proponent is looking at the feasibility of combining the Beetaloo project results with this information on Indigenous use to produce relevant communications. The research proponent and the GISERA Communications team will look to develop further communication products with a likely release of early 2024.

## 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
01/03/2021	<p>Due to effects of COVID and restrictions on travel, the research proponent requested that:</p> <ul style="list-style-type: none"> <li>The project commencement date and delivery date be pushed back by 6 months.</li> <li>The order of milestones be changed to move the original task 5 to task 2</li> </ul>	<p>Milestone 1 pushed back to commence July 2021.  Milestone 5 moved to become milestone 2 with commencement date Sept 2021.  Milestone 2 now becomes 3 with commencement date Apr 2022.  Milestone 3 now becomes 4 with commencement date Apr 2022.  Milestone 4 now becomes 5 with commencement date Oct 2022.  Milestone 6 pushed back to commence Nov 2022.  Milestone 7 (final milestone) pushed back to commence in Jul 2021 and finish Dec 2022.</p>	<p>The NT RRAC approved the project variation.</p> <p>Refer to Minutes.</p>
17/03/2022	<p>Due to the circumstances associated with the change of sample sites based on information from Origin Energy, delays have occurred to milestone 1 &amp; 2</p>	<p>Milestone 1 extended from December 2021 to March 2022 and milestone 2 extended from December 2021 to April 2022</p>	



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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.