# Project Order

## Proforma 2020

## 1. Short Project Title

Baseline assessment of the biodiversity of the Canning Basin

| | |
|---|---|
| Long Project Title | Baseline assessment of the biodiversity of the Canning Basin |
| GISERA Project Number | B.6 |
| Proposed Start Date | 01/08/2020 |
| Proposed End Date | 28/02/2021 |
| Project Leader | Chris Pavey |

## 2. GISERA Region

☐ Queensland          ☐ New South Wales          ☐ Northern Territory

☐ South Australia     ☒ **Western Australia**     ☐ Victoria

## 3. GISERA Research Program

☐ Water Research          ☐ GHG Research          ☐ Social & Economic Research

☒ **Biodiversity Research**     ☐ Agricultural Land Management Research          ☐ Health Research

## 4. Project Summary

**Objective**

The project will provide an assessment of the current state of knowledge of the composition and distribution of the biodiversity of the Canning Basin. It will use this information to both understand gaps in knowledge and recommend further investigations to fill these gaps. The main outputs will be lists (in the form of databases) of all species of plants and animals recorded from the Canning Basin as well as lists of species that are classified as threatened at a national and state level and that are of cultural significance.

**Description**

The project will undertake a desktop assessment to identify the plants and animals that occur in the Canning Basin and to gain a sound understanding of where within the Basin they occur and in what relative abundance. Species and threatened ecological communities that are of conservation or cultural significance will be identified as part of the list compilation process. Gaps in existing knowledge will then be identified. This aspect of the study will focus both on the species level (identifying species or groups of species that are poorly known) and on geography (identifying locations that are poorly sampled). The research will then develop approaches to fill these knowledge gaps.

**Need & Scope**

A baseline knowledge of the biodiversity of a region is an essential component for assessing the risk of any potential future development scenario(s). The biodiversity baseline will be used to identify: (a) the occurrence of threatened species listed nationally under the Environment Protection and Biodiversity Conservation (EPBC) Act of 1999 and in Western Australia under the Biodiversity Conservation (BC) Act, and (b) hotspots of high biodiversity value. This information is essential for the completion of a Strategic Assessment or similar type of regional-scale assessment of environmental impact.

Existing knowledge of the biodiversity of the Canning Basin is patchy. Information is available as a result of a series of previous projects and more informal data capture from community-based projects; however, these records have never been aggregated and interrogated at the scale of the Basin. A major reason for this is that the Canning Basin is a geological unit and biodiversity assessments have been undertaken at smaller geographical scales that are more meaningful from a biological perspective (such as the regions identified in the Interim Biogeographic Regionalisation of Australia; IBRA).

The project will accumulate existing sources of information and undertake mapping of species' occurrence to develop a detailed assessment of the biodiversity of the Canning Basin. The project will provide a high-level framework that will set the baseline for further research. The funding and timeframes do not allow for significant data interpretation and analysis. The information obtained will underpin all future work and will identify areas and species to target for future assessments.

## Methodology

The first task of the project will be a desktop study that provides a baseline assessment of the biodiversity of the Canning Basin at the species level. This phase will include a literature review, interrogation of existing databases and discussions with key stakeholders both in the research sector and in Aboriginal organisations. The anticipated sources of information include, but are not limited to, the following:

- records in the Atlas of Living Australia;
- records in the database for Threatened Flora, Fauna and Ecological Communities maintained by Western Australia's Department of Biodiversity, Conservation and Attractions;
- records for birds held by BirdLife Australia;
- unpublished data of scientists from the WA Museum; WA Department of Biodiversity, Conservation and Attractions; and from other organisations and individual naturalists who are active (or have been active) in the region.
- publicly available knowledge of culturally significant plants and animals (accessed from the scientific literature and unpublished documents)

Species lists and occurrence records will be assembled into a database for all species of plants and animals recorded in the Canning Basin.

The second task of the project will involve interrogation of the database developed in task 1. The database will be matched against lists of threatened species to identify which of the species of plants and animals occurring in the Canning Basin are listed as threatened nationally (EPBC Act) and/or in Western Australia (BC Act). At this stage, threatened ecological communities present within the Canning Basin will also be identified. The database interrogation will also involve identifying culturally significant species. Species of cultural significance will be identified from the literature and from information provided by informants in task 1. These species will include bush foods as well as species of totemic and ceremonial significance.

The database assembled in task 1 will then be used to identify poorly known species and groups of species. This task will seek to clarify which species/species groups would be expected to occur more widely or more frequently in the Canning Basin than indicated by the number of records in the database. This assessment will be based on the project team's expert knowledge and it will be used to assemble a list of inadequately surveyed species/species groups. This list will be used in developing recommendations for further survey, particularly of species listed as threatened.

Mapping of species records will be undertaken in task 4 to identify hotspots of species' records and geographical areas that have not been adequately surveyed.

The final task will involve recognising critical gaps in current knowledge and providing a range of options for further work that can fill these gaps.  This will be delivered as a final report.

## 5. Project Inputs

**Research**

The focus of this research project (as stated above) will be to gain a fuller understanding of what is known and unknown in terms of the biodiversity of the Canning Basin and to synthesise this knowledge so that it can provide a baseline against which environmental change can be assessed. The current project will facilitate understanding of the biodiversity of the Canning Basin to gain an understanding of potential future development impacts that may eventually lead to full scale assessment.

There is a considerable amount of available information, but it has not previously been synthesised to provide understanding at the scale of the Canning Basin. For example, the Atlas of Living Australia contains 207,418 individual bird records and 5,876 individual reptile records for the regions covered by the Canning Basin. Records indicate that 392 species of birds, 97 mammals, 236 reptiles and 33 frogs occur (or once occurred) in the Basin. The current project will use this existing information to gain a coherent understanding of patterns in the richness and distribution of the biodiversity of the Canning Basin, to identify key gaps in this knowledge and to develop targeted future investigations that will fill these gaps.

Later, if onshore gas development is progressed this initial study will serve as a valuable data repository to consider more in-depth baseline work.

**Resources and collaborations**

| Researcher | Time Commitment (project as a whole) | Principle area of expertise | Years of experience | Organisation |
|---|---|---|---|---|
| Chris Pavey | 15 days | Terrestrial ecology: threatened species, impact mitigation, fauna survey | 30 years | CSIRO Land and Water |
| Eric Vanderduys | 27 days | Terrestrial ecology: fauna survey, GIS, species distribution modelling | 30 years | CSIRO Land and Water |

| Subcontractors (clause 9.5(a)(i)) | Time Commitment (project as a whole) | Principle area of expertise | Years of experience | Organisation |
|---|---|---|---|---|
| N/A | | | | |

**Budget Summary**

| Source of Cash Contributions | 2020/21 | 2021/22 | 2022/23 | % of Contribution | Total |
|---|---|---|---|---|---|
| GISERA | $41,118 | $0 | $0 | 75% | $41,118 |
| - Federal Government | $41,118 | $0 | $0 | 75% | $41,118 |
| **Total Cash Contributions** | **$41,118** | **$0** | **$0** | | **$41,118** |

| Source of In-Kind Contribution | 2020/21 | 2021/22 | 2022/23 | % of Contribution | Total |
|---|---|---|---|---|---|
| CSIRO | $13,706 | $0 | $0 | 25% | $13,706 |
| **Total In-Kind Contribution** | **$13,706** | **$0** | **$0** | **25%** | **$13,706** |

## 6.  Project Impact Pathway

| Activities | Outputs | Short term Outcomes | Long term outcomes | Impact |
|---|---|---|---|---|
| Desktop research on biodiversity. | Scientific knowledge presented as lists (databases) of all species of plants and animals and of threatened and culturally significant species, and a report including guidelines for future research. | Increased scientific understanding of the biodiversity of the Canning Basin. | Government regulators have scientific knowledge of the biodiversity of the Canning Basin that can form the basis for future decision making. | • Baseline understanding of biodiversity that will inform all subsequent decision making in the Canning Basin. • Improved understanding of culturally important components of biodiversity. |
| Stakeholder engagement | Engagement with community, regulators and industry through GISERA website, media and face-to-face meetings. | Increased stakeholder awareness of the biodiversity of the Canning Basin. | Community gains awareness of and input into understanding of the key biological components of the Canning Basin. | |
| | | | Industry gains important early understanding of the issues related to biodiversity conservation in the Canning Basin. | |

## 7. Project Plan

**Project Schedule**

| ID | Activities / Task Title (should match activities in impact pathway section) | Task Leader | Scheduled Start | Scheduled Finish | Predecessor |
|---|---|---|---|---|---|
| Task 1 | Compilation of species records | Eric Vanderduys | 1 August 2020 | 31 October 2020 | Nil |
| Task 2 | Identification of significant species | Chris Pavey | 1 October 2020 | 30 November 2020 | Task 1 |
| Task 3 | Identification of poorly surveyed species | Eric Vanderduys | 1 October 2020 | 31 December 2020 | Task 1 |
| Task 4 | Identification of geographical gaps in sampling | Eric Vanderduys | 1 October 2020 | 31 December 2020 | Task 1 |
| Task 5 | Final Report providing outline of options for further biodiversity sampling | Chris Pavey | 1 January 2021 | 28 February 2021 | Tasks 1 to 4 |

**Task description**

**Task 1**

**TASK NAME:** Compilation of species records

**TASK LEADER:** Eric Vanderduys

**OVERALL TIMEFRAME:** 1 August to 31 October 2020 (3 months)

**BACKGROUND:** A large amount of data exists on the biodiversity of the Canning Basin, but this has not been compiled and interrogated cohesively. The Atlas of Living Australia data indicates that there are over 750 species of vertebrate animals in the Canning Basin.

**TASK OBJECTIVES:** To compile available published and unpublished records of plants and animals of the Canning Basin.

**TASK OUTPUTS AND SPECIFIC DELIVERABLES:** The outputs will be: a) lists of species of plants and animals that have been recorded in the Canning Basin; and b) data on occurrence and relative abundance (number of records) of each species. The deliverables will be a database and a report (following completion of task 5).

**Task 2**

**TASK NAME:** Identification of significant species

**TASK LEADER:** Chris Pavey

**OVERALL TIMEFRAME:** 1 October to 30 November 2020 (2 months)

**BACKGROUND:** Significant species include those of conservation significance (listed under the Commonwealth's EPBC Act and Western Australia's BC Act) and those of cultural significance to Aboriginal people.

**TASK OBJECTIVES:** To identify which species that occur in the Canning Basin are of conservation and cultural significance.

**TASK OUTPUTS AND SPECIFIC DELIVERABLES:** The outputs will be lists of: a) species of plants and animals that are classified as threatened nationally (EPBC Act) and/or in Western Australia (BC Act); b) species of plants and animals that are culturally significant to Aboriginal people; and c) ecological communities that are classified as threatened. The deliverables will be a database and a report (following completion of task 5).

**Task 3**

**TASK NAME:** Identification of poorly sampled species

**TASK LEADER:** Eric Vanderduys

**OVERALL TIMEFRAME:** 1 October to 31 December 2020 (3 months)

**BACKGROUND:** Because there has not been a systematic baseline survey of the biodiversity of the Canning Basin, the approach to compiling species lists and occurrence records being undertaken as task 1 will be

incomplete. Therefore, it is necessary to use expert knowledge to identify species and groups of species that will be more widespread or more common than indicated.

**TASK OBJECTIVES:** To assemble a list of under-represented (as a result of inadequate survey effort) species and groups of species for the Canning Basin, with an emphasis on threatened species.

**TASK OUTPUTS AND SPECIFIC DELIVERABLES:** The output will be a list of species and groups of species that are expected to be more common and/or widespread in the Canning Basin than indicated by existing data. The deliverables will be a database and a report (following completion of task 5).

**Task 4**

**TASK NAME:** Identification of geographical gaps in sampling

**TASK LEADER:** Eric Vanderduys

**OVERALL TIMEFRAME:** 1 October to 31 December 2020 (3 months)

**BACKGROUND:** Because there has not been a systematic baseline survey of the biodiversity of the Canning Basin, not all areas have been adequately surveyed for biodiversity. Therefore, it is important to identify the geographic locations that have been undersampled.

**TASK OBJECTIVES:** To map the occurrence of records of species of plants and animals in the Canning Basin to identify both biodiversity hotspots and undersampled geographical locations.

**TASK OUTPUTS AND SPECIFIC DELIVERABLES:** The output will be a list of areas in the Canning Basin that have not been adequately sampled for biodiversity. The deliverables will be a map (or series of maps) showing the location of species' records.

**Task 5**

**TASK NAME: Final Report providing** outline of options for further biodiversity sampling

**TASK LEADER:** Chris Pavey

**OVERALL TIMEFRAME:** 1 January to 28 February 2021 (2 months)

**BACKGROUND:** The current project will provide an assessment of the current state of knowledge of the composition and distribution of the biodiversity of the Canning Basin. In addition to consolidating available information, it will identify gaps in knowledge that will need attention. The project team will be in a good position to provide recommendations for the way forward.

**TASK OBJECTIVES:** To outline options for future survey programs in the Canning Basin that focus on filling gaps in poorly sampled geographic locations and on poorly known species/groups of species.

**TASK OUTPUTS AND SPECIFIC DELIVERABLES:** The output of this final task will be a series of options for additional survey work. The specific deliverable will be a final report.

## Project Gantt Chart

| Task | Task Description | Task Leader | 2020-2021 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Aug-20 | Sept-20 | Oct-20 | Nov-20 | Dec-20 | Jan-21 | Feb-21 |
| 1 | Compilation of species records | Eric Vanderduys | ■ | ■ | ■ | | | | |
| 2 | Identification of significant species | Chris Pavey | | | ■ | ■ | | | |
| 3 | Identification of poorly surveyed species | Eric Vanderduys | | | ■ | ■ | ■ | | |
| 4 | Identification of geographical gaps in sampling | Eric Vanderduys | | | ■ | ■ | ■ | | |
| 5 | Final Report providing outline of options for further biodiversity sampling | Chris Pavey | | | | | | ■ | ■ |

## 8. Technical Reference Group

Experts who will be invited to participate in the Technical Reference Group are:

- Dr Stephen van Leuwin, Assistant Director, Science, Western Australia Department of Biodiversity, Conservation and Attractions, Perth, WA.

- Dr Joe Benshemesh, Researcher, University of Melbourne, Melbourne, Victoria.

- Dr Ron Firth, Director and Principal, Western Ecological Services, Perth, WA.

- Theia Energy (representative to be determined)

- A representative from the ranger network (which will be arranged through the Kimberly Land Council)

## 9. Communications Plan

| Stakeholder | Objective | Channel (e.g. meetings/media/factsheets) | Timeframe (Before, during at completion) |
|---|---|---|---|
| Aboriginal organisations (Kimberley Land Council, Kanyirninpa Jukurrpa etc.) | To establish working relationship, discuss project objectives and then key findings | Meetings | During task 1 & again near completion of project |
| Regulators in Western Australia | To establish working relationship, discuss project objectives and then key findings | Meetings | During task 1 & again near completion of project |
| All stakeholders | To communicate project objectives and progress | Fact sheets (including development of one at commencement of project which will explain in plain English the objective of the project and another at project completion).<br><br>Project progress reported on GISERA website to ensure transparency for all stakeholders including regional communities. | At project commencement and at project completion.<br><br>Periodically |
| Regional Community/ Wider public, Government, Scientific community and Industry | To report on key findings | Final Report | At completion |

## 10. Budget Summary

| Expenditure | 2020/21 | 2021/22 | 2022/23 | Total |
|---|---|---|---|---|
| Labour | $51,224 | $0 | $0 | $51,224 |
| Operating | $3,600 | $0 | $0 | $3,600 |
| Subcontractors | $0 | $0 | $0 | $0 |
| **Total Expenditure** | **$54,824** | **$0** | **$0** | **$54,824** |

| Expenditure per Task | 2020/21 | 2021/22 | 2022/23 | Total |
|---|---|---|---|---|
| Task 1 | $27,005 | $0 | $0 | $27,005 |
| Task 2 | $6,003 | $0 | $0 | $6,003 |
| Task 3 | $7,255 | $0 | $0 | $7,255 |
| Task 4 | $6,381 | $0 | $0 | $6,381 |
| Task 5 | $8,130 | $0 | $0 | $8,130 |
| **Total Expenditure** | **$54,824** | **$0** | **$0** | **$54,824** |

| Source of Cash Contributions | 2020/21 | 2021/22 | 2022/23 | Total |
|---|---|---|---|---|
| Federal Government (75%) | $41,118 | $0 | $0 | $41,118 |
| **Total Cash Contributions** | **$41,118** | **$0** | **$0** | **$41,118** |

| In-Kind Contributions | 2020/21 | 2021/22 | 2022/23 | Total |
|---|---|---|---|---|
| CSIRO (25%) | $13,706 | $0 | $0 | $13,706 |
| **Total In-Kind Contributions** | **$13,706** | **$0** | **$0** | **$13,706** |

| | Total funding over all years | Percentage of Total Budget |
|---|---|---|
| Federal Government Investment | $41,118 | 75% |
| CSIRO Investment | $13,706 | 25% |
| Total Other Investment | | |
| **TOTAL** | **$54,824** | **100%** |

| Task | Milestone Number | Milestone Description | Funded by | Start Date (mm-yy) | Delivery Date (mm-yy) | Fiscal Year Completed | Payment $ (excluding CSIRO contribution) |
|---|---|---|---|---|---|---|---|
| Task 1 | 1.1 | Compilation of species records | GISERA | Aug-2020 | Oct-2020 | 2020/21 | $20,291 |
| Task 2 | 2.1 | Identification of significant species | GISERA | Oct-2020 | Nov-2020 | 2020/21 | $4,502 |
| Task 3 | 3.1 | Identification of poorly surveyed species | GISERA | Oct-2020 | Dec-2020 | 2020/21 | $5,441 |
| Task 4 | 4.1 | Identification of geographical gaps in sampling | GISERA | Oct-2020 | Dec-2020 | 2020/21 | $4,786 |
| Task 5 | 5.1 | Final report providing outline of options for further biodiversity sampling | GISERA | Jan-2021 | Feb-2021 | 2020/21 | $6,098 |

## 11. Intellectual Property and Confidentiality

| Background IP (clause 11.1, 11.2) | Party | Description of Background IP | Restrictions on use (if any) | Value |
|---|---|---|---|---|
| | | | | $ |
| | | | | $ |
| Ownership of Non-Derivative IP (clause 12.3) | CSIRO. | | | |
| Confidentiality of Project Results (clause 15.6) | Project Results are not confidential. | | | |
| Additional Commercialisation requirements (clause 13.1) | Not Applicable. | | | |
| Distribution of Commercialisation Income (clause 13.4) | Not Applicable. | | | |
| Commercialisation Interest (clause 1.1) | Party | | Commercialisation Interest | |
| | CSIRO | | N/A | |
| | Other | | N/A | |