

Project Order

Proforma 2012

1. Short Project Title (less than 15 words)

Project 2 - Fire ecology

Long Project Title	Fire ecology of grassy woodlands
GISERA Project Number	B2 1215
Proposed Start Date	October 2012
Proposed End Date	September 2015
Project Leader	Alan Andersen (CSIRO)

2. GISERA Research Program

- | | | |
|---|---|--|
| <input checked="" type="checkbox"/> Biodiversity Research | <input type="checkbox"/> Marine Research | <input type="checkbox"/> Land Research |
| <input type="checkbox"/> Water Research | <input type="checkbox"/> Social & Economic Research | |

3. Research Leader, Title and Organisation

Alan Andersen
Chief Research Scientist
CSIRO Ecosystem Sciences

4. Summary (less than 300 words)

Appropriate fire regimes are critical for the conservation of the fire-prone vegetation that covers most of the Australian continent. Highly fire-prone grassy woodlands dominate the coal seam gas (CSG) development region, and the CSG industry has identified fire as a priority issue for managing CSG impacts. Recent climatic conditions resulting in increased fuel loads are also of concern. This has exposed a gap in fire ecology understanding around this region and knowledge of how to best

manage the biodiversity impacts of altered fire regimes associated with the development is currently unavailable.

CSG development could potentially influence fire regimes in diverse ways. On one hand, increased human activity might lead to increased ignition sources and therefore to increased fire frequency. On the other hand, landscape-scale developments involving long linear structures can restrict the free movement of fire across the landscape, and so reduce fire frequency in isolated patches. The existence of valuable and fire-sensitive infrastructure might also lead to enhanced fire suppression and therefore a managed reduction in the incidence and severity of fires in the landscape. Such changes to the existing fire regime have the potential to lead to important biodiversity impacts, by altering bio-geochemical cycling and other ecological processes, changing vegetation structure, and promoting invasive species. However, the fire ecology of the region is not well understood and it is currently not possible to predict the impacts of either increased or reduced fire severity. More generally, the sensitivity of the regional biota to changed fire regimes, and the thresholds at which changed fire regimes cause substantial ecological impact, are not well understood. This project will address the knowledge gap issue for the regionally dominant and most fire-prone grassy woodlands.

5. Budget Summary (From Excel Budget Pack worksheet "Project Plan Summary")

Expenditure	2011/12 Year 1	2012/13 Year 2	2013/14 Year 3	2014/15 Year 4	2015/16 Year 5	Total
Labour	-	134,753	299,716	174,977	44,100	653,547
Operating	-	59,370	60,000	10,000	6,125	135,495
Total Costs	-	194,123	359,716	184,977	50,225	789,042
CSIRO		194,123	359,716	184,977	50,225	789,042
Total Expenditure		194,123	359,716	184,977	50,225	789,042

Expenditure per Task	2011/12 Year 1	2012/13 Year 2	2013/14 Year 3	2014/15 Year 4	2015/16 Year 5	Total
Task 1		194,123	359,716	184,977	50,225	789,042
Total Expenditure		194,123	359,716	184,977	50,225	789,042

Cash Funds to Project Partners	2011/12 Year 1	2012/13 Year 2	2013/14 Year 3	2014/15 Year 4	2015/16 Year 5	Total
CSIRO		146,043	97,361	146,042	97,362	486,807
Total Cash to Partners		146,043	97,361	146,042	97,362	486,807

Source of Cash	2011/12	2012/13	2013/14	2014/15	2015/16	Total
Contributions	Year 1	Year 2	Year 3	Year 4	Year 5	
GISERA		146,043	97,361	146,042	97,362	486,807
Total Cash Contributions		146,043	97,361	146,042	97,362	486,807

In-kind Contribution from Partners	2011/12	2012/13	2013/14	2014/15	2015/16	Total
	Year 1	Year 2	Year 3	Year 4	Year 5	
CSIRO		48,080	262,356	38,935	-47,137	302,235
Total Cash Contributions		48,080	262,356	38,935	-47,137	302,235

	Total Funding over all years	Percentage of total Budget
GISERA	486,807	62%
CSIRO	302,235	38%
Other		
Total Project budget	789,042	100%

Task	Milestone Number	Milestone Description	Funded by	Participant Recipient	Start Date (mmm-yy)	Delivery Date (mmm-yy)	Fiscal Year	Fiscal Quarter	Payment \$
Task 1	1	on sign of contract	GISERA	CSIRO	Oct-12	Dec-12	2012/13	Quarter 2	148,988.92
Task 1	2	on completion of experimental plot setup	GISERA	CSIRO	Jan-13	Jun-13	2012/13	Quarter 4	74,494.46
Task 1	3	on completion of manuscript submission from experimental plots	GISERA	CSIRO	Jun-13	Jun-14	2013/14	Quarter 4	148,987.39
Task 1	4	on completion of biodiversity assessments	GISERA	CSIRO	Jun-14	Oct-14	2014/15	Quarter 2	148,987.39
Task 1	5	on completion of data analysis	GISERA	CSIRO	Oct-14	Dec-14	2014/15	Quarter 2	74,494.46
Task 1	6	on acceptance of final report	GISERA	CSIRO	Jan-15	Jun-15	2015/16	Quarter 4	148,988.92

6. Other Researchers (include organisations)

Researcher	Time Commitment (project as a whole)	Principle area of expertise	Years of experience	Organisation
Alan Andersen	0.1	Ant ecology	30	CSIRO
Garry Cook	0.1	Vegetation ecology	25	CSIRO
Dr Teresa Eyre	0.1	Plant and animal ecology	20	Qld Govt
Dr Rod Fensham	0.05	Vegetation ecology	25	Qld Govt

7. GISERA Objectives Addressed

Research that improves and extends knowledge of environmental impacts and opportunities of CSG-LNG projects, enabling the CSG-LNG industry to better meet the expectations of relevant communities and the broader public.

Informing government, regulators and policy-makers on key issues regarding policy and legislative framework for the CSG-LNG industry.

8. Program Outcomes Achieved

Details are provided in *Section 13. Project Objectives and Outputs*.

9. Program Outputs Achieved

Details are provided in *Section 13. Project Objectives and Outputs*

10. What is the knowledge gap that these research outputs will address?

The major outcomes from this project will be an understanding of the sensitivity of the regional biota to variation in fire regimes, and identification of thresholds where change becomes a conservation concern. This will address a key uncertainty in the region.

11. How will these research outputs and outcomes be used by State Government and other managers?

The research will provide state government, local governments and industry with context for predicting potential future fire regimes.

12. Project Development (1 page max.)

The project was developed in consultation between Australia Pacific LNG and CSIRO staff. The proposed activity was discussed with members from various stakeholder groups and was identified as an important research need.

This work will be undertaken in collaboration with relevant groups and professionals within the regions who work on fire management.

13. Project Objectives and Outputs

The major outcomes from this project will be an understanding of the sensitivity of the regional biota to variation in fire regimes, and identification of thresholds where change becomes a conservation concern. This will address a key uncertainty in the region. There is potential to extend this project to long term monitoring of fire-affected sites. At relatively low cost, but with an ongoing commitment, such work could deliver results after 5-10 years of monitoring activity.

14. Project Plan

The project will comprise two core components: (1) landscape-scale analysis of biota at sites with different fire histories, reviewing and building on existing fire and biodiversity research in the region; and (2) modelling the sensitivity of populations of representative tree species to variation in fire regimes, based on existing information on tree growth and survival in relation to fire.

The landscape-scale analysis will be based on biodiversity assessments of a large number of sites that cover a range of regional fire regimes, representing low, moderate and high fire frequency. Because sites have varying fire histories, the historical and current fire regime can be used to provide context for predicting potential future fire regimes. The assessments will target a range of taxonomic groups, including woody plants, mammals, birds and ants, building on Department of Environment and Heritage Protection’s (DEHP) (formerly Department of Environment and Resource Management) existing database on plant and animal species distributions in the region. This and the tree population modeling work will be undertaken in collaboration with relevant groups and professionals within the region who work on fire management.

The table below shows how project activities align with each of the scientific research aims.

Research aim	Research methods	Out comes
Year 2012-2013		
<ul style="list-style-type: none"> Assessments fire regimes of survey sites for landscape-scale analysis, and commencement of new data collection. 	<ul style="list-style-type: none"> Field sampling, GIS analysis Population modelling using FLAMES. 	<ul style="list-style-type: none"> Identified study sites representing the full range of regional fire regimes. Preliminary understanding of sensitivity of tree species to variation in fire regimes
Year 2013-2014		
<ul style="list-style-type: none"> Continuation of biodiversity sampling, processing and 	<ul style="list-style-type: none"> Field sampling and laboratory processing Simulation modeling 	Understanding of the sensitivity of the regional biota to variation in fire regimes.

identification • Completion of tree population modeling.		
Year 2014-2015		
Continuation of biodiversity sampling, processing and identification. Analysis and write-up	Field sampling, laboratory processing and data analysis, synthesis of findings, writing publications.	High quality peer-reviewed scientific papers outlining thresholds where changes in fire regimes become a conservation concern. Guidance for managing fire in the region.

14.1 Project Schedule

ID	Task Title	Task Leader	Scheduled Start	Scheduled Finish	Predecessor
1	Sign contract	Andersen	Oct 12	Dec 12	
2	Set up experimental plots	Andersen	Jan 13	Jun 13	1
3	Submit manuscript from experimental plots	Andersen	Jun 13	Jun 14	2
4	Complete biodiversity assessments	Andersen	Jun 14	Oct 14	3
5	Complete data analysis	Andersen	Oct 14	Dec 14	4
6	Produce final report	Andersen	Jan 15	Sep 15	5

Task 1.

TASK NAME: Sign contract.

TASK LEADER: Alan Andersen

OVERALL TIMEFRAME: Oct 2012 - Dec 2012

BACKGROUND: Contract needs to be signed to allow project to proceed.

TASK OBJECTIVE: To sign the contract.

TASK OUTPUTS & SPECIFIC DELIVERABLES: Signed contract.

Task 2.

TASK NAME: Set up experimental plots.

TASK LEADER: Alan Andersen

OVERALL TIMEFRAME: Jan 2013 – Jun 2013

BACKGROUND: The experimental work will be conducted on Glen Innes station near Alpha, where DEHP has established experimental fire plots. As well as assessments of experimental plots at Glen Innes, there will be selection of study sites for landscape-scale analysis (see full project plan).

TASK OBJECTIVE: To establish the field and landscape plots.

TASK OUTPUTS & SPECIFIC DELIVERABLES: On-ground setup of plots, with established fire histories. Identified study sites representing the full range of regional fire regimes.

Task 3.

TASK NAME: Submit manuscript from experimental plots.

TASK LEADER: Alan Andersen

OVERALL TIMEFRAME: Jun 2013 – Jun 2014

BACKGROUND: Results from experimental work will be written up for publication in scientific journals.

OBJECTIVE: To produce a scientific manuscript detailing the results of the experimental work.

TASK OUTPUTS & SPECIFIC DELIVERABLES: One scientific manuscript.

Task 4.

TASK NAME: Complete biodiversity assessments.

TASK LEADER: Alan Andersen

OVERALL TIMEFRAME: Oct 2012 – Dec 2012

BACKGROUND: Field sampling of experimental and landscape plots to establish biodiversity responses to alternative fire regimes.

TASK OBJECTIVE: To assess biodiversity responses in the field.

TASK OUTPUTS & SPECIFIC DELIVERABLES: Data on biodiversity responses.

Task 5.

TASK NAME: Complete data analysis.

TASK LEADER: Alan Andersen

OVERALL TIMEFRAME: Oct 2012 – Dec 2012

BACKGROUND: Following field data collection, a full analysis will be conducted.

TASK OBJECTIVE: To understand the signals from the data.

TASK OUTPUTS & SPECIFIC DELIVERABLES: Analysed data.

Task 6.

TASK NAME: Produce final report

TASK LEADER: Alan Andersen

OVERALL TIMEFRAME: Oct 2012 – Dec 2012

BACKGROUND: Project reporting is a key deliverable.

TASK OBJECTIVE: To produce a final report.

TASK OUTPUTS & SPECIFIC DELIVERABLES: Final report.

15. Budget Justification

The budget for this project has been approved by GISERA's Research Advisory Committee and Management Committee.

16. Project Governance

Project management tasks and dissemination activities are specified in *Section 14 Project Plan*.

17. Communications Plan

General communication will be managed by GISERA.

18. Risks

At this stage no unmanageable risks particular to this project are foreseen.

Capacity to deliver: All project staff have sufficient experience to lead and supervise the various activities and ascertain the research outcomes. Therefore the impact of unplanned key staff departure is low and can be mitigated.

19. Intellectual Property and Confidentiality

Background IP (clause 10.1, 10.2)	Party	Description of Background IP	Restrictions on use (if any)	Value
				\$
				\$
Ownership of Non-Derivative IP (clause 11.3)	CSIRO			
Confidentiality of Project Results (clause 15.6)	Project results are not confidential.			
Additional Commercialisation requirements (clause 12.1)	Not Applicable			
Distribution of Commercialisation Income (clause 1.1)	Not applicable			
Commercialisation Interest (clause 1.1)	Party		Commercialisation Interest	
	Australia Pacific LNG			
	CSIRO			

20. Approval from Project Parties

In signing this Document you are committing your organisation to provide the specified funds, personnel and the required in-kind contributions.

Australia Pacific LNG

SIGNED for and on behalf of Australia Pacific LNG, exercising authority delegated by the GISERA Management Committee

by
in the presence of

.....
Signature of witness

.....
Name of witness

.....
Date

CSIRO

SIGNED for and on behalf of CSIRO, exercising authority delegated by the GISERA Management Committee

by
in the presence of

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Signature of witness

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Name of witness

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Date

