Project Order, Variations and Research Progress

Project Title: Understanding natural gas impacts and opportunities on primary industries in the South East of South Australia

This document contains three sections. Click on the relevant section for more information.

Section 1: [Research Project Order as approved by the GISERA Research Advisory Committee and GISERA Management Committee before project commencement](#)

Section 2: [Variations to Project Order](#)

Section 3: [Progress against project milestones](#)

GISERA, GPO Box 2583, Brisbane QLD 4001, Australia

1 Original Project Order

Project Order

Proforma 2018

1. Short Project Title

Understanding natural gas impacts and opportunities on primary industries in the South East of South Australia

Long Project Title   A comparative analysis of the likely impacts and opportunities arising from gas development for rural areas in the south east of South Australia

GISERA Project Number   L.8

Proposed Start Date   1 July 2018

Proposed End Date   30 June 2019

Project Leader   Neil Huth

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

This project will assist community understanding and inform public policy development relating to potential primary industry impacts and opportunities from conventional gas development in the south east of South Australia (SESA). This project aims to relay new information and data to the local community and policy makers to minimise misinformation and maximise opportunities in the region.

Description

Natural gas exploration and development has boomed around the world in recent years. Each project and region is different varying enormously in scale and impact, with some universal concerns. To assist community understanding, and to inform public policy development, it is important to clearly describe the likely similarities and differences in issues facing gas developments in other parts of the world with those in South Australia.

To achieve the project objective, we will:

1) Collate basic data on primary industries (e.g. range of commodities, size of sectors, value of production) and the local primary industry environment (e.g. soils, climate and groundwater systems) in the SESA.

2) Engage with the primary industry and environmental stakeholders via a structured survey of relevant individuals using experienced local rural social researchers to document and better understand the risks and opportunities identified for each sector

3) Provide a comparative analysis of likely impacts and opportunities raised by stakeholders in the survey to demonstrate similarities and differences with gas developments in other regions. Comparisons will be made with gas developments such as those in the USA and the Surat Basin in Queensland, or other types of resource development (e.g. coal, wind farms) were necessary, noting differences in environment, primary industries, natural gas fuel choices and a scale of development

4) Provide a report describing

   a. The existing primary industries and the proposed gas development

   b. Issues raised as risks and opportunities by various primary industry sectors

   c. An analysis of the likely magnitude of these risks and opportunities, including brand value protection, via comparison with other gas or resource development areas

   d. Existing research gaps and indications of processes required for monitoring issues.

Need & Scope

Community understanding of issues arising from developments such as those in conventional gas is only as good as the information available to the community members. Experience from other gas development regions highlights the role of independent public good research and communication of scientific data for informing community debate. However, the same experience has clearly shown that community members can feel overwhelmed by the volume, complexity and apparent contradictory nature of information available from the large number of sources available to them. It can be challenging for community members to place reports and experiences from rural regions with gas developments in other parts of Australia or the world in the context of what is likely in their local region. For example, Walton et al 2017 (https://doi.org/10.1080/10371656.2017.1293546) pointed out the need to consider potential 'anticipatory effects' when studying gas development in rural Queensland. This project is aimed at addressing this challenge through timely sharing of locally relevant information.

The SE region of SA is the region comprised of the district councils of Lacepede, Naracoorte, Lucindale, Robe, Wattle Range, Mount Gambier and Grant, an area of some 2.3 million hectares in a line south of Coonalpyn, Tintinara, Keith and Bordertown. Based on land use, livestock grazing of modified pastures is by far the predominant primary industry activity in the SE (58% of land use in 2009), followed by cropping (9%) and forestry (7%). In dollar value terms (2009), beef cattle is the most significant primary industry product in the SE of SA, accounting for nearly 20%, or around $185 million of the $950 million total estimated value of primary industry in the region in 2010. Forestry was the second largest accounting for 17% ($160 million). Sheep and lambs accounted for a further 14% (around $135 million) of the total value of primary industry production in the region, while wine grapes accounted for 13% (nearly $120 million) and milk production 8% (around $75 million). The South East is the largest, by area, of the irrigation areas in South Australia with around 55 450 hectares of land irrigated in 2009. Of this area 54% is applied to pasture and hay crops, 20% to vines and 5% to potatoes (Source: PIRSA)

The project will develop a process to shed light on the SE SA region potentially affected by conventional gas production and help to place existing primary industry community concerns in that context. Information on the similarities or differences between various regions of gas development needs to be clearly documented, applying a scientific approach, to inform the broader community as to which information will remain directly relevant within the new context. Potential development scenarios over a 10 year period will be examined and possible interactions between opportunities and associated impacts will be considered so that possible trade-offs between land management scenarios can be evaluated.

The GISERA agricultural land management team has taken a lead role in other regions in presenting information in a form suitable for rural stakeholders. Experience tells us that information such as this is highly valued during engagement between community, government and industry on issues of future gas development. In this project there is a significant opportunity for early engagement and information provision prior to development to maximize the benefit to primary industry community understanding.

Methodology

The project team will undertake a synthesis of existing gas farm relations from existing gas developments (domestic and internationally) and place these data into context for developments in South Australia. This comparative analysis is crucial for ensuring that the full value of existing research is extracted for these new developments, and also for optimum decision making. Furthermore, it is important to avoid misunderstanding of the implications of research from other areas for this next context. The project consists of four distinct tasks.

1) *Project Establishment.* The project will require efforts to establish the project team and to determine required links with industry. This will be achieved via a project team meeting during which a plan for stakeholder engagement will be developed. Key stakeholders from different links in the value chain of each industry (e.g. production, processing, and transport) will be sought to broaden perspective.

2) *Engagement.* In depth face to face interviews with at least 20 relevant agricultural, viticulture and forestry stakeholders in the SE districts where gas development has been and/or is likely will ensure that the review covers all topics and issues of importance to rural industry. This component of the project will be undertaken by an experienced rural social science researcher with an agricultural background in the SE region with assistance from a lead farming systems researcher based in Adelaide. A structured survey approach will be employed and messages from this will be presented in a manner that can be used to focus the subsequent literature review and analysis tasks.

3) *Comparative analysis*. A literature review and comparative analysis will be undertaken to explore the risks and opportunities raised during the stakeholder engagement. Existing literature will be surveyed by researchers with experience in gas research in an agricultural context. Therefore, the project will combine efforts from CSIRO farming systems research teams based in South Australia and Queensland to provide benefits from the local research community and members with deep experience the study of interactions between gas development and primary industries to provide an analysis of the likely magnitude of risks and opportunities in SESA via comparison with other gas or resource development areas. This will include consultation with PIRSA regional experts. Finally, much spatially explicit information is now available to describe these landscapes in terms of existing land use, land use change, environmental conditions and landscape processes. Where possible, these data will be incorporated into efforts for informing policy development and community discussion in this comparative analysis.

4) *Reporting*. Information gathered during the primary industry stakeholder engagement and subsequent analysis will be synthesised into a final report targeting rural community, government, primary industries and gas industry groups. Important research gaps arising from the combined qualitative survey and subsequent literature review will be documented to inform future research.

5. Project Inputs

Research

Much research has already been undertaken in Australia and overseas on the impacts of different types of gas development on primary industries and primary industry landscapes. In Australia, GISERA alone has undertaken seven research projects investigating impacts of coal seam gas developments in Queensland on farming households and businesses, agricultural soils, landscape processes such as surface hydrology and erosion processes, crop production and farm operations, and pastures and livestock in beef grazing operations. Similarly, there is a long international research history on gas production systems in rural areas. Neil Huth (CSIRO) has led the Queensland Agricultural Land Management projects for GISERA and Mark Thomas has been a team member in research projects funded directly by industry. Much of this will be of high value to rural communities and primary industries in South Australia. However, there are also likely to be great differences in the possible impacts and opportunities of conventional gas development for rural areas in South Australia when compared to other regions and other types of development. For example, conventional gas in SESA has a much smaller footprint than Coal Seam Gas (CSG) in Queensland, and the climate and farming systems are very different to those in Northern Australia.

This project was developed following consultation with GISERA leaders and then through engagement during site visits to SE South Australia with Beach Energy representatives and state government energy staff followed by a workshop also including a wider range of stakeholders (CSIRO, Beach Energy, SA Department of Premier and Cabinet, SA Department of Environment, Water and Natural Resources, SA Environment Protection Authority, Department of Primary Industries and Regions SA, SA Water). Discussion with local primary industry representatives including South-East farmer group representatives, SE landholders and other industry representatives by local CSIRO staff based in South Australia has also informed this project development. The project includes extensive consultation as part of initial scoping exercises.

Resources and collaborations

Researcher	Time Commitment (project as a whole)	Principle area of expertise	Years of experience	Organisation
Neil Huth	12 days	Agricultural systems	>25	CSIRO
Rick Llewellyn	20 days	Agricultural systems	20	CSIRO
Mark Thomas	35 days	Landscapes, Soil and water	20	CSIRO
Rob Bramley	3 days	Viticultural systems	>25	CSIRO
Christina Ratcliff	20 days	Rural land analysis/GIS	10	CSIRO

Subcontractors (clause 9.5(a)(i))	Time Commitment (project as a whole)	Principle area of expertise	Years of experience	Organisation
Geoff Kuehne	25 days	Agricultural social research	15	Meaningful research

Budget Summary

Source of Cash Contributions	2017/18	2018/19	2019/20	% of Cash Contribution	Total
GISERA	-	$131,349.80	-	75%	$131,349.80
- SA Government	-	$65,674.88	-	37.5%	$65,674.90
- Federal Government	-	$65,674.88	-	37.5%	$65,674.90
Total Cash Contributions	**-**	**$131,349.80**	**-**	**75%**	**$131,349.80**

Source of In-Kind Contribution	2017/18	2018/19	2019/20	% of In kind Contribution	Total
CSIRO	-	$43,783.25	-	25%	$43,783.25
Total In-Kind Contribution	**-**	**$43,783.25**	**-**	**25%**	**$43,783.25**

6. Project Impact Pathway

Activities	Outputs	Short term Outcomes	Long term outcomes	Impact
Task 1 • A team meeting to organise project requirements from the various team members, to outline timeframes and staff commitments for each task, and to identify key collaborators and stakeholders for involvement during Task 2 • Initial engagement with external collaborators and stakeholders as identified during initial project meeting. • Sub-contract with social researcher complete	Short progress report outlining outcomes of project meeting and initial engagements with external collaborators	• Communities effectively communicate concerns. • Community awareness about the impacts and opportunities of development is improved. • Industry and Government is informed of key issues of affected primary industries. • New regulatory policies and industry guidelines.	• New knowledge empowers communities to manage current and future issues. • Reduced public discontent and improved social licence. • Improved industry practice and decision making to maximise benefits and minimise costs.	The onshore gas industry operates in a socially, economically, and environmentally sustainable manner
Task 2 • Information gathering about the primary industry landscape, primary industry sectors within that landscape, value chains within those sectors, brand value and a structured survey of stakeholders across these.	Short progress report outlining the sectors and supply chains and summary metrics about the number of stakeholders engaged within the survey.			
Task 3 • Undertake comparative analysis via literature review to inform community understanding of the issues arising from conventional gas development in the south east of South Australia	Short progress report outlining the elements of the literature review and comparative analysis undertaken and any research gaps identified.			
Task 4 • Publish the research findings and to assist knowledge transfer via direct communication and discussion of project results with key external stakeholders.	A final report documenting project tasks and findings.			
	Knowledge Transfer session communicating results to GISERA			

	stakeholders according to standard GISERA project procedures.			

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	Project Establishment	Neil Huth	July 2018	Sep 2018	-
Task 2	Engagement	Rick Llewellyn	Oct 2018	Dec 2018	Task 1
Task 3	Comparative Analysis	Neil Huth	Jan 2019	March 2019	Task 2
Task 4	Final Reporting	Neil Huth	April 2019	June 2019	Task 3

Task Description

Task 1
TASK NAME: Project Establishment
TASK LEADER: Neil Huth
OVERALL TIMEFRAME: July-September 2018
BACKGROUND: This project team includes staff from multiple business units, scientific disciplines and sites. Furthermore, this may be the first project within this problem domain for some team members, and the first contact with our team for many external collaborators. That being the case, a significant level of communication and organisation is required in establishing the project. A subcontract is required to engage a social researcher for detailed industry and stakeholder engagement.
TASK OBJECTIVES: 1) A team meeting to organise project requirements from the various team members, to outline timeframes and staff commitments for each task, and to identify key collaborators and stakeholders for involvement during Task 2. 2) Initial engagement with external collaborators and stakeholders as identified during initial project meeting. 3) Sub-contract with social researcher complete.
TASK OUTPUTS AND SPECIFIC DELIVERABLES: Short progress report outlining outcomes of project meeting and initial engagements with external collaborators.

Task 2
TASK NAME: Engagement
TASK LEADER: Rick Llewellyn
OVERALL TIMEFRAME: October – December 2018
BACKGROUND: The project will provide a comparative analysis of issues raised by stakeholders in the Lower South East. This task will need to inform the later analysis by providing a range of risks and opportunities raised by different primary industry sectors and within different levels of supply chains within those sectors. Basic geographical data (e.g. primary industry production and value, ground water use, soils and landscapes) also required for the Task 3 will be need to be collated prior to the comparative analysis.
TASK OBJECTIVE: To provide basic information about the primary industry landscape, primary industry sectors within that landscape, value chains within those sectors, and a structured survey of agriculture, viticulture and forestry stakeholders across these.
TASK OUTPUTS AND SPECIFIC DELIVERABLES: Short progress report outlining the sectors and supply chains and summary metrics about the number of stakeholders engaged within the survey.

Task 3

TASK NAME: Comparative Analysis

TASK LEADER: Neil Huth

OVERALL TIMEFRAME: January – March 2019

BACKGROUND: Issues raised by primary industry stakeholders in the South East of South Australia will have similarities and differences to other energy and resource developments within primary industry areas around Australia and internationally. These need to be clearly articulated to assist policy development and community understanding.

TASK OBJECTIVE: To provide a comparative analysis via literature review to inform community understanding of the issues arising from conventional gas development in the south east of South Australia.

TASK OUTPUTS AND SPECIFIC DELIVERABLES: Short progress report outlining the elements of the literature review and comparative analysis undertaken and any research gaps identified.

Task 4

TASK NAME: Final Reporting

TASK LEADER: Neil Huth

OVERALL TIMEFRAME: April-Jun 2019

BACKGROUND: Information from this project is to be made publically available after completion of standard CSIRO publication and review processes. Furthermore, all GISERA projects must complete a knowledge transfer process with key external stakeholders to assist in generating impact from research efforts.

TASK OBJECTIVE: To ensure that the information generated by this project is documented and published after thorough CSIRO Internal review, and to assist knowledge transfer via direct communication and discussion of project results with key external stakeholders.

TASK OUTPUTS AND SPECIFIC DELIVERABLES: 1) A final report documenting project findings, and 2) Knowledge Transfer session communicating results to GISERA stakeholders according to standard GISERA project procedures.

Project Gantt Chart

Task Leader	Task	FY 2018-19											
		July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June
Neil Huth	1	██	██	██									
Rick Llewellyn	2				██	██	██						
Neil Huth	3							██	██	██			
Neil Huth	4										██	██	██

8. Technical Reference Group

The Technical Reference Group will comprise of technical experts yet to be determined from agriculture, viticulture and forestry.

9. Communications Plan

Stakeholder	Objective	Channel	Timeframe
Primary industries and Dependant Sectors	GISERA seen as trusted source of information by community	One on one discussions (and interviews) and small select group engagement	During
Rural Community	Demand for GISERA's engagement is maintained as development progresses	Factsheets, media, selected meetings	Near and at completion
Gas Industry	Industry adopts methods for improving community engagement	Presentation of findings at Knowledge Transfer Session	At Completion
Government	Advice provided to senior bureaucrats / ministers / policy makers	Presentation of findings at Knowledge Transfer Session	At Completion

10. Budget Summary

Expenditure	2017/18	2018/19	2019/20	Total
Labour	-	$135,633	-	$135,633
Operating	-	$14,500	-	$14,500
Subcontractors	-	$25,000	-	$25,000
Total Expenditure	**-**	**$175,133**	**-**	**$175,133**

Expenditure per Task	2017/18	2018/19	2019/20	Total
Task 1	-	$26,728	-	$26,728
Task 2	-	$55,487	-	$55,487
Task 3	-	$52,666	-	$52,666
Task 4	-	$40,252	-	$40,252
Total Expenditure	**-**	**$175,133**	**-**	**$175,133**

Source of Cash Contributions	2017/18	2018/19	2019/20	Total
SA Government (37.5%)	-	$65,674.88	-	$65,674.90
Federal Government (37.5%)	-	$65,674.88	-	$65,674.90
Total Cash Contributions	**-**	**$131,349.80**	**-**	**$131,349.80**

In-Kind Contribution from Partners	2017/18	2018/19	2019/20	Total
CSIRO (25%)	-	$43,783.25	-	$43,783.25
Total In-Kind Contribution from Partners	**-**	**$43,783.25**	**-**	**$43,783.25**

	Total funding over all years	Percentage of Total Budget
SA Government Investment	$65,674.90	37.5%
Federal Government Investment	$65,674.90	37.5%
CSIRO Investment	$43,783.25	25%
TOTAL	**$175,133**	

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	Project Establishment	GISERA	Jul-18	Sep-18	2018/19	$20,046
Task 2	2.1	Information Gathering	GISERA	Oct-18	Dec-18	2018/19	$41,615
Task 3	3.1	Comparative Analysis	GISERA	Jan-19	Mar-19	2018/ 19	$39,500
Task 4	4.1	Final Reporting	GISERA	Apr-19	Jun-19	2018/19	$30,188

2 Variations to Project Order

Changes to research Project Orders are approved by the GISERA Director, acting with authority provided by the GISERA National Research Management Committee, in accordance with the [National GISERA Alliance Agreement](#).

The table below details variations to research Project Order.

Register of changes to Research Project Order

Date	Issue	Action	Authorisation

3 Progress against project milestones

Progress against milestones are approved by the GISERA Director, acting with authority provided by the GISERA National Research Management Committee, in accordance with the [National 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**:
        o   Milestone fully met according to schedule.
        o   Project is expected to continue to deliver according to plan.
        o   Milestone payment is approved.
    *   **Amber**:
        o   Milestone largely met according to schedule.
        o   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.
        o   Milestone payment approved for one amber light.
        o   Milestone payment withheld for second of two successive amber lights; project review initiated and undertaken by GISERA Director.
    *   **Red**:
        o   Milestone not met according to schedule.
        o   Problems in meeting milestone are likely to impact subsequent project delivery, such that revisions to project timing, scope or budget must be considered.
        o   Milestone payment is withheld.
        o   Project review initiated and undertaken by GISERA Research Advisory Committee.

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

ID	Activities / Task Title	Task Leader	Scheduled Start	Scheduled Finish	Predecessor
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Task 2	Engagement	Rick Llewellyn	Oct 2018	Dec 2018	Task 1
Task 3	Comparative Analysis	Neil Huth	Jan 2019	March 2019	Task 2
Task 4	Final Reporting	Neil Huth	April 2019	June 2019	Task 3

Project Schedule Report

Task 1
TASK NAME: Project Establishment
TASK LEADER: Neil Huth
OVERALL TIMEFRAME: July-September 2018
BACKGROUND: This project team includes staff from multiple business units, scientific disciplines and sites. Furthermore, this may be the first project within this problem domain for some team members, and the first contact with our team for many external collaborators. That being the case, a significant level of communication and organisation is required in establishing the project. A subcontract is required to engage a social researcher for detailed industry and stakeholder engagement.
TASK OBJECTIVES: 1) A team meeting to organise project requirements from the various team members, to outline timeframes and staff commitments for each task, and to identify key collaborators and stakeholders for involvement during Task 2. 2) Initial engagement with external collaborators and stakeholders as identified during initial project meeting. 3) Sub-contract with social researcher complete.
TASK OUTPUTS AND SPECIFIC DELIVERABLES: Short progress report outlining outcomes of project meeting and initial engagements with external collaborators.
PROGRESS REPORT:
Objective 1) Team planning meeting has been held with involvement from all South Australian and Queensland CSIRO staff and the external social researcher. Project milestones and required work plans have been discussed and agreed. A list of potential stakeholders across the value chains of four agricultural industries (viticulture, grazing, cropping, forestry) has been developed. Engagement with external stakeholders is scheduled for early November.

Objective 2) Initial contact has been established with members of the technical advisory group for the project as outlined by the Research Advisory Committee. Initial cross-cutting project meeting with GISERA Community well-being and attitudes to conventional gas project (S.11) planned for October to develop synergy between the two projects. Objective 3) Sub-contracting for engaging the social researcher has commenced.

Task 2
TASK NAME: Engagement
TASK LEADER: Rick Llewellyn
OVERALL TIMEFRAME: October – December 2018
BACKGROUND: The project will provide a comparative analysis of issues raised by stakeholders in the Lower South East. This task will need to inform the later analysis by providing a range of risks and opportunities raised by different primary industry sectors and within different levels of supply chains within those sectors. Basic geographical data (e.g. primary industry production and value, ground water use, soils and landscapes) also required for the Task 3 will be need to be collated prior to the comparative analysis.
TASK OBJECTIVE: To provide basic information about the primary industry landscape, primary industry sectors within that landscape, value chains within those sectors, and a structured survey of agriculture, viticulture and forestry stakeholders across these.
TASK OUTPUTS AND SPECIFIC DELIVERABLES: Short progress report outlining the sectors and supply chains and summary metrics about the number of stakeholders engaged within the survey.

PROGRESS REPORT:

The interviews are now complete and audio-recorded interviews are now in the process of being transcribed for analysis and reporting. The sample consisted of 20 interviewees including 19 primary producers stratified into 3 subgroups of cropping, livestock and viticulture and one interview was held with a key local government representative with a strong primary industries overview. Nearly all interviews were conducted within the Wattle Range Council area and involved meeting interviewees individually at a time and place convenient for them such as on their property. A stratified purposive sampling method was used to identify key informants from each of the three sub-groups. Interview questions were structured so that all participants were asked the same questions so that data saturation was more likely to be achieved.

Whilst the sample size does not allow comparisons to be made between sub-groups but it does allow statements to be made about the main group – primary producers of the South East of South Australia. A substantial proportion of the interviewees were engaged in some level of irrigation, including those in the crop and livestock subgroups. Most interviewees had some form of representative role in their industry such as involvement with an industry representative group or had senior roles in key businesses.

Because of the diversity within the sectors e.g. cropping included a wide range of broadacre and more intensive crops, livestock included a range of livestock types including value-added products and irrigated/non-irrigated, and wine involved viticulture and wine production, it was not possible to reduce the sample size within each sector without losing rigour and confidence in the overall findings. It was also difficult to interview equivalent key stakeholders and landowners in the forestry, processing and service sectors because they are typically not based in the target region (e.g. city-based senior representatives of forest owners, factories and major transport companies). If these are to be represented it may involve an additional interview process. Preliminary findings relate to general observations by those surveyed including perceived levels of costs and benefits.