School of Earth Sciences Confirmation Document

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# Project title

Visualisation of Groundwater Risk for Unconventional Energy production

# Summary of Project

A rigorous management framework has been proposed by various NGO, state, commonwealth and industry bodies for the effective management of groundwater risk in unconventional energy production. This study aims to 1) clarify the legislative, calculative and technical requirements for such a system, and 2) undertake a minimal viable product (MVP) development to the point of pre-commercialisation. This will be achieved through review of the legislative, mathematical/engineering and data systems literature together with concurrent code development. The concurrent code development will employ the reactive responsive development philosophy which has been enabled with new data technologies.

# Economic, environmental and/or social benefits

Perhaps the most significant, non-operational issue faced by any large-scale unconventional energy production are those of social license. To be seen to be doing the right thing. However it is also a matter of actually doing the right thing, and being able to manage any issues which may occur when an accident happens. The overlaps here are between effective governance, effective management and effective communication of risks, risk mitigations and make good activities. This process involves collecting a large amount of data on the operational activities, and any impacts of those activities. Data systems are an inevitable component of such a management framework, and today, web-maps and charts are perhaps the most easy way to communicate data. The project aims to integrate all these stakeholders in a way which enables effective communication through maps and charts, thereby mitigating risks, and the economic consequences of such risks should an impairment occur. The intention is that all stakeholders will no-long be flying blind due to failures in data models in the industry.

# Keywords

|  |  |  |
| --- | --- | --- |
| # | Term | Definition |
| 1. | Coal seam water |  |
| 2. | Coal seam gas |  |
| 3. | Risk |  |
| 4. | Framework |  |

# Requirements

## Component 1

The goal of the first aim is to identify;

1. Requirements
2. Gaps
3. Solutions

In the current/proposed legislation and literature on risk management frameworks, which may provide gaps or challenges to the successful deployment of a framework.

As interpreted here, the high level requirements for such a framework are:

* System for managing and monitoring risk
* System for integrating data relevant to management and monitoring of risk

## Component 2

The goal of the second aim is to test and develop a Minimum Viable Product (MVP) which enables services to be provided as a part of this management framework. Included within the MVP are arcitechtural considerations regarding integration of disparate data model requirements, and a visualisation of the MVP services to demonstrate the capability of the services.

A reactive development philosophy has been used for the development process (Reactive 2014). This philosophy embraces the concept of continual data model improvement and change at minimal effort.

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# References

Reactive. 2014. “The Reactive Manifesto.” <http://www.reactivemanifesto.org/>.