UK Carbon Capture and Storage Demonstration Competition

UKCCS - KT - S6.4 - OS - 001
Outline Solution Risks of Delay to Programme

April 2011
ScottishPower CCS Consortium
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IMPORTANT NOTICE

Information provided further to UK Government’s Carbon Capture and Storage (“CCS”) competition to develop a full-scale CCS facility (the “Competition”)

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1. Outline Solution Risks of delay to Programme

During the Outline Solution development phase of the project, risks were generated in a series of workshops, utilising established practices for Risk Management (as defined in the HM Treasury ‘Orange Book’, ‘PRAM’). A register was developed to capture these risks.

At that time, the Consortium Risk Register captured only a single value of probability and a single assessment of impact. Differentiation between the types of impact (into schedule, cost and reputation) came later in the development of the Consortium Risk Register.

This summary report presents the five risks that were assessed qualitatively as having the greatest risk to programme at the Outline Solution phase of the project.

The mitigation strategies for these risks were part of the FEED development and are not presented in this summary.

1.1 Major Accident

1.1.1 Risk Description

This risk is concerned with the risk of a serious accident or incident involving personnel, visitors or members of the public.

The risk included a ‘Major Accident to the Environment’ (MATTE) in which fluid is released from any part of the carbon capture and storage facilities, and a ‘Major Accident Hazard’ (or equivalent under the Pipeline Regulations or Offshore Installations Regulations) in which there is catastrophic failure of major items of equipment or buildings.

1.1.2 Consequences

A major accident could lead to some or all of the following consequences:
- Death or injury;
- Damage to plant or equipment;
- Damage to third party buildings and property;
- Additional inspections and testing;
- Remedial work;
- CCS operations shut down whilst investigations and remedial work is carried out;
- Legal costs and fines;
- Damage to the reputation of one or all of the consortium members; and
- A significant change in public and / or Government support to the extent that the viability of long term CO₂ capture and storage is jeopardised.

1.2 Limited Resources

1.2.1 Risk Description

This risk concerns the possibility of insufficient numbers of suitably qualified and experienced resources available to the project. As the UKCCS Demonstration Competition contains novel aspects in the
development of the design, there is a limited resource of people who are knowledgeable in the various technical aspects. These limited resources may be committed to other CCS development projects, particularly if there is a continuity gap in funding / resource utilisation. This risk is exacerbated in some technical application areas of the project where the general turndown in activity has resulted in skills moving either out of the industry or transferring to external markets.

**1.2.2 Consequences**

Insufficient suitably qualified and experienced resources' being available was assessed as having the following consequences:

- An extension of the FEED programme, or, if the programme is protected, FEED not fully addressing project component functionality, process development and major component definition.
- Time or cost inefficiencies at the implementation stage, best value not being achieved in design implementation or design risk carry-over from FEED and the loss of Front End Loading advantage;
- Use of inexperienced / inappropriate resources resulting in a risk to quality and programme.
- Completeness and standard of response to stakeholder queries;
- Insufficient resources will impact project delivery and has the potential to prevent parallel development across project sub-systems resulting in late design changes; and
- Wage escalation with a resulting increase in the base cost for programme delivery.

**1.3 Stakeholder Objections**

**1.3.1 Risk Description**

There is potential for stakeholders to raise objections to the project, e.g. statutory consultees objecting during the planning consents process, public consultation activities and specific interest and action groups. Objections may be directed at component parts of the project or to periods of the project lifecycle across the construction, operational and decommissioning phases. The risk focused on potential for objections relating to environmental, social and safety issues.

**1.3.2 Consequences**

The main impact on the project resulting from stakeholder objections are programme delays ranging from the time required to respond to specific technical queries; to much longer scale involvement in a Public Inquiry.

Potential secondary consequences resulting from stakeholder objections include reputation damage, cost increases, damage to community relations, investment uncertainty and loss of technical continuity within the project team.

**1.4 Operating with a CO₂ inventory**

**1.4.1 Risk Description**

Processing and transportation of CO₂ is outside the normal experience of existing Consortium Operations staff. Staff operating the transportation system from Longannet to Goldeneye, and the injection facilities and wells on the offshore platform, are mostly familiar with handling hydrocarbon gases which have properties and behaviour quite different to CO₂. For these reasons, measures need to be put in place to...
ensure that Operators are suitably aware of the properties of CO₂ and the associated appropriate emergency response actions, which may differ from those taken for typical hydrocarbon events.

1.4.2 Consequences

The consequences of this risk being realised include safety related incidents within the End-to-End CCS chain, resulting in death or injury.

An increase in anticipated OPEX expenditure would also be expected.

1.5 Laydown areas & logistics (Longannet)

1.5.1 Risk Description

This risk concerns the laydown areas available adjacent to the Longannet site being insufficient for the arrival of bulk materials and equipment as well as the difficult logistics of movement of goods to the construction area through the local community and Longannet site.

The situation could be exacerbated if there are other projects taking place on the site at the same time or if there is pressure from local residents, the condition of the road network, limited capacity on rail network, etc.

1.5.2 Consequences

The consequence of a lack of available laydown and the difficult logistics involved with working at Longannet site could result in the following:

- Potential for additional cost for double handling of materials and rental of local off-site land or facilities.
- Potential restriction on the size and weight of loads that can be transported on public access or site roads.
- Potential programme delays