



Peterhead CCS Project

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Executive Summary

This document details the changes to the Bidders financial plan for the Peterhead Carbon Capture and Storage (CCS) Project that occurred during the FEED Period, and an explanation of the reasons for such change. A change in the financial plan is defined in the FEED Agreement as:

- a) material changes including changes in the financial capacity of the Providers of Finance identified in the Financial Plan or other material changes in the regulatory or general economic position impacting on the ability or willingness to finance the Bidder's Project or the expected willingness of such potential Providers of Finance or that has an adverse Impact on Insurance to accept the Bidder's proposed commercial proposition to Providers of Finance; or
- b) material changes to the Financial Plan (being either the sources or types of source of finance with any Impact on Insurance or the process for approaching potential Providers of Finance); or
- c) any other event that might reasonably be expected to have a material adverse, or a material positive, impact on the Financial Plan or the Bidder's expectation of externally financing the Bidder's Project successfully.

The report details the management of financial planning to the extent possible without releasing Bidder's confidential information relating to the Bidder's wider approach to financing strategies beyond the specific context of the Bidder's Project.

Her Majesty's Government (HMG) Autumn Statement and Statement to Markets on 25 November 2015 regarding the Carbon Capture and Storage Competition confirmed that the £1 billion ring-fenced capital budget for the Carbon Capture and Storage Competition was no longer available. This meant that the Competition could not proceed on the basis previously set out. In accordance with the agreements with DECC, the Peterhead FEED was completed as planned in December 2015. The Government and Shell are committed to sharing the knowledge from UK CCS projects, and this Key Knowledge Deliverable represents the evolution and achievement of learning throughout the Peterhead FEED and Shell's intentions for the detailed design, construction and operating phases of the project at the time of HMG's Statement to Markets.



1. Introduction

1.1. Project Introduction

The Peterhead CCS Project aims to capture around one million tonnes of CO₂ per annum, over a period of up to 15 years, from an existing combined cycle gas turbine (CCGT) located at SSE's Peterhead Power Station in Aberdeenshire, Scotland. This would be the world's first commercial-scale demonstration of CO₂ capture, transport and offshore geological storage from a (post combustion) gas-fired power station.

As the Goldeneye gas-condensate field has ceased production, the production facility will be modified to allow the injection of dense phase CO₂ captured from the post-combustion gases of Peterhead Power Station into the depleted Goldeneye reservoir.

The CO₂ will be captured from the flue gas produced by one of the gas turbines at Peterhead Power Station (GT13) using amine-based technology provided by Cansolv (a wholly-owned subsidiary of Shell). After capture the CO₂ will be routed to a compression facility, where it will be compressed, cooled and conditioned for water and oxygen removal to meet suitable transportation and storage specifications. The resulting dense phase CO₂ stream will be transported direct offshore to the wellhead platform via a new offshore pipeline which will tie in subsea to the existing Goldeneye pipeline.

Once at the platform the CO₂ will be injected into the Goldeneye CO₂ Store (a depleted hydrocarbon gas reservoir), more than 2 km under the seabed of the North Sea. The project layout is depicted in Figure 1-1 below:



Figure 1-1: Project Location



2. Bidder and Authority financing during FEED

The FEED Agreement between the Authority and Shell was signed in February 2014 on behalf of Shell UK Ltd. (SUKL), with any funding requirements for Shell's financial commitments covered by SUKL's own cash reserves or via intra-group lending where necessary.

Under the terms of the FEED Agreement, the Authority financially contributes towards the Shell FEED costs up to the contractualised Total Maximum Qualifying Amount (TMQA), reimbursed to Shell over the payment periods reflected in the FEED Agreement. Retention clauses were also included in the FEED Agreement, whereby the Authority may withhold financial payments due to Shell's inability to submit certain key knowledge deliverables on time.

A guarantee was also provided by a senior Shell entity for SUKL's:

- performance of its obligations under the FEED Agreement, i.e. to carry out the front-end engineering and design of the CCS project and
- financial obligations, i.e., SUKL's ability to fund the work required to be carried out under the FEED Agreement
- indemnities for loss suffered by DECC as a consequence of a breach by SUKL of its contractual commitments under the FEED Agreement, and
- for all costs incurred in enforcing the guarantee in the event of default by SUKL.

The liability under the PCG was limited in time and duration.

3. Financing changes during FEED

Both Shell and the Authority have financed the FEED Agreement as described in Section 2 above, with no deviation or requirement to enforce the retention clauses due to Shell's inability to deliver knowledge deliverables as per the agreed schedule in the FEED Agreement. A demand upon the guarantee has also not been required during the FEED phase.

Shell has submitted four (4) invoice reports for FEED cost recovery from the Authority at the time of Bid Update preparation, with all recoverable costs being paid on time and in line with Shell's submission to the Authority. The 5th invoice report will be submitted immediately after the submission of the final FEED Agreement deliverables, due by 18th December 2015, and covering the recoverable costs incurred in the payment period from June 2015 to December 2015. Shell thanks the Authority for the clear guidance received for preparation of invoice reports, and for the timely expediting of payment when invoices were presented.

For the Project Contract, it is Shell's intention to deliver the project using a different legal entity with a different financing approach, albeit with Shell UK Ltd as the main shareholder in a new subsidiary. The next phase of the project is discussed in more detail in subsequent sections of this report.

3.1. New Special Purpose Vehicle – Peterhead Carbon Capture and Storage Limited.

A cross functional review was undertaken within the Peterhead CCS Project to determine the most appropriate legal structure, both for the Project as it stands in its current form with Shell acting as a single Developer, and also in the context of future equity dilution. On the basis of this review, the Project team proposed that a Special Purpose Vehicle (SPV) be utilised and formed as soon as possible, with a view to using this SPV as the legal entity for a fully Incorporated Joint Venture in the event that an appropriate Joint Venture partner has been identified and agreements executed.



3.2. Options considered for formation of SPV

4 options were considered as part of the functional review, as represented below.

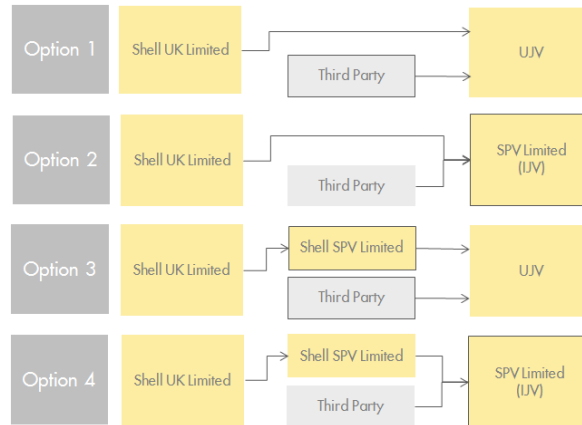


Figure 3-1: Options considered for formation of SPV

Option 2 was selected as the appropriate route principally for the following reasons;

1. It fulfils the primary objective of isolating the Project from the rest of Shell U.K. Limited. It also fulfils DECC’s own preference for a legal entity which is able to stand alone, protected from any wider financial exposure of the business.
2. It is convenient for dilution, as the Project Assets are already separated from the rest of the SUKL’s business at the point of sale.
3. Although there is potential for tax leakage within the SPV given that losses can only be offset against profits earned from the Project, the option is tax efficient for divestment purposes. The sale of an equity share of SUKL’s holding in the IJV will be exempt from tax, as no physical assets are held on the SUKL Balance Sheet.
4. The Option is less complex, and therefore likely to be easier to administer than the other Options which involve an SPV.

As a result of the above, Shell incorporated a new company at Companies House on 10th August 2015, called Peterhead Carbon Capture and Storage Limited (PCCSL).

3.3. Summary of functional reviews on SPV formation

1. Legal

- a) The principle advantage of Options 2-4 over Option 1 is that they isolate the Project from the rest of SUKL’s business, providing additional protection to liabilities outside of the CCS chain including against third party claims. b) As the SPV will be run as a legal entity with assets but minimal dedicated staff (other than directors), an Operating Services Agreement (OSA) with SUKL will be required. DECC have confirmed that this agreement will be deemed to be a Key Sub-Contract (KSC) under the Project Contract, and therefore subject to ‘flowdown’ of the same terms and conditions as the Project Contract. Although Option 1 requires no change in the contracting and governance structures as envisaged in Shell’s Bid to DECC and are potentially the simplest, this is not on its own considered to be sufficiently compelling a reason to retain this Option given the benefits set out in a) above.



2. **Risk and Insurance (R&I)**

- a) Options 2 and 4 (IJV Options) provide additional protection with regards to liabilities outside of the CCS chain. One of the largest uncertainties concerns the quantum of the liability exposure and the potential inability to transfer this exposure to the insurance market. Hence the RI preference is for an IJV structure that enables liabilities to be limited, even if this is ultimately only those liabilities outside of the CCS chain. Option 4 is the least favourable of the IJV Options.

3. **Tax**

- a) Option 1 presents the most advantageous tax position as the Project would form part of an existing outside ring fence (“ORF”) trade and therefore capital allowances and tax losses could be claimed within the existing SUKL ORF tax pool. Furthermore, unused terminal losses from decommissioning would be available to carry back to 2002 against inside ring fence (“IRF”) [upstream] taxable profits with relief at 50% as opposed the ORF rate of 20% (from 1 April 2015). This will not be possible for Options 2-4, as the Goldeneye Assets would never have been used for IRF purposes. However for divestment, Option 2 is preferable over Options 1 & 3 as no tax charge will crystallise upon the sale of SUKL shares in the IJV by virtue of the UK substantial shareholding exemption for chargeable gains. Whereas in the UJV Options 1 & 3, a share of assets physically held on the Balance Sheet will need to be transferred to any new partner.

4. **Treasury**

- a) The simpler the legal structure, the less administration will be required, and therefore Option 1 is deemed preferable. However Options 2 and 3 are still workable. Option 4 is less so, given the 2-tier SPV structure where issues of ‘trapped cash’ releasable upon sufficient retained earnings are likely to be pronounced.
- b) Treasury is relatively neutral to all other considerations. Irrespective of which Option is selected, DECC have confirmed that a specified senior legal entity will be required to provide a PCG, along with a PCG from any investor, to support the Project Contract. This PCG requirement has been endorsed by the respective Board Director on behalf of Shell’s Treasury function.

5. **Financial Accounting and Reporting**

- a) For reporting purposes, Option 2 is clearly preferable over the other options as a single set of Financial Statements will be made available, both as a Statutory requirement, and also to meet DECC’s own requirements for the Competition.
- b) For accounting purposes, Option 2 carried a higher risk than Options 1 & 3 of 100% consolidation of the Project assets on Shell’s balance sheet, if it is demonstrated that Shell has effective control over these assets after completion of any equity dilution. Close attention was given to this issue in the early drafting of the joint venture Shareholders Agreement, with the risk of 100% consolidation judged by Shell Group Accounting experts to be low.

6. **Portfolio Flexibility**

- a) On the basis of discussions to date with potential partners, an IJV (either as Option 2 or 4) was deemed to be the vehicle of choice. Option 1, in the context of a portfolio transaction, is not an attractive option as it would require the assignment of assets, rights and obligations



including consents, licenses and permits to the third party buyer. It is preferable that this assignment be done once, to the SPV, and in advance of any sale to an investor.

7. DECC

- a) DECC's ITPD documentation is based on a Consortium design that approximates Option 2, and their preferred basis of their Project Contract drafting.

4. Financing Options for SPV

4.1. Shell equity financing

It is proposed to fully fund PCCSL via equity from SUKL for the amount of Shell's capital investment in the future phases of the project. The amount reflects the commitment of SUKL as shareholder of PCCSL under a capital contribution agreement with PCCSL. DECC will be named as a party on the capital contribution agreement in order to allow the Authority to enforce the funding of the SPV, as failure to fund constitutes a default event under the Project Contract with DECC.

The amount of required equity is calculated with respect to expected capital expenditure plus an additional reserve for emerging costs above the Emerging Costs target, which are recoverable over time through the Contract for Difference (CfD) payments. Additional funding will be required to provide working capital for delays between expenditure incurred and grant recovered. Equity will be contributed as required, with the intent of limiting cash held in the SPV.

Debt funding of PCCSL was considered and ultimately rejected. The project is partially funded by a government grant and intended to provide a fixed rate of return. Any tax deductibility of interest expense would lead to minimal reduction in the strike price, would be essentially value neutral as far as the SPV is concerned, would grossly complicate the funding arrangements, and activate certain additional obligations in the Project Contract that do not warrant the minimal value gained. The Bidder has also been mindful of the Authority's own representations that the 100% equity funding in previous Bids had attracted positive evaluation.

5. Insurability of risks and conditions/terms of insurance

The insurance strategy for the Peterhead CCS project has been documented via a separate Key Knowledge Deliverable (Insurance Plan, KKD 11.148), and presented to the Authority in the earlier stages of FEED. The main features of the Insurance Plan are:

- Shell will, in consultation with the Authority, put in place a robust and cost-effective insurance programme to provide appropriate cover for both the Construction and Operational Phases of the CCS project. Shell envisage only placing insurance with insurers that meet minimum financial security requirements (being Standard and Poor's (A-) or equivalent by other rating agencies).
- The cost of risk, often materialising as insurance spend, during the lifecycle of a CCS project will present a significant cost to the venture. Implementation of a specific Project Risk Engineering Strategy is planned to reduce the overall "cost of risk" to the CCS project venture through effective Risk Engineering techniques including a Design Phase Risk and Insurance Review (DPRIR), and Risk/Insurance Underwriting and Loss Control Surveys.
- A DPRIR will be conducted to identify and review the hazards, risks and risk controls associated with the design, construction (modification), commissioning, operation, closure and decommissioning and the post-decommissioning phases of Shell activities associated with



the proposed Peterhead CCS project. The principal focus is on the various loss exposures for property damage, liability and production interruption including well control liabilities.

- The Insurance Plan lists various known and identified risks through various stages of the project life and provides assessment and possible insurance solutions or explains lack of solutions via standard insurance risk transfer methods.
- Insurance cannot be procured upfront for the whole lifecycle of the project, thus availability, price and terms and conditions of coverage may vary over time, especially if claims occur. A key constraint of insurance for CCS projects is the term of available insurance as insurance policy periods are generally short term. This means that policies are issued for up to a maximum number of 2/3 years.
- Separate insurance solutions are required in order to facilitate the management of risk for the full CCS chain, defined over 4 key phases: 1) Design and Construction, 2) Operation, 3) Closure and Decommissioning, and 4) Post-Closure monitoring and maintenance.
- Coverage may be very expensive and/or restricted for the “novel” aspects of the project (CCS liability, financial risks of repurchase of carbon credits, subsurface migration/pollution, etc.).
- Until the regulatory regime is defined, it is uncertain what the extent of liability for CO₂ release is. At present, no requirement for re-purchase of credits or financial penalties is expected in case of accidental CO₂ release from the reservoir. Protection against repayment of carbon credits (European Union Allowances (EUAs)) is currently uninsurable.



6. Glossary of Terms

Term	Definition
CCGT	Combined Cycle Gas Turbine
CCS	Carbon Capture and Storage
CfD	Contract for Difference
CO ₂	Carbon Dioxide
DECC	Department of Energy & Climate Change
DPRIR	Design Phase Risk and Insurance Review
EUA	European Union Allowances
FEED	Front End Engineering Design
GT13	Gas Turbine 13
HMG	Her Majesty's Government
IJV	Incorporated Joint Venture
IRF	Inside Ring Fence
ITPD	Invitation To Participate in Discussions
KKD	Key Knowledge Deliverable
KSC	Key Sub Contract
ORF	Outside Ring Fence
OSA	Operating Services Agreement
PCCSL	Peterhead Carbon Capture and Storage Limited
SPV	Special Purpose Vehicle
SSE	Scottish and Southern Energy (SSE Generation Limited)
SUKL	Shell UK Limited
TMQA	Total Maximum Qualifying Amount
UJV	Unincorporated Joint Venture
UK	United Kingdom



7. References

- [1] Insurance Plan KKD 11.148