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Date: 31 July 2015

Dear colleague,

Consultation on the ex-post efficiency review of National Grid Gas Transmission's Milford Haven pipeline project

The Milford Haven pipeline project is the UK's largest new high-pressure gas pipeline and its construction has spanned over a number of years. Funding of such projects is provided through revenue allowances under the price control regime[1]. In 2006 in our Transmission Price Control Review 4 (TPCR4) we indicated that due to the uncertain nature of the expenditure we would rely on ex-post efficiency reviews to determine what should be counted as efficient and economic spend[2].

We have now undertaken our ex-post efficiency review of the Milford haven pipeline project.

We are seeking your views on the proposed findings of our review and our proposal not to make any adjustment to allowed revenues (other than a small correction for spend covered elsewhere). We ask that responses are sent to Gas.TransmissionResponse@ofgem.gov.uk by 18 September 2015.

Below we provide more information about the project, the funding arrangements, the timing of our ex-post efficiency review and our findings. In undertaking this review we are seeking to ensure that consumers are protected from paying for any uneconomic expenditure and to settle an outstanding item from the RIIO-T1 price control for the licensee concerned, National Grid Gas Transmission (NGGT).

The Milford Haven pipeline project

NGGT received capacity signals for incremental entry capacity at Milford Haven at two separate capacity auctions in late 2004. The signals were triggered due to the requirement of two Liquefied Natural Gas (LNG) terminals at Milford Haven (Dragon and South Hook) to connect with the NGGT's gas transmission network. The project was built to link the LNG terminals with the gas transmission network at Tirley in Gloucestershire. The requirement was to deliver entry capacity of 650 GWh/day by October 2007 and 950 GWh/day by January 2009. The pipeline was constructed mainly between 2006 and 2012, with a peak in construction during 2006-2009. The works involved installing:

[1] Please refer to par. 3.15-3.29 of our TPCR4 Rollover Final proposals for additional information (https://www.ofgem.gov.uk/ofgem-publications/53953/tpcr4rolloverfinalproposals.pdf).
[2] Please refer to par. 7.20-7.25 of our TPCR4 Final Proposals (https://www.ofgem.gov.uk/ofgem-publications/56158/16342-20061201tpcr-final-proposalsinv71-6-final.pdf).

- 320km of new 1200mm diameter pipeline;
- A new compressor station (at Felindre) and new units plus modifications at two existing compressor stations (at Wormington and Churchover);
- Two major Pressure Reduction Installations (PRI) at Cilfrew and Tirley; and
- A smaller PRI in one of the pipeline sections.

The project was subject to delays and was finally completed in 2012/13. The total project costs reached £1.15bn[3] in 2009/10 prices[4], exceeding the TPCR4 allowed costs by £241m[5].

At the time the project was seen as critical to maintaining gas security of supply and NGGT was under pressure to deliver the project against tight timescale.

TPCR 4 arrangements – Allowances, incentives and ex-post efficiency review

Ahead of the TPCR4 Final Proposals[6], NGGT submitted a revised cost forecast for the Milford Haven pipeline project. This forecast represented an increase of £86m against the previous projection of £822m. Due to the late provision of the information, it was not possible to interrogate these revised cost estimates in an appropriate manner.

Given the special circumstances of this project, we decided in our TPCR4 Final Proposals to increase the project's allowance to £908m. This comprised the £822m of ex ante allowances and £86m of 'logged up costs'. At that time, we proposed to:

a. Ring-fence the additional logged up costs of £86m and, subject to an efficiency assessment, ignore the implied overspend from the operation of the capital expenditure (capex) incentive and include it in the Regulatory Asset Value (RAV) from 1 April 2012. This included an allowance for financing costs and depreciation incurred during the period of logging-up;
b. Apply the capex incentive regime to any expenditure above the £908m, which means that NGGT would bear 25% of any overspend, whereas the remaining 75% is borne by the consumer; and
c. Place significant emphasis on our ex-post efficiency review of costs and volumes to determine efficient and economic spend.

In July 2006 we introduced an aditional delivery incentive[7] on NGGT. The purpose was to address potential NGGT buyback liabilities under the provisions of the Uniform Network Code if NGGT was unable to provide capacity which it had sold on a firm basis. Given the potential for disruption to Liquefied Natural Gas (LNG) supply chains the costs of this disruption could be relatively large. The incentive capped NGGT's exposure to buy-back liabilities to £12.5m (in 2004/05 prices) in each formula year. Any remaining buyback liability would have been recovered across all shippers and consumers. Ultimately however, NGGT was not exposed to any buy-back costs as it delivered the capacity on time.

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[3] In RIIO-T1 NGGT was allowed a further £6m for the pipeline's ongoing environmental monitoring and aftercare until 2019 to meet environmental requirements. This amount is not included in the overspend.
[4] Unless stated differently, all figures are reported in 2009/10 prices.
[5] The £241m total overspend on Milford Haven was notified to us by NGGT through the annual reporting process and consists of £21m overspend in TPCR-3 and £225m overspend in TPCR-4.
[6] For more information please refer to our TPCR4 Final Proposals (https://www.ofgem.gov.uk/ofgem-publications/56158/16342-20061201tpcr-final-proposalsinv71-6-final.pdf)
[7] For more information please refer to our Incentive arrangements for the provision of NTS entry capacity at Milford Haven (https://www.ofgem.gov.uk/ofgem-publications/56270/14623-11806.pdf)

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TPCR4 Rollover – Financial adjustments

In line with our TPCR4 Final Proposals, we decided in our TPCR4 Rollover[8] Final Proposals in 2011 to provisionally include the £86m in NGGT's TO RAV in 2012-13. The TPCR4 overspend was included in the RAV following the application of the TPCR4 capex incentive mechanism[9]. As a result, NGGT has received full funding for return and depreciation for these two elements of the project's costs.

We note that the effect of applying the capex incentive mechanism to the TPCR4 overspend has **reduced NGGT's allowances by £71m[10]**.

The RIIO-T1[11] price control

In our TPCR4 Final Proposals we said we intended to undertake an ex-post efficiency review of the Milford Haven pipeline project at the time of the next price control, i.e. during RIIO-T1 (2011/12). However, due to delays to the completion of major elements of the project our review of the project had to be deferred[12]. The works were not completed until October 2012, just before our RIIO-T1 Final Proposals[13] were published in December 2012.

Therefore, we deferred the ex-post efficiency review, until all major assets were operational and NGGT had undertaken its internal post completion appraisal process.

Our assessment of the Milford Haven pipeline project

Over the past 18 months we have engaged with NGGT in order to undertake the ex post efficiency review.

a. Our approach (process) for the ex-post efficiency review

Our ex-post efficiency review involved the following steps:

a. Assessment of information received from NGGT during TPCR4 and RIIO-T1. This included re-evaluation of information, made available during RIIO-T1, following visits to sections of the pipeline and critical locations of the project[14], such as the Tirley PRI and the Wormington compressor station;

b. Appointment of financial auditors and engineering consultants. Their respective roles were:

   Financial auditors (Grant Thornton) – Their role was to ascertain project costs at a high level of granularity down to the level of individual contracts for the works, procurement activities, external project management costs, etc. We note that Milford Haven project costs were reported to us during TPCR4 within the annual regulatory

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[8] The TPCR4 Rollover year was a one year extension of the TPCR4 period prior to the implementation of the RIIO-T1 framework in April 2013.

[9] The calulations are explained in more detail within Chapter 11 of the GT1 Price Control Financial Handbook (https://www.ofgem.gov.uk/sites/default/files/docs/2014/11/gt1_handbook_-_v1.3_final_without_mark_up_0.pdf)

[10] The Milford Haven overspend consists of £21m overspend in TPCR-3 and £225m overspend in TPCR-4. The £71m capex incentive deduction is calculated as per Special Condition C8B of NGGT's licence as it then was.

[11] The RIIO model (Revenue = Incentives + Innovation + Outputs) is our new networks regulatory framework designed to drive real benefits for consumers; providing companies with strong incentives to meet the challenges of delivering a sustainable energy sector at a lower cost than under our previous approaches.

[12] The reason for the delays to the project was the rejection of NGGT's planning application for the Corse PRI in 2007. NGGT had issued a notice of Force Majeure (FM) in relation to the construction of the PRI at Corse. Following a lengthy process of reapplications and appeals, the planning permission to construct the PRI was approved at Tirley. NGGT was unable to provide the full capacity even by February 2012. (http://www.gasgovernance.co.uk/sites/default/files/AMIL.pdf)

[13] The announcement of the completion of the Tirley PRI can be seen in the following link: http://www2.nationalgrid.com/mediacentral/uk-press-releases/2012/

[14] The visits allowed us to have a better understanding of the events that took place during the project.

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reporting package (RRP). However, this did not provide us with sufficient detail.

Engineering consultants (Rune Associates/Penspen) – Their role was to assess NGGT's contracting strategy, project management and verify the impact of wet weather, protestor action and local authority consenting on the project's costs.

We are publishing the Financial Auditors' and Engineering Consultants' reports alongside this letter on our website.

c. Request and review of additional evidence and reports from NGGT following the completion of their own internal post-completion appraisal reports.

Further to above, it is important to highlight that our review entailed obtaining and scrutinising evidence and documents, including:

- NGGT board papers – to provide visibility on the governance processes and the strategy adopted during all the phases of the project;
- Individual contracts – to provide understanding on the incentives placed on the contractors employed by NGGT to deliver the works efficiently;
- Project managers' reports – to provide understanding of the decisions made in real time during the project's execution and the recommendations made to NGGT's management;
- Compensation events reports – to provide understanding of the financial and time impact of unforeseen events during the project's execution and NGGT's efforts to control costs through negotiation with its contractors;
- Tender documents, including NGGT's assessment of contractors' proposals – to provide understanding of the efficiency of NGGT's processes to deliver the works, choice of qualified contractors and identification of risks in delivering the project;
- Investment appraisal and Close Out reports and "Lessons learned" documents – to understand how NGGT attempted to improve the delivery of this project (in real time) and subsequent major projects;
- Invoicing and payments records – to understand the timeliness of the financial transactions and the financial exposure of both NGGT and its contractors during the delivery of the project, especially during the peak construction period of 2007.

b. Our findings

Our review found that:

- NGGT utilised resources in order to deliver the project in a timely manner. This relates primarily to the attention paid to delivery of the capacity obligations, especially for the first 650 GWh/d by October 2007;

- The first capacity signal required only the installation of 122km of new pipeline. The second capacity signal in December 2004 meant that the scope of the project had to be expanded and required construction of significantly more assets. This included an additional 200km of pipeline, constructing a new compressor station at Felindre and reinforcement on two existing compressor stations to be completed within the existing timeframe, i.e. by October 2007;

- The changes due to the second capacity signal are evident in the choices made by NGGT at the early stages of the project. Such decisions include additional tenders, acceleration of works, utilising a mix of cost reimbursable and target cost contracts[15] to deliver the works. However, not all decisions appear to be accompanied by comprehensive justification;

[15] Other options could have been target cost and lump sum contracts.

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- Through its tenders' prequalification process NGGT had identified several contractors to deliver the works related to the pipeline sections. However, NGGT did not utilise all of them, as NGGT considered that those employed could deliver the project;
- External factors, such as wet weather, protestor action and difficulties in getting the relevant consents from local authorities for the project works influenced the delivery of the project by increasing project costs and causing delays.

The consequences of these findings were:

- Project costs increased above NGGT's own initial sanctioned values in all areas of works, including the three pipeline sections and the compressor station works;
- The overall TPCR4 overspend for the Milford Haven pipeline amounts to £255.9m[16];
- The contracting strategy meant that NGGT's ability to control the escalation of costs[17] was limited, especially in the cost reimbursable contracts[18]. The reason is that some risks[19] and their impact were not acknowledged adequately. As a result, the contracts in place could not sufficiently mitigate the impact of the risks on the costs. Hence, the escalation of project costs was more prevalent in those contracts, once risks materialised;
- Employing a higher number of contractors would have reduced the strain on the resources of those already involved in the works. Upward pressure on the costs could have been less if the workload was spread and delivered by more contractors. The financial impact of this is higher in the contracts that lacked financial incentives for the contractors;
- Some decisions made during the project's execution, e.g. related to contracting strategy, would have been different in hindsight;
- A potentially different route on one of the pipeline sections could have resulted in lower costs.

c. Appraisal of the project's overspend

As a result of these findings, our review indicates that project costs of up to £200m could have been avoided in hindsight. However, a specific figure of avoided costs cannot be defined because:

- The overspend is spread across all contracts;
- Different factors contributed to the overspend across the various contracts;
- The cost reimbursable contracts do not allow us to determine specific savings and estimations are made using benchmarks from other contracts.

d. Financial adjustments and relevant timings

Special Condition 5A of NGGT's licence and Chapter 11 of the RIIO-GT1 Price Control Financial Handbook provide a mechanism for us to make adjustments to allowances that have been set under legacy price control arrangements.

[16] In our TPCR4 Rollover Final Proposals we identified that the overspend was £241.4m. Following the ex post efficiency review this was increased to £255.9m, i.e. by £14.5m. This reflects projects' costs that should have been included in the Milford Haven project. Our consultants' reports provide more information.
[17] The escalation is measured by comparing the final project cost to the sanctioned value.
[18] For more information please refer to our Engineering Consultants' report.
[19] Such as the level of rainfall and events causing delays.

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In light of the above findings and in accordance with the funding arrangments for the Milford Haven pipeline project as stated in our TPCR4 Final Proposals, we propose to:

- Make no adjustments to the £86m of logged up costs and they will be maintained in the RAV;
- Re-affirm the application of the capex incentive mechanism to the TPCR4 overspend. This means that:
    - We maintain the reduction of £71m undertaken in the TPCR4 Rollover Final Proposals in 2012/13;
    - We will make an additional minor reduction of £4m in NGGT's 2015/16 revenues to account for the additional £14.5m in project costs that has not previously been captured within the capex incentive mechanism. This will be done through a legacy price control adjustment[20] in accordance with the procedure specified in the RIIO-GT1 Price Control Financial Handbook. As a result, the overall reduction applied under the capex incentive mechanism in relation to the project's overspend will amount to a total of £75m.

Applying the capex incentive mechanism in accordance with our stated TPCR4 funding arrangements for the project achieves the benefit of protecting consumers from high levels of overspend, while incentivising the efficient delivery of high capex projects. Also, the process of its application preserves regulatory certainty as it does not modify the framework set in TPCR4.

Given the findings of our review that there was some scope for NGGT to have delivered the project more cheaply it would not be appropriate to increase NGGT's allowed revenues. Equally, given the particular circumstances at the project and the difficulty in judging these issues with hindsight, we haven't identified costs that were demonstrably inefficient or unnecessary[21] that would warrant disallowing either the 'logged up costs' or TPCR4 overspend.

Consultation questions

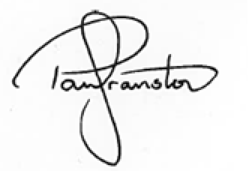
Question 1: Do you have any comments on our approach for the ex post efficiency review of the Milford Haven pipeline project?

Next steps

We welcome the views of interested parties in relation to any of the matters set out in this document. Responses should be sent to Gas.TransmissionResponse@ofgem.gov.uk no later than 18 September 2015. Unless clearly marked as confidential, responses will be published on our website.

We will publish our decision in November 2015.

Yours sincerely,



Paul Branston
Associate Partner, Gas Networks

[20] As provided for under Special Condition 5A of NGGT's licence.
[21] In our TPCR4 Final Proposals we reserved the option to disallow costs from entering the RAV if they are demonstrably inefficient or unnecessary.