

Transmission licensees,  
generators, suppliers and  
consumer groups

Direct dial: 020 7901 7223  
Email: [kersti.berge@ofgem.gov.uk](mailto:kersti.berge@ofgem.gov.uk)

Date: 16 December 2014

Colleague,

### **Decision on our assessment of the Caithness Moray transmission project**

- We are approving an expenditure allowance of £1,118 million (2013/14 prices) for SHE Transmission to build the Caithness Moray transmission project.
- This is £105 million less than SHE Transmission's most recent cost estimate but £56 million more than we proposed in our October consultation.
- We plan to update SHE Transmission's revenue allowance for the project in January next year. This will affect 2015/16 transmission charges and increase the network component of domestic electricity bills by around £1.
- We are reducing the threshold at which SHE Transmission can apply for reconsideration of efficient costs if specific events occur. It will be set at a 5% cost increase rather than 10% for this project only.
- We are consulting on modifying SHE Transmission's licence to implement our decision.

This decision on the Caithness Moray project follows our decision on the need for the project<sup>1</sup> and our October consultation on efficient costs for the project.<sup>2</sup> Our view on the efficient cost of the project is £1,118 million, which is £105 million less than SHE Transmission's most recent cost estimate of £1,223 million. However, it is £56 million more than our view in October. This change is based on responses to the consultation, and new information from SHE Transmission.

We are consulting on modifying SHE Transmission's electricity transmission licence to implement this decision. A Notice under section 11A(2) of the Electricity Act 1989 and the proposed modifications have been published alongside this letter. We ask that responses to that consultation are sent to [SWW@ofgem.gov.uk](mailto:SWW@ofgem.gov.uk) by 16 January. Once we've reached a decision on that consultation, we will update SHE Transmission's 2015/16 price control revenue accordingly in January.

The remainder of this letter explains our decision and reasons.

### **The Caithness Moray project**

SHE Transmission is building the Caithness Moray project in the north-east of Scotland. It will deliver an additional 795MW of transmission capacity across the transmission system boundary B0, and 850MW across boundary B1. The additional capacity is needed by 2018 to allow around 1.2GW of renewable generation to connect.

The project has two key parts: a high voltage direct current (HVDC) cable across the Moray Firth, and major re-development of the onshore network. The main project costs are for:

<sup>1</sup><https://www.ofgem.gov.uk/publications-and-updates/decision-needs-case-assessment-proposed-caithness-moray-electricity-transmission-project-under-strategic-wider-works>

<sup>2</sup><https://www.ofgem.gov.uk/publications-and-updates/consultation-our-assessment-caithness-moray-transmission-project>

- the construction of the HVDC link and onshore developments
- SHE Transmission's own resourcing
- the project risks that SHE Transmission will manage (ie risks not included in the contracts with its suppliers).

### **October consultation on our project assessment**

In October we published a consultation on the project assessment and our view of the efficient costs, alongside our consultant's report. We said the overall cost of £1,236 million wasn't justified. Instead we assessed the efficient cost as £1,062 million: £174 million lower. We thought construction costs for the HVDC link and the onshore works were at the higher end of our efficient range. However, our main concerns were with SHE Transmission's proposed costs for staff resourcing and the residual risks it is managing. These appeared excessive based on the evidence presented, so we proposed significant reductions.

In the consultation we also highlighted a timing issue with our final decision on the project costs and the normal processes for updating price control revenues (and collecting these via transmission charges). Under these normal processes, SHE Transmission would not start recovering the costs it was incurring until 2016/17. To address this we proposed to update SHE Transmission's revenues in January 2015, instead of 30 November 2014, to include our decision on the project costs. This would allow cost recovery for the project to start in 2015/16.

We also acknowledged the uncertainty around the efficient cost of delivering a large project. We invited views on whether alternative arrangements may be more appropriate.

### **Efficient costs**

#### *Consultation responses<sup>3</sup>*

Third parties had limited feedback on the efficient costs of the project. One stakeholder highlighted the need for a strong project management structure on a large scale project. Another stakeholder disagreed with our cost assessment. It said our proposed reduction to the risk allowance suggested a lack of understanding of the commercial aspects of the engineer, procure and construct (EPC) contract-type. It pointed out that EPC contracts aren't risk free.

#### ***SHE Transmission's response and changes to our view on the efficient costs***

SHE Transmission responded with challenges to our project assessment. These cover some aspects of the onshore and HVDC construction costs, the project risks and overall resourcing.

SHE Transmission also reduced its overall cost estimate by £13 million to £1,223 million. The lower estimate is the result of a revaluation of some contract costs (based on a favourable currency movement), and a reduction in its estimated value of project risks. Additional contract negotiations and an increase in operations and regulatory consents costs partly offset these reductions.

We've considered SHE Transmission's arguments and new information and we've revised our view in some areas. As a result we have decided that the efficient cost for the project is £1,118 million. This is £56 million more than the project costs we consulted on in October.

---

<sup>3</sup> The consultation responses are available from: <https://www.ofgem.gov.uk/publications-and-updates/consultation-our-assessment-caithness-moray-transmission-project>

Our cost reductions to SHE Transmission's project costs are summarised below, alongside the reductions we proposed in October. These are shown as a percentage reduction to SHE Transmission's costs.

**Table 1 – Reductions in efficient costs compared to SHE Transmission's estimates<sup>4</sup>**

| Cost category                      | Ofgem's cost reductions |                                           |
|------------------------------------|-------------------------|-------------------------------------------|
|                                    | Latest view             | Proposed in Oct consultation <sup>5</sup> |
| Onshore construction               | -4%                     | -6%                                       |
| HVDC construction                  | -2%                     | -4%                                       |
| Risk                               | -34%                    | -62%                                      |
| Resources                          | -34%                    | -38%                                      |
| Operations, regulatory and consent | 0%                      | 0%                                        |
| <b>Total</b>                       | <b>-9%</b>              | <b>-14%</b>                               |

Below we summarise the additional information and analysis we have considered and explain how this has affected our conclusions.

### **Onshore construction costs**

SHE Transmission raised some concerns in relation to our October cost assessment of the onshore works,<sup>6</sup> and our consultant's use of benchmarks.

One issue is whether the difference between our consultant's efficient benchmarks and the costs of three substations, is due to the omission of site specific works. In most areas, our consultant's views already included the elements identified by SHE Transmission. We've confirmed that one component, a necessary 7km stretch of road improvement, is not entirely included in the Loch Buidhe substation benchmarked by our consultants. Accordingly, we have added the cost for the additional works to the cost benchmark.

SHE Transmission also argues that the cost benchmarking approach used by our consultants is inconsistent, as it reduces forecasts above our benchmark down to the benchmark but does not increase forecasts below the benchmark. This means costs above the benchmark are treated differently to costs below the benchmark. In its submission an element of the project to re-conductor an overhead line came out below the benchmark.

We agree that in this case we should apply adjustments to the benchmark symmetrically. This will reduce the incentive for a company to increase cost estimates to ensure these are not below our benchmarks. This will encourage companies to seek potential efficiency gains, which benefit consumers.

In combination with the adjustment for the road improvement works, our view on the efficient costs of the onshore works has increased. We consider our benchmarking approach to be robust and that inefficiency still exists in SHE Transmission's capital expenditure figures overall. As a result, our assessment of efficient costs for the onshore construction works is now 4% lower than SHE Transmission's proposed costs (compared to 6% we proposed in October).

<sup>4</sup> Owing to potential commercial sensitivity of the underlying cost information in SHE Transmission's project submission we can only provide high level breakdown of our cost reductions. We believe this is necessary to protect the interests of consumers in ongoing and future procurement exercises.

<sup>5</sup> The percentage reduction figures for *HVDC construction costs* and *Risk* are slightly different to those published in the October consultation. This is because we have reallocated some costs between these two categories differently to allow a like for like comparison to the percentage reductions in our decision.

<sup>6</sup> The onshore works consist of the design, procurement and construction of five new substations, major re-development of two substations, two new 132kV and 275kV overhead lines and re-conductoring of an existing overhead line circuit.

## ***HVDC construction costs***

SHE Transmission challenged our treatment of some contract negotiation items (CNI), which are a subset of the HVDC construction costs.<sup>7</sup> Its specific concerns are that we treated around half of the CNI in its submission as similar to risks. SHE Transmission says all but one are of certain scope, duration and cost.

SHE Transmission provided an updated list of CNI. We reviewed each of these individually, against the proposed activity schedule and costs. We also reviewed them, alongside related risks, which SHE Transmission included in its submission in case the contracted works in the CNI are not enough to complete the activity and additional work is required.

Following our review we have disallowed some CNI costs. This is based on:

- Removal of costs where SHE Transmission did not provide sufficient explanation of why an activity was needed (despite us asking), eg extra horizontal drilling requirements.
- Contradictory evidence on the need for additional scope items. For example, SHE Transmission said the amount of spare cable proposed by its contractor did not match its needs, yet the amount proposed was the same in the tender specification. It has recently told us that the extra spares are based on its analysis of the experience of other operators with subsea cables. However, this analysis has not been shared with us.
- Some CNI appear to overestimate costs when considered alongside related risks also included in its submission. For instance, the trenching risk did not recognise that less activity could be required than the amount included in the CNI, which would reduce costs.
- Removal of discounts that SHE Transmission had informed us of elsewhere in its submission.

We also increase some allowances for costs to reflect corrections by SHE Transmission and issues where it provided better explanation, which removed some of our original concerns about overlaps between CNI and risks (eg peat removal).

Based on our further review of CNI above we have decided to set higher allowances than we proposed in October. Following this change, together with some changes to other costs items in the HVDC category, we have decided the overall allowance for efficient HVDC construction costs should be 2% lower than SHE Transmission's estimate. Therefore, we are making a smaller reduction than we proposed in October.

## ***Project risks***

SHE Transmission raised several concerns with the approach used by our consultants to set the risk allowance in October. The first was that our consultants excluded some risks in SHE Transmission's March risk register for which the close out date had passed. SHE Transmission has verified that this is not a termination date for the risk, but a review date, and most of these risks remain, as shown by its September risk register.

The second concern is that our consultants' recommended reduction to the risk allowance is based on adding together the probability-weighted expected value of the individual risk items following the revisions to the probability. SHE Transmission argues that this is an erroneous approach to translating a risk register into a risk allowance as it excludes probabilistic scenario modelling of the risk portfolio to derive the median expected cost impact.

The final issue is that our consultants reduced the value of the risks they hadn't looked at by the same proportion as the ones they had (ie 100% extrapolation of its findings). SHE

---

<sup>7</sup> Contract negotiation items are separate cost provisions for activities to deliver outputs that are specified in the contract but not agreed in the price. This might be because the works are to be completed by third parties, or the client believes it can more efficiently procure the works elsewhere, or because there is uncertainty over the scope of works when the contract was concluded, eg unknown ground conditions.

Transmission has concerns about this approach given that the consultants focused on the highest impact risks. SHE Transmission argues that the small number of risks looked at and the nature of those risks means it is not a representative sample of the risk portfolio. Therefore, the average reduction could overstate (or understate) the reduction we would make to the risks if we assessed those risks individually.

We accept that the issues highlighted in SHE Transmission's response require revision to our analysis. We have addressed the information on expired risks by updating the analysis on the September risk register (as we said we would do in the October consultation). This increased the risk allowance we proposed in October by around 20%.

We have considered alternative ways to take into account the other issues SHE Transmission raised on the risk allowance we proposed in October, based on the set of high impact risks our consultants have assessed.<sup>8</sup> In particular, we have considered reducing or removing the extrapolation of reductions to risks that our consultants did not assess in detail. Considering the specific issues found, we are confident that if we looked at each of the other risks on the register individually we would be able to justify some reductions due to some over-estimation of the probabilities or impacts.

A key question in coming to our view on the risk allowance is, therefore, at what rate is reasonable to extrapolate the assessed reduction to the other risks. On the one hand, it could be argued that SHE Transmission has a better understanding of the lower value risks to which the extrapolation is being applied to. Therefore we would find lower levels of reduction could be justified. Alternatively, it could be argued that SHE Transmission will have put more management focus on the highest impact risks so that the lower impact risks will have had less attention. As a result, we might find that a larger reduction is reasonable.

In coming to a view on the proportion of extrapolation to apply we have considered:

- The scrutinised risk reductions based on our consultants' judgement about the reasonableness of the probability and potential impact of risks. While we are confident in the expertise employed, this area is less certain than capital expenditure benchmarking because of the uncertainty around many of the project risks and the tacit knowledge involved in estimating them (ie based on experience and professional judgement).
- The extrapolation is based on an analysis of the expected risk values rather than running risks with reduced probabilities through the risk model. Therefore these estimates are less accurate but are a reasonable estimate given the shape of the risks.
- We have also compared the risk allowance as a percentage of project costs to other transmission projects involving subsea cables.

We think it is appropriate in this case to err on the side of caution for the successful delivery of the project. We've therefore set the risk allowance by extrapolating 50% of the reduction to the other risks. The potential sampling issue means it is difficult to make strong inferences about the remaining risks. Moreover, the nature of project risks means this area is much more subjective than other expenditure categories.

We have therefore decided to increase the allowance. Our proposed value is 34% less than SHE Transmission's estimate of the latest risk register, compared to a 64% difference in October.

## **Resourcing**

Based on the evidence provided and our consultants' assessment, our October consultation proposed significant reductions to resourcing costs requested by SHE Transmission. These costs are for managing the delivery of the project and commissioning the works.

---

<sup>8</sup> Our consultants assessed 48% by value of the risks in SHE Transmission's updated risk register.

In response, SHE Transmission raised concerns over:

- The general level of resourcing and whether or not certain roles are required.
- Our proposals mean that it would need to switch resources on and off which it doesn't consider practical.
- Resources needed to commission the works and comply with relevant industry standards and requirements.

Our consultants have reviewed SHE Transmission's response and have not changed their view significantly. They consider that the level of resources is sufficient to deliver a project of this magnitude and that our proposals would not require switching resources on and off. Our consultants did however correct an error made in overlooking some commissioning costs and have increased their recommendation in this area accordingly.

Beyond this, we have updated our view of the commissioning resources given the potential impact on consumers if resourcing constraints lead to problems. We have decided to allow the full amount SHE Transmission requested in this area.

This change to commissioning resource corresponds to a slightly smaller reduction to resourcing costs overall than we proposed in October.

### ***Our decision on the overall efficient costs for the Caithness Moray project***

The table below summarises our decision and compares this to the position in our October consultation. An annual expenditure profile is set out the licence modification Notice accompanying this letter.

**Table 2 – Overall efficient project costs**

| <b>2013/14 prices</b> | <b>Latest view<br/>(£ million)</b> | <b>October consultation<br/>(£ million)</b> |
|-----------------------|------------------------------------|---------------------------------------------|
| SHE Transmission      | 1,223                              | 1,236                                       |
| <b>Ofgem</b>          | <b>1,118</b>                       | <b>1,062</b>                                |
| Difference            | -105 (-9%)                         | -174 (-14%)                                 |

### **Managing project cost uncertainty**

#### *Consultation responses*

On cost uncertainty arrangements, one stakeholder was concerned that additional costs could be efficiently incurred but may not be fully recoverable if the trigger threshold was not met. Another stakeholder said changing the strength of efficiency incentives would undermine the RIIO approach to risk sharing. In their view, a change would need to be fully justified with an assessment of the rate of return on such projects.

#### *SHE Transmission's response*

SHE Transmission raised issues over the appropriateness of the RIIO-T1 arrangements for managing uncertainty. In particular, the 50% sharing factor which exposes them to half of any over- or under-spends relative to our allowances and the reopener mechanism for costs arising due to specified uncertain events. (These proposals formed part of SHE Transmission's fast-tracked RIIO T1 business plan.) Given the difference between us on the size of the risk allowance for the project, SHE Transmission is concerned that it could incur additional costs efficiently but not be able to fully recover these. For example, if the threshold for the reopener – set at over £100 million – is not triggered, it would only recover half of additional costs it efficiently incurred through the sharing factor.

In response SHE Transmission proposed two different approaches:

1. Setting the risk allowance equal to SHE Transmission's view and returning 100% of any under-spends to consumers (an asymmetric sharing factor).
2. Reducing the sharing factor to 20% for the risk pot (lowering SHE Transmission's exposure to over-spends as well as under-spend) and have a post construction review to allow recovery of efficiently incurred costs (with no materiality threshold).

### ***Our decision on managing uncertainty***

We do not see consider that the first approach proposed by SHE Transmission would be in consumers' interests as it provides no incentives for SHE Transmission to spend less than what we consider to be an unjustified risk pot. It could also encourage SHE Transmission to spend more than is needed to manage risks to protect itself. This would be a fundamental departure from the principles of incentive regulation.

The second option also has some issues:

- It would incentivise SHE Transmission to reallocate expenditure from elsewhere to risks to take advantage of the weaker sharing factor (it would gain 30p for every £1 reallocated) if we cannot identify this.
- The post construction review and the weaker sharing factor would both weaken the incentives for efficient delivery.
- It would also remove risk from SHE Transmission but there would be no corresponding reduction to the cost of capital which corresponds to that lower level of risk. However, this would be less relevant if the risk for a project is not comparable to or isn't built into that for RIIO-T1 overall.

The advantages of a lower sharing factor include that it would pass back to consumers a larger share of any efficiency outperformance, and would also place less risk on the transmission owner if there is significant uncertainty around the efficient costs of a project. For example, this might arise if the procurement process hasn't completed. We will keep this issue under review in the light of experience with Strategic Wider Works but are not proposing any changes to the sharing factor for the Caithness Moray project at this time.

Based on the evidence available, we think instead there is a case for changing the materiality threshold of the SWW reopener. The reopener is currently only triggered if a specified event, on its own, gives rise to increased costs greater than 10% of the project value.<sup>9</sup> If triggered it would allow recovery of the efficient additional costs from that event.

Caithness Moray is a large, costly reinforcement, consisting of what can be considered as two projects with separate risks (an onshore AC element and a subsea HVDC element). This makes the materiality threshold particularly difficult to trigger as it is likely that one of the specified events would only affect one of the project components. We think there is a good case for halving the materiality threshold to 5% given the composition of the project (the ratio of project costs is approximately 40/60 for the onshore and offshore works). Therefore, we have decided to reduce the threshold to 5% for the SWW reopener on this project only, as this is broadly equivalent to a 10% threshold on each element. In our view this aligns better with the policy intent of the SWW reopener. This helps reduce the risk to SHE Transmission and should provide comfort that it will be possible to recover efficiently incurred additional and material costs if the provisions in the licence condition are met.

### **Updating SHE Transmission's 2015/16 revenue for the project**

#### *Consultation responses*

Two energy suppliers have concerns about the proposal to allow SHE Transmission's revenue for the project in 2015/16. They say this will solely affect demand customers,

<sup>9</sup> The SWW reopener applies for extreme weather; imposition of additional terms or conditions for any statutory consent, approval or permission; movement of agreed outages by the System Operator; or changes in project scope that could not have been reasonably anticipated during the assessment process.

given the new cap on transmission charges for generators. They also highlighted that this will have a significant impact on large customers, with pass through agreements, and that the short notice makes it difficult to manage. One stakeholder suggested that a lack of transparency about revenue increases resulting from large projects could lead to risk premiums being included in energy prices, to the detriment of all consumers. Another stakeholder supported the proposal and maintaining the RIIO principle that a company's revenues should follow its cash flows.

### ***Our decision on updating next year's revenue***

The Caithness Moray project is exceptional, in terms of its absolute scale and also relative to SHE Transmission's current regulatory asset value. If revenues were not adjusted for the project, SHE Transmission would face a shortfall of nearly 25% compared to what it might otherwise have expected. We think there could be greater benefits for consumers from allowing the company's revenues to follow cash flows. This is because the cash flow risk and financing costs could be greater than the benefit in terms of improving predictability.

We acknowledge that the change might cause some customers, particularly large users to bear an increase in charges. National Grid has estimated that the annual increase for the average half hourly user next year would be £220 (a 4% increase to annual charges). It would also increase the transmission component of the annual electricity bill of a typical domestic customer by £1. However, holding over the revenue update until November 2015 will cause greater volatility in transmission charges than is necessary in 2016/17, which is similarly undesirable. Also, it is likely that some suppliers are already planning on the change (following our October consultation), so a reversal now would also cause a problem with predicting charges next year. Therefore, we intend to update SHE Transmission's revenues following our decision so these take effect in 2015/16. We expect SHE Transmission to clearly communicate with stakeholders in a timely manner on the impact this will have on its 2015/16 revenues.

### **Statutory consultation on modifying SHE Transmission's licence**

To implement this decision on the Caithness Moray project, we need to modify special conditions 1B (Transmission Area) and 6I (Specification of Baseline Wider Works Outputs and Strategic Wider Works Outputs and Assessment of Allowed Expenditure) in SHE Transmission's electricity transmission licence. The proposed modifications are set out in Schedule 1 and Schedule 2 of the Notice accompanying this letter.<sup>10</sup> The proposed modifications will specify:

1. a SWW output of an additional transfer capability of 795MW across the transmission system boundary B0 and 850MW across boundary B1 to be completed by end of Q3 2018/19
2. an adjustment of £1,118 million (2013/14 prices) to SHE Transmission's allowed expenditure under the price control
3. a 5% cost threshold to apply only for the Caithness Moray project on the SWW Cost and Output Adjusting Event provisions
4. a change to SHE Transmission's Transmission Area to include the subsea corridor within the territorial sea adjacent to Great Britain, and any Renewable Energy Zone and/or an area designated under section 1(7) of the Continental Shelf Act 1964 that any part of the Caithness Moray cable passes through.

Our decision and reasons for the proposed modifications 1 to 3 have been discussed above.

### ***Proposed modification to the specified Transmission Area***

Special Condition 1B of SHE Transmission's electricity transmission licence sets out its Transmission Area, which is the area within which it is allowed to own or operate a

---

<sup>10</sup> [www.ofgem.gov.uk/publications-and-updates/notice-under-section-11a2-electricity-act-1989-statutory-consultation-proposed-modification-scottish-hydro-electric-transmission-plc%E2%80%99s-electricity-transmission-licence-caithness-moray-project](http://www.ofgem.gov.uk/publications-and-updates/notice-under-section-11a2-electricity-act-1989-statutory-consultation-proposed-modification-scottish-hydro-electric-transmission-plc%E2%80%99s-electricity-transmission-licence-caithness-moray-project)

transmission system. The Caithness Moray project involves the building and operation of a subsea HVDC cable link across the Moray Firth. Part of the Caithness Moray HVDC link will fall outside SHE Transmission's Transmission Area. SHE Transmission asked for an amendment to its Transmission Area to include the areas offshore which the Caithness Moray HVDC link will pass through. SHE Transmission will only be able to build and maintain the Caithness Moray HVDC link if its Transmission Area is extended to the relevant areas offshore where the Caithness Moray HVDC link will pass through.

We agree that the modification to special condition 1B of SHE Transmission's electricity transmission licence is required. Therefore we are proposing to modify the Transmission Area in SHE Transmission's licence. The proposed modification to Special Condition 1B: Transmission Area is set out in Schedule 1 of the Notice.

### **Next steps**

After we have published our decision on the proposed licence changes we will also update SHE Transmission's price control revenue model in January 2015. This means its revenues in 2015/16 will include the costs for the Caithness Moray project and be reflected in next year's transmission charges.

Any questions about the content of this letter should be addressed to Anna Kulhavy in the first instance (SWW@ofgem.gov.uk).

Yours sincerely,

Kersti Berge  
**Partner, Electricity Transmission**