

Publication date:	1 April 2014	Contact:	Matthew Grant
Response deadline:	29 April 2014	Team:	Electricity Transmission Investment
		Tel:	020 7901 0526
		Email:	Cap.Floor@ofgem.gov.uk

#### **Overview:**

This consultation sets out our initial view of efficient costs for the proposed Nemo interconnector between GB and Belgium, and our proposed process for setting the final costs closer to operation.

These costs affect the project's minimum and maximum revenue, which will be set by our proposed regulatory approach – the cap and floor. We welcome views on the information set out in this consultation and on the level of these costs.

## Context

The Nemo project is the proposed 1000MW interconnector between Richborough, Kent in Great Britain and Zeebrugge, Belgium. The project developers are National Grid Nemo Link Ltd (a subsidiary of National Grid plc) and Elia, the Belgian transmission system operator (together the 'Nemo developers'). They will jointly construct, own and operate the interconnector.

The proposed cap and floor for Nemo will be set for the full regime length of 25 years. This approach provides a guaranteed revenue stream (the floor) for the interconnector developers. Should interconnector revenue fall below the floor, the difference between actual revenue and the floor revenue would be topped up by GB and Belgian consumers through network charges (subject to a minimum availability threshold).

Similarly, should revenue exceed the cap, revenue above this level would be returned to GB and Belgian consumers through network charges.

Following consultation on the cap and floor in 2013, we intend to decide on the final regime design for the cap and floor for Nemo in spring this year.

This consultation provides our provisional view on the efficient costs for the construction and operation of the Nemo interconnector. These costs will form inputs for the cap and floor for the project. This document also details the process we plan to follow to arrive at these final cost estimates.

We seek views from stakeholders on the questions and information set out in this consultation.

# Associated documents

Cap and Floor Regime for Regulated Electricity Interconnector Investment for application to project NEMO (28/13), March 2013: <u>http://www.ofgem.gov.uk/Europe/Documents1/Cap%20and%20Floor%20Regime%2</u> <u>0for%20Regulated%20Electricity%20Interconnector%20Investment%20%20for%20</u> <u>application%20to%20project%20NEMO.pdf</u>

Summary of responses to Ofgem's consultation on a cap and floor regime for regulated electricity interconnector investment for application to project NEMO, June 2013:

http://www.ofgem.gov.uk/Europe/Documents1/Summary%20of%20responses%20t o%20NEMO%20consultation.pdf

Cap and floor regime for application to project NEMO: Impact Assessment, December 2013:

https://www.ofgem.gov.uk/ofgem-publications/85112/nemoiafinal.pdf

## Contents

Executive Summary	5
1. Introduction Objectives of the cost assessment Project background and work to date	<b>6</b> 6
2. How the cost assessment process will determine the cap and f	floor
High-level process Monitoring and reporting of cost information during construction (phase 2) Ex-post review of capital costs (phase 3) Updated forecast of operating costs (phase 3)	<b>8</b> 9 9 10
<b>3. Assessment of costs</b> Background and rationale for the cost assessment process Initial cost basis: The BPI report Summary costs from the BPI report Consideration of converter technology and cable Provisional costs for the Nemo interconnector	<b>12</b> 13 14 14 18
4. Next steps	20
Appendices	21
Appendix 1 - Consultation Response and Questions	22
Appendix 2 - Feedback Questionnaire	24

# **Executive Summary**

Where consumers underwrite regulated assets through a regulatory regime we are required to ensure that the associated revenues are based on an efficient level of costs so that consumers do not pay more than is necessary. This principle is applied to regulated assets onshore and offshore. We consider that this same principle should be applied to our proposed cap and floor regulatory regime for the Nemo interconnector, so that consumers are similarly protected.

Under the cap and floor for the Nemo project consumers are not exposed to the full cost of the interconnector – consumer exposure is limited to payments up to the level of the floor that will be determined through our decision on the cap and floor for Nemo in spring this year. Whilst the Nemo interconnector will be subject to risks and rewards that are different to those faced by onshore and offshore assets, we still consider that proportionate scrutiny of the project costs is required.

This document sets out our view on the efficient costs of the project at this stage. This follows an external assessment by independent consultants (BPI) which included detailed information submission from the project developers, along with further analysis by Ofgem.

We consider that the cost assessment undertaken by BPI provides an accurate reflection of economic and efficient costs at this stage of the project and forms the basis for our assessment. Following completion of the BPI report we have received updated information and justification from the project developers on the choice of technology that will be used for the Nemo project. We have therefore updated our cost estimates from those set out in the BPI report to reflect that we now consider the proposed voltage source convertor (VSC) technology choice to be in the interest of consumers.

We seek views, including from the Nemo project developers, on our analysis of the efficient costs set out in this document and welcome additional information that is relevant in coming to our initial decision on project costs. At this stage we consider that total efficient cost of the project is €648.8m broken down into capital costs (€430.1m), operational costs (€206m) and development costs (€12.7m).

Nemo is in early stages of the project construction and will not become operational until later this decade. As indicated in our 2013 consultation, we will update our cost assessment once we have firm information on the actual capital expenditure (capex) leading up to, and on completion of, the construction of the project. We will also request an updated operational expenditure (opex) forecast. We will assess this updated information which will be taken into account in our final decision on efficient and economic project costs. Using the final cost information we will then make any necessary adjustments to the final cap and floor levels – these will be set for the length of the regime.

We have set out an updated position on the future cost assessment processes we intend to follow for both the capex and opex assessment. We also seek views on the process and approach for these future cost assessments.

## 1. Introduction

#### **Chapter Summary**

This chapter describes the objectives of the cost assessment consultation. These are to seek views on our initial cost assessment and to explain our cost assessment process going forward.

## **Objectives of the cost assessment**

1.1. This document contains our initial assessment of the efficient costs for the construction and operation of the Nemo interconnector, which feed into the actual level of the cap and floor for the project as part of the proposed cap and floor regime.

1.2. Our cost assessment process aims to ensure that the cap and floor are set on the basis of an efficient and appropriate level of costs. This is important as consumers will be underwriting the project up to the level of the floor if revenues generated by trading over the interconnector are below the floor in the assessment period.

1.3. This consultation has two main objectives:

- To seek views on our initial assessment of the anticipated costs of the project, supported by a report by British Power International (BPI).
- To explain and seek views on how our cost assessment process will be structured between our planned decision on the cap and floor for Nemo in spring 2014, and the setting of the final levels ahead of operation.

1.4. Following responses to this consultation, we will set the provisional levels of the cap and floor in spring this year. These costs will be indicative and will be subject to change as further more detailed cost information becomes available as the project moves through the construction phase.

## **Project background and work to date**

1.5. The cap and floor regulatory regime has been developed to apply to the Nemo interconnector. Further information on Nemo is available on its website.<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> Nemo Link website: <u>http://www.nemo-link.com/</u>

1.6. We consulted on the regime design and principles in 2011. We then developed the regime with CREG, the Belgian National Regulatory Authority (NRA), and consulted on the proposed cap and floor design and detailed methodology.<sup>2</sup> This consultation closed in May 2013 and we have since published a summary of responses.<sup>3</sup>

1.7. We published our assessment of the impact of applying a cap and floor to the project in December 2013.<sup>4</sup> This consultation closed in February 2014. The responses to our consultation on the regime design, impact assessment and this cost assessment will inform our final decision on the cap and floor for the Nemo project. We expect to publish our decision, including the detail on the proposed cap and floor regime design, in spring this year.

<sup>&</sup>lt;sup>2</sup> March 2013 consultation: <u>https://www.ofgem.gov.uk/ofgem-publications/59243/cap-and-floor-regime-regulated-electricity-interconnector-investment-application-project-nemo.pdf</u> <sup>3</sup> Summary of responses to March 2013 consultation: <u>https://www.ofgem.gov.uk/ofgem-</u>publications/75782/summary-responses-neme-consultation pdf

publications/75782/summary-responses-nemo-consultation.pdf <sup>4</sup> Nemo Impact Assessment: <u>https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-regime-application-project-nemo-impact-assessment</u>

# 2. How the cost assessment process will determine the cap and floor

#### **Chapter Summary**

We propose a three-step cost assessment process to determine the efficient costs that will feed into the cap and floor. This will follow the approach we proposed in the March 2013 consultation. The initial cost assessment will enable us to establish the provisional cap and floor levels in 2014. Our assessment of final costs will lead to the setting of the final cap and floor levels.

#### **Question box**

**Question 1:** Do you agree that the process set out to review the costs which will be used to set the cap and final floor is proportionate and will provide appropriate protection for consumers?

### **High-level process**

2.1. Our March 2013 consultation on the cap and floor regime design and methodology set out a high-level process for the regulatory decisions on the Nemo project. This has been updated in Figure 1, below. This cost assessment, along with the consultation responses, will be used to set the provisional cap and floor levels as set out in Phase 1 of Figure 1.

#### Figure 1: The cost assessment process



2.2. Consistent with the approach taken for ex-post assessments for the offshore regime, we intend to undertake the final ex-post capex assessment when the project is approximately 95 per cent complete. The project developers should indicate when the project reaches this stage. This approach aims to ensure that the asset is operational from the point when construction is finished.

2.3. We will also require an updated operational expenditure (opex) forecast from the developers ahead of operation. We will assess relevant new information and this will be taken into account in the final assessment of operating costs. We will then take a final decision on efficient and economic project cost and make any necessary adjustments to the final cap and floor levels.

2.4. To ensure that we have sufficient information through the construction phase and in preparation for the final assessments, we expect the project developers to provide regular updated cost information. To this end we will work with the developers to agree a practical, regular and proportionate reporting format.

2.5. Further information will be required during the operational phase of the project to assess whether the cap and floor have been triggered. This information is not set out in this document and will be set in our final decision on the cap and floor for Nemo planned for spring 2014.

# Monitoring and reporting of cost information during construction (phase 2)

2.6. We think annual monitoring and reporting through the construction phase is proportionate to ensure the NRAs are kept up to date on the project costs. This will provide auditable information that will help to validate costs in the final capital cost assessment.

2.7. We expect the Nemo developers to justify any deviation in spending from the initial capex allowances in these reports (and in the final assessment). We will conduct a forensic analysis of these costs at the ex-post review, benchmarking each cost category against the initial capex allowances.

2.8. This process will help to ensure the efficient and proportionate scrutiny of costs, to which consumers could be exposed to if revenues are lower than the level of the floor.

## Ex-post review of capital costs (phase 3)

2.9. As described in our March 2013 consultation, we will assess the capital costs incurred in construction on an ex-post basis. This will be a comprehensive review of costs and will include both:

• validation of costs (typically through forensic accounting); and



• assessment of the efficiency of costs (typically through engineering assessment).

2.10. This process will allow reasonably incurred costs to be taken into account in the costs that will feed into the cap and floor levels. This will exclude costs that have been poorly justified or where the developers have not acted efficiently.

2.11. As with our cost assessment for onshore and offshore transmission projects in GB, we may employ external consultants to undertake the cost validation and efficiency review.

2.12. The exact timing of the ex-post capex assessment will be determined by the project construction timing. We will undertake the final capex assessment as the project reaches 95 per cent completion (based on actual spend and forecast remaining spend) and before the Nemo interconnector becomes operational. This approach is consistent with that taken for ex-post assessments as part of the offshore regime and aims to ensure that the asset is operational from the point that construction finishes.

## Updated forecast of operating costs (phase 3)

2.13. As mentioned in our March 2013 consultation, the operational costs will be assessed in the period before operation of the interconnector and as we carry out the ex-post review. We will expect the developers to provide an updated cost forecast, including clear reasoning for the anticipated opex. The Nemo developers will have to provide an updated cost template with a detailed breakdown of opex requirements, backed by a comprehensive commentary.

2.14. We expect the cost information to include clear reasoning for the cost requirements. This should include, but is not limited to:

- Staffing numbers, including recharges;
- Maintenance;
- Warranties and insurance; and
- Operation of IT and trading facilities.

2.15. As Nemo will be owned and operated by National Grid Nemo Link Limited (a National Grid Group company) and the Belgian TSO, Elia, we will consider any potential recharges from the regulated businesses and the interconnector business. As part of our normal cost reporting requirements in GB, we review the allocation of costs throughout National Grid companies. As appropriate, we will extend this review to include National Grid Nemo Link Limited.



2.16. Following our updated opex forecast, the economic and efficient costs will be set for the lifetime of the project.

# 3. Assessment of costs

#### **Chapter summary**

We summarise the initial cost assessment report for the Nemo project, produced by BPI consultants, including our view on these costs and the subsequent information received from the developers. We give our view on the efficient level of costs at this stage in the project. Following this consultation and the responses we receive, we will then determine the final project costs. These will be revisited near to the completion of the development and construction phase.

#### **Question box**

**Question 2**: Do you have any views on the key findings from the BPI report as set out in this chapter and accompanying report, particularly the costs? **Question 3**: Do you consider our view on the additional justification for capex costs relating to the use of VSC technology provided by our consultants DNV KEMA, the Nemo developers and NGET to be appropriate?

**Question 4:** Do you agree with our conclusion on the efficient level of costs for the project at this stage?

### Background and rationale for the cost assessment process

3.1. As proposed in our March 2013 consultation, we have examined the proposed costs of the development, construction and operation of the Nemo interconnector. The actual costs of the project cannot be confirmed at this early stage, and will become more firm as the procurement and construction phase progresses between now and operation.<sup>5</sup>

3.2. We consider it important to provide an initial view on the efficient costs of the project, based on the information currently available, to give an indication of the cap and floor levels ahead of the regulatory and investment decisions. We recognise however that the timing of this cost assessment is such that the information provided will be subject to some uncertainty and may change in future. Figure 1 in Chapter 2 illustrates the process by which these initial costs inform the final cap and floor levels.

3.3. Our initial view of costs, along with stakeholder responses to this consultation, will determine the provisional cap and floor levels. The final allowed project costs will determine the actual cap and floor levels, including the potential exposure of GB and Belgian consumers at the floor.

<sup>&</sup>lt;sup>5</sup> We recognise that the information provided for the BPI assessment was based on early forecasts of operating costs, in some instances with little justification. Where further justification for these costs is provided and the costs are deemed to be economic and efficient, they will be incorporated into the updated costs for estimates to feed into the cap and floor.

3.4. This chapter initially discusses the work carried out by our consultants BPI, which is the basis of this cost assessment. It then considers further information from the project developers, and work completed by DNV KEMA consultants, who we asked to consider the choice of converter technology for the project in more depth.

3.5. The costs discussed in this consultation are in 2010/11 Euros ( $\in$ ). This is to ensure consistency with work undertaken by the consultants BPI, so that stakeholders may review their accompanying report on a like-for-like basis. Some costs, such as network reinforcement in GB, are converted from GBP to Euros based on annual average exchange rates.

## Initial cost basis: The BPI report

3.6. With the Belgian regulator, CREG, we commissioned the consultants BPI to carry out an independent assessment of the economic and efficient capex and opex forecasts for the Nemo project. We propose using this assessment as the initial cost basis for the provisional cost allowances for the project, updated to reflect additional information and justification for the use of converter technology.

3.7. This report includes a detailed assessment of the cost information submitted by the developers, BPI's view on these costs, and BPI's recommendations for the economic and efficient cost levels.

3.8. The BPI work was carried out at an early stage in the project, and detailed information and justification for some of the forecast costs was not provided by the developers. We recognise that this was in part due to mature and accurate data not being available to them at that stage in the project. BPI recommended significant reductions from the cost information put forward by the project developers, partly due to robust justification not being available. We expect more detailed information and justification to become available as the project progresses through the construction phase. Where fully justified, this further information will be taken into account as part of our final cost assessment.

3.9. The BPI report is published alongside this cost assessment consultation and forms the initial basis of the provisional cap and floor levels, which we detail below. Some parts of the report have been redacted in order to protect commercial sensitivities of the project developers.

3.10. Based on the information provided by the Nemo developers, BPI estimated operational expenditure of around €206m over the 25-year lifetime of Nemo. This is composed of €40.6m for operating and maintenance costs (employee and contractor costs), €26.9m for trading, and €138.6m for administrative and general costs.

3.11. BPI also estimated development costs of €12.7m, including €2.1m on employee costs, €2.6m on surveys, €1.7m on land costs, €1.4m on environmental studies, and €1.9m on legal costs.

3.12. BPI estimated capital costs of €413.1m (as outlined below in Table 1). This includes €220m for current source converter (CSC) stations, €163m for cable, and €24m for other costs such as project management.

3.13. Following BPI's work, the Nemo developers provided further information to justify the proposed use of voltage source converter (VSC) technology in the substations for the interconnector.

3.14. We seek views on the information in the BPI report, the rationale for BPI's view on economic and efficient costs of the interconnector, and on the further work we have undertaken to consider the use of convertor technology and associated cable costs.

### Summary costs from the BPI report

Table 1: Summary of BPI's assessment of costs (€m total over the 25-year regulatory period, 2011 prices):

Item	BPI	Our view
	(€m)	
Capital expenditure (including development costs)	425.8	BPI's assessment appears reasonable given the evidence provided at the time. Since BPI's assessment, Nemo has provided further evidence on the choice of voltage source converter technology. We employed DNV KEMA to assess this information and inform our initial view of costs (see below).
Operating expenditure	206.0	BPI's assessment appears reasonable given the limited evidence available at the time. Our view is consistent with BPI's, but we expect better information to inform our view as part of the final assessment prior to operation of the interconnector (see below).
Total	631.8	

## Consideration of converter technology and cable

3.15. A key issue examined in the cost assessment is the choice of converter technology for the project. BPI provided its report to us in November 2013. We have since received updated information from the Nemo developers, specifically on their choice of converter technology. We requested DNV KEMA, an independent consultancy, to review this new information and the implications it has for network reinforcement in GB.

3.16. We have received further technical advice from the consultancy DNV KEMA to confirm our understanding of the technical aspects of the proposal.

3.17. We have assessed the information received and we consider that there is a clear case for the choice of VSC technology and associated cable. In terms of the provisional cost allowances, this is the only area that diverges from the position proposed by BPI's report.

3.18. BPI considered two types of converter technology: CSC and VSC. CSC technology is older and more established, being in commercial use since the 1950s, while VSC saw its first use in the 1980s.

3.19. In technical terms, the main difference between the two is that VSC is more controllable, imposing less of a requirement on the network.<sup>6</sup> This means it offers better network stability than CSC.

3.20. There are also several other advantages of VSC over CSC technology, and these are summarised in BPI's report. These include black start capability (allowing the restart of power after a wide-area power outage or blackout whilst there is no power supply from the grid), and features which make it simpler, more stable, and cheaper to interface with the National Electricity Transmission System (NETS) (and, likewise, the Belgian electricity network). These features would benefit both GB and Belgian consumers.<sup>7</sup>

3.21. Since BPI's assessment, the Nemo developers and NGET, as the National Electricity Transmission System Operator (NETSO), have provided two important pieces of information in relation to the proposal to use VSC technology. The first is the savings to GB consumers: using VSC would require a less costly reinforcement of the local network compared with using CSC technology. The second is in terms of timing: using VSC would enable the Nemo interconnector to be operational significantly earlier than if CSC technology was applied. We think this second factor would deliver benefits to GB and Belgian consumers. These two factors, alongside

<sup>&</sup>lt;sup>6</sup> VSC can control the power flow and provide dynamic voltage control regulation to the AC network system. CSC, on the other hand, requires reactive power compensation from the system, which in turn can lead to changes in the system voltage and pose stability problems. The consequence of this is that using VSC instead of CSC is less costly for the system operator, and therefore consumers.

<sup>&</sup>lt;sup>7</sup> VSC technology brings other benefits (both within Great Britain and Belgium) that, as yet, are less quantifiable:

<sup>•</sup> Independent control of reactive and active power. This is important for GB consumers because it is cheaper to use VSC than the use of reactive power compensation which is required for CSC.

<sup>•</sup> The costs of the cable are likely to be lower. VSC can use more types of cable (known as MI and XLPE) than CSC, allowing more competition. This should reduce costs to the developers and consumers.

<sup>•</sup> Less land is required by VSC. This reduces the risks involved in seeking consent for land purchases and use. This also reduces the environmental impact of the onshore development.

the benefits mentioned in paragraphs 3.19 and 3.20, have informed our view that using VSC technology would be the more efficient technology choice.

3.22. In relation to the first point, NGET undertook network studies following the connection request for Nemo to determine the impacts on safety and security.<sup>8</sup> Following these network studies, NGET determined that an interconnector connection using CSC technology would require a more costly strengthening of its network than VSC in order to avoid the risk of an electrical failure.<sup>9</sup>

3.23. Using VSC technology to connect the interconnector to the NETS would require a lesser reinforcement of the local network. This is estimated by our consultants DNV KEMA to save  $\notin$ 90m (from around  $\notin$ 216m for CSC to around  $\notin$ 126m for VSC).<sup>10</sup>

3.24. Regarding the second point (the timing of connection of the interconnector to the GB system), the network reinforcement required to use CSC technology for the project would delay the connection date for the Nemo interconnector due to the consenting process. Based on information provided by NGET, we estimate that this would delay the connection of the Nemo interconnector by three years. We consider that the delay, and resulting lack of interconnection, would not be in the interest of Belgian or GB consumers.

3.25. Analysis published alongside our impact assessment in December 2013, undertaken by the Brattle Group on behalf of the project developers, suggests an annual social welfare benefit across GB and Belgium of approximately €35m in 2020 as a result of the Nemo interconnector.<sup>11</sup> Whilst the approach taken to the welfare analysis by Brattle is such that this benefit is a snapshot for the single year, and this analysis is subject to assumptions and contains a level of uncertainty, we could assume this figure for 2020 to be indicative of the social welfare gain in each year due to an earlier connection. Assuming an earlier connection of three years from using VSC technology, the social welfare could be in the order of €100m, which is set against the risk to consumers of underwriting a higher floor.

3.26. DNV KEMA also assessed the costs of VSC technology itself, and associated cable. Its assessment of VSC costing €220m was based on its knowledge of similar HVDC projects in China, with adaptation to the European market. This was then

<sup>&</sup>lt;sup>8</sup> The Grid Code specifies technical requirements for connection to, and use of, the National Electricity Transmission System (NETS). More information on the Grid Code is available at: <u>http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/Grid-Code/</u>

<sup>&</sup>lt;sup>9</sup> Specifically a commutation failure, whereby current fails to transfer from one valve to the next ("commutation"), leading to a short circuit.

<sup>&</sup>lt;sup>10</sup> Under the RIIO-T1 price control, any savings would be shared between consumers and the Transmission Owner.

<sup>&</sup>lt;sup>11</sup> The Brattle Group's estimate of the impact of the Nemo interconnector on TSO revenues, welfare and competition was published alongside our Impact Assessment in December 2013. It is available at: <u>https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-regime-application-project-nemo-impact-assessment</u>



sense checked and supported by the Electricity Transmission Costing Study.<sup>12</sup> DNV KEMA estimates cable costs of  $\in$ 180m,  $\in$ 17m higher than BPI's estimate. This was benchmarked using their experience with the NorNed project.

3.27. In summary, a comparison of VSC to CSC technology, and associated cable costs, indicates a consumer impact of:

- an earlier connection of Nemo, valued at around €100m overall to GB and Belgian consumers;
- potential savings on reinforcement costs of €90m;<sup>13</sup>
- an additional cost of VSC technology of €20m; and
- additional benefits such as better network stability and black start capability, as outlined in 3.19 and 3.20 and in more detail in BPI's report.

3.28. These estimates are based on analysis by the consultants BPI and DNV KEMA. The quantified costs are shown in Table 2 below.

<sup>&</sup>lt;sup>12</sup> Study by The Institution of Engineering and Technology. It is available at: <u>http://www.theiet.org/factfiles/transmission.cfm</u>

<sup>&</sup>lt;sup>13</sup> Under the RIIO-T1 price control, any savings would be shared between consumers and the Transmission Owner.

# Table 2: DNV KEMA estimates of the capital costs of VSC and CSC, andnetwork reinforcement in both cases. BPI estimates are also shown(2010/11 prices).

	Costs associated with CSC converter technology		Costs associated with VSC converter technology	
ltem	BPI viewDNV KEMA's viewincluding use of CSC €000sCSC €000s		DNV KEMA's VSC recommended allowance €000s	
Converter stations and cable	€220,000	€200,000	€220,000	
Cable (subsea and land) (km)	€163,000	€180,000	€180,000	
Other costs	€30,100	€30,100	€30,100	
Total (excluding GB network reinforcement costs)	€413,100	€410,100	€430,100	
Network reinforcement cost - independent of converter technology selection <sup>1</sup>	€57,100	€57,100	€57,100	
Network reinforcement cost - converter station cost-specific <sup>2</sup>	€158,700	€158,700	€68,800	
Total	€628,900	€625,900	€556,000	

**Notes:** <sup>1</sup>The network reinforcement costs that are independent of the choice of converter station technology, based on information provided by NGET. <sup>2</sup>The network reinforcement required depending on the converter type used has been estimated by DNV KEMA based on information provided by NGET.

## **Provisional costs for the Nemo interconnector**

3.29. Table 3 below contains what we believe to be the economic and efficient provisional costs for the Nemo project. These costs include capex (as outlined in Table 2 above), opex and development costs. These are informed by the BPI report and our view on the updated information provided by the project developers regarding the choice of convertor technology.

# Table 3: Summary comparison of efficient cost estimates by BPI and DNV KEMA, alongside our proposed initial costs (€m total over the 25-year regulatory period, 2010/11 prices):

	BPI view using CSC	DNV KEMA view using VSC	Our view using VSC	Difference between BPI view and our view
Capex (excluding interest)	€413.1m	€430.1m	€430.1m	€17m
Opex (excluding depreciation)	€206.0m	€206.0m	€206.0m	€0m
Development costs	€12.7m	€12.7m	€12.7m	€0m
Total costs	€631.8m	€648.8m	€648.8m	€17m

# 4. Next steps

4.1. This consultation describes our initial view on the efficient costs that will form an input to the cap and floor. After considering responses, we aim to assess the provisional cap and floor levels for Nemo in spring this year.

4.2. This consultation will run for a period of four weeks. We invite views on our provisional cost assessment and on our proposals for reporting and updating these cost figures before operation.

# Appendices

## Index

Appendix	Name of Appendix	Page Number
1	Consultation response and questions	22
2	Feedback Questionnaire	24

# Appendix 1 - Consultation Response and Questions

1.1. We'd like to hear the views of interested parties in relation to any of the issues set out in this document.

1.2. We would especially welcome responses to the specific questions which we have set out at the beginning of each chapter heading and which are replicated below.

1.3. Responses should be received by 29 April 2014 and should be sent to:

Matthew Grant Electricity Transmission Investment Ofgem, 9 Millbank, London. SW1P 3GE. Cap.Floor@ofgem.gov.uk

1.4. Unless marked confidential, all responses will be published by placing them in Ofgem's library and on our website: www.ofgem.gov.uk. Respondents may request that their response is kept confidential. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

1.5. Respondents who wish to have their responses remain confidential should clearly mark the document/s to that effect and include the reasons for confidentiality. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

1.6. Next steps: Having considered the responses to this consultation, we intend to assess the provisional cap and floor levels for Nemo in spring this year.

1.7. Any questions on this document should, in the first instance, be directed to:

Matthew Grant Electricity Transmission Investment Ofgem, 9 Millbank, London. SW1P 3GE. Cap.Floor@ofgem.gov.uk



#### **CHAPTER: Two**

**Question 1:** Do you agree that the process set out to review the costs which will be used to set the cap and final floor is proportionate and will provide appropriate protection for consumers?

#### **CHAPTER: Three**

**Question 2:** Do you have any views on the key findings from the BPI report as set out in this chapter and accompanying report, particularly the costs?

**Question 3**: Do you consider our view on the additional justification for capex costs relating to use of VSC technology provided by our consultants DNV KEMA, the Nemo developers and NGET to be appropriate?

**Question 4**: Do you agree with our conclusion on the efficient level of costs for the project at this stage?

# Appendix 2 - Feedback Questionnaire

1.1. Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

- **1.** Do you have any comments about the overall process, which was adopted for this consultation?
- 2. Do you have any comments about the overall tone and content of the report?
- 3. Was the report easy to read and understand, could it have been better written?
- 4. To what extent did the report's conclusions provide a balanced view?
- **5.** To what extent did the report make reasoned recommendations for improvement?
- 6. Please add any further comments?
- 1.2. Please send your comments to:

#### Andrew MacFaul

Consultation Co-ordinator Ofgem 9 Millbank London SW1P 3GE andrew.macfaul@ofgem.gov.uk