Ex-Ante Cost Review of Walney Extension Offshore Wind Farm Transmission Assets

Report of Grant Thornton UK LLP
dated 20 October 2017

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APPENDICES

1 EXECUTIVE SUMMARY

1.1 This report relates to the Walney Extension (WOW03+04 / the Wind Farm) which is owned by DONG Energy A/S (DONG Energy) through its subsidiary DONG Energy Walney Extension (UK) Limited (the Developer). The development of the Wind Farm is being managed by DONG Energy.

1.2 Our review and this report is based upon the cost template submitted to Ofgem dated 10 March 2017[1] and incorporates information and explanations provided regarding the costs in this version of the cost template, both in our site visits and in correspondence with the Developer, up to 22 June 2017.

1.3 The Wind Farm is situated to the north west of the existing Walney Offshore Wind Farm 01 and 02, around 19km off the Isle of Walney coast in Cumbria. National Grid Electricity Transmission plc (NGET) is the onshore transmission licensee, and the WOW03+04 Transmission Assets will connect to the Middleton 400kV substation located at Heysham.

1.4 The Wind Farm is expected to consist of 40 8.25MW Wind Turbine Generators (WTGs) for WOW03 with an installed capacity of 330MW and 325MW at the Offshore Boundary Point. WOW04 will utilise 47 7.0MW WTGs with an installed capacity of 329MW and 324MW at the Offshore Boundary Point. Each wind farm will be connected to two Offshore Substations (OSS) located within the boundaries of the WOW03+04 Offshore Wind Farm. Both OSSs are connected to an onshore substation (ONSS), which connects to a NGET 400kV substation.

1.5 The WOW03+04 Transmission Assets are under construction at present, with the expectation of being fully operational and commissioned by the end of 2018.

1.6 Grant Thornton UK LLP (Grant Thornton) has been instructed by The Office of Gas and Electricity Markets (Ofgem) to review the ex-ante cost assessments prepared by the Developer for the Transmission Assets of the Wind Farm (Ex-Ante Review).

[1] For our review we used the cost allocation template dated 7 April 2017 (version 2.1). This is the same as version 2, submitted on 10 March 2017, with no change to the costs. However, document references were added to assist our review.

1.7 The Ex-Ante Review has considered the accuracy, completeness and allocation of costs against the cost template prepared by the Developer for the Wind Farm Transmission Assets, based on supporting information and methodology provided by the Developer. Further detail on our work is set out in Sections 4 to 13 of this report. The purpose of a review at this stage is to:

1.7.1 determine if a developer cost estimate requires updating for the next stage of the transfer process, Enhanced Pre-Qualification (EPQ) and Invitation to Tender (ITT);

1.7.2 aid identification of technical issues that we have noted by helping to identify areas where the cost information suggests that further technical review may be required to consider efficiency as part of determining the Indicative Transfer Value (ITV) for the ITT stage of the process; and

1.7.3 assist determination of the ITV for ITT by reviewing accuracy, allocation and completeness of cost information.

1.8 The Developer's estimate of the cost of the Wind Farm Transmission Assets, included in the cost assessment template dated 10 March 2017 (the CAT), amounts to £533.1 million. This represents a £15.8 million increase on the initial cost assessment by the Developer at 31 May 2016 as set out in version 1 of the cost template that projected the original cost to be £517.3 million. The CAT presents the Developer's estimated costs of the Transmission Assets as follows:

Transmission Assets cost summary

	CAT Reference	Ref	Direct costs £	Contingency £	Total £	%
Project common costs	CR8	6.1	[redacted]	[redacted]	[redacted]	[redacted]%
Offshore substation	CR2	7.1	[redacted]	[redacted]	[redacted]	[redacted]%
Submarine cable supply and installation	CR3	8.1	[redacted]	[redacted]	[redacted]	[redacted]%
Land cable supply and installation	CR4	9.1	[redacted]	[redacted]	[redacted]	[redacted]%
Onshore substation connection	CR5	10.1	[redacted]	[redacted]	[redacted]	[redacted]%
Reactive substation	CR6	11.1	[redacted]	[redacted]	[redacted]	[redacted]%
Connection costs	CR7	12.1	[redacted]	[redacted]	[redacted]	[redacted]%
Other costs	CR9	13.1	[redacted]	[redacted]	[redacted]	[redacted]%
Total capital costs			[redacted]	[redacted]	[redacted]	[redacted]%
Interest during construction			[redacted]	[redacted]	[redacted]	[redacted]%
			[redacted]	[redacted]	**533,088,210**	100.0%

SUMMARY OF FINDINGS

1.9 The Developer has provided us with supporting documentation and/or explanations for the majority of items included within the cost template. Our review found that all major items of capital expenditure for Transmission Assets have either been procured under contracts specific to the transmission business, or have been procured under contracts specific to the Wind Farm as a whole and have been allocated between the Transmission and Generation Assets using a mix of allocation methodologies that will be considered further in this report.

1.10 As part of our line-by-line review of the CAT, we have agreed the costs of the transmission business above £100,000 to supporting documentation. This included confirming costs in the CAT to contracts between the Developer and the subcontractors, contract variations orders and to working schedules prepared by the Developer that set out how estimated costs within the CAT have been calculated. This also included gaining an understanding from the Developer about the determination of costs in the CAT, such as the approach to procurement of main items of expenditure, the allocation of shared costs between the transmission and generation businesses, and the treatment of costs incurred in foreign currencies.

1.11 In most cases, we were able to confirm that the costs included in the CAT were appropriately stated. However, we identified that some costs were incorrectly stated, and as such, we propose adjustments for these costs at paragraph 1.42 below.

1.12 Furthermore, there were some costs where we were unable to gain sufficient comfort of their treatment in the CAT, and where this is the case, we recommend that Ofgem should discuss these areas with the Developer. These are set out below in paragraphs 1.13 to 1.41.

Allocation rates

1.13 The CAT included a number of common costs to the Wind Farm as a whole. Where costs are not directly attributable to either the transmission or generation business (shared costs), the Developer has allocated costs to the Transmission Assets based upon a variety of methods as follows:

1.13.1 Direct allocation. Costs are allocated to the Transmission Assets based upon the items contract values/cost incurred on a line-by-line basis where specifically identifiable as Transmission Assets expenditure;

1.13.2 Geographical area. For costs related to environmental, certain consents and geo survey work where there are clear geographical links to the costs incurred, the allocation has been made based on the proportion of geographical area related to the Transmission Assets. Using Geographic Information System (GIS) data for both onshore and offshore assets, the Developer has determined that the Transmission Assets share of the geographical area of the Wind Farm is 30%;

1.13.3 Transmission Assets cost % of total capital expenditure (CAPEX). This rate is similar to allocation rates used in previous projects where the cost of Transmission Assets capital expenditure is taken as a percentage of total Wind Farm capital expenditure including resource and travel costs, where the rate derived is 26.66%. The Developer has explained that this rate is applied to non-specific CAPEX where the other allocation methods are not considered appropriate, such as construction management work-scope costs[2];

1.13.4 Shared resource and travel costs. For the resource and travel costs which are shared between transmission and generation (eg programme management), an allocation at WBS level has been determined on a package-by-package basis. These rates are largely based upon hours spent or contract values, but in a small number of cases are based upon Package Manager assessments in conjunction with the Cost Controller.

1.14 We consider that some of the allocation methodologies used by the Developer appear reasonable in isolation and in line with cost allocation methodologies we have seen used elsewhere for similar projects. However, some allocation methodologies appear overly complicated, for example, the allocation of costs within some cost categories uses a mixture of rates.

[2] We note that a rounded figure of 26% has been applied to construction site and commissioning costs in the CAT.

1.15 The table below summarises the allocated costs included within the CAT, and the effective allocation rate[3] for such costs:

Allocated costs

	Ref	Total £	Allocation £	Effective Rate
Common costs	6.1	[redacted]	[redacted]	24.6%
Shared resources	5.3	[redacted]	[redacted]	33.5%
DEVEX	6.45	[redacted]	[redacted]	34.6%
Total		[redacted]	[redacted]	**30.4%**

1.16 This table shows that the allocation methodologies used by the Developer have resulted in cost allocations to the Transmission Assets at an average rate of 30.4%, which is higher than rates we have seen on previous projects of around 25%. This is due to the higher effective rates of 33.5% and 34.6% in relation to shared resources and DEVEX respectively.

1.17 Whilst the effective rate for shared resources of 33.5% is higher than the CAPEX rate used for resources on previous projects, discussions on previous projects have highlighted that the amount of time spent by project teams on the Transmission Assets as a proportion of total time is much higher than the proportion of CAPEX, and as such, a higher rate for shared resources may be justifiable.

1.18 Of the £[redacted] million of allocated DEVEX costs, £[redacted] million relates to time costs which have higher allocation rates as explained in paragraph 1.17 above. The average allocation rate for these time costs is 43.2%, and excluding these time costs the average allocation rate for DEVEX is 28.3%. This remains higher than the CAPEX rate used by the Developer due to the higher rates applied in relation to associated employment costs such as travel and accommodation expenses.

1.19 In light of the high effective allocation rates for shared costs to the Transmission Assets, particularly in relation to shared resources and DEVEX, we recommend that Ofgem should discuss cost allocation further with the Developer.

Resources costs - calculation of hourly rates

1.20 The CAT includes approximately £[redacted] million relating to the time costs of DONG Energy employees spent on the Transmission Assets.

[3] Ie excluding costs with an 'allocation rate' of 100%

1.21 Whilst we have been provided with details of the hours spent by the employees on the Transmission Assets, we have not reviewed how the hourly rates for each employee/group of employee have been calculated, or of the constituent parts of those hourly rates.

1.22 Based upon our experience from other projects managed by DONG Energy, the hourly rates have previously included a profit element, which had been included in all cross entity activities to ensure compliance with transfer pricing requirements.

1.23 We understand that the Developer is required to sell the Transmission Assets to the offshore transmission owner (OFTO) at cost. As such, if the hourly rates calculated by the Developer do include any profit element, then this would be inconsistent with this requirement, and in these circumstances, consider that the hourly rates included in the CAT should be reduced to remove such profit element.

Contingencies

1.24 The CAT for the Transmission Assets includes a contingency provision amounting to £[redacted] ([redacted]% of pre contingency capital costs excluding IDC). The Developer has calculated the contingency provision based upon its assessment of risks in relation to the Transmission Assets (and a share of common costs where appropriate), the likelihood of such risks being realised and an estimate of the costs involved in these circumstances. Based upon our experience of similar projects, this appears to be a sensible approach, and the percentage of contingencies is not out of line with what we have seen on other projects.

1.25 However, our verification of the contingency provision has been limited in two respects:

1.25.1 Although we have been provided with details of the individual risks for which the associated contingency assessment exceeds £250,000, the collective value of these contingencies amounts to Danish Krone (DKK) [redacted] (£[redacted]) ([redacted]% of the total contingency provisions), leaving £[redacted] of contingencies which we have been unable to verify. We have asked the Developer to provide further information to substantiate more of the contingency provision, but its policy is not to share its risk registers in full. As such, we are unable to conclude upon whether the remaining contingency provision is appropriate.

1.25.2 Whilst the risks for which the associated contingency assessment exceeds £250,000 do not appear unreasonable, based upon what we have seen on similar projects, we consider that the assessment of the expected value of risks and of the likelihood of each event occurring fall within the scope of a technical assessment, rather than the Ex-Ante Review. On that basis, we cannot say whether these amounts which form the basis for the contingency provision are correct.

1.26 As a result, in light of these limitations, we are unable to conclude whether the contingency provisions in the CAT are reasonable.

1.27 We note that by the time of the ex-post cost assessment (the Ex-Post Review), the value of the contingencies is expected to fall to zero, as at this stage all costs will be known.

Foreign exchange

1.28 The CAT includes costs which are payable in foreign currencies (either Euros or Danish Krone), which we consider total in the region of £[redacted] million (excluding common costs and development expenditure). This is based upon a split by percentage of costs denominated in foreign currencies provided by the Developer. The Developer has accounted for these costs within the CAT by applying set exchange rates based upon actual rates incurred or estimates of the future rates payable.

1.29 Following the Brexit vote in June 2016, the value of sterling fell sharply. Given the large exposure that the Wind Farm had to foreign currencies, this resulted in a notable increase in the value of the Transmission Assets. From May 2016, the Developer began to enter into foreign exchange hedging contracts amounting to €[redacted] million and DKK [redacted] million, and as a result, estimates that it has reduced the impact of these foreign currency movements by £[redacted] million (as set out in Section 13).

1.30 However, as the Developer chose not to enter into many hedging arrangements until after the Brexit vote, it was unable to mitigate against the whole increase in the cost of the Transmission Assets. Ofgem may therefore wish to consider whether further adjustments may be required to reflect the increase in costs of the Transmission Assets due to exchange rate movements not mitigated through the Developer's hedging arrangements.

1.31 As such, we recommend that Ofgem should discuss the impact of the Developer's hedging on the Transmission Assets, including whether any additional adjustments are required.

Areas requiring technical input

1.32 The CAT for the Transmission Assets includes the cost of time spent by the Developer's internal staff in managing the project and in the construction of the Transmission Assets.

1.33 The Developer has provided us with detailed schedules that show the number of hours spent and forecasted hours by each individual and activity during the construction of the Wind Farm. However, it is not our area of expertise to establish whether the time spent by the Developer's own staff is reasonable, or whether the average hourly rate used in the CAT is reasonable.

1.34 On this basis, we recommend that Ofgem should instruct technical advisors to review these schedules in order to determine whether these costs are being efficiently incurred.

1.35 Another area requiring technical input, as we set out above, is the contingency provision for the Transmission Assets. This has been calculated based upon the Developer's assessment of the risks associated with the construction of the Transmission Assets. It is not our area of expertise to establish whether the Developer's assessment of the expected value of risks and of the likelihood of each event occurring are correct.

1.36 On this basis, should Ofgem require a review of these risks, we recommend that it should instruct its technical advisors to review the risk schedule in order to determine whether the Developer's assessment is reasonable.

1.37 Separately, we note that the CAT includes (CR2, CR5 and CR8) costs in relation to strategic spares (see paragraphs 6.28, 7.9.3 and 10.31). Furthermore, £[redacted] is included in the CAT (CR5) for 24/7 service agreements. In line with previous projects, we recommend that Ofgem should take a view regarding both the level of spare parts in the ITV and the inclusion of these operating costs.

Unsubstantiated costs

1.38 The CAT contains a number of estimates made by the Package Managers for expected contract variations and remaining budgets. There are a number of individual estimates of over £100,000 (see paragraph 1.39 below) where the Developer has provided an email from the relevant Package Manager in support of the estimated costs, however the level of information provided has been insufficient for us to substantiate the amount included in the CAT. This includes instances where the Developer has provided rationale for the inclusion of an estimate, whilst being unable to provide justification for the value of the estimate.

1.39 These estimates, which do not include the contingency provision of £[redacted] detailed above, total £[redacted] ([redacted]% of capital costs) as follows:

Unsubstantiated costs

	CAT Reference	Ref	OFTO amount £
Landowner costs - external consultancy budget provision	CR8	6.14	[redacted]
Landowner costs -legal costs budget provision	CR8	6.16	[redacted]
Insurance costs	CR8	6.18	[redacted]
Construction site and commissioning - LIDAR wave buoys	CR8	6.29.2	[redacted]
Construction site and commissioning - Reconstruction site	CR8	6.32	[redacted]
Construction site and commissioning - construction site	CR8	6.37	[redacted]
EPC & Program management costs	CR8	6.40	[redacted]
DEVEX	CR8	6.48	[redacted]
Offshore transformers - spare parts	CR2	7.9.3	[redacted]
OSS design costs - remaining budget (expected variation orders)	CR2	7.13.2	[redacted]
OSP fabrication - remaining budget (estimated future costs)	CR2	7.23	[redacted]
220kv cable supply & termination - estimated future costs	CR3	8.9	[redacted]
Installation & Burial (Export Cable) - estimated costs	CR3	8.20	[redacted]
Subsea cable survey - estimated future costs	CR3	8.28	[redacted]
Onshore substation civil works - expected future costs	CR5	10.12	[redacted]
Onshore switchgear and control - remaining budget	CR5	10.27	[redacted]
Onshore switchgear and control - miscellaneous installation related costs	CR5	10.29	[redacted]
Onshore substation - strategic spare parts	CR5	10.32	[redacted]
Grid connection provision	CR7	12.6	[redacted]
Transaction costs	CR9	13.6	[redacted]
			[redacted]

1.40 In light of the high value of these estimates, we recommend that Ofgem should obtain an update from the Developer on these costs shortly prior to finalising the ITV in order to determine whether these costs should be included within the Transmission Assets.

Update to estimates

1.41 For some estimated costs, the Developer has confirmed new information has come to light since submitting the CAT, meaning the estimates set out in the supporting documentation provided differ to the amounts included in the CAT. The Developer has taken a consistent approach stating that no adjustments to the CAT should be made because of the new information, as this was not present at the time of submitting the CAT. However, we have proposed adjustments to reflect the updated estimated costs. We include these adjustments, totalling a £[redacted] decrease, separately in the table at paragraph 1.42 below.

Conclusion

1.42 Following the Ex-Ante Review and the supporting information provided, we consider that adjustments of £6,077,795 (1.3% of capital costs) are required to the CAT as summarised in the following table.

Impact of cost assessment

	CAT Reference	Ref	£
Cost of Transmission Assets per CAT (excluding IDC)		1.8	485,116,697
Revised estimates - updated for new information available since the CAT date			
Decrease in OSS desgin costs for remaining budget no longer required	CR2	7.13.2	[redacted]
Decrease in Installation & Burial (Export Cable) costs for updated estimated future costs	CR3	8.20	[redacted]
Decrease in subsea cable survey costs for updated estimate of expected variation orders	CR3	8.28	[redacted]
Decrease in transaction costs for current estimate	CR9	13.5	[redacted]
			[redacted]
Reallocation of costs within the CAT			
Reallocation of 400kV cable supply costs	CR4	9.3	[redacted]
Reallocation of 400kV cable supply costs	CR7	12.2	[redacted]
Reallocation of onshore cable supply costs (remaining budget) misallocated to CR5	CR4	9.4	[redacted]
Reallocation of onshore cable supply costs (remaining budget) misallocated to CR5	CR5	10.27	[redacted]
Adjustments where the amounts verified differs to the CAT amount			
Increase in fuel costs estimate	CR8	6.24.2	[redacted]
Consents - application costs budget no longer required	CR8	6.42	[redacted]
Increase in offshore transformers discount	CR2	7.29	[redacted]
Reduction in 220kV Cable Supply & Termination variation orders	CR3	8.7	[redacted]
Reduction in Installation & Burial (Export Cable) variation orders	CR3	8.16	[redacted]
Reduction in onshore cable supply remaining budget - ABB AB	CR4	9.6	[redacted]
Reduction in onshore cable supply remaining budget - DTS system	CR4	9.7.2	[redacted]
Reduction in onshore cable supply remaining budget - HVAC test	CR4	9.7.3	[redacted]
Reduction in onshore cable supply remaining budget - scaffolding costs	CR4	9.8.1	[redacted]
Decrease in onshore export cable installation - estimated furure costs	CR4	9.18.2	[redacted]
Reduction in onshore substation miscellaneous site running costs	CR5	10.14	[redacted]
Reduction in onshore substation strategic spare parts	CR5	10.31.2	[redacted]
Reduction in reactive substation harmonic filters	CR6	11.13	[redacted]
Increase in shunt reactors	CR6	11.17	[redacted]
Reduction in connection bay equipment costs	CR7	12.11	[redacted]
			[redacted]
Total adjustments			**(6,077,795)**
Revised cost of Transmission Assets			**479,038,902**

Summary of cost movements and unsubstantiated costs

1.43 At **Appendix 1**, we set out a summary by CR category of the cost movements detailed in the table at paragraph 1.42 above, along with the unsubstantiated costs including those in the table in paragraph 1.39 above and the contingency provision (paragraph 1.24 above).

Grant Thornton UK LLP

Grant Thornton UK LLP
London

20 October 2017

2 INTRODUCTION AND BACKGROUND

INSTRUCTIONS

2.1 Grant Thornton UK LLP has been instructed by Ofgem to prepare an Ex-Ante Review of the cost information and cost templates prepared for Ofgem by the Developer in relation to the WOW03+04 Transmission Assets.

2.2 The review is to understand whether the costs provided in the Developer's cost template can be matched to specific contracts or other supporting information, and whether appropriate metrics exist for cost allocation between transmission and generation. Our work involved tracing the amounts quoted in the cost assessment template to supporting contracts, schedules and other supporting information that indicates how costs have been derived. The review also involved a site visit to the Developer's premises in order to discuss the information provided, together with the basis for the cost allocation metrics used.

2.3 The purpose of a review at this stage is to:

2.3.1 determine if a developer cost estimate requires updating for the next stage of the transfer process, EPQ and ITT;

2.3.2 aid technical evaluation by helping to identify areas where the cost information suggests that further technical review may be required to consider efficiency as part of determining the ITV for the ITT stage of the process; and

2.3.3 assist determination of ITV for ITT by reviewing accuracy, allocation and completeness of cost information.

2.4 The Ex-Ante Review is based upon the Developer's current estimates of the costs to be incurred in developing and constructing the transmission assets. Following construction of the Wind Farm, we expect to carry out a forensic review of the actual expenditure incurred by the transmission business (the Ex-Post Review).

2.5 Grant Thornton's review of the ex-ante cost information prepared by the Developer is limited to the scope as set out above and does not include detailed cost verification or any review of technical or legal issues.

2.6 Our review and this report is based upon the cost template submitted to Ofgem dated 10 March 2017 and incorporates information and explanations provided regarding the costs in this version of the cost template, both during our meeting with and correspondence with the Developer up to 22 June 2017.

2.7 If further information is produced and brought to our attention after service of this report, we reserve the right to revise our opinions as appropriate.

2.8 This work does not constitute an audit performed in accordance with Auditing Standards.

2.9 Except to the extent set out in this report, we have relied upon the documents and information provided to us as being accurate and genuine. To the extent that any statements we have relied upon are not established as accurate, it may be necessary to review our conclusions.

2.10 The report has been prepared using Microsoft Word and Microsoft Excel. The report may contain minor rounding adjustments due to the use of computers for preparing certain calculations.

2.11 No responsibility is accepted to anyone other than Ofgem.

RESTRICTION ON CIRCULATION

2.12 Grant Thornton does not accept or assume responsibility, duty of care, liability or other obligation to any third party other than Ofgem who, as a result, either directly or indirectly, of disclosure of the whole or any part of this report by Ofgem, receives, reads or otherwise obtains access to this document. Any party relying on this report does so entirely at their own risk.

2.13 In the preparation of our report, Grant Thornton has been provided with material by Ofgem (and by third parties at Ofgem's request) relating to third parties. We have relied upon warranties and representations provided by Ofgem that it is fully entitled to disclose such information to us for inclusion within our report, free of any third party rights or obligations, and that Ofgem will only permit circulation of this report in accordance with any rights to confidentiality on the part of any third party. Any objections to the inclusion of material should be addressed to Ofgem. Accordingly, Grant Thornton acknowledges no duty or obligation to any party in connection to the inclusion in the report of any material referring to any third party material or the accuracy of such material.

DISCLOSURES OF INTEREST

2.14 To the best of our knowledge, we have no connections with any of the parties or advisors involved in this matter, beyond normal commercial relationships, which would influence our report in any way.

FORMS OF REPORT

2.15 For your convenience, this report may have been made available to recipients in electronic as well as hard copy format. Multiple copies and versions of this report may therefore exist in different media and in the case of any discrepancy, the final signed electronic copy should be regarded as definitive.

BACKGROUND TO THE WIND FARM

2.16 The Wind Farm is situated to the north west of the existing Walney Offshore Wind Farm 01 and 02, around 19km off the Isle of Walney coast in Cumbria. The onshore licensing body is NGET and the WOW03+04 Transmission Assets will connect to the Middleton 400kV NGET substation located at Heysham.

2.17 The Wind Farm will consist of 40 8.25MW WTGs for WOW 03 with a Transmission Entry Capacity (TEC) of 330MW and 47 7.0MW WTGs for WOW04 with a TEC of 329MW. Each wind farm will be connected to two OSS located within the boundaries of the WOW03+04 Offshore Wind Farm.

2.18 The WOW03+04 Transmission Assets are currently under construction and are due to be fully operational and commissioned by the end of 2018. They will include an ONSS, two OSS, seven export cables (three subsea and four land) and a dedicated Transmission Assets Supervisory Control and Data Acquisition (SCADA) system.

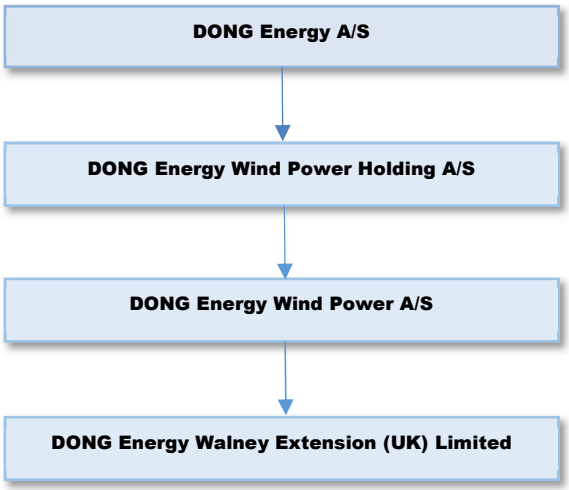
2.19 The WOW03+04 Transmission Assets are expected to deliver an availability of 98%, taking into account both planned and unplanned maintenance.

OWNERSHIP STRUCTURE

2.20 The Wind Farm is owned by DONG Energy Walney Extension (UK) Limited, which is a wholly owned subsidiary of DONG Energy.

2.21 DONG Energy Walney Extension (UK) Limited holds the marine license for the WOW03+04 Offshore Wind Farm under the Marine and Coastal Access Act 2009, and the Development Consent Order (DCO).

2.22 The current ownership structure[4] of the Wind Farm is set out below:



[4] DONG Energy Group Structure, Information Memorandum June 2016

3 THE WOW03+04 EX-ANTE REVIEW

3.1 The main purpose of the Ex-Ante Review of the Wind Farm's Transmission Assets is to determine whether the costs as set out in the Developer's cost template for the Transmission Assets are appropriately stated to use in Ofgem's cost assessment, and whether costs not directly attributable to either the Generation or Transmission Assets have been allocated between the two on a reasonable basis.

3.2 The starting point in our review of the cost information provided was the CAT dated 10 March 2017, and was based upon the Developer's estimates of the costs of the Transmission Assets at 31 January 2017.

3.3 Our review has considered confirmation that costs included in the CAT relate to contracts that are either for the Transmission Assets or are for the Wind Farm in a broader sense but have a reasonable basis for allocation between Transmission Assets and other elements of the Wind Farm. The basis of allocation is different in some cases depending upon:

3.3.1 whether the costs can be directly attributed to either the transmission or generation businesses (as in the case of the main capital contracts); or

3.3.2 what is considered the main driver behind the relevant development or project management cost (this is usually capital cost or the degree of time/activity required in relation to different components of the Wind Farm development).

3.4 In each case where an allocation is involved we have considered if the proposed method and rate of allocation are appropriate for that particular cost. We have not at this stage sought to verify that any expenditure has actually been incurred by tracing to actual payments, as that will be done for selected contracts as part of the later forensic review.

3.5 The cost assessment for the Transmission Assets of the Wind Farm as per the CAT is summarised below:

Transmission Assets cost summary

	CAT Reference	Ref	Direct costs £	Contingency £	Total £	%
Project common costs	CR8	6.1	[redacted]	[redacted]	[redacted]	[redacted]%
Offshore substation	CR2	7.1	[redacted]	[redacted]	[redacted]	[redacted]%
Submarine cable supply and installation	CR3	8.1	[redacted]	[redacted]	[redacted]	[redacted]%
Land cable supply and installation	CR4	9.1	[redacted]	[redacted]	[redacted]	[redacted]%
Onshore substation connection	CR5	10.1	[redacted]	[redacted]	[redacted]	[redacted]%
Reactive substation	CR6	11.1	[redacted]	[redacted]	[redacted]	[redacted]%
Connection costs	CR7	12.1	[redacted]	[redacted]	[redacted]	[redacted]%
Other costs	CR9	13.1	[redacted]	[redacted]	[redacted]	[redacted]%
Total capital costs			[redacted]	[redacted]	[redacted]	[redacted]%
Interest during construction			[redacted]	[redacted]	[redacted]	[redacted]%
			[redacted]	[redacted]	**533,088,210**	100.0%

3.6 Our findings in respect of the Ex-Ante Review are set out as follows:

3.6.1 The overview of the Developer's processes for accounting and procurement of the Wind Farm are set out in Section 4;

3.6.2 Our work in relation to costs and procurement matters which are common to the CAT as a whole are set out in Section 5;

3.6.3 Our work in relation to project common costs and development costs which have been allocated to the Transmission Assets, summarised on the CAT under CR8, are set out in Section 6;

3.6.4 Our work in relation to costs specific to each component of the Transmission Assets, summarised on the CAT under CR2, CR3, CR4, CR5, CR6, CR7 and CR9 is set out in Sections 7 to 13;

3.6.5 A summary of the issues identified as part of our review are set out in the executive summary (Section 1).

INFORMATION PROVIDED

3.7 Grant Thornton has relied upon the following information in reviewing the cost assessment for the Wind Farm:

3.7.1 Preliminary Information Memorandum dated September 2016 and Information Memorandum dated June 2016[5];

3.7.2 information contained in the Ofgem developer data room for the Wind Farm Project; and

3.7.3 information and explanations provided to us by the Developer. This included a meeting with the Developer on 11 May 2017 to discuss the Transmission Assets and telephone calls and email correspondence with the Developer.

[5] Actual dates not specified

4 WOW03+04 PROCESSES

INTRODUCTION

4.1 In this section, we set out the processes that have been used by the Developer in relation to the procurement of and the accounting for the Wind Farm, and in particular, the Transmission Assets.

4.2 From our discussions with the Developer and our review of the cost information prepared by them in respect of the Transmission Assets, it is evident that there are systems in place which will help to ensure that the cost of the Wind Farm Transmission Assets represents value for money including:

4.2.1 competitive tendering;

4.2.2 specific planning and budgeting tools, including building on experience obtained from similar projects; and

4.2.3 controls over variation orders and large expenditure items.

DECISION MAKING PROCESSES

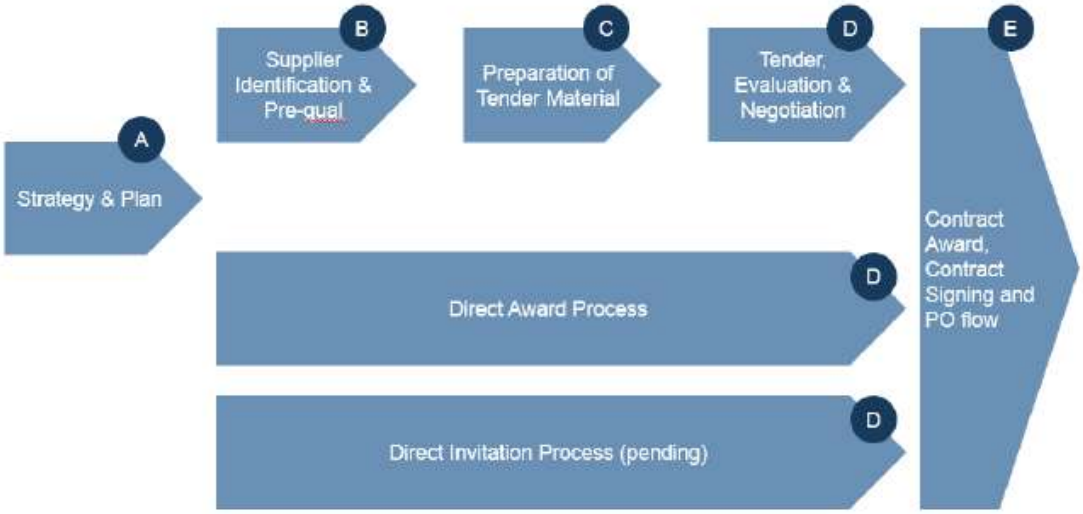
4.3 The decision making in the WOW03+04 programme is based on a project specific Authorisation Matrix. We have been provided with an extract from the current Authorisation Matrix dated September 2016, which sets out the three steps of authorisation, namely:

4.3.1 authorisation to approve decisions (Decision Governance);

4.3.2 authorisation to enter commitments ie to sign contracts (Commitment Governance); and

4.3.3 authorisation to approve and release payments (Payment Governance).

4.4 The formal requirements of the decision making process have been aligned between the Product Line and the WOW03+04 project as follows[6]:



ACCOUNTING AND BUDGETING PROCESS

4.5 DONG Energy uses the SAP accounting system for the Wind Farm. It uses the Propsi interface for forecasting which records expected contract prices along with resources and other forecasts. SAP records the actual costs and remaining committed costs. The CAT is populated using a download from the Propsi interface of forecast costs at 31 January 2017.

4.6 All costs of the Wind Farm are posted to a Work Breakdown Structure (WBS) code in the accounting system. The WBS hierarchy is maintained in the Propsi interface whereby the WBS codes are mapped to the CAT headings according to the hierarchy. The allocation of costs to the Transmission Assets is also maintained in Propsi at purchase order level of detail. The data is separated, depending on the general ledger account code mapping (maintained in a linked CSV file), into either:

4.6.1 the resources data file, which is analysed separately for hours reporting and benchmarking (taking account of transfer pricing); or

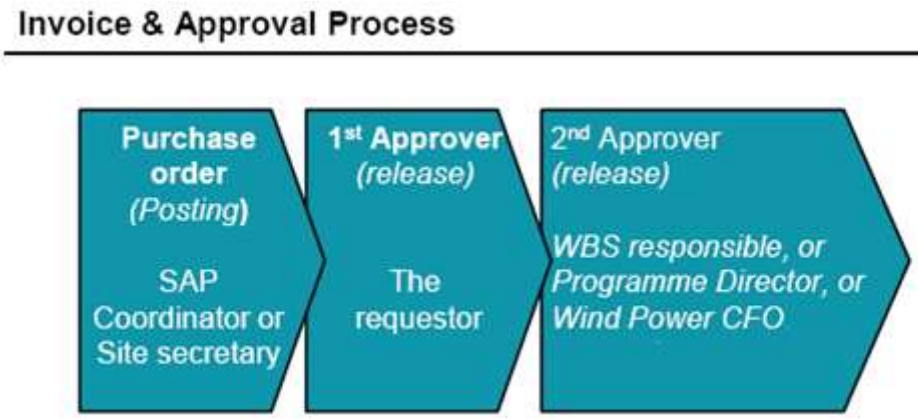
4.6.2 the contracts and travel data file, which is reviewed and any exceptions are reclassified and the data room references are added.

[6] Decision for A – E is aligned with the Authorisation Matrix

4.7 A manual process is carried out where the data files are combined and formatted for manual transfer to the CAT template. Late adjustments, which are not included in SAP, are manually added to the CAT.

Purchase order and invoice approval

4.8 The Developer operates a rigid invoice and purchase order approval process, as set out in the diagram below:



4.9 For each contract, purchase orders are prepared for the expected costs, along with a cash flow profile.

4.10 When the 'First approver' receives the invoice of costs incurred for 'release', the invoice amount and currency is matched against the purchase order (and the payment plan if one has been created). The 'First approver' ensures that the terms, quantities and the total amount are in accordance with both the contract and the item(s)/services(s) received from the vendor.

4.11 The 'Second approver', defined in the Authorisation Matrix depending upon the size and type of the invoice, approves the release of the invoice by the 'First approver'.

Budget Change Request

4.12 A Budget Change Request (BCR) is created whenever a change in cost is expected from the budgeted amount requiring the transfer of budgets between packages and the usage of contingency.

4.13 BCR approval is a continual process, with change requests dealt with as they arise, and when approved, the change is incorporated into the forecast. Approval for BCRs is required from the below levels in the following order, dependent upon the value of the change:

4.13.1 Package Manager

4.13.2 Schedule Manager

4.13.3 Cost Manager

4.13.4 EPC Director[7]

4.13.5 Programme Director

4.13.6 Programme Steering Committee

Cost controlling

4.14 Management of capital expenditure is described in the Project Cost Management Plan. This document references DONG Energy's generic cost management framework which defines the cost management principles, rules, and guidelines formulated and adopted by DONG Energy Wind Power A/S projects. The monthly monitoring and controlling activities are outlined in this document, including review and approval, for which the Cost Controller, Project Manager, Change Manager and Procurement Controller have specific responsibilities.

PROCUREMENT PROCESS

4.15 The Lead Contract Manager for WOW03+04 has the procedural responsibility for all procurement in the project. Contract Managers are responsible for sourcing, tendering and managing a contract throughout the whole process.

Multi-contract strategy

4.16 WOW03+04 has adopted a multi-contract strategy as the most suitable, cost effective and efficient procurement and construction approach for the Transmission Assets. Based upon DONG Energy's experience in the offshore sector, it has found that it is an expensive and often negative risk strategy to combine all contracts into a single EPC contract package. It is considered that a single contractor would inflate prices if it was taking all risks across a wide spread of packages and consequently the price for the project would significantly increase.

[7] In most cases, BCR approval is only required up to EPC director level

4.17 As such, DONG Energy considers that a multi-contract strategy is more economical, and enables the Developer to enlist the services of suitable suppliers with the appropriate technical expertise and experience for specific tasks. It also allows the Developer to retain control and responsibility over all aspects of the WOW03+04 project, including over the management of key interfaces between contractors and the resulting impact on the project and underlying budget.

Competitive Tendering

4.18 One of the main tools used by the Developer in achieving value for money and highest compliance to requirements is the use of a competitive tendering process for the main elements of construction of the Wind Farm.

4.19 As noted above, DONG Energy generally adopts a multi-contract procurement strategy for development and construction of their offshore wind farms. In relation to this project, companies were asked to tender for three wind farms; Race Bank (ROW01), WOW03+04; and Burbo Bank Extension (BBW02). This has been done in order to increase procurement volume, to promote a learning curve to increase technical and execution quality, and to decrease cost.

4.20 The majority of contracts were put out to tender, with DONG Energy inviting specialist companies in each area to tender for the work. However, in some circumstances the requirement to tender was waived when the nature of the work required so.

4.21 The final selection of preferred bidders was based upon an evaluation model, typically focussing on costs, terms and conditions, technical solutions, time schedules and QHSE (Quality, Health and Safety, & Environment). This model is adapted for each contract on a case-by-case basis. This means that in respect of the detailed weighting that is given to certain criteria (for example, costs), adjustments made are dependent on the profile of the package up for tender and are based upon the experience from former tenders, executed contracts and the market situation.

4.22 The following limits have been set for the 'approval of contract award':

4.22.1 < [redacted] DKK Project Manager and Contract Manager;

4.22.2 > [redacted] DKK EPC Director/Programme Director and Lead Contract Manager; or

4.22.3 > [redacted] DKK Programme Director and Chair of the Steering Committee.

Contracting

4.23 For the WOW03+04 project, as DONG Energy is the sole developer, all construction contracts are entered into by DONG Energy Wind Power A/S (DEWP).

COST ACCOUNTING AND ALLOCATION METHODOLOGY

4.24 Costs have been grouped on the cost activity to which they relate and on whether they relate entirely to Transmission or Generation Assets, or to the Wind Farm as a whole (shared costs), with the OFTO percentage for every WBS being maintained in Propsi (as noted in paragraph 4.6 above).

4.25 Shared costs are typically indirect costs which are for the general benefit of the overall project and include:

4.25.1 general project management and administration;

4.25.2 project support functions eg procurement, cost control, health and safety;

4.25.3 general consultants eg surveys, legal, environmental and consent;

4.25.4 offices – London, Copenhagen and on site; and

4.25.5 SCADA equipment benefitting both the Transmission and Generation Assets.

4.26 Further detail on cost allocations is set out in Section 5.

5 COSTS COMMON TO THE TRANSMISSION ASSETS AS A WHOLE

INTRODUCTION

5.1 Whilst the CAT has broken down the costs of the Transmission Assets into distinct areas, largely based upon the separate components that make up the Transmission Assets, there are certain costs and cost principles which are common to the Transmission Assets as a whole.

5.2 As such, we have summarised the work that we have undertaken in relation to these costs and cost principles in this section, and we cross-refer to our findings in relation to such costs and cost principles in the later sections of this report.

RESOURCES AND TRAVEL COSTS

5.3 The CAT contains internal resources and travel costs comprising the following amounts:

Travel and resources costs

	Ref	Resources £	Travel costs £	Total £
Offshore substation	7.1	[redacted]	[redacted]	[redacted]
Submarine cable	8.1	[redacted]	[redacted]	[redacted]
Onshore cable	9.1	[redacted]	[redacted]	[redacted]
Onshore substation	10.1	[redacted]	[redacted]	[redacted]
Reactive substation	11.1	[redacted]	[redacted]	[redacted]
Connection costs	12.1	[redacted]	[redacted]	[redacted]
Common costs	6.1	[redacted]	[redacted]	[redacted]
Other costs	13.1	[redacted]	[redacted]	[redacted]
Total		[redacted]	[redacted]	[redacted]

Resources

5.4 The Developer has provided detailed calculations of expected hours by employee for each package within the Transmission Assets, and has provided a breakdown of expected hours that employees who work on the Wind Farm as a whole will spend on the Transmission Assets.

5.5 These hours have been multiplied by hourly rates, and allocated where appropriate, to derive total expected resources costs for the Transmission Assets.

5.6 Whilst we have agreed the calculations of total resources costs, we have not reviewed how the hourly rates have been determined, including whether the hourly rates include any profit element, which has been the case on similar projects managed by DONG Energy.

5.7 Furthermore, we recommend that Ofgem's technical advisers should review the breakdowns provided of the number of hours by activity and the hourly rates used in order to assess whether the number of hours spent and the hourly rates are efficiently incurred.

Travel costs

5.8 The Developer has provided detailed calculations of the budgets for travel costs, which are based upon the number of trips expected from each employee working on each package over the course of the project, and budgeted costs per trip for hotels and flights. As such, we can see that there is a reasoned basis for the estimates.

CONTINGENCIES

Methodology

5.9 The Developer has conducted a detailed exercise in order to calculate the contingency provision for the projects, based on the Risk Register at January 2017.

5.10 Each Package Manager is responsible for identifying all potential risks in connection with their specific packages, based upon issues that have arisen from previous projects, and then with support from the Project Risk Manager, they estimate the probability of the risk materialising and the cost.

5.11 The Risk Register records all significant project risks and is reviewed and revised on a monthly basis to enable an accurate and up to date estimate of the total contingency.

Calculation

5.12 The contingency provision included within the CAT, approximating [redacted]% of pre-contingency capital costs, is set out in the table below:

Contingencies

	Ref	Total £
Offshore substation	5.20	[redacted]
Submarine cable	5.21	[redacted]
Onshore cable	5.22	[redacted]
Onshore substation	5.23	[redacted]
Common costs	5.19	[redacted]
		[redacted]
Uncertainties	5.24	[redacted]
Total		[redacted]

5.13 Each of the contingency amounts are calculated by multiplying the expected amount which would be incurred if the risk materialised by the probability that the risk will materialise. For example, if the expected costs which would arise if a risk materialised were £5.0 million, and the probability of the risk materialising was 10%, then the contingency amount would be £500,000, ie £5.0 million x 10%.

5.14 However, as the contingency provision was based upon the CAT, as prepared up to March 2017, the current value of contingency related to the Transmission Assets is likely to have decreased as the construction of the Transmission Assets nears completion.

5.15 By the time of the Ex-Post Review, the value of the contingencies will fall to zero, as all costs will be known at this stage.

Verification work

5.16 We have discussed the contingency provision with the Developer, and initially sought an overview of the key Transmission Assets related risks associated with the contingency and explanations for all large amounts (>£250,000) included within the provision.

5.17 The Developer has provided us with a document[8] that summarises the Wind Farm's approach to quantifying risks and the key risks by area, alongside a schedule detailing all risks where the value exceeded £250,000 in relation to the Transmission Assets. This schedule describes the risk, its cause and mitigation measures. It assigns a probability of the risk occurring and the expected value. The share attributable to the Transmission Assets is then recorded.

5.18 The key amounts within the contingency provision are summarised below, and where the individual contingencies exceeded £250,000, we agreed amounts to the schedule provided by the Developer.

Project common costs

5.19 Contingencies of £[redacted] in relation to common costs have been made to cover risks related to consents and timing for Unexploded Ordnance (UXO) clearance and commercial fisheries objections.

[8] Walney Extension Offshore Windfarm Determination and Management of Contingency - OFTO

Offshore substation

5.20 Contingencies of £[redacted] in relation to the offshore substation have been broken down into electrical risks and platform risks and cover:

5.20.1 Station Control System (SCS) installation;

5.20.2 contract management resources; and

5.20.3 electrical component commissioning delays.

Submarine cable

5.21 Contingencies of £[redacted] have been made to cover:

5.21.1 suppliers' minimum bend radius requirements;

5.21.2 cable damage; and

5.21.3 weather downtime on jointing vessel.

Land Cable supply and installation

5.22 Contingencies of £[redacted] have been made to cover the risks of cable damage and termination works.

Onshore substation

5.23 Contingencies of £[redacted] in relation to the onshore substation have been broken down into electrical risks and civil works risk and cover:

5.23.1 electrical component SAT and installation; and

5.23.2 civil works completion.

Uncertainties

5.24 Costs in relation to uncertainties of £[redacted] have been made to cover weather risks, technical and scope risks and price risks.

Limitations of our review

5.25 Our review of contingencies has been limited in the following two respects:

Incomplete information

5.26 Whilst the Developer has provided a schedule of individual contingencies which exceed £250,000, the collective value of these contingencies totals DKK [redacted] (£[redacted]), being [redacted]% of total contingencies). We have therefore been unable to verify the remaining £[redacted] of contingencies.

5.27 We have asked the Developer to provide further information to substantiate more of the contingency provision, but its policy is not to share its risk registers in full. As such, we have not been provided with information to substantiate the remainder of the contingency provision, and cannot therefore conclude upon whether these contingencies are appropriate.

Technical review

5.28 We have reviewed the risk provisions included within the list of contingencies over £250,000 for the Transmission Assets, which appear to be reasonable provisions concerning the Transmission Assets at the time of the CAT submission. However, we consider that the assessment of the expected value of risks and of the likelihood of each event occurring fall within the scope of a technical assessment, rather than the Ex-Ante Review. On that basis, we cannot say whether these amounts, which form the basis for the contingency provision, are correct.

INTEREST DURING CONSTRUCTION

5.29 The CAT includes the Developer's nominal pre-tax interest charge of 10.8% up to November 2011, 8.5% up to March 2014, and 8.0% for the period to the end of construction, estimated at August 2017 for WOW 03 and February 2018 for WOW04. After this time, the project is expected to be generating power and thus beyond the time the Developer will cease to earn interest. The Developer's interest cost for the Transmission Assets totals £[redacted]. For the avoidance of doubt, we have not verified the Developer's assessment of interest during construction, as this is outside the scope of our review.

COST PRINCIPLES

Cost allocation

5.30 Previously, the Developer has used a high-level allocation methodology to assign shared costs to the Transmission Assets, typically based upon the value of capital items for the Transmission Assets as a percentage of the value of total capital items for the Wind Farm as a whole.

5.31 For BBW02, and now ROW01 and WOW03+04, the Developer has taken what they have described as "*a more-evidenced based approach*" wherever possible to ensure that appropriate cost allocation is made. Every cost item in the CAPEX forecast is assessed and an OFTO allocation percentage is applied, down to the Purchase Order (PO) line item level (or WBS level for resource and travel costs where no PO exists). Four different methods have been used as summarised below:

5.31.1 Direct allocation. Costs are allocated to the Transmission Assets based upon the specific items contract values/cost incurred. Costs are identified through a detailed item-by-item review by the Package Manager and Cost Controller. This methodology was used for SCADA, network and telecommunications, and metering costs within the ONSS (see Section 10), and for geo survey costs at both the DEVEX and CAPEX phases (see Section 6);

5.31.2 Geographical area. For costs related to environmental, certain consents and geo survey work where there are clear geographical links to the costs incurred, the allocation has been made based on a proportion of the geographical area related to the Transmission Assets. Using GIS data for both onshore and offshore assets, the Developer has determined that the Transmission Assets share of the geographical area of the Wind Farm is 30%;

5.31.3 Transmission Assets cost % of total CAPEX. This rate is similar to allocation rates used in previous projects where the cost of Transmission Assets CAPEX is taken as a percentage of total Wind Farm CAPEX including resource and travel costs. The rate derived is 26.66%, which is in line with rates used on other projects. The Developer has explained that this rate is applied to non-specific CAPEX where the other allocation methods are not considered appropriate, for example, construction management work scope costs[9] (see paragraph 5.41 below); and

5.31.4 Shared resource and travel costs. For the resource and travel costs which are shared between Transmission and Generation Assets (eg programme management), an allocation at WBS level has been determined on a package-by-package basis. These rates are either based upon hours spent during the construction phase of the project, contract values or by Package Manager assessments in conjunction with the Cost Controller.

[9] We note that a rounded figure of 26% has been applied to construction site and commissioning costs in the CAT.

5.32 Ofgem instructed Xero Energy Limited (Xero) to undertake a detailed review of the resource costs and the methodologies used to allocate such costs between the Generation and Transmission Assets. We have been provided with a copy of the technical report. Whilst the review was undertaken in relation to the allocation rates applied on BBW02, as noted at paragraph 5.31 above, the allocation methodologies are the same for all three projects.

5.33 Whilst some of the above allocation methodologies may appear reasonable in isolation, as highlighted in the Xero report, the approach adopted by the Developer appears overly complicated with the allocation of costs within some categories using a mixture of different rates.

5.34 As such, we recommend that Ofgem should discuss the allocation methodologies and the rates used with the Developer.

Cost allocation rates

5.35 The table below summarises the allocated costs included within the CAT, and the effective allocation rate[10] for such costs:

Allocated costs

	Ref	Total £	Allocation £	Effective Rate
Common costs	6.1	[redacted]	[redacted]	24.6%
Shared resources	5.3	[redacted]	[redacted]	33.5%
DEVEX	6.45	[redacted]	[redacted]	34.6%
Total		[redacted]	[redacted]	**30.4%**

5.36 This table shows that the allocation methodologies used by the Developer have resulted in cost allocations to the Transmission Assets at an average rate of 30.4%, which is higher than rates we have seen on previous projects of around 25%. This is due to the higher effective rates of 33.5% and 34.6% in relation to shared resources and DEVEX respectively.

5.37 Whilst the effective rate for shared resources of 33.5% is higher than the CAPEX rate used for resources on previous projects, discussions on previous projects have highlighted that the amount of time spent by project teams on the Transmission Assets as a proportion of total time is much higher than the proportion of CAPEX.

[10] Ie excluding costs with an 'allocation rate' of 100%

5.38 Of the £[redacted] million of allocated DEVEX costs, £[redacted] million relates to time costs which have higher allocation rates as explained above. The average allocation rate for these time costs is 43.2%, and excluding these time costs the average allocation rate for DEVEX is 28.3%. This remains higher than the CAPEX rate used by the Developer due to the higher rates applied in relation to associated employment costs such as travel and accommodation expenses.

5.39 In light of the high effective allocation rates for shared costs to the Transmission Assets, particularly in relation to shared resources and DEVEX, we recommend that Ofgem should discuss cost allocation further with the Developer.

Verification of allocation rates

Geographical area

5.40 We have verified the calculation of allocation rates for the geographical area, and this appears to have been determined in line with the stated methodology.

Transmission Assets cost % of total CAPEX

5.41 The cost allocation method provided by the Developer states that the allocation rate is derived by dividing the value of the Transmissions Assets by the total value of the Wind Farm project. However, we have not been provided with the supporting calculation and the Developer has stated that the total WOW03+04 and OFTO CAPEX values are confidential.

5.42 Furthermore, we note that:

5.42.1 26.66% is the OFTO allocation applied for ROW01[11] and therefore, in absence of the supporting calculation, does not appear to be specific to WOW03+04; and

5.42.2 as noted in paragraph 5.31.3 above, construction site and commissioning costs have been allocated at 26.00%.

5.43 As such, we recommend that Ofgem should discuss this cost allocation further with the Developer.

[11] [redacted]X [redacted]

Shared resource and travel costs

5.44 The Developer has provided details for the different allocation rates used for the shared resource and travel costs, as summarised in the following table:

Resource and travel allocation rates

	Rate	Rationale
Programme Management		
WOW0304 PM internal hours and travel	[redacted]%	Proportion Transmission Assets hours on entire project
Financial management		
WOW0304 PM internal hours and travel	[redacted]%	Proportion Transmission Assets hours on entire project
Asset management		
WOW0304 PM internal hours and travel	[redacted]%	Proportion Transmission Assets hours on entire project
EPC management		
WOW0304 EPC Management - Hours, Travel, Ext co	[redacted]%	Proportion Transmission Assets hours on EPC packages
WOW0304 EPC Management, hours, travel	[redacted]%	Proportion Transmission Assets hours on EPC packages
EPC support		
WOW0304 EPC Support hours, travel	[redacted]%	Proportion Transmission Assets hours on EPC packages
Consents		
WOW0304 Consent PM - internal hours	[redacted]%	Package manager assessment
WOW0304 Application	[redacted]%	Package manager assessment
WOW0304 Environmental – hours	[redacted]%	Package manager assessment
Site investigation		
WOW0304 Survey – hours	[redacted]%	Package manager assessment
Electrical management		
WOW0304 PM - D&C hour & travel	[redacted]%	Proportion Transmission Assets hours on ELS packages
WOW0304 PM - D&C hour & travel	[redacted]%	Proportion Transmission Assets hours on ELS packages
Electrical Design and compliance		
WOW0304 PM - D&C hour & travel	[redacted]%	Package manager assessment
WOW0304 PM - D&C hour & travel	[redacted]%	Package manager assessment
SCADA		
WOW0304 PM - SCADA hour & travel	[redacted]%	Package manager assessment
WOW0304 Design - SCADA hour & contract	[redacted]%	Package manager assessment
WOW0304 Supply - SCADA hour & contract	[redacted]%	Package manager assessment
Construction management		
WOW0304 Hours - Site mgmt, hours, travel	[redacted]%	Package manager assessment
WOW0304 Hours - offshore site mgmt hours	[redacted]%	Package manager assessment
WOW0304 Hours - commissioning mgmt hours	[redacted]%	Package manager assessment
WOW0304 Hours - marine coordination hours	[redacted]%	Package manager assessment
WOW0304 Hours - HSE site mgmt hours	[redacted]%	Package manager assessment
WOW0304 O&M facilities hours	[redacted]%	Package manager assessment
WOW0304 Hours - Transmission Assets	[redacted]%	Package manager assessment

5.45 We have verified that the allocation rates that were determined by reference to hours spent or contract value appear to be determined in line with the stated methodology. Likewise, the assessment of costs as all relating entirely to Generation Assets or Transmission Assets accords with our expectations.

5.46 However, we note that the allocation rates for consents, site investigations, electrical design and compliance, SCADA and construction management have been based upon judgement of Package Managers. Whilst the allocation for these costs have been conducted on a line-by-line basis, and as such, this may well be a well-informed assessment of the allocation of time spent, we are unable to confirm whether the allocation rate for these categories is reasonable.

Foreign exchange

Accounting for foreign exchange in the CAT

5.47 During the development of the Transmission Assets, costs will be payable in foreign currencies, either Euros, Sterling (GBP) or Danish Krone (DKK). Furthermore, as the Developer is based in Denmark, a number of project management costs are also likely to be paid in the local currency of DKK.

5.48 The Transmission Assets cost estimate applied in the CAT is based on the documented currency for each of the contracts, for resources, travel, etc. The Developer has converted costs, where applicable, into Sterling based upon the monthly rates incurred when the payments were made. The exchange rates are maintained in SAP and the Developer has used OANDA[12] monthly average exchange rates. Where costs have not yet been incurred or committed through a contract, an assessment has been made of the exchange rates that are most likely to be applied each month. For future periods, the costs are forecast into the months according to the PO payment profile maintained in SAP and the exchange rate used is the Dong Energy Market Price Committee (MPC) rate.

[12] Oanda.com

5.49 Of these costs detailed in the CAT, £[redacted] million (46.1% of the Transmission Asset capital costs pre contingency) are denominated in either Euros or Danish Krone as per the table below:

Costs denominated in foreign currencies (ex-contingencies)

	Euros	£ Equivalent	DKK	£ Equivalent	Total £
Offshore substation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Submarine cable	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Onshore cable	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Onshore substation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Reactive substation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Connection costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Effective exchange rate		[redacted]		[redacted]	

5.50 In addition, as DONG Energy is based in Denmark, we consider that a large proportion of resources costs and travel costs are also likely to be paid in foreign currencies. As such, we consider that a significant proportion of the Transmission Assets costs are expected to be payable in currencies other than Sterling.

Rates used

5.51 As explained in paragraph 5.48 above, the Developer has used monthly exchange rates to translate amounts payable in foreign currencies into Sterling.

5.52 Whilst we have not been provided with documentation to show the calculations performed by the Developer to establish the rates, we have compared the rates used to exchange rates during the period and had considered these to be consistent with the rates used by the Developer[13].

5.53 Whilst the fluctuation in exchange rates following Brexit would be expected to result in higher costs of construction, as the Developer has entered into some foreign currency hedges as detailed below, the impact of such fluctuations will have been mitigated to some degree.

Mitigation of foreign exchange risk

5.54 At the start of the project, the Developer did not enter into hedges for foreign currency transactions. Instead, costs incurred in foreign currencies are included in the CAT based upon applicable day rates (ie the spot rate) when the payments were made and would be based on actual CAPEX spent on any given day.

[13] We have used the monthly average rates from https://www.oanda.com/currency/average for comparison purposes

5.55 Further to the Developer's discussions with Ofgem, they have entered into foreign currency hedges with deal dates ranging from June 2016 to February 2017 as follows:

Foreign currency hedges

	DKK	EUR	£	Effective rate
DKK CAPEX hedges	[redacted]		[redacted]	[redacted]
EUR CAPEX hedges		[redacted]	[redacted]	[redacted]

5.56 In Section 13, we set out a breakdown of the foreign exchange gains of £[redacted] that have been made in relation to the above hedges.

5.57 However, we note the following in relation to the hedges which the Developer has entered into:

5.57.1 There is no correlation between the exchanges rates used by the Developer in the CAT and the rates obtained by the Developer on the hedging contracts;

5.57.2 It is unclear why the Developer entered into hedges for DKK [redacted] when costs in the CAT denominated in Danish Krone are only DKK [redacted] (see paragraph 5.49 above); and

5.57.3 As the Developer entered into hedging agreements after the Brexit vote was known (following which future exchange rates dropped), increased costs in the CAT, as a result of the lower future expected rates over the remainder of the construction period following Brexit, are only likely to be partially offset by the hedging gains of £[redacted].

5.58 As such, whilst we consider it appropriate that the hedging gains should be approved in the CAT, we consider that further adjustments may be required to the Transmission Assets to reflect the increase in costs which were not mitigated through the Developer's hedging arrangements.

Application of overriding global discounts

5.59 The Developer has confirmed that no global discounts have been obtained in the course of the project, save for those included in the CAT in relation to the offshore platform supply and installation contracts.

Related party transactions

5.60 The Developer has confirmed that there have been no related party transactions, other than project management and personnel.

Boundaries used for purposes of cost allocation

5.61 The Information Memorandum confirms the boundary points of the Transmission Assets proposed by the Developer, as follows:

- offshore WOW03+04 – located at the sealing ends of the 34kV cable terminating at the 34kV MV switchgear connecting from the grid transformers on the OSSs.
- onshore – located in the first gas barrier zones of both main and reserve 400kV bus bar contained within the existing NGET Middleton 400kV substation.

5.62 The details that we have seen reflect costs between these two boundary points.

6 PROJECT COMMON COSTS AND DEVELOPMENT COSTS

PROJECT COMMON COSTS

6.1 The project common costs included within the CAT are comprised as follows:

Project common costs

	Ref	Total £
Surveys	6.3	[redacted]
Landowner costs	6.8	[redacted]
Insurance	6.17	[redacted]
Construction site & commissioning	6.19	[redacted]
EPC & Program management costs	6.39	[redacted]
Consents costs	6.41	[redacted]
Internal resources	5.3	[redacted]
Travel	5.3	[redacted]
Transmission Assets Related CAPEX Contingency	5.12	[redacted]
Development costs	6.45	[redacted]
Total		[redacted]

6.2 We detail these costs further in this section. The rates for the allocation of costs to the Transmission Assets, including the rationale for the allocation methodology and the procedures we have undertaken to verify these rates, are set out in Section 5.

Survey costs

6.3 Survey costs are summarised as follows:

Surveys

	Supplier	Ref	Total costs £	Allocation rate	Total per CAT £
UXO inspection and EOP works	Boskalis EOD Services (UK) Limited	6.4	[redacted]	[redacted]%	[redacted]
Geophysical Investigation Pre-construction and UXO Survey	Fugro EMU Limited	6.5	[redacted]	[redacted]%	[redacted]
Shallow Geotech Investigation 2016	Fugro Geoconsulting Limited	6.6	[redacted]	[redacted]%	[redacted]
UXO Consultancy work	Ordtek Limited	6.7	[redacted]	[redacted]%	[redacted]
CPT works	Allied Exploration & Geotechnics Ltd	-	[redacted]	[redacted]%	[redacted]
Cable Burial Risk Assessment	Cathie Associates SA/NV	-	[redacted]	[redacted]%	[redacted]
Vessel Inspection	Erria A/S	-	[redacted]	[redacted]%	[redacted]
Vessel Inspection	Nordic Maritime Solutions Gmbh & Co	-	[redacted]	[redacted]%	[redacted]
Vessel Inspection	Specialist Marine Consultants Ltd.	-	[redacted]	[redacted]%	[redacted]
Point cloud cleaning	Beamworx BV	-	[redacted]	[redacted]%	[redacted]
Geophys consultancy	Budget provision	-	[redacted]	[redacted]%	[redacted]
Total			[redacted]		[redacted]

6.4 The Developer entered into a contract with Boskalis EOD Services (UK) Limited for UXO Inspection and EOP works at a cost of £[redacted][14], which we have agreed to the contract. The Developer has allocated 30% of the cost to the Transmission Assets, based on the geographical area method, as described in Section 5, amounting to £[redacted].

6.5 The Developer entered into a contract with Fugro EMU Limited for geophysical investigation pre-construction and UXO survey at a cost of £[redacted][15], which we have agreed to the contract. The Developer has allocated 30% of the cost to the Transmission Assets, based on the geographical area method, as described in Section 5, amounting to £[redacted].

6.6 The Developer entered into a contract with Fugro Geoconsulting Limited for shallow geotech investigation work at a cost of £[redacted], which we have agreed to the contract. The full cost has been attributed to the Transmission Assets.

6.7 The Developer entered into a contract with Ordtek Limited for UXO Consultancy work at a cost of £[redacted], which we have agreed to the contract. There has been one variation to the contract at a cost of £[redacted], which we have agreed to the variation order, leading to total costs of £[redacted]. In December 2016, the costs increased further by £[redacted], which we have agreed to email correspondence from the Senior Project Lead, leading to total costs of £[redacted]. The Developer has allocated 30% of the cost to the Transmission Assets, based on the geographical area method, as described in Section 5, amounting to £[redacted].

[14] Small difference of £[redacted] to the CAT amount of £[redacted]

[15] Small difference of £[redacted] to the CAT amount of £[redacted]

Landowner costs

6.8 Landowner costs (which are 100% OFTO) are summarised as follows:

Landowner costs

		Ref	Total £
Land agreement OnSS	C R Baxter	6.9	[redacted]
Land agreement OnSS work	E E Thornton & Sons	6.10	[redacted]
Crossing agreement, payment of Counterparty's costs	Blue Transmission Walney 2 Ltd.	-	[redacted]
Crossing agreement, payment of counterparty's costs	WoDS Transmission plc	-	[redacted]
Crossing agreement legal support	Pinsent Masons LLP	6.11	[redacted]
Legal advice	Watson, Farley & Williams LLP	-	[redacted]
Legal advice	Kromann Reumert	-	[redacted]
Land agreement	Duchy of Lancaster	6.12	[redacted]
External consultancy	Budget provision	6.13	[redacted]
Legal costs	Budget provision	6.15	[redacted]
Total			[redacted]

6.9 The CAT includes costs of £[redacted] in relation to C R Baxter land agreement costs, of which we have agreed £[redacted] to supporting invoices, leading to a difference of £[redacted]. We have not adjusted for this small difference.

6.10 The CAT includes costs of £[redacted] in relation to E E Thornton & Sons rental costs, of which we have agreed £[redacted] to two supporting invoices. We do not propose an adjustment for the small difference of £[redacted].

6.11 The Developer has provided a detailed breakdown of the Pinsent Masons LLP crossing agreement legal support costs of £[redacted], which is made up of multiple PO lines. The breakdown includes one item above £100,000 noted at a value of £[redacted], which we have agreed to the payment request order with supporting schedule of payments to be made before entry.

6.12 The CAT includes a budget provision of £[redacted] for the Duchy of Lancaster land agreement. The Developer has provided a detailed schedule of expected payments, which is based on rental costs of approximately £[redacted] per annum. We have agreed the rent per annum to the signed landowner's consent agreement dated 18 December 2014.

6.13 We requested supporting documentation for the external consultancy budget provision of £[redacted]. The Developer has confirmed there are no detailed calculations in support of this estimate available at present. The Developer has provided an email from the site and land rights manager dated 26 May 2017 with explanations of the costs in which he states "*The £[redacted] looks broadly in line with what I have estimated remaining*", which includes the following costs:

6.13.1 completion payments;

6.13.2 professional fees;

6.13.3 crop loss and disturbance compensation;

6.13.4 stamp duty land tax (STDL) late submission fees; and

6.13.5 land registry fees.

6.14 Without further information, we are unable to substantiate the external consultancy budget provision of £[redacted]. As such, we recommend that Ofgem should obtain an update from the Developer on the costs prior to finalising the ITV.

6.15 We requested supporting documentation for the legal costs budget provision of £[redacted], relating to legal crossing and proximity agreement fees. We have been provided with an explanation of the costs from the Programme Asset Manager in an email dated 23 May 2017. The email explains that the budget provision was in place as it was initially thought that the Developer may have to reimburse legal and technical costs under the crossing and proximity agreements separately, however it is now likely that these will all be invoiced directly by the other "cross-parties".

6.16 The Developer has confirmed that this is new information, which was not present at the time of submitting the CAT and therefore the Developer does not propose an adjustment, as there is no certainty of the adjustment amount. We recommend that Ofgem should obtain an update on whether the estimated budget provision of £[redacted] is still required before finalising the ITV.

Insurance costs

6.17 The Wind Farm expects to incur costs of £[redacted] in respect of the Construction All Risks (CAR) insurance policy, of which 20% has been allocated to the Transmission Assets, amounting to £[redacted].

6.18 The Developer has provided an email trail with confirmation from the Package Manager that the CAR premium relating to the Transmission Assets is DKK [redacted] (£[redacted])[16]. We have not been provided with any further supporting documentation[17]. As such, we have not had sufficient information to substantiate the expected insurance cost and recommend that Ofgem should obtain an update from the Developer before finalising the ITV.

Construction site and commissioning

6.19 The Wind Farm expects to incur costs of £[redacted] in relation to construction site and commissioning costs, of which 26%[18], has been allocated to the Transmission Assets, amounting to £[redacted] as follows:

Construction site and commissioning

	Ref	Total costs £	Allocation rate	Total £
Crew vessel fee	6.20	[redacted]	26.00%	[redacted]
Guard vessel fee	6.21	[redacted]	26.00%	[redacted]
Establish offshore construction base	6.22	[redacted]	26.00%	[redacted]
Fuel	6.23	[redacted]	26.00%	[redacted]
MHCC VTMS SCADA	6.25	[redacted]	26.00%	[redacted]
Operate offshore construction base	6.26	[redacted]	26.00%	[redacted]
LIDAR wave buoy	6.27	[redacted]	26.00%	[redacted]
MMO vessel fee	6.30	[redacted]	26.00%	[redacted]
Portakabin temporary facilities	6.31	[redacted]	26.00%	[redacted]
Reconstruction site	6.32	[redacted]	26.00%	[redacted]
Helicopter EPC	6.33	[redacted]	26.00%	[redacted]
Running cost utility	6.34	[redacted]	26.00%	[redacted]
Establish offshore construction base	6.35	[redacted]	26.00%	[redacted]
HSE equipment	6.36	[redacted]	26.00%	[redacted]
Diving Agreement	6.37	[redacted]	26.00%	[redacted]
Pontoon lease and refurbishment	6.38	[redacted]	26.00%	[redacted]
Port mooring fees	-	[redacted]	26.00%	[redacted]
Vessel inspection	-	[redacted]	26.00%	[redacted]
PPE site personnel	-	[redacted]	26.00%	[redacted]
		[redacted]		[redacted]

[16] However the transmission asset value for WOW03+04 and associated allocation rate applied to the CAR premium has been redacted and noted as confidential

[17] We note that on previous projects we have been provided with the policy schedule

[18] Direct allocation method as described in Section 5

6.20 The Wind Farm expects to incur costs of £[redacted] in relation to crew vessel fees, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. The Developer has provided a calculation of this estimate, stating that "*no offshore work has commenced at the time of preparing the ITV CAT so there are no actual costs, only this forecast*". The estimate of £[redacted][19] comprises the following:

6.20.1 crew vessel charter cost based on £[redacted] per vessel per day for [redacted] days, leading to costs of £[redacted];

6.20.2 crew vessel site survey at a cost of £[redacted] per day for [redacted] days, leading to costs of £[redacted];

6.20.3 rib boat based on £[redacted] per day for [redacted] months, leading to costs of £[redacted]; and

6.20.4 two days of mobilisation and demobilisation at a cost of £[redacted].

6.21 The Wind Farm expects to incur costs of £[redacted] in relation to guard vessel fees, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. The Developer has provided a calculation of this estimate comprising the following costs:

6.21.1 guard vessel fees of £[redacted] for [redacted] days, leading to costs of £[redacted]. The Developer stated that for BBW02 the estimate was £[redacted] and the increase is due to the specification of guard vessels increasing resulting in larger more capable vessels being required; and

6.21.2 mobilisation and demobilisation costs of £[redacted], leading to total costs of £[redacted].

6.22 The Wind Farm expects to incur costs of £[redacted] in relation to establishing an offshore construction base, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. The Developer has provided a breakdown of the amounts that make up the total construction costs. We requested further information in relation to the following Transmission Assets amounts above £100,000:

6.22.1 miscellaneous service and maintenance costs of £[redacted], of which 26% (£[redacted]) has been allocated to the Transmission Assets. We have been provided with a detailed breakdown from SAP and all items within this breakdown are below £100,000; and

[19] £[redacted]

6.22.2 unassigned costs of £[redacted], of which 26% (£[redacted]) has been allocated to the Transmission Assets. We have been provided with a detailed breakdown from SAP and all items within this breakdown are below £100,000. The costs noted in the breakdown relate to resource costs. The Developer explained these are overhead costs that have been provided by MHCC whereby the costs do not have a particular project line and therefore have been posted as a journal.

6.23 The Wind Farm expects to incur fuel costs of £[redacted], of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. The Developer has provided a breakdown amounting to £[redacted], leading to a difference of £[redacted]. We do not propose an adjustment for this insignificant difference.

6.24 We requested further information in relation to the following Transmission Assets amounts above £100,000:

6.24.1 Furgo EMU Limited costs of £[redacted] allocated at 26% leading to OFTO costs of £[redacted]. We have agreed this cost to the purchase order request and the Developer's calculation of the estimate.

6.24.2 Henty Oil Limited costs of £[redacted] allocated at 26% leading to OTFO costs of £[redacted]. We have agreed this cost to the purchase order request. The Developer has stated that this cost has increased to £[redacted] since the SAP forecast at January 2017. The increased total costs of £[redacted], allocated at the rate of 26%, leads to a Transmission Assets increase of £[redacted]. The Developer has confirmed that this was the best estimate at the time of submitting the CAT and therefore has stated that no adjustment should be made to the CAT. However, we propose an adjustment to increase the CAT by £[redacted] to reflect the current estimate.

6.24.3 LECK Construction Limited various groundwork costs of £[redacted], allocated at 26% leading to costs of £[redacted]. We have agreed this cost to the purchase order request.

6.24.4 Securitas Security Services Limited costs of £[redacted], allocated at 26% leading to costs of £[redacted]. We have agreed this cost to the purchase order request.

6.25 The Wind Farm expects to incur costs of £[redacted] in relation to MHCC VTMS SCADA system costs, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. We have reviewed the detailed calculation of the estimate provided by the Developer which includes cost of materials, CAPEX, resources, training, travel and systems.

6.26 The Wind Farm expects to incur costs of £[redacted] to operate the offshore construction base, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. The Developer has provided a breakdown of the costs and no individual Transmission Assets amount above £100,000 has been noted in the breakdown.

6.27 The Wind Farm expects to incur costs of £[redacted] in relation to LIDAR wave buoys, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. The Developer has provided a detailed estimate of this estimate whereby the Package Manager has estimated £[redacted] as the cost of the wave buoys, plus £[redacted] in relation to LIDAR less the actual incurred costs of £[redacted], leading to total costs of £[redacted].

6.28 The Package Manager explained that the cost of £[redacted] for wave buoys is based on the ROW01 estimate for two buoys at £[redacted] and the BBW02 estimate for one buoy at £[redacted]. The WOW03+04 estimate assumes three buoys are required along with a further one as mitigation in the event one buoy is lost during bad weather. In line with previous projects, we recommend that Ofgem should take a view regarding the level of spare parts in the ITV.

6.29 In light of the above explanations we have recalculated the estimate as follows:

6.29.1 The average of two buoys at £[redacted] and one buoy at £[redacted] leads to an average cost per buoy of £[redacted][20]. Therefore, if four buoys are required, this leads to costs of £[redacted]. Taking into account the incurred costs, the remaining estimate is £[redacted][21], leading to a difference of £[redacted][22]. The Transmission Assets element (26%) of the difference is £[redacted].

6.29.2 The Developer has noted that the amount included in the CAT was its best estimate at the time of submitting the CAT and therefore no adjustment is required. We recommend that Ofgem should obtain an update from the Developer and take a view on whether the wave buoy estimate of £[redacted] included in the CAT should be adjusted before setting the ITV.

6.30 The Wind Farm expects to incur costs of £[redacted] in relation to MMO vessel fees, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. We have been provided with a detailed breakdown of these costs and no individual amount above £100,000 has been noted in this breakdown.

[20] [redacted]

[21] [redacted]

[22] [redacted]

6.31 The Wind Farm expects to incur costs of £[redacted] in relation to the porta cabin temporary facilities, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. We have agreed the costs of £[redacted] to the Portakabin Ltd purchase order request.

6.32 The Wind Farm expects to incur costs of £[redacted] in relation to the reconstruction site, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. The Developer has based its estimate on the ROW01 costs of £[redacted] for the reconstruction and demolition of offshore site facilities less various committed purchase orders of £[redacted]. The Developer confirmed this is its best estimate at present. We have not been provided with further supporting documentation to substantiate these costs. As such, we recommend that Ofgem should obtain an update on this estimate before finalising the ITV.

6.33 The Wind Farm expects to incur costs of £[redacted] in relation to helicopter EPC fees, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. The Developer has based its estimate on one helicopter with four seats for eight hours a day at a cost of £[redacted] per day for [redacted] days including transfers to and transfers from base to Walney airfield and offshore. Other costs included in this estimate are fuel, BAE subsidiary costs and CAA airport fees.

6.34 The Wind Farm expects to incur costs of £[redacted] of utility running costs, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. We have been provided with a detailed breakdown of these costs and no individual amount above £100,000 has been noted in this breakdown.

6.35 The Wind Farm expects to incur costs of £[redacted] in relation to establishing the offshore construction base, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. We have been provided with a detailed breakdown of these costs and no individual amount above £100,000 has been noted in this breakdown.

6.36 The Wind Farm expects to incur costs of £[redacted] in relation to HSE equipment, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. We have been provided with a detailed breakdown of these costs and no individual amount above £100,000 has been noted in this breakdown.

6.37 The Wind Farm expects to incur costs of £[redacted] in relation to diving agreement, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. The Developer explained: "*This is an estimate for the Marine Coordination, RAMS/HSE, and initial set-up work scopes, based on previous projects' experience (WDS). We have no further detail at present*". We have not been provided with a detailed breakdown or calculations to substantiate this estimate. As such, we recommend that Ofgem should obtain an update from the Developer before finalising the ITV.

6.38 The Wind Farm expects to incur costs of £[redacted] in relation to pontoon lease and refurbishment, of which 26% has been allocated to the Transmission Assets, amounting to £[redacted]. We have been provided with a detailed breakdown of these costs and no individual amount above £100,000 has been noted in this breakdown.

EPC management

6.39 The Wind Farm expects to incur costs of £[redacted] in relation to EPC management, £[redacted] in relation to programme management and £[redacted] in relation to local information, leading to total costs of £[redacted]. The Developer has advised this amount is a forecast, which is made up of actual paid costs, committed contract and remaining budget provision.

6.40 We have not been provided with any further detail on these forecast costs. As such, we recommend that Ofgem should obtain an update from the Developer before finalising the ITV.

Consents

6.41 The budget for consent is broken down into the following areas:

Consents costs

	Ref	Total costs £	Allocation rate	Total £
Application	-	[redacted]	50%	[redacted]
Application	6.42	[redacted]	30%	[redacted]
Application - Transmission Assets	-	[redacted]	100%	[redacted]
Application - Transmission Assets	6.43	[redacted]	100%	[redacted]
Consent environmental - Transmission Assets	-	[redacted]	100%	[redacted]
Consent management	6.44.1	[redacted]	100%	[redacted]
Consent management	6.44.2	[redacted]	50%	[redacted]
External consultancy – environmental		[redacted]	10%	[redacted]
Total		[redacted]		[redacted]

6.42 The Wind Farm is expected to incur application costs of £[redacted] of which 30% have been allocated to the Transmission Assets, amounting to £[redacted]. We have been provided with a breakdown of the application costs of which there is one individual item above £100,000, being additional consent costs for DCO variations of £[redacted] (£[redacted] allocated at 30%). In response to our request for supporting documentation of these costs, the Developer stated that this budget is no longer required. On the basis that this cost was the best estimate at the time of submitting the CAT the Developer has stated that no adjustment is required. However, we propose an adjustment to update the CAT and remove the costs of £[redacted] no longer required.

6.43 The Wind Farm is expected to incur Transmission Assets application costs of £[redacted], which are fully attributable to the Transmission Assets. We have been provided with a breakdown of the application costs where all individual items in the breakdown are below £100,000.

6.44 The Wind Farm is expected to incur consent management costs of £[redacted] and £[redacted], of which 100% and 50% respectively have been allocated to the Transmission assets, amounting to £[redacted][23]. We note the following:

6.44.1 Of the consent management costs of £[redacted], one item has been noted above £100,000, being discharge onshore consent requirement costs of £[redacted] which we have agreed to Haskoning UK Limited purchase order;

6.44.2 We have reviewed the breakdown of consent management costs of £[redacted] and note that all individual OFTO amounts are below £100,000.

[23] [redacted]

General development costs

6.45 General development costs (DEVEX) are incurred in the WOW03+04 project development activities and include all activities in the initial commencement of the project including ensuring consents and obtaining advice in respect of the set-up.

DEVEX

	£
DEVEX project 1-01069	
Overall project development costs	[redacted]
Advance payment connection grid	[redacted]
Internal resources	[redacted]
External consultancy	[redacted]
Project set up legal services	[redacted]
	[redacted]
DEVEX project 2-00417	
Overall project development costs	[redacted]
Internal resources	[redacted]
External consultancy	[redacted]
Project set up legal services	[redacted][24]
	[redacted]
DEVEX project 2-00547	
Advance payment connection grid	[redacted]
Aux Management Services	[redacted]
Contingency	[redacted]
Contract management	[redacted]
Department internal hours	[redacted]
Design	[redacted]
Export cable	[redacted]
External consultancy	[redacted]
Gate Review	[redacted]
Grid connection	[redacted]
HV/MV onshore substation	[redacted]
Internal resources	[redacted]
Offshore cable installation	[redacted]
Offshore export cable	[redacted]
Onshore export cable	[redacted]
Overall project development costs	[redacted]
Package management	[redacted]
SCADA	[redacted]
Standard Wind Farm	[redacted]
Travel and meetings	[redacted]
	[redacted]
DEVEX project 2-00694	
Engineering	[redacted]
HV/MV GIS switch gears sup	[redacted]
Management / Portfolio	[redacted]
Offshore export cable installation	[redacted]
Offshore export cable supply	[redacted]
Onshore export cable installation	[redacted]
Onshore sub contract	[redacted]
SCADA	[redacted]
Standard Wind Farm	[redacted]
	[redacted]
Total	[redacted]

24 [redacted]

Verification of costs incurred

6.46 In order to gain comfort in relation to the general development costs incurred, we have obtained a breakdown of all lines on the CAT where the costs allocated to the Transmission Assets are greater than £100,000, to gain some understanding on how the costs were incurred. The results of our review are summarised in **Appendix 2**.

6.47 General development cost categories which had a balance of more than £100,000 amount to £[redacted] (94% of total development costs), of which £[redacted] (39% of total development costs) relate to resources. We have confirmed that there has been no double counting of resources costs between those included in general development costs and those included in common costs as summarised in paragraph 5.3.

6.48 For non-resources expenditure we reviewed the cost breakdowns, and sought supporting documentation and explanations for individual amounts over £100,000. We note that as we have not been provided with supporting documentation we have been unable to substantiate DEVEX costs of £[redacted] (as per **Appendix 2**). As such, we recommend that Ofgem should discuss these costs with the Developer prior to finalising the ITV.

Allocation rates

6.49 The allocation rates used for DEVEX have been calculated using the same methodology as that detailed from paragraph 5.30, albeit that the rates for resources are different as these rates were calculated based upon hours incurred during the DEVEX phase, rather than the construction phase.

6.50 We have verified the calculations of these allocation rates that appear to be determined in line with the stated methodology.

7 OFFSHORE SUBSTATION

7.1 The OSS costs are comprised as follows:

CR2 – OFFSHORE SUBSTATION COSTS

Contract Overview	Ref	£
Offshore Transformers		
ABB A/S	7.2	[redacted]
Other	7.7	[redacted]
Nexans - 34 kV System	7.10	[redacted]
Kolektor Etra Energetski - 34 kV System	7.11	[redacted]
Hilkar Electric - 34 kV System	-	[redacted]
		[redacted]
Offshore Switchgear/Protection		
Siemens A/S - 220kV GIS Offshore	7.12	[redacted]
Offshore Substation and Platform		
Design		
Atkins Limited	7.13	[redacted]
FORCE Technology Limited	7.14	[redacted]
DNVGL	7.15	[redacted]
		[redacted]
Fabrication		
JV Cofely Fabricom-Iemants	7.20	[redacted]
Other fabrication costs	7.21	[redacted]
		[redacted]
Installation		
SHL Offshore Contractors - Installation	7.25	[redacted]
Other installation costs	7.30	[redacted]
		[redacted]
Site running costs	-	[redacted]
Miscellaneous	7.31	[redacted]
Resources and travel		
Resource cost	5.3	[redacted]
Travel cost	5.3	[redacted]
		[redacted]
SCADA		
Alstom Grid UK Ltd - SCADA control system	7.33	[redacted]
Semco Maritime A/S - Network & Telecommunications	7.35	[redacted]
Siemens plc - Metering (Auxilliary Systems)	-	[redacted]
Miscellaneous	-	[redacted]
		[redacted]
		[redacted]

OFFSHORE TRANSFORMERS – 220/33KV TRANSFORMERS

7.2 As set out in Section 4, the Developer adopted a portfolio approach to the competitive tendering for three wind farms, WOW03+04, ROW01 and BBW02, to maximise the attractiveness and competitiveness of procurement across the portfolio.

7.3 [redacted]. The two shortlisted suppliers for the design, engineering, manufacturing and commissioning of four 220/34kV 220MVA power transformers for WOW03+04 were:

- [redacted]
- [redacted]

7.4 The basis for recommendation was an evaluation model focusing on costs, technical solution, time schedule, project management and QHSE, with the weighting for this tender being [redacted]% price, [redacted]% technical solution, [redacted]% time schedule, [redacted]% project management and [redacted]% QHSE.

7.5 A recommendation was made to award the work to ABB A/S after it achieved an overall weighted score of [redacted] compared to [redacted] for [redacted].

7.6 Subsequently, the Developer entered into a contract with ABB A/S for the provision of offshore transformers for €[redacted] (£[redacted]), which we have agreed to the contract. There have been three variations to this contract totalling €[redacted] (£[redacted]), leading to total costs of €[redacted] (£[redacted]).

Other costs

7.7 Other costs of £[redacted] comprise the following:

Other costs

	Supplier	Ref	£
DGA boxes	Kemp & Lauritzen A/S	-	[redacted]
FAT support	WSP Parson Brinckerhoff	-	[redacted]
Professional services	Various contracts	-	[redacted]
Expected variation orders	-	7.8	[redacted]
Strategic Spares / EU antidump tax / metal index	-	7.9	[redacted]
Total			[redacted]

7.8 The estimated variation orders of €[redacted] (£[redacted]) relate to the provision of a claim for [redacted], which we have agreed to an email from the Technical Manager dated 7 March 2017.

7.9 The remaining budget[25] estimate of £[redacted] relates to strategic spares, EU antidump tax and metal index. We have been provided with a breakdown of the calculation and explanations from the Developer as follows[26]:

7.9.1 the EU antidump tax applies to the steel and was estimated at 3% of the cost of all offshore High Voltage (HV)/Medium Voltage (MV) components being GIS, shunt reactors and transformers, which has been estimated at DKK [redacted] (£[redacted]);

7.9.2 the contract with SMIT is subject to metal price indexation, estimated at €[redacted] (£[redacted]); and

7.9.3 a provision of £[redacted] has been made for spare parts which were not included in the HV/MV supply contracts. At the time of the CAT forecast, the spare parts strategy was not finalised and no contract had been made for the supply of spares, therefore the amount was retained. In line with previous projects, we recommend that Ofgem should take a view regarding the level of spare parts in the ITV.

34kV System

7.10 The Developer entered into a contract with Nexans for the supply and termination work of 34kV internal platform cable for an amount of €[redacted] (£[redacted]), which we have agreed to the schedule of prices in the underlying contract.

7.11 The Developer also entered into a contract with Kolektor Etra Energetski for the supply of Earthing Auxiliary Transformers (EAT) at a cost of €[redacted] (£[redacted]), which we have agreed to the contract. There has been one variation of €[redacted] (£[redacted]) to this contract, leading to total expected costs of €[redacted] (£[redacted]).

OFFSHORE SWITCHGEAR/PROTECTION

Switchgear

7.12 The Developer entered into a contract with Siemens A/S for the provision of offshore switchgear protection at a cost of €[redacted] (£[redacted]), which we have agreed to the contract. There was one variation to this contract for €[redacted] (£[redacted]) leading to total expected costs for the 220kV offshore switchgear of €[redacted] (£[redacted]).

[25] Being the total budgeted at FID (Final Investment Decision) less costs already incurred and known variation orders

[26] We note that the explanations provided total £[redacted] (£[redacted]). We do not propose an adjustment in respect of the small difference of £[redacted]

OFFSHORE SUBSTATION AND PLATFORM

Design

7.13 OSS design costs of £[redacted] comprise £[redacted] in relation to the contract with Atkins Limited and £[redacted] of remaining budget as detailed below:

7.13.1 The Developer entered into an agreement with Atkins Limited for the design of the offshore substation and platform for £[redacted], which we have agreed to the contract. There were two variations[27] to this contract totalling £[redacted], which we have agreed to the variation orders, leading to total costs of £[redacted]. Total costs included in the CAT of £[redacted][28] have been apportioned across development costs included in CR8[29] (common costs) of £[redacted] and capital costs in CR2 of £[redacted].

7.13.2 The Developer has provided a breakdown of estimated costs of £[redacted][30]. This includes costs which are individually below £100,000 of £[redacted] and one amount over £100,000 for £[redacted] with the description 'Atkins Devex (transfer of budget)'. The Developer explained that costs were transferred from DEVEX to CAPEX as a budget to cover estimates to complete the design activities and in the January CAPEX forecast (which was used to prepare the CAT) the remaining budget was £[redacted]. As of May 2017, the platform design is complete and the Package Manager has agreed to release £[redacted] of the remaining budget at the next forecast, with the remaining budget of £[redacted] required for the close out of the Hoboken site. We note that the Developer has stated that no adjustment should be made to the CAT as this information was not known at the time the CAT was prepared. However, we propose an adjustment to the CAT, being a decrease of £[redacted], for the remaining budget which is no longer required. Additionally, we recommend that Ofgem should obtain an update from the Developer in relation to the remaining budget estimated at £[redacted], before finalising the ITV.

7.14 The Developer entered into a contract with FORCE Technology for fabrication testing inspection at a cost of €[redacted] (£[redacted]), which we have agreed to the contract.

[27] Variation order 3 for £[redacted] was raised in January 2017 and therefore has been accounted for in the CAT as part of the remaining budget rather than included with the above two variation orders

[28] We note a small difference of £[redacted] between the total CAT amount of £[redacted] and the supporting documentation of £[redacted]. As such, no adjustment has been proposed

[29] DEVEX included in WBS [redacted]

[30] Small difference of £[redacted] to the amount included in the CAT of £[redacted]

7.15 The Developer entered into a contract with DNV GL Denmark A/S (DNVGL) for certification of OSS design at a cost of €[redacted] (£[redacted]), which we have agreed to the contract. There were two variations to this contract totalling €[redacted] (£[redacted]), which we have agreed to the variation orders, leading to total costs of €[redacted] (£[redacted]). The CAT includes an amount in respect of these costs of €[redacted] (£[redacted]). We do not propose an adjustment in respect of the small difference of €[redacted][31] (£[redacted]).

Fabrication - supply

7.16 For the supply of the OSP fabrication, 20 companies applied for pre-qualifications of which five did not meet the criteria. Following further evaluation, eight candidates were shortlisted and following initial negotiations and clarifications, three were shortlisted, of which one did not submit the required documentation or prices. The final tender prices were as follows[32]:

- [redacted] €[redacted]
- [redacted] €[redacted]

7.17 The basis for recommendation was an evaluation model focusing on costs, terms and conditions, technical solution, time schedule and QHSE, with the weighting for this tender being [redacted]% price, [redacted]% technical solution, [redacted]% programme, [redacted]% QHSE and [redacted]% impact on industrial development.

7.18 A recommendation was made to award the work to JVFI after it achieved an overall weighting of [redacted], compared to [redacted] for [redacted].

7.19 Subsequently, the Developer entered into an agreement with JVFI for the fabrication of the offshore substation and platform for €[redacted] (£[redacted]), which we have agreed to the contract. [redacted].

7.20 There were 12 variations to this fabrication contract totalling €[redacted] (£[redacted]), which have been agreed to their respective variation orders, leading to total costs of €[redacted] (£[redacted]).

[31] [redacted]

[32] Total tender prices for Lots 4a, 4b, 5a and 5b

7.21 Other fabrication costs comprise estimated future costs of €[redacted] (£[redacted]), and barge rental costs of £[redacted] (see paragraph 7.24 below), leading to expected total costs of £[redacted]. The estimated future costs are broken down as follows:

OSP Fabrication - Estimated future costs

	€	£
Variation order 13	[redacted]	[redacted]
Variation order 14	[redacted]	[redacted]
Variation order 15	[redacted]	[redacted]
Variation order 16	[redacted]	[redacted]
Variation order 17	[redacted]	[redacted]
Variation order 18	[redacted]	[redacted]
Variation order 19	[redacted]	[redacted]
Variation order 20	[redacted]	[redacted]
Remaining budget	-	[redacted]
		[redacted]

7.22 We have agreed the variations over £100,000, totalling £[redacted], to the variation orders, and the Developer has advised that the remaining budget of £[redacted] relates to the best estimate for the following works to complete the OSS fabrication:

7.22.1 [redacted];

7.22.2 [redacted];

7.22.3 [redacted];

7.22.4 [redacted];

7.22.5 [redacted];

7.22.6 [redacted]

7.22.7 [redacted].

7.23 We have not received any further information to substantiate the estimated future costs of £[redacted]. Additionally, we understand that there are on-going negotiations in relation to these cost items. As such, we recommend that Ofgem should obtain an update from the Developer on these costs before finalising the ITV.

7.24 The barge rental costs of £[redacted] relate to rental for two barges of €[redacted] per day for [redacted] days being €[redacted] (£[redacted]) each along with associated costs of £[redacted].

Installation – main contractor

7.25 Competitive tendering was used for the OSP installation, as set out in Section 4. For the installation, eight companies were approached and four submitted tenders[33]:

- [redacted] [redacted]
- [redacted] [redacted]
- [redacted] [redacted]
- [redacted] [redacted]

7.26 The basis for recommendation was an evaluation model focusing on costs, terms and conditions, technical solution, time schedule and QHSE, with the weighting for this tender being [redacted]% price and costs, [redacted]% technical solution, and [redacted]% QHSE.

7.27 A recommendation was made to award the work to SHL after it scored best[34] on all main components of the evaluation model and achieved an overall weighting of [redacted], compared to [redacted].

7.28 Subsequently, the Developer entered into a contract with SHL Offshore Contractors BV for the installation of the offshore substation and platform at a cost of €[redacted] (£[redacted]), which we have agreed to the contract. There was one variation to this contract totalling €[redacted] (£[redacted]) (which we have agreed to the variation order) and a discount of €[redacted] (£[redacted]) (see paragraph 7.29 below), leading to total costs of £[redacted].

7.29 As set out above, the CAT includes a discount €[redacted] (£[redacted]). However, the Developer has advised that this should be €[redacted] (£[redacted]), which we have agreed to supporting documentation. As such, we propose an increase in the discount included in the CAT (ie a reduction of costs) of €[redacted] (£[redacted]).

[33] Tender amounts including options

[34] [redacted]X
X
X

7.30 Also included in the CAT in relation to the installation of the offshore substation and platform are estimated future costs of £[redacted] for hiring the jack-up vessel Atlantis Esbjerg, owned by Atollo, for the period from 1 May to 31 July 2017. The Developer has provided us with a detailed calculation setting out total estimated costs for three months of £[redacted][35] less forecast savings of £[redacted] in respect of OSS, £[redacted] in respect of ELS and £[redacted] in respect of construction, which we have agreed to the budget change request.

Miscellaneous costs

7.31 Miscellaneous costs comprise the following:

Miscellaneous costs

	Supplier	Ref	£
Vessel inspection OS	Specialist Marine Consultants Ltd	-	[redacted]
Load out, transport & installation of OSS structure components	Global Maritime Consultancy Ltd	7.32	[redacted]
Marine warranty survey		-	[redacted]
Total			[redacted]

7.32 The Developer entered into a contract with Global Maritime Consultancy Limited for the provision load out, transport and installation of OSS structure components at a cost of £[redacted], which we have agreed to the contract.

SCADA

SCADA control system

7.33 The Developer entered into a contract with Alstom Grid UK Ltd for the SCADA control system at a cost of £[redacted], which we have agreed to the contract. The Developer has allocated 57% (£[redacted]) of these costs to the Transmission Assets, half of which has been allocated to the OSS (CR2) and half to the ONSS (CR5), ie £[redacted] to each. There was a variation to the contract at a cost of £[redacted], half of which (£[redacted]) has been allocated to the OSS (and half to the ONSS (see paragraph 10.33)) leading to total expected costs in relation to the OSS of £[redacted][36].

7.34 We have agreed the 57% allocation rate to the Developer's cost allocation spreadsheet which allocates the contract costs to the Transmission Assets, generator or shared on a line by line basis and then applies the Transmission Assets costs percentage to the shared costs[37].

[35] [redacted] days x total day rate of £[redacted] comprising day rate of £[redacted], meals and accommodation of £[redacted] and additional costs including mobilisation, demobilisation and fuelling of £[redacted]

[36] [redacted]

[37] Direct cost allocation methodology as described in Section 5

Network & Telecommunications

7.35 The Developer entered into a contract with Semco Maritime A/S for the provision of network and telecommunications amounting to €[redacted] (£[redacted]), which we have agreed to the contract. The Developer has allocated 27% (€[redacted] (£[redacted])) of these costs to the Transmission Assets, of which half has been allocated to the OSS (CR2) and half to the ONSS (see paragraph 10.34), ie €[redacted] (£[redacted]) to each.

7.36 There were variations to the contract amounting to €[redacted] (£[redacted]). The Developer has allocated 27% (€[redacted] (£[redacted])) of these costs to the Transmission Assets, half of which has been allocated to the OSS and half to the ONSS, ie £[redacted] each, leading to total expected costs in relation to the OSS of £[redacted].

7.37 We have agreed the 27% allocation rate to a line-by-line analysis of the contract prepared by the Developer[38].

[38] Direct cost allocation methodology as described in Section 5

8 SUBMARINE CABLE SUPPLY AND INSTALLATION

8.1 The submarine cable supply and installation costs are comprised as follows:

CR3 – SUBMARINE CABLE SUPPLY AND INSTALLATION COSTS

Contract Overview	Ref	£
Subsea Cable Supply & Design		
ABB AB - 220kV cable supply & termination	8.2	[redacted]
Other costs	8.10	[redacted]
		[redacted]
Subsea Cable		
Deep Ocean Ltd - installation & burial (export cable)	8.12	[redacted]
Miscellaneous costs	8.21	[redacted]
Surveys	8.24	[redacted]
Site running costs		[redacted]
		[redacted]
Resources and travel		
Resource cost	5.3	[redacted]
Travel cost	5.3	[redacted]
		[redacted]
		[redacted]

220KV CABLE SUPPLY & TERMINATION

8.2 Competitive tendering was used for the supply of the submarine and onshore cable, as set out in Section 4. For the cable supply, seven companies were invited for pre-qualification, of which one did not qualify and one did not submit a tender, leading to five submitted tenders:

- [redacted] [redacted]
- [redacted] [redacted]
- [redacted] [redacted]
- [redacted] [redacted]
- [redacted] [redacted]

8.3 The basis for recommendation was an evaluation model focusing on project economics, technical solution, time schedule, project management and QHSE, with the weighting for this tender being [redacted]% project economics, [redacted]% technical solution, [redacted]% time schedule, [redacted]% project management and [redacted]% QHSE.

8.4 Based upon the evaluation exercise, [redacted] scored highest after it achieved an overall weighting of [redacted], compared to [redacted].

8.5 [redacted]:

- [redacted];
- [redacted];
- [redacted]
- [redacted]

8.6 Subsequently, the Developer entered into a contract with ABB for the 220kV Cable Supply and termination at a cost of DKK [redacted] (£[redacted]), which we have agreed to the contract. There have been 13 variations to this contract that the Developer estimated would amount to DKK [redacted] (£[redacted]) (see paragraph 8.7 below), and expected future costs of £[redacted] (see paragraph 8.8 below), leading to total expected costs of £[redacted].

8.7 The Developer has provided a schedule of 11[39] variation orders amounting to DKK [redacted] (£[redacted]), of which we have agreed DKK [redacted] (£[redacted]) to supporting documentation. The total per the schedule provided is DKK [redacted] (£[redacted]) less than the CAT amount of DKK [redacted] (£[redacted]). As such, an adjustment is proposed to decrease the CAT amount by the difference of £[redacted].

[39] There are no costs associated with variation orders 11 and 12

8.8 Expected future costs of £[redacted] are made up of estimated variation orders of DKK [redacted] (£[redacted]) and remaining budget of £[redacted], as detailed below:

8.8.1 The Developer has provided a breakdown of the estimated variation orders and we have requested supporting documentation for individual items above £100,000. The Developer advised "*It is not possible to provide detailed calculations for the estimated VOs as they are currently being negotiated with the vendor; Values are the contract manager's best estimates at this point of time*". As such, we are unable to substantiate the estimated variation orders of £[redacted].

8.8.2 The Developer explained that the remaining budget of £[redacted] would be used for additional variation orders currently listed in the Developer breakdown as 'TBC'. We have not been provided with detailed calculations of the budget, and the Developer confirmed "*these contracts are still very much in process, and final outturn is not certain*". As such, we are unable to substantiate the remaining budget of £[redacted].

8.9 As we have not been provided with sufficient information to substantiate the estimated future costs of £[redacted], we recommend that Ofgem should obtain an update from the Developer before finalising the ITV.

8.10 Other costs of £[redacted] comprise the following:

Subsea Cable Supply & Design – Other costs

Description	Supplier	€	£
Supply and installation of distributed temperature sensing system	AP Sensing GmbH	[redacted]	[redacted]
Service agreement for consultant's appointment export cable	DNV GL UK LTD	-	[redacted]
Call off contract cable crossing scour study and 3rd part design sign-off	HR Wallingford	-	[redacted]
Professional services	PowerSure Technology Ltd.	-	[redacted]
Total			[redacted]

8.11 We have agreed the costs of €[redacted] (£[redacted]) for the supply and installation of distributed temperature sensing system to the contract with AP Sensing GmbH.

INSTALLATION & BURIAL (EXPORT CABLE)

Deep Ocean Ltd

8.12 Competitive tendering was used for the installation of the submarine and array cables, as set out in Section 4, [redacted]. 14 suppliers applied for pre-qualification, of which one was in an unclear financial situation and four decided to withdraw. The remaining nine suppliers submitted tenders, and five were shortlisted, one of which subsequently withdrew. The final bids for the shortlisted suppliers were:

- [redacted]
- [redacted]
- [redacted]
- [redacted]

8.13 The basis for recommendation was an evaluation model focusing on costs, terms and conditions, technical solution, time schedule and QHSE, with the weighting for this tender being [redacted]% price, [redacted]% technical solution, [redacted]% QHSE and [redacted]% impact on industrial development.

8.14 A recommendation was made to award the work to Deep Ocean after it achieved an overall weighted price of £[redacted], compared to [redacted].

8.15 Subsequently, the Developer entered into a contract with Deep Ocean Ltd for the installation and burial of the subsea export cable at a cost of £[redacted], which we have agreed to the contract. The CAT includes one variation order with costs of £[redacted] (see paragraph 8.16 below) and estimated future costs of £[redacted] (see paragraph 8.17 below), leading to total costs in the CAT of £[redacted].

8.16 We have been provided with the variation order for additional costs of £[redacted]. The Developer has confirmed that the difference of £[redacted] to the amount included in the CAT of £[redacted] is as a result of a duplication of the purchase order and can therefore be removed. As such, an adjustment to decrease the CAT value by £[redacted] is proposed.

8.17 [redacted]. At the time of preparing the CAT, the offshore export cable installation works had not commenced. We have been provided with the following breakdown of the estimated future costs of £[redacted], based on the remaining FID budget:

	Explanation	€	£
Scope for variations	[redacted]	[redacted]	[redacted]
Remedial burial works	[redacted]	[redacted]	[redacted]
Storage on turntable	[redacted]	[redacted]	[redacted]
Inter-tidal field joint	[redacted]	[redacted]	[redacted]
Fuel	[redacted][40]	[redacted]	[redacted]
CPS	-	[redacted]	[redacted]
Site Works	[redacted]	[redacted]	[redacted]
Crossing construction/ materials	[redacted]	[redacted]	[redacted]
Miscellaneous	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
Total		[redacted]	[redacted]

8.18 The Developer has provided an email from the Package Manager confirming that the above costs were the best estimate at the time of submitting the CAT, based on contractual unit rates and benchmark prices/prior experience. No further supporting documentation has been provided.

8.19 The estimated costs have since been updated and as at April 2017 estimated costs were £[redacted], due to a decrease of £[redacted] in unallocated cost estimates, as set out below:

	Explanation	€	£
Scope for variations	[redacted]	-	[redacted]
Remedial burial works	[redacted]	-	[redacted]
Storage on turntable	As above	[redacted]	[redacted]
Inter-tidal field joint	As above	[redacted]	[redacted]
Fuel	As above	[redacted]	[redacted]
CPS	As above	[redacted]	[redacted]
Site Works	As above	[redacted]	[redacted]
Crossing construction/ materials	As above	[redacted]	[redacted]
Miscellaneous	[redacted]	-	-
Total		**-**	[redacted]

[40] [redacted]

8.20 We note that the Developer has stated that no adjustment should be made to the CAT for the decrease in estimated future costs of £[redacted] on the basis that this information was not present at the time of submitting the CAT. However, we propose an adjustment to decrease the CAT by this amount to reflect the updated estimated costs. Additionally, we recommend that Ofgem should obtain an update from the Developer regarding the estimated future costs (after the proposed adjustment) of £[redacted] before finalising the ITV.

Other installation and burial costs

8.21 The CAT also includes the following costs, which had not yet been incurred at 10 March 2017, but which the Developer expects to incur during the installation and burial of the submarine cable:

Other installation and burial costs

Description	Supplier	Ref	DKK	€	£
Rock dump for export cable crossing	[redacted]	8.22		[redacted]	[redacted]
Loud out, transportation, installation export cable	[redacted]	8.23			[redacted]
Variation order	[redacted]	-			[redacted]
Analysis ref birdcage	[redacted]	-			[redacted]
Print of contracts	[redacted]	-	[redacted]		[redacted]
Hire of Argocat vehicles	[redacted]	-			[redacted]
Professional services – offshore	[redacted]	-			[redacted]
Total					[redacted]

8.22 The Developer entered into a contract with VBMS for rock dumping over the submarine cable crossings at a cost of €[redacted] (£[redacted]), which we have agreed to the contract.

8.23 The Developer entered into a contract with Mwaves Limited for load out, transport and installation of components for the submarine cable at a cost of £[redacted], which we have agreed to the contract.

Other survey costs

8.24 The CAT includes the following survey costs relating to the installation of the submarine cable:

Survey costs

	Supplier	Ref	€	£
Export cable route engineering	Engineering Technology Applica Ltd.	-		[redacted]
Met Ocean	Fugro EMU Limited	8.25	[redacted]	[redacted]
Expected variation orders		8.26		[redacted]
Total				[redacted]

8.25 The Developer has provided us with a detailed breakdown of its estimate of the met ocean survey costs for the offshore export cable from Fugro EMU Limited for the period Q4 2016 to Q4 2017, setting out total expected costs of €[redacted] (£[redacted]). For individual lines above £100,000 in the breakdown provided, amounting to €[redacted] (£[redacted]), we have agreed the rates used by the Developer to the framework agreement.

8.26 The Developer has provided the following breakdown of the expected variation orders of £[redacted]:

Expected variation orders

	£
As built validation survey	[redacted]
Independent validation of Transmission Assets	[redacted]
Total	[redacted]

8.27 In response to our request for supporting documentation to substantiate the above costs, the Developer stated that the remaining budget of £[redacted] relates to completing survey works immediately after the installation to verify the depth of the export cable burial.

8.28 We have been provided with an email from the Geoscience Construction Manager, dated 25 May 2017, [redacted][41]. We note that the Developer has stated that no adjustment should be made to the CAT for the difference on the basis that this was its best estimate at the time of submitting the CAT. However, we propose an adjustment to decrease the CAT by £[redacted] to reflect the updated estimate of expected costs. Additionally, we recommend that Ofgem should obtain an update from the Developer regarding the expected variation orders (after the proposed adjustment) of £[redacted] before finalising the ITV.

41 [redacted]

9 LAND CABLE SUPPLY AND INSTALLATION

9.1 The land cable supply and installation costs are comprised as follows:

CR4 – LAND CABLE SUPPLY AND INSTALLATION

Contract Overview	Ref	£
Onshore Cable Supply		
ABB AB - 220kV cable supply	9.2	[redacted]
Miscellaneous costs	9.9	[redacted]
		[redacted]
Onshore Cable Installation		
J Murphy and Sons Ltd - 400kV & 220kV onshore export cable	9.13	[redacted]
Volkerinfra Limited - HDD landfall cable installation	9.19	[redacted]
HDD Consultants Ltd - HDD landfall cable installation	-	[redacted]
Miscellaneous costs	-	[redacted]
		[redacted]
Resources and travel		
Resources cost	5.3	[redacted]
Travel cost	5.3	[redacted]
		[redacted]
		[redacted]

ONSHORE CABLE SUPPLY

220kV cable supply

9.2 As set out in paragraphs 8.2 to 8.6 above, competitive tendering was used for the supply of the submarine and onshore cable for which ABB AB was the successful bidder. The Developer entered into an agreement with ABB AB for the supply of the 220kV cable at a cost of DKK [redacted] (£[redacted]), which we have agreed to the contract. There have been variations to the contract of DKK [redacted] (£[redacted]), leading to total costs of DKK [redacted] (£[redacted]).

400kV cable supply

9.3 As detailed in paragraph 12.2, the Developer entered into an agreement with NKT cables A/S for the supply of the 400kV cables. The Developer has allocated total costs of €[redacted] (£[redacted]) to CR7 (connection costs). However, we propose an adjustment to reallocate these costs to CR4.

Remaining budget

9.4 The Developer has stated that the remaining FID budget of £[redacted] (detailed in paragraph 9.5 below) in relation to cable supply was misposted[42] and therefore allocated in the CAT to the 200kV GIS onshore costs in CR5 (see paragraph 10.27) in error. We therefore propose a reallocation of £[redacted] from CR5 to CR4.

9.5 The Developer has provided a schedule[43] of the remaining budget costs included in CR4, CR5 and CR6 of the CAT which details the remaining budget for cable supply as follows:

Onshore cable supply remaining budget

	Ref	DKK	€	£
ABB AB	9.6	[redacted]	-	[redacted]
NKT Cables A/S	9.7	-	[redacted]	[redacted]
Miscellaneous items to supply	9.8	-	-	[redacted]
Total		-	-	[redacted]

9.6 The remaining budget of DKK [redacted] (£[redacted]) mainly relates to the difference of DKK [redacted] between the ABB AB contract amount of DKK [redacted] and the amount in SAP of DKK [redacted]. However, the full contract amount is included in the CAT and therefore it would be incorrect to include an additional budgeted amount for the difference between the contract price and SAP. The Developer has confirmed that the remaining budget provision is overstated by DKK [redacted] (£[redacted]). As such, we propose an adjustment to reduce the cost reallocated to CR4 (as per paragraph 9.4 above) by £[redacted].

9.7 The remaining budget of €[redacted] (£[redacted]) comprises:

9.7.1 Expected costs of €[redacted] (£[redacted]) for variation order 4 to the contract with NKT Cables A/S (see paragraph 9.3 above) for temporary export cable termination for HVAC test. The Developer has provided a detailed calculation of the expected costs, with no individual amount over £100,000;

9.7.2 €[redacted] (£[redacted]) for the contract with AP Sensing GmbH for the supply and installation of the distributed temperature sensing system. We have confirmed with the Developer that these costs are also included in the subsea cable supply and design (CR3) other costs (see paragraph 8.11 above) and therefore we propose an adjustment to reduce the cost reallocated to CR4 (as per paragraph 9.4 above) by £[redacted]; and

[42] Incorrectly posted to WBS 2-00706-53-03-05 (instead of WBS 2-00705-53-05-05 – cable supply)

[43] Ofgem developer data room - 4.3.21 WOW0304 ITV CAT Onshore Electrical remaining budget explanation 20042017 (DOK2766730)

9.7.3 €[redacted] (£[redacted]) for the supply and installation of temporary CSE for HVAC test of export cable. The Developer has confirmed that this is a duplication of the expected variation order to the contract with NKT Cables A/S as described at paragraph 9.7.1 above and therefore should be removed. As such, we propose an adjustment to reduce the cost reallocated to CR4 (as per paragraph 9.4 above) by £[redacted].

9.8 The remaining budget for miscellaneous items of £[redacted] is made up of £[redacted] for scaffolding for HV cable termination and £[redacted] in relation to the HV test of HV cables. The Developer has confirmed:

9.8.1 the scaffolding cost is double counted and has also been accounted for within miscellaneous costs of £[redacted] as described in paragraph 9.11 below). As such, we propose an adjustment to reduce the cost reallocated to CR4 (as per paragraph 9.3 above) by £[redacted].

9.8.2 the testing costs of £[redacted] are the best estimate of the Cable Installation Manager at the time of the CAT submission. The Developer has provided an overview of the testing costs at May 2017, which sets out an updated estimate of £[redacted]. We do not propose an adjustment for the insignificant difference of £[redacted].

Miscellaneous costs

9.9 Miscellaneous costs comprise the following:

Onshore cable supply – miscellaneous costs

	Supplier	Ref	DKK	£
Cable sealing end works Middleton	ABB Limited	9.10		[redacted]
Scaffolding	Complete Access (Scaffolding) Ltd.	9.11		[redacted]
Walney badged PPE	Comtec Int A/S	-	[redacted]	[redacted]
Environmental consent support	Kelvin Power Consultants	9.12		[redacted]
Reallocation to connection costs (CR7)	Kelvin Power Consultants	-		[redacted]
Onshore cable installation support	Lynch Decommissioning Services Ltd	-		[redacted]
Total				[redacted]

9.10 The Developer entered into a contract with ABB Limited for cable sealing works at a cost of £[redacted], which we have agreed to the contract.

9.11 We have agreed scaffolding costs of £[redacted] to a quotation from Complete Access (Scaffolding) Ltd. A further £[redacted] is included in CAT as an element of contingency, leading to total scaffolding costs of £[redacted].

9.12 We have been provided with a breakdown of the environmental consent support costs of £[redacted], with all items being individually below £100,000. We note that, as set out in the breakdown at paragraph 9.9 above, the Developer has reallocated £[redacted] of these costs, relating to the 400kV supply and installation costs, to connection costs.

ONSHORE EXPORT CABLE INSTALLATION

Main installation contractor

9.13 Competitive tendering was used for the installation of the onshore cables, as set out in Section 4. For this work, four contractors were pre-qualified, one of which one dropped out. The tender prices were as follows:

- [redacted]
- [redacted]
- [redacted]

9.14 The basis for recommendation was an evaluation model focusing on costs, terms and conditions, technical solution, time schedule and QHSE, with the weighting for this tender being [redacted]% technical ability, [redacted]% QHSE, [redacted]% commercial, [redacted]% environmental and consents and [redacted]% industrial development.

9.15 A recommendation was made to award the work to J Murphy & Sons Ltd after it achieved an overall score of [redacted], compared to [redacted] submitted the second lowest bid, but was largely recommended on the following basis:

9.15.1 [redacted];

9.15.2 [redacted]; and

9.15.3 [redacted].

9.16 Subsequently, the Developer entered into a contract with J Murphy and Sons Ltd for the installation of the 400kV & 220kV onshore export cable at a cost of £[redacted], which we have agreed to the contract. The Developer has reallocated £[redacted] of the contract costs to connection costs (CR7) (see paragraph 12.3 below).

9.17 There were 11 variations to the contract amounting to £[redacted], which we have agreed to the variation orders (of which the Developer reallocated £[redacted] to connection costs (CR7) (see paragraph 12.3 below)), and estimated future costs amount to £[redacted] (see paragraph 9.18 below), leading to total expected costs (in CR4) of £[redacted][44].

9.18 The estimated future costs included in the CAT of £[redacted] comprise expected variation orders of £[redacted] and the remaining budget of £[redacted], as detailed below:

9.18.1 We have been provided with a breakdown of the expected variation orders of £[redacted], which includes one amount above £100,000 of £[redacted] in respect of ground stabilisation works. The quotation document in relation to these works details costs of £[redacted]. We do not propose an adjustment to increase the costs in the CAT by the insignificant difference of £[redacted].

9.18.2 The Developer confirmed that the remaining budget of £[redacted] is an error in the CAT and should be removed. As such, we propose an adjustment to decrease the CAT by this amount.

HDD Landfall cable installation

9.19 The Developer entered into a contract with Volkerinfra Limited for the supply and installation of ducts for the export cable at a cost of €[redacted] (£[redacted]), which has been agreed to the contract. Expected future costs amount to €[redacted] (£[redacted]), which we have agreed to the settlement agreement[45] dated 31 March 2017, leading to expected total costs of £[redacted].

[44] [redacted]

[45] Volkerinfra claims 1, 2, 4 and 5

10 ONSHORE SUBSTATION

10.1 The ONSS costs are comprised as follows:

CR5 – ONSHORE SUBSTATION COSTS

Contract Overview	Ref	£
Onshore Substation Design		
WSP Parson Brinckerhoff	10.2	[redacted]
Onshore Substation Civil works		
Amey Utility Services Ltd	10.3	[redacted]
Onshore Substation site costs		
Miscellaneous site running costs	10.13	[redacted]
Onshore Transformers		
ABB A/S - 400/220kV transformers	10.15	[redacted]
Onshore Switchgear and Control		
Mitsubishi Electric Europe - 400kV GIS onshore	10.21	[redacted]
Siemens A/S - 220kV GIS onshore	10.22	[redacted]
Transformers and switchgear - Expected VO's to supply	10.27	[redacted]
Miscellaneous installation related cost	10.28	[redacted]
Strategic spares	10.31	[redacted]
		[redacted]
SCADA		
ALSTOM Grid UK Limited - SCADA control system	10.33	[redacted]
Semco Maritime - Network & Telecommunications	10.34	[redacted]
Siemens Plc - Metering (Auxiliary Systems)	-	[redacted]
Miscellaneous	-	[redacted]
		[redacted]
Resources and travel		
Resources cost	5.3	[redacted]
Travel cost	5.3	[redacted]
		[redacted]
		[redacted]

ONSHORE SUBSTATION DESIGN

10.2 The Developer entered into a contract with WSP Parson Brinckerhoff (WSP) for the provision of the ONSS design, for £[redacted]. The Developer has confirmed that the original purchase order has been revised upwards several times, and we have been provided with a breakdown of all invoices totalling £[redacted]. We have agreed the amounts above £100,000, totalling £[redacted], to supporting invoices.

ONSHORE SUBSTATION CIVIL WORKS

10.3 Competitive tendering was used for the civil works construction of the onshore substation, as set out in Section 4. Four suppliers were invited for pre-qualification, of which four were pre-qualified and invited to tender, and three suppliers submitted tenders:

- [redacted]
- [redacted]
- [redacted]

10.4 The basis for recommendation was an evaluation model focusing on costs, terms and conditions, technical solution, time schedule and QHSE, with the weighting for this tender being [redacted]% price, [redacted]% technical solution, [redacted]% programme, [redacted]% local content and [redacted]% QHSE.

10.5 Amey, with an overall weighting of [redacted], and [redacted], with an overall weighting of [redacted] were shortlisted. However, both companies were subsequently asked to submit their best and final offers based upon a revised design for the substation, of which only Amey submitted a best and final offer of £[redacted], which was subsequently reduced to around £[redacted] following a reduction in the scope of work.

10.6 Subsequently, the Developer entered into an agreement with Amey Utility Services Ltd for the construction of onshore substation at a cost of £[redacted], which we have agreed to the contract. The Developer has reallocated £[redacted] of the contract amount to connection costs (CR7) (see paragraph 12.12 below). There were nine variations to the contract amounting to £[redacted], which we have agreed to the six variation orders totalling £[redacted] and three invoices totalling £[redacted]. Future expected costs are £[redacted] (see paragraph 10.7 below), leading to total expected costs of £[redacted][46], of which £[redacted][47] in included in CR5.

10.7 [redacted]. The expected future costs comprise:

Remaining budget

	Ref	£
WSP Forecast – remaining budget	10.8	[redacted]
Estimate to complete	10.9	[redacted]
Contingency [redacted]%	10.11	[redacted]
		[redacted]

[46] [redacted]

[47] [redacted]

10.8 The Developer has engaged WSP quantity surveyors to provide a measure of the works carried out[48] by the contractor (Amey) so that the Developer can challenge the contractor if any discrepancies arise when the Developer is invoiced. The Developer has provided a schedule with a breakdown of the current[49] costs forecast by WSP totalling £[redacted][50]. The remaining budget of £[redacted] is the difference between the WSP forecast and the contract amount of £[redacted] (as per paragraph 10.6 above).

10.9 The Developer has explained that the estimate to complete of £[redacted] has been derived from a list of claims provided by Amey in January 2017, totalling £[redacted], less the committed and paid variations of £[redacted] (as per paragraph 10.6 above). We have been provided with an Excel schedule of the list of claims and requested supporting documentation for individual items in this breakdown above £100,000 amounting to £[redacted]. The Developer has provided a payment application from Amey in support of the £[redacted], however has stated that no further information is available (as detailed in the below paragraph, no further back up to the list of claims has been provided by Amey).

10.10 [redacted].

[48] For example amount of material used ie X metres of cable

[49] CAPEX forecast February 2017

[50] Being £[redacted] of costs forecast by WSP based on measureable items ie quantity used/produced plus £[redacted] contingency included in the Amey contract

10.11 [redacted]. The Developer has stated that £[redacted] is included in the Risk Register (which we have agreed to the extract provided (see paragraph 5.17 above) and have confirmed is included in the total contingencies (which are included all together in the CAT as one amount in CR8) of which £[redacted] relates to the ONSS (as per paragraph 5.23 above)). The additional contingency of £[redacted][51] has been added to the remaining budget (and hence is included in CR5).

10.12 As the Developer has stated that no further information is available to substantiate the estimate to complete of £[redacted] in relation to the Amey contract, [redacted], we recommend that Ofgem should obtain an update from the Developer regarding the estimated future costs of £[redacted][52] prior to setting the ITV.

ONSHORE SUBSTATION SITE COSTS

Miscellaneous site running costs

10.13 The following miscellaneous site running costs have been included in the CAT in respect of the onshore substation civil works:

Miscellaneous site running costs

	Supplier	Ref	DKK	€	£
DRC wing Bushing frames and steelwork	Kelvin Construction Company Limited	10.14	[redacted]	[redacted]	[redacted]
Earthing consultants	Earthing Risk Management Ltd	-	[redacted]	[redacted]	[redacted]
Rent land and storage space	Various	-	[redacted]	[redacted]	[redacted]
PPE / Workwear	Comtec Int A/S	-	[redacted]	[redacted]	[redacted]
PPE / Workwear	Larkin Eng Services Limited	-	[redacted]	[redacted]	[redacted]
Site running costs	Various	-	[redacted]	[redacted]	[redacted]
Site running costs	Various	-	[redacted]	[redacted]	[redacted]
			[redacted]	[redacted]	[redacted]

10.14 We have agreed Dynamic Reactive Compensation (DRC) wing bushing frames and steelworks costs of £[redacted] to the invoice. The Developer has confirmed that the amount was double counted in the CAT (due to an actual and a commitment being recorded on the same PO line in SAP). As such, an adjustment is proposed to decrease the CAT by £[redacted].

[51] [redacted]

[52] £[redacted] + the associated contingency provision at [redacted]% of £[redacted] = £[redacted]

ONSHORE TRANSFORMERS

200/220kV Transformers

10.15 As set out in Section 4, the Developer adopted a portfolio approach to the competitive tendering for three wind farms, WOW03+04, ROW01 and BBW02, to maximise the attractiveness and competitiveness of procurement across the portfolio.

10.16 Shortlisted suppliers from the tender procedure for ROW01 were invited to tender, for the design, engineering, manufacturing of two 400/220kV 470MVA autotransformers. The tender for transformers for the "UK pipeline projects" included the following 'Lots':

- [redacted]
- [redacted]
- [redacted]
- [redacted]

10.17 [redacted]:

- [redacted]
- [redacted]

10.18 The basis for recommendation was an evaluation model focusing on costs, technical solution, QHSE, time schedule and project management, with the weighting for this tender being [redacted]% price, [redacted]% technical solution, [redacted]% QHSE, [redacted]% time schedule and [redacted]% project management.

10.19 A recommendation was made to award the work to ABB after it achieved an overall score of [redacted] compared with [redacted].

10.20 Subsequently, the Developer entered into a contract with ABB A/S for the supply of 400/220kV Transformers at a cost of €[redacted] (£[redacted]), which we have agreed to the contract.

ONSHORE SWITCHGEAR AND CONTROL

400kV GIS Onshore

10.21 The Developer entered into a contract with Mitsubishi Electric Europe BV for the provision of 400kV GIS onshore switchgear and control at a cost of £[redacted], which we have agreed to the contract. There was a variation to the contract of £[redacted], and future expected costs of £[redacted], leading to total expected costs of £[redacted].

220KV GIS onshore

10.22 Five shortlisted suppliers from the tender procedure carried out on [redacted] were invited for tender, of which two decided not to participate, leaving three suppliers who submitted tenders:

- [redacted]
- [redacted]
- [redacted]

10.23 The basis for recommendation was an evaluation model focusing on costs, technical solution, time schedule and project management and HSE, with the weighting for this tender being [redacted]% price, [redacted]% technical solution, [redacted]% time schedule and project management and [redacted]% QHSE.

10.24 A recommendation was made to award the work to Siemens after it achieved an overall weighting of [redacted], compared to [redacted].

10.25 Subsequently, the Developer entered into a contract with Siemens A/S for the provision of 220kV GIS onshore switchgear and control at a cost of €[redacted] (£[redacted]), which we have agreed to the contract. There was a variation to the contract for additional costs at site of €[redacted] (£[redacted]) (which we have agreed to the variation order) and future expected costs amount of €[redacted] (£[redacted]) (see paragraph 10.26 below), leading to total expected costs of £[redacted].

10.26 The Developer has provided a schedule in support of estimated future costs of €477,447 (£[redacted]). This includes one amount over £100,000 (€[redacted]) relating to an adjustment to the contract by [redacted] as they informed the Developer that a mistake was made in the contract where the cost for the [redacted] in the GIS feeders was not included in original contract price. We have agreed costs of €[redacted] (£[redacted]) to Variation Order 0127.02 – Adjustment of Contract Amount.

10.27 Also included in the CAT is an amount of £[redacted] in relation to expected variation orders to supply transformers and switchgear. The Developer has confirmed that this remaining budget (being the difference between the budget at FID and the sum of the committed and actual costs[53]) was misposted in SAP, resulting in an incorrect split of costs between CR4, CR5 and CR6 in the CAT. £[redacted] of the remaining budget relates to the supply of the onshore cable and therefore, as per paragraph 9.4 above, we propose a reallocation of this amount from CR5 to CR4. The remaining budget of £[redacted][54] relates to €([redacted]) (£([redacted])) for an expected reduction in costs to the contract with ABB A/S, additional costs in relation to the contract with Power Systems Design Solution Limited of £[redacted] and £[redacted] for ongoing work on AIS and DRC. The Developer has advised that £[redacted] reflects the required budget at 31 January 2017 at which point there was are a large number of ongoing contracts. The Developer states that this budget should be allocated between CR5 and CR6, however, we have not been provided with a breakdown of the costs or the required allocation. As we have not been provided with sufficient information to substantiate the remaining budget of £[redacted], we recommend that Ofgem should obtain an update on these costs from the Developer prior to finalising the ITV.

Miscellaneous costs

10.28 The following miscellaneous costs have been included in the CAT in relation to the onshore substation installation:

Miscellaneous installation related costs

	Supplier	Ref	DKK	£
DGA boxes 8/14 OnSS	Kemp & Lauritzen A/S	-	[redacted]	[redacted]
Provision of high voltage maintenance services	National Grid Electricity Transmission	10.29		[redacted]
Electrical interface CTRs	Power Systems Design Solution Limited	10.30		[redacted]
Reallocation to connection costs (CR7)	Power Systems Design Solution Limited	-		[redacted]
Electrical interface CTRs	Power Systems Design Solution Limited	-		[redacted]
Consultant work FAT	WSP UK Ltd.	-		[redacted]
				[redacted]

[53] At the time the CAT was prepared ie forecasts at 31 January 2017

[54] [redacted]

10.29 The Developer explained that the provision of high voltage maintenance services from National Grid Electricity Transmission (NGET) at a cost of £[redacted] is the Contract Manager's best estimate assuming a contract value is £[redacted] per annum. No detailed calculation has been provided in support of the £[redacted]. We have observed the rates and prices in Appendix 1 of the contract with NGET which details the fees charged each year and the rates for the different service engineers, which are to be billed as required. Annual costs include site routine annual inspection fees of approximately £[redacted] per annum, 24 hour emergency call out fees of approximately £[redacted] per annum, safety management fees of approximately £[redacted] per annum (along with a one off £[redacted] set up fee) and operational control fees of approximately £[redacted] per annum (along with a one off £[redacted] set up fee). This leads to annual fees of approximately £[redacted]. Although we are unable to comment on the service engineer costs, as this is nearly £[redacted] lower than the assumed annual contract value (and this is multiplied by three to arrive at the total estimate in the CAT), we would recommend that Ofgem should discuss the estimate of £[redacted] further with the Developer.

10.30 We have agreed the electrical interface costs of £[redacted] to the contract with Power Systems Design Solution Limited.

Strategic spare parts

10.31 The Developer has estimated costs of £[redacted] relating to strategic spare parts of which £[redacted] relate to 24/7 service agreements and £[redacted] relate to spare parts. The Developer has confirmed these amounts are both estimates and cover:

10.31.1 24/7 service agreements with suppliers for the period between Take Over Certificate and transfer to the Transmission Assets, calculated as [redacted] contracts at £[redacted] per annum for [redacted] years[55]; and

10.31.2 the supply of spare parts whereby the Developer has advised that most of the supply has now been contracted. We have been provided with a breakdown amounting to £[redacted], with no individual item above £100,000 noted. The Developer expects to release £[redacted] from the onshore budget and as such, an adjustment to decrease the CAT amount by £[redacted] is proposed.

[55] [redacted]

10.32 We note that operating costs are not typically included in the CAT and therefore recommend that Ofgem should take a view in relation to the inclusion of the £[redacted] for 24/7 service agreements. Furthermore, in line with previous projects, we recommend that Ofgem should take a view regarding the level of spare parts (being £[redacted] after the proposed adjustment) in the ITV.

SCADA

SCADA control system

10.33 As set out further at paragraph 7.33, the Developer entered into a contract with Alstom Grid UK Ltd for the SCADA control system at a cost of £[redacted], with one variation to the contract of £[redacted]. £[redacted][56] of these costs has been allocated to the ONSS (CR5) however the Developer has reallocated £[redacted] of this to connection costs (CR7), leading to total ONSS costs of £[redacted].

Network & Telecommunications

10.34 As set out further at paragraphs 7.35 and 7.36, the Developer entered into a contract with Semco Maritime A/S for the provision of network and telecommunications at a cost of €[redacted] (£[redacted]), with variations to the contract amounting to €[redacted] (£[redacted]). £[redacted][57] of these costs has been allocated to the ONSS.

[56] [redacted]

[57] [redacted]

11 REACTIVE SUBSTATION

11.1 The reactive substation costs are comprised as follows:

CR6 – REACTIVE SUBSTATION COSTS

Contract Overview	Ref	£
Dynamic Reactive Compensation Plant		
Siemens AS - dynamic reactive compensation plant	11.2	[redacted]
Shunt Reactors		
Siemens AG - 220kV 115-250MVar onshore shunt reactors	11.10.1	[redacted]
Royal SMIT Transformers - 400kV onshore reactors	11.10.2	[redacted]
Royal SMIT Transformers - 220kV offshore shunt reactors	11.11	[redacted]
		[redacted]
Harmonic Filters		
Siemens Wind Power Limited - harmonic filters	11.12	[redacted]
Miscellaneous		
Expected variation orders	11.13	[redacted]
Resources and travel		
Resources cost	5.3	[redacted]
Travel cost	5.3	[redacted]
		[redacted]
		[redacted]

REACTIVE COMPENSATION PLANT

Dynamic reactive compensation plant

11.2 Seven suppliers were invited for pre-qualification and invited to tender, of which one did not submit a tender and three were not shortlisted due to technical requirements. Three suppliers were shortlisted:

- [redacted] [redacted]
- [redacted] [redacted]
- [redacted] [redacted]

11.3 The basis for recommendation was an evaluation model focusing on costs, terms and conditions, technical solution, time schedule, QHSE, reservations and impact on local industrial development, with the weighting for this tender being [redacted]% price, [redacted]% technical solution, [redacted]% programme, [redacted]% QHSE, [redacted]% reservations and [redacted]% impact on local industrial development.

11.4 A recommendation was made to award the work to Siemens after it achieved an overall weighting of [redacted], compared to [redacted].

11.5 Subsequently, the Developer entered into a contract with Siemens A/S for the provision of services in respect of the development of the dynamic reactive compensation plant, at a cost of €[redacted] (£[redacted]), which we have agreed to the contract. There have been two variations to this contract amounting to €[redacted] (£[redacted]), which we have agreed to the variation orders, leading to total costs of €[redacted] (£[redacted]).

Onshore 400kV shunt reactors and 220kV variable shunt reactors

11.6 The tender for the onshore shunt reactors was broken down into two lots:

- Lot C: two 220kV variable shunt reactor, 120-250Mvar for WOW+04 onshore substation
- Lot D: two 400kV shunt reactors, 62Mvar for WOW03+04

11.7 Shortlisted suppliers from the tender procedure recently carried out by [redacted] were invited to tender. The suppliers invited for tender were:

- [redacted]
- [redacted]
- [redacted]

11.8 The basis for recommendation was an evaluation model focusing on costs, technical solution, project management and quality, time schedule, tenderer's impact and HSE, with the weighting for both Lot C and Lot D being [redacted]% price, [redacted]% technical solution, [redacted]% project management and quality, [redacted]% time schedule, [redacted]% tenderer's impact and [redacted]% HSE.

11.9 A recommendation was made to award Lot C to Siemens AG after it achieved an overall weighting of [redacted] compared to [redacted]. A recommendation was made to award Lot D to SMIT after it achieved an overall weighting of [redacted], compared to [redacted].

11.10 Subsequently, the Developer entered into the following contracts with:

11.10.1 Siemens AG for the provision of 220kV reactors at a cost of €[redacted] (£[redacted]), which we have agreed to the contract; and

11.10.2 Royal SMIT Transformers BV for the provision of 400kV onshore reactors at a cost of €[redacted], which we have agreed to the contract. The Developer has explained that at the time the CAT was prepared, only [redacted]% of the contract costs (PO lines 1 to 3) were included in SAP, ie €[redacted] (£[redacted]). The remaining contract amount of €[redacted] (£[redacted]) was added into Propsi to correct the forecast amount and is therefore included within the expected variations of £[redacted] (see paragraph 11.17 below).

220kV Offshore shunt reactors

11.11 The Developer entered into an agreement with Royal SMIT Transformers for the provision of 220kV offshore shunt reactors at a cost of €[redacted] (£[redacted]), which we have agreed to the contract. There has been two variations to this contract at a cost of €[redacted] (£[redacted]), leading to total costs of €[redacted] (£[redacted]).

Harmonic filters

11.12 The Developer entered into an agreement with Siemens Wind Power Limited for the supply of harmonic filters at a cost of £[redacted], which we have agreed to the contract.

Expected variation orders

11.13 The CAT includes estimated future costs of £[redacted] in relation to the dynamic reactive compensation plant, shunt reactors and harmonic filters. The Developer has provided us with a schedule in support of the remaining budget (expected variation orders) amounting to £[redacted] (see paragraph 11.14 below) and has confirmed that the remaining amount of £[redacted] has been included in the CAT in error. As such, an adjustment to reduce the CAT amount by £[redacted] is proposed.

11.14 The remaining budget of £[redacted] comprises:

Reactive equipment remaining budget

Supplier	Ref	€	£
Siemens A/S – expected variation orders	11.15	[redacted]	[redacted]
Siemens AG – expected variation orders	11.16	[redacted]	[redacted]
Royal SMIT Transformers	11.17	[redacted]	[redacted]
Siemens UK Transmission and Distribution Ltd.	-	-	[redacted]
			[redacted]

11.15 We have reviewed the breakdown of the expected variation orders in relation to the contract with Siemens A/S amounting to €[redacted] (£[redacted]) and note one variation above £100,000 for [redacted]. We have agreed these costs, along with costs of €[redacted] (£[redacted])[58], to Variation Order 004 for [redacted] for the period May 2016 to September 2016.

11.16 We have reviewed the breakdown of the expected variation orders in relation to the contract with Siemens AG amounting to €[redacted] (£[redacted]) and note one variation for €[redacted] (£[redacted]) which we have agreed to payment certificate 4, which notes "[redacted]".

11.17 As noted at paragraph 11.10.2 above, €[redacted] (£[redacted]) of the total cost of the contract with Royal SMIT Transformers BV was not included in SAP at the time the CAT was prepared and therefore this amount has been included within the remaining budget. The remaining budget has been reduced by €[redacted] (£[redacted]) to €[redacted] (£[redacted]) to account for four expected variation orders. We have reviewed the breakdown of these expected variation orders and note that the removal of noise panels from the contract (a cost reduction of [redacted] (£[redacted])) has been included twice and therefore the forecast costs are understated by €[redacted] (£[redacted]). As such, we propose an adjustment to increase costs in the CAT by this amount.

Remaining budget

11.18 As detailed in paragraph 10.27 above, included in CR5 of the CAT are costs of £[redacted][59] in relation to the remaining budget for ongoing works which the Developer states should be allocated between CR5 and CR6. However, we have not been provided with details of the amount to be reallocated to CR6. We recommend that Ofgem should obtain an update on these costs, including the required allocation, from the Developer prior to finalising the ITV.

[58] Also included in the breakdown of €[redacted] (£[redacted])

[59] After the proposed adjustment to relocate £[redacted] to CR4

12 CONNECTION COSTS

12.1 The connection costs are comprised as follows:

CR7 – CONNECTION COSTS

Contract Overview	Ref	£
400kV Cable		
NKT cables A/S – supply	12.2	[redacted]
J.Murphy & Sons Ltd – installation	12.3	[redacted]
		[redacted]
Grid connection agreement		
Miscellaneous costs	12.4	[redacted]
NGET connection bay equipment		
NGET - Onshore Connection bay equipment	12.7	[redacted]
Amey - Supply of UPS LVAC inter cabling	12.12	[redacted]
Miscellaneous costs	12.13	[redacted]
		[redacted]
Resources		
Resources cost	5.3	[redacted]
		[redacted]

400KV CABLE

Supply

12.2 The Developer entered into an agreement with NKT cables A/S for the supply of 400kV cables at a cost of €[redacted] (£[redacted]), which we have agreed to the contract. There have been variations to the contract amounting to €[redacted] (£[redacted]), leading to total costs of €[redacted] (£[redacted]). We propose an adjustment to reallocate these costs for the supply of the 400kV cables to CR4 – land cable supply and installation (see paragraph 9.3 above).

Installation

12.3 As detailed in paragraphs 9.13 to 9.17 above, the Developer entered into an agreement with J. Murphy & Sons Ltd for the installation of 400kV cables at a cost of £[redacted], of which £[redacted] has been allocated to CR7. A further £[redacted] has been allocated to CR7 in relation to the 11 variations to the contract amounting to £[redacted], leading to total costs in CR7 of £[redacted][60].

[60] [redacted]

GRID CONNECTION AGREEMENT

12.4 Miscellaneous grid connection agreement costs comprise the following:

	Ref	£
Land agency services	12.5	[redacted]
Modification of BCA	-	[redacted]
Grid connection	12.6	[redacted]
		[redacted]

12.5 The Developer entered into an agreement with Kelvin Power Consultants for the provision of land agency services at a cost of £[redacted], which we have agreed to the contract.

12.6 The Developer has confirmed that the grid connection provision of £[redacted] "[redacted]". As such, we are unable to substantiate this cost at present and recommend that Ofgem should obtain an update from the Developer before finalising the ITV.

NGET CONNECTION BAY EQUIPMENT

Onshore connection bay equipment

12.7 The Developer entered into an agreement with NGET for onshore connection bay equipment. We have agreed costs of £[redacted] to the contract. The contract costs have been apportioned between CAPEX and DEVEX and the Developer has provided a reconciliation of the apportionment as set out below:

National Grid Contract 095	Ref	£
Contract 095 / PO 480013492	12.8	[redacted]
Variation orders	12.9	[redacted]
Total contract value	**-**	[redacted]
Invoiced in DEVEX (WBS 2-00547-05-04-03)	12.10	[redacted]
Remainder transferred to CAPEX	12.10	[redacted]
	-	[redacted]
CAPEX included in the CAT		
Invoiced in CAPEX	-	[redacted]
Remainder on PO 4800013492, novated to PO 4800023341	-	[redacted]
	-	[redacted]
Expected costs to complete	12.11	[redacted]
		[redacted]

12.8 We do not propose an adjustment for the small difference of £[redacted] between the cost set out in the above table (PO 480013492) and the cost per the contract of £[redacted] (see paragraph 12.7 above).

12.9 There have been four variations to this contract amounting to £[redacted], of which we have agreed variations above £100,000, amounting to £[redacted], to variation orders, leading to total costs of £[redacted].

12.10 As set out in the table at paragraph 12.7 above, the contract costs have been apportioned between DEVEX[61] (£[redacted]) and CAPEX (£[redacted]).

12.11 In addition to the CAPEX contract costs of £[redacted], the CAT (CR7) includes expected costs to complete of £[redacted], leading to total costs of £[redacted]. The Developer has confirmed expected costs of £[redacted] "[redacted]". As such, an adjustment to decrease the CAT amount by £[redacted] is proposed. We have not adjusted in light of the small remaining difference of £[redacted].

Supply of UPS LVAC inter cabling

12.12 As detailed in paragraphs 10.3 to 10.6 above, the Developer entered into an agreement with Amey and £[redacted] for associated connection costs, design costs and management services has been reallocated by the Developer to CR7.

Miscellaneous costs

12.13 A breakdown of miscellaneous costs, totalling £[redacted], is included in the CAT and as all individual amounts are below £100,000 we have not looked into these costs further.

[61] 2-00547-05-04-03 - WOW03 External consultancy – Electrical. See **Appendix 2**

13 OTHER COSTS

13.1 The other costs included in the CAT comprise Transmission Assets transaction costs and hedging impacts as follows:

CR9 – OTHER COSTS

	Ref	£
Transmission Assets transaction costs		
External consultancy	13.2	[redacted]
Legal assistance	-	[redacted]
Expected VOs legal Advice	13.3	[redacted]
Expected VO	13.4	[redacted]
Resources	5.3	[redacted]
Travel	5.3	[redacted]
		[redacted]
Hedging impacts		
Matured hedge	13.7	[redacted]
Open hedge	13.7	[redacted]
		[redacted]
Total		[redacted]

TRANSMISSION ASSETS TRANSACTION COSTS

13.2 The Developer has estimated costs of £[redacted] in relation to external consultancy, stating that: "[redacted]". We have not been provided with further documentation or detailed calculations for this estimate.

13.3 The Developer has estimated variations of £[redacted] in relation to legal advice. The Developer has stated: "[redacted]." We have not been provided with further documentation or detailed calculations for this estimate.

13.4 The Developer has estimated further variations of £[redacted]. We have been provided with explanations for estimates totalling £[redacted], as follows:

13.4.1 estimate of £[redacted] for an external tax consultant engaged to provide tax advice relating to the transaction and tax treatment of the project during the transaction process;

13.4.2 estimate of £[redacted] for an external consultant to perform third party analysis and produce necessary reports owing to the bidder due diligence relating to the technical aspects of the transmission assets design, installation and operation; and

13.4.3 estimate of £[redacted] for an external technical advisor.

13.5 We note that the Developer has stated that no adjustment should be made to the CAT for the difference of £[redacted] to the costs included in CAT of £[redacted] on the basis that this was its best estimate at the time of submitting the CAT. However, we propose an adjustment to decrease the CAT by £[redacted] to reflect the current estimate.

13.6 We have not been provided with further documentation or detailed calculations for the above estimates totalling £[redacted][62]. As there is insufficient information to substantiate costs, we recommend that Ofgem should discuss these costs further with the Developer.

Hedging Impacts

13.7 Included in the CAT are profits and losses made on the hedging contracts that the Developer entered into from May 2016 to mitigate their exposure to foreign exchange movements, as detailed further in Section 5. The Developer has calculated a net foreign exchange gain of £[redacted], being net exchange gains on matured Euro hedges of £[redacted], net exchange gains on matured DKK hedges of £[redacted] and net exchange gains on open hedges of £[redacted].

13.8 We have agreed the hedging impact of £[redacted] to a document provided by the Developer[63] which sets out a summary of the open and matured deals for EUR and DKK CAPEX hedges entered into for the Transmission Assets. The hedges are based on a rolling monthly forecast with delta hedges being set up as and when contracts are placed or payment schedules revised. As a result, there is no correlation between the rates used to calculate the exchange gains and losses arising from their hedging activities, and the exchange rates set out in the CAT.

13.9 Our conclusions in relation to the hedging impact are set out in Section 5, from paragraph 5.47.

[62] [redacted]

[63] [redacted]

1 SUMMARY OF COST MOVEMENTS AND UNSUBSTANTIATED COSTS

Summary of cost movements

Project cost category	Per CAT £	Adjusted value £	Total adjustment £	Breakdown £	Revised estimate/ Adjustment/ Reallocation	Rationale for adjustment	Unsubstantiated costs £
Offshore substation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
				[redacted]	[redacted]	[redacted]	
Submarine cable supply & install	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
				[redacted]	[redacted]	[redacted]	[redacted]
				[redacted]	[redacted]	[redacted]	
				[redacted]	[redacted]	[redacted]	
Onshore cable supply & install	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
				[redacted]	[redacted]	[redacted]	
				[redacted]	[redacted]	[redacted]	
				[redacted]	[redacted]	[redacted]	
				[redacted]	[redacted]	[redacted]	
				[redacted]	[redacted]	[redacted]	
				[redacted]	[redacted]	[redacted]	

Summary of cost movements continued

Project cost category	Per CAT £	Adjusted value £	Total adjustment £	Breakdown £	Revised estimate/ Adjustment/ Reallocation	Rationale for adjustment	Unsubstantiated costs £
Onshore substation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
				[redacted]	[redacted]	[redacted]	
				[redacted]	[redacted]	[redacted]	
Reactive substation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-
				[redacted]	[redacted]	[redacted]	
Connection costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
				[redacted]	[redacted]	[redacted]	
Common costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
				[redacted]	[redacted]	[redacted]	
Other costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total capital costs (exc. IDC)	**485,116,697**	**479,038,902**	**(6,077,795)**				[redacted]
			-1.3%				[redacted]%

2 GENERAL DEVELOPMENT COSTS

		Total costs £	Allocation rate	Total per CAT £	Time costs £	Transactions to	Notes	Unsubstantiated costs £	Allocation basis
	DEVEX project 1-01069								
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted] –	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

		Total costs £	Allocation rate	Total per CAT £	Time costs £	Transactions to	Notes	Unsubstantiated costs £	Allocation basis
	DEVEX project 2-00417								
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted] -	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	DEVEX project 2-00547								
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted] X	[redacted]	[redacted]

		Total costs £	Allocation rate	Total per CAT £	Time costs £	Transactions to	Notes	Unsubstantiated costs £	Allocation basis
	[redacted]								
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]								
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]								
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted] -	[redacted]
	[redacted]								
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

		Total costs £	Allocation rate	Total per CAT £	Time costs £	Transactions to	Notes	Unsubstantiated costs £	Allocation basis
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

		Total costs £	Allocation rate	Total per CAT £	Time costs £	Transactions to	Notes	Unsubstantiated costs £	Allocation basis
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted].	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

		Total costs £	Allocation rate	Total per CAT £	Time costs £	Transactions to	Notes	Unsubstantiated costs £	Allocation basis
	[redacted]								
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]								
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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		Total costs £	Allocation rate	Total per CAT £	Time costs £	Transactions to	Notes	Unsubstantiated costs £	Allocation basis
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

		Total costs £	Allocation rate	Total per CAT £	Time costs £	Transactions to	Notes	Unsubstantiated costs £	Allocation basis
	[redacted]								
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[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	DEVEX project 2-00694								
	[redacted]								
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]								
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		Total costs £	Allocation rate	Total per CAT £	Time costs £	Transactions to	Notes	Unsubstantiated costs £	Allocation basis
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]		[redacted]	[redacted]			[redacted]