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Ex-Ante Cost Review of Burbo Bank Extension Offshore Wind Farm Project

Report of Grant Thornton UK LLP dated 16 November 2016

CONTENTS

APPENDICES

1 EXECUTIVE SUMMARY

1.1 Our review and this report is based upon the cost template submitted to Ofgem dated 4 May 2016 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 Developers.

1.2 The Burbo Bank Extension Offshore Wind Farm (BBW02/the Wind Farm) will be situated in the Bay of Liverpool approximately 20km off the coast of Liverpool, and will be located entirely within UK territorial waters. It will consist of 32 8MW WTGs with a Transmission Entry Capacity (TEC) of 254.2MW[1], which will be connected to an offshore substation platform (OSP) located within the boundaries of the BBW02 Offshore Wind Farm.

1.3 The Transmission Assets are under construction at present, with an estimated completion time of October 2016.

1.4 The Wind Farm is owned by DONG Energy Wind Power A/S (DONG Energy) through its subsidiary DONG Energy Burbo Extension (UK) Limited, PKA A/S and KIRKBI A/S (collectively the Developers). The development of the Wind Farm is being managed by DONG Energy.

1.5 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 Developers for the Transmission Assets of the Wind Farm (Ex-Ante Review).

1.6 The Ex-Ante Review has considered the accuracy, completeness and allocation of costs against the cost template prepared by the Developers for the Wind Farm Transmission Assets, based on supporting information and methodology provided by the Developers. Further detail on our work is set out in Sections 4 to 10 of this report. The purpose of a review at this stage is to:

1.6.1 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] The difference between installed and connected capacity is attributed to wind turbine generator and array cable losses

1.6.2 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

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

1.7 The cost allocation template dated 4 May 2016 (the CAT) estimates the costs of the BBW02 Transmission Assets at £241.6 million. This represents an increase on the initial cost assessment by the Developers at 15 January 2016 as set out in version 1 of the cost template which projected the original cost to be £230.2 million. The CAT has assessed the costs of the Transmission Assets as follows:

Transmission Assets cost summary

	Direct costs £	Contingency £	Total costs £	%
Project common costs	[redacted]	[redacted]	[redacted]	[redacted]
Offshore substation	[redacted]	[redacted]	[redacted]	[redacted]
Submarine cable supply and installation	[redacted]	[redacted]	[redacted]	[redacted]
Land cable supply and installation	[redacted]	[redacted]	[redacted]	[redacted]
Onshore substation connection	[redacted]	[redacted]	[redacted]	[redacted]
Connection costs	[redacted]	[redacted]	[redacted]	[redacted]
Total capital costs	[redacted]	[redacted]	[redacted]	[redacted]
Transaction costs	[redacted]	[redacted]	[redacted]	[redacted]
Interest during construction	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	241,635,432	100.0%

SUMMARY OF FINDINGS

1.8 The Developers have provided us with supporting documentation and/or explanations for the majority of items included within the cost template, which we have reviewed. We have found that all major items of expenditure for Transmission Assets have been procured under contracts specific to the transmission business.

1.9 We have agreed the costs of the transmission business to the major contracts, variation orders or working schedules with underlying supporting documentation, entered into by the Wind Farm and the subcontractors for the various packages. However, we indicate the areas we would recommend Ofgem discusses with the Developers within this executive summary.

Overhead allocation rates

1.10 The CAT included a number of common costs to the Wind Farm as a whole, which have been allocated to the Transmission Assets based upon a variety of methods as follows:

1.10.1 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;

1.10.2 Geographical area. For costs related to environmental and geo survey work where there are clear geographical links to the costs incurred. Three allocation rates have been calculated here dependent upon the area where work has taken place; i) the OFTO offshore area of 22.7%; ii) the English water OFTO of 12.8%; and iii) the Welsh water OFTO of 100%;

1.10.3 OFTO % of total capex. This rate is similar to allocation rates used in previous projects where the cost of directly attributable Transmission Assets capital expenditure is taken as a percentage of total directly attributable Wind Farm capital expenditure including resource and travel costs, where the rate derived is 26.39%. This rate is then applied to non-specific capex where the other allocation methods are not considered appropriate;

1.10.4 Shared resource and travel costs. For the resource and travel costs which are shared between transmission and generation (eg programme management), an allocation 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 based upon package manager assessments.

1.11 In principle, we consider that the allocation methodologies used by the Developers appear reasonable. However, the allocation methodology between OFTO and the generator is subject to the agreement of Ofgem and we have simply verified that the calculations match the methodology rather than verified that the methodology applied is correct.

1.12 The table below summarises the allocated costs included within the CAT, and the effective allocation rate for such costs:

Allocated costs

	Total £	Allocation £	Effective rate
Common costs	[redacted]	[redacted]	[redacted]
Shared resources	[redacted]	[redacted]	[redacted]
Development expenditure (devex)	[redacted]	[redacted]	[redacted]
	91,974,972	29,528,671	32.3%

1.13 Previously, DONG Energy used a high level allocation methodology to assign shared costs to the Transmission Assets, which was 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. However, this table shows that the different approach to allocation methodologies used by the Developers in relation to Burbo Bank has resulted in cost allocations to the Transmission Assets at an average rate of 32.3%, which is higher than what we have seen on previous projects of around 25%. However, based upon our analysis of these rates, there are specific reasons why this rate is higher:

1.13.1 The average rate for common costs of 27.6% is not dissimilar to the capex rate used by the Developers of 26.39% that we have seen used on similar projects.

1.13.2 Whilst the average rate for shared resources of 37.2% 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, the higher rate used may be justifiable. The average allocation rate of 37.2%, based upon the cost of the allocated Transmission Asset resources costs as a percentage of total resources costs, is lower than the allocation rate based purely on hours of 48.2%. We have verified the Developers calculation of the allocation rates for resources which appear reasonable.

1.13.3 The average allocation rate for devex of 32.0% is higher than the benchmark of 25%. However, £[redacted] of the £[redacted] allocated devex relates to time costs which have higher allocation rates as explained above. The average allocation rate for these time costs is 49.1%, and excluding these time costs, the average allocation rate for devex is 21.5% which is actually lower than the capex rate used by the Developers.

1.14 As such, whilst the allocation rates are higher than we have seen on other projects, there appears to be justification for the higher rates, and the rates appears to have been calculated appropriately.

Calculation of hourly rates

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

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

1.17 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.

1.18 We understand that the Developers are required to sell the Transmission Assets to the offshore transmission owner (OFTO) at cost. As such, if the hourly rates calculated by the Developers 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

1.19 The CAT for the Transmission Assets includes a contingency provision amounting to £[redacted] ([redacted]% of pre contingency capital costs excluding transaction costs and IDC). The Developers have calculated the contingency provision based upon their 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.

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

1.20.1 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 £[redacted] (45.8% of the total contingency provisions), leaving £[redacted] of contingencies which we have been unable to verify. We have asked the Developers to provide further information to substantiate more of the contingency provision, but their policy is not to share their risk registers in full. As such, we are unable to conclude upon whether the remaining contingency provision is appropriate.

1.20.2 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.

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

1.22 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

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

1.24 At the time that the CAT was prepared, the Developers had not hedged against fluctuations in foreign exchange rates which we understand was based upon previous cost assessment guidance from Ofgem. Following discussions with Ofgem, the Developers have entered into foreign currency hedges for Danish Krone and Euros. Based upon these contracts, the Developers anticipate a hedging gain of around £[redacted]. This gain was estimated at a certain point in time, and may vary. As such, it does not form part of the deductions proposed in this report. The Developers have confirmed that the CAT will be updated at the Final Transfer Value (FTV) stage once the final position is known.

Areas requiring technical input

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

1.26 The Developers have provided us with detailed schedules which 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 Developers' own staff is reasonable, or whether the average hourly rate used in the CAT is reasonable.

1.27 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.

1.28 Separately as we set out above, the contingency provision for the Transmission Assets that has been calculated based upon the Developers' assessment of the risks associated with the construction of the Transmission Assets. It is not our area of expertise to establish whether the Developers' assessment of the expected value of risks and of the likelihood of each event occurring are correct.

1.29 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 Developers' assessment is reasonable.

Updates to estimates

1.30 The CAT contains a number of estimates made by the package managers of the costs of additional works performed by contractors on the main packages. Some of these costs have been supported by emails from the package managers which indicate that costs are expected to be finalised with the contractors in the coming months.

1.31 As such, we recommend that Ofgem should obtain an update from the Developers on these costs shortly prior to finalising the report.

Project common costs – legal expenses

1.32 The CAT currently includes a provision for legal costs, allocated to the Transmission Assets at the rate of 26.39%, amounting to £[redacted]. The Developers have explained that *"the estimated cost is budget provision for general legal risks. Specific risks are not known at the present time so a budget breakdown is not available"*.

1.33 It is not clear to us whether the inclusion of provisions for contingent legal expenditure is appropriate as it is not clear whether it would be efficiently incurred. Furthermore, we have not been provided with information to verify the Developers estimate, and are unable to confirm whether such provisions are already included within contingencies provision.

1.34 As such, we recommend that Ofgem discusses this further with the Developers.

Conclusion

1.35 Following the Ex-Ante Review and the supporting information provided, we consider that adjustments of £3,752,951 (1.7% of capital costs) are required to the CAT as summarised in the following table.

Impact of cost assessment

	Ref	£
Cost of Transmission Assets per CAT (excluding interest during construction (IDC) and transaction costs)		224,239,795
[redacted]		
Total adjustments		(3,752,951)
Revised cost of Transmission Assets		**220,486,844**

Grant Thornton UK LLP

Grant Thornton UK LLP

London

16 November 2016

[redacted]

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 Developers in relation to the Transmission Assets of BBW02.

2.2 The review is to understand whether the costs provided in the Developers' 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 Developers' 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 Developers' 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 Developers 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 4 May 2016 and incorporates information and explanations provided regarding the costs in this version of the cost template, both during our site visits and in correspondence with the Developers up to 19 October 2016.

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 by the Court 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 BBW02 EXTENSION

2.16 BBW02 will be situated in the Bay of Liverpool, approximately 20 km off the coast of Liverpool, and is located entirely within UK territorial waters. The onshore licensing body is National Grid Electricity Transmission plc (NGET) and the Transmission Assets will connect to the Bodelwyddan, 400kV substation in North Wales.

2.17 The Wind Farm will be the first commercial UK wind farm to utilise 8MW wind turbines generators (WTGs) and will consist of 32 8MW WTGs with a Transmission Entry Capacity (TEC) of 254.2 MW, which will be connected to an offshore substation platform (OSP) located within the boundaries of the BBW02 Offshore Wind Farm.

2.18 The BBW02 Transmission Assets are currently under construction and are due to be fully operational and commissioned by the end of Q3 2016. They will include an onshore substation, one OSP subsea cable and land cable, and an OFTO (Offshore Transmission Owner) dedicated Supervisory Control and Data Acquisition (SCADA) system.

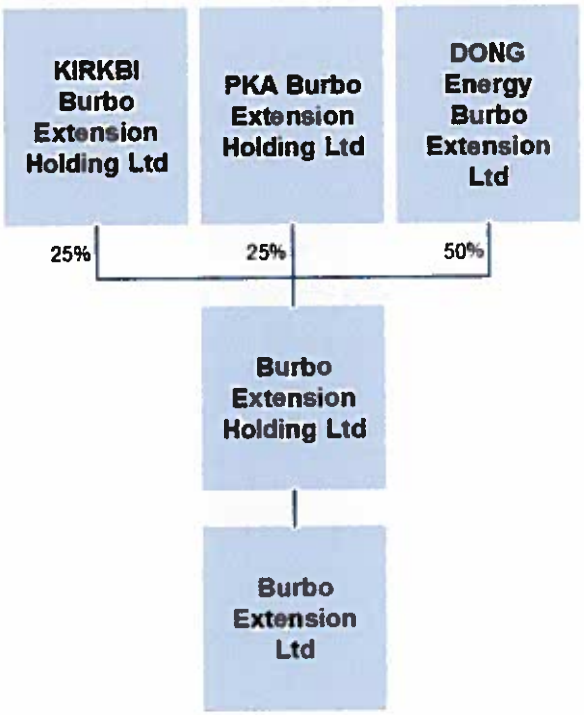
2.19 The BBW02 Transmission Assets are expected to deliver an availability of 98%, taking into account both planned and unplanned maintenance.

OWNERSHIP STRUCTURE

2.20 The Wind Farm is owned by Burbo Extension Limited, an SPV ultimately jointly-owned by DONG Energy, KIRKBI A/S and PKA A/S

2.21 Burbo Extension UK Limited holds a Development Consent Order and deemed marine license made pursuant to an application under the Planning Act 2008.

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



3 THE BBW02 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 Developers' 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 4 May 2016, and was based upon the Developers' estimates of the costs of the Transmission Assets at 31 March 2016.

3.3 Our analysis has considered confirmation that costs incurred 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 what is considered the main driver behind the relevant cost (this is usually capital cost or the degree of time/activity required in relation to different components of the Wind Farm development). 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.

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

Transmission Assets cost summary

	Direct costs £	Contingency £	Total costs £	%
Project common costs	[redacted]	[redacted]	[redacted]	[redacted]
Offshore substation	[redacted]	[redacted]	[redacted]	[redacted]
Submarine cable supply and installation	[redacted]	[redacted]	[redacted]	[redacted]
Land cable supply and installation	[redacted]	[redacted]	[redacted]	[redacted]
Onshore substation connection	[redacted]	[redacted]	[redacted]	[redacted]
Connection costs	[redacted]	[redacted]	[redacted]	[redacted]
Total capital costs	[redacted]	[redacted]	[redacted]	[redacted]
Transaction costs	[redacted]	[redacted]	[redacted]	[redacted]
Interest during construction	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	241,635,432	100.0%

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

3.5.1 The overview of the Developers' processes for accounting and procurement of the Wind Farm are set out in **Section 4**;

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

3.5.3 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**;

3.5.4 Our work in relation to costs specific to each component of the Transmission Assets, summarised on the CAT under CR2, CR3, CR4 and CR5, are set out in **Sections 7 to 10**;

3.5.5 A summary of the issues identified as part of our review are set out in the executive summary.

INFORMATION PROVIDED

3.6 Grant Thornton have relied upon the following information in reviewing the cost assessment for the Wind Farm:

3.6.1 Preliminary Information Memorandum dated April 2016[3] and Vendor Due Diligence report dated 4 April 2016;

3.6.2 information contained in the Ofgem developer data room for the BBW02 Wind Farm Project; and

3.6.3 information and explanations provided to us by the Developers. This included a visit to the Developers on 23 June 2016 to discuss the Transmission Assets and subsequent telephone calls and email correspondence with the Developers.

[3] Actual date not specified

4 BBW02 PROCESSES

INTRODUCTION

4.1 In this section, we set out the processes which have been used by the Developers 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 Developers 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.

4.3 DONG Energy, as project manager of the Wind Farm, provides the accounting team that supports the Wind Farm project and undertakes the budgeting process. DONG Energy uses the SAP accounting system for the Wind Farm.

DECISION MAKING PROCESSES

4.4 The decision making in the BBW02 programme is based on a project specific Authorisation Matrix. We have been provided with an extract from the current Authorisation Matrix dated July 2016, which sets out the three steps of authorisation, namely:

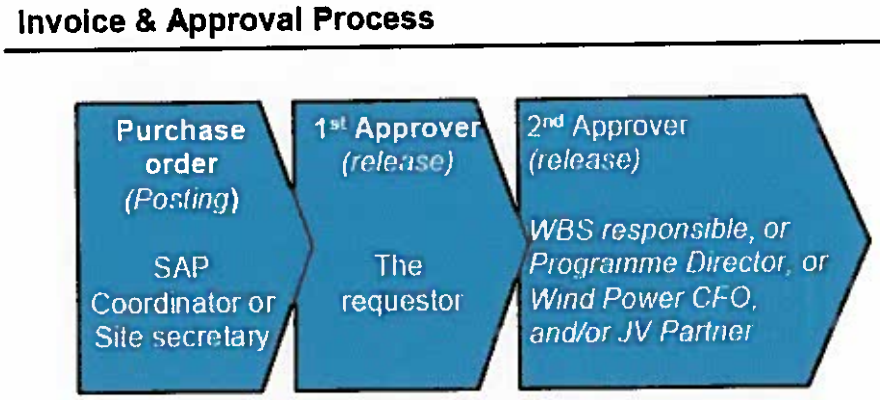
4.4.1 authorisation to approve decisions (Decision Governance);

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

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

ACCOUNTING AND BUDGETING PROCESS

4.5 The Developers operate a rigid invoice and purchase order approval process, as set out in the below diagram from the Developers[4]:



4.6 For each contract, purchase orders are prepared for the costs expected to be incurred, along with a cash flow profile.

4.7 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.

4.8 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

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

4.10 The BCR approval process is performed on a monthly basis and requires approval from all of the below levels, in the following order, dependent upon the value of the change:

4.10.1 EPC Director

4.10.2 Programme Director

4.10.3 Programme Steering Committee

[4] For clarification WBS refers to Work Breakdown Structure

Cost controlling

4.11 Capital expenditure, budgets and forecasts are updated on a monthly basis. Budgets are made up of actual costs incurred, committed costs and remaining expenditure. Remaining costs are inspected on a monthly basis, with the package manager being asked to provide rationale for those costs.

PROCUREMENT PROCESS

4.12 The Lead Contract Manager for BBW02 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

4.13 BBW02 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, as 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.

4.14 As such, DONG Energy considers that a multi-contract strategy is more economical, and enables the Developers to enlist the services of suitable suppliers with the appropriate technical expertise and experience for specific tasks. It also allows the Developers to retain control and responsibility over all aspects of the BBW02 project, including over the management of key interfaces between contractors and the resulting impact on the project and underlying budget.

Competitive Tendering

4.15 One of the main tools used by the Developers 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.

4.16 BBW02 is the first of DONG Energy's projects to benefit from a portfolio approach to competitive tendering, whereby companies were asked to tender for three wind farms; Race Bank, Walney Extension and BBW02. This has been done in order to increase procurement volume, to promote a learning curve to increase technical and execution quality, and decrease cost.

4.17 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 can be waived when the nature of the work requires so.

4.18 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, 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.

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

4.19.1 [redacted]

4.19.2 [redacted]

4.19.3 [redacted]

Contracting

4.20 For the BBW02 project, DONG Energy is taking all of the construction risk. As such, all construction contracts are entered into by DONG Energy Wind Power A/S.

COST ACCOUNTING AND ALLOCATION METHODOLOGY

4.21 All costs of the Wind Farm are posted to a Work Breakdown Structure (WBS) code in the accounting system. Costs have been grouped on the cost activity to which they relate and also on whether they relate entirely to Transmission or Generation Assets, or to the Wind Farm as a whole (shared costs).

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

4.22.1 general project management and administration;

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

4.22.3 general consultants eg legal/environment and consent

4.22.4 offices – London, Copenhagen and on site; and

4.22.5 SCADA equipment benefitting both the Transmission and Generating Assets.

4.23 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 which 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.

CONTINGENCIES

Methodology

5.3 The Developers have conducted a detailed exercise in order to calculate the contingency provision for the projects, based on a Risk Register.

5.4 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.

5.5 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

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

Contingencies

	DKK	£
Offshore substation	[redacted]	[redacted]
Submarine cable	[redacted]	[redacted]
Land cable	[redacted]	[redacted]
Onshore substation	[redacted]	[redacted]
Common costs	[redacted]	[redacted]
	[redacted]	[redacted]

5.7 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 probably that the risk materialising was 10%, then the contingency amount would be £500,000, ie £5.0 million x 10%.

5.8 However, as the contingency provision was based upon the CAT, as prepared up to March 2016, the current value of contingency related to the Transmission Assets is likely to have decreased as the construction of the Transmission Assets nears completion.

5.9 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

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

5.11 The Developers have provided us with the document "BBW02 Capex Contingency Methodology" which summarises the Wind Farm's approach to quantifying risks, a summary of 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.

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

Project common costs

5.13 Contingencies in relation to common costs in the region of £[redacted] have been made to cover risks related to consent, marine licenses and crossing agreements.

Offshore substation

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

5.14.1 difficulties in finding suitable vessels for installation due to the low water depth;

5.14.2 fabrication delays due to late delivery of electrical equipment; and

5.14.3 changes in the design required to accommodate electrical systems or other requirements.

Submarine cable

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

5.15.1 the risk of the burial target not being achieved due to the seabed conditions that are yet to be surveyed;

5.15.2 the risk of other cables affecting the laying of the export cables; and

5.15.3 delay of the beach pull-in, due to tidal restrictions.

Land Cable supply and installation

5.16 Contingencies of £[redacted] have been made. This is a small residual risk as the peak construction to which they relate had already occurred before 31 March 2016.

Onshore substation

5.17 Contingencies in relation to the onshore substation have been broken down into electrical risks (£[redacted]), onshore substation (£[redacted]) and SCADA risks (£[redacted]) and cover:

5.17.1 the risk of grid design uncertainties causing re-work; and

5.17.2 the risk of late supply of electrical components.

Limitations of our review

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

Incomplete information

5.19 Whilst the Developers have provided a schedule of individual contingencies which exceed £250,000, the collective value of these contingencies totals £[redacted] (45.8% of total contingencies), leaving £[redacted] of contingencies which we have been unable to verify.

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

Technical review

5.21 Whilst we have reviewed the risk provisions included within the list of contingencies over £250,000 for the Transmission Assets, which appear reasonable provisions in regard to the Transmission Assets at the time of the CAT submission, 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

5.22 The CAT includes the Developers' nominal pre-tax interest charge of 10.8% up to November 2011, 8.5% up to April 2014 and 8.0% for the period to the end of construction, estimated at October 2016, after which the project is expected to be generating power and thus beyond this time the Developer will cease to earn interest. The Developers' interest cost for the Transmission Assets totals £[redacted]. For the avoidance of doubt, we have not verified the Developers' assessment of interest during construction, as this is outside the scope of our review.

COST PRINCIPLES

Cost allocation

5.23 Previously, DONG Energy 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.

5.24 For BBW02, the Developers have taken a more-evidenced based approach wherever possible to ensure that appropriate cost allocation is made. Four different methods have been used as summarised below:

5.24.1 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 onshore substation (see Section 10), and for geo survey costs at both the DEVEX and CAPEX phases (see Section 6);

5.24.2 Geographical area. For costs related to environmental and geo survey work where there are clear geographical links to the costs incurred. Three allocation rates have been calculated here; i) the OFTO offshore area of 22.7%; ii) the English water OFTO of 12.8%; and iii) the Welsh water OFTO of 100% dependent upon the area of where the costs were incurred;

5.24.3 OFTO % of total capex. This rate is similar to allocation rates used in previous projects where the cost of Transmission Assets capital expenditure is taken as percentage of total Wind Farm capital expenditure included resource and travel costs. The rate derived is 26.39%, which is slightly higher, but not significantly so, than that used on other projects, and is applied to non-specific capex where the other allocation methods are not considered appropriate;

5.24.4 Shared resource and travel costs. For the resource and travel costs which are shared between transmission and generation (eg programme management), an allocation 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.

5.25 In principle, the allocation methodologies used by the Developers appear reasonable and in line with cost allocation methodologies we have seen elsewhere. However, there should be a (policy) decision taken by Ofgem on whether to allow this allocation methodology.

5.26 The table below summarises the allocated costs included within the CAT, and the effective allocation rate for such costs:

Allocated costs

	Total £	Allocation £	Effective rate
Common costs	[redacted]	[redacted]	[redacted]
Shared resources	[redacted]	[redacted]	[redacted]
Development expenditure (DEVEX)	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]

5.27 This table shows that the change in allocation methodologies used by the Developers has resulted in cost allocations to the Transmission Assets at an average rate of 32.3%, which is higher than rates we have seen on previous projects of around 25%. However, based upon our analysis of these rates, there are specific reasons why this rate is higher:

5.27.1 The average rate for common costs of 27.6% is not dissimilar to the capex rate used by the Developers of 26.39%, which is slightly higher, but not significantly so, than that we have seen used on similar projects.

5.27.2 Whilst the average rate for shared resources of 37.2% 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. The average allocation rate of 37.2% based upon the cost of the allocated Transmission Asset resources costs as a percentage of total resources costs, is lower than the allocation rate based purely on hours of 48.2%. We have verified the Developers calculation of the allocation rates for resources.

5.27.3 The average allocation rate for devex is 32.0%. Of the £[redacted] allocated devex, £[redacted] relates to time costs which have higher allocation rates as explained above. The average allocation rate for these time costs is 49.1%, and excluding these time costs, the average allocation rate for devex is 21.5% which is actually lower than the capex rate used by the Developers.

5.28 As such, whilst the allocation rates are higher than we have seen on other projects, there appears to be justification for the higher rates, and the rates appears to have been calculated appropriately.

Verification of allocation rates

Geographical area

5.29 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.

OFTO % of total capex

5.30 We have verified the calculation of the allocation rate for OFTO capital expenditure as a proportion of total capital expenditure (which excludes project management costs), and this appears to have been determined in line with the stated methodology.

Shared resource and travel costs

5.31 The Developers have 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	[redacted]	Allocation rate based upon hours spent on OFTO by programme management employees or by project employees as a whole
Financial management	[redacted]	Allocation rate based upon hours spent on OFTO by project employees as a whole
Asset management	[redacted]	Allocation assessment undertaken by project manager for asset management employees on a line by line basis
O&M preparation	[redacted]	Allocation based upon O&M hours spent on OFTO as percentage of total O&M hours
EPC management	[redacted]	Allocation rate based upon hours spent on OFTO by EPC management
Geo survey	[redacted]	Allocation rate based upon contract values for OFTO as percentage of total contract values
Consents	[redacted]	Allocation rate based upon contract values for OFTO as percentage of total contract values
Foundation	0.00%	All generation
WTG	0.00%	All generation
Electrical management	[redacted]	Allocation rate based upon hours spent on OFTO by electrical management employees
Onshore export cable	100.00%	All transmission
Offshore export cable	100.00%	All transmission
Array cable	0.00%	All generation
HV/MV/Onshore	100.00%	All transmission
HV/MV/Offshore	100.00%	All transmission
SCADA	[redacted]	Allocation rate based upon contract values for OFTO as percentage of total contract values
Design & compliance	[redacted]	Allocation based upon judgement of person working in this area
Offshore Platform	100.00%	All transmission
Onshore substation civil work	100.00%	All transmission
Site & commissioning	[redacted]	Allocation based upon CAPEX rate

5.32 We have verified the calculations of the allocation rates which have been calculated by reference to hours spent or contract value, which appear to be determined in line with the stated methodology. Likewise, the assessment of costs as all generation or transmission accords with our expectations.

5.33 However, the allocation rates for asset management resources and design and compliance have been based upon judgement of package managers. Whilst the allocation for the asset management resources has been conducted on a line-by-line basis, and as such, this is likely to be a well-informed assessment of the allocation of time spent, we are unable to confirm whether the allocation rate for design and compliance hours, which leads to costs in the CAT of £[redacted], is reasonable.

Foreign exchange

Accounting for foreign exchange in the CAT

5.34 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.

5.35 The Transmission Assets cost estimate applied in the CAT is based on the documented currency for each of the underlying contracts, for resources, travel, etc. The Developers have converted costs, where applicable, into Sterling based upon the monthly rates incurred when the payments were made. Where costs have not yet been incurred or committed through a contract, an assessment has been made of the exchange rates which are most likely to be applied each month.

5.36 Of these costs detailed in the CAT, £[redacted] ([redacted]% 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 £ Equivalent
Offshore substation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Submarine cable supply and installation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Land cable supply and installation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Onshore substation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Effective exchange rate		[redacted]		[redacted]	

5.37 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

5.38 As explained above, the Developers have used monthly exchange rates to translate amounts payable in foreign currencies into Sterling.

5.39 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 Developers. Whilst the fluctuation in exchange rates following Brexit would be expected to result in higher costs of construction, as the Developers have entered into foreign currency hedges as detailed below, this is likely to have been mitigated.

Mitigation of foreign exchange risk

5.40 At the start of the project the Developers had decided, based upon previous Ofgem cost assessment guidance, that they would not enter into hedges for foreign currency transactions, and that instead, costs incurred in foreign currencies would be 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.

5.41 Further to the Developer's discussions with Ofgem, they have entered into foreign currency hedges as follows:

Foreign currency hedges

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

5.42 As at 19 August 2016, the Developers anticipate a hedging gain of around £[redacted]. However this gain may vary, therefore does not form part of the deductions proposed in this report. However, the Developers have confirmed that the CAT will not be updated until the Final Transfer Value (FTV) stage.

Application of overriding global discounts

5.43 The Developers have 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

5.44 The Developers have confirmed that there have been no related party transactions, other than staffing.

Boundaries used for purposes of cost allocation

5.45 The Preliminary Information Memorandum confirms the boundary points of the Transmission Assets proposed by the Developers, as follows:

- offshore – located at the 220/34kV transformer - 34kV LV terminals
- onshore – located in the gas barrier zones of both main and reserve 400Kv bus bar contained within the existing NGET Bodelwyddan 400kV substation.

5.46 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	£
Programme management	6.3	[redacted]
Financial management		[redacted]
Asset management	6.7	[redacted]
OFTO spares	6.11	[redacted]
EPC management	6.12	[redacted]
Consents	6.14	[redacted]
Geo survey	6.19	[redacted]
Site & commissioning	6.21	[redacted]
Internal resources and travel	6.31	[redacted]
Development costs	6.38	[redacted]
Contingencies	5.6	[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.

Programme management costs

6.3 Programme management costs are summarised as follows:

Programme management costs

	Total costs £	Allocation rate	Total per CAT £
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]		[redacted]

6.4 The Wind Farm is expected to incur insurance costs of £[redacted], of which 26.39% have been allocated to the Transmission Assets, amounting to £[redacted]. Of these costs, £[redacted] had been incurred up to 31 March 2016, principally in relation to the Construction All Risks policy which we have agreed to invoices, and a further £[redacted] is expected to be incurred. The remaining budget relates to the last instalment of the CAR (construction all risks) premium which is due in November 2016 of £[redacted] which we agreed to the policy payment schedule and an estimate for additional premium in the event the final Wind Farm expenditure is greater than expected of £[redacted]. As such, a reduction in insurance costs in the CAT of £[redacted][5] is required.

6.5 The Wind Farm has included a provision for legal costs of DKK [redacted] (£[redacted]), of which 26.39% have been allocated to the Transmission Assets, amounting to £[redacted]. The Developers have explained that *"the estimated cost is budget provision for general legal risks. Specific risks are not known at the present time so a budget breakdown is not available"*. Whilst we are unable to substantiate these costs, we would also question whether the inclusion of provisions for contingent legal expenditure is appropriate, particularly absent further information about the nature of costs and the full contingency provision. As such, we recommend that Ofgem discusses this further with the Developers.

6.6 The Wind Farm is expected to incur programme training costs of £[redacted], of which 26.39% have been allocated to the Transmission Assets, amounting to £[redacted]. Of this amount, £[redacted] has been incurred, with a further £[redacted] committed. Remaining costs of £[redacted] largely comprise the cost of leadership training seminars for the project management team.

Asset management

6.7 Asset management costs are summarised as follows:

Asset management costs

	Total costs £	Allocation rate	Total per CAT £
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]		[redacted]

[5] Per Q&A tracker 14 July

6.8 Grid connection costs of £[redacted] are expected in relation to the Transmission Assets to cover the cost of two modification applications to the grid connection agreement during the construction period. This cost is for two possible grid modifications for National Grid based upon experience from previous projects.

6.9 The cost of landowner agreements to cover the area of the onshore cable route are expected to amount to £[redacted] in relation to landowner agreements, of which £[redacted] has been incurred, leaving a remaining budget of £[redacted], which comprises approximately £[redacted] of legal fees, £[redacted] of completion payments to landowners and a £[redacted] HDD (horizontal directional drilling) compound payment.

6.10 Of the costs incurred to date, £[redacted] has been paid to (via a law firm's client account) for payments to landowners, £[redacted] has also been paid to Bond Dickinson for legal fees associated with the same and £[redacted] has been paid to Dalcour Maclaren as agents dealing with the landowner negotiations.

OFTO spares

6.11 The CAT includes costs of £[redacted] in respect of operations preparation. To date costs of £[redacted] have actually been incurred, leaving a remaining budget of £[redacted], which is to be used to pay for asset integrity management programme hardware and OFTO maintenance costs between handover and divestment.

EPC management

6.12 The Wind Farm expects to incur costs of £[redacted] in relation to EPC management travel and rehearsal of concept (ROC) drills, of which 52.41%[6] were allocated to the Transmission Assets, amounting to £[redacted].

6.13 Of this, £[redacted] has already been incurred, with a further £[redacted] having been committed via invoices that are due to be issued for purchase orders relating to the ROC drill workshop venue, material and consultant. The committed costs also include travel costs to cover the Developers' personnel hired as consultants. The remaining budget of £[redacted] is the travel budget to be used by the EPC management team for EPC related activities and events, of which £[redacted] relates to remaining travel for the EPC team for which detailed budgets exist.

[6] Allocation based upon mix of the [redacted] rates detailed in Section 5

Consents

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

Consents

	Total costs £	Allocation rate	Total per CAT £
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]		[redacted]

6.15 The Wind Farm is expected to incur environmental costs of £[redacted] of which 11.06%[7] have been allocated to the Transmission Assets, amounting to £[redacted]. Of these costs, £[redacted] had been incurred up to 31 March 2016, £[redacted] is already committed and a further £[redacted] is expected to be incurred. Expected future costs are expected to cover the costs of the offshore monitoring of the birds and other species.

6.16 The Wind Farm is expected to incur consents consultation costs of £[redacted] of which 27.89%[8] have been allocated to the Transmission Assets, amounting to £[redacted]. Of these costs, £[redacted] had been incurred at 31 March 2016 which includes administration of and donations to community funds of £[redacted] and £[redacted] paid to Counter Context Limited for the costs of liaison with stakeholders and the local community (pre-allocation), £[redacted] is already committed and a further £[redacted] is expected to be incurred, for which we have been provided with a breakdown indicating no significant items. Future costs are expected to cover the Community Engagement Policy during the construction period, an inaugural event to celebrate the commissioning, fishery disturbance fund and local communication.

6.17 The Wind Farm is expected to incur consent application costs of £[redacted] of which [redacted]%[9] have been allocated to the Transmission Assets, amounting to £[redacted]. Of these costs, £[redacted] had already been incurred at 31 March 2016, with further committed costs of £[redacted], and a further £[redacted] is expected to be incurred. Future costs are expected to include the application for both English and Welsh new Marine Licences to remove and/or detonate any identified unexploded ordnance which pose a risk to offshore installation, Town and Country Planning Association applications (Development Consent Orders) and an application to remove rock groynes from the Welsh water.

[7] Allocation based upon mix of the [redacted] rates detailed in Section 5

[8] Allocation based upon mix of the [redacted] rates detailed in Section 5

[9] Allocation based upon mix of the [redacted] rates detailed in Section 5

6.18 The Wind Farm is expected to incur external consultancy costs in relation to consents of £[redacted] of which 72.92%[10] are allocated to the Transmission Assets, amounting to £[redacted]. Of these costs, £[redacted] had already been incurred at 31 March 2016, for which we have been provided with a breakdown indicating no significant items, with further committed costs of £[redacted], and a further £[redacted] is expected to be incurred, for which we have been provided with a breakdown indicating no significant items:

6.18.1 the ecological clerk work on and around the site to ensure all required monitoring was in place and landscape and ecological mitigation plans are being followed

6.18.2 the fisheries industry representative, who acted as a communicator between local fisheries and the project

6.18.3 the onshore archaeological consultant who was responsible for undertaking additional boreholes along the cable route.

Geo survey

6.19 The Wind Farm is expected to incur geo survey costs of £[redacted], of which 24.94%[11] have been allocated to the Transmission Assets, amounting to £[redacted]. Of these costs, £[redacted] had been incurred up to 31 March 2016, with further costs of £[redacted] been committed and a further £[redacted] is expected to be incurred, for which we have been provided with a breakdown indicating no significant items. Further expected costs include GPS reference stations, the cost of the support for the UXOs (unexploded ordnance) during construction, the geophysical post construction survey and the ROV post construction investigation.

6.20 Of the incurred costs, £[redacted] has been paid to Modus Seabed Intervention Limited for UXO surveys which we have agreed to pricing schedules, and €[redacted] was paid to Bibby Hydromap Limited for ROV surveys, of which we have agreed £[redacted] to the underlying contract.

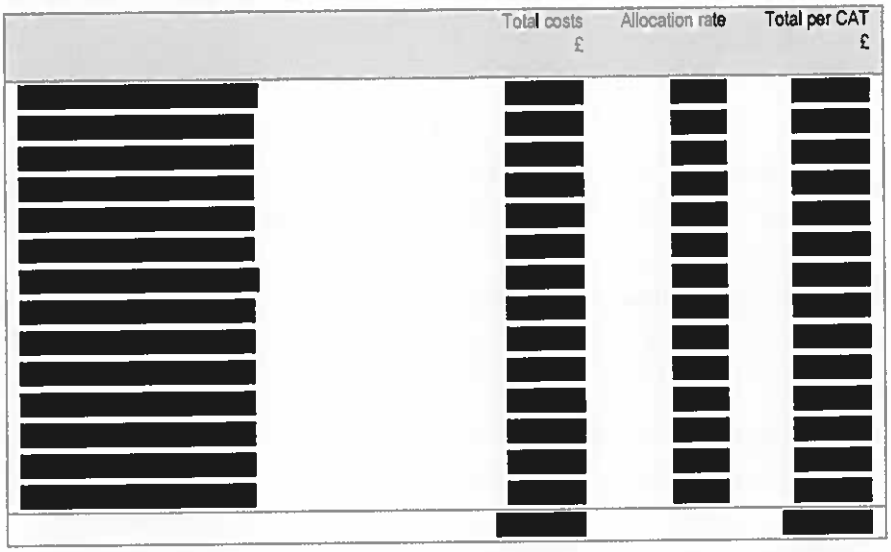
[10] Allocation based upon mix of the [redacted] rates detailed in Section 5

[11] Allocation based upon mix of the [redacted] rates detailed in Section 5

Site and commissioning

6.21 Site and commissioning costs are comprised as follows:

Site and commissioning



6.22 The Wind Farm is expected to incur travel costs in relation to site and commissioning of £[redacted] of which 26.39%[12] are allocated to the Transmission Assets, amounting to £[redacted]. Of these costs, £[redacted] had already been incurred or committed at 31 March 2016, and a further £[redacted] is expected to be incurred to cover the costs of travel and attending meetings until March 2017. We have been provided with a breakdown from the Developers of the number of expected trips, which is heavily weighted to the construction period in 2016.

6.23 The Wind Farm is expected to incur the costs of construction of the base outdoor facility of £[redacted] of which 26.39% are allocated to the Transmission Assets, amounting to £[redacted]. Of these costs, £[redacted] had already been incurred, with the largest amount being a sum of £[redacted] (pre allocation) for rent which we have agreed to a payment requisition, with further costs of £[redacted] having been committed relating to the costs of leasing the site and pontoon, for which we have been provided a breakdown. Future costs of £[redacted] are expected to include further leasing costs and the recommissioning of the offshore construction site at Liverpool, of which the largest amount of £[redacted] relates to the cost of the pontoon/quay rental.

[12] Allocation based upon the [redacted] rate detailed in Section 5

6.24 The Wind Farm is expected to incur marine management and co-ordination costs of £[redacted], of which 26.39% are allocated to the Transmission Assets, amounting to £[redacted]. As at 31 March 2016, none of these costs had been incurred. We have been provided with a breakdown of these costs, with the bulk (£[redacted]) relating to the cost of setting up a Marine and Helicopter Co-ordination Centre.

6.25 The Wind Farm is expected to incur costs for the establishment of the offshore construction site of £[redacted], of which 26.39% are allocated to the Transmission Assets, amounting to £[redacted]. Of these costs, £[redacted] of costs were committed at 31 March 2016, comprising metocean measurements of £[redacted] and demarcation buoys of £[redacted], and future costs of £[redacted] are expected to be incurred relating to wave and demarcation buoys.

6.26 The Wind Farm is expected to incur costs for HSE equipment costs of £[redacted], of which 26.39% are allocated to the Transmission Assets, amounting to £[redacted]. Of these costs, £[redacted] has been incurred or committed at 31 March 2016, and future costs of £[redacted] are expected to be incurred to cover further HSE equipment, training and campaigns at site. We have not been provided with a further breakdown of the estimate.

6.27 The Wind Farm is expected to incur costs for a crane, diving and fall arrester costs of £[redacted], of which 26.39% are allocated to the Transmission Assets, amounting to £[redacted]. Of these costs, £[redacted] were committed at 31 March 2016, and future costs of £[redacted] are expected to be incurred for cranes loading and unloading equipment behind the lock, diver activity to assist offshore installation and fall arrester maintenance. We have been provided with a breakdown of these costs, with a large proportion (£[redacted]) relating to call off agreements for diving.

6.28 The Wind Farm is expected to incur costs for running the site office of £[redacted], of which 26.39% are allocated to the Transmission Assets, amounting to £[redacted]. Of these costs, £[redacted] were incurred or committed at 31 March 2016, and future costs of £[redacted] are expected to cover site running costs, such as cleaning, security, and utilities.

6.29 The Wind Farm is expected to incur costs for operating site vessels of £[redacted], of which 26.39% are allocated to the Transmission Assets, amounting to £[redacted]. As at 31 March 2016 none of these costs, which are expected to cover charter crew vessels, supply vessels, mobilisation, demobilisation, charter costs and mooring fees, had been incurred. We have been provided with a breakdown of these costs, with £[redacted] relating to crew vessels. The Wind Farm is expected to require [redacted] days' worth of vessel hire, using three vessels over the duration of the project at a cost of DKK[redacted] per day.

6.30 The Wind Farm is expected to incur costs for fuel consumption of £[redacted], of which 26.39% are allocated to the Transmission Assets, amounting to £[redacted]. As at 31 March 2016 none of these costs, which are expected to fund fuel consumption by crew vessels, guard vessels, supply vessels and supply fuel for the onshore substation, had been incurred. We have been provided with a breakdown of these costs, with £[redacted] relating to the fuel for crew vessels, based upon [redacted] days' worth of vessel hire with a fuel cost of DKK[redacted] per day.

Resources and travel costs

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

Travel and resources costs

	Resources £	Travel costs £	Total £
Offshore substation	[redacted]	[redacted]	[redacted]
Submarine cable	[redacted]	[redacted]	[redacted]
Land cable	[redacted]	[redacted]	[redacted]
Onshore substation	[redacted]	[redacted]	[redacted]
Project common costs	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]

Resources

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

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

6.34 Whilst we have agreed the underlying calculations of total resources costs, we asked for, but have not been provided with information to verify 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.

6.35 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

6.36 The Developers have 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.

General development costs

6.37 General development costs (DEVEX) are incurred in the BBW02 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.

6.38 The general development costs are summarised as follows:

General development costs	Ref	£
[redacted]		
[redacted]		
[redacted]		
Total		[redacted]

Verification of costs incurred

6.39 In order to gain some 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 1**.

6.40 General development cost categories which had a balance of more than £100,000 amount to £[redacted] (91% of total development costs), of which £[redacted] (51% 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 6.31.

6.41 For non-resources expenditure we reviewed the cost breakdowns, and sought explanations for significant costs

Allocation rates

6.42 The allocation rates used for devex have been calculated using the same methodology as that detailed from paragraph 5.23, 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.

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

7 OFFSHORE SUBSTATION

7.1 The offshore substation costs are comprised as follows:

CR2 – OFFSHORE SUBSTATION COSTS

Contract Overview	Ref	Currently projected costs £
Offshore Transformers		
ABB A/S - 220/33kV Transformers	7.2	[redacted]
Offshore Switchgear/Protection		
Siemens A/S - 220kV GIS Offshore	7.3	[redacted]
EAT and NER costs	7.4	[redacted]
		[redacted]
Offshore Substation and Platform		
Atkins Limited – Design	7.6	[redacted]
JVFI – Fabrication	7.7	[redacted]
FORCE Technology Limited – Fabrication	7.15	[redacted]
Det Norske Veritas – Fabrication	7.16	[redacted]
Other fabrication costs	7.17	[redacted]
SHL Offshore Contractors BV – Installation	7.18	[redacted]
Marine Warranty Survey	7.25	[redacted]
Other installation costs		[redacted]
		[redacted]
Contingency	5.6	[redacted]
		[redacted]

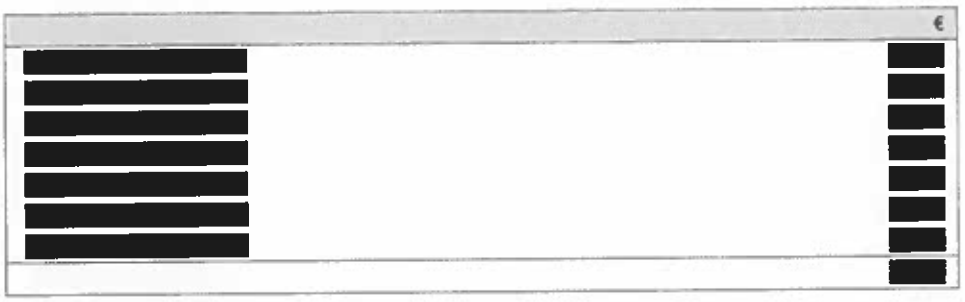
OFFSHORE TRANSFORMERS – 220/33KV TRANSFORMERS

7.2 The Developers entered into a contract with ABB A/S for the provision of offshore transformers for the amount of €[redacted] (£[redacted]), which we have agreed to the underlying contract. There have been three variations to this contract totalling €[redacted] (£[redacted]) with estimated further variations of €[redacted] (£[redacted]), leading to expected total costs for the 220/33kV transformers of €[redacted] (£[redacted]).

OFFSHORE SWITCHGEAR/PROTECTION

Switchgear

7.3 The Developers 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 underlying contract. There was one variation to this contract for €[redacted] (£[redacted]) and estimated future costs of €[redacted] (£[redacted]), leading to expected total costs for the 220kV offshore switchgear of €[redacted] (£[redacted]). The estimated future costs are broken down as follows:



EAT and NER costs

7.4 The Developers entered into contracts for Earthing Auxiliary Transformers (EAT) and Neutral Earthing Resistors (NER) costs as follows:

7.4.1 A contract with Kolektor Etra Energetski for the supply of EAT in the amount of €[redacted] (£[redacted]).

7.4.2 A contract with Hilkar Elektrik Elektroteknik San TIC for the supply of NER at a cost of €[redacted] (£[redacted]). A variation to this contract was subsequently approved for €[redacted] (£[redacted]).

7.4.3 A contract with Omicron Electronics GmbH for the calibration of CT Analyser equipment for €[redacted] (£[redacted]).

7.5 The CAT also includes a cost of €[redacted] (£[redacted]) for further variations to the EAT and NER contracts, leading to total costs for the EAT and NER contracts of €[redacted] (£[redacted]). The Developers have since advised that only £[redacted] of the further variations are expected to be incurred, and have accordingly proposed a reduction in the CAT of £[redacted][13].

OFFSHORE SUBSTATION AND PLATFORM

Design

7.6 The Developers entered into an agreement with Atkins Limited for the design of the offshore substation and platform. Whilst the initial contract has been included within development costs on CR8 (common costs), two variation orders have been included within the offshore substation costs amounting to £[redacted], and we have agreed these costs to the underlying variation orders.

[13] £[redacted] -£[redacted] = £[redacted]

Fabrication - supply

7.7 As set out in Section 4, the Developers adopted a portfolio approach to the competitive tendering for three wind farms, Race Bank, Walney Extension and Burbo Bank extension to maximise the attractiveness and competitiveness of procurement across the portfolio.

7.8 For the supply of the offshore substation platform fabrication, 20 companies applied for pre-qualifications of which five did not meet the criteria. Following further evaluation, eight candidates were shortlisted, of which six submitted tenders (one subsequently withdrew) and following initial negotiations and clarifications, three were shortlisted:

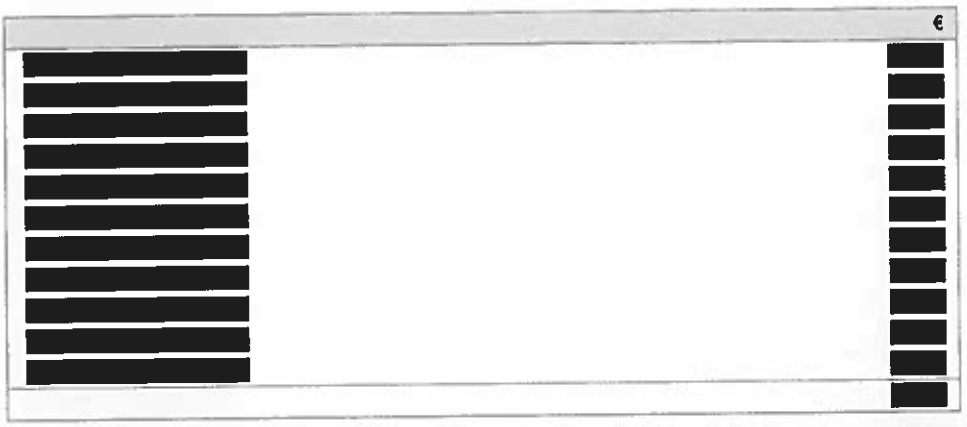
- [redacted] €[redacted]
- [redacted] €[redacted]
- [redacted] €[redacted]

7.9 The basis for recommendation was based upon 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.

7.10 [redacted].

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

7.12 There were nine variations to this fabrication contract totalling €[redacted] (£[redacted]), which have been agreed to their respective underlying variation orders, estimated future costs of €[redacted] (£[redacted]), and a discount for the OSP platform of €[redacted] (£[redacted]) arising from the bulk buying decision, leading to expected total costs for the fabrication of the offshore substation and platform of €[redacted] (£[redacted]). The estimated future costs are broken down as follows:



7.13 We understand that all of these costs are on-going negotiation cost items. [redacted]. As such, we recommend that Ofgem obtains an update from the Developers on these costs before finalising the FTV.

7.14 Whilst the Developers applied a discount of €[redacted] (£[redacted]) to the platform fabrication contract in the CAT, this discount actually related to the platform installation contract. As such, an increase in platform fabrication costs of €[redacted] (£[redacted]) is required, with a corresponding decrease in platform installation costs also being required. However, as the net impact of these adjustments in the total offshore substation costs is £nil, no overall adjustment to the CAT is required.

Structural inspection

7.15 The Developers instructed Force Technology to conduct a structural inspection of the offshore substation and to be the document controller onsite. The respective costs associated with these tasks were €[redacted] (£[redacted]) and €[redacted] (£[redacted]), totalling £[redacted]. We have agreed the structural inspection costs to estimates of time and rates to the underlying contract, amounting to €[redacted]. Due to the insignificant difference between this amount and the sum of €[redacted], we have not proposed an adjustment to the CAT.

Constructed design

7.16 The Developers entered into a contract with Det Norske Veritas, Denmark A/S to deliver the constructed design of the offshore substation & platform. Whilst the initial contract has been included within development costs on CR8 (common costs), there are three variations to the contract amounting to €[redacted] (£[redacted]) and expected future costs of €[redacted] (£[redacted]), leading to expected total costs of €[redacted] (£[redacted]). We have agreed the variations to the variation orders

Fabrication – other costs

7.17 The Developer's anticipated further costs in relation to the fabrication of the offshore platform of £[redacted], made up of barge supply costs of €[redacted] (£[redacted]), spare parts of €[redacted] (£[redacted]) and site running costs of £[redacted].

7.17.1 The Developers have advised that the barge was used for the transportation of the OSP platform and jacket structure from Belgium to the BBW02 site at Liverpool and was required for whole installation. Rental cost for the supply of the barge was calculated on a daily rate of €[redacted] per day for an estimated maximum rental period of [redacted], amounting to €[redacted]. Due to the insignificant difference between this amount and the sum of €[redacted], we have not proposed an adjustment to the CAT.

7.17.2 The cost of the spare parts was estimated based on previous experience and in particular, the project input of one of the Developer's more recently completed offshore windfarms in the UK, which is in operation now. In line with previous projects, we recommend that Ofgem should take a view regarding the level of spare parts in the ITV.

7.17.3 The site running costs have been agreed to a detailed breakdown, comprising multiple purchase orders. The bulk of this expenditure is expected between April and December 2016 which is in line with the construction schedule.

Installation – main contractor

7.18 A competitive tendering approach was used for the installation of the offshore platform installation, as set out in Section 4. For the installation, eight companies were approached and three submitted tenders[14]:

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

7.19 The basis for recommendation was based upon 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.

[14] Tender amounts exclude options and additional discounts for the award of all projects

7.20 [redacted].

7.21 Subsequently, the Developers entered into a contract with SHL Offshore Contractors B.V. for the installation of the offshore substation and platform for the amount of €[redacted] (£[redacted]), which we have agreed to the underlying contract. There were two variations to this contract totalling €[redacted] (£[redacted]) which have been agreed to their respective underlying variation orders, estimated future costs of €[redacted] (£[redacted]), contract options of €[redacted] (£[redacted]) and a discount of €[redacted] (£[redacted]), leading to total expected costs of €[redacted] (£[redacted]).

7.22 The estimated future costs are broken down as follows:

	€
[redacted]	[redacted]

7.23 The Package Manager has confirmed that the future estimated costs relating to the offshore platform installation are still valid until August 2016, at which point he will be holding the close-out/settlement meeting with SHL and will have the final figures. He expects the actual final costs to fall well below the estimate. However, at the current time the amount is currently unclear, and we therefore recommend that Ofgem obtains an update from DONG Energy before setting the ITV.

7.24 Whilst the CAT includes an amount of €[redacted] (£[redacted]) for the pile cutting option, the Developers have advised that this cost should be to €[redacted] (£[redacted]), which we have agreed to the contract, and as such we propose an increase to the cost of offshore substation costs in the CAT of €[redacted] (£[redacted]).

Marine Warranty survey

7.25 The Developers entered into a contract with Global Maritime Scotland Limited for the provision of a Marine Warranty Survey at a cost of £REDA. Estimated future costs for this contract amount to €[redacted] (£[redacted]), leading to a total expected cost of €[redacted] (£[redacted]). The Developers advised that the total budget for the Marine Warranty Survey is €[redacted], being the estimate of the average costs of two other offshore wind farm projects (with adjustments for inflation), and the remaining budget of €[redacted] (£[redacted]) is the total budget less the current committed cost.

7.26 The Developers have since advised us that they now expected future costs to amount to £[redacted], and as such, a reduction to offshore substation costs in the CAT of £[redacted] is required.

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	Currently projected costs £
Subsea Cable Supply & Design		
ABB AB - 220kV Cable Supply & Termination	8.2	[redacted]
Subsea Cable		
Jan De Nul NV - Installation & Burial (Export Cable)	8.6	[redacted]
Other installation and burial costs	8.10	[redacted]
Miscellaneous costs	8.17	[redacted]
		[redacted]
Parent company guarantee costs	8.19	[redacted]
Contingency	5.6	[redacted]
		[redacted]

220KV CABLE SUPPLY & TERMINATION

8.2 A competitive tendering approach was used for the supply of the submarine and onshore cable, as set out in Section 4. For the installation, 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 [redacted].

8.4 Subsequently, the Developers entered into a contract with ABB AB for the supply of the subsea and land cable amounting to DKK[redacted] (£[redacted]), which the Developers have allocated DKK[redacted] (£[redacted]) to the subsea cable and DKK[redacted] (£[redacted]) to the land cable, with allocations between the two based upon the breakdown of costs in the contract. We have agreed the total cost to the underlying contract.

8.5 There were two subsequent variations to the cable supply contract totalling DKK[redacted] (£[redacted]), which have been agreed to the variation orders, and estimated future variations of DKK[redacted] (£[redacted]), leading to expected total costs for the submarine cable supply of DKK[redacted] (£[redacted]).

INSTALLATION & BURIAL (EXPORT CABLE)

Jan De Nul NV

8.6 A competitive tendering approach was used for the installation of the submarine and array cables, as set out in Section 4, with the strategy being to divide the tender into lots and sub-lots to maximise competition and encourage bids from specialist firms. 13 suppliers applied for pre-qualification, of which three did not meet pre-qualification requirements and two were not progressed to the tender round. Six companies submitted tenders, of which one subsequently withdrew due to the availability of its vessel[15]:

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

8.7 The basis for recommendation was based upon 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]% commercial, [redacted]% technical solution, and [redacted]% QHSE.

8.8 [redacted]

[15] Bids below relate to submarine cables only

8.9 Subsequently, the Developers entered into a contract with Jan De Nul N.V. for the installation and burial of the subsea cable for the amount of € [redacted] (£ [redacted]), which we have agreed to the underlying contract.

Other installation and burial costs

8.10 The CAT also included the following costs, which had not yet been incurred at 31 March 2016, but which the Developers expect to incur during the installation and burial of the submarine cable:

	€	£
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]

8.11 The Developers have advised that as at March 2016, the cable crossings requiring more rock or mattresses were estimated to cost € [redacted]. Since that time, Jan De Nul submitted an estimate for this work of € [redacted]. However, as € [redacted] is already included within the original installation contract, the additional costs are therefore € [redacted] (£ [redacted]). This work has now been completed and the remaining budget should therefore be reduced from £ [redacted] to £ [redacted]. As such, we therefore propose a reduction in submarine cable costs in the CAT of £ [redacted][16].

8.12 The package manager has confirmed that the variation order in respect of this cost has not been signed due to on-going negotiation and the expected amount is a maximum of € [redacted]. We recommend that Ofgem obtains an update from the Developers on these costs before finalising the ITV.

8.13 The Developers have explained that the P50[17] weather down time cost estimate of € [redacted] (£ [redacted]) was based upon [redacted] days of normal weather delays at a vessel standby cost of € [redacted] per day. The Developers currently expect these costs to amount to € [redacted] per day (€ [redacted] in total) which we have agreed to the contract. Given the small difference between the two amounts of £ [redacted][18], we have not proposed an adjustment to the CAT in this regard.

[16] £ [redacted] - £ [redacted] = £ [redacted]

[17] These are the weather delays that are likely to occur in 50% of cases, which we accept as a reasonable basis

[18] € [redacted] - € [redacted] @ [redacted]

8.14 The Developers anticipate that normal fuel costs for the installation vessel will amount to €[redacted] (£[redacted]), being [redacted] tonnes at approximately €[redacted] per ton. The fuel price per ton is based on a DONG Energy forecast from 2014 when FID (final investment decision) was made. The Developers have not reassessed this estimate since that time for the cost of fuel, which is likely to have fallen, or for actual consumption, which may be lower or higher than estimated.

8.15 The Developers expected the cost of the surveys to be conducted once the submarine cable had been laid and buried to be €[redacted] (£[redacted]). However, the cost for the survey has been agreed at £[redacted], and the package manager has confirmed in an email that there are expected additional costs for the vessel inspection survey, leading to total expected costs of £[redacted]. As such, a reduction in the CAT of £[redacted] is required.

8.16 The Developer has also advised that the export cable dropoff estimated at €[redacted] (£[redacted]) is for the offloading and storage of the spare export cable length in the storage facility in Holland, up until the time of OFTO transfer. The Developers have provided a breakdown of their estimate of these costs amounting to €[redacted] (£[redacted]). As such, a reduction in submarine cable costs in the CAT of £[redacted][19] is required.

Miscellaneous costs

8.17 The CAT included the following miscellaneous costs relating to the installation of the submarine cable:

Cost	Supplier	£
[redacted]	[redacted]	[redacted]
Total		[redacted]

[19] £[redacted] -£[redacted] =£[redacted]

8.18 The Developers have provided us with their estimate of the time required for the marine warranty survey of the offshore export cable, and we have agreed the day rate to the contract, leading to total expected costs of £[redacted]. Due to the insignificant difference between this amount and the sum of £[redacted] included in the CAT, we have not proposed an adjustment.

PARENT COMPANY GUARANTEE COSTS

8.19 The CAT includes parent company guarantee costs of £[redacted]. The Developers current expectation is that DONG Energy will be required to provide one guarantee for cable crossings amounting to £[redacted]. It is anticipated that this guarantee will be required for [redacted] months, and the Wind Farm will be required to pay for the guarantee at a rate of [redacted]% per annum, leading to expected costs of £[redacted][20]. As such, a reduction in submarine cable costs of £[redacted] is required to the CAT to reflect those parent company guarantee costs which are no longer required.

[20] [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	Currently projected costs £
Onshore Cable Design		
Kelvin Energy Limited - Design Assurance	9.2	[redacted]
Onshore Cable Supply		
NKT Cables A/S - 400kV Cable Supply	9.6	[redacted]
ABB AB - 200kV Cable Supply	9.9	[redacted]
Heat shrink end caps		[redacted]
		[redacted]
Onshore Cable		
Volkerinfra Limited - 400kV & 220kV Onshore Export Cable	9.11	[redacted]
Volkerinfra Limited - Complex Horizontal Directional Drills HDD	9.18	[redacted]
Miscellaneous costs	9.20	[redacted]
Site running costs	9.23	[redacted]
		[redacted]
PCG Costs		
Parent company guarantee costs	9.24	[redacted]
Contingency	5.6	[redacted]
		[redacted]

ONSHORE CABLE DESIGN

9.2 The Developer entered into an agreement with Kelvin Energy Limited for the provision of design assurance for the amount of £[redacted], which we have agreed to the underlying contract.

9.3 The Developers expect future costs of £[redacted], leading to a total expected cost of £[redacted].

9.4 The Developers have advised that the entry of £[redacted] shown in the CAT, which is recorded as an expected variation to the design assurance contract (bringing the design assurance total cost to £[redacted]) was in fact an error. This cost relates to another contract with Kelvin Energy Limited for HDD landfall consultancy. The contract states that the cost should not exceed £[redacted], and the developer has advised that costs invoiced to date total £[redacted] and the SAP PO value was £[redacted]. As such, there should be expected further costs of £[redacted].

9.5 Based on this additional information from the Developers, an increase in the land cable costs of £[redacted] is required[21].

ONSHORE CABLE SUPPLY

400KV cable supply

9.6 The Developer entered into an agreement with NKT Cables A/S for the supply of the 400kV cable at a cost of €[redacted] (£[redacted]), which we have agreed to the underlying contract.

9.7 There were three variations to the contract amounting to €[redacted] (£[redacted]), which are all individually below £100,000, and estimated future costs amount to €[redacted] (£[redacted]), leading to total expected costs of €[redacted] (£[redacted]).

9.8 The Developers have since reassessed future expected costs to be €[redacted] (£[redacted]), comprising variation orders 4 – 8, which we have agreed to the variation orders. As such, a reduction in land cable supply costs in the CAT of £[redacted] is required.

200KV cable supply

9.9 As set out at paragraph 8.4, the Developers entered into a contract with ABB AB for the supply of the submarine and onshore cable, of which the onshore cable amounted to DKK[redacted] (£[redacted]), which we have agreed to the underlying contract.

9.10 There were two subsequent variations to the costs of the land cable with a combined value of DKK[redacted] (£[redacted]), which we have agreed to the underlying variation orders, and further expected costs of DKK[redacted] (£[redacted]), leading to a total expected cost of DKK[redacted] (£[redacted]).

ONSHORE EXPORT CABLE INSTALLATION

Main installation contractor

9.11 A competitive tendering approach was used for the installation of the onshore cables, as set out in Section 4. For this work, six contractors were pre-qualified with three being shortlisted:

- [redacted] £[redacted]
- [redacted] £[redacted]
- [redacted] £[redacted].

[21] The difference between £[redacted] and £[redacted] will result in an increase in the CAT.

9.12 The basis for recommendation was based upon 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, and [redacted]% QHSE.

9.13 [redacted].

9.14 Subsequently, the Developers entered into a contract with Volkerinfra Limited for the installation of the 400kV & 220kV onshore export cable at a cost of £[redacted], which has been agreed to the underlying contract.

9.15 There were three variations to the contract amounting to £[redacted], which have been agreed to the underlying variation orders, and estimated future costs amount to £[redacted], leading to total expected costs of £[redacted]. Due to the insignificant difference between the amount of variation five of £[redacted] and the sum of £[redacted] included in the CAT, we have not proposed an adjustment.

9.16 The estimated future costs, which the Developers advised has increased to £[redacted], are set out below:

	£
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
	[redacted]

9.17 We have been provided with an email from the change manager confirming approval for the cost of £[redacted] for landfall cable works, and have been provided with a breakdown from the package manager of VO and claims in process which amounts to £[redacted]. The package manager has advised in an email that the difference between the £[redacted] and the £[redacted] in the CAT of £[redacted] is likely to cover the costs of any additional costs which have not yet been advised.

Complex horizontal directional drills

9.18 The Developer entered into a contract with Volkerinfra Limited & VBMS (UK) Limited for the supply and installation of ducts for the export cable at a cost of €[redacted] (£[redacted]), which has been agreed to the underlying contract.

9.19 Five variations with a total cost of €[redacted] (£[redacted]) were made to the supply and installation contract, leading to expected total costs of €[redacted] (£[redacted]). We have agreed the variations to the variation orders.

Miscellaneous costs

9.20 The following miscellaneous costs have been included in the CAT in respect of the onshore cable installation:

Supplier	DKK	€	£
[redacted]	[redacted]	[redacted]	[redacted]

9.21 The ecological mitigation costs, which total £[redacted], relate to an area of circa [redacted] metres that requires continued ecological mitigation and then eventual removal, as the Developers now reinstate the work areas back to the landowners' requirements. The Developers current expectation of the costs are made up of £[redacted] of purchase orders and £[redacted] for Gwynt-Y-Mor mitigation areas, totalling £[redacted]. As such, a reduction in land cable miscellaneous costs in the CAT of £[redacted] is required.

9.22 We have agreed the DTS (distributed sensor testing) supply and installation costs to the underlying contract. However, the Developers now expect the 400/200KV termination and jointing QA (quality assurance) costs payable to Correll Services to amount to £[redacted]. However, the impact of the difference between the amount in the CAT and the current estimate of £[redacted] is not significant, and as such, no adjustment is proposed.

Site running costs

9.23 The CAT includes a further £[redacted] for miscellaneous site running costs. The site running costs have been agreed to a detailed breakdown, comprising multiple purchase orders. The bulk of this expenditure is expected between April and December 2016 which is in line with the construction schedule.

PARENT COMPANY GUARANTEES

9.24 The CAT includes parent company guarantee costs of £[redacted]. The Developers current expectation is that DONG Energy will be required to provide one guarantee for cable crossings amounting to £[redacted]. It is anticipated that this guarantee will be required for [redacted] months, and the Wind Farm will be required to pay for the guarantee at a rate of [redacted]%, leading to expected costs of £[redacted][22]. The Developers have added inflation to reach the amount in the CAT of £[redacted].

[22] [redacted]

10 ONSHORE SUBSTATION CONNECTION

10.1 The onshore substation connection costs are comprised as follows:

CR5 – ONSHORE SUBSTATION CONNECTION COSTS

Contract Overview	Ref	Currently projected costs £
Onshore Connection Bay Equipment		
ABB Limited - 400kV Generator Bay	10.2	[redacted]
Onshore Transformers		
BEST Transformers A/S - 400kV/220kV Transformers	10.3	[redacted]
Other costs		[redacted]
Onshore Switchgear and Control		
ABB A/S - 400kV GIS Onshore	10.5	[redacted]
Siemens A/S - 220kV GIS Onshore	10.6	[redacted]
Harmonic Filtering Equipment		
ALSTOM Grid UK Limited - 400kV & 220kV Harmonic Filters	10.7	[redacted]
Reactive Compensation		
BEST Transformers A/S - 400kV/220kV Reactors	10.8	[redacted]
Rongxin Power Electronic Co. Limited - Dynamic Reactive Compensation Plant	10.10	[redacted]
Other costs		[redacted]
Onshore Substation Civil Work		
WSP Parson Brinckerhoff - Design	10.11	[redacted]
RWE/Siemens laydown areas	10.12	[redacted]
Balfour Beatty Civil Engineering Limited - Construction	10.13	[redacted]
Kelvin Construction Company Limited - Construction	10.18	[redacted]
Jones Bros. Ruthin (Civil Engineering) Co. Limited	10.20	[redacted]
Site running costs	10.22	[redacted]
Other civil works costs	10.26	[redacted]
Other costs		
ALSTOM Grid UK Limited - SCADA Control Systems	10.29	[redacted]
Semco Maritime A/S - Network & Telecommunications	10.31	[redacted]
Miscellaneous costs	10.34	[redacted]
Small costs > £100,000		[redacted]
Parent company guarantee costs		[redacted]
Contingency	5.6	[redacted]
		[redacted]

ONSHORE CONNECTION BAY EQUIPMENT

10.2 The Developers entered into a contract with ABB Limited for the provision of the 400kV generator bay, for the amount of £[redacted], which we have agreed to the contract. There were nine variations to this contract amounting to £[redacted] (reduction), and we have agreed the bulk of these to the variation orders, with expected future costs of £[redacted], leading to total expected costs of £[redacted]. The Developers have not provided the invitation to tender processes for the onshore connection costs.

ONSHORE TRANSFORMERS

10.3 The Developers entered into a contract with Balikesir Elektromekanik (BEST Transformers A/S) for the provision of onshore substation transformers at a cost of €[redacted] (£[redacted]), which we have agreed to the underlying contract. There were four variations to the contract amounting to a €[redacted] (£[redacted]) reduction, of which we have agreed net reductions of €[redacted] to variation orders, and future expected costs of €[redacted] (£[redacted]), leading to total expected costs of €[redacted] (£[redacted]). The expected future costs are set out below:

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

10.4 The package manager has confirmed that the variation order for the installation of the female part of 400KV termination has been agreed at €[redacted], whilst the final claims have been agreed at €[redacted], a total of €[redacted] (£[redacted]). In light of the small difference between the two of £[redacted], no adjustment is proposed.

ONSHORE SWITCHGEAR AND CONTROL

400KV GIS Onshore

10.5 The Developers entered into a contract with ABB A/S for the provision of 400kV GIS onshore switchgear and control at a cost of €[redacted] (£[redacted]). There was a variation to the contract of €[redacted] (£[redacted]), which we have agreed to the variation order, and future expected costs of €[redacted] (£[redacted]), leading to total expected costs of €[redacted] (£[redacted]).

220KV GIS onshore

10.6 The Developers 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 underlying contract. Future expected costs amount to €[redacted] (£[redacted]), leading to total expected costs of €[redacted] (£[redacted]).

HARMONIC FILTERING EQUIPMENT

10.7 The Developers entered into a contract with ALSTOM Grid UK Limited for the provision of 440kV and 220kV harmonic filters at a cost of £[redacted]. We have agreed this cost to the underlying contract. There were three variations to the contract, totalling £[redacted], and future expected costs of £[redacted], leading to total expected costs of £[redacted].

REACTIVE COMPENSATION

400/220KV reactors

10.8 The Developer entered into an agreement with BEST Transformers A/S for the provision of 440/220kV reactors at a cost of €[redacted] (£[redacted]), which we have agreed to the underlying contract. There was a variation to this contract of €[redacted] (£[redacted]), which we have agreed to the variation order, and expected future costs of €[redacted] (£[redacted]), leading to total expected costs of €[redacted] (£[redacted]).

10.9 With regard to expected future costs, the package manager has confirmed that three variation orders amounting to €[redacted] have been signed and that the cost of installation of a female part 400KV termination has been agreed at €[redacted]. No further costs are expected, and as such, a reduction in onshore substation costs of €[redacted] (£[redacted]) is required.

Dynamic reactive compensation plant

10.10 The Developers entered into a contract with Rongxin Power Electronic (Rongxin) 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 underlying contract. Expected future costs amount to €[redacted] (£[redacted]) leading to total expected costs of €[redacted] (£[redacted]). We have been provided with a breakdown of expected future costs, none of which exceed £100,000.

ONSHORE SUBSTATION CIVIL WORK

Design

10.11 The Developers entered into a contract with WSP UK Limited in respect of the design of the onshore substation. The cost of the contract and variations 1 to 16 amounts to £[redacted], which we have agreed to the contract and variation orders, and future cost variations are expected of £[redacted], leading to expected total costs of £[redacted]. Of this amount, £[redacted] is included within development costs and £[redacted] is included within onshore cable costs, leading to a shortfall in the CAT of £[redacted]. As such, an increase in onshore substation design work in the CAT of £[redacted] is required.

10.12 An additional cost of £[redacted], included within the CAT relates to the design RWE/Siemens laydown areas. This cost is expected to be funded from the remaining budget and should cover the cost of re-establishing the access road and additional laydown areas of the construction compound. The design work is expected to commence in June/July 2016. We have seen an email from the package manager confirming that this is his current best estimate of the costs.

Onshore substation civil work – Balfour Beatty

10.13 A competitive tendering approach was used for the civil works construction of the onshore substation, as set out in Section 4. 20 suppliers were invited for pre-qualification, of which five were pre-qualified and invited to tender, and four suppliers submitted tenders[23]:

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

10.14 The basis for recommendation was based upon 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]% time schedule/programme, [redacted]% local content and [redacted]% QHSE.

10.15 [redacted].

10.16 Subsequently, the Developers entered into an agreement with Balfour Beatty for the construction of the onshore substation at a cost of £[redacted], which we have agreed to the underlying contract. However, the contract includes the costs of the fire enclosure, which the Developers have removed from the contract and the work has been given to Kelvin Energy Limited instead. The cost of the fire enclosure amounts to £[redacted], which we have agreed to a contract variation, reducing the contract value to £[redacted].

[23] Bids below relate to submarine cables only

10.17 There were six variations to the contract amounting to £[redacted], which we have agreed to the underlying variation orders, and future expected costs of £[redacted], leading to total expected costs of £[redacted]. The Developers have advised that the future expected costs should cover the expected interface and site running costs not included in the base contract. The expected future costs, which have been confirmed in an email from the package manager, are set out below:

	£
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
	[redacted]

Onshore substation civil work – Kelvin Construction

10.18 The Developers entered into an agreement with Kelvin Construction Company Limited for the construction of the acoustic transformer and reactor fire enclosure amounting to £[redacted], which we have agreed to the underlying contract. Whilst the CAT includes an amount of £[redacted] in relation to these costs, in light of the small difference between the two of £[redacted], no adjustment is proposed.

10.19 Estimated future costs amount to £[redacted], leading to total expected costs of £[redacted]. The estimated cost is expected to cover maturation of the design after the contract award of £[redacted], plus expected site costs not captured in the base contract. We have seen an email from the package manager confirming that this is his current best estimate of the costs, but have received no breakdown of the estimate.

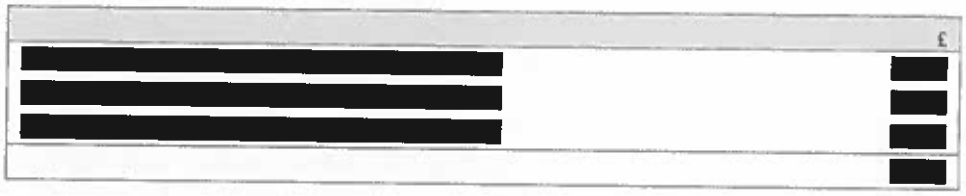
Onshore substation civil work – Jones Bros. Ruthin

10.20 The Developers entered into a contract with Jones Bros. Ruthin (Civil Engineering) Co. Limited for the enabling work amounting to £[redacted], which we have agreed to the underlying contract. Whilst the CAT includes an amount of £[redacted] in relation to these costs, in light of the small difference between the two of £[redacted], no adjustment is proposed.

10.21 There were two variations to the enabling work contract amounting to £[redacted], leading to total expected costs of £[redacted]. Whilst we have agreed the amount of variation 2 to the underlying variation order, variation 1 amounts to £[redacted] as opposed to £[redacted], a difference of £[redacted]. As such, we propose that the onshore substation costs in the CAT should be increased by this amount.

Site running costs

10.22 The CAT includes site running costs for the onshore substation amounting to £[redacted], made up as follows:



10.23 The site set up and demobilisation costs of £[redacted] are expected to cover the demolition costs of the site and are estimated based upon those incurred on the Westermost Rough project. These costs are expected to be incurred in December 2016.

10.24 As at the end of March, the Developers had incurred site running costs of £[redacted], and had future committed costs of £[redacted], leading to total expected costs of £[redacted]. We have been provided with a breakdown of the incurred and committed costs.

10.25 Future expected site running costs, which had not been committed at the end of March 2016 amount to £[redacted], and are expected to cover all site related running costs such as utilities, catering, office supply, cleaning, vehicles and fuel, HSE equipment and HSE inductions between April 2016 and December 2016. These costs have been estimated at £[redacted] per month, although we have not been provided with a breakdown of the estimate.

Other civil works costs

10.26 The CAT included a number of other costs, which are expected to be incurred and which fall within the remaining budget. These are summarised as follows:

10.27 The Developers have advised that:

10.27.1 the amount of £[redacted] budgeted for the retention area after construction is specifically to be used to establish an environmental retention area adjacent to the onshore substation site, for which work is expected to commence from July to November 2016.

10.27.2 the amount of £[redacted] budgeted for the Siemens/RWE areas is for the re-establishment of the access road to the onshore substation site, and additional laydown areas of the construction compound to the original state, for which the work is expected to take place from July to November 2016.

10.27.3 the amount of £[redacted] budgeted to the security of the onshore substation is to be used to fund the site security during the retention area and re-establishment of the Siemens/RWE areas. This work is expected to take place from July to November 2016.

10.27.4 the amount of £[redacted] is budgeted for the additional equipment used during the commissioning, if it is not already included in the contractor's toolbox. This amount has been estimated based upon reference projects such as Westermost Rough and West of Duddon Sands.

10.28 We have seen an email from the package manager confirming that these are his best current estimates of the costs, but have received no further breakdowns of the estimated amounts.

OTHER COSTS

SCADA control system

10.29 The Developers entered into a contract with ALSTOM Grid UK Limited for the development of the SCADA Control System at a cost of £[redacted], which we have agreed to the underlying contract. There was a variation to this contract costing £[redacted], leading to total expected costs of £[redacted]. The Developers have allocated 75.1% of the SCADA control systems costs to the Transmission Assets, which amounts to £[redacted], based upon the split of directly attributable costs in the Wind Farm.

10.30 The Developers have identified that the allocation rate of 75.1% was incorrectly calculated, and should instead be 77.62%. We have reviewed the Developers' revised calculation of the allocation rate and have confirmed it has been appropriately calculated. However, the impact on the change in rates on these costs of £[redacted] is not significant, and as such, no adjustment is proposed.

Network & telecommunications

10.31 The Developers 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 underlying contract. The Developers have allocated 27.78% (£[redacted]) of these costs to the Transmission Assets. Variations to the agreement with Semco amounted to €[redacted] (£[redacted]) of which only £[redacted] was allocated to the Transmission assets, leading to total expected costs of £[redacted].

10.32 We have been provided with the Developers calculation of the allocation rate of 27.78% which has been allocated based upon a line-by-line analysis of directly attributable contract costs of 27.33%, with the indirectly attributable costs being allocated on the same basis, save for design costs which were allocated to the Transmission Assets at the rate of 46.20%. However, we are satisfied that separate allocation for design costs does not create a significant difference to the total costs and as such, no adjustment is proposed.

Miscellaneous

10.33 The CAT includes costs of €[redacted] (£[redacted]) in relation to an expected variation to a contract for SCADA, network and metering. The Developers have allocated 75.1% (£[redacted]) of these costs to the Transmission Assets. We have been provided with a breakdown of these costs, with €[redacted] relating to SCADA and €[redacted] relating to telecoms. No costs are individually less than €100,000. As identified at paragraph 10.30, the Developers identified that the SCADA allocation rate of 75.1% had been incorrectly calculated and should instead be 77.62%. However, the impact on the change in rates on these costs of £[redacted] is not significant, and as such, no adjustment is proposed.

10.34 The CAT also includes consultancy costs of £[redacted] payable to Power Systems Design Solution Limited for developing drawings in line with required standards, which have been allocated to the Transmission Assets at a rate of 85% (£[redacted]). The cost has been based upon the Developers estimates of hours for each level of consultant and the rates included in the letter of appointment. The allocation rate has been determined by the package manager based upon the major scope of this contract relating to OFTO.

1 GENERAL DEVELOPMENT COSTS

TABLE FULLY REDACTED

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