

East Anglia ONE Offshore Wind Farm Transmission Assets

Ex-Ante Cost Review

16 October 2020





Private and Confidential

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16 October 2020

Dear Sirs

East Anglia ONE Offshore Wind Farm Transmission Assets

In accordance with our contract call-off agreement dated 30 January 2019 and associated task order, we enclose for your attention our report detailing our findings arising from the Ex-Ante Cost Review of the East Anglia ONE Offshore Wind Farm Transmission Assets.

Our conclusions and recommendations are included within the Executive Summary set out in section one, however for a full understanding it is necessary to read this in conjunction with our detailed commentary set out in sections 2 to 12 and appendices A to J.

This report is confidential and has been prepared exclusively for Ofgem. Whilst other parties may be interested in receiving a copy of this report, we stress that, to the fullest extent permitted by law, we cannot accept any responsibility whatsoever in respect of any reliance that these parties may place on our report in any decision that they may make in relation to the East Anglia ONE Offshore Wind Farm.

Yours faithfully

Grant Monten UL LLP

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Glossary

AC	Alternating current	EA1/ the Wind Farm	East Anglia ONE offshore windfarm
ACE	Anticipated Compensation Event	EA3	East Anglia THREE offshore windfarm
AVO	Anticipated Variation Order	EUR	Euro
BAFO	Best and Final Offer	FID	Final investment decision
BEIS	Department for Business, Energy and Industry Strategy,	FX	Foreign exchange
	(formerly the DECC)	GBP	Great British Pound
BoQ	Bill of Quantities	Generation Assets	The generation assets of EA1
Capex	Capital expenditure	GIG	Macquarie Green Investment Group
CAT	Cost assessment template	GIS	Gas insulated switchgear
CATV	Cost assessment template value	Grant Thornton	Grant Thornton UK LLP
CE	Compensation Event		
CfD	Contract for Difference	HDD	Horizontal directional drilling
Construction Swathe	The onshore cable construction corridor	HSE	Health, Safety and Environment
СРА	Contract price adjustment	HSEQ	Health, Safety, Environment and Quality
DC	Direct current	IDC	Interest during construction
		InTV	Initial Transfer Value
DCO	Development consent order dated / July 2014	ITT	Invitation to tender
DECC	Department of Energy and Climate Change	ITV	Indicative transfer value
Developer	SPR, ScottishPower Renewables	1	Vilometros
EAOL	East Anglia ONE Limited	KIII	Knometres
East Anglia Zone	The area off the East Anglia coast over which SPR was	kV	Kilovolts
	awarded offshore wind energy development rights by the Crown Estate in 2009	Monte-Carlo	A mathematical model using repeated random sampling to generate a probability distribution

Glossary (continued)

MW	Megawatt
NGET	National Grid Electricity Transmission plc
Ofgem	The Office of Gas and Electricity Markets
OFSS	Offshore substation
OFTO	Offshore transmission operator
ONSS	Onshore substation
РО	Purchase order
PQQ	Pre-qualification questionnaire for competitive tendering
P90	The 90 th percentile parameter of the Monte-Carlo model's probability distribution
Q1/2/3/4	Quarter one/two/three/four
SPR/ ScottishPower Renewables	ScottishPower Renewables UK Ltd and all of its subsidiaries
TEC	Transmission entry capacity
Transmission Assets	The transmission assets of EA1
UXO	Unexploded ordnance
VO	Variation order
WDC	Weather down cost
WDT	Weather down time
WTG	Wind turbine generator

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Section 1: Executive summary

01. Executive summary

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Executive summary

Introduction

- This report relates to the East Anglia ONE Offshore Wind Farm which is owned by SPR (60%) and GIG (40%) (with SPR leading the construction of the Wind Farm on behalf of the joint venture with GIG) and covers an area of approximately 278.5km².
- The EA1 planned development will consist of 102 WTG's installed in the southern North Sea, approximately 43km off the coast of Suffolk. It is anticipated that the Wind Farm will meet the annual electricity demands of the equivalent of almost 630,000 homes
- The EA1 Transmission Assets consist of an AC connection with a single offshore collector platform, two cable circuits with a route length of 85km offshore to a landfall at Bawdsey, East Anglia and 37km onshore, terminating at an ONSS located close to the National Grid ONSS at Bamford
- EA1's transmission system is estimated to have a project capacity of 714MW, a TEC of 680MW and is expected to deliver an availability of 98%

Grant Thornton review

- Our review and this report is based upon the cost template submitted to Ofgem dated 5 July 2019 and incorporates information and explanations provided regarding the costs in this version of the cost template, and in correspondence with the Developer up to 29 September 2020. We note that in relation to our cost verification work, we have reviewed information provided by the Developer up to 13 December 2019
- Grant Thornton has been instructed by Ofgem to review the ex-ante cost assessments prepared by the Developer for the Transmission Assets of the Wind Farm (Ex-Ante Cost Review)
- The Ex-Ante Cost Review has considered the accuracy, completeness and allocation of costs against the cost template prepared by the Developer for the Wind Farm's Transmission Assets, based on supporting information and methodology provided by the Developer

Transmission Assets cost summary

	CAT	Direct costs	Contingency	Total	%
	Reference	£	£	£	
Offshore substation	CR2				%
Submarine cable supply and installation	CR3				%
Land cable supply and installation	CR4				%
Onshore substation	CR5				%
Reactive substation	CR6				%
Connection costs	CR7				%
Project common costs	CR8				%
Transaction costs	CR9				%
Total capital costs					%
Interest during construction					%
Total		761,215,749	45,917,287	807,133,036	100%

• The purpose of this review is to:

- determine if the Developer's cost estimate requires updating for the next stage of the transfer process, ITT
- assist in the identification of technical issues by noting 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
- assist in the determination of the ITV for ITT by reviewing the accuracy, allocation and completeness of cost information
- The Developer's estimate of the cost of the Wind Farm's Transmission Assets, included in the CAT dated 5 July 2019, amounts to £807.1 million. This represents a £6.5 million decrease on the initial cost assessment by the Developer that projected the cost to be £813.6 million. The Developer's estimated costs of the Transmission Assets, as set out in the CAT, are summarised in the table above

Summary of findings

- The Developer has provided us with supporting documentation and/or explanations for the majority of items included within the cost template. Our review found that all major items of capital expenditure for the Transmission Assets have either been procured under contracts specific to the transmission business, or have been procured under contracts specific to the Wind Farm as a whole and have been allocated between the Transmission and Generation Assets using a mix of allocation methodologies that will be considered further in this report
- As part of our line-by-line review of the CAT, we have sought to agree the costs of the transmission business above $\pounds 200,000$ to supporting documentation, representing $\pounds 733.5$ million (99.0% excluding IDC) of the total costs in the CAT. This included:
 - confirming costs in the CAT to contracts between the Developer and subcontractors, contract variations orders and to working schedules prepared by the Developer that set out how estimated costs within the CAT have been calculated
 - gaining an understanding from the Developer about the determination of costs in the CAT, such as the approach to tendering for the main construction contracts, the allocation of shared costs between the transmission and generation businesses, and the treatment of costs incurred in foreign currencies
- In most cases, we were able to confirm that the costs included in the CAT were appropriately stated. However, we identified that some costs were incorrectly stated, and as such, we propose adjustments for these costs within the 'Impact of cost assessment' table at the end of this executive summary
- We also were not provided with supporting documentation for some costs in the CAT, and as such, we have separately identified these costs within the 'Unsubstantiated costs' table at the end of this executive summary
- A summary of our testing and cost coverage is set out in the 'Summary of testing approach' table at the end of this executive summary

• Furthermore, there are some areas which we draw to Ofgem's attention, and these are detailed in the table on the following pages of this executive summary

Conclusion

• Based upon our review, subject to the items included in the "Impact of cost assessment" table, the "Unsubstantiated costs" table and the matters highlighted in the "Matters requiring further consideration by Ofgem" table, we consider that the costs of the Transmission Assets stated in the CAT dated 5 July 2019 appear to be appropriately stated

Matters requiring further consideration by Ofgem

Area	Further information	Grant Thornton observations
Contingency • Validation of contingency provision	 The CAT includes a contingency of £ This has been calculated based upon the Developer's assessment of risks it has elsewhere 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 A Monte-Carlo simulation, which relies on repeated random sampling, has been used to estimate a probability distribution for the risk cost outcome of each package. The sum total of these components represents the total contingency allocated to the Transmission Assets for the remaining construction works 	 We have reviewed the summary of risks and consider that the types of risks and the amounts allocated to each risk look reasonable Based upon our experience of similar projects, the Monte-Carlo approach taken for the calculation of contingencies is not out of line with what we have seen on previous projects Likewise, in light of the level of completion of the Transmission Assets, the percentage of contingencies as a proportion of total pre-contingency capital costs is not out of line with what we have seen on similar projects However, we consider that the assessment of the expected value of risks and of the likelihood of each event occurring falls within the scope of a technical assessment, rather than the Ex-Ante Cost Review We note that by the time of the ex-post cost assessment (the Ex-Post Cost Review), the value of the contingencies is expected to fall to zero, as at this stage all costs will be known In light of the significant size of the contingency provisions, we recommend that Ofgem should obtain an update from the Developer prior to finalising the ITV

Matters requiring further consideration by Ofgem (continued)

Area	Further information	Grant Thornton observations
Area EA1/EA3 methodology • Approach to costs split between EA1 and EA3 for ducting	 Further information To minimise disturbance to local landowners, the DCO states that all ducting for future projects that will share the same onshore cable corridor is to be installed in a single campaign. Although EA3 is only under development, and has not yet secured a CfD or FID, it will share a cable corridor and onshore grid connection point with EA1 As the costs for laying ducting for each project must be recovered separately, the costs in relation to EA3 must be removed from the CAT Costs for ducting fall into the following categories: excluded costs: costs exclusive to EA3 scope have been excluded from the CAT EA1 costs: all costs which would have been incurred by EA1, irrespective of EA3 scope, are included in the CAT Construction Swathe allocation: 	 Grant Thornton observations We consider it reasonable that the Developer has excluded any costs that solely relate to EA3 from the EA1 CAT. However, it appears that as EA1 will be constructed in advance of EA3, EA1 is bearing the full costs associated with ducting irrespective of EA3 scope which does not appear appropriate As EA3 would share the resources constructed, the costs incurred in constructing these resources should be split between the two projects equitably, for example based on expected usage Of the total costs with some EA3 scope of £, only £ have been allocated to the EA3 project, an effective allocation of% Based on our understanding of the methodology this split does not appear appropriate and the effective allocation of% should be substantially higher, and as such the costs included in the EA1 CAT of £ should be substantially lower

Matters requiring further consideration by Ofgem (continued)

Area	Further information	Grant Thornton observations
Areas requiring technical input Time spent by internal staff 	In order to substantiate project resource costs, the Developer has provided detailed schedules of the forecasted time for personnel to spend on the Transmission Assets. The Developer has also provided the rates for the project resource costs	 We have reviewed the support provided to assess the accuracy of the costs, however, it is not within our area of expertise to establish whether the time spent by the internal staff and the rates used are reasonable
		 We recommend that Ofgem consider instructing technical advisors to review the project resource time and rates in order to determine whether these costs are being efficiently incurred including whether they include any profit element
Cost allocation	 The majority of costs relating to the Transmission Assets are fully attributable to the Transmission Assets 	 Whilst the allocation methodologies used by the Developer are consistent with those seen on previous projects, at , the total average allocation
	 However, where costs are not directly attributable to the Transmission Assets (shared costs), the Developer has allocated costs using the following methods: 	 rate derived is much higher than we have seen previously The higher rate may be attributable to the construction plans for the project,
	 indirect shared costs have been allocated to the Transmission Assets based upon the Transmission Assets indirect capital costs as a percentage of total Wind Farm indirect capital expenditure. The Developer has calculated the rate at interference of the Transmission Assets based upon the Transmission Assets direct capital costs as a percentage of total Wind Farm direct capital expenditure. The Developer has calculated the rate at interference of total wind Farm direct capital expenditure. The Developer has calculated the rate at interference of total wind Farm direct capital expenditure. The Developer has calculated the rate at interference of total wind Farm direct capital expenditure. The Developer has calculated the rate at interference of total wind Farm direct capital expenditure. The Developer has calculated the rate at interference of total wind Farm direct capital expenditure. The Developer has calculated the rate at interference of total wind Farm direct capital expenditure. The Developer has calculated the rate at interference of total wind Farm direct capital expenditure. The Developer has calculated the rate at interference of total wind Farm direct capital expenditure. The Developer has calculated the rate at interference of total wind Farm direct capital expenditure. The Developer has calculated the rate at interference of total wind Farm direct capital expenditure. The Developer has calculated the rate at interference of total wind Farm direct capital expenditure. 	with EA1 being the first wind farm under construction in the East Anglia Zone
		 However, the Developer has only provided us with a high level schedule and not a detailed calculation of the allocation rates. Therefore, based on
		the information provided to us prior to the cut-off date for information of 13 December 2019, we are unable to confirm whether the above is the case
		• We also note that of the £ for of shared costs included in the CAT, £ for with an effective allocation rate of for % - calculated by
		dividing the total CAT manually allocated shared costs of £ by the total manually allocated shared costs of £ by have been derived from manual cost allocation rates
		 Accordingly, we recommend that Ofgem consider this matter further and establish whether it is able to obtain a more detailed calculation for how the rates have been derived from the Developer
		 Further, given the value of the manually-allocated shared costs, we recommend that Ofgem instruct technical advisors to assess the reasonableness of the manual cost allocation rates applied

Matters requiring further consideration by Ofgem (continued)

Area	Fu	arther information							Grant Thornton observations			
 Foreign currencies Approach to costs incurred in foreign currencies 	•	Although the contracts for the Transmission Assets are predominantly denoted in GBP, the Developer considers that there are two notable contracts exposed to foreign currency risk as follows:						•	We consider that the principles of the approach taken by the Developer in relation to costs incurred in foreign currencies, with a focus on mitigating the impact of foreign currency movements, to be reasonable			
5		_	OFSS fabrication contract OESS fabrication contract						۰	It appears that elements of the £ submarine cable contract are also exposed to commodity price risk. We note to date that		
	٠	The Dev risks as	The Developer has entered into hedges to mitigate EUR foreign currency exchan risks as follows:					icy exchange	٠	f CPA fuel adjustments have been recorded under this CAT cost. We suggest that Ofgem discusses the exposure of commodity risk under this contract with the Developer		
		Supplier	CAT	Forw ard	Foreign	Actual forw ard	Blended hedge	Amount				
			Reference	date	currency	rate	forward rate	£				
			CR2	Mar-19	EURO							
			CR2	Mar-19	EURO							
		contract	submarine was signed	cable sup 1 in GBP, e	ply and ins elements a	stallation contra are subject to F	act - although th [:] X risk and comr	າodity (fuel)				

adjustments. As these costs cannot be committed in advance, the Developer has

not entered into commodity price hedges for this contract

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Impact of cost assessment

	CAT reference	Section(s)	£
Cost of Transmission Assets per CAT (excluding IDC)			740,997,266
Developer adjustments where the amount verified differs to the amount included in the CAT			
Project Resources reallocation	CR2	4, 5	
Project Resources reallocation	CR3	4, 6	
Project Resources reallocation	CR4	4, 7	
Project Resources reallocation	CR5	4, 8	
Project Resources reallocation	CR8	4, 11	
Project Resources reallocation	CR9	4, 12	
Legal costs adjustments	CR3	6	
Legal costs adjustments	CR9	12	
EA3 cable supply	CR4	7	
Quality, Ex pediting, Other Services	CR8	11	
Additional adjustments where the amount verified differs to the amount included in the CAT			
Project Resources	CR3	4, 6	
Construction Readiness	CR3	6	
CE.059 - Ground Conditions HDD	CR3	6	
CE.013 - Drawings	CR4	7	
CE.001 - Archaeological Trenching	CR4	7	
Legal Services	CR9	12	
Project Resources	CR9	4, 12	
Revised cost of Transmission Assets			742,556,963

Unsubstantiated costs

	Section	£
CR2 - Offshore substation costs		
	l l	
CR3 - Submarine cable supply and installation costs	_	
CR4 - Onshore cable costs	_	
	Ī	
CR7 - Connection costs		
CR8 - Project common costs		
Total unsubstantiated costs		
% of CATV unsubstantiated		/0

Summary of testing approach

	Total costs	Substantiated	Not substantiated	Under £200,000
	£	£	£	£
CR2 - Offshore substation costs				
CR3 - Submarine cable supply and installation costs				
CR4 - Onshore cable costs				
CR5 - Onshore substation costs				
CR6 - Reactive substation costs				
CR7 - Connection costs				
CR8 - Other/ project common costs				
CR9 - Transaction costs				
Total	740,997,266			7,509,618
% of total costs	100%	%	%	1.0%

Section 2: Instructions and background

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10.	Connection costs
11.	Project common costs and development costs
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Instructions and background

Instructions

- Grant Thornton UK LLP has been instructed by Ofgem to prepare an Ex-Ante Cost Review of the cost information and cost templates prepared for Ofgem by the Developer in relation to the EA1 Transmission Assets
- In this review we established whether the costs greater than £200,000 provided in the Developer's cost template can be matched to specific contracts or other supporting information, and whether appropriate metrics exist for cost allocation between Transmission and Generation Assets. Our work involved tracing the amounts stated in the cost assessment template to supporting contracts, schedules and other supporting information that shows how costs have been derived
- The purpose of a review at this stage is set out on the next page
- The Ex-Ante Cost Review is based upon the Developer's current estimates of the costs to be incurred in developing and constructing the Transmission Assets.
 Following construction of the Wind Farm, we expect to carry out a forensic review of the actual expenditure incurred by the transmission business (the Ex-Post Review)
- Grant Thornton's review of the Ex-Ante cost information prepared by the Developer is limited to the scope as set out above and does not include detailed cost verification or any review of technical or legal issues
- Our review and this report is based upon the cost template submitted to Ofgem dated 5 July 2019 and incorporates information and explanations provided regarding the costs in this version of the cost template, and correspondence with the Developer up to 29 September 2020
- We note that in relation to our cost verification work and proposed adjustments, we have considered information provided by the Developer up to 13 December 2019
- 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
- This work does not constitute an audit performed in accordance with Auditing Standards

- Except to the extent set out in this report, we have relied upon the documents and information provided to us as being accurate and genuine. To the extent that any statements we have relied upon are not established as accurate, it may be necessary to review our conclusions
- The figure in this report have been prepared using Microsoft Excel. The report may therefore contain minor rounding adjustments due to the use of computers for preparing certain calculations

Background

- EA1 is part of the wider East Anglia Zone, which has a total planned capacity of up to 7,200MW and is divided into four sub-projects; East Anglia ONE, East Anglia ONE North, East Anglia TWO and East Anglia THREE
- In March 2016 the DECC, now the BEIS, authorised an amendment to the consent from a 1,200MW DC technology to a 714MW AC technology
- EA1 is the first project that will be built in the East Anglia Zone, although EA3 received its development consent order in August 2017. The two remaining projects are still in the development process
- The EA1 site covers approximately 278.5km² and is located in the English southern North Sea
- The East Anglia Zone lease was awarded by the Crown Estate in 2009 to SPR and Vattenfall Wind Power in partnership. In February 2015, SPR took over Vattenfall Wind Power's share in the project
- The project company, EAOL, will develop the Wind Farm and is owned by SPR (60%) and GIG (40%)
- The construction and commissioning of the EA1 Transmission Assets was achieved on 13 March 2020. The Developer considers it will receive the final operating notice in the coming months. They are expected to deliver a minimum availability of 98%, taking into account both planned and unplanned maintenance

Background (continued) and purpose and method of the review

Background (continued)

- The assets will principally comprise of one OFSS, two offshore export cables with route lengths of approximately 85km to the onshore transition joint bays located back from the shoreline and two onshore export circuits with route lengths of approximately 37km from the onshore transition joints to an ONSS. Two 400kV cables connect the ONSS to the existing 400kV bay at the NGET substation, with an approximate length of 550 metres. The connection is via a single bay of the 400kV GIS within the existing NGET substation
- The OFSS is located approximately in the middle of the Wind Farm. 12 inter-array cable strings feed into the OFSS and two parallel submarine export cables will be routed towards the South West
- The offshore export cables connect to the onshore cables via an HDD at the cable landfall near Bawdsey, in East Anglia. The overall onshore export cable route will terminate at an ONSS close to the National Grid main ONSS at Bramford

Purpose and method of the review

- The main purpose of the Ex-Ante Cost Review of the Wind Farm's Transmission Assets is to:
 - determine if a developer cost estimate requires updating for the next stage of the transfer process, ITT
 - assist in the identification of technical issues by noting 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
 - assist determination of the ITV for ITT by reviewing accuracy, allocation and completeness of cost information. In particular:
 - whether the costs as set out in the Developer's cost template for the Transmission Assets are appropriately stated to use in the cost assessment
 - whether costs not directly attributable to either the Generation or Transmission Assets have been allocated to each on a reasonable basis

- The starting point in our review of the cost information provided was the CAT dated 5 July 2019, and was based upon the Developer's estimates of the costs of the Transmission Assets at that time
- Our review has considered confirmation that costs included in the CAT relate to contracts that are either for the Transmission Assets or are for the Wind Farm in a broader sense but have a reasonable basis for allocation between Transmission Assets and other elements of the Wind Farm. The basis of allocation is different in some cases depending upon:
 - whether the costs can be directly attributed to either the transmission or generation businesses (as in the case of the main capital contracts)
 - what is considered the main driver behind the relevant development or project management costs (this is usually capital costs 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 Ex-Post Cost Review

Section 3: EA1 processes

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03. EA1 processes

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Introduction, competitive tendering and budgeting

Introduction

- In this section, we set out the processes that have been used by the Developer in relation to competitive tendering, budgeting, and the accounting for the Wind Farm, and in particular, the Transmission Assets
- From our discussions with the Developer and our review of the cost information prepared by them in respect of the Transmission Assets, it is evident that there are systems in place which will help to ensure that the cost of the Wind Farm Transmission Assets represents value for money including:
 - specific planning and budgeting tools, including building on experience obtained from similar projects
 - controls over variation orders and large expenditure items
 - contract tenders measured on a bid-by-bid scenario and assessed against past purchase prices of similar goods and services

Competitive tendering

- One of the main tools used by the Developer in achieving value for money and highest compliance to requirements is the use of a competitive tendering process for the main elements of construction of the Wind Farm
- The process follows five steps:
 - Pre-qualification
 - Invitation to tender
 - Technical Evaluation
 - Commercial Evaluation: Best and Final Offer
 - Contract Award

- The majority of contracts were put out to tender, with the Developer inviting specialist companies in each area to tender for the work
- The final selection of preferred bidders was made using an evaluation model, which typically focuses on costs, fulfilment of the scope of works, technical solutions and risks, experience and HSEQ. This model is adapted for each contract on a case-by-case basis, with the detailed weighting for each package being varied to take into account factors such as the profile of the package up for tender, and is based upon the experience from former tenders, executed contracts and the relevant market situation
- The tender award process for each of the key capital components of the Transmission Assets is summarised in Appendix B

Budgeting

- The current budget for EA1 is a function of two components:
 - the base FID budget, which was entered into the accounting system's cost structure at an analytical order level; and
 - approved changes



Budgeting (continued) and cost accounting and allocation methodology

Budgeting (continued)



Cost accounting and allocation methodology

- The Developer operates a SAP accounting system to plan, report and monitor all costs associated with EA1. The SAP cost structure is organised into four distinct categories:
 - Generator/Wind Farm: budgets which do not relate to the Transmission Assets
 - OFTO: budgets which relate to the Transmission Assets
 - Shared (manual allocation): budgets (and therefore contracts) where the scope of work spans across both the Generation and Transmission assets. It is not always clear at the outset of the contract what portion of the costs will ultimately relate to one element or the other. These costs are allocated on a case by case basis once the contract's scope has been finalised

- Shared (general allocation): budgets which cannot be accurately allocated to the Transmission Assets so have been allocated on a pro-rata basis. This allocation is discussed further under the heading Cost allocation methodology below
- The base input for the valuation of the Transmission Assets is the project's assessment of the anticipated capital costs, excluding risk, and is prepared using the latest available information in relation to scope, programme, procurement activity, contract commercial status, market conditions, FX rates, commodity prices and any other information which may be reasonably relied upon to inform assessment of an expected cost outcome
- This input is then adjusted to create a CAT model to value the Transmission Assets. These adjustments fall into the following categories:
 - application of the EA1/EA3 cost split methodology, excluding any EA3 costs from the CAT
 - application of the shared cost methodology
 - addition of contingency based on Monte-Carlo simulations
 - addition of IDC

EA1/EA3 cost split methodology

- To minimise disturbance to local landowners, the DCO states that all ducting for future projects that will share the same onshore cable corridor is to be installed in a single campaign. Although EA3 is only under development, and has not yet secured a CfD or FID, it will share a cable corridor and onshore grid connection point with EA1
- As such, as the costs for laying ducting for each project must be recovered separately, the costs in relation to EA3 must be removed from the CAT
- Further detail on our review of the cost split methodology is set out in the next section

Cost accounting and allocation methodology (continued)

Cost accounting and allocation methodology (continued)

Cost allocation methodology

- Where project costs are not fully attributable to the Transmission Assets, ie they relate to the Wind Farm as a whole (shared costs), estimates have been made of the proportion of the costs that should be attributed to the Transmission Assets
- Examples of these shared costs include:
 - general project management and administration
 - project support functions eg procurement, cost control, health and safety
 - general consultants eg legal/environment and consent
 - office rent, heating, lighting and corporate services
 - cross-package management resources eg document control, planning etc
 - stakeholder engagement costs/ events
- These shared costs fall into three categories, each with their own unique cost allocation method as follows:
 - indirect shared cost: default calculated indirect cost Capex ratio
 - direct shared cost: default calculated direct cost Capex ratio
 - manually allocated shared cost: Developer proposed methodology (determined on a case-by-case basis)
- Further detail on our review of cost allocation is set out in the next section

Contingency cost methodology

- The base input for the valuation of the Transmission Assets does not include risk. A risk register is used to reflect the risk position of each package, and by extension, the overall project
- · Further detail on our review of contingency costs is set out in the next section

IDC

- IDC is a cost specific to the transaction and as such is an add-on to the CAT model. The purpose of allowing the Developer to claim IDC is to recompense it for the economic and efficient costs of financing the development and construction of the Transmission Assets
- Further detail is set out in the next section

Section 4: Costs common to the Transmission Assets as a whole

01.	Executive summary

- 02. Instructions and background
- 03. EA1 processes
- 04. Costs common to the Transmission Assets as a whole
- 05. Offshore substation costs
- 06. Submarine cable supply and installation costs
- 07. Land cable supply and installation costs
- 08. Onshore substation costs
- 09. Reactive substation costs
- 10. Connection costs
- 11. Project common costs and development costs
- 12. Transaction costs

Introduction, resourcing costs, interest during construction and boundaries

Introduction

- Whilst the CAT breaks down the costs of the Transmission Assets into distinct areas, largely based upon the separate components that make up the Transmission Assets, there are certain costs and cost principles which are common to the Transmission Assets as a whole
- As such, we have summarised the work that we have undertaken in relation to these costs and cost principles below and cross refer to our findings in relation to such costs and costs principles in the later sections of this report

Resourcing costs

• The CAT includes approximately $f_{\text{management}}$ relating to the time costs of project management resources on the project, as summarised in the table below

Resource costs



• The Developer has provided a resource planner, which details the expected hours employees will spend working on the Transmission Assets, together with hourly rates, and allocated where appropriate, to derive the total expected resources costs for the Transmission Assets

- We have reviewed the supporting documentation provided for the project resource costs to agree the costs in the CAT. As it is not within our area of expertise to establish whether the time spent by the internal staff and the rates used are reasonable, we have raised this matter as a point of further consideration. We have proposed a net adjustment to reduce resource costs by *f*
- Overall, whilst we can confirm that there is a reasonable basis for the Developer's estimates of the project resource costs, we do not have the technical expertise to determine whether the time spent or rates used are economically or efficiently incurred. We recommend that Ofgem's technical advisors 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 including whether they include any profit element

Interest during construction

- IDC represents the financing costs deemed allowable for funding the development and construction of the Transmission Assets
- Interest should be included within the Transmission Assets costs from the time the cost was actually paid and up to the end of construction, ie up to first power
- The Developer's current interest cost for the construction period of the Transmission Assets totals approximately *f*.
- For the avoidance of doubt, we have not verified the Developer's assessment of interest during development or construction, as this is outside the scope of our review

Boundaries used for the purposes of cost allocation

- The Information Memorandum confirms the boundary points of the Transmission Assets proposed by the Developer, as follows:
 - offshore: located at the 220/66kV transformer 66kV low voltage terminals
 - onshore: located in the respective gas zone at the main and reserve busbar at Bramford 400kV substation

Contingencies, global discounts and related party transactions

Contingencies

• The CAT provided by the Developer includes a contingency provision of <u>formation</u> (% of pre-contingency capital costs excluding IDC) and is summarised in the table below

Contingencies cost summary



- The Developer has calculated the contingency provision based upon its assessment of risks in relation to the Transmission Assets (and a share of common costs where appropriate), the likelihood of such risks being realised and an estimate of the costs involved in these circumstances. The contingency provision is therefore the sum of the monetary value of all the risks extracted from the risk register
- The package teams are responsible for identifying, developing, mitigating and updating risks which are reflected on the risk register. Package managers and cost control ensure alignment between the risk register and the best estimate of the costs for the Transmission Assets
- The risks per the risk register are then quantified into a monetary value and added to the CAT. The quantification assessment consists of estimating the range of possible outcomes should a risk materialise and the probability of the risk materialising

• A Monte-Carlo simulation, which relies on repeated random sampling, has been used to estimate a probability distribution for the risk cost outcome of each package. The sum total of these components represents the total contingency allocated to the Transmission Assets for the remaining construction works



- The Developer considered that the contingency provision of \underline{f} , reflected a prudent allocation
- · Our observations in this regard are set out further in the executive summary

Application of overriding global discounts

• The Developer has confirmed that no global discounts have been obtained in the course of the project

Related party transactions

• The Developer has confirmed that there have been no related party transactions in the course of the project, with all internal SPR costs transacted at arms-length

Cost allocation

Cost allocation

- As set out in section 3, the Developer has used three methods for the allocation of shared costs between the Transmission Assets and the Generation Assets:
 - indirect shared costs have been allocated to the Transmission Assets based upon the Transmission Assets indirect capital costs as a percentage of total Wind Farm indirect capital expenditure. The Developer has calculated the rate at 100%
 - direct shared costs have been allocated to the Transmission Assets based upon the Transmission Assets direct capital costs as a percentage of total Wind Farm direct capital expenditure. The Developer has calculated the rate at 100%
 - manually allocated shared costs have been allocated to the Transmission Assets based upon a manual rate determined on a case-by-case basis

Indirect shared costs

- Use of indirect shared costs of the Transmission Assets as a percentage of total Wind Farm indirect capital costs is an approach that is common in OFTO projects
- The general allocation rule for indirect shared costs between Transmission Assets and Generation Assets is % and % respectively
- The Developer has provided us with high level workings for the 2018 rate for the Transmission Assets amounting to 500 % and for 2019 amounting to 500 %
- However, the level of detail in these workings is such that we are unable to establish whether the amount of Transmission Assets capital costs accords with the Transmission Asset capital costs included in the CAT

Direct shared costs

- Use of direct shared costs of the Transmission Assets as a percentage of total Wind Farm direct capital costs is an approach that is common in OFTO projects
- The general allocation rule for indirect shared costs between Transmission Assets and Generator Assets is 200% and 200% respectively

- The Developer has provided us with high level workings for the 2018 rate for the Transmission Assets amounting to % and for 2019 amounting to %
- However, the level of detail in these workings is such that we are unable to establish whether the amount of Transmission Assets capital costs accords with the Transmission Asset capital costs included in the CAT

Manually allocated shared costs

- Manually allocated shared costs have been allocated to the Transmission Assets based upon a manual rate determined on a case-by-case basis
- The effective allocation rate applied to manually allocated shared costs for 2018 was
 % and for 2019 was
- However, the level of detail in these workings is such that we are unable to establish whether the amount of Transmission Assets capital costs accords with the Transmission Asset capital costs included in the CAT

Impact of allocated shared costs

- The table below summarises the allocated costs included within the CAT, and the effective allocation rate for such costs.
- This table shows that the allocation methodologies used by the Developer has resulted in cost allocations to the Transmission Assets at an average rate of \$\$\screwty\$\$, which is higher than the rates we have seen on previous projects. Our observations in this regard are set out further in the executive summary

Allocated costs

	Total	Allocation	Effective rate
	£	£	%
Indirect shared cost			%
Direct shared cost			%
Manually allocated shared cost			%
Total			%

EA1/EA3 split methodology

EA1/EA3 split methodology

Methodology

- To minimise disturbance to local landowners, the DCO states that all ducting for future projects that will share the same onshore cable corridor is to be installed in a single campaign. Although EA3 is only under development, and has not yet secured a CfD or FID, it will share a cable corridor and onshore grid connection point with EA1
- The costs for preparing the land for installation of the ducts, laying ducting for each project and other costs relating to the EA3 onshore works completed during the EA1 construction period must be recovered separately, and as such, the costs in relation to EA3 must be removed from the CAT
- Costs relating to the EA3 works undertaken during the EA1 construction period fall into the following categories (based on the methodology set out by the Developer at the start of the ITV process):
 - excluded costs: costs exclusive to EA3 scope which have been excluded from the CAT
 - EA1 costs: all costs which would have been incurred by EA1 irrespective of EA3 _ scope are included in the CAT



EA3 based on the 'extra costs' that were due to the EA3 scope being included

- as such these costs should be allocated at a rate of % (being metres/(metres + metres))

Excluded costs

• It seems appropriate to exclude any costs that solely relate to EA3 from the EA1 CAT. As such we have no comments on this approach

EA1 costs

• It appears that as EA1 will be constructed in advance of EA3, EA1 is bearing the full costs associated with ducting irrespective of EA3 scope which does not appear appropriate. As EA3 would share the resources constructed, ie the onshore cable haul road and construction compounds, the costs incurred in constructing these resources should be split between the two projects equitably, for example based on expected usage

Construction swathe allocation



EA1/EA3 split methodology (continued)

EA1/EA3 split methodology (continued)

Incremental cost allocation



			CAT	ITV best estimate	Ex cluded	Total per CAT
Contract	Description		reference	for EA1 £	EA3 costs £	£
			CR4			
			CR4			
		(CR4			
			CR4			
			CR4			
			CR4			
			CR4			
			CR4			
			CR5			
			CR5			
			CR4			
			CR2/CR4			
		,	Various			
Total						

EA03 cost deductions

Impact of EA1/EA3 split methodology

- The table opposite provides a summary of EA1 contracts with an actual or expected EA3 scope element, and the value deducted from EA1's costs in accordance with the Developer's adopted methodology
- We note that, of the total costs (including some EA3 scope) of \pounds , only \pounds has been allocated to the EA3 project, an effective allocation of 10%
- Based on our understanding of the methodology this split does not appear appropriate and the effective allocation of 50% should be substantially higher, and as such the costs included on the EA1 CAT should be substantially lower
- Our observations in this regard are set out further in the executive summary

Unquantified costs: Project management resources





Unquantified costs: Development and pre-FID works

Foreign exchange and commodity prices

Foreign exchange and commodity prices

- The Developer notes that contracts for the Transmission Assets are predominantly denoted in GBP, although there are three noteworthy contracts exposed to FX risk which are discussed below
- We have been informed that the treasury will enter into external hedges for all FX payments and contracts which have a cumulative value greater than \underline{f}
- The GBP value of an FX payment is then recognised in the project's accounts at the prevailing exchange rate on the date of the payment. If the contract is hedged, the treasury will post an adjustment to the project's accounts to align the GBP value of the payment with the achieved hedge rate
- At InTV, all project costs had to be reported in GBP. As such, the translated GBP costs were the sum of the costs in foreign currency for each contract divided by the forward rate taken on or near the FID for some Developer-specific project mid-point which represents when the majority of project payments will be made and is between the FID and financial close
- The Developer has made the following assumptions when calculating these project costs:
 - the project mid-point forward rate will be taken, being November 2018
 - financial close represents the date when assets are transferred from the Developer to the OFTO. Contracts do not need to be fully paid at financial close
 - the internal SPR treasury reporting rate for forward forecasting has been used, and cross checked against Bloomberg Finance offerings
- The main contracts exposed to FX risk are detailed below and our observations in relation to the approach taken by the Developer to costs incurred in foreign currencies are set out in the executive summary

OFSS Fabrication Contract

- the original contract was hedged on signing with all subsequent VOs hedged as soon as the costs were committed and exceeded the f_{ij} threshold
- as such the blended hedge rate aggregated the actual exchange rates which were achieved for forward buys for the base contract and its variations, and the SPR internal reporting exchange rate determined for pending/anticipated variations, consistent with forward buy quotations from Bloomberg Finance for the March 2019 period close
- for the base contract (EUR and the second of the second

OFSS Fabrication Contract

- the original contract was not hedged, however as elements of the contract grew over time hedges have subsequently been put in place once committed costs exceeded the f_{i} threshold
- as such the blended hedge rate aggregated the payments made at the spot rate prior to the decision to hedge the anticipated contract costs and the actual exchange rate achieved for forward buys secured for anticipated future costs
- payments were made at the spot rate prior to the decision to hedge anticipated contract costs. Anticipated contract costs were then hedged using the actual exchange rate achieved for forward buys. A single blended rate being the weighted average aggregate of these rates was then applied to the contract

submarine cable supply and installation

 the contract was signed in GBP however certain elements are subject to commodity (fuel) adjustments. As these costs cannot be firm or committed in advance of the works being completed and costs actually being paid no commodity hedges have been raised

Section 5: Offshore substation costs

01.	Executive	summary
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02. Instructions and background

03. EA1 processes

04. Costs common to the Transmission Assets as a whole

05. Offshore substation costs

- 06. Submarine cable supply and installation costs
- 07. Land cable supply and installation costs
- 08. Onshore substation costs
- 09. Reactive substation costs
- 10. Connection costs
- 11. Project common costs and development costs
- 12. Transaction costs

Offshore substation costs

CR2 - Offshore substation costs

		Adjustments	Revised CAT
	£	£	amount £
Major contracts			
Other			
Contingency		1	
Total			

Overview

• The table above summarises the costs of construction of the offshore substation and associated works

Verification work

- Our verification work in relation to the offshore substation costs is set out in Appendix C
- Based upon our review, subject to our observations in relation to resources costs as further detailed in section 4, we have been able to agree the majority of offshore substation costs exceeding £200,000 (%) to supporting documentation
- Whilst most costs appear to be appropriately stated, the table below sets out one item where the amount included in the CAT requires amendment. This adjustment was proposed by the Developer to reallocate the

CR2 adjustments

		Adjustments	Reasons for	Revised CAT
	£	£	adjustment	amount £
Developer adjustments				
Total			-	

• The Developer has been unable to provide supporting documentation for **costs** of £ (**costs**). These are set out in the table below and are included within the list of unsubstantiated costs set out in the executive summary

CR2 - unsubstantiated costs



Conclusion

• Based upon our review, subject to the one amendment and the unsubstantiated costs highlighted in the tables above, and detailed in the executive summary, the offshore substation costs included in the CAT appear to be appropriately stated

Section 6: Submarine cable supply and installation costs

01.	Executive summary
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02. Instructions and background

03. EA1 processes

- 04. Costs common to the Transmission Assets as a whole
- 05. Offshore substation costs

06. Submarine cable supply and installation costs

- 07. Land cable supply and installation costs
- 08. Onshore substation costs
- 09. Reactive substation costs
- 10. Connection costs
- 11. Project common costs and development costs
- 12. Transaction costs

Submarine cable supply and installation costs

Submarine cable supply and installation costs

CR3 - Submarine cable supply and installation costs

		Adjustments	Revised CAT
	£	£	amount £
Major contracts			
Other			
Contingency		I	
Total			

Overview

• The table above summarises the costs associated with the supply and installation of the submarine cable

Verification work

- Our verification work in relation to the submarine cable supply and installation costs is set out in Appendix D
- Based upon our review, subject to our observations in relation to the resources costs as further detailed in section 4, we have been able to agree the majority of submarine cable supply and installation costs exceeding £200,000 (%) to supporting documentation
- Whilst most costs appear to be appropriately stated, the table opposite sets out five items where the amount included in the CAT requires amendment
- In addition, the Developer has been unable to provide supporting documentation for f. These are set out in the

second table opposite and are included within the list of unsubstantiated costs set out in the executive summary

CR3 adjustments



CR3 - unsubstantiated costs

	£
Total	

Conclusion

• Based upon our review, subject to the amendments and the unsubstantiated costs highlighted in the tables above, and detailed in the executive summary, the submarine cable supply and installation costs included in the CAT appear to be appropriately stated

Section 7: Land cable supply and installation costs

01. Executive summary

02. Instructions and background

03. EA1 processes

- 04. Costs common to the Transmission Assets as a whole
- 05. Offshore substation costs
- 06. Submarine cable supply and installation costs

07. Land cable supply and installation costs

- 08. Onshore substation costs
- 09. Reactive substation costs
- 10. Connection costs
- 11. Project common costs and development costs
- 12. Transaction costs

Land cable supply and installation costs

Land cable supply and installation costs

CR4 – Onshore cable costs



Overview

• The table above summarises the costs associated with the supply and installation of the land cable

Verification work

- Our verification work in relation to the land cable supply and installation costs is set out in Appendix E
- Based upon our review, subject to our observations in relation to the resources costs as further detailed in section 4, we have been able to agree the majority of land cable supply and installation costs exceeding £200,000 (%) to supporting documentation
- Whilst most costs appear to be appropriately stated, the table opposite sets out four items where the amount included in the CAT required amendment
- In addition, the Developer has been unable to provide supporting documentation for f_{charged} of f_{charged} . These are set out in the second table opposite and are included within the list of unsubstantiated costs set out in the executive summary

Conclusion

• Based upon our review, subject to the amendments and the unsubstantiated costs highlighted in the tables opposite, and detailed in the executive summary, the land cable supply and installation costs included in the CAT appear to be appropriately stated

CR4 adjustments



CR4 - unsubstantiated costs



Section 8: Onshore substation costs

- 01. Executive summary
- 02. Instructions and background
- 03. EA1 processes
- 04. Costs common to the Transmission Assets as a whole
- 05. Offshore substation costs
- 06. Submarine cable supply and installation costs
- 07. Land cable supply and installation costs
- 08. Onshore substation costs
- 09. Reactive substation costs
- 10. Connection costs
- 11. Project common costs and development costs
- 12. Transaction costs
Onshore substation costs

CR5 - Onshore substation costs

		Adjustments	Revised CAT
	£	£	amount £
Major contracts			
Other			
Contingency		I	
Total			

Overview

• The table above summarises the costs of construction of the onshore substation and associated works

Verification work

- Our verification work in relation to the onshore substation costs is set out in Appendix F
- Based upon our review, subject to our observations in relation to resources costs as further detailed in section 4, we have been able to agree all onshore substation costs exceeding $\pounds 200,000$ to supporting documentation
- Whilst most costs appear to be appropriately stated, the table opposite has highlighted one item where the amount included in the CAT requires amendment. This adjustment to the **second second** was proposed by the Developer and is a reallocation of costs between the packages

CR5 adjustments

		Adjustments	Revised CAT
	£	£ Reasons for adjustment	amount £
Developer adjustments			
Total			

Conclusion

• Based upon our review, subject to the one amendment highlighted in the table above, and detailed in the executive summary, the onshore substation costs included in the CAT appear to be appropriately stated

Section 9: Reactive substation costs

- 01. Executive summary
- 02. Instructions and background
- 03. EA1 processes
- 04. Costs common to the Transmission Assets as a whole
- 05. Offshore substation costs
- 06. Submarine cable supply and installation costs
- 07. Land cable supply and installation costs
- 08. Onshore substation costs
- 09. Reactive substation costs
- 10. Connection costs
- 11. Project common costs and development costs
- 12. Transaction costs

Reactive substation costs

CR6 - Reactive substation costs

		Adjustments	Revised CAT
	£	£	amount £
Major contracts			
Other		I	
Contingency		I	I
Total			

Overview

• The table above summarises the costs associated with the reactive substation

Verification work

- Our verification work in relation to the reactive substation costs is set out in Appendix G
- Based upon our review, subject to our observations in relation to resources costs as further detailed in section 4, we have been able to agree all reactive substation costs exceeding $f_{200,000}$ to supporting documentation, with no issues arising
- As such we have not identified any adjustments to the CAT value

Conclusion

• Based upon our review the reactive substation costs included in the CAT appear to be appropriately stated

Section 10: Connection costs

01. Executive summary

02. Instructions and background

- 03. EA1 processes
- 04. Costs common to the Transmission Assets as a whole
- 05. Offshore substation costs
- 06. Submarine cable supply and installation costs
- 07. Land cable supply and installation costs
- 08. Onshore substation costs
- 09. Reactive substation costs

10. Connection costs

- 11. Project common costs and development costs
- 12. Transaction costs

Connection costs

CR7 – Connection costs

	£	Adjustments	Revised CAT
		£	amount £
Major contracts			
Other		I	
Contingency	I	1	
Total			

Overview

• The table above summarises the costs in connection with the Transmission Assets to the National Grid

Verification work

- Our verification work in relation to the connection costs is set out in Appendix H
- Based upon our review, we have been able to agree the majority of the connection costs exceeding £200,000 (%) to supporting documentation, with no issues arising
- The Developer has been unable to provide supporting documentation for **and the set of formal and the set of the set of**

CR7 – unsubstantiated costs

	£
Total	

Conclusion

• Based upon our review, subject to the unsubstantiated costs in the table opposite, and detailed in the executive summary, the connection costs included in the CAT appear to be appropriately stated

Section 11: Project common costs and development costs

- 01. Executive summary
- 02. Instructions and background
- 03. EA1 processes
- 04. Costs common to the Transmission Assets as a whole
- 05. Offshore substation costs
- 06. Submarine cable supply and installation costs
- 07. Land cable supply and installation costs
- 08. Onshore substation costs
- 09. Reactive substation costs
- 10. Connection costs
- 11. Project common costs and development costs
- 12. Transaction costs

Project common costs and development costs

CR8 – Project common costs



Overview

• The table above summarises the costs that are common to the project as a whole, which have been allocated to the Transmission Assets, together with the early development costs related to the Transmission Assets

Verification work

- Our verification work in relation to the project common costs is set out in Appendix I
- Based upon our review, subject to our observations in relation to the resources costs as further detailed in section 4, we have been able to agree 100% of project common costs and development costs exceeding £200,000 to supporting documentation
- Whilst most costs appear to be appropriately stated, the table opposite sets out two items where the amount included in the CAT requires amendment. The adjustment to the proposed by the Developer is a reallocation of costs between the packages and the adjustment to item is a refining of the forecast
- In addition, the Developer has been unable to provide supporting documentation for f_{constant} , and these are set out in the second table opposite and included within the list of unsubstantiated costs set out in the executive

opposite and included within the list of unsubstantiated costs set out in the executive summary

CR8 adjustments



CR8 – unsubstantiated costs



Conclusion

• Based upon our review, subject to our comments set out in the executive summary in relation to the cost allocation methodology for direct and indirect costs, the amendments and unsubstantiated costs highlighted in the tables above and also detailed in the executive summary, the project common costs and development included in the CAT appear to be appropriately stated

Section 12: Transaction costs

- 01. Executive summary
- 02. Instructions and background
- 03. EA1 processes
- 04. Costs common to the Transmission Assets as a whole
- 05. Offshore substation costs
- 06. Submarine cable supply and installation costs
- 07. Land cable supply and installation costs
- 08. Onshore substation costs
- 09. Reactive substation costs
- 10. Connection costs
- 11. Project common costs and development costs
- 12. Transaction costs

Transaction costs

CR9 – Transaction costs

		Adjustments	Revised CAT
	£	£	amount £
Other			
Contingency	I.	I	l
Total			

Overview

• The table above summarises the transaction costs in connection with the Transmission Assets

Verification work

- Our verification work in relation to the transaction costs is set out in Appendix J
- Based upon our review, subject to our observations in relation to the resources costs as further detailed in section 4 and the two adjustments to **section** (as set out in the table opposite), we have been able to agree all transaction costs exceeding $\pounds 200,000$ to supporting documentation, with no issues arising

CR9 adjustments



Conclusion

• Based upon our review, subject to the amendments highlighted in the table above, and detailed in the executive summary, the transaction costs included in the CAT appear to be appropriately stated

- A. Restrictions on circulation, disclosures of interest, forms of report and information relied on
- B. Summary of key contracts tender process and award
- C. Offshore substation costs verification work
- D. Submarine cable costs verification work
- E. Land cable supply and installation costs verification work
- F. Onshore substation costs verification work
- G. Reactive substation costs verification work
- H. Connection costs verification work
- I. Project common costs and development costs verification work
- J. Transaction costs verification work

A. Restrictions on circulation, disclosures of interest, forms of report and information relied on

Restriction on circulation

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Disclosures of interest

• 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

• 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

Information relied on

- Grant Thornton has relied upon the following information in reviewing the cost assessment for EA1:
 - Information Memorandum dated May 2019
 - information contained in the Ofgem developer data room for the EA1 project
 - information and explanations provided to us by the Developer. This includes telephone calls and email correspondence with the Developer

B. Summary of key contracts tender process and award

Introduction

- As set out in section 3, one of the main tools used by the Developer in achieving value for money and highest compliance to requirements is the use of a competitive tendering process for the main elements of construction of the Wind Farm
- In this section, we summarise the tender award process for the key capital components of the Transmission Assets

Offshore substation – Navantia S.A.

- The Developer has provided the proposal of award report for the supply, fabrication and commissioning of jackets, piles and topside for the offshore substation, including low voltage electrical systems and load-out
- The procurement process included several steps in order to achieve a transparent result which would provide the best value for the project. The bids were requested as a lump sum price, acknowledging that the engineering design was not final and therefore amendments were to be expected in the overall design due to equipment contracts not being fully placed and in the final steel quantities. Prices were requested through a detailed BoQ
- The process involved the following stages:
 - market engagement: PQQ. The PQQ documentation was released to several companies in May 2015 and after evaluation, the following suppliers were invited to the tender process:



• The scoring after the last technical evaluation of the bids is highlighted in the table below:

Bidder scoring



Offshore substation - Navantia S.A. (continued)

- The bidders who submitted during the
- The combined option, as opposed to separate scopes of foundation and topside, resulted in the lowest economical figure. The prices presented by the suppliers are summarised as follows:

Full scope (£)	Supplier 1	Supplier 2	Supplier 3	Supplier 4	Supplier 5	Navantia
Total homogenised						

• As a result of the procurement process, Navantia was proposed as the preferred supplier for the OFSS fabrication contract

220kV submarine cable - Nexans Norway AS

- The Developer has provided the proposal of award report for the supply, installation and testing of the 220kV submarine cable and its accessories. The proposal was for the award of the supply of two 85km lines of 220kV submarine cable and associated accessories, supervision of the installation, assembly of the GIS terminals (on the offshore platform), assembly of the splices (connecting the submarine and earth cables) and assembly of the sea connections as well as the two-line tests, necessary for the connection from the Offshore Substation to land in Bawdsey
- The request for bids was made by the procurement team in September 2015 and was sent to the following suppliers:



• Pre-tender meetings were held in October 2015 with all suppliers. The consulted suppliers presented their offers in November 2015.

was capacity constrained. Once offers were

received, clarification meetings were held in November and December 2015

• A technical evaluation was undertaken in relation to the November 2015 offers. The bids proposed by were considered technically valid. The options presented by were considered only partially valid. The options were considered not technically valid

220kV submarine cable - Nexans Norway AS (continued)

• A BAFO was requested in June 2016. Conditions, such as which cable rates to use, the formula to apply in relation to contract price adjustments regarding metal, and which exchange rates to use, were imposed on the bidders

•	

• After various negotiations and meetings, Nexans combined offer was summarised below:



220kV onshore cable - Prysmian

- The Developer has provided the proposal of award report for the supply, installation and testing of the 220kV cable and its accessories. The proposal is for the award of the supply, laying, installation and testing of 231km insulated cable 220 kV (2,000mm2 Al) and 3.3 km cable 400kV (1000mm2 Al) to connect from the submarine cable in Bawdsey to Bramford
- The request for bids was made by the procurement team in October 2015 and was sent to the following suppliers:

_			
		_	

- Pre-tender meetings were held in October 2015 with all suppliers. The consulted suppliers presented their offers in December 2015.
 Once offers were received, clarification meetings were held in November and December 2015
- A technical evaluation was undertaken in relation to the December 2015 offers. The bids proposed by were considered technically valid. The options presented by were considered not technically valid

220kV onshore cable - Prysmian (continued)

- A BAFO was requested in November 2016. Conditions, such as which metal price and which exchange rates to use, were imposed on the bidders
- Meetings were held in person or by telephone with all suppliers whose bids were considered technically valid. Base case offers were received in November 2016 and are summarised in the table below:

	Supplier 1	Supplier 2	Supplier 3	Supplier 4	Pry smiar
Base case	£	£	£	£	£
Site Management					
Installation					
Supply					
Civil Works					
Testing and Commission					
Total					

- Alternative offers were also presented by the suppliers.
 - As a result, the Developer proposed to award supply, installation and testing of the 220kV insulated cable to Prysmian for an overall cost of f_{i}

	Supplier 1	Supplier 2	Supplier 3	Pry smian
Alternative case	£	£	£	£
Site Management				
Installation				
Supply				
Civil Works				
Testing and Commission				
Homogenization (concrete joint chamber)				
Total				

Onshore Cable Enabling Works - Roadbridge

- The Developer has provided the proposal of award report in relation to the appointment of the preferred supplier for onshore cable enabling works
- The process involved the following stages:



• The technical evaluation revealed that all remaining bidders were considered technically compliant in the works to be done. Two possible haul road construction methods were provided by the bidders. As were non-compliant for conventional methods due to project programme requirements, the base option for the second were was based on an alternative construction method (stabilisation method) which could be mechanical or chemical

Onshore Cable Enabling Works - Roadbridge (continued)

• Prices presented by the suppliers at the are summarised in the table below

	Supplier 1	Supplier 2	Supplier 3	Roadbridge
Scope	£	£	£	£
EA1				
EA3				
Total				

• As a result of the proposal process, it was considered that Roadbridge was the preferred supplier for the onshore cable enabling works execution contract, with a total estimated contract value of f_{i}

Onshore Substation Civil Enabling Works - Roadbridge

- The Developer has provided the proposal of award report in relation to the appointment of the preferred supplier for onshore substation civil enabling works
- The process involved the following stages:



- The technical evaluation revealed that all bidders were considered technically compliant in the works to be done
- Prices presented by the suppliers at the table below

are summarised in the

	Supplier 1	Supplier 2	Supplier 3	Supplier 4	Roadbridge
	£	£	£	£	£
Total					

• As a result of the proposal process, it was considered that Roadbridge was the preferred supplier for the onshore substation enabling works execution contract, with a total estimated contract value of f_{i}

C. Offshore substation costs verification work

Major contracts

Cost ov erv iew	£	Contract number	Documentation seen	Cost v erified
		I		
	. =			
		- <u> </u>		

C. Offshore substation costs verification work (continued)

Cost Cost ov erv iew Contract number Documentation seen v erified

Major contracts (continued)

C. Offshore substation costs verification work (continued)

Major contracts (continued) Cost overview £ Contract number Documentation seen verified Image: Second S

C. Offshore substation costs verification work (continued)

Other Cost Cost overview £ Contract number Documentation seen verified Image: Image:

Contingency

				Cost
Cost ov erv iew	£	Contract number	Documentation seen	v erified
Total				

D. Submarine cable costs verification work

Major contracts

Cost ov erv iew	£	Contract number	Documentation seen	Cost v erified
				<u> </u>
				_
				•
		1		
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				8

D. Submarine cable costs verification work (continued)

Major contracts	(continued)			
Cost ov erv iew	£	Contract number	Documentation seen	Cost v erified
				_
				Ī
Total				

D. Submarine cable costs verification work (continued)

Other Cost Cost ov erv iew Contract number Documentation seen v erified Total

Contingency

				Cost
Cost ov erv iew	£	Contract number	Documentation seen	v erified
Total				

E. Land cable supply and installation costs verification work

Major contracts Cost Cost ov erv iew Contract number Documentation seen v erified

E. Land cable supply and installation costs verification work (continued)

Major contracts	(continued)			
Cost ov erv iew	£	Contract number	Documentation seen	Cost v erified
		<u> </u>		-
				-

E. Land cable supply and installation costs verification work (continued)

Major contracts	(continued)			
Cost ov erv iew	£	Contract number	Documentation seen	Cost v erified
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E. Land cable supply and installation costs verification work (continued)

Major contracts (continued) Cost Cost overview £ Contract number Documentation seen verified Image: Im

Other

Cost ov erv iew	£	Contract number	Documentation seen	Cost v erified
				

E. Land cable supply and installation costs verification work (continued)

Other (continued) Cost Cost overview Contract number Documentation seen v erified Total Contingency Cost v erified Cost overview Contract number Documentation seen Total

F. Onshore substation costs verification work

Major contracts

				Cost
Cost ov erv iew	£	Contract number	Documentation seen	v erified
				-
		-		
		1		
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F. Onshore substation costs verification work (continued)



F. Onshore substation costs verification work (continued)

Other Cost overview £ Cost overview £ Contract number Documentation seen Cost overview 1 <

Contingency

				Cost
Cost ov erv iew	£	Contract number	Documentation seen	v erified
Total				

G. Reactive substation costs verification work

Major contracts Cost Contract number Cost ov erv iew Documentation seen v erified Total

Other



H. Connection costs verification work

Major contracts

				Cost
Cost ov erv iew	£	Contract number	Documentation seen	v erified
		-		_
		1		
				_
Total				

Other

				Cost
Cost ov erv iew	£	Contract number	Documentation seen	v erified
Total				

I. Project common costs and development costs verification work

OFTO General Costs

Cost ov erv iew	£	Contract number	Documentation seen	· · · · · · · · · · · · · · · · · · ·	Cost v erified
Total					

Pre-FID/Development Costs

				Cost
Cost ov erv iew	£	Contract number	Documentation seen	v erified
				-
				•
Total				

I. Project common costs and development costs verification work (continued)



Project Shared/Common Costs (OFTO Allocation)

Contingency

				Cost
Cost ov erv iew	£	Contract number	Documentation seen	v erified
Total				

J. Transaction costs verification work




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