

Decision

Offshore Transmission: Cost Assessment for the Dudgeon transmission assets

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This document sets out the cost assessment for the Dudgeon offshore transmission assets (DOWL) and the key principles that we have applied in our cost assessment process for the fifth tender round. The Authority has granted an offshore transmission licence to TC Dudgeon OFTO plc, incorporated by the consortium of Transmission Capital Partners Limited Partnership and International Public Partnerships Limited.

TC Dudgeon OFTO plc has incorporated the assessed transfer value as set out in this report into their tender revenue stream. The appendices published alongside this report are available on the Ofgem website. They include correspondence between Ofgem and the developer as part of the cost assessment process and external consultants' reports.

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Executive summary

This document sets out Ofgem’s assessment of the economic and efficient costs which ought to have been incurred in connection with the development and construction of the transmission assets for the DOWL offshore transmission project (“the Project”). It also details the cost assessment process we have undertaken.

The cost assessment process involved the three key stages set out below:

- The calculation of costs based on the Developer’s initial estimate was £377.2m (“the initial transfer value”). This was communicated by Ofgem to the Developer and published in the preliminary information memorandum (PIM) in October 2016;
- The indicative estimate of costs was £310.9m (“the ITV”). The estimate was calculated as a result of further information regarding the development and construction of the Project being made available by the Developer and continuing analysis by Ofgem and its advisors. This updated calculation was communicated to the Developer in April 2017. The indicative transfer value was made available to bidders and was the transfer value assumed for the purpose of Invitation To Tender (ITT) stage submissions; and
- The final assessment of costs is £297.9m (“the assessed costs”). This is a reduction of £7.6m from the Developer’s final submission of £305.5m. The Developer has confirmed that the incoming Offshore Transmission Owner (OFTO) will be able to obtain the full benefit of all available capital allowances. Therefore, the final assessed cost of £297.9m is the amount to be paid to the Developer by the OFTO for the transmission assets (“the FTV”).

The key components of the initial, indicative and final transfer values, together with the Developer’s submission for the latter, are given in table 1 below.

Table 1: Summary of cost components

Category	Initial Transfer Value Sep 16 (£m)	Indicative Transfer Value April 17 (£m)	Developer Proposed Transfer Value Oct 17 (£m)	Final Transfer Value April 18 (£m)
Capex	236.8	239.3	233.9	235.0
Development	81.2	41.8	41.0	33.3
Contingency	16.3	-	-	-
IDC	42.9	28.5	28.1	27.5
Transaction	0	1.3	2.1	2.1
Total	377.2	310.9	305.1	297.9

Capital expenditure (Capex)

The Capex component of the FTV has decreased by £4.3m since the ITV, as set out below.

Increases of:

- £5.6m of cost reallocated to Capex from Development costs;
- £3.2m due to extended hire period of offshore personnel accommodation; transfer and installation vessels;
- £3.3m due to additional export cable spares; and
- £0.6 additional landscaping and reinstatement costs.

These increases were offset by the following reductions:

- £9.1m due to the firming up of estimated contract costs and Variation Orders (VOs);
- £3.7m due to the actual cost of hours worked being lower than the previously estimated hours;
- £1.7m due to the correction of invoicing and reporting errors;
- £0.4m due to the removal of non-OFTO costs and correction of OFTO adjustments made by us and the Developer during the cost assessment process;
- £0.6m due to insurance reductions; and
- £1.5m in costs related to establishing compliance with the Balancing Mechanism Unit (BMU).

Development costs

The Project's development costs have decreased by £8.5m since the ITV. The decrease is mainly due to the reallocation of £5.6m to Capex and £0.9m to Transaction costs, as well as estimated costs at the ITV stage now being realised at different levels.

Contingency

£16.3m of contingency was allowed in the initial transfer value. This was removed by the Developer in its cost submissions for the ITV and FTV.

Interest During Construction (IDC)

The IDC amount has decreased by £1m since the ITV. This decrease is due to changes to the Project's cash flow, as set out in the reasons above.

Transaction costs

The Transaction costs are composed of both internal and external resource costs arising from the Developer's participation in the tender process. Transaction costs have been assessed at £2.1m.

Final transfer value for the DOWL transmission assets

In accordance with Regulation 4(2)(b) of the Tender Regulations, the assessed costs of the DOWL transmission assets are £297,927,189. The FTV as determined by the Authority under Regulation 4(8) of the Tender Regulations is £297,927,189.

Associated documents

- The Electricity (Competitive Tenders for Offshore Transmission Licences) Regulations 2015 [Link](#)
- Offshore Transmission: Tender Rules [Link](#)
- Decision on approach to Interest During Construction for offshore transmission [Link](#)
- Offshore Transmission: Guidance for Cost Assessment [Link](#)

1. Context

A key part of the offshore electricity transmission regime is that an offshore electricity transmission licence will be granted to an Offshore Transmission Owner (OFTO) following a competitive tender process run by Ofgem.

The Electricity (Competitive Tenders for Offshore Transmission Licence) Regulations 2015 (“the Tender Regulations”) came into force on 3 August 2015. The Tender Regulations set out the tender process framework for granting an OFTO licence, including how Ofgem will run future tenders under both the generator build and OFTO build options.

The Tender Regulations set out the requirement for the Authority to calculate, based on all relevant information available to it, the economic and efficient costs which ought to be, or ought to have been, incurred in connection with developing and constructing the offshore transmission assets in respect of a project. The Tender Regulations provide for an estimate, followed by an assessment of costs, in relation to offshore transmission assets.

Where the Authority has determined to grant an offshore electricity transmission licence to the successful bidder in respect of a particular project, the assessment of costs shall be used by the Authority to determine the value of the transmission assets to be transferred to the successful bidder. This value will be reflected in the revenue stream in the offshore electricity transmission licence granted to the OFTO.

2. The cost assessment process

Chapter Summary

The Tender Regulations set out the requirement for the Authority to calculate, based on all relevant information available to it, the economic and efficient costs which ought to be, or ought to have been, incurred in connection with developing and constructing the offshore transmission assets in respect of a project. This chapter sets out the process that we followed in carrying out the cost assessment for the Project.

Overview of the cost assessment process

- 2.1. The Tender Regulations provide the legal framework for the process which Ofgem follows for the grant of offshore electricity transmission licences. This process includes calculating the economic and efficient costs of developing and constructing the offshore transmission assets to be transferred to the new OFTO.
- 2.2. The calculation of those costs shall be:
 - Where the construction of the transmission assets has not reached the stage when those transmission assets are available for use for the transmission of electricity, *an estimate* of the costs which ought to be incurred in connection with the development and construction of those transmission assets; and
 - Where the construction of the transmission assets has reached the stage when those transmission assets are available for use for the transmission of electricity, an assessment of the costs which ought to have been incurred in connection with the development and construction of those transmission assets.

Cost assessment principles

- 2.3. The cost assessment principles and overall process we have adopted in relation to various cost categories for tender rounds and the reasoning for such principles can be found in the document 'Offshore Transmission: Guidance for Cost Assessment'¹.
- 2.4. We have applied these principles in our cost assessment process for all the projects and, where appropriate, we have taken into account project specific circumstances.

¹ [Offshore Transmission: Guidance for Cost Assessment](#), July 2017

2.5. The remainder of this chapter describes some of the key elements of the cost assessment process. Chapter 2 provides the detail as to how these have been applied to the specifics of the Project.

Data collection

2.6. To undertake cost assessments we gather and review a range of information and supporting evidence. These relate to the forecast and actual costs of developing and constructing the transmission assets that will transfer to the OFTO. Detailed cost information is provided by the Developer in the form of cost reporting templates, contract values, asset cost schedules and cashflows. The Developer also provides supporting evidence to substantiate its cost submissions including, amongst other things, contract documentation, supplier payment lists and invoices and receipts.

2.7. We have worked closely with the Developer and gathered information relating to the following cost categories in the development and construction of the transmission assets:

- Capital expenditure;
- Development costs;
- Contingency provisions;
- Interest during construction; and
- Transaction costs.

Process stages for cost assessment

2.8. The cost assessment process involves the key stages set out below.

Initial transfer value

2.9. The initial transfer value is based on cost submissions by the Developer for the project. This value is made available to bidders at the Pre-Qualification (PQ) or, as was the case with this project, the EPQ stage of the tender process. The letter we send to the Developer at this time indicates that the calculation might be updated as a result of any further information provided by the Developer and our continuing analysis.

ITV

2.10. We provide the ITV for the commencement of the ITT stage of the tender process. This value is used as an assumption underlying the TRS bids submitted by bidders at the ITT stage. The letter we send to the Developer confirming the ITV indicates that the calculation might be updated as a result of any further information provided by the Developer and our continuing analysis.

Assessed costs

- 2.11. Once the transmission assets are complete or are close to completion and the Developer indicates that they have documentation to support an assessment, we commence an exercise to determine the assessed costs.
- 2.12. Following this assessment exercise, Ofgem sends the Developer a draft cost assessment report setting out the amount of the assessed costs. This gives the Developer the opportunity to correct factual errors and propose redaction of commercially sensitive information.
- 2.13. The draft report is also sent to the preferred bidder, to allow it to incorporate the assessed costs into their estimate of the TRS payable to the OFTO. This TRS amount, incorporating the assessed costs, is published in a consultation pursuant to section 8A of the Electricity Act 1989, by which the Authority proposes modifications to the standard conditions of the licence on a project specific basis ("the section 8A consultation").
- 2.14. The draft cost assessment report is published alongside the section 8A consultation. The report remains in draft form until the conclusion of the section 8A consultation and the Authority has determined to grant an offshore transmission licence to the successful bidder.

FTV

- 2.15. If the Developer retains some of the benefit of the available capital allowance, we will reduce the relevant amount from the assessed costs before we derive the final transfer value. The FTV is confirmed once the Authority has determined to grant an offshore transmission licence to the successful bidder. After licence grant the final cost assessment report and supporting appendices is published on the Ofgem website.
- 2.16. Ofgem normally finalises the assessment of costs prior to commencement of the section 8A consultation, with the section 8A TRS accounting for 100% of the FTV.

Cost assessment analysis

- 2.17. We apply two tests when calculating the estimate and assessment of costs:

Test 1 - Assessing the accuracy and allocation of Developer's cost submissions

- 2.18. As a first test, we check the accuracy of the data provided by the Developer and the appropriateness of cost allocations, in particular, between the offshore generation and transmission assets. Throughout the cost assessment process the Developer provides cost information to us on an ongoing basis. Where we identify discrepancies in how the Developer has allocated these costs, we check with the Developer to assess if they have been allocated to the correct asset category and make adjustments accordingly.

- 2.19. To support the cost assessment process we undertake a forensic accounting investigation. The scope of this investigation is shared with the Developer in advance. This investigation is based on the final costs that the Developer provides to us and applies to a sample of contract costs. The actual sample for each project varies due to the different contracting strategies adopted by the Developer and the specific needs of the project, but generally focuses on the most expensive contract and/or contracts which materially increase in cost.
- 2.20. The forensic accounting investigation scrutinises the cost allocations provided by the Developer. This may indicate the need for amendments to the Developer's submissions to reflect, for example:
- The actual costs incurred (e.g. in respect of exchange rates on foreign currency payments); and
 - More relevant metrics for the allocation of shared service costs.
- 2.21. Where amendments in our opinion are required and in the absence of further evidence from the Developer to substantiate the original allocation, we incorporate the recommended changes from the forensic accounting investigation.

Test 2 - Assessing if a Developer's incurred costs are economic and efficient

- 2.22. Under the second test, we assess, through appropriate analysis, whether the costs have been economically and efficiently incurred by the Developer. Where possible, we apply benchmarking and where industry wide cost indices are unavailable we review data from projects in the tender rounds. This analysis includes benchmarking across the projects and analysis in relation to funding interest rates. We consider such approaches to be an important tool in assisting us in determining what the economic and efficient costs should be.
- 2.23. To inform our cost estimate and assessment we undertake a benchmarking exercise. This is carried out using comparable costs across all transitional and enduring projects and any wider industry data to identify any cost outliers across the main cost categories. Any cost outliers we identify through the benchmarking exercise are subject to further review.
- 2.24. We also consider the procurement processes adopted by the Developer to obtain economic and efficient transmission asset costs. We will keep the efficiency of Developer procurement and contract management approaches under review for future cost assessments.
- 2.25. When undertaking the assessment of costs to derive the FTV, we review updated information provided by the Developer. Where Capex or development costs have increased since the ITV, the Developer is asked to provide supporting documentation to justify these increases. We may undertake a technical investigation which focuses on, for example, a particular cost component, such as an increase of costs in a contract or multiple increases across several contracts.

3. DOWL Cost Assessment

Chapter Summary

This chapter summarises how we have undertaken our cost assessment for the DOWL transmission assets from the initial transfer value to the final transfer value. It provides a breakdown of the key cost categories that we have considered and highlights the decisions that we have made.

DOWL Transmission Assets

- 3.1. The Project is a 402MW offshore wind farm located 32km off the coast of the seaside town of Cromer in North Norfolk. The wind farm comprises sixty-seven 6MW Siemens turbines, each situated on a monopile.
- 3.2. The transmission assets consist of an offshore substation supported by a jacket foundation structure with suction buckets. The offshore substation will collect all of the power produced by the wind turbine generators (WTGs) and step-up the voltage from 33kV to 132kV before transmitting it via two 132 kV export cables. The offshore export cables are each 42km long and the onshore export cables are each 47km long. The Project will connect to the 400kV network of National Grid Electricity Transmission plc ("NGET") via a new onshore substation in Necton, Norfolk. Figure 1 below details the location of the turbines as well as the transmitting cables. The Project has a Transmission Entry Capacity ("TEC")² of 400MW.

² TEC is a Connection and Use of System Code (CUSC) term that defines a generator's maximum allowed export capacity onto the transmission system.

Figure 1 – Location of the DOWL Wind Farm and Transmission Assets



- 3.3. The DOWL wind farm is owned by affiliates of Statoil ASA (35%), Abu Dhabi Future Energy Company PJSC (35%) and China Resources (Holdings) Company Limited (30%) (collectively 'the Developer').
- 3.4. The DOWL transmission assets connect to the DOWL wind farm at one offshore substation. The transmission assets that are transferring to the OFTO comprise:
- One offshore substation and associated electrical equipment;
 - Two subsea export cable of approximately 42km each;
 - Two onshore cable of approximately 47km each; and
 - One onshore substation at Necton.
- 3.5. The boundary points for the DOWL transmission system are defined below:
- Offshore: located at the 33kV low voltage terminals of the 132/33kV transformer; and
 - Onshore: located in the clamp on the busbar side of the isolators on Dudgeon onshore substation transformer circuit at Necton 400kV substation.
- 3.6. The spares included in the transmission assets that are transferring to the OFTO are:
- 2km of 1000mm² subsea cable;
 - 1.5km of 500mm² subsea cable;
 - 0.9km of 1600mm² onshore cable;
 - 0.2km of 1200mm² onshore cable;
 - 1km of 1400mm² onshore cable;
 - Various joints (transition, straight and cable repair joints);
 - Cable terminations; and
 - Other miscellaneous spares.

DOWL cost assessment process overview

- 3.7. We received the first set of cost information from the Developer in June 2016. Since then, we have worked with the Developer and our advisers to reach an assessment of the costs which ought to have been incurred in connection with the development and construction of the transmission assets. Set out below is an outline of the steps taken in the cost assessment process for the Project.
- September 2016: initial transfer value (£377.2) published.
 - April 2017: indicative transfer value (£310.9m) determined.
 - May 2017 – January 2018: Cost reporting updates by the Developer over the course of the construction of the Project; Ofgem's investigation of allocation methodology for shared costs; and, Ofgem's investigation of overall level of resource costs.
 - January 2018: Forensic accounting for FTV undertaken.

- January – April 2018: Final cost reporting updates and final supporting information received from the Developer.
- May 2018: Draft cost assessment report released to the Developer for comment and the preferred bidder for information.
- August 2018: Draft cost assessment report published alongside the section 8A consultation.
- November 2018: The Authority determines the final transfer value when it determines to grant the licence to the successful bidder. The final cost assessment report is published after licence grant.

Summary of ITV determination

- 3.8. The initial transfer value calculated in September 2016 was £377.2m. This value was based on information received from the Developer at an early stage in the construction and development of the Project. A number of the Developer's contracts were in the process of being finalised at the initial transfer value stage and these were considered in greater detail when the indicative transfer value was set.
- 3.9. The ITV of £310.9m was established in April 2017. Our estimate was supported by our forensic accounting advisors, Grant Thornton ("GT"), our internal analysis and the supporting information provided by the Developer.
- 3.10. At the ITV stage, there were a number of information transfer issues between Ofgem and the Developer, which we were unable to resolve in time for the commencement of the ITT. Accordingly, we agreed to further review the overall level of all costs at the FTV stage, along with the methodologies applied to apportion the costs of resources that are shared between transmission and generation assets.
- 3.11. As noted in paragraph 2.10, for the FTV stage we had agreed with the Developer to fully review all costs that had been included in the ITV determination. Below are the main points arising from our review and our treatment of costs in determining the FTV.

Foreign Exchange movements

- 3.12. The Developer stated that it did not hedge against foreign exchange movements, at either a Project or a group level, when it made its Final Investment Decision (FID). In May 2016 to November 2017, the Developer placed hedges for the remainder of the committed Project costs.
- 3.13. The Developer had submitted its CAT for both the initial and ITV stages based on the spot exchange rate at mid-2016³. Following discussions with Ofgem, it did a true-up of the actual exchange rates incurred. Since it had completed almost 80% of its expenditure prior to mid-2016, it had generally

³ This incorporated the post-Brexit referendum decline in the Sterling exchange rate

achieved a more favourable rate than the mid-2016 rate. This resulted in a £7.1m reduction against the costs submitted.

Ofgem's view

- 3.14. For the period between FID and May 2016, we understand that the Developer placed no hedges, and therefore used the actual spot rate to calculate actual incurred costs in Sterling. For the period from May 2016 to November 2017, we included the Developer's hedges in the calculation of costs in Sterling. This is based on confirmation from the Developer that they did not place any hedges, at either a Project or a group treasury level, during the period before this to cover foreign exchange exposures arising from this Project.
- 3.15. As such, we agree with the Developer identifying that an adjustment to the CAT to reduce the value of the transmission assets of £7.1m was required and we included this reduction in the FTV. The £7.1m reduction has been applied to the individual contracts where the savings were incurred.

Onshore substation delays

- 3.16. In its ITV cost submission, the Developer included circa £0.7m of extra costs associated with the delayed connection of 400kV equipment at Necton substation. The Developer considered the cause of this cost to be a 6-week delay in the cable trenching works conducted by National Grid Electricity Transmission (NGET). They state that the trenches were vital for enabling the connection of the high voltage (HV) and control cable to NGET's substation.
- 3.17. Although the Developer incurred extra cost as a result of NGET's delay, it was able to minimise the impact by reallocating resources to other tasks and then subsequently prioritising the critical energisation work on the transmission assets when NGET had completed their works. Importantly, this meant that the Developer met the dates that were required to meet an NGET outage date to complete the connection to the 400kV network, thereby avoiding more significant Project delays and substantially increased costs.

Ofgem's view

- 3.18. We reviewed the documentation and rationale provided by the Developer. We consider the delay in the cable trenching works that largely caused this cost increase to be out of the control of the Developer, and that the Developer had no contractual mechanism of recovering the cost of the delay. We recognise the Developer acted prudently to minimise the cost impact by prioritising energisation milestones and we have not removed this cost from the Developer's submission.

Land Cable

- 3.19. The Developer has stated the programme was delayed by additional works associated with areas affected by newt habitation. The newt trapping procedure at the start of the Project in the spring was impacted by cold weather, causing an 8-week delay. This pushed the overall land cable works into the autumn and winter seasons.
- 3.20. Moving the land cable work into the winter season threatened to have a knock-on impact on the HV testing regime. The Project also encountered difficulties with a landowner requiring on-site actions under an archaeological watch, which delayed the programme of reinstatement works.
- 3.21. In order to mitigate the knock-on impact of these delays, the Developer incurred £0.5m in costs associated with various contractor performance incentives and in the resolution of contractual disputes. The Developer considered these costs to be necessary in order to prevent more costly delays to other elements of the Project, for example, the HV testing programme and incurring additional crop loss payments to landowners.

Ofgem's view

- 3.22. We acknowledge that the overall cost of these works is below our benchmark expectations and are of a low materiality, so have been included in the FTV.
- 3.23. Further, the Developer was able to demonstrate that the incentive payments were used as a last case initiative to avoid significantly more costly delays to the transmission Project. Therefore, in this instance, we consider the incentive payments to be acceptable and have not removed any of these costs.

Process for determining the final assessed costs

Accuracy and Allocation

- 3.24. A forensic accounting investigation was undertaken by GT to ensure that the costs reported to us by the Developer were accurate, in that they represented the actual costs incurred by the Developer during the development and construction of the Project.
- 3.25. This investigation considered the main contracts in respect of the transmission assets for the following:
- The onshore substation, offshore substation and jacket and the supply of the electrical infrastructure;
 - The offshore cable supply;
 - The offshore cable installation;
 - The land cable supply and installation;
 - Onshore civil engineering works; and

- Costs associated with an offshore accommodation vessel.

3.26. We also checked that the costs were allocated to the correct asset category, in particular between generation and transmission assets. To assess whether the costs were allocated correctly we took into consideration the following:

- Metrics used when allocating costs between generation and transmission;
- The Developer's submissions using our cost reporting template;
- The findings of the forensic accounting investigation; and
- Cashflow payments related to the transmission assets.

Efficiency

3.27. After costs had been appropriately identified and allocated, we performed an assessment of whether these costs had been incurred economically and efficiently. This involved an internal benchmarking review and a review of information provided by the Developer.

Summary of assessment

3.28. Following completion of the development and construction of the transmission assets, the Developer submitted costs amounting to a proposed final transfer value of £305.5m. Our assessment of the economic and efficient costs which have been or ought to have been incurred, in connection with developing and constructing the transmission assets, has established a final transfer value of £297.9m. Table 2 below provides a breakdown of the cost categories for the Project at each stage and comments on the reasons for the main cost changes between the ITV and the FTV.

Table 2: Summary of cost categories

Category	Initial Transfer Value Sep-16 (£m)	Indicative Transfer Value Apr-17 (£m)	Final Transfer Value Apr-18 (£m)	Reasons for change between Indicative Transfer Value and Final Transfer Value
Capex	236.8	239.3	235.0	<p><u>Increases of:</u></p> <p>£5.6m of cost reallocated from Capex</p> <p>£3.2m due to additional hire of offshore personnel and installation vessels for offshore platform commissioning</p> <p>£3.3m due to additional export cable spares.</p> <p>£0.6 additional landscaping and reinstatement costs</p> <p><u>Offset by decreases of:</u></p> <p>£9.1m due to the firming up of estimated contract costs and VO's</p> <p>£3.7m due to the firming up of estimated project management hours worked</p> <p>£1.7m due to the correction of invoicing and cost reporting errors</p> <p>£0.4m due to the removal of non OFTO costs and correction of OFTO allocation</p> <p>£0.6m for insurance reductions</p> <p>£1.5m related to BMU's</p>
Development	81.2	41.9	33.3	<p><u>Decreases of:</u></p> <p>£5.6m of cost reallocated to Capex</p> <p>£1.6m due to the firming of estimated costs, and cost and allocation adjustments made during the cost assessment process</p> <p>£0.5m for WTG jacket study</p> <p>£0.9m reallocation to transaction costs</p>
Contingency	16.3	-	-	
IDC	42.9	28.5	27.5	<p><u>Decrease of:</u></p> <p>£1m due to the impact of the above changes on the Project's cash flow</p>
Transaction	0	1.2	2.1	<p><u>Increases of:</u></p> <p>£0.9m of cost reallocated from development to transaction costs</p>
Total	377.2	310.9	297.9	

The issues we have considered in setting the FTV are detailed below.

Capex

3.29. The Capex element of the final transfer value is £235.0m. Overall, the Capex has decreased by £4.3m from the ITV to the FTV. As discussed in more detail below, this decrease is largely due to the updating of costs estimated at the ITV stage offset by the reallocation of costs from development to Capex, delays to the Project, and the inclusion of costs associated with spare export cable.

3.30. GT undertook a forensic investigation of a selected number of Capex contracts. The main Capex contracts investigated were:

- Siemens Transmission Distribution Limited (STDL) - supply of the electrical system infrastructure for the wind farm;
- ABB AB (ABB) - supply of the submarine export cable;
- Visser & Smit Marine Contracting (VBMS) - installation and burial of the subsea cable;
- A2SEA - vessel time charter party costs (accommodation vessel during offshore hook-up and commissioning); and
- Carillion Utility Services (Carillion) - supply and installation of the onshore export cables.

Accuracy and allocation of Capex costs

3.31. For the majority of Capex costs incurred on the Project, it was clear whether they should be allocated to the transmission or the generation assets in their entirety. For costs shared between generation and transmission assets, the Developer allocated certain proportions to the transmission assets using cost allocation metrics, which differ depending on the nature of the work undertaken. Only those costs related to the transmission assets were allowed in the FTV.

3.32. In conducting our own analysis of these costs there were a number of items whose accuracy and allocation we have discussed with the Developer. These items are set out below.

Updated cost estimates

3.33. In its final cost submission, the Developer included a Capex decrease of £9.1m due to the updating of estimated contract and VO costs to reflect their actual final values. This included a £3.4m reduction in offshore substation costs, a £2.1m reduction in export cable costs, a £2.5m reduction in land cable costs, and a £0.4m reduction in onshore substation costs.

3.34. In addition, the Developer included a Capex decrease of £3.7m due to the updating the ITV stage estimate of hours worked on project management. This comprised of a £1.6m reduction in offshore substation costs, a £1.3m reduction in export cable costs, and a £0.8m reduction in onshore substation costs.

Corrections to submitted costs

3.35. As a result of GTs investigation, the Developer removed £1.7m from its final Capex cost submission. This is mainly attributable to a £1.5m reduction in onshore and offshore substation costs due to the removal of duplicate costs entered in both Capex and development categories, missing invoices, and updating contract costs to reflect their final value. This was offset by circa. £0.2m increase in export cable costs due to the correction of invoicing errors, as well as other minor cost variations.

3.36. During the cost assessment process, the Developer removed an additional £0.4m from its final cost submission. This was due to a correction of an OFTO allocation error in relation to common costs on the onshore and offshore substation, as well as the removal of some costs not associated with the transmission part of the Project.

Ofgem's view

3.37. We have reviewed the costs associated with the updating of previous estimates at the ITV stage and corrections to cost allocations. For the purpose of setting the Project's FTV, we are satisfied that the costs now have the correct treatment and this is reflected in the assessed FTV.

Re-allocation of shared Capex from Development

3.38. Since the ITV stage, we noted that the Developer's Capex to development ratio was above our expected 10%-15% range. These are largely costs which are shared between generation and transmission assets and include:

- Construction insurance costs;
- Offshore substation and export cable commissioning costs; and
- Offshore construction site and vessel costs.

3.39. The Developer carried out a review of these costs and proposed to reallocate some of these costs to Capex categories. The rationale for this was that they were more closely aligned to the assets in the Capex categories rather than a shared cost. In our cost assessment guidance, we recommend that costs associated with specific elements of a project should be allocated to that work package; for example, project management of the onshore substation work package should be in the onshore substation cost template.

Ofgem's view

3.40. For the purpose of informing our assessment of the Project's FTV, we have also further reviewed these costs and considered the additional information submitted by the Developer. We agree these are Capex costs. As a result, the Developer has reallocated £5.6m from Development to Capex.

Compliance with the Balancing Mechanism Unit

3.41. In its final cost submission, the Developer included circa £1.5m in costs related to generation metering and the transmission project's share of associated delay costs. The Developer stated that the changes to the metering equipment was required from the Low Carbon Contracts Company (LCCC) to comply with the LCCC conditions. The Developer subsequently reallocated the costs associated with the metering equipment (£1m) to generation assets, leaving only the costs of preliminary activities associated with the delays to the programme of works caused by the requirement to install additional metering. The costs of this delay have been allocated to the transmission assets based on the Developer's assertion that the delay impacted the transmission programme of works as well as the generation programme of works.

Ofgem's view

3.42. We consider that the root cause of this delay is works required for the generation assets, and therefore the cost of the delay should be borne by the generation element of the windfarm project. In the course of our review, the Developer revisited their costs and reduced the submitted value by £1m. We have removed the remaining circa £0.5m from the Developer's submission, removing £1.5m in total from this portion of the Developer's submission.

Efficiency of Capex costs

3.43. The FTV has a Capex decrease of £4.3m, compared with the Capex value at ITV. This is due to decreases, outlined below, being offset by the reallocation of costs from development to Capex, delays to the Project, and the inclusion of costs associated with the spare export cable.

3.44. The Developer has provided additional information to support these costs. For the purposes of informing our assessment of the efficiency of the Project's Capex costs, we have reviewed these costs along with the additional information submitted by the Developer. Our views on whether these increases have been incurred in an economic and efficient manner are discussed below.

Offshore substation commissioning costs

Offshore personnel accommodation, transfer and marine installation vessels

3.45. In its final cost submission, the Developer included an increase in accommodation, personal transfer vessels and marine installation costs of circa £4.2m since the ITV. This was subsequently reduced to £3.2m due to the Developer recalculating the OFTO allocation of these costs. The Developer stated that the costs have increased due to the need to accommodate and transport personnel for seven additional months more than estimated at the ITV stage. The reasons cited for this extension of the Project timeline were:

- Delays to the hook-up and commissioning works, caused partly by weather;
- Part of the export cable had to be replaced at the transition joint bay due to malicious damage to the cable;
- Offshore substation access limitations; and
- Late delivery of the offshore substation crane platform and its pedestal.

3.46. As the issues described above caused delays in the commissioning programme, the work had to take place later than planned in the year, over the winter period. To help mitigate this, the Developer extended the period for which the accommodation vessel was in use. This increased the accommodation vessel costs relative to the estimated value at the ITV stage.

3.47. This extension to this contract was only a temporary solution as the accommodation vessel was used for the turbine installation and had to leave the Offshore Substation Platform (OSP) site before the offshore commissioning was complete.

3.48. To continue the offshore commissioning and hook-up process, the Developer then started using a floatel together with personnel transfer vessels (PTV) to get technicians to and from the offshore substation. This type of craft is dependent on weather conditions to be able to operate safely. As the Project was now into the winter months, there was an increase in aborted journeys as access was not possible to the offshore substation due to sea conditions. This in turn increased the costs associated with this part of the commissioning.

Ofgem's view

3.49. We recognise that the majority of the delays were caused by weather, and so were out of the control of the Developer. We consider that the Developer acted prudently to minimise the cost and time impact of these delays on the offshore transmission works program. The additional costs to meet the transmission commissioning milestones as a result of these delays has therefore been included in the FTV.

Offshore substation crane

3.50. The originally sourced supplier of the offshore crane platform and its pedestal could not meet EU safety requirements, therefore the contractor (STDL) needed to switch suppliers. The Developer made a number of amendments to the STDL contracts in order to minimise impact on the programme of works. For example, it allowed STDL to delay the crane installation date so long as STDL picked up the additional installation cost. The Developer also introduced a modest financial incentive to ensure that the crane would be available when needed for the program of offshore works.

Ofgem's view

3.51. We recognise the requirement to switch crane supplier was largely out of the Developer's control, and that the Developer had no mechanism to pass on additional costs to sub-contractors without jeopardising the programme of works. We consider that it acted prudently to minimize the cost and time impact of this switch on the offshore transmission works program. We also acknowledge that the incremental work incurred is of a low materiality and that the OSP is below our benchmark expectations, therefore we have included these costs in the FTV.

Export Cable

3.52. The Developer's final submission had included a short length of spare subsea cable for transfer to the OFTO. This length and dimension of cable was not thought to be sufficient to make a repair in the event of a cable failure. Therefore, the Developer proposed to procure additional lengths of spare cable and transfer these to the OFTO.

3.53. The Developer's technical team provided an analysis of the length of spare cable required for a single subsea cable fault. They recommended that a minimum of 2km of spare cable is required for a worst case scenario repair, in light of the length of the horizontal direction drilling section on the landfall 1000mm² cable route. A further 1km of 500mm² subsea cable was proposed to be included as spare for the cable from the OSP to the intertidal joint route.

Ofgem's views

3.54. Our view is that typically the length of spare cable to carry out a subsea cable fault repair is no more than 1km. However, taking Project specific conditions into account, we agree with the Developer's technical team that a length greater than 1km of spare cable is required for the Project on the landfall 1000mm² cable section. For the 500mm² section, 1km was agreed to be sufficient to carry out a repair.

3.55. We have therefore included the cost of the additional spare cables (the minimum recommended length for a worst-case repair) and the associated spares, including other miscellaneous electrical spares. This has resulted in an additional £3.3m being included in the Developer's final submission.

Onshore substation

Landscaping and reinstatement works

3.56. In its final cost submission, the Developer included a provisional £1.25m in landscaping and reinstatement works. This is more than double the cost listed in the contract as a provisional sum. The Developer has clarified that at the time of ITT, the contractor was unable to provide a lump sum offer due to the lack of relevant data, and hence a provisional sum was placed. The Developer required the contractor to maintain a documented record of

works to present the actual costs. The contractor was unable to evidence costs at the level that the Developer required. Subsequently, the contractor raised a number of variation order requests (VOR) to cover the additional works being included in the contractor's scope of works. The Developer settled the contract and additional works for £0.6m, removing a number of VORs as well as commercial settlement of the outstanding VORs and transferring all risk, including weather delay, to the contractor.

Ofgem's view

3.57. We reviewed the documentation and rationale provided by the Developer. We consider the increased cost to be rationalised by the increase in scope of works and settlement of numerous VORs. Accordingly, we have included this additional cost in the Developer's final submission.

Insurance reductions

3.58. The Developer's final submission included a reduction of circa. £0.6m on insurance costs. The Developer stated that it had included an estimate of insurance claims at the ITV stage, and this was corrected for the FTV submission.

Ofgem's views

3.59. We have amended the Developer's allowed costs to include the correct level of insurance deductibles in the FTV and removed the additional £0.6m cost.

Development costs

3.60. The assessed development expenditure for the Project assets is £33.3m. This represents a reduction of £8.5m relative to the costs that were included in the ITV. As discussed in more detail below, the decrease is largely due to the reallocation of costs from development to Capex.

3.61. For the purpose of informing our cost assessment, we have reviewed the cost information provided by the Developer. We also asked our advisors to investigate the Project's resource costs, which was the main component of the submitted development costs.

Accuracy and allocation of development costs

3.62. As discussed in paragraphs 2.21 to 2.23, following a further review of the information submitted by the Developer, we have reallocated £5.6m of construction costs from development to Capex.

Estimated costs, cost and allocation adjustments during the cost assessment process

3.63. At the ITV stage, the Developer included their best estimate for the development costs to completion. As the Project progressed these costs

were then actually incurred, but at values less than estimated at the ITV. This caused cost reductions to the Developer final submission.

- 3.64. During their review of the development costs, the Developer identified costs not related to the transmission assets; corrected errors identified by GT and re-allocated costs to generation. In total, this has reduced the cost in development by £1.6m from the ITV submission.

Ofgem's view

- 3.65. For the purpose of informing our assessment of the Project's FTV, we have also further reviewed these costs and considered the additional information submitted by the Developer. We therefore agree with the treatment of these costs and as a result, we have included the £1.6m reduction in the FTV.

Re-allocation of shared development costs to generation assets

- 3.66. Shared development costs are costs that are not directly attributable to the transmission or generation assets. These costs are shared according to a methodology that is reviewed by Ofgem. In its final cost submission, the Developer allocated circa 58% of shared development costs for turbine foundation development to transmission assets. We have reviewed the Developer's allocation of these costs to the transmission assets and we identified that they should be borne by the generation project. The Developer agreed that these costs should be allocated to the generation assets.

Ofgem's view

- 3.67. We consider appropriate that none of these costs should be assigned to the transmission assets. As a result, £0.5m of shared development costs have been re-allocated to generation assets and excluded from the Project's FTV.

Efficiency of Development Costs

Development costs at ITV

- 3.68. Development costs submitted at the ITV stage were £41.8m. When setting the Project's ITV, we were concerned by the level of these costs, 17.5% as a ratio to Capex, as they appeared well above the level we have observed on other projects (as discussed in paragraph 2.21).

Ofgem's views

- 3.69. We have conducted further analysis and further reviewed the level of Development costs submitted for the FTV. Following the reallocation of costs to Capex, we are satisfied with the level of Development costs submitted by the Developer, 14.2% as a ratio to Capex, which is broadly in line with what we observed on other comparable projects.

Contingency

3.70. The assessed costs do not contain a separate contingency value. £16.3m of the contingency that existed at the initial transfer value stage has either been used or not realised and therefore it has been removed by the Developer from its final cost submission.

Interest during construction

3.71. In its final submission, the Developer included £28.1m of IDC, a reduction of £0.4m from the ITV. This is based on the Developer's calculation of the IDC to completion of the assets over a period from November 2010 to December 2016. The change since ITV is mainly due to the reduction in Capex and Development costs since the ITV, altering the cash flow.

3.72. The decisions that we made with respect to the Project's Capex costs for the FTV have resulted in a £1.0m reduction in IDC to the Developer's submission. The total IDC calculated for the Project assets is £27.5m.

Transaction costs

3.73. The ITV included an estimate of £1.3m for transaction costs. The Developer has subsequently submitted a firm estimate of the costs it expects to incur to asset transfer as being £2.1m.

Accuracy and allocation of transaction costs

3.74. The Developer provided information regarding both internal and external costs. For their internal costs, they provided information on the personnel who were involved and their day rate relating to the work undertaken and time spent on the tender process as opposed to the construction of the Project or generation activities. The external costs related to professional services in respect of the tender, eg legal and technical. We have concluded that the costs provided by the Developer were allocated appropriately.

3.75. In their final submission, the Developer included the additional £0.9m of costs associated with the transaction costs in the Development category. The Developer identified these costs and subsequently we have reallocated these costs to the transaction category.

Efficiency of transaction costs

3.76. Transaction costs increased by £0.9m since the ITV. The Developer explained the increase is largely due to the transaction budget being revised

up to account for more resources being needed to reach asset transfer and costs being updated from estimated to actuals.

Ofgem's view

3.77. Transaction costs can only be provided to us by developers to a reasonable degree of accuracy towards the end of the tender process. We have considered the types of resource costs incurred in relation to this Project's tender process and the level of transaction costs incurred appear reasonable in comparison with other projects.

Confirmations in relation to tax benefits

3.78. The ITV was calculated on the basis that the purchaser would obtain the full benefit of all available capital allowances. If this were not the case for the FTV, we would reduce the assessment of costs for an amount that reflects the value of the tax benefit retained by the Developer. The Developer has confirmed that the purchaser will be able to obtain the full benefit of all available capital allowances and therefore FTV will be the same as the assessment of costs.

4. Conclusion

- 4.1. In conclusion, in accordance with Regulation 4 of the Tender Regulations, the Authority has assessed the economic and efficient costs which ought to have been incurred in connection with developing and constructing the Project assets as £297,927,189.

Appendices

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4	Grant Thornton ex-ante review	Separate PDF
5	Grant Thornton ex-post review	Separate PDF

Appendix 1 - Glossary

A

Authority

The Gas and Electricity Markets Authority

C

Capex

Capital Expenditure

D

Developer

Dudgeon Offshore Wind Limited (DOWL)

F

FTV

Final Transfer Value

G

GT

Grant Thornton

I

IDC

Interest During Construction

ITT

Invitation To Tender

ITV

Indicative Transfer Value

M

MW

Megawatt

MVA

Megavolt-Ampere

O

OFTO

Offshore Transmission Owner

P

PIM

Preliminary Information Memorandum detailing the Projects details released to potential bidders through the tender portal and on the Ofgem website.

Project

The development and construction of the DOWL offshore transmission assets