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Decision

Offshore Transmission: Cost Assessment for the Hornsea Project Two Offshore Windfarm Transmission Assets

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Contact: Andrew Martin, Offshore Cost Assessment Manager

Team: Offshore Cost Assessment

Tel: 0141 354 5450

Email: Andrew.Martin@ofgem.gov.uk

This document sets out the cost assessment for the Hornsea Project Two Offshore Windfarm Limited (**HOW02** or the **Developer**) offshore transmission assets and the key principles that we have applied in our cost assessment process for the sixth tender round. The Authority has granted an offshore transmission licence to Diamond Transmission Partners Hornsea Two Limited a consortium of HICL Infrastructure PLC and Mitsubishi Corporation.

Diamond Transmission Partners Hornsea Two Limited has incorporated the assessed transfer value as set out in this report into its 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.

Contents

Executive summary

This report sets out the cost assessment work that Ofgem has undertaken from the Invitation to Tender (**ITT**) stage of the Tender Process in relation to the Hornsea Project Two Offshore Windfarm Transmission Assets (the **Transmission Assets**). This work has been used by the Authority[1] to derive the Assessed Costs and will be used to set the Final Transfer Value (**FTV**) for the Transmission Assets. Unless otherwise stated or defined in-text, capitalised terms in this report are defined in the Glossary at Appendix 1.

The cost assessment process involves the below three key stages:

- The Initial Transfer Value (**InTV**) for the Transmission Assets was published in the preliminary information memorandum on 22 July 2021[2] and was set at £1212.5m based on information provided to Ofgem by Breesea Ltd, Soundmark Wind Ltd and Sonningmay Wind Ltd (for the purposes of this report, together, the **Developer**);

- The Developer submitted a revised cost assessment template (**CAT**) on 22 June 2021. This CAT was used both for the Ofgem analysis of submitted costs and the forensic analysis by our forensic independent accounting consultants Grant Thornton (**GT**). Ofgem reviewed and analysed the cost information and calculated the Indicative Transfer Value (**ITV**) as £1189.5m. This updated value was communicated to the Developer on 28 January 2022 and the formal ITV letter issued on 25 February 2022; and

- The Developer submitted a further CAT dated 15 August 2022 with a value of £1,191.8m (the **FTV CAT**). Ofgem reviewed this further cost information to calculate the final assessment of costs as £1141.2m (the **Assessed Costs**). This is a reduction of £50.5m from the submitted FTV CAT. It is intended that the incoming Offshore Transmission Owner (**OFTO**) will be able to obtain the full benefit of all

[1] References to the "Authority", "Ofgem", "we" and "our" are used interchangeably in this document. The Authority refers to GEMA, the Gas and Electricity Markets Authority. The Office of Gas and Electricity Markets (Ofgem) supports GEMA in its day-to-day work.
[2] Offshore Transmission: TR8 Generic Preliminary Information Memorandum | Ofgem

available capital allowances. Therefore, the final Assessed Costs of £1141.2m is the amount that will be used to set the Final Transfer Value (**FTV**) at licence grant.

The key components of the InTV, the ITV and the FTV, together with the Developer's submission (the **FTV CAT**) are set out in Table 1 below.

Table 1: Summary of costs components*

Category	InTV	ITV	Developer submitted cost for FTV review (FTV CAT)	FTV
	Jul 21 (£m)	Jan 22 (£m)	Aug 22 (£m)	Dec 2022 (£m)
Capex	[redacted]	[redacted]	[redacted]	[redacted]
Other costs**	[redacted]	[redacted]	[redacted]	[redacted]
Contingency	[redacted]	[redacted]	[redacted]	[redacted]
IDC	[redacted]	[redacted]	[redacted]	[redacted]
Transaction	[redacted]	[redacted]	[redacted]	[redacted]
Total	1,212.5	1,189.5	1,191.8	1,141.2

these figures may not add to totals due to rounding

***Other costs includes development costs, as well as other common costs.*

Sections 3.28 – 3.92 of this report set out details of the Assessed Costs and any reductions made to the values submitted in the FTV CAT and against the ITV. The main increases/decreases in the Assessed Costs, against the ITV figures, are as follows:

a) the capital expenditure (**Capex**) component of the FTV has decreased by [redacted];
b) the other costs have decreased by [redacted];
c) the ITV contingency amount of [redacted] was removed in its entirety;
d) the Interest During Construction (**IDC**) amount decreased by [redacted]; and
e) the transaction costs have remained the same.

Below we summarise the main increases and decreases to each cost category as shown in Table 1 and detailed in sections 3.28 – 3.92. Please note that the figures set out in this section have been rounded.

Capital expenditure (Capex)

The Capex of the FTV has decreased by £6.0m since ITV. The main changes are:

a) a net decrease in costs submitted by the Developer due to finalisation of provisional sums,
b) other minor adjustments.

Other costs

The development costs at FTV have decreased by £3.9m since ITV. The changes are mainly due to:

a) a decrease in costs submitted by the Developer;
b) other minor adjustments.

Contingency

We allowed £28.5m of contingency in the ITV. This has now been removed in its entirety from the FTV as it has been released or realised at this stage of the transaction.

Interest During Construction (IDC)

The IDC amount has decreased by £9.9m since the ITV. This overall decrease in IDC is the result of negative adjustments (due to costs not being included in the FTV), changes to the timing of when assets are considered available for use and cost changes submitted by the Developer at FTV.

Transaction costs

Transaction costs have been assessed at £3.2m. The transaction costs are composed of both internal and external resource costs arising from the Developer's participation in the Tender Process. These have not changed since the ITV.

Assessed Costs and FTV for the Transmission Assets

In accordance with Regulation 4(2)(b) of the Tender Regulations, the Assessed Costs of the Transmission Assets are £1,141,241,031 The Assessed Costs will be used as the FTV in accordance with Regulation 4(8) of the Tender Regulations.

1. Introduction

Context and related publications

1.1 In 2009, the Government introduced the regulatory regime for offshore electricity transmission to connect significant amounts of renewable offshore generation to the onshore electricity network (the OFTO regime).

1.2 Offshore Transmission Owners (OFTOs) are appointed through a competitive tender process (the Tender Process). OFTOs are granted an offshore transmission licence (OFTO Licence) with a fixed revenue stream for a specified time.

1.3 From the outset, the OFTO regime has encouraged innovation and attracted new sources of technical expertise and finance, whilst ensuring that grid connections are delivered efficiently and effectively.

1.4 The Electricity (Competitive Tenders for Offshore Transmission Licences) Regulations 2015 (the Tender Regulations) provide the legal framework for the Tender Process. The Tender Regulations require 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 qualifying project.

1.5 Where the Authority has determined to grant an OFTO Licence for a particular project, the assessment of costs must 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 granted OFTO Licence.

1.6 This report should be read in conjunction with the "Offshore Transmission: Guidance for Cost Assessment" (the Cost Assessment Guidance)[3].

[3] https://www.ofgem.gov.uk/sites/default/files/2022-03/Offshore Transmission Guidance for Cost Assessment 2022.pdf

Associated publications

- The Electricity (Competitive Tenders for Offshore Transmission Licences) Regulations 2015 Link
- Tender Process Guidance Document for TR8 Link
- Offshore Transmission: Guidance for Cost Assessment Link

2. The cost assessment process

Section summary

The Tender Regulations require 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 section sets out the process that Ofgem followed in carrying out the cost assessment for the Hornsea Project Two offshore transmission project (the **Project**).

Overview of the cost assessment process

2.1 The Tender Regulations provide the legal framework for the process we follow for granting 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:

a) 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

b) 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, the reasoning for such principles, and the overall process we have adopted can be found in the Cost Assessment Guidance.

2.4 We have applied these principles in our cost assessment process for the Project and, where appropriate, have taken into account project-specific circumstances.

2.5 The remainder of this section describes some of the key elements of the cost assessment process. Section 3 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 assessment templates (CATs), 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, invoices and receipts.

2.7 We work closely with the Developer to gather information relating to the following cost categories in the development and construction of the relevant Transmission Assets:

a) capital expenditures;
b) development costs;
c) contingency provisions;
d) interest during construction; and
e) transaction costs.

Process stages for cost assessment

2.8 The cost assessment process involves the key stages described below.

Initial Transfer Value (InTV)

2.9 The InTV value is based on cost submissions by the developer for the relevant project. This value is made available to bidders at the Pre-Qualification or the Enhanced pre-qualification (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.

Indicative Transfer Value (ITV)

2.10 We provide the estimate of costs for the offshore transmission assets (the ITV) for the commencement of the Invitation to Tender (ITT) stage of the tender process. This value is used as an assumption underlying the tender revenue stream (TRS) bids submitted by bidders at the ITT stage. The ITV letter we send to the developer at this stage 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 As soon as reasonably practicable after the ITV has been completed, we are satisfied that the assets are available for use, and we have obtained any further information that we require, we commence the exercise to determine the Assessed Costs.

2.12 Following this assessment exercise, Ofgem sends the developer a draft cost assessment report (in the form of this report) setting out the amount of the Assessed Costs. This gives the developer the opportunity to correct factual errors and propose the redaction of commercially sensitive information.

2.13 The draft cost assessment report is also sent to the preferred bidder, to allow it to incorporate the Assessed Costs into its 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 OFTO 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 the OFTO Licence to the successful bidder.

Final Transfer Value

2.15 If a developer retains some of the benefit of the available capital allowances, we reduce the relevant amount from the Assessed Costs before we derive the FTV. The FTV is confirmed once the Authority has determined to grant an OFTO Licence to the successful bidder. After licence grant, the final cost assessment report and supporting appendices are published on the Ofgem website.

2.16 Ofgem normally finalises the assessment of costs prior to commencement of the Section 8A Consultation. The FTV is taken into account when the TRS for the full licence period is published.

Cost assessment analysis

2.17 Throughout the cost assessment process, Ofgem applies two key tests to the cost information submitted by the developer. These are:

Test 1 - Assessing if a developer's cost submissions are accurate and allocated appropriately

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 contracts and/or contracts that 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:

a) the actual costs incurred (e.g., in respect of exchange rates on foreign currency payments); and/or
b) 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 costs are economic and efficient

2.22 Under test two we assess whether the costs reported to date by the relevant developer have been economic and efficient.

2.23 We undertake benchmarking analysis using cost reporting data from other projects. This is used to identify cost outliers reported by offshore developers. Where cost outliers are identified on a project, these are further reviewed and Ofgem may use external consultants to investigate the reasons for this and evaluate whether the costs are economic and efficient.

2.24 We also consider the procurement processes adopted by the developer to obtain economic and efficient transmission asset costs.

2.25 When undertaking the assessment of costs to derive the FTV, we review updated information provided by the developer, as well as any cost areas flagged for further investigation at the ITV stage. Where costs have increased since the ITV, we ask the

developer to provide supporting documentation to justify these increases. We may undertake a technical investigation that focuses on, for example, a particular cost component, such as an increase of costs in a contract or multiple increases across several contracts.

3. Hornsea Project Two Offshore Windfarm cost assessment

Section summary

This section sets out a short description of the wind farm and the Transmission Assets, based on information provided by the Developer. It then summarises how we have undertaken our cost assessment for the Transmission Assets, from the InTV to the FTV and provides a breakdown of the key cost categories that we have considered and highlights the decisions that we have made.

Transmission Assets[4]

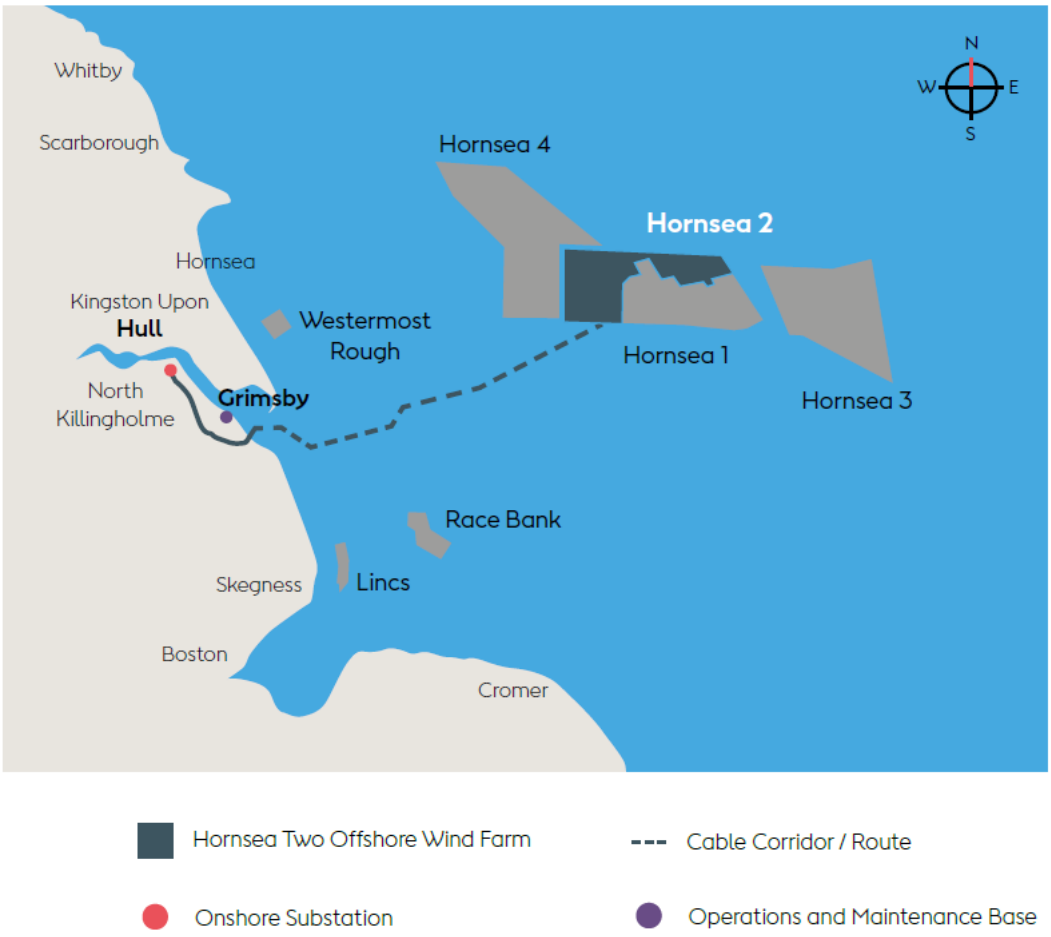
3.1 The Hornsea Project Two Offshore Wind Farm is located approximately 89 km (at the nearest point) east of the Humber Estuary, East Yorkshire in England.

3.2 The wind farm has a capacity of over 1.3GW and comprises 165 Siemens Gamesa 8.4 MW turbines spanning an offshore area of 462Km2. The windfarm is subdivided into three zones, North East, South West and North West, all terminating to a single triple size Offshore Substation Platform (**OSP**), linking to a single Reactive Compensation Station (**RCS**) located within the export cable route. The OSP has interlink facilities at transmission 220 kV GIS and generation 66 kV GIS.

3.3 The Transmission Assets include the OSP, the RCS, three offshore export cable circuits with an average route length of approximately 128km, three onshore transition joints and three onshore export cable circuits with a route length of approximately 38km, connecting to an Onshore Substation (**ONSS**) and connected via two 400 kV cables to two double bus bar 400 kV GIS bays within the existing National Grid Electricity Transmission (**NGET**) Killingholme onshore substation. Within the ONSS there is an additional complete 220 kV GIS bay to enable future connection of systems to the Hornsea 2 transmission assets.

[4] The technical information contained in this section of the Report is based on information provided by the Developer and has not been independently verified by Ofgem.

Figure 1: Location of the Hornsea Project Two Offshore Wind Farm and Transmission Assets



3.4 Hornsea Project Two Offshore Wind Farm is owned by Breesea Limited, Soundmark Wind Limited and Sonningmay Wind Limited.

3.5 The Transmission Assets that are transferring to the OFTO comprise:

a) a single OSP, mounted on a jacket foundation;
a) three approximately 62 km long 220 kV three-core marine far shore offshore export cables;
b) an RCS, mounted on a jacket foundation;
c) three approximately 66 km long 220 kV three-core marine near shore offshore export cables;

d) three sets of approximately 38 km long 220 kV onshore, underground cables;
e) a new ONSS at Killingholme and;
f) two runs approximately 282 m long of 400 kV three single-core cables connecting the new ONSS to two new 400 kV NGET unlicensed bays at the existing NGET substation at Killingholme.

3.6 The onshore and offshore boundary points indicated on the TR8 Information Memorandum are as follows:

a) offshore (North West, South West and North East circuit) – located at the 66kV MV switchgear incomer termination connecting from the grid transformers on the OSP; and
b) onshore – located at the first gas barrier zones on both the main and reserve 400kV bus bar contained within the existing NGET Killingholme 400 kV substation.

3.7 The spares included in the Transmission Assets that are transferring to the OFTO are:

a) [redacted] subsea cable;
b) [redacted] subsea cable;
c) [redacted] subsea cable;
d) various joints (transition, straight and cable repair joints);
e) cable terminations; and
f) other miscellaneous spares.

Overview of cost assessment process for the Transmission Assets

3.8 We received the first cost information from the Developer in June 2021. 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. We set out below an outline of the steps taken, and to be taken, in the cost assessment process for the Project.

a) **July 2021**: InTV (£1,212.5m) published.
b) **Jun 2021**: Developer submitted the ITV CAT (the **ITV CAT**)
c) **July-November 2021:** forensic accounting and ITV investigation undertaken.
d) **January 2022**: ITV figure (£1,189.5m) determined and communicated to Developer.
e) **September 2021:** ITT process (bidding and evaluation).
f) **February 2022**: formal ITV letter issued.
g) **August 2022:** Developer submitted a revised CAT (the **FTV CAT**).
h) **August – December 2022**: final cost reporting updates and supporting information received for the FTV from the Developer.
i) **March 2023:** this draft cost assessment report released to the Developer for comment and the Preferred Bidder for information.
j) **May 2023:** draft cost assessment report published alongside the Section 8A Consultation.
k) **July 2023:** The Authority to determine the FTV when granting the licence to the successful bidder. The final cost assessment report will be published after licence grant.

Summary of the InTV and ITV determination

3.9 The InTV of £1,212.5m was published in July 2021. This value was based on information received from the Developer at an early stage in the construction and development of the Project. This value was included in the EPQ document and Preliminary Information Memorandum (**PIM**) for the commencement of the EPQ stage of the Project.

3.10 The ITV of £1,189.5m was established in January 2022, with the formal ITV letter issued to the Developer in February 2022. Our estimate was supported by our forensic accounting advisors, Grant Thornton (**GT**), our internal analysis, and the supporting information provided by the Developer.

3.11 We conducted an in-depth cost analysis at ITV, however some costs could not be fully investigated and were highlighted as needing further attention at the FTV stage. This included, but was not limited to, costs related to the offshore substation generator contribution, onshore substation lease premium amount and costs associated with land retained by the Developer, resources costs, spares for onshore and offshore cable, delays associated with subsea cable installation and review of the period and duration in which IDC is applicable.

3.12 Below are the main points arising from our review, the forensic review, and a description of the adjustments applied at ITV. Full details are set out in the ITV letter issued by Ofgem on 25 February 2022 (**the ITV Letter**).

Ofgem review – Individual cost categories

3.13 We undertook a detailed review of each cost category. Below we summarise the adjustments made to each category.

Offshore Substation Platforms (OSPs)

3.14 At ITV we reviewed the costs for the design, supply, installation, commissioning and project management of the OSP and increased this category by £10.2m overall. This figure was made up of the following adjustments:

a) a reduction for additional costs associated with staff employed by the Developer to meet the sailaway date;

b) a reduction for the removal of a damaged pile gripper;
c) a reduction for quality testing;
d) a reduction for auxiliary transformers manufactured incorrectly;
e) a positive adjustment for cost changes identified by the Developer; and
f) a positive adjustment for the reallocation of OSP costs incorrectly included in the 'other' cost category.

Submarine cable supply and installation

3.15 We adjusted the costs submitted for the design, fabrication, installation and project management of the submarine cables which resulted in an overall reduction of [redacted]. This consisted of the following reductions:

a) a reduction for the removal of spare submarine cables;
b) a reduction for adjustments identified by the Developer; and
c) a reduction related to costs [redacted]

Onshore cables

3.16 We reviewed the costs submitted for the design, fabrication, installation and project management of the onshore cables and reduced costs by [redacted] This adjustment was a consequence of inadequate justification for changing the installation method [redacted]

Onshore substation

3.17 We reduced the costs submitted for the design, fabrication, installation and project management of the onshore substation cables by £1.1m. This adjustment included:
a) a reduction for cost identified by the Developer;
b) a reduction for engineering costs [redacted];
c) a reduction for costs associated with interface management issues;
d) a reduction for costs associated with generator related equipment in the substation;
e) a positive adjustment related to the lease for the onshore substation land; and
f) a positive adjustment for reallocation of costs related to the ONSS that were incorrectly included into the 'other' cost category.

Reactive and harmonic equipment

3.18 The Developer submitted costs for the Project's reactive and harmonic filtering equipment. We have reviewed those costs and applied an overall positive adjustment of £1.5m, made up of the following components:

a) a reduction relating to additional costs for staff employed by the Developer to meet the sailaway date;
b) an increase for costs identified by the Developer.

Connection works

3.19 The Developer submitted costs for the connection works undertaken to connect to the 400kV transmission system. We have not applied any adjustments to this category.

Other costs

3.20 We have reviewed the submitted costs which included end-to-end project management and development costs. We have made an overall reduction of £18.6m to this cost category, made up of the following components:

a) a reduction for re-allocation of offshore substation costs;
b) a reduction for re-allocation of onshore substation costs; and
c) a reduction for the cost of freehold land for the substation retained by the Developer.

Transaction costs

3.21 At ITV stage these costs were not fully defined. We did not apply any adjustment at this stage and these costs were fully reviewed at the FTV stage. We included £3.2m of transaction costs in the ITV.

Interest During Construction (IDC)

3.22 We made an overall reduction of £4.6m to this cost category, based on:

a) adjustment related to the duration of the development phase of the Project;
b) a reduction proportionate to the reduction in capex due to costs not being included in the ITV; and
c) a reduction due to change in submitted IDC when the Developer submitted CAT RevA.

Forensic Review

3.23 When establishing the ITV, we took into account the results of the forensic investigation conducted by our independent consultant GT. They assessed the level of contingency, as a proportion of total costs, and found it to be reasonable. GT found that most other costs in the CAT were appropriately stated. For those costs that were not appropriately stated, GT have proposed adjustments. They highlighted the following items for further review by Ofgem:

a) to request supporting information for estimated transaction costs;
b) to request updates to the contingency amounts included by the Developer;
c) to review the allocation rates used by the Developer where costs are split between the Hornsea Project Two Offshore Wind Farm generation assets (the **Generation Assets**) and the Transmission Assets;
d) to review resource time and rates relating to internal staff spend;
e) to review Covid-related costs and whether they should be included into the cost assessment;
f) to review costs included in the "Remaining Budget" to determine if they should be included into the cost assessment; and
g) to review the model proposed by the Developer for the calculation of costs related to foreign currency to verify it aligns with Ofgem's policy on Forex.

Process for determining the Assessed Costs

Accuracy and Allocation

3.24 The Project was constructed using a multi-contract strategy. An ex-post 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 following main contracts in respect of the Transmission Assets:

a) onshore substation and onshore cable contract;
b) offshore substation contract; and
c) offshore cable contract.

Efficiency

3.26 After costs had been appropriately identified and allocated, we performed an assessment of whether these costs were economic and efficient, which involved an internal benchmarking review as well as a wider review of costs incurred in each cost category.

Summary of Assessment

3.27 Following completion of the development and construction of the Transmission Assets, the Developer submitted costs in the August 2022 FTV CAT amounting to a value of £1,191.8m. 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 an Assessed Costs value of £1,141.2m. Table 2 below provides a breakdown of the cost categories for the Project at each stage and the changes between the ITV and the FTV stages, and paragraphs 3.28 – 3.92 set out the issues considered as part of the FTV stage.

Table 2: Summary of cost categories*

Category	InTV Oct 20 (£m)	ITV July 21(£m)	FTV Dec 21 (£m)	FTV-ITV	Reasons for change between ITV and FTV
Capex	983.20	1000.2	994.2	-6.0	Increase of: [redacted] for new Cable costs [redacted] for previous ITV disallowances that were resubmitted at FTV [redacted] for new Design, Construction, Civils, Consents, leasing, and resource costs. [redacted] for minor contracts and reallocated costs [redacted] for Vessel related costs [redacted] for Electrical, SCADA & Communication costs Decrease of: [redacted] for the finalisation of costs submitted at the ITV [redacted] for Removal of spare cable [redacted] for DEVEX Remaining budget items to reflect costs incurred. [redacted] for costs added that relate to generation assets. [redacted] of Incentive & Acceleration costs [redacted] Cost for additional manpower costs for delay recovery. [redacted] for Substation lease reduction [redacted] for Interface Management issues [redacted] for Vessel break down costs [redacted] for Additional Manpower [redacted] for Costs resulting from contractor error [redacted] for 2nd instance of Harmonic Filter Resistors [redacted] for [redacted]. [redacted] for [redacted] [redacted] for Standby Costs [redacted] for Removal of back feed and delay charges [redacted] for Substation certifications. [redacted] for costs included in CAT in error and incorrect values [redacted] for additional costs incurred due to a delayed/late cancellation
**Other costs ** **	65.7	46.4	42.5	-3.9	Decrease of: [redacted] finalisation of costs [redacted] for Remaining budget items to reflect costs incurred. [redacted] for CAR insurance extension

Contingency	44.6	28.5	0	-28.5	Decrease of: [redacted] due to the release of remaining contingency funds
IDC	115.7	111.2	101.3	-9.9	Increase of: [redacted] to reflect FTV submitted costs [redacted] for the reverse out % of assets in service calculation. Decrease of: [redacted] for Change in % applied to assets in service and IDC cease date [redacted] IDC suspension when assets not under construction [redacted] for Pro-rata reduction following costs not being included in FTV.
Transaction	3.3	3.2	3.2	0	No cost movements from submitted costs in this section from ITV.
Total	1,212.5	1,189.5	1,141.2	50.5	

these figures may not add to totals due to rounding.

***Other costs includes development costs, as well as other common costs.*

Capital expenditure

3.28 The Capex element of the Assessed Costs is [redacted]. Overall, the Capex has decreased by [redacted] from the ITV to the FTV stage as set out in more detail in Table 2 above.

Accuracy and allocation of Capex costs

3.29 For the majority of Capex costs incurred on the Project, it was clear whether those costs should be allocated to the Transmission Assets or the Generation Assets in their entirety. For costs shared between Generation Assets and Transmission Assets, the Developer allocated a proportion of costs to the Transmission Assets using the Capex ratio between Generation Assets and Transmission Assets.

Efficiency of Capex costs

3.30 Most cost categories showed a decrease in costs. However, there was an overall increase which was the result of cost updates from the Developer and adjustments applied following our cost review, which are detailed below.

Crosscutting Issues

Remaining Budget Items

3.31 The Developer submitted multiple costs across all sections of their FTV submission that were labelled as "Remaining Budget" items. The Developer confirmed that these items were estimated costs that were included to cover anticipated expenditure for items identified as having the potential to be incurred between the start of the cost assessment and completion of the project.

Ofgem's view

3.32 We have queried all the costs submitted within the "Remaining Budget" line items. The Developer has confirmed that a number of these costs have been incurred, however, in some instances these were ultimately not incurred or were not realised in full. We have therefore removed and reduced these costs where applicable to reflect the actual economic and efficient costs incurred. As a result of this we have removed the costs that were submitted by the Developer.

Manpower Costs for Delay Recovery & Standby time for OCS & RCS Jackets Installation

3.33 The Developer submitted costs for additional manpower required for delay recovery and for additional standby time incurred during the installation of the OSC and RCS jackets. These costs were submitted in the Reactive and Offshore Substation category in the FTV. These costs were initially submitted by Developer during the ITV review where these costs were not included in the ITV.

Ofgem's view

3.34 We were not provided with any additional evidence from what was provided at ITV to substantiate these costs. We have therefore maintained our position that this cost was not economic and efficient. This has resulted in [redacted] not being included in the FTV.

Acceleration and incentivisation payments

3.35 The Developer has included acceleration and incentivisation payments within the Reactive and Offshore Substation categories.

Ofgem's View

3.36 We have not included this cost in the FTV as Ofgem does not consider acceleration payments to be economic and efficient costs. We have therefore not included this cost in the FTV.

Interface Management

3.37 Within the FTV CAT submission, the Developer has presented costs relating to lifting equipment, damage to painted work structures, hydrogen sensors and cable cleat structures which were submitted across both the Offshore Substation and Reactive categories within their FTV CAT.

Ofgem's View

3.38 During the cost assessment process, it was confirmed that these costs were incurred as a result of [redacted]. Any recompense for damage that has occurred during construction should be sought from the contractor liable for the damage. We have therefore not included the total of these costs across both categories.

Vessel Hire

3.39 The Developer inadvertently submitted costs within the Offshore & Onshore Substation categories of the FTV CAT. [redacted]

Ofgem's View

3.40 This resource has been confirmed as a generation-related cost and not part of the Transmission Assets. This should not have been included in the Developer's submission. We have therefore made a reduction to the Developer's submitted costs

in both the Onshore and Offshore Substation categories and have not included a total value of [redacted] in the FTV.

Vessel Costs

3.41 The Developer has submitted costs for vessel related costs that were required as part of the construction of the OSP assets. Costs were submitted for vessel breakdown charges after fault occurred on vessel during transportation to site. Further, the Developer submitted costs relating to cancellation and rehiring charges for a Heavy Transport Vessel (HTV). These costs were submitted by Developer within both the Offshore Substation and Reactive categories within the FTV.

Ofgem's View

3.42 We have not included the full cost for the vessel breakdown as recompense for this cost should be borne by the contractor. We have also made a deduction to the cancellation and the rehiring charges of [redacted] Both deductions across categories have resulted in a negative adjustment totalling [redacted] from the Developer's submission.

Offshore Substation Platforms (OSP)

Interface Management Issues

3.43 Within the FTV CAT submission, the Developer has included costs relating to lifting equipment, damage to painted work structures, ~~hydrogen~~ sensors and cable cleat structures.

Ofgem's View

3.44 In relation to the costs referenced in point 3.43 it was confirmed during the cost assessment process that these costs were incurred as a result of interface management inefficiencies. It is the responsibility for the Developer to manage the

relationship with the contractors and any costs resulting from damage or contractor error must be recouped from the contractor. As a result, the costs associated with these issues have not been included in the FTV.

Submarine cable

Spare Cable

3.45 Within the FTV CAT submission the Developer included the cost of [redacted] of spare cable covering both nearshore and far shore cable routes that were to be transferred to the OFTO.

Ofgem's view

3.46 In relation to the Project's spare submarine cables, we have allowed approx. 14km of spare cable. We determined the economic and efficient quantity of cable based on our view of spare cable as set out in the Cost Assessment Guidance, combined with our review of the project-specific information provided by the Developer. [redacted] As a result, we have not included the [redacted] of costs associated with this in the FTV.

Cable Incident

3.47 The Developer submitted costs for the [redacted] Cable incident, this incident was reviewed during the ITV and the developer confirmed that they were pursing these costs via an [redacted] and therefore the costs were removed at the ITV. The costs were included by the Developer in the FTV CAT in error.

Ofgem's view

3.48 The Developer highlighted these costs with a request to remove them [redacted]. We agreed with this approach [redacted] is the responsibility of the Developer and therefore we did not include the value in the FTV .

Cable Sheath damage

3.49 The Developer submitted costs due to damage to a cable sheath which was the result of the contractor's actions.

Ofgem's View

3.50 [redacted] We have therefore not included this cost in the FTV.

Cable Joint Interface Issue

3.51 During the ITV stage we reviewed costs relating to cable joints, [redacted]. This cost was disallowed at the ITV but was included in the FTV CAT.

Ofgem's View

3.52 [redacted]. Also, since the ITV there has been no new information or justification provided on this issue. Therefore, we are still of the view that this was not economic and efficient and have not included [redacted] in the FTV as a result.

Inclusion of Generation Assets

3.53 A small amount of Generation costs were included in error within the FTV CAT submission. [redacted]

Ofgem's view

3.54 As these costs are related to generation and sit outside the scope of this assessment, we have removed the costs associated with the Generation Assets from the FTV.

Data Entry Error

3.55 During our review of costs, the Developer confirmed that costs submitted for [redacted] contained an incorrect total value that was submitted in error. The Developer proposed an adjustment to this figure to bring it in line with the actual value incurred.

Ofgem's View

3.56 In relation to the costs submitted for [redacted] we have not included the additional cost above those so that the true value of this activity is captured. The removal of these costs from the FTV has resulted in [redacted] worth of costs not to be included within the FTV.

Onshore cables

Change of Cable Installation Methodology

3.57 Costs were submitted by the Developer for change of cable installation methodology.

Ofgem View

3.58 These costs were reviewed during the ITV stage and were removed from the submission. No new information was submitted by the Developer at the FTV, so we are still of the view that this was not economic and efficient. Therefore, we have not included the [redacted] cost for this in the FTV.

Crop Compensation

3.59 As part of the onshore development, a number of farms and related premises were disrupted by the construction and as a result, compensation for crop loss or similar loss of earnings was paid to the landowners.

Ofgem's View

3.60 It is Ofgem's position that costs relating to ongoing compensation payments and related costs after first power are considered an operational cost and as such, fall outside of the scope of this assessment. Due to this we have not included these costs in the FTV resulting a reduction of [redacted] from the Developer's FTV CAT submission.

Onshore substation

Substation Lease Costs

3.61 In the Developer's submission, costs were included in relation to the lease of the land that the substation and associated infrastructure occupies. This was the value that the Developer was proposing to charge the OFTO for the land lease over the period of the licence duration.

[redacted]

Ofgem's view

3.62 During our analysis of these submitted costs, we considered that the initial land price used by the Developer was higher than what we would expect for similar locations. We reviewed the information provided to the Developer

[redacted]

3.63 Subsequently, we used a new value per acre, which we consider reflected the economic and efficient cost for the land purchased. We used the information contained in land agent's report to arrive at this lower value. Based on this new value, we calculated a cost per year for the use of the substation site for the duration of the OFTO licence. This has resulted in a cost of [redacted] not being included in the FTV

[redacted] Engineering Costs

3.64 Within the submission the Developer has resubmitted costs relating to the [redacted] contract costs. These costs were submitted and reviewed during the ITV assessment and were discounted from the ITV pending further information.

Ofgem's View

3.65 We have reviewed these costs again after they were resubmitted in the FTV CAT

3.66 . As a result of this, we have not changed our position from the ITV stage and we have not included the associated [redacted] for this in the FTV.

Civils Interface Management

3.67 The Developer has also submitted costs relating to civils contracts, these costs are the result of a change of scope in the works by the Developer. These were costs that were presented during the ITV and were not included at that stage, as these costs were not economic and efficient.

Ofgem's view

3.68 We were not provided with additional evidence other than what was previously reviewed during the ITV to justify the inclusion of these costs. Therefore, we are still of the view that this was not economic and efficient. This has resulted in [redacted] of costs not being included in the FTV.

Reactive and harmonic equipment

Harmonic Filter Resistors

3.69 The Developer submitted costs for two sets of harmonic filter resistors. This was because it was found that the harmonic filter resistors that were purchased in the first instance were not suitable for use for the final installation. This necessitated the purchase of another set of harmonic filters that were compatible with the final design.

Ofgem's View

3.70 We have included the costs of one set of harmonic filter resistors and not included costs that were incurred for the second set purchased. We only allow the costs of one set of harmonic filters resistors for installations (where required). Allowing duplicate costs for two sets when one was not suitable is not economic and efficient. Therefore, the removal of one set of harmonic filter resistors has resulted in [redacted] of costs associated with this not being included in the FTV.

Inclusion of Generation Assets in error

3.71 The Developer included costs associated with Generation Assets which were included in error within their submission. These costs related to "scaffolding execution excellence" and were not intended to be included in the final submission.

Ofgem's View

3.72 Only costs related to transmission assets should have been submitted as part of the cost assessment process and generation costs cannot be included in the final assessed costs. As a result, we have not included these costs for this, which totalled [redacted], in the FTV.

Connection costs

Back feed and delay charges

3.73 [redacted]

Ofgem's View

3.74 We do not view this cost as economic and efficient as had the correct information been supplied for the [redacted] in the first instance, no additional costs would have been incurred. We have therefore not included the [redacted] cost for this in the FTV.

Other Costs

3.75 The assessed other costs for the Transmission Assets at the FTV is [redacted], a decrease of [redacted] from ITV. The detailed cost decrease is set out in Table 2 above and consists of the adjustments set out in the paragraphs below.

CAR Insurance Extension

3.76 Costs were submitted by the Developer for the extension of Construction All Risk (CAR) insurance.
[redacted]

Ofgem's View

3.77 We have taken the view that the original extension to the CAR insurance should have been sufficient. We have considered the impact of rescheduling the sail away

date for the topside which was caused by a delay in the delivery of materials in Batam as well as yard closures in Singapore. We have concluded that further extensions should not have been required. Therefore, we have not included the [redacted] cost for this in the FTV.

Interest during construction

3.78 Since the ITV, the Project had been progressing and incurring additional costs. This has, in turn, resulted in an increase of £5.6m in IDC based on the Developer's updated cost submission in August 2022.

3.79 The Project was divided into 3 areas for the purposes of energisation: North East, South West and North West circuits. In the Cost Assessment Guidance, we state that "we will consider the length of time over which IDC is applicable, and if we consider there is evidence of inefficient and uneconomic time periods during the pre-construction, construction or commissioning programme for the Transmission Assets, the period of IDC applicability may be adjusted to reflect this".

Ofgem's view

3.80 At the FTV we have not included £20m for the IDC. The adjustments that make up this value are detailed in the paragraphs below.

3.81 [redacted] We discussed the reasons for this extended duration with the Developer and took their mitigating reasons into account. Subsequently we did not include IDC on 40 months that we considered to be neither economic nor efficient.

3.82 During the course of construction, the Developer took the decision to place the export cables [redacted].

3.83 In line with the Cost Assessment Guidance, we identified the assets concerned and the duration [redacted]

3.84 In addition to the periods of wet storage for the export cables, the topside was not worked on for a period of 2 months during the Covid lockdown in Singapore. For both the Covid lockdown and wet storage periods, we suspended the IDC on the appropriate assets which resulted in an overall reduction of [redacted]

3.85 Further, a reduction was made of [redacted] relating to our adjustment of the timing of the last IDC allowance. The Developer submitted the final IDC amount for [redacted], the month in which it considered the Transmission Assets became available for transmission. This is based on the Developer's position that the Transmission Assets are available for use when they have completed their stage 2 commissioning process, which is the point at which the developer considers the assets as being "safely energised and commissioned" and "available for use for the transmission of electricity to the onshore network" (as outlined in the Cost Assessment Guidance, paragraph 3.100.2). We consider, as stated in the Cost Assessment Guidance, that IDC will cease:

"'available for use for the transmission of electricity to the onshore network' at the point at which we consider that those assets have been safely energised and commissioned"

3.86 Based on our consultant, Atkins's, advice and our treatment of previous projects, we concluded that in this instance the assets could be safely energised and commissioned at ION-B and calculated the interest accrual accordingly, ceasing IDC in [redacted], which resulted in a reduction to the Developer's calculation.

3.87 Finally, a reduction of [redacted] was made representing the adjustment following the conclusion of the broader FTV cost assessment, for the of all costs not included in the FTV after our final position on the economic and efficient costs.

3.88 The increases in IDC submitted by the Developer were offset by the reductions in IDC due to the adjustment for inefficient duration of IDC, the date the assets were available for transmission and the proportionate reduction in Capex for costs not included in the FTV. The overall reduction to IDC is [redacted], which results in an overall decrease of [redacted] from ITV. The total allowed IDC for the Transmission Assets at FTV is £101.3m

Transaction costs

3.89 The Developer has submitted a firm estimate of the transaction costs it expects to incur at asset transfer. We have reviewed the estimate and assessed the transaction costs at £3.2m.

3.90 The Developer provided a breakdown of the transaction costs submitted. They included both internal and external costs. The external costs related to professional services in respect of the tender, e.g., legal. These costs have not changed since the ITV, and we have concluded that the costs provided by the Developer were allocated appropriately.

Ofgem's view

3.91 We have considered the level of costs submitted and concluded they are in line with expectations and are considered efficient and economic and were allocated appropriately.

Confirmation in relation to tax benefits

3.92 The ITV was calculated on the basis that the OFTO would obtain the full benefit of all available capital allowances. If this were not the case for the Assessed Costs, we would reduce the assessment of costs for an amount that reflects the value of the tax benefit retained by the Developer. It is expected that the OFTO will be able to obtain the full benefit of all available capital allowances. At the time of licence grant, when the FTV will be defined, this will be translated into the FTV coinciding with the Assessed Costs, should no other conditions change.

Conclusion

3.93 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 Transmission Assets as £1,141,241,031.

Appendices

Index

Appendix 1 - Glossary

A

Assessed Costs

The final assessment of costs determined by Ofgem through the cost assessment process for the Transmission Assets.

C

Capex

Capital Expenditure

CAT

Cost Assessment Template

Cost Assessment Guidance

Can be found here Offshore Transmission: Guidance for Cost Assessment (2022) | Ofgem

D

Developer

Breesea Limited, Soundmark Wind Limited and Sonningmay Wind Limited

E

EPQ

Enhanced Pre-Qualification

F

FTV CAT

The Developer cost assessment template submitted in August 2022

FTV

Final Transfer Value

G

GEMA

The Gas and Electricity Markets Authority

Generation Assets

The Hornsea Project Two Offshore Windfarm generation assets

GT
Grant Thornton

I

IDC

Interest During Construction

InTV

Initial Transfer Value issued in July 2021

ITT

Invitation to Tender

ITV

Indicative Transfer Value

ITV CAT

The Developer cost assessment template submitted in June 2021

ITV letter

The formal letter issued to the Developer in February 2022 confirming the ITV

M

MW

Megawatt

O

OFTO

Offshore Transmission Owner

OFTO licence

See definition in Section 1 of this report

OFTO regime

See definition in Section 1 of this report

P

PIM

Preliminary Information Memorandum detailing the Project's details released to EPQ bidders through the tender portal.

PM

Project Management

Project

The development and construction of the Transmission Assets

S

Section 8A Consultation

See definition in Section 2.13 of this report

T

Tender process

The competitive tender process run in accordance with the Tender Regulations through which OFTOs are granted offshore electricity transmission licences

Tender Regulations

The Electricity (Competitive Tenders for Offshore Transmission Licences) Regulations 2015

Transmission Assets

The Hornsea Project Two Offshore Windfarm transmission assets

TRS

Tender Revenue Stream