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Offshore Transmission: Cost Assessment for the East Anglia One Transmission Assets

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This document sets out the cost assessment for East Anglia One (EA1 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 TC East Anglia One OFTO Limited, a consortium of Transmission Capital Partners Limited Partnership and International Public Partnerships Limited.

TC East Anglia One OFTO 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.

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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 East Anglia One Limited (**EA1**) offshore 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 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 in November 2018[1] and was set at £813.6m based on information provided to Ofgem by the developer, East Anglia One Limited (**EAOL**) (the **Developer**);

- The Developer submitted a revised cost assessment template (**CAT**) in July 2019.
  Ofgem reviewed and analysed the cost information and calculated the Indicative Transfer Value (**ITV**) as £715.1m. This updated calculation was communicated to the Developer in March 2020 and the formal ITV letter issued in June; and

- The Developer submitted a further CAT dated July 2020 with a value of £746.1m (the **FTV CAT**). Ofgem reviewed this further cost information to calculate the final assessment of costs as £692.6m (the **Assessed Costs**). This is a reduction of £53.5m from the submitted FTV CAT. 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 Costs of £692.6m is the amount that will be used to set the Final Transfer Value (**FTV**) at licence grant.

[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] https://www.ofgem.gov.uk/sites/default/files/docs/2018/11/tr6_generic_pim_final.pdf

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.

Category	InTV	ITV	Developer submitted cost for FTV review (July CAT)	FTV
	Sept 18 (£m)	July 19 (£m)	July 20 (£m)	November 22 (£m)
Capex	502.4	518.2	568.4	535.7
Development**	136.1	93.7	107.5	95.7
Contingency	102.7	40.0***	0.0	0.0
IDC	68.2	58.6	65.2	56.5
Transaction	4.2	4.6	4.9	4.7
Total	813.6	715.1	746.1	692.6

**These figures may not add to totals due to rounding*

***Development represents all costs within the cost category 'Other' (CR8) in the Cost Assessment Template. This includes development costs, as well as other common costs.*

**** Included £5.9m contingency at ITV*

Sections 3.27 – 3.86 of this report set out details of the Assessed Costs and any reductions made to the values submitted in the July 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 increased by

   £17.5m;

b) the development costs have increased by £2.1m;

c) the ITV contingency amount of £40.0m was removed in its entirety;

d) the Interest During Construction (**IDC**) amount decreased by £2.1m; and

e) the transaction costs have increased by £0.1m.

Below we summarise the main increases and decreases to each cost category as shown in Table 1 and detailed in sections 3.27 – 3.86. Please note that the figures set out in this section have been rounded.

Capital expenditure (Capex)

The Capex of the FTV has increased by £17.5m since ITV. The main changes are increases for:

a) cost estimates being made firm;
b) cost estimate included for onshore filters; and
c) reallocation of costs from development

and decreases for:

a) costs over and above our expected values for onshore cable supply and installation;
b) cost estimate for onshore filters
c) additional costs for UXO clearance;
d) contractor interface issues
e) fibre optic cables for generation use;
f) costs removed by the Developer; and
g) other minor adjustments.

Development costs

The development costs at FTV have increased by £2.1m since ITV. The main increase was for:

a) Firming up of resource costs

and a decrease for:

a) re-allocation of costs to Capex
b) estimated costs being made firm

Contingency

We allowed £40.0m of contingency in the ITV (an additional £5.9m of this was also included within the Development category). This has now been removed in its entirety as it has been released or realised at this stage of the transaction, and hence there is no contingency included in the FTV.

Interest During Construction (IDC)

The IDC amount has decreased by £2.1m since the ITV. This overall decrease in IDC is the result of balancing positive adjustments (for cost increases, and a longer time allowed for the development phase in line with other projects), and negative adjustments (for disallowed costs and changes to the timing of when assets are considered available for use).

Transaction costs

Transaction costs have been assessed at £4.7m. The transaction costs are composed of both internal and external resource costs arising from the Developer's participation in the Tender Process. These have increased since the ITV, due to transaction budget being revised and costs firmed up at the FTV stage.

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 £692,649,090. 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%20Transmission%20Guidance%20for%20Cost%20Assessment%202022.pdf

Associated publications

- The Electricity (Competitive Tenders for Offshore Transmission Licences) Regulations 2015 Link
- Tender Process Guidance Document TR6 Link
- Offshore Transmission: Guidance for Cost Assessment Link

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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 EA1 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 (**CAT**s), contract values, asset cost schedules and cashflows. The developer alone 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.

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.

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 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.

FTV

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. EA1 Offshore Wind Farm 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[2]

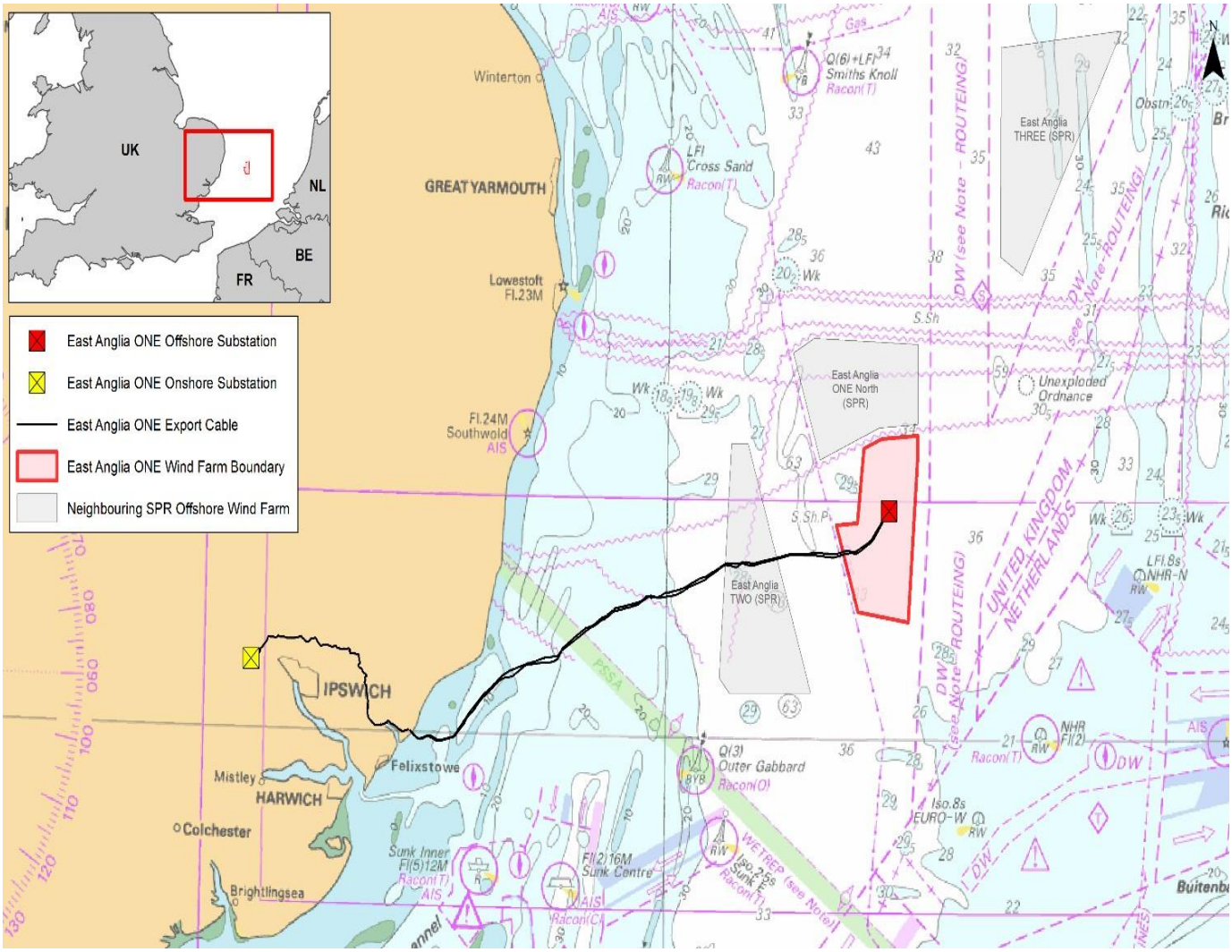
3.1. The EA1 Offshore Wind Farm is located in the North Sea, 43km from the Suffolk coast.

3.2. The wind farm has a 714MW capacity, comprising 102 E19 Siemens Gamesa turbines on three-legged jacket foundation. The power is collected via one offshore substation platform, via 66kV array cables and associated equipment. Power is stepped up to 220kV on the offshore platform and is exported to the onshore substation at Bramford, in Suffolk, via circa 85km of offshore and 37km of onshore

[2] 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.

export cables using two circuits. At the onshore substation, the power is stepped up again to 400kV and connected to the adjacent National Grid substation where it joins the National Electricity Transmission System (**NETS**).

Figure 1: Location of the EA1 Offshore Wind Farm and Transmission Assets



3.3. EA1 is owned by SPR (60%) and Bilboa Offshore Holding Limited, a part of the GIG (40%), where SPR is leading the construction of the wind farm on behalf of the joint venture with GIG.

3.4. The Transmission Assets connect to the EA1 Offshore Wind Farm at the offshore platform. The Transmission Assets that are transferring to the OFTO comprise:

a) an offshore substation platform (**OSP**) mounted on a jacket foundation;
b) two c.85km 220kV 3 core undersea offshore export cables;
c) two sets of c.37km long 220kV onshore, underground cables;
d) a new onshore substation at Bramford; and
e) two 400kV cables connecting the Burstall substation to the existing 400kV National Grid Electricity Transmission (**NGET**) substation at Bramford.

3.5. The onshore and offshore boundary points proposed by the Developer are as follows:

a) Offshore (Grid Entry Point) Located at the 220/66kV transformer 66kV low voltage terminals; and
b) Onshore (Transmission Interface Point) – located in the respective gas zone at the main and reserve busbar at Bramford 400kV Substation

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

a) 1.8km of 1800m^2, 1.3km 1600m^2 and 0.7km of 1200m^2 subsea cable;
b) various lengths of 400kv and 220kv onshore cable, 2km in total;
c) various joints (transition, straight and cable repair joints);
d) cable terminations; and
e) other miscellaneous spares.

Overview of cost assessment process for EA1 project

3.7. We received the first cost information from the Developer in August 2018. Since then, we have worked with the Developer and our advisers to conclude our 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) **September 2018**: InTV (£813.6m) published.
b) **July 2019**: Developer submitted the ITV CAT
c) **March 2020**: ITV figure (£715.1m) determined and communicated to Developer.
d) **April 2020:** ITT process (bidding and evaluation).
e) **June 2020**: formal ITV letter issued.
f) **July 2020:** Developer submitted a revised CAT (the **FTV CAT**).
g) **August 2020 - May 2021:** forensic accounting and FTV investigation undertaken.
h) **July 2021:** this draft cost assessment report released to the Developer for comment and the Preferred Bidder for information.
i) **November 2022:** draft cost assessment report published alongside the Section 8A Consultation.
j) **December 2022:** 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

3.8. The InTV of £813.6m was published in September 2018. 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.

3.9. The ITV of £715.1m was established in March 2020, with the formal ITV letter issued to the Developer in the month of June. 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. 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. These included a review of construction readiness costs, generation equipment impact on the offshore substation, UXO surveys and disposal, civil works of Onshore substation, fisheries, dredging costs, HDD settlement agreement and land costs.

3.11. 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 20 June 2020 (the **ITV Letter**).

Ofgem review – Crosscutting issue

1.1. In reviewing the individual cost categories, there was one crosscutting issue:

Reallocation of Resources Cost

1.2. After the Developer submitted the July 2019 CAT, they re-allocated costs related to resources that originally were included into the category "other costs" to the appropriate category to reflect the true cost of resources attributable to each cost category.

Ofgem review – Individual cost categories

We have undertaken a detailed review of each cost category. Below we summarise the adjustments made to each category. Full details of the ITV review are in the ITV Letter.

OSP

3.12. We reviewed at ITV the costs for the design, supply, installation, commissioning and project management of the OSP and reduced this category by £6.4m overall.

3.13. This adjustment includes £1.8m of unsubstantiated costs highlighted by GT, the positive adjustment for resources allocated from the 'Other cost' category (£1.4m) and the following reductions:

a) £0.1m for costs derived by the change of jacket transportation vessel by the transportation contractor, impacting the fabrication contractor for additional fabrication and documentation costs;
b) £0.1m for various generation related costs including costs related to array J-tubes and metering costs;
c) £1.6m for open insurance claims related to the replacement of a damaged gantry crane during transportation/installation and for failure of the jacket grouting system;
d) £0.1m for paint removal as a result of a contractor's mistake, which we consider should be recovered through the contractor;
e) £2.7m for the impact that generation related equipment has on the OSP structure, that we calculated considering the information provided by the Developer;

Submarine cable supply and installation

3.14. We reviewed at the ITV stage the costs for the design, supply, installation, commissioning and project management of the submarine cable and made an overall increase of £3.4m.

3.15. This adjustment includes an increase of £3.8m for amounts verified by GT and a reduction of £0.8m for unsubstantiated costs highlighted by GT. In addition, the Developer applied a positive adjustment of £0.5m for resources allocated from the 'Other cost' category and a reduction of £0.1m to legal costs.

Onshore cable supply and installation

3.16. We reduced the costs submitted for the design, fabrication, installation and project management of the onshore cables by £35.2m. The adjustments applied consisted of:

a) £29.4m for costs incurred during construction of the EA1 onshore cable corridor, which included costs for the benefit of the proposed EA3 project
b) £2.2m for personnel costs (including project management) and related expenses that we considered for the benefit of the EA3 project, as personnel costs were shared between EA1 and EA3 projects;

c) £1.2m for land use agreements costs, including agents' costs and crop compensation, relating to the period after first power which are considered operational costs and, therefore, cannot be included in the ITV.

d) A net positive adjustment of £0.9m proposed by the Developer as a result of: the re-allocation of resources costs to this category, removal of communication sub-ducts included in error and adjustments to archaeological trenching costs based on the actual work completed; and

e) A reduction of £0.4m for adjustments and £2.9m for unsubstantiated costs that GT has identified as a result of their investigation.

Onshore substation

3.17. The Developer made an overall positive adjustment of £1.3m to the onshore substation cost category which included a reduction for additional costs related to protection of fragile cables and not included in the original contract and an increase for reallocation of resources to this category. We incorporated this adjustment in the ITV.

Connection costs

3.18. We applied a reduction of £0.5m to the Developer's submitted costs, including the Developer's adjustment for a cost not pertaining to the transmission system and unsubstantiated costs highlighted by GT.

Other costs

3.19. We reduced the costs for this category by £49.5m, including £25.9m of unsubstantiated costs and £9.2m proposed by the Developer for costs out of scope and for resources re-allocated to other cost categories. In addition, we applied the following reductions:

a) £9.8m for costs related to resources not classified, related to the generation portion of the Project or to the proposed EA3 project;

b) £4.7m for development cost attributable to the generation assets.

Transaction costs

3.20. The Developer re-allocated resources costs from other categories, adding £3.5m and reducing the total by £0.5m for legal costs. GT proposed an overall reduction of £0.6m. We applied all these adjustments to the ITV.

Interest During Construction (IDC)

3.21. We reduced IDC by £7.5m, to reflect the adjustment made to the Project's Capex as part of the ITV process.

Forensic Review

3.22. As a result of the investigation conducted, GT applied a net positive adjustment of £2.5m to the cost of the transmission assets and highlighted a total amount of unsubstantiated costs of £36.0m. These adjustments have been corrected to account for the re-allocation of costs between EA1 and EA3 projects and between direct and indirect costs.

Process for determining the Assessed Costs

Accuracy and Allocation

3.23. The Project was constructed using a multi-contracting 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.

3.24. This investigation considered the following main contracts in respect of the Transmission Assets:

a) Kirby and ABB for the onshore substation supply and offshore HV equipment;
b) Navantia for the provision of the offshore substation structure;
c) Nexans, for the provision of subsea export cables;
d) Prysmian for the supply and install of onshore cables;
e) Seaways Heavy Lifting, for the provision of offshore substation installation
f) Roadbridge, for the provision of onshore enabling works

Efficiency

3.25. 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

3.26. Following completion of the development and construction of the transmission assets, the Developer submitted costs in the July 2020 FTV CAT amounting to a value of £746.1m. 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 £692.6m. 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 3.27 – 3.86 set out the issues considered as part of the FTV stage.

Table 2: Summary of cost categories*

Category	InTV Sept 18 (£m)	ITV July 19 (£m)	FTV November 22 (£m)	FTV-ITV	Reasons for change between ITV and FTV
Capex	502.4	518.2	535.7	17.5	Increase of: £37.2m for cost estimates being made firm £13.0m for estimated cost for onshore filers £10.7 for cost re-allocated from development costs Decrease of: £0.8m for correction of allocations £1.8m for contractor interface issues £0.5m for insurance deductibles not incurred £0.4m for Generator weight contribution to OSP £0.1m for minor adjustments £7.4m for additional UXO clearance £0.6m for fishery compensation cost after first power £0.2m for generator's use of fibre optics offshore £15.2m for onshore cable supply and installation over benchmark values £1.5m for land costs after first generation £0.3m for generator's use of fibre optics onshore £13.0 for onshore filters not required £0.5m for space occupied by generator in onshore substation £1.0m for compensation events unsubstantiated
Development	136.1	93.7***	95.7	2.1	Increase of: £13.9m for firming up of resource costs Decrease of: £1.2 for estimated costs being made firm £10.7 for costs reallocated to Capex
Contingency	102.7	40.0	0.0	-40.0	Decrease of: £40.0m due to contingency being released or realised
IDC	68.2	58.6	56.5	-2.1	Increase of: £6.6m for updated costs submitted Decrease of: £0.2m for adjustment to pre-FID duration £4.5m for delays in assets being available £4.0m for adjustments related to Capex reductions
Transaction	4.2	4.6	4.7	0.1	Increase of: £0.4m for updated estimated costs to completion Decrease of: £0.2m for costs estimates being made firm
Total	813.6	715.1	692.6	-22.4	

**These figures may not add to totals due to rounding.*

***Development represents all costs within the cost category 'Other' (CR8) in the Cost Assessment Template. This includes development costs, as well as other common costs.*

****Included £5.9m contingency at ITV*

Capital expenditure

3.27. The Capex element of the Assessed Costs is £535.7m. Overall, the Capex has decreased by £17.5m from the ITV to the FTV stage. This decrease is the overall result of a series of cost increases and decreases, as set out in more detail in Table 2 above.

Accuracy and allocation of Capex costs

3.28. 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 Assets and Transmission Assets, the Developer allocated a proportion of costs to the Transmission Assets using the Capex ratio between Generation and Transmission Assets.

Efficiency of Capex costs

3.29. All cost categories showed a decrease. This overall decrease is the result of cost updates from the Developer and adjustments applied following our cost review, which are detailed below.

Crosscutting Issues

Reallocation of staff costs

3.30. We have discussed with the Developer the allocation of various staff costs included in the development category and have agreed that a series of costs will be re-allocated to their appropriate asset cost category rather than the generic development category

Ofgem's View

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3.31. After reviewing the costs, we consider that re-allocating the costs to the individual cost categories to be the correct treatment for these, as it is more reflective of the costs actually incurred to construct those assets. The staff costs that were allocated to their relevant cost categories totalled £10.7m.

Ancillary Geophy/UXO/Benthic

3.32. When reviewing the submitted costs for the surveys, the Developer noted that the percentage allocation between Generation and OFTO was incorrect.

Ofgem's view

3.33. We reviewed the allocation methodology applied to this cost and concluded that we agreed with the Developer's proposed adjustment and that a reduction in £0.2m for the OSP and £0.6m for the subsea cable be applied to bring the costs into alignment with the correct allocation percentage.

Individual cost categories

OSP

Jack-up vessel extension

3.34. The Developer submitted costs relating to an extension of time for the use of the jack-up vessel, Endurance. The hire of the vessel was extended by a total of 57 days. Of those 57 days, the Developer was seeking to claim for 20 of these via the cost assessment process. The extension was required due to slower than expected progress by the contractor, interface issues and an increase in the scope of work.

Ofgem's view

3.35. We analysed the reasons behind the extension of time and determined that the costs associated with it were incurred as a consequence of interface issues with the Developer and their contractors. The Cost Assessment Guidance states:

> 'We expect Developers to manage their contractors effectively. They should provide evidence that project management or contract control processes are put in place upfront (i.e. before the relevant contract is signed) to minimise any cost overruns. Developers should also be able to evidence how they

implement their contract and cost control processes through the project's lifespan. If a lack of robust contract cost management leads to increased costs in the development and construction of the Transmission Assets, we may conclude that such costs were not economic and efficient and may not, therefore, be allowed.'

3.36. We therefore have concluded that the £1.3m cost associated with the extension of the jack-up vessel for 20 days should be disallowed as this duration was not economic and efficient, due to poor interface management.

Seaway Heavy Lifting Insurance Claim

3.37. At the time of submission of the FTV CAT, the Developer was in the process of making two separate insurance claims and had included the insurance deductibles for both. During the FTV review period, the Developer was informed that their claims would be treated as a single claim, therefore only one deductible payment would be required.

Ofgem's view

3.38. We engaged with the Developer regarding this issue and accepted the confirmation of the insurance claim being treated as a single claim. As a result of this, a £0.5m reduction for one of the deductibles, as proposed by the Developer, was agreed.

Generation assets weight impact

3.39. The generator has equipment on the OSP, which adds to the dimensions for the topside and therefore the support structure required. The additional weight of generation equipment will ultimately drive additional costs to support this equipment, such as an increase in size of jackets needed. We therefore have made an adjustment to the construction costs of the OSP to reflect the cost contribution from the generator to the overall cost of the OSP. This adjustment was made at the ITV stage.

Ofgem's view

3.40. During the FTV stage we engaged in discussions with the Developer regarding our position to remove generator weight costs as well as sharing the

calculations. As a result of this review, we have not included a further £0.4m at the FTV. This is our view of the economic and efficient value that would be incurred by the Generation Assets being on the OSP.

Minor adjustments

3.41. The Developer submitted two minor costs for items being replaced (tools and incorrect sockets). These items had to be replaced and the Developer included the costs for this in their submission.

Ofgem's view

3.42. We reviewed the Developer's response for reasoning behind these costs and we consider that the Developer and/or their contractors were at fault and the costs were not economic or efficient as the cost was incurred twice. Therefore, we have not included £0.1m for these costs.

Submarine cable

UXO (UneXploded Ordinance) clearance

3.43. The Project incurred significantly higher costs than originally expected in relation to UXO investigation and clearance. The original contractor was dismissed due to poor performance, despite being appointed as a competent contractor. As a result, the newly appointed contractor for this work had a higher rate per investigation and additional vessel costs, due to working in the summer months, rather than winter (vessel rates are seasonal). The original tender for this work had also been tendered on incomplete surveys and the number of investigation targets used in the tender were significantly lower than the number of targets actually encountered.

Ofgem's view

3.44. In reviewing the sequence of events, we consider that the Developer should have undertaken the tender with more complete survey information and target

numbers. The change in contractor during the UXO clearance process resulted in much higher costs being incurred compared to the original contract for this work.

3.45. We reviewed all of the information from the Developer and made an adjustment to the calculation methodology and used the original rates from the UXO tender. We consider these to be more in line with what should have been the economic and efficient cost for this work. This adjustment resulted in £7.6m not being included in the FTV.

Fisheries disruption

3.46. Developers routinely pay compensation to fishing vessels who can prove they have their grounds disrupted by construction taking place offshore. These payments should only cover periods of construction and must only relate to areas surrounding transmission assets.

Ofgem's View

3.47. The developer proposed a reduction of £0.6m to reflect the cost of the fisheries that took place in the area containing only generation assets. After reviewing the supplied information, Ofgem agreed with this position and level of costs not included in the FTV.

Fibre optic cables for generation related activities

3.48. Both the submarine and onshore cables installed for the Project contain fibre optic cable. These cables are to be owned by the OFTO but a number of the fibre optic cables are used for the transmission of data for the Generation Assets. No costs for this were allocated to the Generation Assets.

Ofgem's view

3.49. Fibre optic cables are installed alongside or within the onshore and offshore export cables for offshore transmission projects. These fibres are used for both transmission and generation control, monitoring, and communication purposes. As projects are now being constructed on an increasingly larger scale and further offshore, cable lengths are increasing, as are the communication requirements.

This means that the cost associated with the supply and installation of the fibre optic cables is significant.

3.50. As the fibres which make up the fibre optic cable are used for generation purposes and are not available to the OFTO and the OFTO gains no benefit from them, we requested that the Developer provide us with an evaluation of the cost to the generation portion of the Project for its use of the fibre optic cables. Following the generation allocation review, the value of £0.2m for offshore and £0.3m for onshore was not included in the FTV to reflect the generator's share of their fibre costs and cannot be included in the FTV.

Onshore cables

Cable costs over expected values

3.51. As part of the benchmarking exercise, the onshore cable cost category was identified as being a significant outlier when compared to our expected values. The expected values are based on data from previous projects' onshore cable supply and installation costs.

3.52. We made allowances for a number of project specific factors including a high level of archaeological work being required on the cable route as well as unforeseen ground and weather conditions. However, even after revisiting the benchmarking analysis with all the project specific allowances, there was still a significant difference in the submitted costs for this category compared to projects of a similar size and scale.

Ofgem's view

3.53. The Developer was unable to provide any further evidence or justification, due to the nature of the benchmark containing commercially sensitive information that we are unable to share with the Developer. Because of this, the Developer was unable to provide any further information to explain this difference between the submitted costs and the expected costs. In the Cost Assessment Guidance we state:

"In the absence of appropriate evidence to justify these differences, we may use the benchmarking data to inform our view of whether or not the relevant costs can be considered economic and efficient."

3.54. As such, in conjunction with the benchmarking data, we carried out a detailed 'bottom up' analysis of the individual components that made up the onshore installation costs. We identified cost that were allowable in the FTV and identified other additional costs where we required further information from the Developer. This was around the following areas:

a) increase in the scope of works;
b) weather / ground conditions costs;
c) scope gap post contract award; and
d) archaeology prolongation and acceleration costs.

3.55. The Developer submitted additional information around the increase in the scope of work and we accepted that these were justified. For the weather / ground conditions and the scope gap, the developer didn't supply any substantially new information to justify these costs and we have not included these additional costs for this in the FTV as they were not economic and efficient.

3.56. In respect of the archaeology costs, the information supplied by the Developer contained sufficient detail for them to be reclassified as acceleration costs and excessive interface management between EA1 and its contractors. This was due to work scheduling issues between archaeology works and the main construction works. These costs, along with the stand-alone acceleration costs, were excluded from the FTV. Additional cost for management interface issues, as describe previously, are the responsibility of the Developer and consumers should not bear these additional costs. Ofgem considers that the acceleration payments are not economic and efficient. Electricity consumers should not therefore bear these costs and as a result, the costs were excluded from the FTV.

3.57. In total, we have not included £13.8m for the onshore cable installation for the items discussed above and a further £1.4m was excluded for the associated project management of this work. This additional level of project management costs cannot be regarded as economic and efficient. Therefore, these both these values have not been included in the FTV, £15.2m in total.

3.58. It should be noted that as part of the FTV process Ofgem reviewed EA1's application of the agreed EA1/EA3 cost split methodology that had been previously agreed during the ITV process and is satisfied that this has been applied correctly to the FTV submitted costs. As this was for the EA1 project, none of the EA3 costs were reviewed.

Land payments

3.59. As part of the onshore development, a number of farms and related premises were disrupted by the construction as a direct result, compensation for crop loss or similar loss of earnings was paid to the landowners. As well as these compensation costs, reinstatement costs for the land to return it to its original condition were incurred and some were also scheduled to be incurred after first power.

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. However, reinstatement costs would not be excluded as they are a construction cost that must occur as a result of the cable installation work. By the nature of reinstatement, this must be carried out once installation work has been completed, sometimes after first power.

3.61. A total of £1.5m was not included in the FTV for land payments after first power due to them being classed as operational costs and cannot be included in the FTV as they are not construction or development costs.

Onshore fibre optic cables for generation related activities

3.62. As described earlier, both the submarine and onshore cables contain fibre optic cables and a number of these fibres are used for the transmission of generation data and control. No associated costs for the use of this was allocated to the Generation Assets as it had all been included as Transmission Assets.

Ofgem's view

3.63. As the fibres used for generation purposes are not available to the OFTO and the OFTO gains no benefit from them, we requested that the Developer provide us with an evaluation of the cost that the generation portion of the Project should assume for their use of the fibre optic cables. Following the allocation review, £0.3m was not included in the Assessed Costs to reflect the Developer's share of the fibre costs.

Onshore substation

Harmonic Filters

3.63. At the submission of the FTV, it was unclear if the Project would require the installation of harmonic filters, therefore, a placeholder value of £13m was included within the submission in the event they were required. The developer updated us on a regular basis as to if they would be required. Ultimately, it was deemed that they would not be required and the developer proposed an adjustment of £13m to remove the value of the filters in full.

Ofgem's view

3.64. We agree with the Developer's decision and the full £13m value of the filters was not included in the FTV as they were not needed and no costs incurred.

Generation space in the onshore substation

3.65. As offshore projects are getting larger and their communication requirements increasing, we have observed that the space occupied by equipment housed within the onshore substation for generation purposes is increasing in proportion to the project size.
This space is not available for OFTO use and has a cost associated with it.
Ofgem's view

3.66. We routinely scrutinise all costs associated with generation related equipment for new projects to ensure that the apportionment between Generation and Transmission Assets is appropriate and costs remain economic and efficient.

3.67. Therefore, we have apportioned the cost associated with housing the Generation Assets in the onshore substation and we have not included the £0.5m for the generation use of space in the onshore substation. This is because it is considered a generation cost and cannot be included in the FTV.

Contractor interface issues

3.68. The Developer worked closely with contractors to manage any potential interface issues, which avoided a number of standing time costs with Kirby Engineering works. However, variations were submitted for 2 occasions where equipment was hired to be on site for work to commence on a pre-planned date and the contractor was not available to be on site at the same time.

Ofgem's view

3.69. The root cause of the cost being incurred was an interface issues between the Developer and the contractor and, as stated previously, it is up to the Developer to manage this relationship and any increases in cost resulting from interface issues would be deemed to not be economic and efficient. We therefore took the decision to remove the cost for both instances of interface issues with Kirby, totalling £0.5m.

Anticipated CEs (Compensation Events)

3.70. There were a number of anticipated CE claims submitted as part of the FTV by the Developer. During the assessment, they were regularly updated and values confirmed once the CE was approved and paid. There were a number of CEs left outstanding at the end of the assessment that had yet to be approved and had no documentation backing up these claims.

Ofgem's view

3.71. As the CEs had yet to be approved and did not have any documentation backing up the reasons to justify the cost submitted, we considered these cost as unsubstantiated. As a result of this, the full value of £1.0m would not be included in the FTV. Costs have to be evidenced as economic and efficient and, as this could not be demonstrated, the value was not included.

Development costs

Cost reallocations

3.72. As noted earlier, staff costs in the development category were reallocated to the Capex costs. The total costs reallocated from development was £10.7m. This was made up in total of £11.8m, with a reduction made by the Developer of £1.2m for costs being made firm, equating to the £10.7m (rounded) increase in the capex category.

Ofgem's view

3.73. After reviewing the reallocations and the reduction in costs, we consider this to reflect correctly the costs incurred in the individual assets. We have made the reallocation of costs and have not included the £1.2m in the FTV.

Interest during construction

3.74. Since the ITV, the Project had been progressing with construction work and incurring additional costs. This has, in turn, resulted in an increase of £6.6m in IDC based on the Developer's updated cost submission in July 2020.

3.75. At the FTV, a reduction of £0.2m was made in relation to pre-FID duration, in Ofgem's view, the pre-FID period should last no longer than 63 months based on other projects under the Development Consent Order (DCO) regime. EA1's duration was 65 months and therefore a reduction of two months was made to bring it into line with the expected duration for a DCO project.

3.76. While reviewing the IDC calculations supplied by the developer, it was noted that there was a delay in the circuits being energised and the ION B being issued. The developer supplied us with detailed information on the reasons for this delay, due to faults on the circuits.

3.77. 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."

3.78. In line with this principle, we analysed the information provided by the Developer around the energisation and commissioning activities and noted that the duration between the energisation and ION B dates on the circuits was not economic and efficient.

3.79. In conjunction with our advisers, we concluded that these circuits could be considered safely energised and commissioned prior to the supplied ION B dates and recalculated the duration of the interest accrual. This resulted in a reduction to the Developer's calculation of £4.5m.

Ofgem's view

3.80. The increases in IDC 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 disallowed costs. The overall reduction to IDC is £8.7m, which results in an overall decrease of £2.9m since ITV. The total IDC for the Transmission Assets at FTV is £56.5m.

Transaction costs

3.81. The Developer had submitted an estimate of the transaction costs it expected to incur up to the point of asset transfer. Transaction costs are typically the costs incurred by a developer in divesting the assets under the OFTO tendering process. We have reviewed this estimate and assessed transaction costs at £4.7m.

3.82. The Developer provided a breakdown of the transaction costs submitted. It included both internal and external costs. The external costs related to professional services (e.g. legal) in respect of the tender. The internal costs were for staff involved in the end to end OFTO tender process.

3.83. Transaction costs decreased by £0.2m since the FTV submission due to an updated legal quote being provided.

Ofgem's view

3.84. 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 level of costs submitted and concluded they are in line with expectations and are considered economic and efficient and were allocated appropriately.

Confirmation in relation to tax benefits

3.85. 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. The Developer has confirmed that the OFTO will be able to obtain the full benefit of all available capital allowances. At the time of licence grant, when FTV will be defined, this will be translated into the FTV coinciding with the Assessed Costs, should no other conditions change.

Conclusion

3.86. 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 £692,649,090.

Appendices

Index

Appendix 1 - Glossary

A

Assessed Costs

The final assessment of costs determined by Ofgem through the cost assessment process for the East Anglia One Offshore Windfarm transmission assets.

B

Bilbao Offshore Holding Limited

A part of the Green Investment Group

C

Capex

Capital Expenditure

CAT

Cost Assessment Template

CE

Compensation Event

Cost Assessment Guidance

Can be found here:

https://www.ofgem.gov.uk/sites/default/files/2022-03/Offshore%20Transmission%20Guidance%20for%20Cost%20Assessment%202022.pdf

D

Developer

SPR, Scottish Power Renewables

E

EPQ

Enhanced Pre-Qualification

EAOL

East Anglia One Limited

F

FTV CAT

The Developer cost assessment template submitted in July 2020

FTV

Final Transfer Value

G

GEMA

The Gas and Electricity Markets Authority

Generation Assets

The EA1 Windfarm Generation Assets

GIG

Macquarie Green Investment Group

GT

Grant Thornton

I

IDC

Interest During Construction

InTV

Initial Transfer Value

ITT

Invitation to Tender

ITV

Indicative Transfer Value

ITV CAT

The Developer cost assessment template submitted in July 2019

ITV letter

The formal ITV letter issued to the Developer in June 2020

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

Q

QTT

Qualification to Tender

S

SPR

Scottish Power Renewables (UK) Limited

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 EA1 Offshore Windfarm Transmission Assets

TRS

Tender Revenue Stream