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# Consultation

## Consultation on the Final Project Assessment of the Greenlink interconnector to Ireland

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This consultation provides our minded to position on costs and technical aspects of the Final Project Assessment (FPA) of the Greenlink interconnector to Ireland. We welcome views from all stakeholders on these areas.

This document outlines the scope, purpose and questions of the consultation and how you can get involved. Once the consultation is closed, we will consider all responses. We want to be transparent in our consultations. We will publish the non-confidential responses we receive alongside a decision on next steps on our website at **Ofgem.gov.uk/consultations**. If you want your response – in whole or in part – to be considered confidential, please tell us in your response and explain why. Please clearly mark the parts of your response that you consider to be confidential, and if possible, put the confidential material in separate appendices to your response.

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# Contents

# Executive summary

Electricity interconnectors can provide significant benefits to GB energy consumers. We[1] confirmed our cap and floor regulatory regime in 2014, to provide a clear and transparent regulatory approach for the development of new electricity interconnector projects between GB and other countries. This aims to incentivise commercial investment in interconnectors where it stands to benefit consumers.

This consultation provides our minded to position on the Final Project Assessment (FPA) of the Greenlink interconnector. The Greenlink project is being developed by Greenlink Interconnector Limited (GIL).[2] Alongside this consultation we have also published a decision on the reassessment of the needs case for Greenlink.

## Background and scope

The Greenlink project is a planned 500MW electricity interconnector between Pembrokeshire in Wales, Great Britain (GB) and Great Island in County Wexford, Republic of Ireland. Our cap and floor regime applies to the GB portion of the Greenlink project (50% share).

The cap and floor regime is the regulated route for interconnector development in GB. There are three main stages to our cap and floor regime – the Initial Project Assessment (IPA), the FPA and the Post Construction Review (PCR). We assessed the needs case for the Greenlink project at the IPA stage and decided in September 2015[3] to grant the project a cap and floor regime in principle. This was based on an updated assessment of the project in August 2015 which demonstrated expected net benefits over a 25-year period. At the time of the IPA, we projected circa £206m[4] of welfare benefit to GB consumers (2020/21 prices).

In this FPA consultation document, we are seeking responses to our position on Greenlink's costs and technical characteristics. As Greenlink is planned as a project financed interconnector, the provisional cap and floor levels will be calculated when the project reaches financial close[5]

[1] The terms "Ofgem" and "the Authority," "we" and "us" are used interchangeably in this document.
[2] "GIL" and "Greenlink" are used interchangeably in this document.
[3] Decision on Initial Project Assessment of the Greenlink Interconnector
[4] Decision on Initial Project Assessment of the Greenlink Interconnector

[5] Decision on proposed changes to our electricity interconnector cap and floor regime to enable project finance solutions (May 2020)

and using the cap and floor financial model that is currently being consulted on separately, alongside specific licence changes to give effect to finance-related regime variations[6].

## What our assessment shows

We set the cap and the floor levels based on building blocks of development costs, capital costs, operating costs, replacement costs, decommissioning costs, tax and allowed return. We have set out our views on these different blocks of costs, except allowed return, in this document. We refer to these blocks of costs collectively as 'Provisional Costs'.

Greenlink submitted their incurred and forecasted project costs to Ofgem in April 2020. GIL then submitted a revised set of incurred and forecasted project costs in August 2020. We have assessed whether these costs are economic and efficient and have concluded that the majority of the project's firm costs are reasonable. We considered the procurement process that was followed for the major contracts (primarily the cable and converters) and decided that this was competitive and generally efficient.

The Provisional Costs set out within this consultation include a provisional value to cover project risks and uncertainties. This reflects an economic and efficient estimate for the additional costs that may be incurred by Greenlink between the FPA and the PCR. We will undertake a detailed assessment of eligible cost changes since the FPA as part of our PCR, and we will update our final cap and floor levels to reflect our economic and efficient allowance for such cost changes at that stage.

Based on our assessment, we have provisionally set the GB share of Greenlink's development and capital costs at £205.3m, a reduction of £1.3m from the submitted £206.5m[7].

We will confirm the financial parameters that will apply to the Greenlink project after Greenlink's financial close. These financial parameters (such as the actual cost of debt and gearing) will underpin our calculation of the cap and floor levels for Greenlink. Our May 2020 regime variations policy decision[8] allows the relevant financial parameters to be confirmed at

[6] New proposed special conditions for the electricity interconnector licence held by Greenlink Interconnector Limited
[7] For all values in this document, due to rounding, the figures may not add up precisely to the totals indicated.
[8] Decision on proposed changes to our electricity interconnector cap and floor regime to enable project finance solutions (May 2020)

Greenlink's financial close. Financial close is when we expect to know all the necessary financing arrangements and details that Greenlink will agree with its lenders. We have also decided to set a target of 97.55% for Greenlink's availability incentive, based on our review of the project's technical design. The cap level can increase or decrease by up to 2% based on performance against this target.

We will determine and publish our preliminary cap and floor levels for the Greenlink interconnector following financial close by Greenlink.

The calculation methodologies we will follow to determine the cap and floor levels are set out in our February 2021 consultation on licence changes for the Greenlink and NeuConnect projects[9]. We will then update all the relevant parameters in the Greenlink Cap and Floor Financial Model 1 (GCFFM1) in accordance with the terms and calculations set out in the model.

When the Greenlink interconnector starts operations, we will assess the interconnector revenues against the cap and floor levels considering the interconnector's target availability for each assessment period.

Our 2015 decision document[10] on the Initial Project Assessment of the Greenlink interconnector states that the IPA stage may be revisited if the basis of the IPA decision has materially changed. Following our assessment of updated project costs against Greenlink's IPA forecasts, we considered there to have been a material rise since the IPA submission. We have re-run our analysis of the needs case for the project to confirm whether the project continues to be in consumers' interests and should continue to be granted a cap and floor regime. We have published a letter alongside this consultation setting out our decision on Greenlink's needs case re-assessment.

In our cap and floor roll-out decision,[11] our 2017 'Window 1' update letter[12] and our 2018 'Window 1' update letter[13] we specified that the regime start date for all Window 1 projects is 1 January 2021. Furthermore, we included a provision that states where projects are

[9] New proposed special conditions for the electricity interconnector licence held by Greenlink Interconnector Limited
[10] Decision on Initial Project Assessment of the Greenlink Interconnector
[11] Decision to roll out a cap and floor regime to near-term electricity interconnectors.
[12] Cap and floor regime: An update on 'Window 1' interconnector projects.
[13] Cap and floor regime: An update on the timing of the Final Project Assessment (FPA) for 'Window 1' interconnector projects

commissioned later than 1 January 2021, the 25-year duration of the cap and floor regime will still commence on 1 January 2021.

Our 2017 'Window 1' update letter also included proposed relief for delays to the regime start date where the developer has experienced development or construction delays caused by force majeure events. Our force majeure mechanism excludes the duration of any delay caused by force majeure events from the provision whereby the regime otherwise would be shorter.

Alongside the FPA submission, we received a force majeure request from GIL. The request details the primary causes for a delay to the project of three years past the commissioning date submitted at the IPA stage (2020)[14]. GIL have requested that Ofgem delay the project's regime start date to 31 December 2023.

## Next Steps

We request stakeholders to respond with their views and evidence relating to the questions posed in this document. Responses to this consultation and continued stakeholder engagement over the coming months will help shape our decision on this FPA.

We request that stakeholders respond to all questions in this consultation within four weeks.

We are consulting on a new Standard Licence Condition on "Delay to Regime Start Date caused by Pre-operational Force Majeure" alongside this publication. The purpose of this is to implement our proposed mechanism for regime duration relief for force majeure events. We then expect to decide on GIL's force majeure request and confirm the regime start date in the summer of 2021.

We are aware that certain costs can fluctuate from the point of publishing our FPA decision to Greenlink taking FID. Therefore, we will look at the final contract costs following completion of the project's main procurement process. Subject to satisfaction that the final stages of the process (i.e. between our FPA decision and FID) have been run competitively, and subject to the final contract costs not being significantly different to current expectations, we will update

[14] Greenlink is currently expected to be operational in 2024.

our provisional cost position to reflect these changes (e.g. in relation to exchange rate and commodity price fluctuations) at FID.

GIL will need to report to us throughout the construction period. As part of this annual reporting, GIL should provide notice of any significant variations from the project delivery schedule, as well as details of any cost changes from GIL's August 2020 updated FPA submission and final contract prices at FID. We will review eligible costs relating to such changes at the PCR stage.

# 1. Introduction

## What are we consulting on?

1.1. We are consulting on our minded to position on the FPA of the Greenlink interconnector. In particular we are seeking views on our assessment of GIL's proposed project costs and technical aspects. We will confirm the financial parameters that will apply to the Greenlink project after Greenlink's financial close.

1.2. The following areas are in the scope of this consultation:

- Provisional views on firm devex and capex costs;
- Provisional views of uncertain capital costs;
- Provisional views of the project's post-construction costs; and[15]
- Technical aspects, including a review of the technical design and setting the project-specific target for the availability incentive.

1.3. The following areas are not in the scope of this consultation but are being worked on alongside it:

- Statutory consultation on our proposal to insert new special conditions into the electricity interconnector licences held by Greenlink Interconnector Limited. This includes the modifications we have made to our default cap and floor financial model to implement the relevant aspects of our May 2020 regime variations decision;
- Our decision to retain Greenlink's cap and floor regime in principle;
- Our pending decision on Greenlink's request for force majeure relief to the regime start date.

[15] By post-construction costs we mean costs associated with operational expenditure (opex), replacement expenditure (repex) and decommissioning expenditure (decommex).

- Our pending decision on the financial parameters for Greenlink at FID.

- Our oversight of the debt raising process prior to FID.

1.4. The following areas will be assessed and decided at the PCR stage and are therefore not within the scope of this document:[16]

- Adjustments to the devex and capex costs presented in GIL's August 2020 submission; and

- Adjustments to the post-construction costs presented in GIL's August 2020 submission.

1.5. The preliminary cap and floor levels have not been presented in this document. Following the cap and floor financial model consultation, we will provide an update with preliminary cap and floor levels for Greenlink after financial close.

**Structure of this document**

1.6. This consultation includes five main sections:

**Chapter 2** gives an overview of the Greenlink project and our cap and floor regime.

**Chapter 3** provides an overview of our cost assessment, which includes an assessment of our proposed view on firm costs and on uncertain costs.

**Chapter 4** provides information on the regime variations decision, proposed licence modifications and updates to the cap and floor financial model.

**Chapter 5** provides information on the annual reporting requirements, the scope and timing of our PCR stage and high-level principles on eligibility.

[16] Further details on the specific cost areas that we will review at the PCR stage are included in Chapter 3 of this document.

**Chapter 6** sets out our views on the technical aspects of the FPA. This includes our review of the technical design and our setting of the project-specific target for the availability incentive. We address the request for relief due to force majeure in this section.

**Appendix 1** provides a regime summary for Greenlink and **Appendix 2** sets out more information on the principles we will apply when considering risk-related eligibility at the PCR.

## Related Publications

The regulation of future electricity interconnection: Proposal to roll out a cap and floor regime to near-term projects Published: May 2014

Decision to roll out a cap and floor regime to near-term electricity interconnectors Published: August 2014

Cap and floor regime: Initial Project Assessment of the FAB Link, IFA2, Viking Link and Greenlink interconnectors Published: March 2015

Cap and floor regime: Update on our Initial Project Assessment of the Greenlink interconnector Published: August 2015

Decision on the Initial Project Assessment of the Greenlink interconnector Published: September 2015

Cap and floor regime: An update on 'Window 1' interconnector projects Published: June 2017

Cap and floor regime: Open letter on procedural changes to our Final Project Assessment stage Published: November 2017

Post Construction Review of the Nemo Link interconnector to Belgium published: September 2019

Decision on the Final Project Assessment of the Viking Link interconnector to Denmark Published: September 2020

## Consultation stages

1.7. Our consultation on Greenlink's FPA will close on 28 April 2021.

1.8. Following the close of this consultation and subject to consideration of responses, we expect to make our final decisions on each of the elements as follows:

- Determination of Greenlink's firm costs and our FPA position on uncertain costs.
- Determination of our FPA position on Greenlink's technical characteristics.
- Finalising the target for the availability incentive which will apply to the project

*Figure 1: Consultation stages*


## How to respond

1.9. We want to hear from anyone interested in this consultation. Please send your response to the person or team named on this document's front page.

1.10. We've asked for your feedback in each of the questions throughout. Please respond to each one as fully as you can.

1.11. We will publish non-confidential responses on our website at www.ofgem.gov.uk/consultations.

## Your response, data and confidentiality

1.12. You can ask us to keep your response, or parts of your response, confidential. We'll respect this, subject to obligations to disclose information, for example, under the Freedom of Information Act 2000, the Environmental Information Regulations 2004, statutory directions, court orders, government regulations or where you give us explicit permission to disclose. If you do want us to keep your response confidential, please clearly mark this on your response and explain why.

1.13. If you wish us to keep part of your response confidential, please clearly mark those parts of your response that you *do* wish to be kept confidential and those that you *do not* wish to be kept confidential. Please put the confidential material in a separate appendix to your response. If necessary, we'll get in touch with you to discuss which parts of the information in your response should be kept confidential, and which can be published. We might ask for reasons why.

1.14. If the information you give in your response contains personal data under the UK GDPR and domestic legislation on data protection, the Gas and Electricity Markets Authority will be the data controller for the purposes of GDPR. Ofgem uses the information in responses in performing its statutory functions and in accordance with section 105 of the Utilities Act 2000. Please refer to our Privacy Notice on consultations, see Appendix 4.

1.15. If you wish to respond confidentially, we'll keep your response itself confidential, but we will publish the number (but not the names) of confidential responses we receive. We won't link responses to respondents if we publish a summary of responses, and we will evaluate each response on its own merits without undermining your right to confidentiality.

## General Feedback

1.16. We believe that consultation is at the heart of good policy development. We welcome any comments about how we've run this consultation. We'd also like to get your answers to these questions:

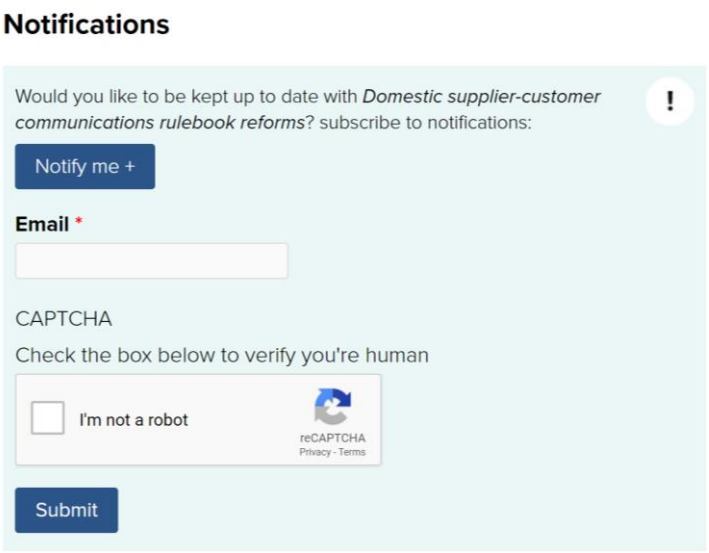
1. Do you have any comments about the overall process of this consultation?
2. Do you have any comments about its tone and content?
3. Was it easy to read and understand? Or could it have been better written?

4. Were its conclusions balanced?
5. Did it make reasoned recommendations for improvement?
6. Any further comments?

Please send any general feedback comments to stakeholders@ofgem.gov.uk

**How to track the progress of the consultation**

You can track the progress of a consultation from upcoming to decision status using the 'notify me' function on a consultation page when published on our website. Ofgem.gov.uk/consultations.




Once subscribed to the notifications for a particular consultation, you will receive an email to notify you when it has changed status. Our consultation stages are:

| | | | |
|---|---|---|---|
| Upcoming ▶ | Open ▶ | Closed (awaiting decision) ▶ | Closed (with decision) |

# 2. Background

**Section Summary**

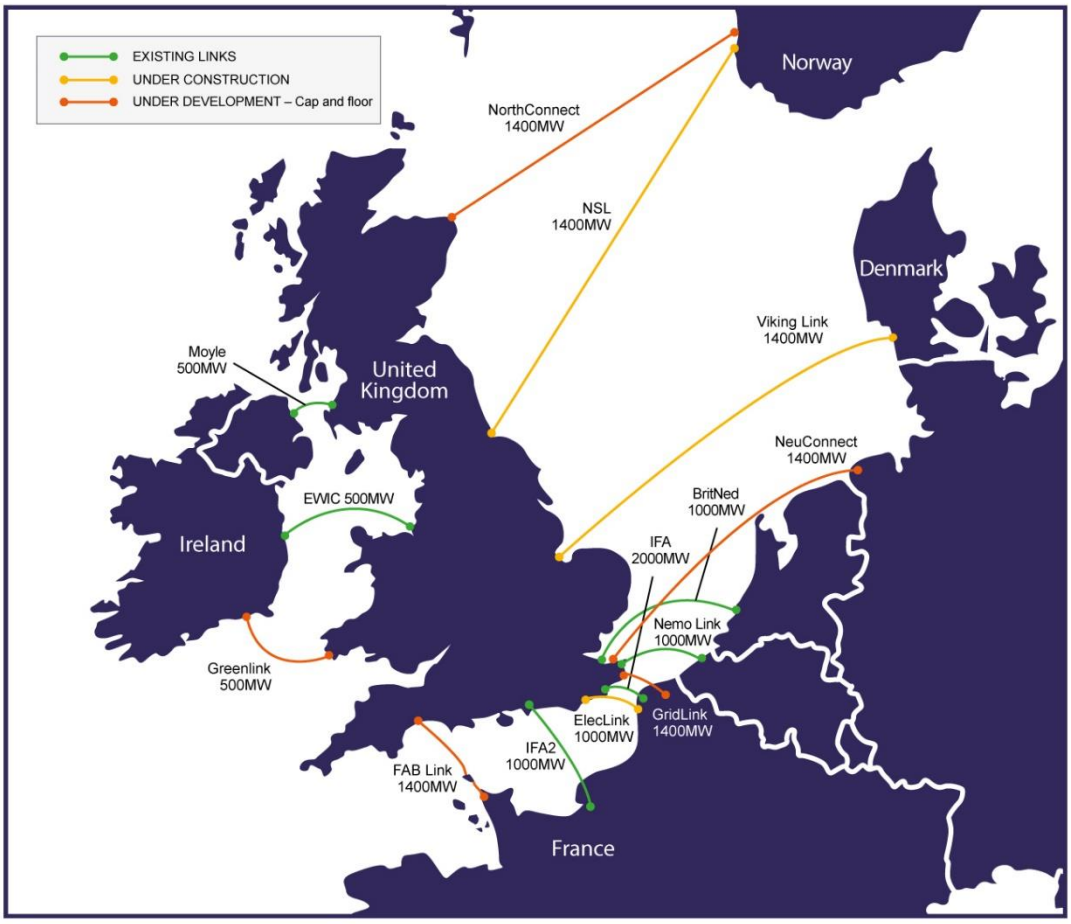
This section gives an overview of the Greenlink project and our cap and floor regime.

## Project Overview

2.1. The Greenlink project is a planned 500MW electricity interconnector between Pembrokeshire in Wales, Great Britain (GB) and Great Island in County Wexford, Ireland. In the UK, the connection to National Grid's existing network will be at Pembroke substation. In Ireland, the connection point to the existing network will be to EirGrid's Great Island substation.

Greenlink is shown alongside other operational and proposed projects in Figure 2 below:

*Figure 2 - Map of existing and proposed GB electricity interconnectors*



2.2. The Greenlink project is being developed by Greenlink Interconnector Limited (GIL). GIL is jointly owned by Element Power Holdings, part of Hudson Sustainable Investments, and Partners Group, on behalf of its clients.

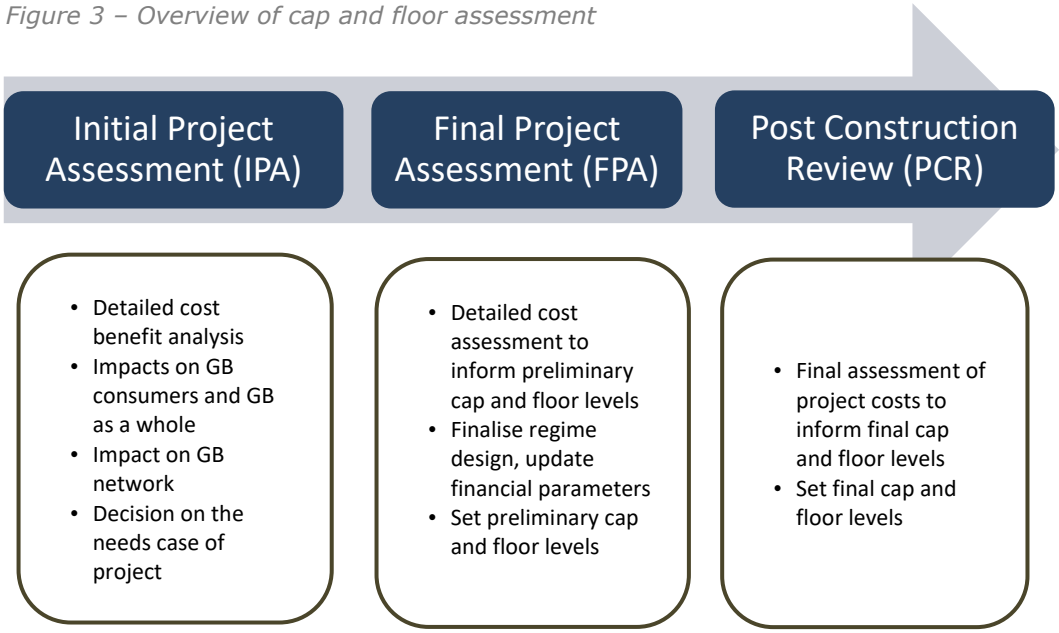
2.3. Our cap and floor regime applies to the 50% GB portion of the Greenlink project. The 50% which applies to the Irish side of the project is regulated by the Commission for Regulation of Utilities (CRU). More information on the cap and floor regime design for Greenlink is included in Appendix 1.

## Our Cap and Floor Regime

2.4. The cap and floor regime is the regulated route for interconnector development in GB. We developed the cap and floor regulatory model jointly with the Belgian regulator, CREG, for application to the Nemo Link interconnector. We then extended the cap and floor regime to other interconnectors in August 2014.[17]

2.5. There are three main stages to our cap and floor assessment framework, shown in Figure 3 below.

*Figure 3 – Overview of cap and floor assessment*




[17] We extended the cap and floor regime to near-term projects in August 2014, and then confirmed this as our enduring approach to interconnector regulation in March 2015 as part of our Integrated Transmission Planning and Regulation project conclusions.

- The IPA stage is when we assess the needs case for new interconnector projects. This is predominantly an economic assessment, taking into account the total costs and benefits of new interconnectors and assessing the likely impacts on consumers.

- At the FPA stage we confirm the grant of a cap and floor regime and assess the economic and efficient costs associated with developing, constructing, operating, maintaining and decommissioning of the licensee's interconnector. We also develop a project-specific financial model, set the preliminary cap and floor levels and values for incentives.

- We are not setting out our preliminary cap and floor levels for the Greenlink project in this consultation document. Our May 2020 regime variations decision allows us to set the preliminary floor level using the actual cost of debt and gearing achieved through a competitive finance raising process. Greenlink has informed us that this process will start after we have issued our FPA decision confirming the efficient costs for the project. We expect the finance raising process to end at financial close and produce key financial parameters (such as cost of debt and gearing) that will underpin the preliminary floor level. Following financial close, we will update the cap and floor financial model and publish the preliminary cap and floor levels based on the costs that we have assessed in this document.

- We confirm the cap and floor levels at the PCR stage, when we revisit aspects of our cost assessment that were not fixed at the FPA stage, and assess the efficiency of certain costs incurred during construction.

2.6. We assessed the needs case for the Greenlink project as part of our first cap and floor application window and decided in September 2015 to grant the project a cap and floor regime in principle.[18] This was based on our assessment that the project is likely to benefit GB consumers and GB as a whole based on the CBA results and other qualitative factors. This decision was subject to a number of conditions, including the projected costs of the project not materially increasing from the IPA stage and the project meeting the backstop connection deadline of 31 December 2023.[19]

[18] Decision on the Initial Project Assessment of the Greenlink interconnector

[19] The regime start date of all Window 1 projects is 1 January 2021 with a connection deadline of 31 December 2023. Any delay beyond 1 January 2021 will reduce the effective regime length by the length of the delay. Any delay beyond the connection deadline may mean revisiting our IPA analysis.

2.7. Following the updated FPA cost submission by Greenlink in August 2020, we consider the IPA conditions have not been met as, in our view, costs have materially increased from the projection at IPA stage. This has resulted in us revisiting the needs case of the project. Alongside this consultation we have published a letter outlining our decision that Greenlink remains likely to benefit GB consumers and GB as a whole.

2.8. We published a procedural update to our assessment framework in November 2017.[20] This noted that we no longer intend to consult on the FPA stage of our assessment, except in cases where information has significantly changed since our IPA stage. This would include situations where:

- project costs have materially increased;
- we think the expected impacts of the project have changed significantly since our IPA decision;
- the project has requested variations to the default regime design that we are minded to approve;
- the project does not meet the conditions that were attached to our IPA decisions; or
- the project has otherwise changed significantly.

2.9. We made this procedural update to allow for a quicker decision-making process where our FPA stage is more straightforward. In addition, we noted that some aspects at the FPA stage – such as updating financial parameters and setting a target for the availability incentive – are reasonably mechanistic and are undertaken in line with a policy framework that has already been decided.

2.10. We have decided that the Greenlink FPA qualifies for consultation. This is on the basis of our decision that costs have materially increased since the IPA, as well as the fact that we have approved variations to the default regime that were requested by GIL.

[20] Cap and floor regime: Open letter on procedural changes to our Final Project Assessment stage.

# 3. Cost Assessment

**Section Summary**

This section provides an overview of our cost assessment, which includes an assessment of firm costs and our initial views on uncertain costs.

**Questions**

Question 1: Do you agree with our proposed cost allowances?

## Scope of our cost assessment

3.1. During the IPA, GIL submitted its high-level estimates for the project's costs, based on the information that was available to them at that time. We did not undertake a detailed assessment of these costs. At the FPA stage, the cost estimate provided by GIL is much more mature, enabling us to undertake a detailed review of the costs.

3.2. Since the cap and floor levels are largely based on Greenlink's costs, at the FPA stage we assess the project costs to ensure these are economic and that consumers do not underwrite inefficient costs. We then use the GB share of these costs to inform the cap and floor levels for the GB share of the project.[21]

### Phased FPA process

3.3. Further to the letter that we published on 2 October 2018,[22] we agreed to conduct a phased FPA process for the Greenlink project, under which the information that we required Greenlink to submit to conduct our FPA was provided in three main stages. This allowed our FPA process to more effectively reflect:

- the phased nature of Greenlink's procurement process; and

[21] The costs that inform our cap and floor levels are 50% of the total project costs.
[22] Cap and floor regime: An update on the timing of the Final Project Assessment (FPA) for 'Window 1' interconnector projects

- the timing of the equivalent decision-making process progressing within the Irish regulator, the Commission for Regulation of Utilities (CRU).

3.4. Stage 1 and stage 2 of GIL's FPA submission provided qualitative and contextual information, including an overview of key technical and regulatory updates since Greenlink's IPA submission. These submissions also included an early view on the project's costs. These submissions allowed us to begin our assessment of the project and to engage with GIL through discussions to ensure that we had a complete basis for our assessment.

3.5. Stage 3 was submitted to us in April 2020. We were also provided with a cost update to the stage 3 submission in August 2020, as explained in further detail below. At the time of the April 2020 stage 3 submission, Greenlink had received its final tender returns and had appointed a preferred bidder to complete the majority of the manufacturing and construction works for the project. The stage 3 submission contained updated cost and risk information, as well as wider updates on the project and the final stages of the procurement process.

3.6. At this stage, Greenlink had made the majority of the key technical decisions for the project, and we had costs of a sufficient level of maturity to conduct a thorough and detailed cost assessment.

3.7. Our initial review of the April 2020 stage 3 submission confirmed that there had been a significant cost increase when comparing costs between Greenlink's IPA submission and its FPA stage 3 submission. Having acknowledged our view on this cost change, GIL provided us with an updated cost submission in August 2020.

3.8. This updated submission included some cost reductions when compared to the April 2020 stage 3 submission. However, as detailed in the decision letter accompanying this consultation, we believe that there had been a material cost increase to Greenlink's project costs between its IPA submission and the August 2020 cost update. We therefore decided to re-visit the project's needs case by undertaking a cost benefit analysis (CBA) of the project.

3.9. In this FPA consultation, we have reviewed the project's elements where costs are of a sufficient maturity. We have undertaken a detailed review of the project's development expenditure (devex), capital expenditure (capex) and aspects of its operational expenditure (opex).

3.10. Where cost elements are based on early estimates, we have undertaken a high-level review at this stage and, provided that there were not any significant issues in relation to assumptions that had been made, included placeholder values within this consultation.

3.11. This consultation provides our provisional view on the project costs. After careful consideration of all consultation responses, we will then publish our FPA decision on these costs, setting out our view on the economic and efficient costs for delivering the Greenlink project. We will conduct a final review of the project's costs at the PCR stage. At the PCR stage we would expect that the vast majority of GIL's costs would be fixed. Therefore, alongside a review of the eligible capex costs, we will complete our detailed assessment of GIL's post-construction costs at the PCR. We will then determine the final cap and floor levels for Greenlink.[23]

## Our view on Greenlink's submitted costs

3.12. Table 1 and table 2 provide an overview of our provisional view on the economic and efficient costs for the GB share of the Greenlink project.

*Table 1: Summary of devex and capex (costs are in nominal prices, GB share)[24]*

| Cost type | | GIL IPA Submission | GIL FPA Submission | Ofgem FPA Provisional Allowance |
|---|---|---|---|---|
| Devex (£m) | | 8.9 | 10.3 | 10.3 |
| Capex (£m) | *Main project costs* | 143.7 | 185.6 | 184.9 |
| | *Risk* | | 10.5 | 10.1 |
| **Total (£m)** | | **152.7** | **206.5** | **205.3** |

[23] By post-construction costs we mean costs associated with operational expenditure (opex), replacement expenditure (repex) and decommissioning expenditure (decommex).
[24] For all values in this document, due to rounding, the figures may not add up precisely to the totals indicated.

*Table 2: Summary of post-construction costs (costs are in real 2020 prices, GB share)*

| Cost type | GIL IPA Submission | GIL FPA Submission | Ofgem FPA Provisional Allowance |
|---|---|---|---|
| Operating costs (£m) | 68.0 | 145.9 | 145.9 |
| Replacement costs (£m) | | 7.4 | 7.4 |
| Decommissioning costs (£m) | | 3.8 | 3.8 |
| **Total** | **68.0** | **157.2** | **157.2** |

3.13. GIL's FPA submission sets out its rationale for the devex costs incurred to date, and the projected devex and capex spend for the remainder of the project's development and its construction. The majority of these costs relate to the engineering, procurement and construction (EPC) contract(s) that GIL will award for the project. We present our review of these costs in the sections below, which cover the assessments of:

3.13.1. devex costs;

3.13.2. capex costs; and

3.13.3. post-construction costs.

3.14. Table 3 provides a breakdown of the project's devex and capex costs, on a component basis, including our provisional FPA cost allowances.

*Table 3 – Devex and capex costs and proposed Ofgem adjustments (nominal, GB share)*[25]

| Cost type | Submitted cost (£m) | Provisional Adjustment (£m) | Provisional FPA value (£m) |
|---|---|---|---|
| Subsea cables | 58.5 | 0.0 | 58.5 |
| Land cables | 26.6 | 0.0 | 26.6 |
| Converter stations | 96.1 | 0.0 | 96.1 |
| Substations | 5.4 | 0.0 | 5.4 |
| Other | 9.4 | -0.8 | 8.6 |
| Risk | 10.5 | -0.5 | 10.1 |
| **Total** | **206.5** | **-1.3** | **205.3** |

## Assessment of devex costs

3.15. As presented in table 1, GIL submitted £10.3m of costs associated with development expenditure as part of its FPA submission.[26]

3.16. We consider devex to cover costs associated with items such as studies, assessments and resourcing costs that have been incurred prior to the project taking FID. The devex costs also include any eligible grants that have been awarded to the developer, such as the European Union's Connecting Europe Facility (CEF) grant.[27]

3.17. Due to the timing of our assessment, some of GIL's devex costs have already been incurred, and therefore can be considered as fixed, whilst others remain as estimates. These estimated costs reflect the period between GIL's Stage 3 submission to us and the anticipated date for the project's FID.

3.18. We have reviewed the costs associated with both the fixed and estimated devex costs during this assessment. We are satisfied that the total cost associated with the project's fixed

[25] Due to rounding, the figures in this table may not add up precisely to the totals indicated.
[26] Unless otherwise stated, all costs referred to in this section reflect the GB share.
[27] Grants such as the CEF grant are presented as negative values within GIL's submission.

devex costs are economic and efficient, and we are minded to allow the total sum of £9.4m associated with these costs.

3.19. We are also satisfied with GIL's estimates for the remainder of the devex costs. Therefore, provided that the actual incurred costs associated with these development works do not deviate significantly from these estimates, we are also minded to accept the total sum of £1.0m associated with these costs.

**Assessment of capex costs**

3.20. GIL submitted £196.2m of capex costs as part of its FPA submission. At this stage of the project, GIL have not yet incurred any capex costs. Therefore, this value is based on estimates.

3.21. We are minded to provide a provisional allowance for the majority of these costs, based on our assessment and the maturity of the estimates provided to us in GIL's submission. However, for non-firm costs that are based on initial estimates, we are minded to use a placeholder value for these costs at this stage, and to revisit these cost areas during the project's PCR.

3.22. Our assessment of the capex costs considered the following elements:

3.22.1. the suitability of the tender process of the project's main contract(s); and

3.22.2. the efficiency of the estimated capex costs on an overall basis and by component.

3.23. We provide further details on our assessment, and how we came to our minded to position, below.

**Firm capex costs**

3.24. The vast majority of Greenlink's capex costs can be attributed to the works associated with the project's main EPC contract(s).

3.25. The procurement process for these works is still ongoing. We have undertaken a detailed assessment of GIL's approach to procurement and find that the process and the expected outturn value of the contract(s) appear reasonable. Due to the maturity of the costs associated with these works, we refer to these as firm costs within this document.

3.26. Based on the competitive nature of the procurement process and our comparison of GIL's cost estimates with other similar projects, we expect the final contract costs to be economic and efficient.

3.27. We will look at the final contract costs following completion of the procurement exercise. Subject to satisfaction that the final stages of the process (i.e. between now and the contract award) have been run competitively, and subject to the final contract costs not being significantly different to current expectations, we are minded to provide the full allowance for the outturn value for the awarded contract(s). This means that we will not re-assess the contract(s) unless costs are significantly different.

3.28. The price schedules within Greenlink's EPC contract(s) include various staff and vessel rates the contractor(s) proposes to use, if Variation Orders (VOs) are required to enable the completion of the works.[28] However, a number of these rates are yet to be finalised. We expect to see further details on these rates during the project's annual submissions.

3.29. GIL will need to demonstrate that any rates are economic and efficient during our consideration of any VOs. We will assess VOs as they arise during the project's annual submissions. We will then make a final decision on these costs at the project's PCR.

3.30. Further to the above, we have also reviewed GIL's land costs. Subject to the final costs for these works not being significantly different to current expectations, we are minded to provide the full allowance for the outturn value of these costs. This is currently estimated as £2.5m. This means that we will not re-assess this cost area unless outturn costs are significantly different.

**Non-firm capex costs**

3.31. Following our review of GIL's submission, we are minded to apply a reduction of £1.3m compared to GIL's submitted value for these cost areas.

3.32. These costs related to three main areas:

[28] A VO is issued when there is an alteration to the scope of works within a construction contract. This may be in the form of an addition, substitution or omission from the original scope of works, and could bring either an increase or a decrease in costs.

3.32.1. Developer project management;

3.32.2. Developer insurance; and

3.32.3. Risks.

3.33. We discuss our assessment of each of these in turn, below.

**Developer project management**

3.34. This covers costs associated with GIL's own resourcing, as well as all relevant external contractors and advisers, during the project's construction phase.

3.35. We believe that, when compared to similar projects, GIL's developer project management costs appear reasonable. We also believe that the assumptions that sit behind these estimates are appropriate.

3.36. However, when combining the developer project management costs with the contractor's project management costs, we believe that Greenlink's combined project management costs appear to be towards the higher end of the range that we would expect for such costs.

3.37. We do not propose to adjust these developer project management costs at this stage. However, we will closely monitor these costs throughout the project's annual submissions, and its PCR, to ensure that they do not increase significantly. If we do see cost increases in this area that are not substantiated with robust justifications, then we may propose cost adjustments.

**Developer insurance**

3.38. This covers costs associated with the insurance coverage that GIL expect to place for the Greenlink construction phase.

3.39. GIL are yet to procure these various forms of insurance coverage. Therefore, the costs included within its submission are estimates, based on communication with its insurance broker.

3.40. Greenlink submitted a cost of £0.8m for Delay in Start Up (DSU) insurance for the project. After assessing this cost and following discussions with GIL, we do not believe that this

insurance provides a tangible benefit to consumers. We are therefore minded to disallow this cost. We acknowledge that this insurance could prove to be beneficial for Greenlink, in the event of a loss of projected revenue, but we do not believe it is a necessary cover for the project. Our minded-to position is that in the event that Greenlink do make a claim based on their DSU insurance, any revenue from this would not be considered part of the cap and floor and therefore any revenue from this source would not be considered against the cap and floor levels. We do not propose to revisit our assessment of the requirement for DSU insurance during our PCR.

3.41. Other than the costs associated with the project's DSU insurance, we do not propose to make any further adjustments to GIL's developer insurance costs. However, as these costs are still early estimates, we will undertake an in-depth analysis of all other insurance costs during the PCR.

**Risks**

3.42. GIL is forecasting to incur £10.5m of costs (GB share) as a result of a wide range of risks materialising during the construction phase. This includes, for example, costs for unforeseen ground conditions or those due to extreme weather conditions.

3.43. The cap and floor levels should not include risk allowances that result from inefficiencies. Furthermore, for risks which consumers should be (at least in part) underwriting, the developer should have appropriate mitigation measures in place.

3.44. We have assessed the risks included in GIL's FPA submission, based on the criteria mentioned above. Our minded-to position is that some of these risks should not be included in the FPA cap and floor calculation. For example, we are proposing to reject high impact, low probability risk costs, as these should not be taken into account when calculating the preliminary cap and floor levels. As well as removing ineligible risks, we are also proposing to reduce various costs for other risks, by adjusting the assumptions that sit behind these risks so that they are economic and efficient.

3.45. Our minded to position is to consider £10.1m as an appropriate placeholder to cover GIL's share of the eligible risks for the project. This is a reduction of £0.5m from GIL's £10.5m submission.[29]

3.46. We will monitor the project's risk profile and materialised risk expenditure throughout the annual submissions. We will take a view on the materialised risks at the PCR stage, applying the principles for risk eligibility that are set out in Appendix 2.

3.47. Our £10.1m allowance is based on GIL's detailed analysis of its construction risks, and our view on these risks. We do not expect the project's materialised risk expenditure to exceed this amount.

**Assessment of post-construction costs**

3.48. GIL submitted a total estimate of £157.2m (GB share) for the project's post-construction costs, which consisted of:[30]

- £145.9m for opex;
- £7.4m for repex; and
- £3.8m for decommex.

3.49. We have reviewed these costs and GIL's justification for them. However, as the project is still several years away from being operational, some of these costs are based on early estimates. Where this is the case, we have only undertaken a high-level assessment at this stage, to ensure that that the placeholder value that we will use for these are appropriate.

3.50. We do not propose to make any adjustments to GIL's post-construction costs at this stage.

[29] As previously noted, due to rounding, the figures may not add up precisely to the totals indicated.
[30] All post-construction costs reported within this section, and within this document, are in real 2020 prices.

**Firm post-construction costs**

3.51. Through the procurement process previously mentioned in this section, GIL is also procuring service and maintenance services for the project's operational phase. The costs associated with these services are therefore of the same maturity as the capex costs associated with the main EPC contract(s). These are for the service and maintenance of the project's converter stations and cables.

3.52. Based on the competitive nature of the procurement process and the comparison of GIL's expected costs with other similar projects, we expect the final costs for these services to be economic and efficient.

3.53. We will look at the final costs following completion of the procurement exercise. Subject to satisfaction that the final stages of the process (i.e. between now and the contract award) have been run competitively, and subject to the final costs for these services not being significantly different to current expectations, we are minded to provide the full allowance for the outturn value for these services. This means that we will not re-assess the costs for these services unless outturn costs are significantly different.

**Non-firm post-construction costs**

3.54. Following our review of GIL's submission, we are minded to use a placeholder value of £127.2m for post-construction costs that we have deemed to be non-firm.

3.55. This placeholder covers costs associated with the following elements during the project's operational phase:

3.55.1. Subsea cable surveys;

3.55.2. Personnel, commercial and business services;

3.55.3. Insurance;

3.55.4. Property and route;

3.55.5. Non-controllable opex;

3.55.6. Repex; and

3.55.7. Decommex.

3.56. We have reviewed the main assumptions and considerations that have informed these cost estimates. Following our review, we believe that GIL's estimates for these areas appear reasonable. We also believe that the assumptions that sit behind these estimates are appropriate.

3.57. Therefore, we do not propose to make any adjustments to these costs at this stage. We propose to use a placeholder value of £127.2m for the project's non-firm post-construction costs.

3.58. We will undertake an in-depth review of these cost elements during the project's PCR. We expect these costs to be more mature at the PCR, which will enable us to complete a thorough assessment of their eligibility and efficiency. However, we do not expect that these costs will increase significantly from these estimates.

# 4. Cap and floor regime variations

**Section Summary**

This section sets out key aspects of our regime variations decision and its application for GIL. This includes how we have implemented the variations decision in our proposed licence modifications and our cap and floor financial model modifications for Greenlink.

4.1. As allowed in the cap and floor regime, GIL requested changes to the financing aspects of the default regime. GIL noted that granting the request would broaden the sources of financing available to the developer and allow a more efficient financing arrangement to progress the Greenlink project through development and construction. In our May 2020 decision,[31] we accepted some of GIL's requests (after a public consultation) and made changes to our default regime to apply for GIL. The detail of these changes is set out in our decision.

4.2. To reflect the approved changes for GIL, we have proposed modifications to our typical special licence conditions for cap and floor projects. This modified version will apply for GIL after we have considered views from stakeholders on the statutory licence modification consultation we published on February 2021.[32]

4.3. We published the modified versions of the special licence conditions and the cap and floor financial model implementing our regime variations for Greenlink as subsidiary documents to the consultation.

4.4. Table 4 below sets out a summary of our May 2020 decision and the licence conditions implementing the decision. More detail of our May 2020 decision that will apply to GIL is set out in relevant aspects of our proposed special licence conditions for GIL.

[31] Decision on proposed changes to our electricity interconnector cap and floor regime to enable project finance solutions

[32] Statutory consultation on our proposal to insert new special conditions into the electricity interconnector licences held by Greenlink Interconnector Limited and NeuConnect Britain Limited to implement the cap and floor regime

*Table 4: Regime variations decision to apply for GIL*

| Item number | Regime variations decision to apply for GIL | Relevant GIL licence condition modified to implement our decision |
|---|---|---|
| 1 | We will assess Greenlink interconnector revenues against the cap and floor levels every year to ensure that GIL is more likely to access any consumer payments annually through the TNUoS process. Under the default regime, we assess revenues every five years although licensees can request a shorter assessment period with Ofgem's approval. | **Special Condition 3:** Cap and Floor Assessment; and **Special Condition 5:** Assessed Revenue |
| 2 | Consumers will top up revenues to the floor (in the form of a temporary loan to GIL) to enable debt servicing if GIL is unable to meet the 80% minimum availability target. GIL will have to repay consumers (from future revenues) on a Net Present Value (NPV-neutral) basis for consumer payments received in years where availability is below 80%. Under the default regime, consumer will not top up revenues to the floor level if a licensee fails to meet the minimum availability target. | **Special Condition 4:** Interconnector Availability Incentive; and **Special Condition 10:** Calculation of adjustments to the Interconnector Revenue |
| 3 | We have added the following three events to the force majeure definition applicable in the GIL licence: (i) strike, (ii) lockout, and (iii) other industrial disturbance. The default regime does not cover these events. We note that this particular change (unlike the others) will apply for all cap and floor projects. | **Special Condition 1:** Definitions and Interpretation |
| 4 | We will set the floor level for GIL based on the below two alternative approaches: **Approach 1:** Notional approach using Markit's bond index 'iBoxx GBP Non-financials BBB 10+' with everything else remaining the same as in default regime; or **Approach 2:** Market approach based on actual debt financing achieved, its cost and actual gearing, | **Special Condition 2:** Cap Level and Floor Level; **Special Condition 3:** Cap and Floor Assessment; and **Special Condition 10:** Calculation of adjustments to the Interconnector Revenue |

| | | |
|---|---|---|
| | including provision for a reasonable debt service cover ratio and/or reserve and tail requirements (with Ofgem to oversee the process). Under this approach, we set the floor to allow developers to recover only what is necessary to meet their contractual yearly debt financing obligations to lenders; and we also provide a mechanism for developers to repay consumers any extra costs over Approach 1 if the overall cost under Approach 2 is higher. | |

## Statutory consultation on proposed licence modifications for GIL

4.5. In our February 2021 consultation, we proposed changes to the electricity interconnector licence held by GIL. These changes introduce new special conditions into GIL's licence that will give effect to its specific cap and floor regime. In addition, the changes also set out the cap and floor regime variations to apply for GIL.

4.6. These proposed changes follow a statutory licence modification consultation process under section 11A(2) of the Electricity Act 1989. We have provided more information in our cover letter to the consultation.

## Cap and floor financial model for the Greenlink interconnector

4.7. The Cap and Floor Financial Models (CFFM1 and CFFM2) are a key part of the cap and floor framework. CFFM1 is a Microsoft Excel-based financial model that is used to determine, for any electricity interconnector granted the cap and floor regime:

- The preliminary cap and floor levels at the Final Project Assessment (FPA) stage; and
- The final cap and floor levels, and resulting Post Construction Adjustment (PCA) to the preliminary cap and floor levels, at the Post Construction Review (PCR) stage.

4.8. We have modified slightly the structure of our default CFFM1 to reflect our May 2020 regime variations for GIL. This modified version will apply for the Greenlink project as the Greenlink Cap and Floor Financial Model 1 (GCFFM1). We have published our Cap and Floor Financial Model 1 Handbook (CFFM1H) explaining the structure and functioning of the GCFFM1.

4.9. The default CFFM1 model follows a notional cost of debt approach – using notional financial inputs to generate cap and floor levels against which actual revenues earned by an interconnector are then compared. The GCFFM1 follows an actual cost of debt approach – using notional financial inputs to generate the cap level and a notional floor level, but also actual financial inputs determined via market competition (overseen by Ofgem) to generate an actual floor level. Further detail is available in Appendix 2 to our February 2021 consultation cover letter.

4.10. CFFM2 is also a Microsoft Excel-based financial model that, for any electricity interconnector granted the cap and floor regime, is used during the 25-year operational period to:

- Determine, if required, any adjustment to be made to the cap and floor levels set at Post Construction Review (PCR) stage;
- Index cap and floor levels to account for inflation;
- Adjust cap and floor levels to apply the (+/-2%) availability incentive;
- Assess actual interconnector revenue against cap and floor levels;
- Determine whether, in any relevant period of time, there is a revenue excess (above the cap) or shortfall (below the floor) and, therefore, whether any payments need to be made, respectively, to or from GB consumers; and determine the amount of any required payments; and
- Determine the amount of any pass-through payments required in relation to non-controllable opex.

4.11. We will modify our default CFFM2 to reflect our May 2020 regime variations for GIL (GCFFM2) at the PCR stage for the project.

## Determination of Cap and Floor levels for GIL

4.12. We are following a slightly different decision-making sequence for determining the preliminary cap and floor levels for a project.

4.13. Our past FPA decisions have followed contract awards (FID) as was preferred by the respective project developers and have set out the preliminary cap and floor levels that applies for the projects. Our approach for GIL is different – FID will follow our FPA decision as this would give potential lenders a clear view on the project costs that GB consumers will support.

This project costs would then be converted into preliminary cap and floor levels based on financial parameters agreed between GIL and its lenders at financial close with Ofgem overseeing the process.

4.14. The approach we are following for GIL starts with our statutory consultation to update GIL's electricity interconnector licence and ends with a publication of our FPA decision for the project. Financial close by GIL and publication of the preliminary cap and floor levels that would apply for the project will follow our FPA decision for GIL. Further detail on our proposed sequence is set out below:

1) consult and make a decision on the GIL FPA setting out the efficient costs that will apply in the GCFFM1;

2) oversee debt financing process undertaken by GIL and sign-off on the financing parameters (to underpin the floor level) agreed with lenders through a competitive and transparent process;

3) run the GCFFM1 based on project costs approved at FPA and based on financial parameters determined at financial close to generate the preliminary cap, notional floor and actual floor levels for GIL; and

4) publish the updated GCFFM1 and a decision setting out the preliminary cap and floor levels to apply for the Greenlink project.

4.15. The preliminary cap and floor levels set following financial close are not final. They will be finalised following our PCR assessment to account for eligible changes in costs between the FPA stage and the PCR stage. Please refer to Section 5 for more detail on the scope of our PCR process and Appendix 2 for an overview of the principles we will apply when considering risk-related expenditure at our PCR stage.

# 5. Annual Reporting and our Post Construction Review

**Section Summary**

This section provides information on the annual reporting requirements, the scope and timing of our PCR stage and high-level principles on eligibility.

**Questions**

Question 1: Do you agree with our proposed approach to the post-construction review?

Question 2: Do you have any other views on the post-construction review for GIL?

## Annual reporting

5.1. GIL will be required to submit annual reports during the construction phase, including cost variations from those set at the FPA. GIL will be required to submit detailed financial information and explanations of any changes annually.

5.2. GIL will need to maintain high quality financial records, according to the requirements set out by Ofgem,[33] and to provide evidence of expenditure during construction. As a minimum GIL will need to:

5.2.1. Ensure a clear paper trail of expenditure for all items submitted as part of the annual reporting. For example, GIL need to differentiate clearly between expenditure on the original contract and any variations to it. If we are unable to distinguish the expenditure, we may assume it is expenditure for items already assessed at the FPA and therefore not eligible for further review.

5.2.2. Evidence will need to be provided for all expenditure, such that a forensic audit can be carried out by Ofgem if required. Items which cannot be evidenced (e.g. no invoice and proof of payment) may be disallowed by Ofgem entirely.

[33] Our Cap and Floor Regulatory Instructions and Guidance (RIGs), published as Schedule 5A to our Nemo Link PCR decision, sets out these requirements.

5.3. All changes in cost (including risk-related costs and VOs) will need to be transparently documented, against the scope of works and expectations at the FPA, so that they can be assessed separately from FPA items. In addition, the link between these cost changes and GIL's proposed FPA risk allowance should be noted within the annual submissions. These costs will need to be evidenced and documented in the same reporting year in which they occurred.

5.4. If any risk-related cost variance is deemed eligible, only efficient costs will then be allowed. We expect GIL's decisions taken in response to such risk-related factors to be evidence-based and the developer to be responsible for proving that decisions taken in response to these factors were efficient. Appendix 2 provides further information on risk-related eligibility at the PCR.

## Scope of the Post Construction Review

5.5. This FPA consultation proposes our minded-to position on the economic and efficient costs to feed into the cap and floor levels. For many reasons the outturn costs may be different. The PCR will adjust the FPA's preliminary cap and floor levels for costs we deem to be eligible and efficient.

5.6. The result of the PCR will be an update to the cap and floor levels in GIL's interconnector licence, which will represent the final cap and floor values for the duration of Greenlink's cap and floor regime (subject to discretionary opex and decommex reopeners).

5.7. We may choose to conduct a forensic analysis of GIL's costs, or any eligible cost variations, to ensure the traceability and substantiation of the cost submission. This analysis can be used to help establish the final PCR values for the project, including any adjustments to values stated within this document.

5.8. More information on our consideration of risk-related expenditure at the PCR stage is included in Appendix 2.

## Timing of the Post Construction Review

5.9. We intend to start the PCR process:

a) The earlier of either: [34]

   i. a date on which between 85% and 95% of development and capital expenditure, excluding IDC (and any snagging retention) has been committed to the development and construction of the Licensee's interconnector; and

   ii. The Full Commissioning Date; or

b) Such date as may be agreed in writing by us.

5.10. If some risks materialise shortly after PCR submission by GIL, we may allow inclusion of these costs into the PCR up to a certain cut-off point. This cut-off point will be specified as part of the PCR guidance that we will issue to GIL to ensure that there is no unreasonable delay to the PCR process.

5.11. If GIL have reasonable grounds to believe that some of the remaining construction works might be exposed to certain risks after this point, we intend to provide them with an ex-ante allowance for managing these risks, which would be granted as part of the PCR and would not be reopened.

5.12. If the PCR process doesn't conclude within the first year of operation, we may choose to disallow GIL any within-period revenue assessments until the PCR is completed and final cap and floor values are established.

[34] This wording is still under consultation as part of our Statutory consultation on our proposal to insert new special conditions into the electricity interconnector licences held by Greenlink Interconnector Limited and NeuConnect Britain Limited to implement the cap and floor regime

# 6. Other Aspects of our Final Project Assessment

**Section Summary**

This section sets out our views on the technical aspects of the FPA. Mainly, our review of the technical design and our setting of the project-specific target for the availability incentive.

**Questions**

Question 1: Do you agree with our proposal to set an availability target of 97.55% for the GIL interconnector based on the updated report by GHD consultants?

Question 2: Do you have any views on the technical assessment carried out on GIL?

## Technical Assessment

6.1. At the FPA stage we undertake a high-level assessment of the project's technical design. The aim of this assessment is to ensure that the developers have adopted a sensible procurement strategy, which has informed an efficient technical design.

6.2. The Greenlink interconnector will have a symmetrical monopole configuration. This consists of two conductors, one positive and one negative, between the two converter stations. This is the expected configuration for schemes with rated capacity of less than 1000MW. This type of configuration offers an optimal level of reliability. However, when main circuit faults occur, all transfer capacity is lost while repair or replacement take place. This is consistent with reliability and availability assumptions within the FPA submission.

6.3. A voltage level of 320 kV has been selected for this project. We recognise this DC system voltage has become common amongst many existing interconnector projects of this size.

6.4. GIL's IPA submission makes reference to a capacity of either 500MW or 700MW. At the time of IPA submission, the proposed rating was based on the maximum permitted infeed loss, that is the most capacity that can be lost by a single failure, which in Ireland was 500MW.

6.5. In October 2019, the nominal rating of the interconnector was increased to 504MW (noting that the transmission entry capacity of the East-West Interconnector increased to 504MW at the time of commissioning). The bilateral connection agreements also reflect this small increase.

6.6. GIL are investigating the possibility of including functionality for a 40% overload for short periods of time. This would increase the capacity to 700MW for short durations. Both converter station and DC cable equipment specifications have shown feasibility for a short-term capacity overload which will be at no additional cost and without any overall detrimental impact.

## Availability Incentive

6.7. The availability incentive is a mechanistic incentive, which applies to all cap and floor interconnector projects. The incentive aims to ensure that the developers maintain technical availability of the cable, even in periods when they could reasonably expect revenues to exceed the cap or fall below the floor. Incentivising good technical availability will help to ensure that consumers realise the full benefits of interconnection between GB and Ireland.

6.8. The availability incentive gives a potential 2% upside and downside to maximum interconnector revenues at the cap. This is based on performance against a target level of availability. If developers outperform against the target by up to two percentage points, then the cap level increases by the same amount. If developers underperform against the target by up to two percentage points, then the cap level reduces by the equivalent. The specific availability target varies from project to project, depending on a number of technical factors such as project design and cable length.

6.9. The availability target is determined by a Microsoft Excel-based model designed by Sinclair Knight Merz (SKM) engineering consultants, for our work on Nemo Link's cap and floor regime in 2013. SKM recommended that the model should be updated where possible to reflect new information that becomes available to ensure that developments in VSC converter and HVDC cable technologies are captured.

6.10. This was materially updated by GHD (Gutteridge Haskins & Davey) consultants for the NSL FPA in 2016 and the IFA2 FPA in 2018. GHD's updates ensured that the model structure and source data continued to be fit for purpose. They also updated the model so that it could capture project-specific information thus increasing the usability.

6.11. For this FPA, we asked GHD to update the technical input assumptions to reflect the final design of the Greenlink interconnector. The model has been updated to reflect the latest HVDC reliability and availability data that has been recorded since the last time the model was

updated, in 2018. As no new data has been published[35] in relation to cable reliability, the submarine cable data in the model has not been updated.

6.12. The failure rate selection factor for Greenlink's offshore HVDC cable was set to 'low' as opposed to the 'average' setting, which was used in the modelling for the IFA2 and NSL FPAs. This decision was primarily driven by the Cable Burial Risk Assessment (CBRA), which was completed for Greenlink. The CBRA outlines a target depth of lowering in order to mitigate damage by third parties. We note that the uptake of CBRAs on projects allows for the submarine cable to be more appropriately protected for the full cable length. We expect future projects that follow similar industry best practice will also have a 'low' failure rate selection factor.

6.13. **Based on GHD's analysis and recommendation, we are minded to apply an availability incentive target of 97.55% for Greenlink's cap and floor regime.**

6.14. GHD's summary report and the updated availability model are published alongside this decision. GHD's summary report contains details on the updates performed to the availability model.

## Force majeure relief request

6.15. The regime start date for all Window 1 projects is 1 January 2021 or earlier; any delay to the connection date beyond this date would mean the 25-year duration of the cap and floor regime will still commence on 1 January 2021. GIL, alongside their FPA submission, requested 36 months of regime start date relief under our force majeure mechanism.

6.16. We intend to make our decision on GIL's force majeure relief request in the summer of 2021 following the consultation on our new Standard Licence Condition on "Delay to Regime Start Date caused by Pre-operational Force Majeure".

[35] The CIGRE underground and cable survey update was anticipated in 2018/19 had not been published at the time of this assessment hence there has been no update to the subsea cable failure rates in the model.

# Appendices

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# Appendix 1

## Regime Summary for Greenlink

In this appendix we provide a summary of the key cap and floor regime features that will apply for GIL. Financial parameters not provided will be estimated following FID using the FID date as reference date. We will calculate and publish these after FID together with the preliminary cap and floor levels that will apply for GIL.

The final regime design will be confirmed via a decision by the Authority after the close of our February 2021 statutory licence modification consultation for GIL.

*Table 5: Key regime features*

| Feature | Default regime | GIL regime variations |
|---|---|---|
| Regime duration and start date | • The regime duration will be confirmed after we have considered GIL's force majeure request.<br>• The cap level will come into effect automatically on the regime start date.<br>• The floor level will come into effect following a successful completion of a proving period and will be retrospectively applied from the date when the successful proving period started.<br>• Except for delays caused by force majeure events, we will start the 25-year cap and floor period from the earlier of the actual commissioning date or 1 January 2021. This means that if non-FM delays cause the connection date to be delayed beyond 1 January 2021, the regime start date will still be 1 January 2021.<br>• We will grant interest during construction (IDC) and additional incurred costs associated with delays if developers can demonstrate they were efficiently incurred. Our final view on the application of IDC to the | • No change – same as default regime |

| | | |
|---|---|---|
| | project's spend will be confirmed at the PCR stage. | |
| Amount of project covered by the regime | • The GB cap and floor regime broadly covers 50% of the project's costs – with minor deviations set out below – and will cover 50% of the total revenues earned by the interconnector.<br>• The detailed costs that inform our cap and floor levels are: 50% of GIL's development costs; 50% of the total costs of cable, converters, site preparation (at both GB and Ireland); 100% of GB-specific separate costs; and 0% of Irish-specific separate costs. | • No change – same as default regime |
| Interconnector revenues | • All sources of interconnector revenue, including from selling capacity, capacity market payments and provision of ancillary services will be taken into account for assessment against the cap and floor levels.<br>• Receipts that substitute revenue will also be included, for example:<br>• business interruption insurance, and<br>• constraint payments.<br>• Certain 'market related costs', defined as firmness, error accounting costs and trip contract costs, will be netted off revenues before comparison against the cap and floor levels (which gives the 'assessed revenue'). | • No change – same as default regime |
| Assessment period (assessing whether interconnector revenues are above the cap or below the floor) | • Each assessment period is five years. This means that the interconnector's 'assessed revenue' will be compared to the cap and floor levels on a net present value (NPV) neutral basis, every five years.<br>• Each five-year assessment period shall be considered in isolation, with no carry-overs between assessment periods.<br>• Where the interconnector's revenue is below the floor or above the cap (on a cumulative NPV-neutral basis) during an assessment period, the developer may request a 'within- | • Each assessment period is one year. This means the interconnector's 'assessed revenue' will be compared to the cap and floor levels on a net present value (NPV) neutral basis, every year.<br>• The discount rate applied for the NPV-neutrality calculations (the operational discount rate) will be the Bank of England's Sterling Overnight Index Average |

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| | period adjustment' on the grounds of:<br>○ financeability; or<br>○ pre-empting a material end of period adjustment.<br>• Such a request can cover from year 1 up to year 4 of any five-year assessment period, but must reflect whole years only (not partial years).<br>• Ofgem cannot request a within-period adjustment (i.e. only the developer can trigger a within-period adjustment).<br>• Any within period adjustment will be subject to a true-up on a NPV neutral basis at the end of the relevant assessment period.<br>• The discount rate applied for the NPV-neutrality calculations (the operational discount rate) will be the notional operational discount rate (ODR), calculated as the simple arithmetic average of the floor return rate and the cap return rate. | (SONIA) rate applicable for the period under consideration plus a margin to be determined at financial close (based on a competitive debt raising process and with the approval of the Authority). |
| Regulatory reporting | • Developers will be required to report annually during the operational phase on revenues, availability and costs.<br>• Developers will also be required to report during construction on construction progress and costs.<br>• This reporting must be in line with the 'regulatory instructions and guidance' (RIGs) issued by Ofgem. | • No change – same as default regime. |
| Cap and floor Payments | • Cap and floor payments will be made between the developer and NGESO as the system operator and will be recovered/distributed via the prevailing transmission charging arrangements. | • No change – Same as default regime |

*Table 6: Cap and floor levels*

| Principles for setting the cap and floor levels | Default Regime | GIL Regime variations |
|---|---|---|
| Building Blocks Approach | • The cap and the floor levels are built from building blocks of development costs, capital costs, operating and maintenance costs, decommissioning costs, tax and allowed return.<br>• The cost related building blocks (capital costs, operations, maintenance and decommissioning) as well as the tax and return building blocks are confirmed at FPA and/or PCR stages.<br>• The cap and floor levels will be profiled so that they are flat over time in real terms. | A Notional or Market approach is possible:<br>• Notional approach: No change – same as default regime (but replacing the default benchmark with 'iBoxx GBP Non-financials BBB 10+', with everything else remaining the same as in the default regime).<br>• Market approach: The cap level is built in the same way as under the default approach; the floor level equals actual debt servicing costs, including interest payments and principal repayment, as well as provision for a reasonable debt service cover ratio and/or reserve and tail requirements, plus the yearly operational costs incurred during those years in which debt is serviced. |
| Cap and floor levels are indexed by RPI | • Cap and floor levels are indexed by RPI using the CHAW index. | • No change – same as default regime. |
| Currency | • Cap and floor levels are expressed in Pound Sterling. | • No change – same as default regime. |
| Availability incentive and Minimum Availability. | • The target availability level for Greenlink is 97.55%<br>• The cap level will be adjusted annually by up to +/- 2% if interconnector availability exceeds or falls short of a target availability level. This means that availability above (or below) the target level will result in a one-for-one percentage increase (or decrease) in the cap level, up to +/- 2%.<br>• Developers will lose automatic eligibility for floor payments for | • Same as default with the following exception: consumers will top up revenues to the floor (in the form of a temporary loan to GIL) to enable debt servicing if GIL is unable to meet the 80% minimum availability target. GIL will have to repay consumers (from future revenues) on a Net Present Value (NPV-neutral) basis for consumer payments received in years where availability is below 80% (before any |

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| | each individual year if availability is below 80% in that year.<br>• Ofgem will retain the discretion to reinstate eligibility for floor payments if the outage that caused availability to fall below 80% was caused by an 'exceptional event' (i.e. force majeure). | distribution or payment to equity providers).<br>• Outstanding temporary loans (over the regime duration) to GIL would not be allowed to exceed a maximum of four times the annual floor level. |

*Table 7: Financial parameters for Greenlink*

| Financial Parameters | Default regime | GIL regime variations |
|---|---|---|
| Returns at the floor | • The allowed notional return rate at the floor (real-RPI) will be applied to 100% of RAV.<br>• This notional return is calculated using the 20-day trailing average to the FID date of the average yield on two iBoxx GBP Non-Financial indices of bonds with 10+ years to maturity, with credit rating of A and BBB. Inflation used to deflate nominal iBoxx yields from nominal to real-RPI is 10-year breakeven inflation (reflecting the difference between nominal and real gilt yields), as published by the Bank of England. | A Notional or Market approach is possible:<br>• Notional approach: no change – same as default regime (but replace the default benchmark with iBoxx GBP Non-financials BBB 10+, with everything else remaining the same as in the default regime).<br>• Market approach: return at the floor is based on actual debt financing achieved, its cost and actual gearing, including provision for a reasonable debt service cover ratio and/or reserve and tail requirements, with Ofgem to oversee the competitive funding process. |
| Returns at the cap | • The allowed notional return rate at the cap (real-RPI) will be applied to 100% of RAV.<br>• This is calculated using capital asset pricing model (CAPM) and comprises the following elements:<br>○ Equity beta: 1.25<br>○ Risk free rate: 1.6%<br>○ Total market return: latest DMS average of UK equity returns since 1900 available at FID date | • No change – same as default regime. |

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| | ○ UK RPI formula-effect adjustment: 0.4% | |
| Interest during construction (IDC) | • This is a weighted-average cost of capital calculated using CAPM for the cost of equity and the floor return rate as the cost of debt. The value comprises the following elements:<br>○ Cost of debt: estimated with reference to FID date<br>○ Risk-free rate: estimated with reference to FID date<br>○ Total market return: estimated with reference to FID date<br>○ Equity beta (weighted-average of a comparator group): estimated with reference to FID date<br>○ UK RPI formula-effect adjustment: 0.4%<br>○ Pre-operational gearing (weighted-average of a comparator group): estimated with reference to FID date<br>○ Development risk premium: 0.54%<br>○ Construction risk premium: 0.91%. | • IDC is unavailable under the market approach. It is replaced with the actual debt financing terms agreed by GIL with lenders to the project. |
| Tax | • Corporation tax rate and write-down allowances used for the purposes of calculating cap and floor values are the UK tax rates as published by HM Treasury. | • No change – same as default regime. |
| Transaction costs | • The financial transaction costs are calculated as a percentage of the opening RAV. The allowances are 2.5% for debt transaction costs and 5% for equity transaction costs. | • Notional approach: no change – same as default regime.<br>• Market approach: determined through market competition. |

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| | • The final allowance (in £) will reflect the final RAV at the PCR stage. | |

# Appendix 2

## Risk related eligibility at the PCR

This appendix provides an overview of the principles we'll apply when considering risk-related expenditure at our PCR stage. Risk-related expenditure is allowable within the PCR where the risk is foreseeable but it would have been uneconomic to mitigate the entirety of it. We present the risk eligibility review process in the diagram below.

**Examples of risks**

We recognise that interconnector projects are large, complex assets and that they often face unique construction risks on a case-by-case basis. This is why we have not sought to include a definitive list of risks that will or will not be eligible for assessment at the PCR stage. Not all projects will face the same risks, and some projects may encounter risk-related expenditure that neither the project developers nor we could have foreseen.

The section below lists some specific risks where we would expect related expenditure to be eligible, considered on case-by-case basis for eligibility or ineligible for assessment at the PCR stage. These lists are non-exhaustive and it will be the responsibility of project developers to demonstrate that risk-related expenditure meets our eligibility principles in the PCR submission.

Examples of risks that we would expect to be eligible for our PCR assessment:

- Soil conditions are significantly different to those indicated by the developer's relevant survey(s) or studies,[36] and therefore additional rock placement or ploughing/burial equipment is required.

- TSOs at either end change the connection arrangements or requirements, which leads to new design requirements and/or delays.

- Grid reinforcement works by TSOs are delayed.

- A significant number of unexploded ordnances are discovered that were not detected by the developer's initial studies or surveys. [30]

**Examples of risks that we would consider on a case-by-case basis for eligibility under the PCR assessment:**

- Weather conditions (cable) – harsh weather conditions offshore beyond statistical expectations for that time of year.

[36] Assuming that the initial surveys or studies were conducted in line with industry good practice and therefore should have been deemed reliable. The onus is on project developers to ensure that their strategy in relation to studies and surveys is appropriate. We would expect the developer to have negotiated suitable rates in advance such that they are not a distressed buyer of services.

- Weather conditions (converter) – site conditions mean that construction is delayed beyond what could have reasonably been expected. This can cover excessive wind, flooding, snow, avalanche etc.

- Contractors or other related parties fail to deliver on their contracted expectations or obligations.

- Knock-on effects from contractor delivery of other major projects cause delays/additional costs.

For both of the above examples, to be considered for inclusion in the PCR, we would expect the following circumstances to apply:

- The additional incurred costs are in excess of contractual damages received.

- The developer had adequate risk monitoring processes in place and took timely action to mitigate incurred cost.

- It would have been uneconomic to insure against the scale of the contractor failure.

**Examples of risks that we would expect to be ineligible for our PCR assessment:**

- Performance of the project organisation leads to delays or additional costs.

- The cable or converter design is unsatisfactory, leading to additional costs or delays.

- Cable or converters are damaged during transport (unless this is due to third party actions or weather events beyond usual expectations).

- Cable laying vessels break down or are not available as scheduled.

- Cable is damaged during manufacturing.

- Cable damage during installation due to inappropriate practices/use of inappropriate equipment.

**Our PCR assessment of eligible risk expenditure**

We recognise that there is a strong incentive on developers to efficiently manage and minimise costs within the construction phase, and that this incentive extends to unexpected costs. However, we still think it is necessary to assess the costs incurred in dealing with unexpected events. This is to ensure that the costs have been efficiently incurred, and represent good value for consumers.

We will look to ensure that proper process was undertaken, that risk-related expenditure is well-documented, and that costs incurred were not excessive for that type of action.

In addition, our dialogue with project developers throughout the construction stage as part of our annual reporting process should provide developers with an opportunity to ensure that costs (including in relation to risk events) are updated regularly and that sufficient supporting evidence is provided to us. Whilst we will not make any final decisions on cost variations (including risk-related expenditure) prior to the PCR stage, we expect developers to provide us with justification as the project progresses. If we notice large variances from the planned expenditure, we may ask for further evidence during this annual process. We would also ask for further evidence and justification if the PCR submission differs from the iterative updates received as part of the annual reporting process.

# Appendix 3

## Privacy Notice on Consultations

**Personal data**

The following explains your rights and gives you the information you are entitled to under the General Data Protection Regulation (GDPR).

Note that this section only refers to your personal data (your name address and anything that could be used to identify you personally) not the content of your response to the consultation.

**1. The identity of the controller and contact details of our Data Protection Officer**

The Gas and Electricity Markets Authority is the controller, (for ease of reference, "Ofgem"). The Data Protection Officer can be contacted at dpo@ofgem.gov.uk

**2. Why we are collecting your personal data**

Your personal data is being collected as an essential part of the consultation process, so that we can contact you regarding your response and for statistical purposes. We may also use it to contact you about related matters.

**3. Our legal basis for processing your personal data**

As a public authority, the GDPR makes provision for Ofgem to process personal data as necessary for the effective performance of a task carried out in the public interest. i.e. a consultation.

**3. With whom we will be sharing your personal data**

***(Include here all organisations outside Ofgem who will be given all or some of the data. There is no need to include organisations that will only receive anonymised data. If different organisations see different set of data then make this clear. Be a specific as possible.)***

**4. For how long we will keep your personal data, or criteria used to determine the retention period.**

Your personal data will be held for ***(be as clear as possible but allow room for changes to programmes or policy. It is acceptable to give a relative time e.g. 'six months after the project is closed')***

**5. Your rights**

The data we are collecting is your personal data, and you have considerable say over what happens to it. You have the right to:

- know how we use your personal data
- access your personal data
- have personal data corrected if it is inaccurate or incomplete
- ask us to delete personal data when we no longer need it
- ask us to restrict how we process your data
- get your data from us and re-use it across other services
- object to certain ways we use your data
- be safeguarded against risks where decisions based on your data are taken entirely automatically
- tell us if we can share your information with 3rd parties
- tell us your preferred frequency, content and format of our communications with you
- to lodge a complaint with the independent Information Commissioner (ICO) if you think we are not handling your data fairly or in accordance with the law. You can contact the ICO at https://ico.org.uk/, or telephone 0303 123 1113.

**6. Your personal data will not be sent overseas** (Note that this cannot be claimed if using Survey Monkey for the consultation as their servers are in the US. In that case use "the Data you provide directly will be stored by Survey Monkey on their servers in the United States. We have taken all necessary precautions to ensure that your rights in term of data protection will not be compromised by this".

**7. Your personal data will not be used for any automated decision making.**

**8. Your personal data will be stored in a secure government IT system.** (If using a third party system such as Survey Monkey to gather the data, you will need to state clearly at which point the data will be moved from there to our internal systems.)

**9. More information** For more information on how Ofgem processes your data, click on the link to our "Ofgem privacy promise".