



**STATEMENT OF METHODOLOGY AND CHARGES FOR  
CONNECTION TO NORTHERN POWERGRID  
(YORKSHIRE) PLC'S ELECTRICITY DISTRIBUTION  
SYSTEM**

**NORTHERN POWERGRID HOLDINGS COMPANY**

Northern Powergrid (Yorkshire) Plc, Registered Office: Lloyds Court, 78 Grey Street,

Newcastle upon Tyne NE1 6AF

Registered in England and Wales No. 4112320

# Contents

<b>Important Note</b> .....	<b>4</b>
<b>Section 1 – General Information</b> .....	<b>5</b>
Competition in Connections.....	6
Contractual Framework.....	6
Structure of this document and Further Information .....	8
Disputes.....	8
<b>Section 2 – Applying for a connection where we undertake all of the relevant work</b> .....	<b>10</b>
Persons entitled to apply for a connection.....	10
Procedure for getting a connection .....	10
Information Required.....	11
Budget Estimates .....	11
Feasibility Studies .....	12
Connection Offers - How is your formal application handled?.....	12
Cost Breakdown .....	13
Interactive Connection Applications.....	13
Transitional arrangements .....	15
Small Scale Embedded Generation .....	15
Embedded Networks.....	15
<b>Section 3 – Applying for a connection where an ICP undertakes the Contestable Work</b> ..	<b>17</b>
Introduction.....	17
Procedure for getting a connection .....	17
Information Required.....	18
Budget Estimates .....	19
Feasibility Studies .....	19
POC Offers - How is your formal application handled?.....	19
Cost Breakdown .....	21
Interactive Connection Applications.....	21
Transitional arrangements .....	21
<b>Section 4 – Information specific to us</b> .....	<b>22</b>
Introduction.....	22
Connection Offer and POC Offer Validity Periods.....	22
What to expect after acceptance of our Connection Offer.....	22
Connection Offer Expenses.....	22
<b>Section 5 – Common Connection Charging Methodology</b> .....	<b>24</b>
Minimum Scheme .....	24
Cost Allocation.....	25
Costs to be paid in full by you.....	25
Costs of Reinforcement.....	28
Costs to be apportioned between you and us.....	29
Recovery of costs for previous works.....	32
Costs to be paid in full by us .....	32
Additional Cost Allocation for Flexible Connections and Curtailable Connections .....	37
Recovered Equipment and Deferral of Asset Replacement.....	38

Rebates .....	38
Speculative Developments.....	38
Connection Alterations.....	41
National Electricity Transmission System Operator (NETSO) Charges.....	41
Land Rights .....	41
Unmetered Supplies.....	42
Capacity Ramping for LDNOs.....	42
Phased Capacity Site.....	43
Disconnection and De-Energisation .....	43
Adoption Payments.....	43
Competition in Connections.....	44
Worked Examples Illustrating the Application of the Connection Charging Methodology	45
<b>Section 6 – Our Specific Connection Charging Methodology .....</b>	<b>118</b>
Introduction.....	118
Competition in Connections.....	118
Non-Contestable Work.....	118
Operational Access.....	119
Inspection and Monitoring .....	119
Factors influencing Competition in Connection (CIC) Charges .....	119
Contestable Work.....	120
Contestable Reinforcement and Diversionary Work.....	121
Table of Contestable/Non-Contestable Work .....	122
Payment Terms.....	123
Connection Offer and POC Offer Terms and Conditions .....	123
Operation and maintenance costs .....	123
Land Rights .....	124
Provision of Data.....	124
Margin included in Connection Offers .....	124
Credit for equipment recovery associated with Temporary Connections .....	125
<b>Section 7 – Connection Charging Statement .....</b>	<b>126</b>
Introduction.....	126
Quotation Accuracy Scheme .....	127
A Budget Estimates .....	129
B Feasibility Studies .....	131
C Assessment and Design for all relevant work .....	133
D CIC Assessment and Design of the Non-Contestable Work.....	135
E CIC Design Approval of the Contestable Work .....	137
F Construction .....	139
G CIC Final Works and Phased Energisation.....	156
H CIC Inspection and Monitoring of the Contestable Works.....	157
I Land Rights .....	157
J Other .....	159
<b>Section 8 – Glossary of Terms .....</b>	<b>160</b>

# Important Note

This document consists of a Connection Charging Methodology that has been approved by the Gas and Electricity Markets Authority ('the Authority') and a Connection Charging Statement, the form of which has been approved by the Authority. This document also provides other information to explain the options available for obtaining a connection and the processes that need to be followed.

The Connection Charging Statement provides the basis of charges for the provision of a connection whilst the Connection Charging Methodology describes the methodology under which Customers will be charged for a connection to the Distribution System belonging to Northern Powergrid (Yorkshire) being 'the Company'. We are a Licensed Distribution Network Operator (LDNO).

This document has been prepared by us in accordance with the requirements of our Licence issued under the Electricity Act 1989 (as amended)('the Act').

A fee of £5 (plus VAT) will be payable at the Company's discretion for each hard copy of this document which is provided in accordance with a request. An electronic copy of this document is available free of charge from the Company's website at: [www.northernpowergrid.com](http://www.northernpowergrid.com).

## Version Control

Version Ref	Change Description
April 23	Access SCR implementation
Aug 23	DPC422 Part B removal and other updates, QA inspection charges updated
Sept 23	Connections charges updated, version control introduced
Feb 24	DCP 427 amendment to Schedule 22, paragraph 5.16 correcting 5.35 to 5.36 plus other housekeeping updates to sections 1-4 including EHV connection offer expenses in 4.14

# Section 1 – General Information

1.1 We are Northern Powergrid, an LDNO serving an area from North Northumberland south to the Humber and Northern Lincolnshire, and from the east coast to the Pennines. We operate and maintain the electricity distribution network that delivers electricity to more than 3.8 million premises through the electricity distribution companies Northern Powergrid (Northeast) and Northern Powergrid (Yorkshire). The network consists of more than 31,000 substations, around 29,000 km of overhead line and 62,000 km of underground cable.. Some of the LDNOs have Distribution Service Areas which are shown on the map below.



1.2 Whilst some LDNOs do not have a Distribution Services Area, they may also be able to provide connections to customers within Great Britain.

- 1.3 The provision of a connection to our Distribution System may be undertaken by ourselves, our agents or associated companies. Alternatively, certain activities may be undertaken by an Independent Connections Provider (ICP).
- 1.4 This document describes the Connection Charging Methodology under which Customers will be charged for connection and provides details of illustrative costs; it also describes how you can obtain a new or altered connection to our Distribution System.
- 1.5 We will review this document in accordance with our Licence obligations at least once a year to ensure that the information continues to be accurate in all respects. Costs shown in the Connection Charging Statement are current at the time of publication and are subject to change without notice except as otherwise provided.
- 1.6 Certain words in this document are capitalised, e.g. Distribution System. These words have a specific meaning which is set out in the Glossary of Terms. The words “you”, “your” and “yourself” refer to the Customer, the person requesting a connection, his company or agent and “we”, “us”, “our” and “ourselves” refer to Northern Powergrid (Yorkshire) or our agents.

## Competition in Connections

- 1.7 Competition in Connections (CIC) is the term attributed to the opening up of the market for the design, procurement and installation of new assets necessary to accommodate a new or modified electricity connection. You have the option to have some of the connections work, referred to as Contestable Work, carried out by an ICP who must be accredited with Lloyds Register unless otherwise agreed with us.
- 1.8 Section 6 of this document contains details of the elements of work which are Contestable and Non-Contestable, and the arrangements which apply if you choose to appoint an ICP to carry out Contestable Work.
- 1.9 The Non-Contestable Work can only be carried out by us or our appointed agents.
- 1.10 If you wish to appoint an ICP to carry out Contestable Work you may do so, and if you want us to adopt the Contestable Work after completion we will require you and/or your ICP to enter into an Adoption Agreement.
- 1.11 Further information outlining the process and options available is given in Section 3 of this document.

## Contractual Framework

- 1.12 Depending on the size and type of the connection and whether you wish ourselves, or an ICP, to undertake any Contestable Work you will need to enter into a set of contractual arrangements. Unless you are an LDNO, you will also need to appoint a Supplier who must also be a party to various industry agreements and codes. These are outlined below:-

### **Offer to connect the Premises and to construct the connection (Connection Offer)**

- 1.13 The offer that we make to you to carry out the connection works (both Non-Contestable and Contestable Work) to our Distribution System which will, if accepted by you, create a legally binding contract between you and us. Its terms will depend, amongst other things, on the complexity and value of the work to be carried out.

### **Offer to undertake Non-Contestable Work (POC Offer)**

- 1.14 The offer that we make to you to carry out the Non-Contestable Work only to allow connection to our Distribution System which will, if accepted by you, create a legally binding contract between you and us. Its terms will depend, amongst other things, on the complexity and value of the work to be carried out.

## **Adoption Agreement**

1.15 The Adoption Agreement is an agreement for us to adopt the Contestable Work, subject to the satisfaction of certain conditions. This agreement, amongst other things, addresses a number of fundamental principles:

- The transfer of title from the asset owner (normally the Customer or the ICP) to us;
- The quality and safety of the adopted asset;
- Any required sureties;
- The transfer of Land Rights;
- The procedure for us, or a suitably accredited ICP to Energise the assets installed by the ICP during the works;
  
- Planning permissions and compliance with street works legislation; and
- Defect correction processes, where applicable.

The parties to the Adoption Agreement may vary depending on the circumstances and may be between:-

- us and you
- us and your appointed ICP
- us, you and your appointed ICP

## **Connection Agreement**

1.16 The owner/ occupier of the Premises to which the connection is to be provided will be required to enter into a Connection Agreement with us. The Connection Agreement will set out the terms upon which they will be, and remain, connected to our Distribution System. The Connection Agreement will normally be provided on our behalf by the owner/occupier's chosen Supplier for the Premises as part of their application for a supply of electricity.

1.17 However, in some cases for larger connections, or where non-standard conditions exist, we will provide a site-specific Connection Agreement, which replaces any Connection Agreement put in place via the Supplier, as part of the connection process. This particular Connection Agreement will only take effect upon completion of the connection and will set out, in more detail, our rights and obligations to one another. Additionally, it may contain the technical detail of the installation being connected to the Distribution System and will require the owner/occupier of the Premises to comply with the provisions of the Distribution Code.

1.18 The Distribution Code covers, amongst other matters, all material technical aspects relating to:

- connection to, and the operation and use of a LDNO's Distribution System; and
- the operation of electrical lines and electrical plant or apparatus connected to an LDNO's Distribution System.

A copy of the Distribution Code can be downloaded from the Distribution Code website at [www.dcode.org.uk](http://www.dcode.org.uk).

## **Appointment of a Supplier**

1.19 It is your responsibility to make arrangements with a Supplier of your choice. You, or your Supplier, must also arrange for the installation of metering equipment appropriate to the connection that is being provided for you. The metering must be installed before a supply of electricity can be provided. In order to obtain a supply of electricity, you will need a Supply Number (also known as a Meter Point Administration Number or

'MPAN') for each connection. We will issue the MPAN shortly before installing the connection, but only upon receipt of the full postal address of the Premises.

**Please note that we are unable to give advice on a choice of Supplier.**

The link below will take you to the Ofgem website where you will find a list of Ofgem accredited price comparison websites for Suppliers.

<https://www.ofgem.gov.uk/information-consumers/energy-advice-households/switching-energy-tariff-or-supplier>

- 1.20 Energisation will not take place unless the appropriate metering, where this is required, has been installed.
- 1.21 Your Supplier will be a party to a number of industry codes and agreements which, will allow it to use the GB Transmission System, our Distribution System and also allow it to purchase and trade energy on behalf of its customers.

## Structure of this document and Further Information

- 1.22 The document is divided into a number of Sections.
- 1.23 Section 2 outlines the high level process for applying for a connection where we undertake all the relevant works and provides the relevant contact details.
- 1.24 Section 3 outlines the high level process for applying for a connection where an ICP undertakes the Contestable Work and provides the relevant contact details.
- 1.25 Section 4 provides further information specific to us regarding obtaining a connection.
- 1.26 Section 5 details the Common Connection Charging Methodology which sets out how Connection Charges are to be calculated and includes examples of how the methodology would be applied in particular circumstances.
- 1.27 Section 6 details our Specific Connection Charging Methodology which includes additional aspects of our charging methodology that are not included in Section 5.
- 1.28 Section 7 contains the Connection Charging Statement which enables reasonable estimates of the charges liable for connection to be made.
- 1.29 Section 8 provides a glossary of terms used throughout the document.
- 1.30 For further information about this document (or if you need advice about getting a connection), please contact: -

Northern Powergrid

Network Connections

Alix House

Falcon Court

Preston Farm Industrial Estate

Stockton

TS18 3TU

Email: [getconnected@northernpowergrid.com](mailto:getconnected@northernpowergrid.com)

Tel: 0800 011 3433 between 8:00am to 8:00pm Monday to Friday and 9:00am to 5:00pm on Saturday

[www.northernpowergrid.com/get-connected](http://www.northernpowergrid.com/get-connected)

## Disputes

- 1.31 If you are not satisfied with the terms we have offered, or with our handling of your application, please contact your single point of contact in the first instance to discuss your concerns. If we cannot resolve your concerns satisfactorily you can escalate the matter using our complaints process. The complaints process is set out on our website:

[https://northernpowergrid.custhelp.com/app/service\\_request/type/complaints](https://northernpowergrid.custhelp.com/app/service_request/type/complaints)

Alternatively you may telephone us on 0800 781 8848 or write to us at:

Customer Care Team  
Northern Powergrid  
FREEPOST RSXE – RCZX - XKBL  
Manor House  
Station Road  
Penshaw  
Houghton le Spring  
DH4 7BR

Or email us at [cus.serv@northernpowergrid.com](mailto:cus.serv@northernpowergrid.com)

- 1.32 If you are still not satisfied with our actions and you have followed our complaints procedure and you are a domestic or small business customer you have the right to refer your complaint to the Energy Ombudsman. This is a free and independent dispute resolution service. They can be contacted at:

Energy Ombudsman  
PO Box 966  
Warrington  
WA4 9DF  
Phone: 0845 055 0760  
Fax: 0845 055 0765  
Email: [enquiry@energyombudsman.org](mailto:enquiry@energyombudsman.org)  
Visit: [www.energyombudsman.org](http://www.energyombudsman.org)

- 1.33 If the Energy Ombudsman is unable to deal with or resolve the dispute then either party may request a determination of the matter by the Gas and Electricity Markets Authority (the Authority), whose details are:

The Office of Gas and Electricity Markets (OFGEM)  
9 Millbank  
London  
SW1P 3GE  
Phone: 020 7901 7000  
Fax: 020 7901 7066  
[www.ofgem.gov.uk](http://www.ofgem.gov.uk)

## Section 2 – Applying for a connection where we undertake all of the relevant work

This Section applies where you want us to undertake all the works necessary to provide your connection. Section 3 applies where you wish to appoint an ICP to undertake any Contestable Work. You may make a request under Section 2 and Section 3 at the same time.

### Persons entitled to apply for a connection

- 2.1 Any person may apply in their own right for a connection to our Distribution System.
- 2.2 Any person may appoint an agent to apply for a connection on their behalf but the agent may be required to provide written evidence of their appointment on application.
- 2.3 Persons entitled to seek connection to our Distribution System for the purpose of generating electricity or for supplying electricity are those who are authorised by licence or by exemption under the Act to generate or supply electricity.

### Procedure for getting a connection

- 2.4 A person seeking a new or modified connection should contact us as detailed below.

#### Connection enquiries

Northern Powergrid

Network Connections

Alix House

Falcon Court

Preston Farm Industrial Estate

Stockton on Tees

TS18 3TU

Email: [getconnected@northernpowergrid.com](mailto:getconnected@northernpowergrid.com)

Tel: 0800 011 3433 between 8:00am to 8:00pm Monday to Friday and 9:00am to 5:00pm on Saturday

Visit: [www.northernpowergrid.com/get-connected](http://www.northernpowergrid.com/get-connected)

#### Enquiries for non-contestable items only

Connections Input Services Team

Northern Powergrid (Northeast)/Northern Powergrid (Yorkshire)

98 Aketon Road

Castleford

West Yorkshire

WF10 5DS

Email: [cinc.connections@northernpowergrid.com](mailto:cinc.connections@northernpowergrid.com)

Tel: 0113 241 5245 between 8:30am to 4:45pm Monday to Friday

- 2.5 We will offer terms for the making of a connection as soon as reasonably practicable, but in any event within sixty-five Working Days once we have received your completed application. In addition to the terms for making the connection we will specify the proposed POC to our Distribution System, the location of the Entry/Exit Point on the Premises to be connected and details of the work to be carried out by us.

The link below will take you to our website where further information is available:

[www.northernpowergrid.com](http://www.northernpowergrid.com)

## Information Required

2.6 When you make your application to us you should provide the information set out below. In some cases, it is possible that additional information will be required and we will notify you of this when we have assessed your requirements.

2.7 If you do not provide the information we need it will prevent us from dealing with your enquiry as quickly as we would like, so please provide the information indicated on our application form. The information we require will vary depending on the nature of your connection request. Typically we require the following details:

- Your name and correspondence address and other contact details.
- The Premises address.
- Whether you require a Budget Estimate or a formal Connection Offer. A formal Connection Offer is a contractual document and more appropriate once you are in a position to decide whether the project can proceed to the construction phase.
- A site location plan showing the site boundary.
- A site layout plan, drawn to a suitable scale, indicating where the connection(s) are required.
- The number of connections you require.
- The Required Capacity for each connection.
- Details of the heating to be installed.
- The date by which you require the connection to be made.
- Whether the connection is required for a fixed period or indefinitely.
- The type of connection required, e.g. demand, generator or for a licensed, embedded network. Further information on generation connections can be found in our Distributed Generation Connections Guide which can be accessed from our website.
- Any information you have in respect of equipment which may interfere with our Distribution System or the supply of electricity to others (e.g. apparatus which can cause voltage fluctuations, such as large motors associated with air conditioning systems, lifts, cranes, hoists and other similar plant; or apparatus which can produce harmonics, such as uninterruptible power supplies or electronic control systems).

An application form can be downloaded from our website:

[www.northernpowergrid.com](http://www.northernpowergrid.com)

## Budget Estimates

2.8 If you make an enquiry of a provisional nature we can provide an indication of the charge for providing the connection in a Budget Estimate. We will not carry out any detailed design work and the assessment will be carried out as a desk top exercise. Any estimate that we provide at this stage will be the result of a preliminary assessment only and possibly without any site specific considerations being taken into account. You should note that the estimate that we provide at this stage may vary considerably from any further Budget Estimates or the price in any formal Connection Offer. A Budget Estimate is not a formal offer for connection and cannot be accepted by you. See Section 7, Part A for charges associated with the provision of Budget Estimates.

## Feasibility Studies

- 2.9 We may undertake at your request, generally for more complex connections, a Feasibility Study to consider a number of options for connection and provide estimated costs for each option as appropriate. Any cost estimated at this stage will be purely indicative and not binding. The price in any formal Connection Offer to you may differ from it. A Feasibility Study is not a formal offer for connection and cannot be accepted by you. See Section 7, Part B for charges associated with the provision of feasibility studies.

## Connection Offers - How is your formal application handled?

- 2.10 You do not need to have requested a Budget Estimate or Feasibility Study before you request a formal Connection Offer. We may require you, as the Applicant, to pay connection offer expenses (commonly known as assessment and design fees) and have provided further information on how these expenses are calculated and whether you are liable to pay them in sections 4 and 7. Unless your application is in one of the categories marked as “Not applicable” in section 7 then the requirement for you to pay connection offer expenses will apply irrespective of whether you accept the Connection Offer or cancel your application. When you request a connection to our Distribution System, your request is dealt with in five key stages.

### Stage 1 – Your application

- 2.11 We will only be able to progress your application once you have provided us with the information we require (see 2.7). We will notify you if we require any additional information in order to process your application. You will also be notified in writing that you may be required to pay connection offer expenses and you will have 5 Working Days in which to withdraw your application without incurring any connection offer expenses. Following the 5 Working Day period, the amount of the connection offer expenses payable in the event of a cancellation will depend on the stage the application has reached in the Connection Offer process, irrespective of the number of working days that have elapsed. When you have confirmed that the Connection Offer is no longer required we will confirm your cancellation in writing. Further information is available in section 4.

### Stage 2 – Our design

- 2.12 When we design the connection for you it takes into account the location of the Premises for which the connection is required, its proximity to the existing Distribution System and the available capacity in the Distribution System to provide the connection that you require.

### Stage 3 – Our Connection Offer

- 2.13 This is our formal written offer to you to provide the connection to the Distribution System. This offer will set out the terms and the Connection Charge for making the connection. The Connection Offer may be accepted by you in accordance with its terms at any time within the Validity Period set out in our Connection Offer, providing it is not, or does not become an Interactive Connection Offer as described in paragraphs 2.21 to **Error! Reference source not found.** You should note that the price provided by us at this stage may vary considerably from any previous Budget Estimates or Connection Offers. Once we issue your Connection Offer we will invoice you for the relevant connection offer expenses as indicated in section 7 unless your application is in one of the categories marked as “Not applicable” or, the Connection Offer is for an EHV connection and in such cases the Connection Offer Expenses must be paid before the Connection Offer is issued.

#### Stage 4 – Acceptance of our Connection Offer

- 2.14 If you wish to accept our Connection Offer to the Distribution System you must:
- accept that offer in accordance with its terms within the Validity Period; and
  - make any required payment due on acceptance by the means specified in our Connection Offer.
- 2.15 A valid acceptance of our Connection Offer will create a legally binding agreement between us.

#### Stage 5 – Construction of the required works by us

- 2.16 At this stage we will carry out the construction work, subject to the terms of the accepted Connection Offer, to provide the new connection. We will maintain appropriate liaison with you during the planning and execution of the works.
- 2.17 Supply Numbers (Metering Point Administration Numbers or ‘MPANs’) will be issued before the connection works are completed, so that you can make arrangements with your Supplier. On completion of this stage, the work required to provide the connection will have been installed and will be available for use.

### Cost Breakdown

- 2.18 For Connection Offers that include Contestable Work with a Connection Charge in excess of £20,000, we will provide a breakdown of costs, that are referable to the tables in Section 7, which will include as a minimum :-
- a description of the works involved, including whether it is an Enhanced Scheme
  - the length of underground cable/overhead line required
  - the number of substations required
  - information on any Reinforcement works required;
  - legal and professional charges associated with the securing of Land Rights.
- 2.19 Where the Connection Charge is based on the Minimum Scheme and not the Enhanced Scheme that is to be built, a cost breakdown of both the Minimum Scheme and the Enhanced Scheme will be provided in accordance with paragraph 2.18. Where the Connection Charge to you is based on an enhanced connection arrangement requested by you, and not the Minimum Scheme, a cost breakdown of the Minimum Scheme can be provided on request.
- 2.20 Where requested by you, we will provide details of how any Cost Apportionment Factors have been calculated.

### Interactive Connection Applications

- 2.21 Interactivity arises where the Company receives two or more applications for connection which make use of the same part of the Distribution System, but where there is insufficient capacity or other network constraints on the Company’s Distribution System that will prevent both being connected.
- 2.22 The process for managing two or more “Interactive Connection Applications” will be as described below. The following definitions are used in this Section.

<b>Affected Parties</b>	all Customers whose Connection Offer(s)/ POC Offer(s) have been identified by us as being interactive.
<b>Application Date</b>	the date upon which we receive <b>all</b> the information (see 2.7) we require in respect of an application.

<b>Committed Network</b>	means assets that are not yet installed and commissioned on our Distribution System, but which are planned to be so as a result of other Connection Offer(s)/ POC Offer(s) which have been made by us and accepted by other applicant(s).
<b>Connection Offer</b>	is as described in 1.13.
<b>Conditional Connection Offer</b>	Connection Offers are dependent on some or all of previous applications not being accepted.
<b>POC Offer</b>	is as described in 1.14.
<b>Existing Network</b>	means our currently installed and commissioned Distribution System.
<b>Interactive Connection Applications</b>	arise where we receive two or more applications for connection which make use of the same part of the Existing Network or Committed Network or otherwise have a material operational effect on that network such that there is or would be a material impact on the terms and conditions of any Connection Offer/ POC Offer made in respect of such connections.
<b>Interactive Connection Offers</b>	are Connection Offers/ POC Offers made in respect of Interactive Connection Applications.
<b>Interactive Queue</b>	the queue of Affected Parties in receipt of Interactive Connection Offer(s) as defined by us.
<b>Notice of Interactivity</b>	a notice issued by us in accordance with paragraph 2.24.
<b>Unconditional Connection Offer</b>	Connection Offers are not dependent on any other applications

- 2.23 We will identify where there are Interactive Connection Applications for new Connection Offer(s)/ POC Offer(s). Once Interactivity is identified, we will notify all Affected Parties at the same time that their Connection Offer/ POC Offer is interactive.
- 2.24 Where possible we will give you advanced indication if we believe it is likely that your application may become interactive before the Connection Offer(s)/POC Offer(s) is issued.
- 2.25 At the time of making any Connection Offer(s)/ POC Offer(s) that trigger interactivity all Affected Parties will receive a “Notice of Interactivity”. The Notice of Interactivity may be included in the Connection Offer/POC Offer or be a separate notification and shall:
- a) inform the Affected Parties in writing:
    - that their Connection Offers/ POC Offers are interactive;
    - their respective positions in the Interactive Queue, determined by the Application Date;
    - the validity period of their Interactive Connection Offer, and
    - the process for accepting Interactive Connection Offers.
  - b) make all Interactive Connection Offers conditional upon the other(s) not having been accepted; and
- 2.26 Interactive Connection Offers will be considered Unconditional Connection Offer or Conditional Connection Offer depending on their queue position.
- 2.27 The Interactive Queue will be determined by the Application Date.
- 2.28 The validity period of any Connection Offer issued as Interactive will be 30 Working Days, i.e. less than the normal validity period. Any Connection Offer that had been

issued prior to becoming Interactive will have its validity reduced to 30 Working Days from the date that another related Interactive Connection Offer is issued, where more than 30 Working Days is still outstanding. Where the validity period is less than 30 Working Days there will be no change to the validity period.

- 2.29 If you wish to accept an Unconditional Connection Offer, within the Connection Offer validity period, you will need:
- a) Return the signed acceptance form; and
  - b) Make payment required in the Connection Offer to ensure cleared funds are received.
- 2.30 If you wish to accept a Conditional Connection Offer, initially you will only need to return the signed acceptance form. If your acceptance is validated by us, then you will need to make payment within 10 Working Days.
- 2.31 We will confirm which applicant(s) is successful as soon as practicable. Any relevant Conditional Offers that had not been accepted and that are still within their validity period will be withdrawn. Where a Conditional Offer was accepted within its validity period but subsequently not successful, the customer will be informed that they have been unsuccessful. The original Application Date may be retained for any future Interactivity if the customer reapplies within 10 Working Days so long as there are no changes from the original application.

## Transitional arrangements

- 2.32 A Connection Offer issued by us will include a Connection Charge calculated in accordance with our Connection Charging Methodology, which is current at the time of issue. If you accept our Connection Offer and the connection work is completed within the prescribed periods set out in it, the Connection Offer shall remain valid even if our Connection Charging Methodology should change, by approval of the Authority, in the interim period between acceptance of the Connection Offer and completion of the connection work.

## Small Scale Embedded Generation

- 2.33 Small Scale Embedded Generation (SSEG) is defined as a source of electrical energy rated up to and including 16 Amperes per phase, single or multi-phase, LV and designed to operate in parallel with our Distribution System. If you install a SSEG unit (typically domestic combined heat and power units, domestic photovoltaic and domestic wind turbines), you must, in accordance with statutory requirements, advise us of your intention to utilise the SSEG installation no later than 28 days (inclusive of the day of commissioning), after its commissioning.
- 2.34 Engineering Recommendation G83 entitled “Recommendations for the Connection of Small-Scale Embedded Generators (Up to 16A per phase) in Parallel with Public Low-Voltage Distribution Networks” is published by the Energy Networks Association (ENA). It sets out the technical requirements for the connection of SSEG units. For further information visit either the ENA web-site ([www.energynetworks.org](http://www.energynetworks.org)).
- 2.35 For the connection of other types of generator please follow the process above so we can make an offer to connect your generator. Further information can be found in our Distributed Generation Connections Guide which can be accessed from our website.

## Embedded Networks

- 2.36 Any person wishing to build a distribution network requiring a connection to our Distribution System should apply to us using the processes set out in either Section 2 or Section 3.

- 2.37 We accept and shall work to Engineering Recommendation G88 entitled; “Principles for the planning, connection and operation of electricity distribution networks at the interface between Distribution Network Operators (DNOs) and Independent Distribution Network Operators (IDNOs)”, published by the ENA.
- 2.38 A Bilateral Connection Agreement will be required between us and the connected party, setting down the specific terms and conditions for connection that will apply in relation to the connection for the long term. While such terms and conditions will be consistent with our Connection Charging Methodology, the Bilateral Connection Agreement will take precedence.

## Section 3 – Applying for a connection where an ICP undertakes the Contestable Work

This Section applies where you wish to appoint an ICP to undertake any Contestable Work. Section 2 applies where you want us to undertake all the works necessary to provide your connection. You may make a request under Section 2 and Section 3 at the same time.

### Introduction

- 3.1 As set out in paragraphs 2.1 to 2.3, any person may apply for a connection to our Distribution System.
- 3.2 You may choose to appoint an ICP to carry out Contestable Work. If you do, we may require you to confirm such appointment in writing.
- 3.3 We must be satisfied that the ICP has sufficient accreditation to carry out the Contestable Work to the required standards. You may appoint an ICP accredited for the appropriate work categories under the National Electricity Registration Scheme presently operated by Lloyds Register. Details of the National Electricity Registration Scheme are available from the Lloyds Register website at:  
<https://www.lrga.com/en-gb/utilities/ners/>
- 3.4 If you do appoint an ICP to undertake the Contestable Work, we will carry out and charge you for the Non-Contestable Work. We will also charge for carrying out various services associated with the Contestable Work; for example approval of the design and inspection of the assets to be adopted. These are collectively known as the CIC Charges and they will be identified in any POC Offer that we provide.
- 3.5 An explanation of the works that are categorised as ‘Contestable’ and ‘Non-Contestable’ by us is provided in Section 6. Further information relating to the process is also available from our website at [www.northernpowergrid.com](http://www.northernpowergrid.com).

### Procedure for getting a connection

- 3.6 A person seeking a new or modified connection should contact us as detailed below.  
Connections Input Services Team  
Northern Powergrid (Northeast)/Northern Powergrid (Yorkshire)  
98 Aketon Road  
Castleford  
West Yorkshire  
WF10 5DS  
Email: [cinc.connections@northernpowergrid.com](mailto:cinc.connections@northernpowergrid.com)  
Tel: 0113 241 5245 between 8:30am to 4:45pm Monday to Friday
- 3.7 We will submit a POC Offer to you or your appointed ICP. The POC Offer will, on acceptance, form the construction agreement which covers the Non-Contestable Work we will undertake. We will enter into an Adoption Agreement with the relevant parties. These agreements will need to be signed and exchanged before any work is undertaken.
- 3.8 The POC Offer will be sent as soon as reasonably practicable, and we will take all reasonable steps to meet the timescales indicated within the table below once we have received your completed application. In addition to the terms for making the connection

we will specify the proposed POC to our Distribution System and details of the work to be carried out by us.

- 3.9 Appendix 1 of Standard Licence Condition 15 of our Licence details the standards of performance that we must take all reasonable steps to comply with when providing the POC Offer, design approval, connection and Energisation of the connection. These are repeated in the table below:

<b>Provision of POC Offers</b>	<b>Performance level</b>
(a) low voltage demand: for a new demand connection to our Distribution System where the highest voltage of the assets at the POC and any associated works is not more than one kilovolt.	within fifteen Working Days of receiving the request
(b) low voltage generation: for a new generation connection to our Distribution System where the highest voltage of the assets at the POC and any associated works is not more than one kilovolt.	within thirty Working Days of receiving the request
(c) high voltage demand: for a new demand connection to our Distribution System where the highest voltage of the assets at the POC and any associated works is more than one kilovolt but not more than 22 kilovolts.	within twenty Working Days of receiving the request
(d) high voltage generation: for a new generation connection to our Distribution System where the highest voltage of the assets at the POC and any associated works is more than one kilovolt but not more than 22 kilovolts.	within fifty Working Days of receiving the request
(e) extra high voltage demand: for a new demand connection to our Distribution System where the highest voltage of the assets at the POC and associated works is more than 22 kilovolts but not more than 72 kilovolts.	within fifty Working Days of receiving the request
(f) other connections: for a new demand connection or generation connection to our Distribution System that is not included within the preceding sub-paragraphs.	within sixty-five Working Days of receiving the request

The link below will take you to our website where further information is available:

[www.northernpowergrid.com](http://www.northernpowergrid.com)

## Information Required

- 3.10 When you make your application to us you should provide the information set out below. In some cases, it is possible that additional information will be required and we will notify you of this when we have assessed your requirements.
- 3.11 If you do not provide the information we need it will prevent us from dealing with your enquiry as quickly as we would like, so please provide the information indicated on our application form. The information we require will vary depending on the nature of your connection request. Typically we require the following details:
- Your name and correspondence address and other contact details.
  - The Premises address.
  - Whether you require a Budget Estimate or a formal POC Offer. A formal POC Offer is a contractual document and more appropriate once you are in a position to decide whether the project can proceed to the construction phase.

- A site location plan showing the site boundary, indicating where the connection(s) are required.
- The Required Capacity.
- The date by which you require the connection to be made.
- The characteristics of the connections, e.g. demand, generator or for a licensed, embedded network. Further information on generation connections can be found in our Distributed Generation Connections Guide which can be accessed from our website.
- Any information you have in respect of equipment which may interfere with our Distribution System or the supply of electricity to others (e.g. apparatus which can cause voltage fluctuations, such as large motors associated with air conditioning systems, lifts, cranes, hoists and other similar plant; or apparatus which can produce harmonics, such as uninterruptible power supplies or electronic control systems).

3.12 An application form can be downloaded from our website:

[www.northernpowergrid.com](http://www.northernpowergrid.com)

## Budget Estimates

3.13 If you make an enquiry of a provisional nature we can provide an indication of the charge for providing the connection in a Budget Estimate. We will not carry out any detailed design work and the assessment will be carried out as a desk top exercise. Any estimate that we provide at this stage will be the result of a preliminary assessment only and possibly without any site specific considerations being taken into account. You should note that the estimate that we provide at this stage may vary considerably from any further Budget Estimates or the price in any formal POC Offer. A Budget Estimate is not a formal offer for connection and cannot be accepted by you. See Section 7, Part A for charges associated with the provision of Budget Estimates.

## Feasibility Studies

3.14 We may undertake at your request, generally for more complex connections, a Feasibility Study to consider a number of options for connection and provide estimated costs for each option as appropriate. Any cost estimated at this stage will be purely indicative and not binding. The price in any formal POC Offer to you may differ from it. A Feasibility Study is not a formal offer for connection and cannot be accepted by you. See Section 7, Part B for charges associated with the provision of feasibility studies.

## POC Offers - How is your formal application handled?

3.15 You do not need to have requested a Budget Estimate or Feasibility Study before you request a formal POC Offer. When you require a connection to our Distribution System and propose to use an ICP to carry out the Contestable Work, the ICP may make an application on your behalf. We may require you, as the Applicant, to pay connection offer expenses (commonly known as assessment and design fees) and provide further information on how these expenses are calculated and whether you are liable to pay them in sections 4 and 7. Unless your application is in one of the categories marked as “Not applicable” in section 7 then the requirement for you to pay connection offer expenses will apply irrespective of whether you accept the Connection Offer or cancel your application. The request will be dealt with in five key stages, as follows:

## **Stage 1 - Your Application**

- 3.16 We will only be able to progress your application once you have provided us with the information we require (see 3.11). We will notify you within five Working Days if we require any additional information in order to process your application. You will also be notified in writing that you may be required to pay connection offer expenses and you will have 5 Working Days in which to withdraw your application without incurring any connection offer expenses. Following the 5 Working Day period the amount of the connection offer expenses payable in the event of a cancellation will depend on the stage the application has reached in the Connection Offer Process, irrespective of the number of working days that have elapsed. When you have confirmed that the Connection Offer is no longer required we will confirm your cancellation in writing. Further information is available in section 4.
- 3.17 If you choose to appoint an ICP to carry out the Contestable Work then the POC will be based on the information provided to us by the ICP and will be determined by us taking into account the ICP's requirements and our wider obligations. For larger demand and generator connections more than one POC may need to be assessed. A table showing our indicative charges for assessing the POC is given in paragraph 7.16. These charges will be included within the POC Offer.

## **Stage 2 – Design**

- 3.18 Our design of the Non-Contestable Work and the identification of the POC will take into account the location of the Premises for which a connection is required, its proximity to our Distribution System, and the available capacity in our Distribution System to provide the connection that you require.

## **Stage 3 – Our POC Offer and the Adoption Agreement**

- 3.19 This is our formal written offer to you to provide the connection to our Distribution System. This POC Offer will set out the terms and the price upon which we will make that connection, whilst the Adoption Agreement will set out the terms for adoption of assets installed by an ICP. The POC Offer that we make to you may be accepted by you in accordance with its terms at any time within the Validity Period set out in our POC Offer. You should note that the price provided by us at this stage may vary considerably from previous Budget Estimates. Once we issue your Connection Offer we will invoice you for the relevant connection offer expenses as indicated in section 7 unless your application is in one of the categories marked as “Not applicable” or, the Connection Offer is for an EHV connection and in such cases the Connection Offer Expenses must be paid before the Connection Offer is issued.

## **Stage 4 – Acceptance of our POC Offer**

- 3.20 If you wish to accept our POC Offer to connect to our Distribution System, you must
- accept that POC Offer in accordance with its terms within the Validity Period;
  - obtain design approval from us for the Contestable Work in the timescales specified;
  - make any required payment due on acceptance by the means specified in our POC Offer; and
  - return the signed Adoption Agreement in the timescales specified.
- 3.21 A valid acceptance of our POC Offer will create a legally binding agreement between us. Where the terms of the Adoption Agreement have been unaltered, we will sign the Adoption Agreement and return a copy to the relevant parties.

## Stage 5 - Construction by us and the ICP

3.22 At this stage we carry out construction of the Non-Contestable Work and the ICP carries out construction of the Contestable Work, unless you or your appointed ICP has requested that we carry out elements of the Contestable Work. We may carry out routine inspections of the Contestable Work as it is installed by an ICP. Shortly before the Contestable Work is ready for connection to the Distribution System your appointed ICP must submit a project call off request to us so that we, or a suitably accredited ICP, can arrange a date to connect the Contestable Work. Subject to the contestable works being constructed to our published specifications, provision of any required documentation and the satisfactory completion of any required tests we shall connect the Contestable Work to our Distribution System and adopt the assets. Supply Numbers (Metering Point Administration Numbers or 'MPANs') will be issued before the connection works are completed, so that arrangements can be made with the Supplier. On completion of this stage, the Extension Assets and Entry/ Exit Point(s), as appropriate, will have been commissioned and will be available for use.

## Cost Breakdown

- 3.23 For all POC Offers comprising Non-Contestable Work we will provide a breakdown of costs, that are referable to the tables in Section 7, which will include as a minimum :-
- a description of the works involved, including whether it is an Enhanced Scheme
  - the length of underground cable/ overhead line required
  - the number of substations required
  - information on any Reinforcement works required;
  - legal and professional charges associated with the securing of Land Rights.
- 3.24 Where the Connection Charge is based on the Minimum Scheme and not the Enhanced Scheme that is to be built, a cost breakdown of both the Minimum Scheme and the Enhanced Scheme will be provided in accordance with paragraph 3.23. Where the Connection Charge to you is based on an enhanced connection arrangement requested by you, and not the Minimum Scheme, a cost breakdown of the Minimum Scheme can be provided on request.
- 3.25 Where requested by you, we will provide details of how any cost apportionment factors have been calculated.

## Interactive Connection Applications

3.26 The process for managing two or more "Interactive Connection Applications" will be as set out in paragraphs 2.21 to **Error! Reference source not found.**

## Transitional arrangements

3.27 A POC Offer issued by us will include a Connection Charge calculated in accordance with our Connection Charging Methodology, which is current at the time of issue. If you accept our POC Offer and the connection work is completed within the prescribed periods set out in it, the POC Offer shall remain valid even if our Connection Charging Methodology should change, by approval of the Authority, in the interim period between acceptance of the POC Offer and completion of the connection work.

## Section 4 – Information specific to us

### Introduction

- 4.1 This Section sets out further information regarding obtaining a connection which is specific to us.

### Connection Offer and POC Offer Validity Periods

- 4.2 Connection Offers and POC Offers will be open for acceptance for a period of ninety days from the date of issue, subject to the provisions of Interactive Connection Applications as set out in paragraphs 2.21 to 2.28. We may, at our sole discretion, extend this period for individual offers depending on the circumstances.

### What to expect after acceptance of our Connection Offer

- 4.3 If you decide to accept our Connection Offer and you have chosen to have us carry out all the relevant work required then we will agree a mutually acceptable date with you to start the work. To enable us to schedule the work involved you will need to provide us with a programme for your project which confirm dates of when you will reach key stages. If these stages are not met at those dates or you request a variation, we may need to reevaluate our Connection Offer.
- 4.4 Where you have chosen to have an ICP carry out the Contestable Work we will plan and schedule the Non Contestable Work with your representative or contractor. The ICP will be required to provide us with a programme for your project together with the key dates to enable us to schedule the Non Contestable Works. If these stages are not met at those dates or you request a variation, we may need to reevaluate our Connection Offer.

### Connection Offer Expenses

- 4.5 We may require you, as the applicant, to pay for the work involved in preparing the Connection Offer in accordance with the Electricity (Connection Offer Expenses) Regulations 2018 (the 'Regulations'). This charge is commonly termed the assessment and design charge.
- 4.6 Where we require you to pay expenses relating to the application that have been reasonably incurred by us those expenses may include us doing any of the following:
- (a) Assessing the impacts of the connection or diversion on the Distribution System;
  - (b) Assessing the impacts of the connection or diversion on the GB Transmission System;
  - (c) Designing the connection or diversion, including in particular—
    - i) Designing any Reinforcement works required to add capacity to the Distribution System;
    - ii) Designing any Reinforcement works required to add capacity to the GB Transmission System;
    - iii) Designing any required extension of the Distribution System; and
    - iv) Designing any required extension of the GB Transmission System; and
  - (d) Processing your application, including the information to be included in your Connection Offer.

- 4.7 The assessment and design charge includes the costs of checking and clarifying the application and registering it in our system(s), identifying any Interactive Queue, carrying out any network studies to establish the Point of Connection, designing and cost estimation of the solution, internal approval processes, preparation of the Connection Offer and any necessary liaison with NGET.
- 4.8 Our assessment and design charge does not include any fees charged to us by NGET to assess the impact of your application on the GB Transmission System (see also paragraph 5.43 – 5.44A.) and these may be also be chargeable.
- 4.9 The same assessment and design charge is made irrespective of whether Reinforcement work is included in the final Connection Offer. This means that the customer making the application has more certainty as to the amount of the charge.

### **Application of the Assessment and Design charge**

- 4.10 The amount we charge will vary according to the complexity of your application and will be based upon your requested capacity and the type of assets required to enable the connection. The level of the assessment and design charge and whether it is required on issue of the Connection Offer is shown in tables C and D of Section 7.
- 4.11 Where we require you pay the assessment and design charge associated with the issue of the Connection Offer, the expenses will apply irrespective whether the Connection Offer is accepted or not.
- 4.12 Where we require you to pay an assessment and design charge for the Connection Offer, you will be notified and given a 5 working day cooling off period. If you cancel the application within this 5 working day period, you will not be liable for the assessment and design charge. If you do not cancel the application within the 5 working day cooling off period, you will be liable to pay a percentage of the assessment and design charge subject to the amount of work completed regardless of whether the Connection Offer is issued.
- 4.13 If you accept our Connection Offer but subsequently cancel, the assessment and design charge will not be refunded.

### **Basis for calculation of charges**

- 4.14 An assessment is made of all staff that undertake any of the activities relating to connection offer expenses identified in 4.6 and 4.7. Average hourly rates for the relevant teams are then used to calculate the average cost incurred in preparing a Connection Offer for each category of connection. This is based on a typical connection in each category, recognising that some Connection Offers will be simpler and quicker to prepare, whilst others will be more complex and therefore take longer.
- 4.15 An associated indirect cost is applied to these staff costs to recover those costs that are incurred but are not directly attributable to the preparation of the Connection Offer (e.g. business support costs).

## Section 5 – Common Connection Charging Methodology

This Section sets out the Common Connection Charging Methodology that is implemented to ensure a consistent approach in the way your Connection Charge is calculated.

### Minimum Scheme

- 5.1 The Minimum Scheme is the Scheme with the lowest overall capital cost (as estimated by us), solely to provide the Required Capacity. The Minimum Scheme will be subject to:
- accepted industry standards, including the requirements of the Distribution Code;
  - the status and configuration of the Relevant Section of Network (RSN);
  - the standard sizes and types of equipment currently used by us on our Distribution System which shall be reasonable in all the circumstances;
  - maintaining our ability to minimise regulatory penalties associated with the Interruptions Incentive Scheme and the Guaranteed Standards of Performance; and
  - where the Customer is an LDNO, maintaining the Customer's ability to minimise regulatory penalties associated with the Guaranteed Standards of Performance.
- and shall be consistent with our statutory and licence obligations including the requirement to develop, maintain and operate an efficient, co-ordinated and economical electricity Distribution System.
- 5.2 We will make available our design policies and standards as appropriate.
- 5.3 Subject to paragraphs 5.4 and 5.7 below, we will calculate the Connection Charge based on the estimated costs of the Minimum Scheme.
- 5.4 In certain circumstances we may decide to design an Enhanced Scheme. This will include one or more of the following:
- additional assets not required as part of the Minimum Scheme;
  - assets of a larger capacity than required by the Minimum Scheme;
  - assets of a different specification than required by the Minimum Scheme.
- 5.5 If we decide to design an Enhanced Scheme, the Connection Charge that will apply will be the lower of the Connection Charge associated with the Minimum Scheme and the Connection Charge associated with the Enhanced Scheme.
- 5.6 The Connection Charge associated with the Enhanced Scheme will be calculated subject to the exclusion of costs of any additional assets not necessary for the provision of your connection.
- 5.7 We may recover the reasonable costs incurred, both direct and indirect, in providing a connection and may, where allowed by our Licence, apply a margin on some of those costs. The factors taken into account by us to calculate the Connection Charge will include, but are not limited to:
- industry standards governing the Distribution System;
  - the Required Capacity;
  - available capacity of the existing Distribution System;
  - whether any necessary extension or Reinforcement of the existing Distribution System is by underground cable or overhead lines;
  - whether any diversionary work is required as a result of the development and the required disconnection of any assets;

- the length of cable or line required;
- type of ground requiring excavation, the type and extent of reinstatement necessary (including New Roads and Street Works Act requirements and any other relevant legislation), and the need for road, bridge crossings etc;
- any Electrical Plant and civil costs required, allowing for any civil works undertaken by you with our agreement;
- the cost of installing communication equipment;
- the costs of installing system management equipment;
- the requirement to work outside of normal working hours;
- the costs of undertaking the design;
- the costs of securing wayleaves/easements for plant, cables or lines including any consents;
- the costs of securing suitable substation sites including any necessary Land Rights;
- any overhead line surveys required;
- the costs of public enquiries and environmental impact studies;
- charges for any other costs associated with the work on Sites of Special Scientific Interest (SSSI), railway lines etc; and
- any variations in respect of the actual costs that were reasonably incurred as specified in the Connection Offer.

## **Cost Allocation**

- 5.8 The costs to be charged to you as a Connection Charge may be split into three categories:
- Costs for providing the connection which are to be paid in full by you (see paragraphs 5.10 to 5.16);
  - Costs for providing the connection which are to be apportioned between you and us (see paragraphs 5.28 to 5.33); and
  - Costs to be paid by you in respect of works that have previously been constructed or are committed and are used to provide the connection (see paragraph 5.34).
- 5.9 Some costs may be borne in full by us and will not be included in your Connection Charge (see paragraphs 5.35 to 5.39).

## **Costs to be paid in full by you**

- 5.10 The costs of providing Extension Assets are charged in full to you.
- 5.11 Where you have requirements for additional security or the characteristics of your load requires us to install assets in excess of the Minimum Scheme then you will pay the costs in excess of the Minimum Scheme in full. Where you have requested a three-phase connection and/or a supply voltage that is not necessary to meet the Required Capacity, and the local Distribution System is not of the requested number of phases and/or voltage, then you will pay in full the cost of Reinforcement of the Distribution System to your specified number of phases and/or voltage.
- 5.12 The costs of the future operation and maintenance of any additional assets requested by you (over and above those associated with the Minimum Scheme) will be payable in full. This would normally be levied as a one-off charge representing the net present value of the future operation and maintenance costs and calculated as a percentage

(specified in Section [6]) of the additional capital cost of the Scheme. See Example 7 for an illustration of where you request additional security.

- 5.13 Work required to reconfigure the Distribution System to meet your requirements where no additional Network or Fault Level Capacity is made available shall be charged in full to you. See Example 20.
- 5.14 Where the Extension Assets would normally require the extension of existing switchgear equipment and this is not possible, the cost of the full replacement of the switchgear (using the nearest standard size) will be charged to you, provided that there is no Reinforcement of the Distribution System (see paragraph 5.25).
- 5.15 If your development is considered to be speculative then the Reinforcement costs will be charged to you in full (see paragraphs 5.48 to 5.70).
- 5.16 Reinforcement costs for the Minimum Scheme in excess of the High-Cost Project Threshold, shall be charged to you in full as a Connection Charge. For the avoidance of doubt, where paragraph 5.36 applies, the High-Cost Threshold will not apply. The calculation of this charge will include all costs for Reinforcement carried out at the same Voltage Level and one Voltage Level above the Point of Connection to the existing Distribution System. For Generation Connections the High-Cost Project Threshold is £200/kW; for Demand Connections the High-Cost Project Threshold is £1,720/kVA. Reinforcement costs below the High-Cost Project Threshold will follow the methodology outlined under paragraphs 5.17 to 5.27. For Generation Connections, where the Reinforcement costs at the same Voltage Level as the Point of Connection are greater than the High-Cost Project Threshold then the methodology outlined under paragraphs 5.17 to 5.27 will be applied to Reinforcement costs up to and including the High-Cost Project Threshold only. The table below illustrates the application of the High-Cost Project Threshold.

## England and Wales

Voltage of Scheme Assets	Voltage at the POC			
	LV (at or below 1000V)	HV (above 1kV but not more than 22kV)	EHV (above 22kV but not more than 72kV)	132kV
132kV Network	Excluded from assessment <sup>1</sup>	Excluded from assessment <sup>1</sup>	Included in assessment	Included in assessment
132kV/ EHV Substation	Excluded from assessment <sup>2</sup>	EHV CBs only included in assessment	Included in assessment	Not applicable
EHV Network	Excluded from assessment <sup>1</sup>	Included in assessment	Included in assessment	
132kV/ HV Substation	HV CBs only included in assessment	Included in assessment	Not applicable	
EHV/HV Substation	HV CBs only included in assessment	Included in assessment		

<b>EHV/LV substation</b>	Included in assessment	<b>Not applicable</b>		
<b>HV Network</b>	Included in assessment	Included in assessment		
<b>HV/ LV Substation</b>	Included in assessment	<b>Not applicable</b>		
<b>LV Network</b>	Included in assessment			

<sup>1</sup> Except where there is direct transformation from 132kV to HV or EHV to LV when the higher voltage costs are included.

<sup>2</sup> Except where there is direct transformation from 132kV to HV or EHV to LV when the higher voltage circuit breaker costs are included.

NB: The above table may not accommodate every possible set of circumstances, where this is the case, the Voltage Level (as defined in the Glossary) shall be applied.

## Scotland

	Voltage at the POC		
Voltage of Scheme Assets	LV (at or below 1000V)	HV (above 1kV but not more than 22kV)	EHV (above 22kV but not more than 72kV)
<b>EHV Network</b>	Excluded from assessment <sup>1</sup>	Included in assessment	Included in assessment
<b>EHV/HV Substation</b>	HV CBs only included in assessment	Included in assessment	<b>Not applicable</b>
<b>EHV/LV substation</b>	Included in assessment	<b>Not applicable</b>	
<b>HV Network</b>	Included in assessment	Included in assessment	
<b>HV/ LV Substation</b>	Included in assessment	<b>Not applicable</b>	
<b>LV Network</b>	Included in assessment		

<sup>1</sup> Except where there is direct transformation from EHV to LV when the higher voltage costs are included.

NB: The above table may not accommodate every possible set of circumstances, where this is the case, the Voltage Level (as defined in the Glossary) shall be applied.

## Costs of Reinforcement

- 5.17 Reinforcement is defined as assets installed that add capacity (network or fault level) to the existing shared use Distribution System.
- 5.18 For Generation Connections, where the Reinforcement is at the same Voltage Level of the voltage at the POC to the existing Distribution System, then the costs of Reinforcement shall be apportioned between you and us, unless other exceptions apply which take precedence. The methods used to apportion the costs of Reinforcement are set out in paragraphs 5.28 to 5.33.
- 5.19 For Demand Connections, the costs of Reinforcement will be paid in full by us, unless other exceptions apply which take precedence.
- 5.20 If you choose not to pay (i) Reinforcement costs for the Minimum Scheme for a Non-Curtailable Connection or (ii) Reinforcement costs in excess of the High-Cost Project Threshold for a Non-Curtailable Connection, then you can request an enduring Curtailable Connection instead (i.e. one which will not convert to a Non-Curtailable Connection in the future). If you subsequently require a Non-Curtailable Connection, then this would require a new connection request which may still be subject to Reinforcement costs, potentially in excess of the High-Cost Project Threshold.
- 5.21 Where one of the exceptions set out in paragraphs 5.22 to 5.27 applies, Reinforcement will be treated as Extension Assets and the costs of the Reinforcement will not be apportioned or paid in full by us. The application of the exceptions is demonstrated in the Examples.

- 5.22 Exception 1: Where the Reinforcement is:
- down stream of the POC; and
  - over and above the Minimum Scheme; and
  - provided at our request; and
  - provided by connecting two points on the existing Distribution System,
- then the apportionment rules will not apply. You will pay the costs associated with the Minimum Scheme and we will pay the costs over and above the Minimum Scheme. See Example 4.
- 5.23 Exception 2: Where the Reinforcement is in excess of the Minimum Scheme and is at your request, the Reinforcement will be treated as Extension Assets and the apportionment rules will not apply. The costs in excess of the Minimum Scheme will be borne in full by you (see paragraphs 5.11 and 5.12 above). See Example 3.
- 5.24 Exception 3: Where the Reinforcement is provided to accommodate a Temporary Connection, the Reinforcement will be treated as Extension Assets and the apportionment rules will not apply. Consequently, in such circumstances, you will pay in full the costs associated with the Temporary Connection. Temporary Connections are defined as connections that are only required for a period of up to five years, but exclude connections to provide the initial connection to a development, where the Reinforcement will subsequently be required for the permanent connection.
- 5.25 Exception 4: Where the replacement of switchgear results in an increase in fault level capacity and:
- that increase is solely as a result of the fault level rating of the standard switchgear equipment used by us being higher than that of the existing switchgear; and
  - that increase in fault level capacity is not needed to accommodate your connection.
- then, unless the switchgear adds network capacity and the Security CAF applies, the switchgear replacement will be treated as Extension Assets and the apportionment rules will not apply. Consequently, in such circumstances, you will pay the full cost of the switchgear replacement. See Example 15.
- 5.26 Exception 5: Where the Minimum Scheme requires Reinforcement that is provided by connecting two points on the existing Distribution System to provide connectivity to your Premises, then the lowest cost feeder shall be treated as an Extension Asset and all other feeders required to connect your Premises shall be treated as Reinforcement. See Example 17.
- 5.27 Exception 6: Where the Reinforcement:
- is provided by connecting two points on the existing Distribution System; and
  - is providing connection to a development with a number of Entry/ Exit Points,
- then the additional network length (measured from suitable points close to the site boundaries which would allow for a clear demarcation of Contestable and Non-Contestable Work) required to provide connectivity within the development will be considered to be Extension Assets and the apportionment rules will not apply. Consequently, in such circumstances, you will pay the full cost of the additional network length. See Example 18.

## **Costs to be apportioned between you and us**

- 5.28 The costs of Reinforcement will be apportioned using one of two Cost Apportionment Factors (CAFs), dependent upon which factor is driving the requirement for Reinforcement:
- The 'Security CAF'; and

- The 'Fault Level CAF'.

5.29 The following definitions are used in the application of the CAFs.

<p><b>Existing Capacity</b></p>	<p>For existing Customers their Existing Capacity will be either:</p> <p>(a) the Maximum Capacity used in the calculation of their use of system charges; or</p> <p>(b) for Customers who are not charged for use of system on the basis of their Maximum Capacity the lower of:</p> <ul style="list-style-type: none"> <li>• No. of phases x nominal phase-neutral voltage (kV) x fuse rating (A); and</li> <li>• The rating of the service equipment.</li> </ul>
<p><b>Fault Level Contribution from Connection</b></p>	<p>is the assessment of the Fault Level contribution from the equipment to be connected taking account of its impact at the appropriate point on the Distribution System. Where an existing Customer requests a change to a connection then the “Fault Level Contribution from Connection” is defined as the incremental increase in Fault Level caused by the Customer.</p>
<p><b>New Fault Level Capacity</b></p>	<p>is the Fault Level rating, following Reinforcement, of the equipment installed after taking account of any restrictions imposed by the local network Fault Level capacity. For the avoidance of doubt this rule will be used for all equipment types and voltages.</p>
<p><b>New Network Capacity</b></p>	<p>is either the secure or non-secure capacity of the Relevant Section of Network (RSN) following Reinforcement. Whether secure or non-secure capacity is applicable depends upon the type of capacity that can be provided from the RSN. For example, if the capacity provided to the Customer by the RSN is secure, but the capacity requested by the Customer at the point of connection is non-secure, the secure capacity will be used. See Example 24.</p>

	<p>The capacity to be used will be based on our assessment of the thermal ratings, voltage change and upstream restrictions and compliance with our relevant design, planning and security of supply policies. The equipment ratings to be used are the appropriate operational rating at the time of the most onerous operational conditions taking account of seasonal ratings and demand.</p>
<p><b>Relevant Section of Network (RSN)</b></p>	<p>is that part or parts of the Distribution System which require(s) Reinforcement. Normally this will comprise:</p> <ul style="list-style-type: none"> <li>• the existing assets, at the Voltage Level that is being reinforced, that would have been used to supply you (so far as they have not been replaced) had sufficient capacity been available to connect you without Reinforcement; and/or</li> <li>• the new assets, at the same Voltage Level, that are to be provided by way of Reinforcement.</li> </ul> <p>Where it is unclear what assets would have supplied the Customer in the event that sufficient capacity had been available, the existing individual assets with the closest rating to the new assets will be used.</p> <p>There may be more than one RSN (e.g. at different Voltage Levels).</p>
<p><b>Required Capacity</b></p>	<p>is the Maximum Capacity agreed with the Customer. In the case of multiple connections (e.g. a housing development) it may be adjusted after consideration of the effects of diversity. Where an existing Customer requests an increase in capacity then it is the increase above their Existing Capacity.</p>

5.30 The 'Security CAF' is applied, where the costs are driven by either thermal capacity or voltage (or both) as assessed against the relevant standard. This rule determines the proportion of the Reinforcement costs that should be paid by you as detailed below.

$$Security\ CAF = \frac{Required\ Capacity}{New\ Network\ Capacity} \times 100\% \quad (\max\ 100\%)$$

- 5.31 The 'Fault Level CAF' is applied, where the costs are driven by Fault Level restrictions. This rule determines the proportion of the Reinforcement costs that should be paid by you as detailed below.

$$\text{Fault Level CAF} = 3 \times \frac{\text{Fault Level Contribution from Connection}}{\text{New Fault Level Capacity}} \times 100\% \text{ (max 100\%)}$$

- 5.32 For clarity, where you require an augmentation to an existing connection, both the Security and Fault Level CAFs will be based on the increase in Required Capacity and increase in Fault Level Contribution from the connection respectively. Any related increases within the previous three year period will be taken into account in determining the increase in the Required Capacity or increase in the Fault Level Contribution from the connection to be applied within the CAF.
- 5.33 On some Schemes there may be interaction between the two rules. In such cases, the 'Security' CAF will be applied to costs that are driven by the security requirement. The 'Fault Level CAF' will be applied to costs that are driven by Fault Level requirements. See the Examples for illustrations on the application of the CAFs.

## Recovery of costs for previous works

- 5.34 Where, in order to provide your connection;
- we propose to utilise existing Distribution System assets that were previously installed to provide a connection to another customer, and
  - the other customer has paid us (either in part or in full) a Connection Charge for those assets or paid an ICP for those assets which were adopted by us,
- you may be required to make a payment towards them. The ECCR prescribes the circumstances where such payment is required. Charges for such works only apply where the new connection is provided within the ECCR Prescribed Period.

## Costs to be paid in full by us

- 5.35 For Demand Connections we will fully fund all Reinforcement. For Generation Connections, we will fully fund Reinforcement carried out at a Voltage Level higher than the Voltage Level at the POC to the existing Distribution System. However, there are exceptions to these two approaches, as set out elsewhere in this methodology.
- 5.36 We will fully fund Reinforcement carried out to allow the installation of all equipment at an existing Premises which remain connected via an existing low-voltage single, two or three phase service fused at 100 amperes or less per phase which is metered with whole-current metering; provided that (to the extent relevant):
- the Reinforcement is carried out to allow the installation of equipment as part of a single application for a single or multiple installations;
  - any and all electricity generation equipment installed has a rated output not greater than 16 amperes per phase (or not greater than 16 amperes per phase at any single Premises if a single application for multiple installations);
  - any and all equipment installed which does not constitute a modification to the existing service conforms with the technical requirements of the following standards (notwithstanding that the equipment may have an input current that is more than 16 amperes per phase):
  - BS EN 61000-3-2 Electromagnetic compatibility (EMC). Limits. Limits for harmonic current emissions (equipment input current  $\leq$  16 A per phase); and

- BS EN 61000-3-3 Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current  $\leq 16$  A per phase and not subject to conditional connection.
- 5.37 Where it is necessary to modify a low-voltage single phase looped service for an existing Premises, this shall be considered to have remained connected under paragraph 5.36 above.
- 5.38 Where another LDNO with a distribution network that is connected to our Distribution System requires an increase in capacity to its distribution network, the voltage at the POC for assessing the Voltage Level will be:
- in the case of a new extension to the network of the other LDNO, the voltage of connection at which the Extension Assets will connect to the other LDNO's network; or
  - in the case of additional capacity required in respect of a customer connected to the existing assets of the LDNO, the voltage at which the customer connects to the LDNO's network; or
  - in the case of additional capacity required to meet general load growth on the LDNO's network then the Reinforcement costs will be borne by us. The LDNO will be required to provide justification in such circumstances.
- 5.39 The tables below illustrate the application of the voltage rules in relation to Reinforcement for Demand Connections and Generation Connections. For Generation Connections, you will be required to contribute towards the cost of any Reinforcement provided at the Voltage Level of the POC, up to and including the cost of circuit breakers provided at that voltage.

**England and Wales**

<b>Demand Connections</b>				
	<b>Voltage at the POC</b>			
<b>Voltage of Scheme Assets</b>	<b>LV (at or below 1000V)</b>	<b>HV (above 1kV but not more than 22kV)</b>	<b>EHV (above 22kV but not more than 72kV)</b>	<b>132kV</b>
<b>132kV Network</b>	We fund	We fund	We fund	We fund
<b>132kV/ EHV Substation</b>	We fund	We fund	We fund	Not applicable
<b>EHV Network</b>	We fund	We fund	We fund	Not applicable
<b>132kV/ HV Substation</b>	We fund	We fund	Not applicable	Not applicable
<b>EHV/HV Substation</b>	We fund	We fund	Not applicable	Not applicable
<b>EHV/LV substation</b>	We fund	Not applicable	Not applicable	Not applicable
<b>HV Network</b>	We fund	We fund	Not applicable	Not applicable
<b>HV/ LV Substation</b>	We fund	Not applicable	Not applicable	Not applicable
<b>LV Network</b>	We fund	Not applicable	Not applicable	Not applicable

NB: The above table may not accommodate every possible circumstance, where this is the case, the Voltage Level (as defined in the Glossary) shall be applied.

<b>Generation Connections</b>				
	<b>Voltage at the POC</b>			
<b>Voltage of Scheme Assets</b>	<b>LV (at or below 1000V)</b>	<b>HV (above 1kV but not more than 22kV)</b>	<b>EHV (above 22kV but not more than 72kV)</b>	<b>132kV</b>
<b>132kV Network</b>	We fund	We fund <sup>1</sup>	We fund	Apportioned
<b>132kV/ EHV Substation</b>	We fund	We fund	EHV circuit breakers only Apportioned	Not applicable
<b>EHV Network</b>	We fund	We fund	Apportioned	Not applicable
<b>132kV/ HV Substation</b>	We fund	HV circuit breakers only Apportioned	Not applicable	Not applicable
<b>EHV/HV Substation</b>	We fund	HV circuit breakers only Apportioned	Not applicable	Not applicable
<b>EHV/LV Substation</b>	LV board only Apportioned	Not applicable	Not applicable	Not applicable
<b>HV Network</b>	We fund	Apportioned	Not applicable	Not applicable
<b>HV/ LV Substation</b>	LV board only Apportioned	Not applicable	Not applicable	Not applicable
<b>LV Network</b>	Apportioned	Not applicable	Not applicable	Not applicable

NB: The above table may not accommodate every possible circumstance, where this is the case, the Voltage Level (as defined in the Glossary) shall be applied.

**Scotland**

<b>Demand Connections</b>			
	<b>Voltage at the POC</b>		
<b>Voltage of Scheme Assets</b>	<b>LV (at or below 1000V)</b>	<b>HV (above 1kV but not more than 22kV)</b>	<b>EHV (above 22kV but not more than 72kV)</b>
<b>EHV Network</b>	We fund	We fund	We fund
<b>EHV/HV Substation</b>	We fund	We fund	Not applicable
<b>EHV/LV substation</b>	We fund	Not applicable	Not applicable
<b>HV Network</b>	We fund	We fund	Not applicable
<b>HV/ LV Substation</b>	We fund	Not applicable	Not applicable
<b>LV Network</b>	We fund	Not applicable	Not applicable

NB: The above table may not accommodate every possible circumstance, where this is the case, the Voltage Level (as defined in the Glossary) shall be applied.

<b>Generation Connections</b>			
	<b>Voltage at the POC</b>		
<b>Voltage of Scheme Assets</b>	<b>LV (at or below 1000V)</b>	<b>HV (above 1kV but not more than 22kV)</b>	<b>EHV (above 22kV but not more than 72kV)</b>
<b>EHV Network</b>	We fund	We fund	Apportioned
<b>EHV/HV Substation</b>	We fund	HV circuit breakers only Apportioned	Not applicable
<b>EHV/LV Substation</b>	LV board only Apportioned	Not applicable	Not applicable
<b>HV Network</b>	We fund	Apportioned	Not applicable
<b>HV/ LV Substation</b>	LV board only Apportioned	Not applicable	Not applicable
<b>LV Network</b>	Apportioned	Not applicable	Not applicable

NB: The above table may not accommodate every possible circumstance, where this is the case, the Voltage Level (as defined in the Glossary) shall be applied.

## Additional Cost Allocation for Flexible Connections and Curtailable Connections

- 5.40 To facilitate the provision of a Flexible Connection or a Curtailable Connection, we may need to install and maintain specific system management equipment, at your Premises and/or further upstream in other parts of the Distribution System. Some of the costs associated with installing, operating and maintaining the system management equipment will be directly attributed to your connection and be included as part of your Connection Charge (see illustrative table in paragraph 5.41). The proportion of the costs which you must fund depends on whether your connection forms part of a Dedicated Scheme or a Wide Area Scheme, as described below:

Type 1 – Dedicated Scheme: A scheme managing constraint(s) where there are no Customers downstream of the constraint(s) who could connect new or additional generation without being controlled by the Dedicated Scheme:

- Type '1A' considers a scenario involving only one customer; and
- Type '1B' considers a scenario involving multiple customers

Type 2 – Wide Area Scheme: A scheme managing constraint(s) where there are Customers downstream of the constraint(s) who could connect new or additional generation without being controlled by the Wide Area Scheme.

- 5.41 The table below illustrates the scheme types and methodology for cost recovery associated with each type of Flexible Connection or a Curtailable Connection. The methodology covers Type 1A, Type 1B and Type 2 (as each is described in paragraph 5.40).

Typical connection components <sup>1</sup>	Type 1A - Single	Type 1B - Multiple	Type 2 - Wide Area
Extension Assets for customer	You fund	You fund	You fund
End user control unit for the customer	You fund	You fund	You fund
Local system management unit	You fund	Shared equally between participants	We fund
Scheme management unit	You fund	Shared equally between participants	We fund
Central management unit	N/A	N/A	We fund
Scheme specific ongoing costs e.g. communications	We fund	We fund	We fund

<sup>1</sup>We will describe the main connection components within the relevant connection offer, which will also include the funding arrangements for each such connection component (if different to that stated in this illustrative table).

## Recovered Equipment and Deferral of Asset Replacement

- 5.42 Normally, you will not receive any credit for the value of any equipment recovered by us as a result of providing the connection. However, where a Temporary Connection is to be Disconnected, we will determine the value of recovered equipment that we can subsequently reuse (net of depreciation and removal and refurbishment costs). Where there is a net value in the recovered equipment that can be reused, we will pay you the amount of such net value subject to a de minimis level as specified in Section [6].
- 5.43 You will not receive any credit for the value of any deferral of asset renewal expenditure by us.

## Rebates

- 5.44 For Distribution System assets where you have paid in full, then you may be entitled to a reimbursement payment under the ECCR should another Customer connect to those assets. These circumstances are detailed in the ECCR.
- 5.45 For Distribution System assets where you have paid in proportion to your Required Capacity, then you are not entitled to a future rebate of charges should another Customer connect to those assets.
- 5.46 Your entitlement to receive payments under the ECCR only applies to connections made within the ECCR Prescribed Period from the first provision of the connection.
- 5.47 These provisions do not apply where your connection was made before 6 April 2017 and we have adopted the assets from an ICP. However, for connections made on or after 6 April 2017, these provisions do apply to assets we have adopted from an ICP (as further described in the ECCR).

## Speculative Developments

- 5.48 Developments which have one or more of the following characteristics may be considered as speculative:
- their detailed electrical load requirements are not known;

- the development is phased over a period of time and the timing of the phases is unclear;
- the capacity requested caters for future expansion rather than the immediate requirements of (an) end user(s);
- the capacity requested caters for future speculative phases of a development rather than the initial phase(s) of the development; or
- the infrastructure only is being provided, with no connections for end users requested.

5.49 Where we are asked to provide a connection to a speculative development then the cost of the work including any Reinforcement is charged in full and the CAFs do not apply. Additional charges to reflect ongoing operation, repair and maintenance costs may also be levied.

5.50 We may, at our sole discretion, allow capacity to be reserved on the infrastructure provided to service the speculative development on the commercial terms agreed between you and us in respect of the development.

5.51 Applications will be assessed to determine whether they are a Speculative Development by using the Speculative Developments scoring system described in paragraphs 5.52 to 5.70, which will be applied as follows:

- Consideration will be given to the fact that some aspects of an application may have a greater bearing on whether the application should be considered as not being a Speculative Development. In recognition of this, the criteria used in the scoring system are weighted as either high or low significance.
- Only the points identified in the scoring criteria shall be placed against each respective criterion that is relevant to the application. Each high significance criterion shall be scored 2 points and each low significance criterion shall be scored 1 point, without exception.
- The number of points entered in the 'speculative' and 'non-speculative' columns shall be added up to give a total number for the respective column, as shown in the scoring proforma below.
- If the total value of points for the 'speculative' column is greater than the total value of points for the 'non-speculative' column, then the application will be considered as being a Speculative Development.
- If there is no score in either column, then we reserve the right to obtain additional information prior to making the assessment.
- All criteria may not apply to every application.

<b>Scoring Proforma</b>		
<b>Criteria</b>	<b>Non-Speculative Points</b>	<b>Speculative Points</b>
1		
2		
3		
4		Not applicable

5		
6		Not applicable
Total points		

**Criterion 1: Programme (domestic and non-domestic developments)**

- 5.52 This criterion is deemed to be of low significance.
- 5.53 The application will receive points in the ‘non-speculative’ column, if:
- the development has an overall timescale of up to two years from the date of the initial application is made until the completion of the final phase; or
  - the applicant has provided a clear phasing plan for the complete development.
- 5.54 The application will receive points in the ‘speculative’ column, if:
- the development has an overall timescale of more than ten years from the date on which the initial application is made to completion of the final phase; and
  - the applicant does not provide a clear phasing plan for the complete development.
- 5.55 Should the Customer’s development be phased over a period greater than two years but less than or equal to ten years, then no points shall be entered in either the ‘speculative’ or ‘non-speculative’ columns.

**Criterion 2: Programme (domestic developments only)**

- 5.56 This criterion is deemed to be of high significance.
- 5.57 The application will receive points in the ‘non-speculative’ column if the complete development comprises less than 100 dwellings or requires less than three permanent HV/LV substations beyond the POC.
- 5.58 The application will receive points in the ‘speculative’ column, if the complete development includes more than 5,000 dwellings or requires more than ten permanent HV/LV substations beyond the POC.
- 5.59 Should the characteristics of the customers development fall between these two thresholds, then no points shall be entered in either of the ‘speculative’ or ‘non-speculative’ columns.

**Criterion 3: Load Profile**

- 5.60 This criterion is deemed to be of high significance.
- 5.61 The application will receive points in the ‘non-speculative’ column if the application is for a development that is (or will become) a Phased Capacity Site.
- 5.62 The application will receive points in the ‘speculative’ column if the applicant does not provide an acceptable (to us) capacity ramp profile and a portion of the Required Capacity is for future expansion.

**Criterion 4: Financial Commitment**

- 5.63 This criterion is deemed to be of low significance.
- 5.64 The application will receive points in the ‘non-speculative’ column if the applicant makes a financial commitment in support of the application. A financial commitment is made where the applicant agrees to pay for:
- assets installed at initial connection which are sized sufficiently to accommodate the complete future development and which are greater than the assets to accommodate the capacity to be utilised in the early phases of construction; and

- any operation and maintenance costs for such increased assets which may be included within the connection offer prior to the initial energisation of the connection.

#### **Criterion 5: Future Provision**

- 5.65 This criterion is deemed to be of high significance.
- 5.66 The application will receive points in the ‘non-speculative’ column if at least 75% of the total connections and/or at least 75% of the total load are delivered in the first phase of the development (excluding any temporary works).
- 5.67 The application will receive points in the ‘speculative’ column if only infrastructure is being provided, with no connections for end users requested, and the development is not within the relevant local authority’s development plans.

#### **Criterion 6: Planning Permission**

- 5.68 The application will receive points in the ‘non-speculative’ column reflective of a high significance criterion if the complete development has achieved Full Planning Permission.
- 5.69 The application will receive points in the ‘non-speculative’ column reflective of a low significance criterion if the complete development has only achieved Outline Planning Permission.
- 5.70 For clarity, the absence of any planning permission/consent for the development will not result in any points being added to the ‘speculative’ column.

### **Connection Alterations**

- 5.71 Where you request an alteration to your connection arrangements, including a change in the supply voltage, the costs are charged in full to you. For the avoidance of doubt increases in the Required Capacity are dealt with in accordance with the previous Sections.

### **National Electricity Transmission System Operator (NETSO) Charges**

- 5.72 We have an obligation under the CUSC to discuss certain requests for connection or changes in connection with the NETSO. Such requests are typically for large electrical demand or generation projects. Under certain circumstances, as determined by the NETSO, they may apply charges to assess the potential impact on the GB Transmission System of a request or the combined effect of a number of requests and these will be included in the Connection Charge, or through a separate mechanism agreed between you and us.
- 5.73 Subsequent to such assessment, the NETSO may also require works to be undertaken on the GB Transmission System as a condition of the connection being permitted. In the event of NETSO applying charges for these works, we will reflect these charges in our charges to you.
- 5.74 Should GB Transmission System works be required, NETSO may apply a cancellation charge in the event that your project is cancelled or the capacity of your project reduces. The NETSO also calculates a secured amount in respect of this cancellation charge (being a percentage of the cancellation charge, which reduces at certain trigger points). We may ask you for security in respect of this cancellation charge, but we will not ask you for more than the secured amount calculated by the NETSO.

### **Land Rights**

- 5.75 Where Land Rights are required from a third party, the cost of acquiring those rights will be included in either the Connection Charge to you or through a separate mechanism agreed between you and us.

- 5.76 If the Land Rights that we require cannot be obtained by negotiation, we may, following discussion with you, exercise our powers of compulsory purchase (Section 10 and Schedule 3 of the Act) or apply to the Secretary of State or the Scottish Government in Scotland for a 'necessary wayleave' (paragraphs 6-8 of Schedule 4 of the Act). If we do so, the costs that we incur, including those of the Lands Tribunal/ Lands Tribunal for Scotland (which determine issues of compensation) will be charged to you. The Lands Tribunal may award compensation to the landowner and/or anyone who holds an interest in the land and this will be included in the Connection Charge or through a separate mechanism agreed between you and us.

## Unmetered Supplies

- 5.77 For some street lighting and other installations, we may allow items of equipment to be connected to our Distribution System without a meter. This is subject to the equipment having a low and predictable pattern of consumption and meeting the requirements of The Electricity (Unmetered Supply) Regulations 2001.
- 5.78 Where we agree that a meter is not required the provision of such a connection is dependent on the owner entering into an unmetered Connection Agreement and providing and maintaining an auditable inventory, in a format agreed with us, so that an accurate estimate of the consumption can be produced.
- 5.79 Where certain criteria are met the provision of services for unmetered connections may be made via a time-based connection service charge, e.g. Rent-a-Jointer Services. This is subject to us entering into a contract with you for the provision of such services.
- 5.80 You may elect to appoint an accredited ICP to carry out the Contestable Work for unmetered connections. The ICP will be allowed to carry out live jointing on low voltage, underground cables. Where you use an ICP, arrangements must first be established as follows:
- You will enter into an agreement with the ICP to carry out and complete the Contestable Work; and
  - We will enter into an agreement and/or an Adoption Agreement with you and/or your appointed ICP as appropriate.

## Capacity Ramping for LDNOs

- 5.81 For an LDNO the Required Capacity (expressed in kVA) is the Maximum Capacity to be provided at the boundary between the LDNO's distribution network and our Distribution System. This value will be agreed with us and stated in the Bilateral Connection Agreement for the relevant embedded network.
- 5.82 When a connection is provided to an LDNO the take-up of capacity may grow over a period of time as the site develops and individual customers are connected. In such circumstances the Bilateral Connection Agreement shall include a phased Required Capacity based on the Development Phase.
- 5.83 During the Development Phase a review may be undertaken annually on the anniversary of the Energisation of the embedded network. Any unused capacity identified in such review may be released for use by other customers and the Maximum Capacity reduced to an agreed level within the Bilateral Connection Agreement.
- 5.84 The Required Capacity agreed with us as being required at the end of the Development Phase shall be used to determine the Required Capacity for determination of the Cost Apportionment Factors where applicable.
- 5.85 Should additional capacity subsequently be required, the LDNO may incur additional Connection Charges for any Reinforcement based on the increase in capacity.

## Phased Capacity Site

- 5.86 If a Customer has a requirement for capacity to increase over a period of time, then a phased Required Capacity can be agreed. The phased Required Capacity will be documented in the Connection Agreement for the connection.
- 5.87 The DNO will use the phased Required Capacity to assess the needs of the Distribution System and what, if any, Reinforcement is required. Any Reinforcement will be charged in accordance with the Charging Methodology for a Demand Connection or Generation Connection, as appropriate.
- 5.88 The DNO will use the phased Required Capacity, updated in the Connection Agreement and as applicable at the relevant time, as the Maximum Capacity for the purposes of calculating the Customer's Use of System Charges.
- 5.89 By agreeing a phased Required Capacity, the Customer is committing to pay, from Energisation of the connection, Use of System Charges based upon the residual charging band allocated in accordance with DCUSA Schedule 32 (Residual Charging Bands) based on the Required Capacity for the complete development. For example, if the connection will be ramped from 1MVA to 5MVA over 10 years, the Customer is committing to pay Use of System Charges for a 5MVA connection in line with the ramped profile (i.e. when the capacity is ramped to 5MVA in year 10).
- 5.90 During the Development Phase a review may be undertaken annually on or around the anniversary of the date of Energisation of the connection. The results of that review will be discussed, and we may require reasonable changes to the phasing as a result of that review.

## Disconnection and De-Energisation

- 5.91 If we either Disconnect or De-energise your Entry/ Exit Point:
- at the request of your Supplier; or
  - due to a failure of your Supplier to comply with the terms of the DCUSA,
- then the cost of such disconnection or De-energisation will be borne by your Supplier.
- 5.92 If we either Disconnect or De-energise your Entry/ Exit Point:
- at your request; or
  - due to a failure by you to comply with the terms of your Connection Agreement,
- then the cost of such disconnection or De-energisation will be borne by you.
- 5.93 On termination of your Connection Agreement, we retain the right to remove our Electrical Plant and Electric Lines and charge you if we do so. Apparatus which is not cost effective for us to recover (e.g. Electric Lines laid underground) will normally be made safe and left at the Premises, but if you require us to remove them, the cost of removal will be payable by you. All such apparatus will remain our property unless otherwise agreed in writing.

## Adoption Payments

- 5.94 Where we adopt assets installed by an ICP we will not make any adoption payment in respect of those assets.

## **Competition in Connections**

5.95 Where you choose to have any Contestable Work undertaken by an ICP, we levy CIC Charges associated with the design approval, inspection and adoption of the Contestable Works as set out in Section [6] and Section [7].

## Worked Examples Illustrating the Application of the Connection Charging Methodology

The following Examples are to illustrate the application of the Connection Charging Methodology and are not intended to provide an accurate estimate of the charges for which a person would become liable in respect of the provision of a connection. The Examples do not necessarily represent the Minimum Scheme for a specific connection application or how we would classify a connection between what is a Demand Connection or Generation Connection. Where an example only applies to either Demand or Generation Connections, then this is identified in the Example title, otherwise the examples apply to both.

The figures quoted in the Examples are illustrative. Section [7] of this statement provides our charges and indicative costs to undertake various activities.

The Examples illustrate where we undertake both the Contestable and Non-Contestable Work. These costs will include the determination of the POC and assessment and design costs, though these are not explicitly identified in the Examples.

Where Contestable Work is undertaken by an ICP, we will apply CIC Charges for services associated with the Contestable Works which would cover activities including design approval, inspection and monitoring. The CIC Charges are not shown in the Examples. For the avoidance of doubt, in each Example, where an ICP undertakes the Contestable Work, our Connection Charge will include the cost of the Non-Contestable Work and the CIC Charges but exclude the cost of Contestable Work.

The Examples are generic and standard for all LDNOs, but they do not represent the network analysis and subsequent design solutions that would be completed for an actual connection scheme. The actual designs are subject to our design policies.

For illustrative purposes only, the rated capacities of the Examples use 'kVA, MVA' and 'kW, MW' interchangeably.

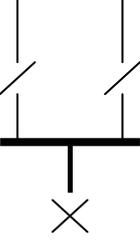
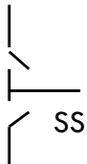
## Index of Examples

Example	Description	Purpose
1	A new connection at LV	To show Extension Assets are charged in full to the Customer.
2	A new connection at HV	To show LV and HV Extension Assets are charged in full to the Customer.
3	A new connection on a domestic housing development with interconnection requested by Customer	To illustrate Exception 2 where the interconnection is treated as Extension Assets and are charged in full to the Customer.
4	A new connection with interconnection requested by us.	To illustrate Exception 1 where LV and HV Extension Assets are charged in full to the Customer, but the interconnection is paid in full by us.
5	A new connection where the Minimum Scheme is a new substation teed onto the existing HV network.	Simple example of a commercial connection, Extension Assets only, so charged in full to the Customer.
6	A new connection where the Minimum Scheme is a new substation looped into existing HV network.	Simple example of looped connection, Extension Assets only, so charged in full to the Customer.
7	A new connection where the Minimum Scheme is as for Example 5 but the Customer requests an enhanced connection arrangement where the substation is looped into existing HV network.	Shows that for a Customer requested Enhanced Scheme that the Customer pays costs above the Minimum Scheme plus O&M.
8	A new connection where the Minimum Scheme is as for Example 5 but we request an Enhanced Scheme where the substation is looped into the existing HV network.	Shows that for a DNO requested Enhanced Scheme that the DNO pays for all costs above Minimum Scheme.
9	An additional load application requiring a new connection from the HV network and Reinforcement.	To demonstrate the treatment of Reinforcement cost for a Demand Connection that drives Reinforcement.
10	A new connection that results in a Point of Connection further away than the nearest network.	To show that the Minimum Scheme may result in a Point of Connection that is further away than the nearest network and may result in increased Extension Asset costs that are charged in full to the Customer.
11	A new Generation Connection with capacity triggered Reinforcement.	To demonstrate the treatment of Reinforcement cost for a Generation Connection which drives Reinforcement using the Security CAF.
12	A new Generation Connection with Fault Level Triggered Reinforcement.	To demonstrate how the Fault Level CAF calculation is applied.
13	A new Generation Connection that requires Reinforcement involving both Security and Fault Level CAFs.	To demonstrate Reinforcement charging principles for a Generation Connection where both Security CAF and Fault Level CAF are applicable.
14	A new Generation Connection with Reinforcement at a voltage above that of the Point of Connection.	To illustrate that a Generation Connection does not contribute to Reinforcement costs at a voltage level above the connection voltage.

<b>Example</b>	<b>Description</b>	<b>Purpose</b>
<b>15</b>	New Generation Connection where switchgear extension is not possible and switchgear replacement is needed	Illustrate Exception 4, if switchgear extension not possible, then treated as Extension Assets and costs are charged in full to the Customer.
<b>16</b>	A new Storage Connection that triggers Reinforcement	To show that Storage, when not co-located with other demand, is treated as a Generation Connection for the purposes of charging and any Reinforcement at the same Voltage of the POC will be charged, irrespective of whether the Reinforcement is due to the import or the export.
<b>17</b>	A new connection that is connected by Reinforced assets	To demonstrate the application of Exception 5 where the Customer needs to pay for the assets that connect them to the existing network.
<b>18</b>	A new connection of a development	To demonstrate the application of Exception 6 where the Customer pays for assets within the site boundary.
<b>19</b>	A new connection with remote network Reinforcement	To show treatment where capacity is created on a different part of the network and a load transfer is required to allow the connection. Example again demonstrates which elements are Reinforcement and which are Extension Assets.
<b>20</b>	A new connection with load transfer	Variation to Example 19 where a load transfer is required to free up capacity, but no new capacity is created and demonstrates why elements become Extension Assets.
<b>21</b>	A new Generation Connection with an Enhanced Scheme at the DNO's request.	To show how the Security CAF calculation is applied where the DNO requests an Enhanced Scheme.
<b>22</b>	A new Generation Connection on a meshed HV distribution system requiring Reinforcement.	To show that a contribution is required where Reinforcement is carried out at the same voltage as the Point of Connection for a Generation Connection.
<b>23</b>	A non-secure Generation Connection with non-secure Reinforcement.	To show that a contribution is required where Reinforcement is carried out at the same voltage as the Point of Connection for a Generation Connection in relation to a non-secure system.
<b>24</b>	A new non-secure Generation Connection with secure Reinforcement.	To show the application of the apportionment rule where secure Reinforcement is provided but the connection for a Generation Connection is non-secure.
<b>25</b>	A new Generation Connection with voltage rise triggered Reinforcement.	To show that a Generation Connection pays for Reinforcement at the voltage level of connection based on the CAF.
<b>26</b>	A new Generation Connection with voltage rise triggered Reinforcement.	To show that if voltage rise Reinforcement is tailored so that just the amount of network is upgraded to meet the Customer requirements, the CAF is 100% for a Generation Connection.
<b>27</b>	A new Generation Connection with Fault Level Triggered Reinforcement and transmission works.	To show how the Fault Level CAF calculation is applied and how the cost of transmission works are treated for a Generation Connection.
<b>28</b>	A new Generation Connection with Fault Level triggered Reinforcement and transmission works.	To show the treatment of Reinforcement costs at more than one voltage level above the POC and

Example	Description	Purpose
		the cost of transmission works for a Generation Connection.
29	A new Demand Connection that has Reinforcement above the High-Cost Project Threshold.	To show how the Demand High-Cost Project Threshold is applied.
30	A new Generation Connection that has Reinforcement above the High-Cost Project Threshold.	To show how a Generation Connection that triggers the Generation High-Cost Project Threshold is charged when the Reinforcement required is at the same voltage of connection.
31	The Customer requirements for supply characteristics are greater than the Minimum Scheme.	To illustrate that the Customer specifically requesting a three-phase connection, where the existing network is not of a sufficient number of phases, pays for any Reinforcement.

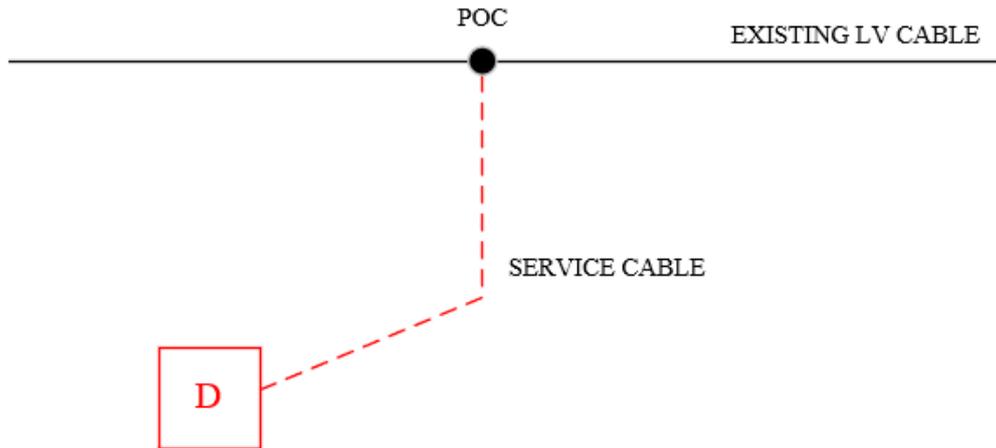
### Key to Illustrations

X	Circuit Breaker (any voltage)
	Switch
	Transformer
	Joint on cable
	High voltage ring main unit
	Existing cable
	Proposed cable
	Normal Open Point (NOP)
	Generation Connection
	Demand Connection
	Point of Connection (POC)
	Sub Station

**Example 1: A new connection at LV**

**Purpose:** To show Extension Assets are charged in full to the Customer.

A Customer requests a LV single phase connection to a new house. The Premises can be connected to an existing LV main cable in the street.



The Connection Charge for this Scheme is calculated as follows:

**Extension Assets:**

	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
15m service cable, excavation in footpath for joint hole to Customer laid duct, backfill and termination	£1,600	n/a	£1,600
Single service breach joint	£300	n/a	£300
<b>Total Extension Asset Cost</b>	<b>£1,900</b>		<b>£1,900</b>

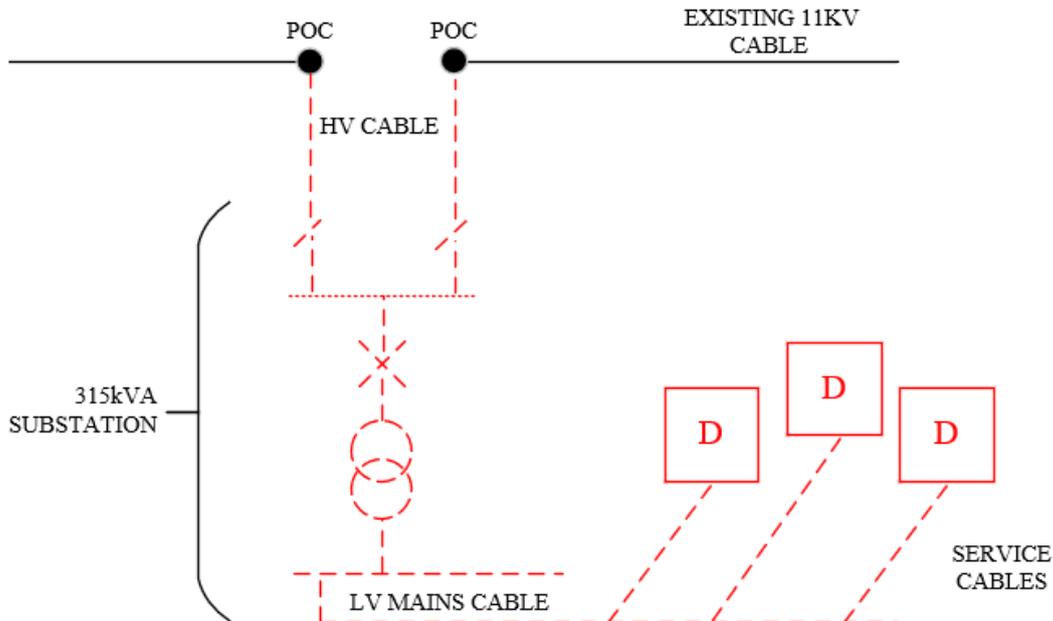
**Total cost of the work = £1,900**

**Total Connection Charge to Customer = £1,900**

**Example 2: A new connection at HV**

**Purpose: To show LV and HV Extension Assets are charged in full to the Customer.**

A housing developer requests connection for 200 domestic Premises. The Required Capacity to supply the 200 homes is 250kVA. A new distribution substation will be established to provide the Required Capacity of the site. The Minimum Scheme requires the substation to be looped into the existing 11kV network.



The Connection Charge for this Scheme is calculated as follows:

Extension Assets:	Cost	Apportionment	Customer Contribution
Provision and installation 100m 11kV cable	£30,000	n/a	£30,000
315kVA substation	£60,000	n/a	£60,000
LV mains, service cables and terminations	£200,000	n/a	£200,000
Two 11kV cable joints	£6,000	n/a	£6,000
<b>Total Extension Asset Cost</b>	<b>£296,000</b>		<b>£296,000</b>

**Total cost of the work = £296,000**

**Total Connection Charge to Customer = £296,000**

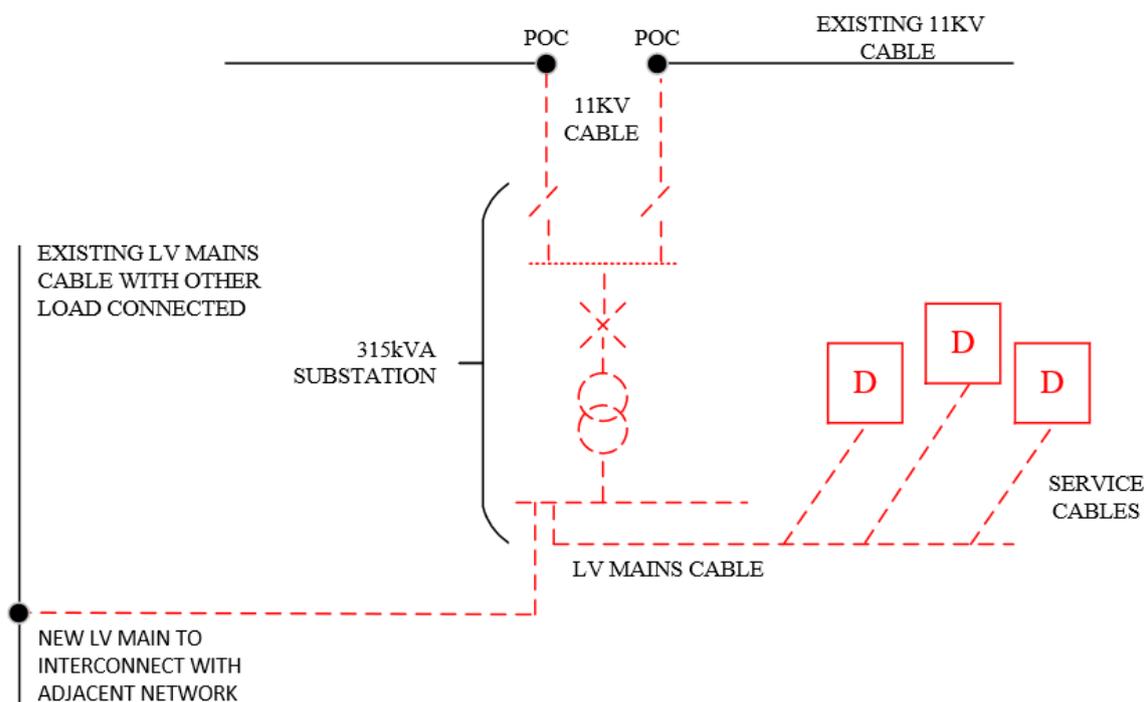
**Example 3: A new connection on a domestic housing development with interconnection requested by Customer**

**Purpose: To illustrate Exception 2 where the interconnection is treated as Extension Assets and are charged in full to the Customer.**

As in Example 2, a housing developer requests connections for 200 domestic Premises. The Required Capacity to supply the 200 homes is 250kVA. A new distribution substation will be established to provide the Required Capacity of the site. The Minimum Scheme requires the substation to be looped into the existing 11kV network. However, in this example there is an option to provide an additional LV cable to interconnect the distribution substation with the existing LV network. This option is over and above the Minimum Scheme.

Interconnecting into the existing LV network will increase the capacity of the existing Distribution System. Therefore, the assets that connect the 11kV and LV network would normally be considered to be Reinforcement. These assets (as shown on the diagram below) include the 11kV cable, the 315kVA substation and the interconnecting LV main. They exclude the LV mains and service cables from the 315kVA substation to the Customer’s development. However, whether these assets are to be considered Reinforcement or Extension Assets depends upon who requested the LV interconnection.

In this case Exception 2 (Paragraph 5.23) applies as the LV interconnector is over and above the minimum scheme and requested by the Customer, therefore all assets (including the interconnecting LV cable) will be treated as Extension Assets and their costs will be borne in full by the Customer. As the interconnecting LV main and associated LV joint are over and above the Minimum Scheme, a charge for their future operation and maintenance will be made.



The Connection Charge for this Scheme is calculated as follows:

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Provision and installation 100m 11KV cable (from existing 11kV network to substation)	£30,000	n/a	£30,000
315kVA substation	£60,000	n/a	£60,000
LV mains, service cables and terminations (from substation to the Customer's development)	£200,000	n/a	£200,000
Two 11kV cable joints	£6,000	n/a	£6,000
Interconnecting cable (from substation to existing LV network)	£12,000	In excess of Minimum Scheme	£12,000
LV cable joint	£300	In excess of Minimum Scheme	£300
Difference between Minimum Scheme and actual Scheme is £12,300. Operations & maintenance @ 20%* of £12,300		20%* of £12,300	£2,460
<b>Total Extension Asset Cost</b>	<b>£308,300</b>		<b>£310,760</b>

\*Note, the 20% Operation and Maintenance percentage has been used for illustrative purposes only.

**Total cost of the work = £308,300**

**Total Connection Charge to Customer = £308,300 + £2,460 = £310,760**

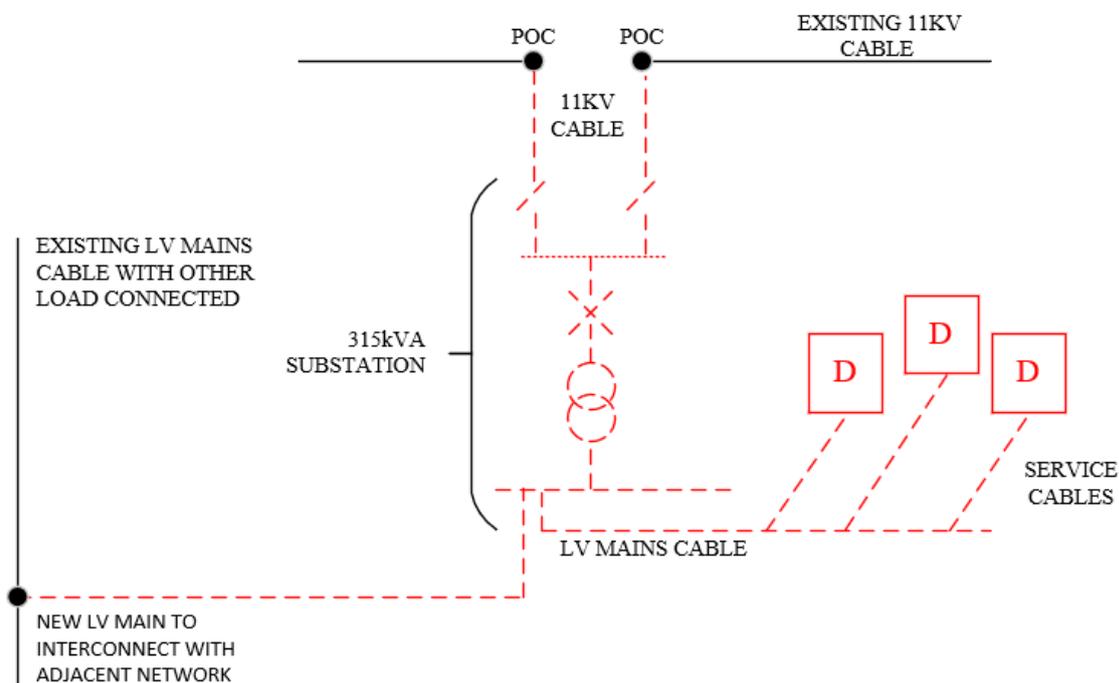
**Example 4: A new connection with interconnection requested by us**

**Purpose:** To illustrate Exception 1 where LV and HV Extension Assets are charged in full to the Customer, but the interconnection is paid in full by us.

As in Example 2, a housing developer requests connections for 200 domestic Premises. The Required Capacity to supply the 200 homes is 250kVA. A new distribution substation will be established to provide the Required Capacity of the site. The Minimum Scheme requires the substation to be looped into the existing 11kV network. However, in this Example there is an option to provide an additional LV cable to interconnect the distribution substation with the existing LV network. This option is over and above the Minimum Scheme.

Interconnecting into the existing LV network will increase the capacity of the existing Distribution System. Therefore, the assets that connect the 11kV and LV network would normally be considered to be Reinforcement. These assets (as shown on the diagram below) include the 11kV cable, the 315kVA substation and the interconnecting LV main. They exclude the LV mains and service cables from the 315kVA substation to the Customer's development. However, whether these assets are to be considered Reinforcement or Extension Assets depends upon who requested the LV interconnection.

In this case all the requirements of Exception 1 (paragraph 5.22) are met so the assets that connect the existing 11kV and LV Distribution System will be treated as Extension Assets. The Customer will pay the costs associated with the Minimum Scheme in full. The interconnecting LV cable and associated LV joint, as they are over and above the Minimum Scheme and were requested by us, therefore the costs will be borne in full by us.



The Connection Charge for this Scheme is calculated as follows:

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Provision and installation 100m 11KV cable (from existing 11kV network to substation)	£30,000	n/a	£30,000
315kVA substation	£60,000	n/a	£60,000
LV mains, service cables and terminations (from substation to the Customer's development)	£200,000	n/a	£200,000
Two 11kV cable joints	£6,000	n/a	£6,000
Interconnecting cable (from substation to existing LV network)	£12,000	In excess of Minimum Scheme	£0
LV cable joint	£300	In excess of Minimum Scheme	£0
<b>Total Extension Asset Cost</b>	<b>£308,300</b>		<b>£296,000</b>

**Total cost of the work = £308,300**

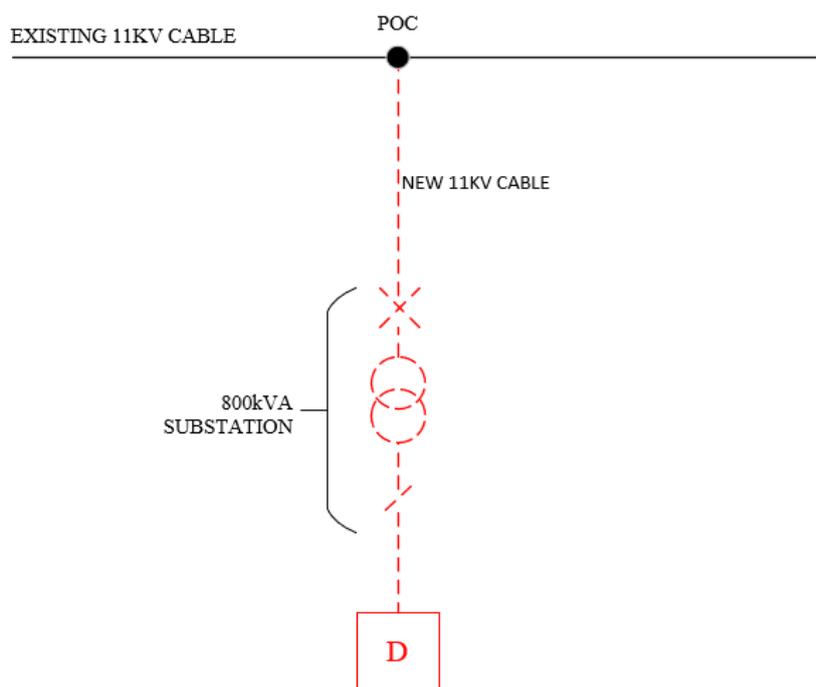
**Total Connection Charge to Customer = £296,000**

**Example 5: A new connection where the Minimum Scheme is a new substation teed onto the existing HV network.**

**Purpose: Simple example of a commercial connection, Extension Assets only, so charged in full to the Customer.**

A Customer requests a new LV three phase 600kVA connection to commercial Premises. Four scenarios for connection are considered in Examples 5 to 8. The Minimum Scheme will be dependent on the specific circumstances as set out in paragraphs 5.1 to 5.7.

In this example the Minimum Scheme is a new 800kVA substation teed onto the existing 11kV network. The figure below shows the proposed network.



The Connection Charge for this Scheme is calculated as follows:

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Provision and installation of 150m of 11kV cable	£45,000	n/a	£45,000
800kVA substation	£85,000	n/a	£85,000
Provision and installation LV cabling	£6,000	n/a	£6,000
LV Metering Panel	£4,000	n/a	£4,000
11kV joint to network	£3,000	n/a	£3,000
<b>Total Extension Asset Cost</b>	<b>£143,000</b>		<b>£143,000</b>

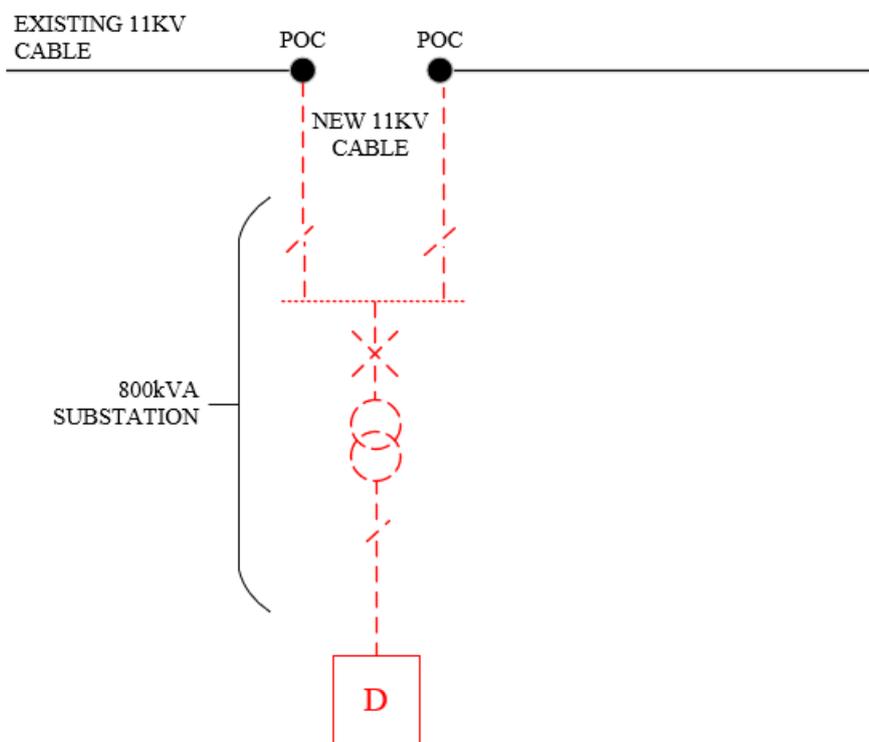
**Total cost of the work = £143,000**

**Total Connection Charge to Customer = £143,000**

**Example 6: A new connection where the Minimum Scheme is a new substation looped into existing HV network.**

**Purpose: Simple example of looped connection, Extension Assets only, so charged in full to the Customer.**

In this variation to Example 5, the Customer is connected with a looped connection, as illustrated in the following diagram. The Minimum Scheme is a new 800kVA substation looped into existing 11kV network.



The Connection Charge for this Scheme is calculated as follows:

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Provision and installation of 300m (2x150m) of 11kV cable looped into the network,	£90,000	n/a	£90,000
800kVA transformer	£75,000	n/a	£75,000
Ring Main Unit	£25,000	n/a	£25,000
Provision and installation LV cabling	£6,000	n/a	£6,000
LV Metering Panel	£4,000	n/a	£4,000
11kV joints to network	£6,000	n/a	£6,000
<b>Total Extension Asset Cost</b>	<b>£206,000</b>		<b>£206,000</b>

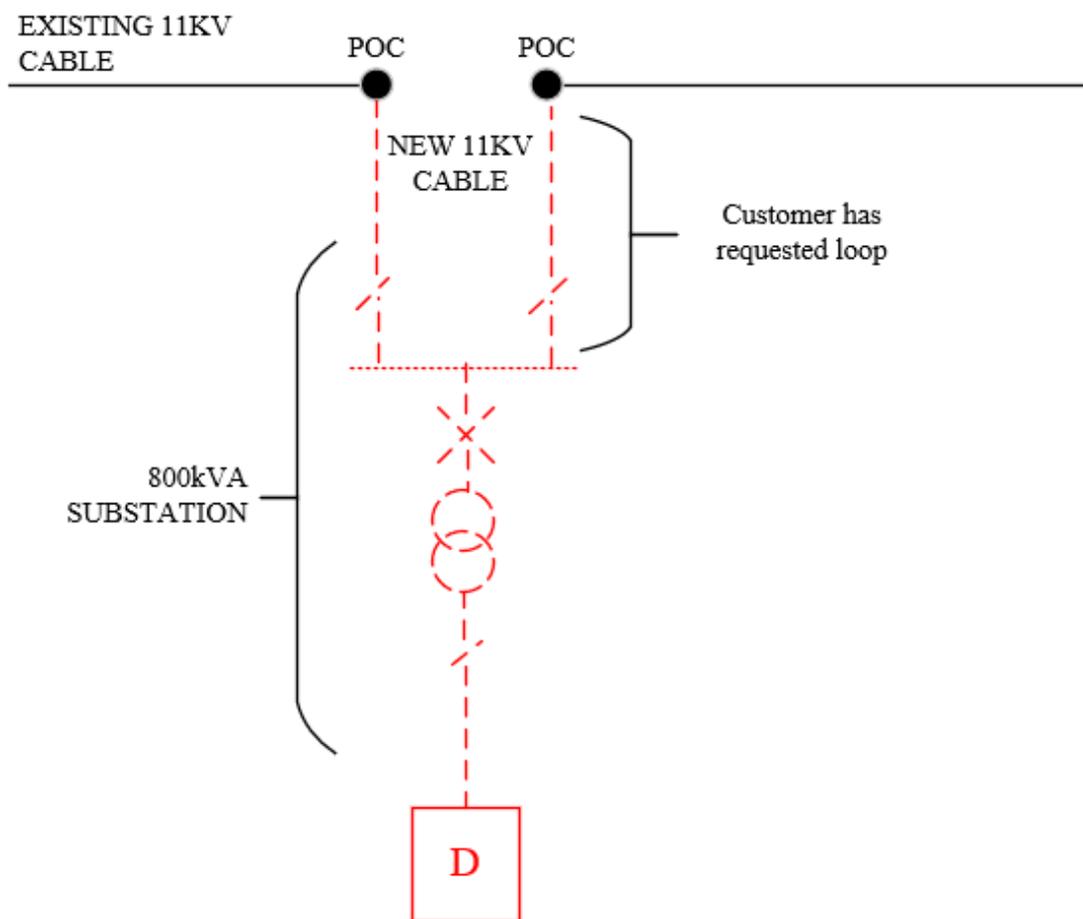
**Total cost of the work = £206,000**

**Total Connection Charge to Customer = £206,000**

**Example 7:** A new connection where the Minimum Scheme is as for Example 5 but the Customer requests an enhanced connection arrangement where the substation is looped into existing HV network.

**Purpose:** Shows that for a Customer requested Enhanced Scheme that the Customer pays costs above the Minimum Scheme plus O&M.

In this variation to Example 5, the Customer requests an enhanced connection arrangement where the substation is looped into existing 11kV network, as illustrated in the following diagram. The Minimum Scheme is as for Example 5.



The Connection Charge for this Scheme is calculated as follows:

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Provision and installation of 300m (2x150m) of 11kV cable looped into the network	£90,000	n/a	£90,000
800kVA transformer	£75,000	n/a	£75,000
Ring Main Unit	£25,000	n/a	£25,000
Provision and installation LV cabling	£6,000	n/a	£6,000
LV Metering Panel	£4,000	n/a	£4,000
11kV joints to network	£6,000	n/a	£6,000
<b>Total Extension Asset Cost</b>	<b>£206,000</b>		<b>£206,000</b>
Difference between Minimum and the actual Scheme is £73,000 (£206,000-£133,000). Operation & Maintenance @20%* of £73,000.		20%* of £73,000	£14,600
<b>Total Extension Asset Cost incl O&amp;M</b>			<b>£220,600</b>

\*Note, the 20% Operation and Maintenance percentage has been used for illustrative purposes only

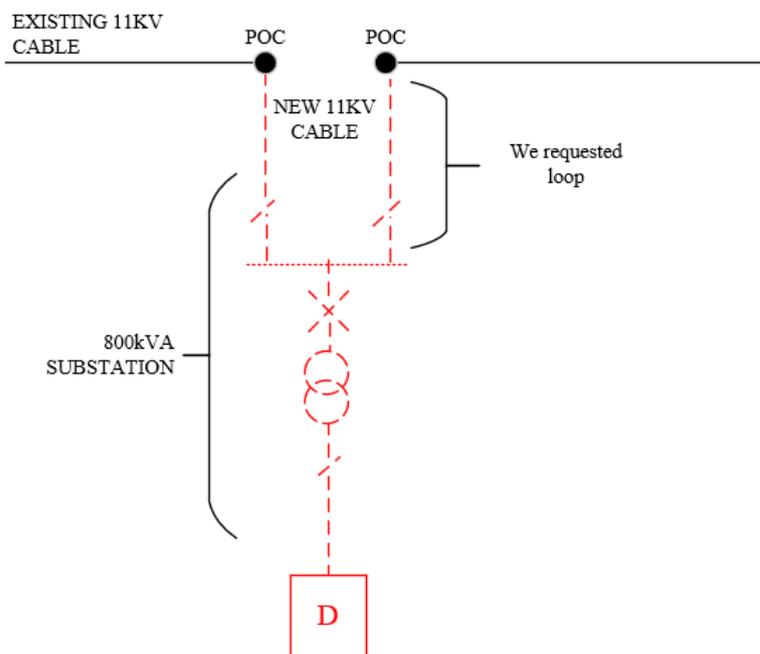
**Total cost of the work = £206,000**

**Total Connection Charge to Customer = £206,000 + £14,600 = £220,600**

**Example 8:** A new connection where the Minimum Scheme is as for Example 5 but we request an Enhanced Scheme where the substation is looped into the existing HV network.

**Purpose:** Shows that for a DNO requested Enhanced Scheme that the DNO pays for all costs above Minimum Scheme.

In this variation to Example 5, the Customer is connected with a looped connection, as illustrated in the following diagram. The Minimum Scheme is as for Example 5 but we request an Enhanced Scheme where the substation is looped into the existing 11kV network.



The Connection Charge for this Scheme is calculated as follows:

Extension Assets:	Cost	Apportionment	Customer Contribution
Provision and installation of 300m (2x150m) of 11kV cable	£90,000	Minimum Scheme Charges Apply	£45,000
800kVA transformer	£75,000	Minimum Scheme Charges Apply	£85,000
Ring Main Unit	£25,000		
Provision and installation LV cabling	£6,000	n/a	£6,000
LV Metering Panel	£4,000	n/a	£4,000
11KV joints to network	£6,000	Minimum Scheme Charges Apply	£3,000
<b>Total Extension Asset Cost</b>	<b>£206,000</b>		<b>£143,000</b>

**Total cost of the work = £206,000**

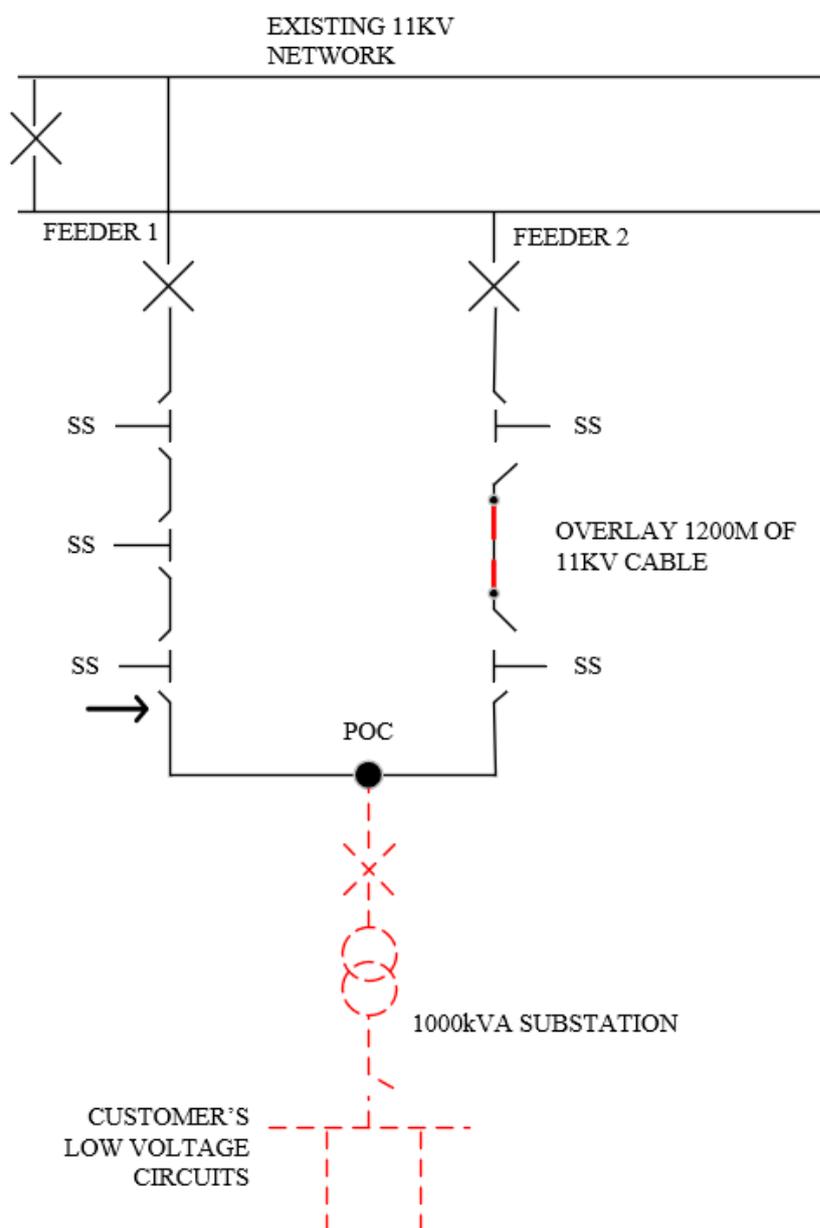
**Total Connection Charge to Customer = £143,000**

**Example 9: An additional load application requiring a new connection from the HV network and Reinforcement.**

**Purpose:** To demonstrate the treatment of Reinforcement cost for a Demand Connection that drives Reinforcement.

A Customer requests to increase the Maximum Capacity of their existing LV connection from 200kVA to 850kVA; an increase of 650kVA (the Required Capacity). The Connection is a Demand Connection.

As the Customer's existing LV connection is unable to deliver the Required Capacity a new connection will be required from the local 11kV network. This will be a non-secure connection to a secure network. The Minimum Scheme is to overlay part of the nearest 11kV circuit (Feeder 2) which only has spare capacity of 200kVA. The Reinforcement to make the capacity available requires 1200m of existing 11KV cable to be overlaid with a larger capacity cable. Costs of the disconnection of the existing LV connection have not been included in this example.



**Reinforcement:**

The Relevant Section of Network is the two feeder ring comprising Feeder 1 and Feeder 2.

As this connection is a Demand Connection the Customer will not be charged for Reinforcement. The Connection Charge for this Scheme is calculated as follows:

Reinforcement	Cost	Apportionment	Customer Contribution
Overlay 1200m of 11kV cable	£360,000	0%	£0
11kV Jointing	£6,000	0%	£0
<b>Total Reinforcement Cost</b>	<b>£366,000</b>		<b>£0</b>

Extension Assets	Cost	Apportionment	Customer Contribution
Provision and installation 11kV cable	£60,000	n/a	£60,000
1000kVA substation	£80,000	n/a	£80,000
Termination of Customer's LV cables	£4,000	n/a	£4,000
LV Metering panel	£4,000	n/a	£4,000
11kV Jointing	£3,000	n/a	£3,000
<b>Total Extension Asset Cost</b>	<b>£151,000</b>		<b>£151,000</b>

**Total Cost of the Work** = £366,000 + £151,000 = **£517,000**

**Total Connection Charge to Customer** = **£151,000**

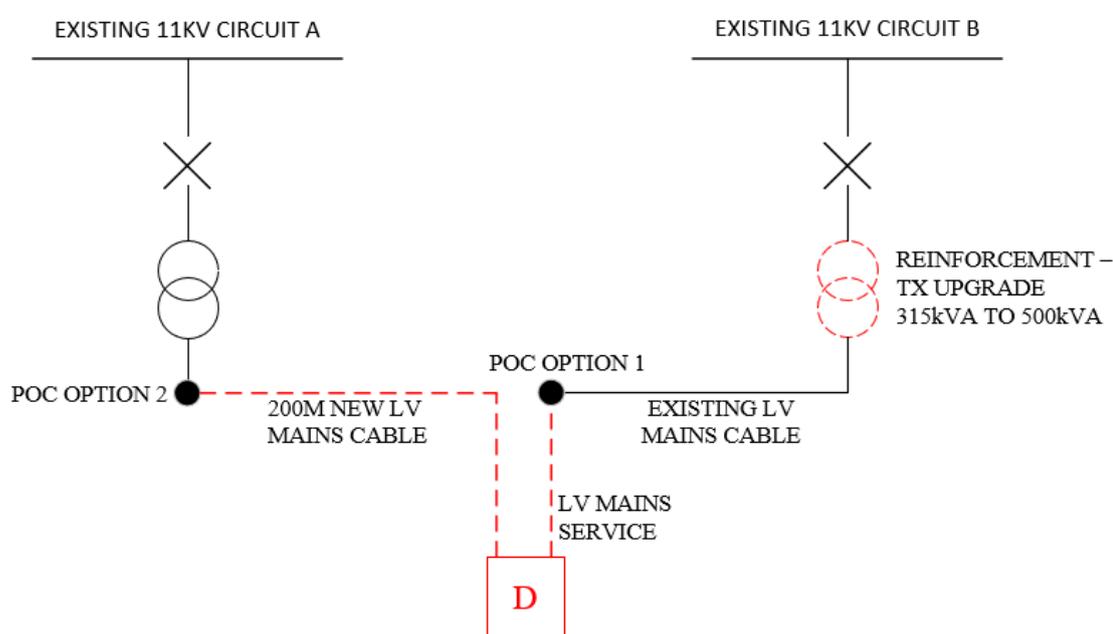
**Example 10: A new connection that results in a Point of Connection further away than the nearest network.**

**Purpose:** To show that the Minimum Scheme may result in a Point of Connection that is further away than the nearest network and may result in increased Extension Asset costs that are charged in full to the Customer.

A Customer applies for a new connection with a Maximum Capacity of 100kVA.

Assessment of the local network identifies that there is an existing LV cable to the front of the development, which is fed from a 315kVA transformer. The LV cable has sufficient spare capacity for the connection; however the transformer is at full capacity and would therefore require Reinforcement work to upgrade it from a 315kVA to 500kVA transformer.

Two design options are considered. For the first option, the cost of this work is estimated to be £70,000, and the cost of the LV Mains Service is estimated to be £5,000.



The Connection Charge for this Option 1 would be calculated as follows:

Reinforcement Assets:	Cost	Apportionment	Customer Contribution
Upgrade 315kVA transformer to 500kVA	£70,000	0%	£0
<b>Total Reinforcement Asset Cost</b>	<b>£70,000</b>		<b>£0</b>

Extension Assets:	Cost	Apportionment	Customer Contribution
LV Mains Service	£5,000	n/a	£5,000
<b>Total Extension Asset Cost</b>	<b>£5,000</b>		<b>£5,000</b>

**Total cost of the work** = £70,000 + £5,000 = **£75,000**

**Total Connection Charge to Customer** = £5,000 = **£5,000**

For the second option, there is a large cross-sectional LV cable 200m from the development which is fed from a 1000kVA transformer, and both the LV cable and transformer have sufficient spare capacity to provide a connection to the development without Reinforcement work. This design requires Extension Assets involving 200m of LV Cable estimated to cost £40,000 and a mains type service; the cost of the LV Mains Service is £5,000 consistent with the first option.

The Connection Charge for Option 2 would be calculated as follows:

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
200m of LV mains cable	£40,000	n/a	£40,000
LV Mains Service	£5,000	n/a	£5,000
<b>Total Extension Asset Cost</b>	<b>£45,000</b>		<b>£45,000</b>

**Total cost of the work** = **£45,000**

**Total Connection Charge to Customer** = **£45,000**

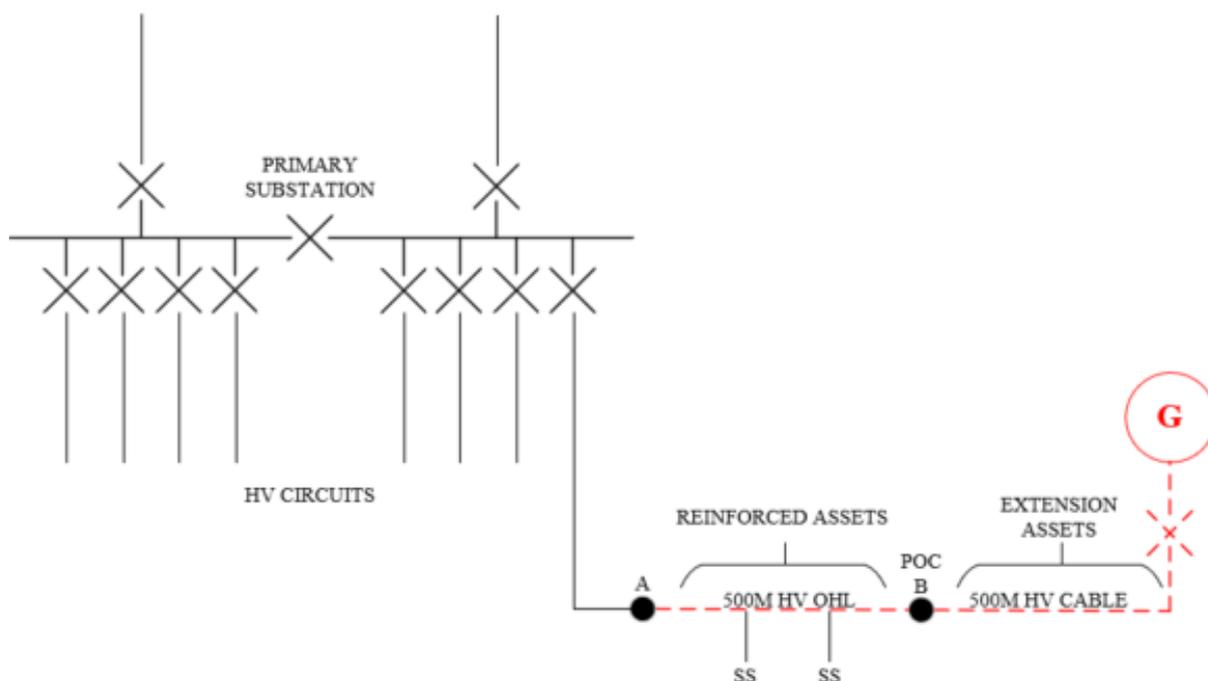
Option 2 has the lower overall capital cost of £45,000 (compared to £75,000 for Option 1) and therefore represents the Minimum Scheme. Whilst Option 2 results in a higher charge to the Customer, it is the overall capital cost that is used to determine the Minimum Scheme. The connection offer to the Customer would therefore be based on Option 2.

**Example 11: A new Generation Connection with capacity triggered Reinforcement.**

**Purpose:** To demonstrate the treatment of Reinforcement cost for a Generation Connection which drives Reinforcement using the Security CAF.

A Customer requests a Generation Connection with a Required Capacity for export purposes of 3MW. The Minimum Scheme requires the Reinforcement of 500m of 11kV overhead line between points A and B to provide 7.6MVA of capacity.

The POC is to the existing 11KV network at point B and it is proposed to install 500m of 11kV underground cable from the POC to the Customer’s installation and this cable is treated as Extension Assets.



**Reinforcement:**

The Relevant Section of Network is the 11kV OHL between points A and B and the Security CAF applies. The numerator in the CAF calculation is based upon the Required Capacity of the Customer, i.e. 3MVA and the denominator is based on the New Network Capacity following Reinforcement, i.e. 7.6MVA.

The Connection Charge for this Scheme is calculated as follows:

Reinforcement:	Cost	Apportionment	Customer Contribution
Re-conductor 500m of 11kV overhead line at a higher capacity (7.6MVA)	£60,000	$3/7.6 \times 100\% = 39.5\%$	£23,700
<b>Total Reinforcement Cost</b>	<b>£60,000</b>		<b>£23,700</b>

Extension Assets:	Cost	Apportionment	Customer Contribution
Installation of 500m 11kV cable	£45,000	n/a	£45,000
11KV circuit breaker at Customer’s substation	£25,000	n/a	£25,000

<b>Total Extension Asset Cost</b>	<b>£70,000</b>		<b>£70,000</b>

**Total cost of the work** = £60,000 + £70,000 = **£130,000**

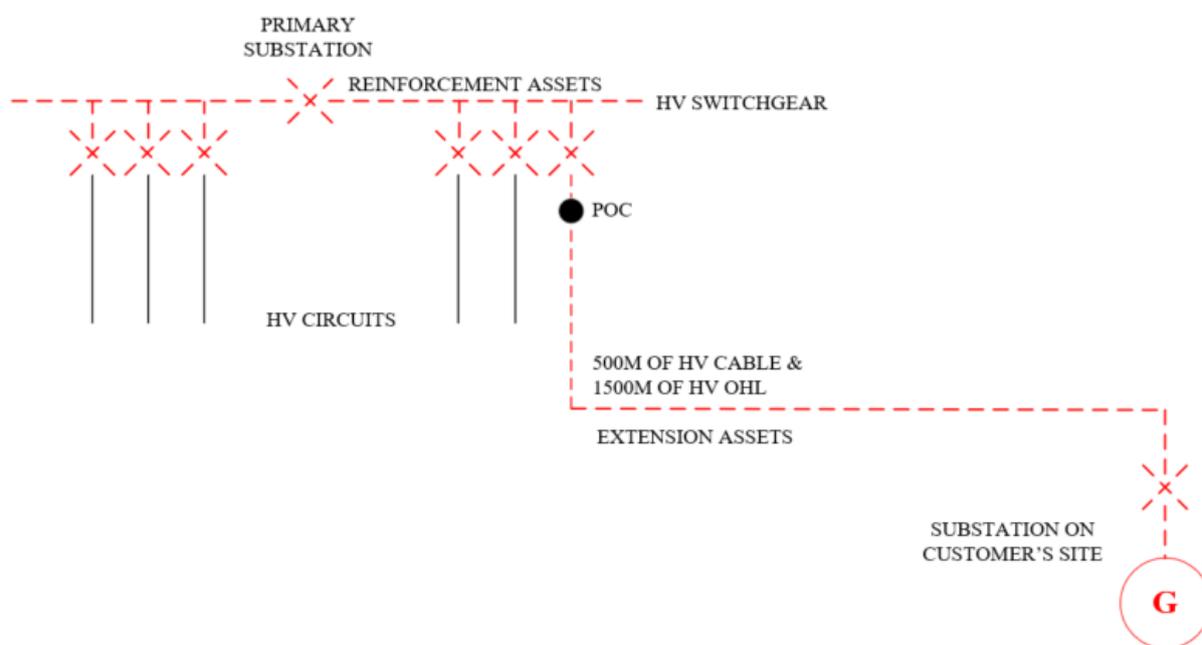
**Total Connection Charge to Customer** = £23,700 + £70,000 = **£93,700**

**Example 12: A new Generation Connection with Fault Level-Triggered Reinforcement.**

**Purpose:** To demonstrate how the Fault Level CAF calculation is applied.

A Customer wishes to connect a new generator with a Required Capacity for export purposes of 6MW. The connection of the generator requires the installation of 500m of 11kV cable and 1500m of overhead line between a new circuit breaker, added to the 11kV extensible switchgear panel at an existing primary substation and a new substation at the Customer's Premises. These assets are treated as Extension Assets.

The connection of the generator necessitates Reinforcement works to replace the 11kV switchgear at the existing primary substation with switchgear of a higher fault level rating.



**Reinforcement:**

Fault Level CAF calculation: The numerator in the CAF calculation is based upon the Fault Level contribution from the Customer's new generator connection, in this example, 24MVA. The denominator is based upon the New Fault Level Capacity; in this Example the Fault Level capacity of the new 11kV switchboard, 315MVA.

The Connection Charge for this Scheme is calculated as follows:

Reinforcement:	Cost	Apportionment	Customer Contribution
Replacement 11kV switchboard (excluding Customer's sole use circuit breaker)	£800,000	$3 \times (24/315) \times 100\% = 22.9\%$	£182,857
<b>Total Reinforcement Cost</b>	<b>£800,000</b>		<b>£182,857</b>

Extension Assets:	Cost	Apportionment	Customer Contribution
Installation of a 500m 11kV cable	£150,000	n/a	£150,000

Installation of a 1500m 11kV overhead line	£120,000	n/a	£120,000
11kV circuit breaker at Customer substation	£25,000	n/a	£25,000
<b>Total Extension Asset Cost</b>	<b>£325,000</b>		<b>£325,000</b>

**Total cost of the work** = £800,000 + £325,000 = **£1,125,000**

**Total Connection Charge to Customer** = £182,857 + £325,000 = **£507,857**

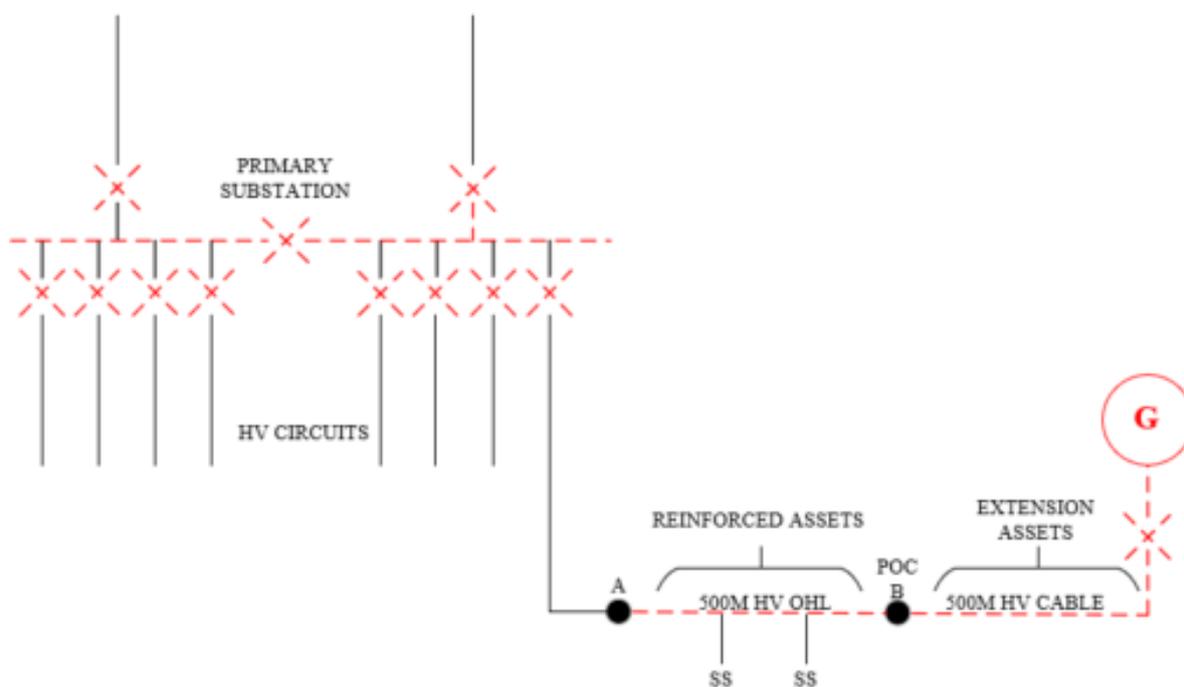
**Example 13 A new Generation Connection that requires Reinforcement involving both Security and Fault Level CAFs.**

**Purpose:** To demonstrate Reinforcement charging principles for a Generation Connection where both Security CAF and Fault Level CAF are applicable.

A Customer requests a connection to a generator with a Required Capacity for export purposes of 6MW. The Fault Level contribution at the primary substation from the generation connection is 10MVA.

The POC is to the existing 11kV network at point B and it is proposed to install 500m of 11kV underground cable from the POC to the Customer's installation. This is treated as Extension Assets.

The connection requires the Reinforcement of 500m of 11kV overhead line between points A and B for a thermal capacity requirement and the Security CAF applies. The connection also requires the replacement of the existing 11kV switchboard at the primary substation in order to increase its fault level rating from 150MVA to 350MVA and the Fault Level CAF applies. However, the new fault level will be limited by the fault level rating of the local network of 250MVA.



**Reinforcement:**

The Relevant Section of Network is the 11kV network from the primary substation to Point B.

Security CAF calculation: the numerator in the CAF calculation is based upon the Required Capacity of the Customer, i.e. 6MW. The denominator is based on the New Network Capacity following Reinforcement, which is 7.6MVA, i.e. after Reinforcement, in this particular case, the section of cable with the lowest rating.

The Relevant Section of Network is the 11kV switchboard at the primary substation.

Fault Level CAF calculation: The numerator in the CAF calculation is based upon the Fault Level contribution from the Customer's new generator connection, in this Example 10MVA. The denominator is based upon the New Fault Level Capacity, which is the lower of the Fault Level capacity of the new 11kV switchboard, 350MVA or of the local system, 250MVA in this Example.

The Connection Charge for this Scheme is calculated as follows:

Reinforcement	Cost	Apportionment	Customer Contribution
Re-conductor of 500m of 11kV overhead line	£20,000	$6/7.6 \times 100\% = 78.9\%$ Security CAF	£15,789
Replacement 11kV switchboard	£800,000	$3 \times (10/250) \times 100\% = 12.0\%$ Fault Level CAF	£96,000
<b>Total Reinforcement Cost</b>	<b>£820,000</b>		<b>£111,789</b>

Extension Assets	Cost	Apportionment	Customer Contribution
Installation of 500m 11kV cable	£150,000	n/a	£150,000
11kV circuit breaker at Customer's substation	£12,000	n/a	£12,000
11kV pole top termination	£2,500	n/a	£2,500
<b>Total Extension Asset Cost</b>	<b>£164,500</b>		<b>£164,500</b>

**Total cost of the work:** = £820,000 + £164,500 = **£984,500**

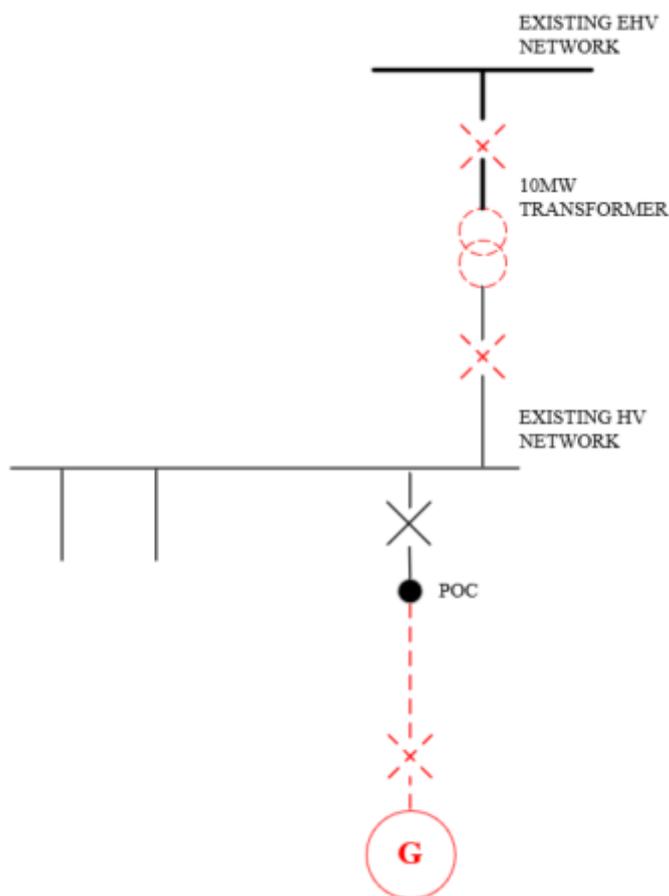
**Total Connection Charge to Customer** = £111,789 + £164,500 = **£276,289**

**Example 14 A new Generation Connection with Reinforcement at a voltage above that of the Point of Connection.**

**Purpose:** To illustrate that a Generation Connection does not contribute to Reinforcement costs at a voltage level above the connection voltage.

A Customer requests a Generation Connection with a Required Capacity for export purposes of 6.0MW. A new single circuit cable will be required to connect the Customer to the existing 11KV network. There is sufficient spare capacity on the existing 11kV network main but the existing 7.5MVA transformer at the local 11KV/33KV substation is fully loaded.

The Minimum Scheme is to provide a new 250m 11KV cable from the POC which is treated as Extension Assets. The connection also requires the replacement of the 7.5MW transformer at the local substation with a 10MVA transformer and is treated as Reinforcement. The 11kV and 33kV switchgear either side of the transformer also requires replacement due to exceedance of its thermal capacity.



**Reinforcement:**

Security CAF calculation: The numerator in the CAF calculation is based upon the Required Capacity of the Customer, which is 6MW. The denominator is based on the New Network Capacity following Reinforcement, which is 10MVA.

Reinforcement is required at both the 11kV and 33kV levels, however the CAF is only required at the same voltage of connection, which in this case is 11kV.

The Connection Charge for this Scheme is calculated as follows:

Reinforcement:	Cost	Apportionment	Customer Contribution
----------------	------	---------------	-----------------------

11kV Jointing	£3,000	6/10 x 100% = 60% Security CAF	£1800
11kV circuit breaker	£30,000	6/10 x 100% = 60% Security CAF	£18,000
33kV circuit breaker	£80,000	0%	£0
Transformer replacement	£1,000,00 0	0%	£0
<b>Total Reinforcement Cost</b>	<b>£1,113,00 0</b>		<b>£19,800</b>

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Install 200m of 11kV cable	£60,000	n/a	£60,000
11kV circuit breaker at Customer's substation	£25,000	n/a	£25,000
11kV Jointing	£3,000	n/a	£3,000
<b>Total Extension Asset Cost</b>	<b>£88,000</b>		<b>£88,000</b>

**Total cost of the work** = £1,113,000 + £88,000 = **£1,201,000**

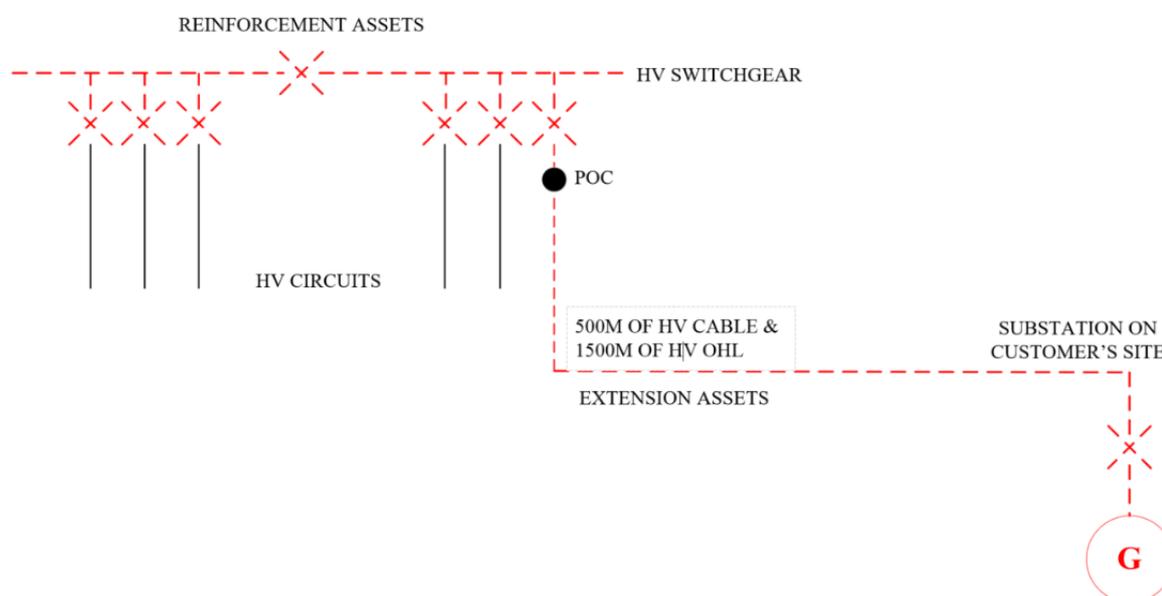
**Total Connection Charge to Customer** = £19,800 + £88,000 = **£107,800**

**Example 15: A new Generation Connection where switchgear extension is not possible and switchgear replacement is needed.**

**Purpose:** Illustrate Exception 4, if switchgear extension not possible, then treated as Extension Assets and costs are charged in full to the Customer.

This example demonstrates the application of Exception 4 (paragraph 5.25).

A Customer requests to connect a new generator with a Required Capacity for export purposes of 3MW. The connection of the generator requires the installation of the works as provided in Example 13 above. In this scenario, however, there is no Fault Level issue but, as the connection cannot be facilitated by an extension of the existing switchgear equipment in our primary substation, a full replacement of the existing switchgear installation is required. As no capacity is added to the existing shared use distribution network, the Customer will be required to fund the full cost of the switchgear installation replacement.



The existing switchgear had fault level rating of 250MVA. The company no longer uses switchgear with a fault level rating of 250MVA, so uses the closest equivalent switchgear used by it as standard, which has a slightly higher rating. Whilst the replacement switchgear increases the fault level capacity and could be considered Reinforcement, in this case this is due solely to the fault level rating of the standard equipment used by the company being higher than the fault level rating of the existing switchgear. The increase in fault level capacity is not required to connect the Customer. Therefore, Exception 4 (Paragraph 5.25) applies and the switchgear is considered Extension Assets and its costs will be charged in full to the Customer.

The Connection Charge for this Scheme is calculated as follows:

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Installation of a 500m 11kV cable	£150,000	n/a	£150,000
Installation of a 1500m 11kV overhead line	£120,000	n/a	£120,000
11kV circuit breaker at Customer substation	£25,000	n/a	£25,000
Replacement 11kV switchboard	£450,000	n/a	£450,000
New Extension Asset circuit breaker	£25,000	n/a	£25,000
<b>Total Extension Asset Cost</b>	<b>£770,000</b>		<b>£770,000</b>

**Total cost of the work = £770,000**

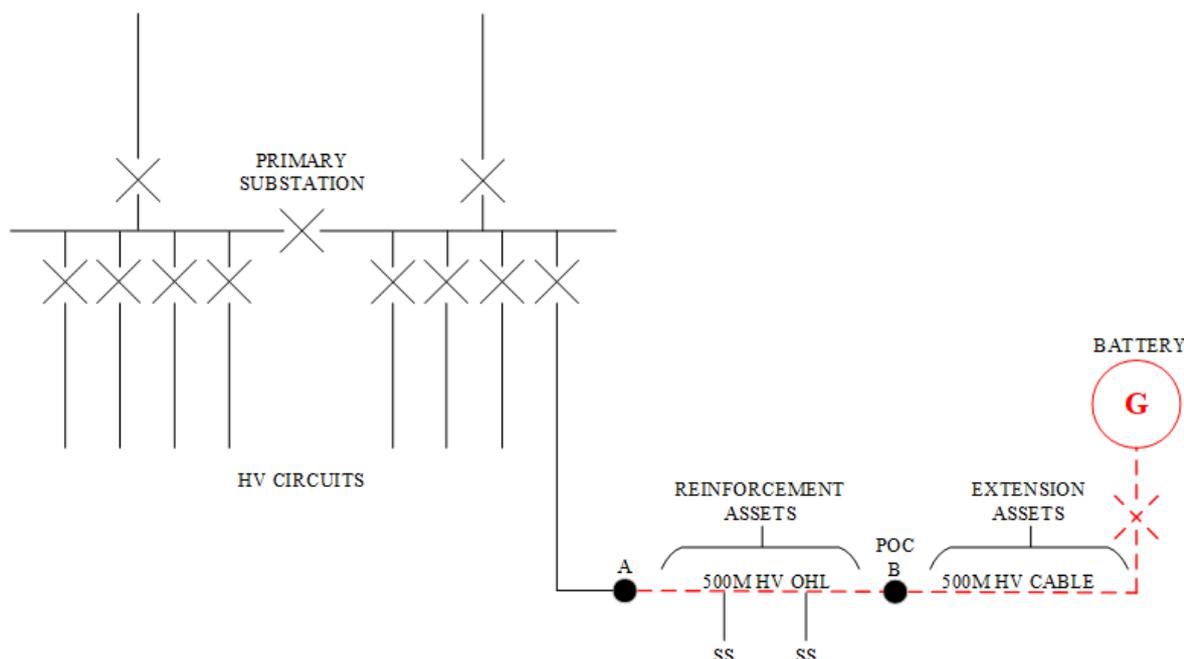
**Total Connection Charge to Customer = £770,000**

**Example 16: A new Storage Connection that triggers Reinforcement.**

**Purpose:** To show that Storage, when not co-located with other demand, is treated as a Generation Connection for the purposes of charging and any Reinforcement at the same Voltage of the POC will be charged, irrespective of whether the Reinforcement is due to the import or the export.

A Customer requests to connect a Battery with a Required Capacity of 3MW export and 3MVA import. The Minimum Scheme requires the Reinforcement of 500m of 11kV overhead line between points A and B to provide 7.6MVA of capacity.

The POC is to the existing 11kV network at point B and it is proposed to install 500m of 11kV underground cable from the POC to the Customer’s installation and this cable is treated as Extension Assets.



**Reinforcement:**

The Relevant Section of Network is the 11kV OHL between points A and B and the Security CAF applies. The numerator in the CAF calculation is based upon the Required Capacity of the Customer. In this instance, the reinforcement is driven by the Required Capacity for import, i.e. 3MVA and the denominator is based on the New Network Capacity following Reinforcement, i.e. 7.6MVA.

The Connection Charge for this Scheme is calculated as follows:

Reinforcement:	Cost	Apportionment	Customer Contribution
Re-conductor 500m of 11kV overhead line at a higher capacity (7.6MVA)	£60,000	$3/7.6 \times 100\%$ = 39.5%	£23,700
<b>Total Reinforcement Cost</b>	<b>£60,000</b>		<b>£23,700</b>

Extension Assets:	Cost	Apportionment	Customer Contribution

Installation of 500m 11kV cable	£45,000	n/a	£45,000
11kV circuit breaker at Customer's substation	£25,000	n/a	£25,000
<b>Total Extension Asset Cost</b>	<b>£70,000</b>		<b>£70,000</b>

**Total cost of the work** = £60,000 + £70,000 = **£130,000**

**Total Connection Charge to Customer** = £23,700 + £70,000 = **£93,700**

### Example 17: A new connection that is connected by Reinforced assets

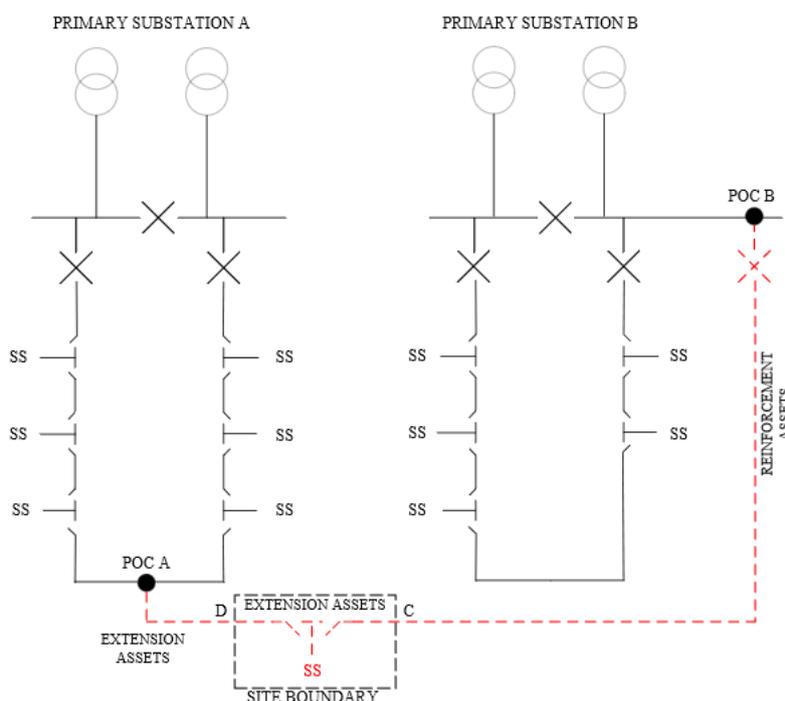
**Purpose:** To demonstrate the application of Exception 5 where the Customer needs to pay for the assets that connect them to the existing network

A new housing development has a Required Capacity of 1MVA to serve 450 plots. The local 11kV feeder has a network capacity of 7.7MVA based upon the limitation of the existing 400 Amp circuit breakers at Primary Substation A. The existing load on the circuit is 7.6MVA. The new load will be connected to the existing 11kV feeder from Primary Substation A with 100m of 11kV cable from POC A to the point D at the boundary of the site and provide interconnection with 700m of 11kV cable from POC B at Primary Substation B to the boundary of the site at point C. In this example:

- 200m of 11kV cable on site (between points C and D) is required to provide connectivity within the development and is considered to be Extension Assets.
- 100m of 11kV cable from POC A to the point D.
- 700m of 11kV cable from POC B to the point C

The Minimum Scheme requires the site to be connected onto the existing network. In this case the lowest cost feeder is the 11kV cable from A to D and is treated as an Extension Asset. The alternative connection to POC B at Primary Substation B is required to meet the minimum network security requirements and is treated as Reinforcement.

The figure below shows the proposed network.



#### Reinforcement:

The 700m of 11kV cable from POC B at Primary Substation B to point C is treated as reinforcement however as this is a demand connection the reinforcement work is funded by us.

The Connection Charge for this Scheme is calculated as follows:

<b>Reinforcement:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
1 new HV Circuit Breaker from POC B	£30,000	0%	£0
2 by HV closing joints	£6,000	0%	£0
700m of HV cable from POC B to point C	£210,000	0%	£0
<b>Total Reinforcement Cost</b>	<b>£246,000</b>		<b>£0</b>

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
100m of HV cable from POC A to point D	£30,000	n/a	£30,000
One 1000kVA Substation	£75,000	n/a	£75,000
On site LV mains and services	£24,900	n/a	£24,900
2 by HV cable box terminations	£24,000	n/a	£24,000
<b>Total Extension Asset Cost</b>	<b>£153,900</b>		<b>£153,900</b>

**Total cost of the work** = £246,000 + £153,900 = **£399,900**

**Total Connection Charge to Customer** = £153,900 = **£153,900**



**Reinforcement:**

The assets connecting POC A and point C add capacity to the existing network will be treated as Reinforcement and funded by us.

The Connection Charge for this Scheme is calculated as follows:

<b>Reinforcement:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
1 new 11kV Circuit Breaker tailed out from Primary Substation B (POC A)	£30,000	0%	£0
2 by 11kV closing joints	£6,000	0%	£0
700m of 11kV cable from Primary Substation B to site	£210,000	0%	£0
<b>Total Reinforcement Cost</b>	<b>£246,000</b>		<b>£0</b>

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
600m of 11kV cable on site	£180,000	n/a	£180,000
3 by 800kVA unit Substation	£225,000	n/a	£225,000
On site LV mains and services	£24,900	n/a	£24,900
2 by 11kV cable box terminations	£24,000	n/a	£24,000
600m of 11kV cable from POC B to site	£180,000	n/a	£180,000
<b>Total Extension Asset Cost</b>	<b>£633,900</b>		<b>£633,900</b>

**Total cost of the work** = £246,000 + £633,900 = **£879,900**

**Total Connection Charge to Customer** = £0 + £633,900 = **£633,900**

### Example 19: A new connection with remote network Reinforcement

**Purpose:** To show treatment where capacity is created on a different part of the network and a load transfer is required to allow the connection. Example again demonstrates which elements are Reinforcement and which are Extension Assets.

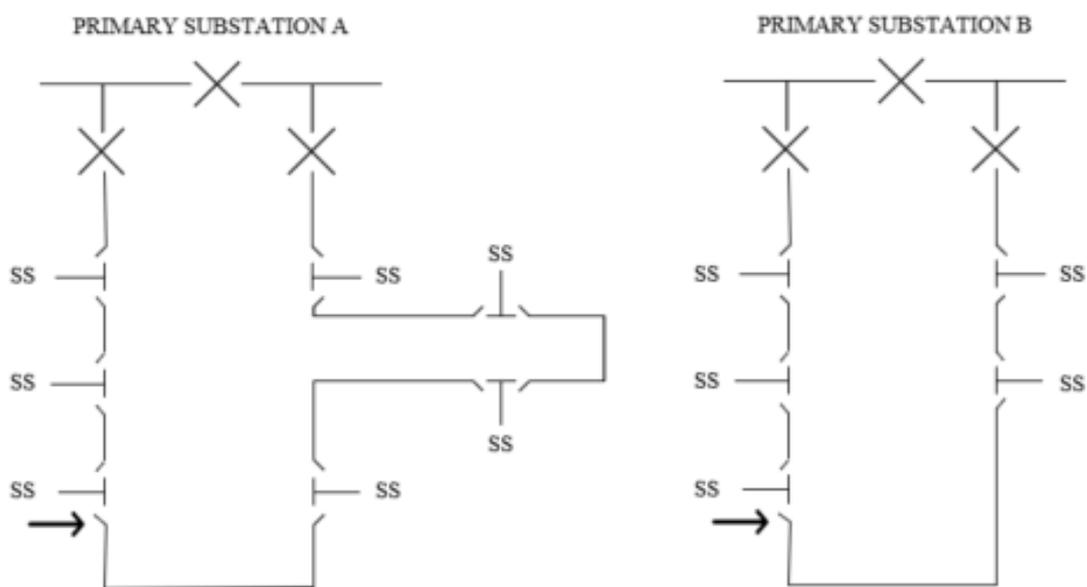
This example shows the arrangements that will apply where it is necessary to reinforce a different part of the Distribution System so that existing load may be transferred in order to release capacity for the new connection.

A Customer requests a Generation Connection with a Required Capacity of 2MW. The local 11kV feeder has a network capacity of 7.7MW based upon the limitation of the existing 400 Amp circuit breakers at Primary Substation A. The existing load on the circuit is 7.7MW. It is therefore not possible to connect the new generation to this circuit without Reinforcement works.

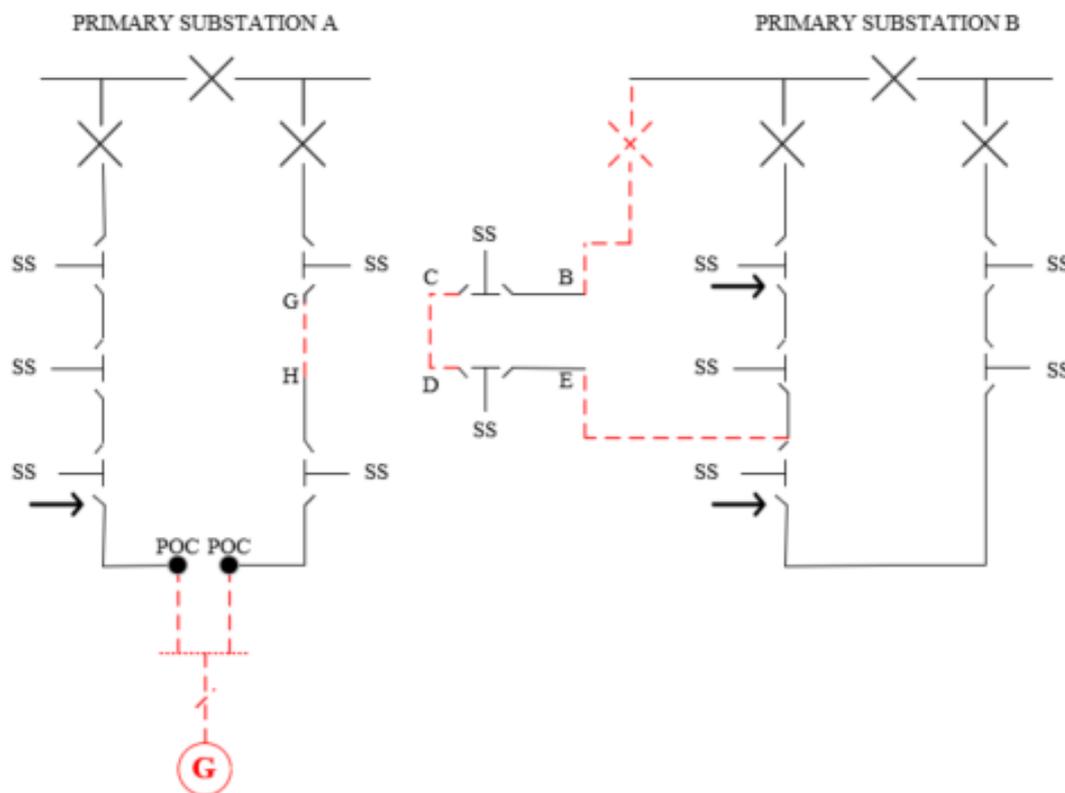
It is proposed to reinforce an adjacent network from primary substation B so that two existing substations may be transferred on to it from primary substation A, in order to release capacity to accommodate the new connection. Primary Substation B has sufficient spare capacity to accommodate the two existing substations. A new circuit breaker is to be installed at Primary Substation B and a new 11kV feeder (also rated at 7.7MW) is to be installed between points A – B and between points E – F for connection to the local 11kV circuit at point F. The existing circuit will be cut at point BE so that the new joints can be made. This will convert the Primary Substation B network from a two-feeder to a three-feeder network. The total new cable length between points A – B and points E - F is 500m. The network will be reconfigured by the installation of two short straps C – D and G - H in order to maintain connectivity.

This Reinforcement will allow a POC to be taken from the local 11kV circuit to supply the new generation. The newly installed cable to connect the generation from the POC is 1200m long. The above work represents the Minimum Scheme to provide connections to the new site.

The figure below shows the original network.



The figure below shows the proposed network.



**Reinforcement:**

The Relevant Section of Network is the three-feeder network from Primary Substation B which supplies the loads on the existing two feeders from Primary Substation B as well as the loads at points C and D transferred from the network from the Primary Substation A. The RSN does not supply the new generation in this case. The numerator in the CAF calculation is based upon the Required Capacity of the new generation, i.e. 2MW. In this case, the New Network Capacity (under N-1 conditions) following the Reinforcement works is equal to  $(3 - 1) \times 7.7\text{MW} = 15.4\text{MW}$ .

Fault Level CAF calculation: This Scheme does not have any significant Fault Level contribution to the existing shared use distribution network and Fault Level CAF is therefore not applicable here.

The Connection Charge for this Scheme is calculated as follows:

Reinforcement:	Cost	Apportionment	Customer Contribution
500m of 11kV cable: A-B, C-D, E-F	£150,000	$2/15.4 \times 100\% = 13\%$	£19,480
11kV Circuit Breaker at Primary Substation B	£30,000	As above	£3,896
11kV jointing at Points A,B,C,D,E,F	£18,000	As above	£2,337
<b>Total Reinforcement Cost</b>	<b>£198,000</b>		<b>£25,713</b>

Extension Assets:	Cost	Apportionment	Customer Contribution

1200m of 11kV cable inc. strap at G – H	£360,000	n/a	£360,000
3 by 800kVA distribution substations	£225,000	n/a	£225,000
On site LV mains and services	£24,900	n/a	£24,900
4 by 11kV closing joints at POC and at points G,H	£12,000	n/a	£12,000
<b>Total Extension Asset Cost</b>	<b>£621,900</b>		<b>£621,900</b>

**Total cost of the work** = £198,000 + £621,900 = **£819,900**

**Total Connection Charge to Customer** = £25,713 + £621,900 = **£647,613**

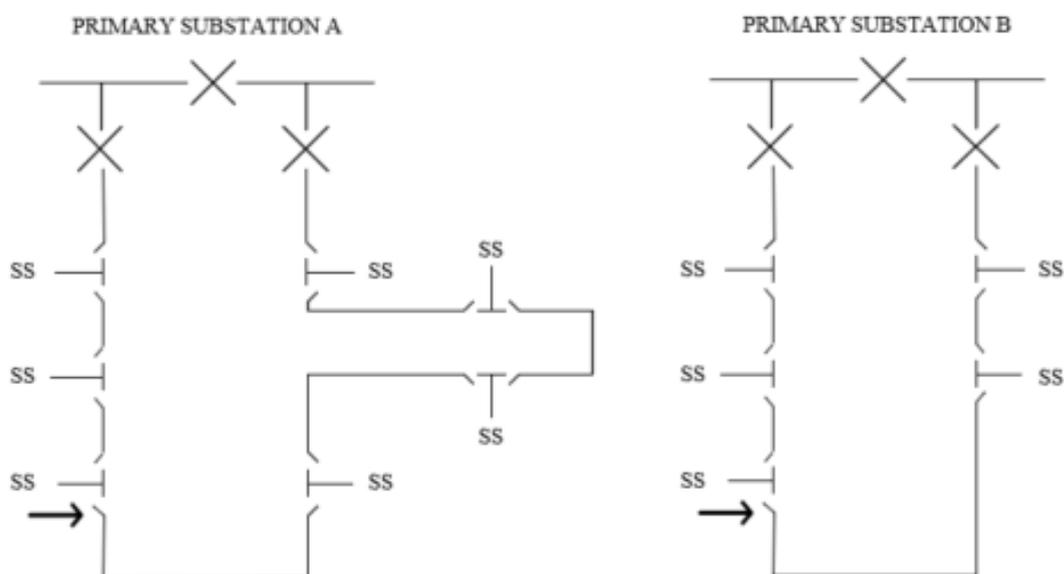
**Example 20: A new connection with load transfer**

**Purpose:** Variation to Example 19 where a load transfer is required to free up capacity but no new capacity is created and demonstrates why elements become Extension Assets.

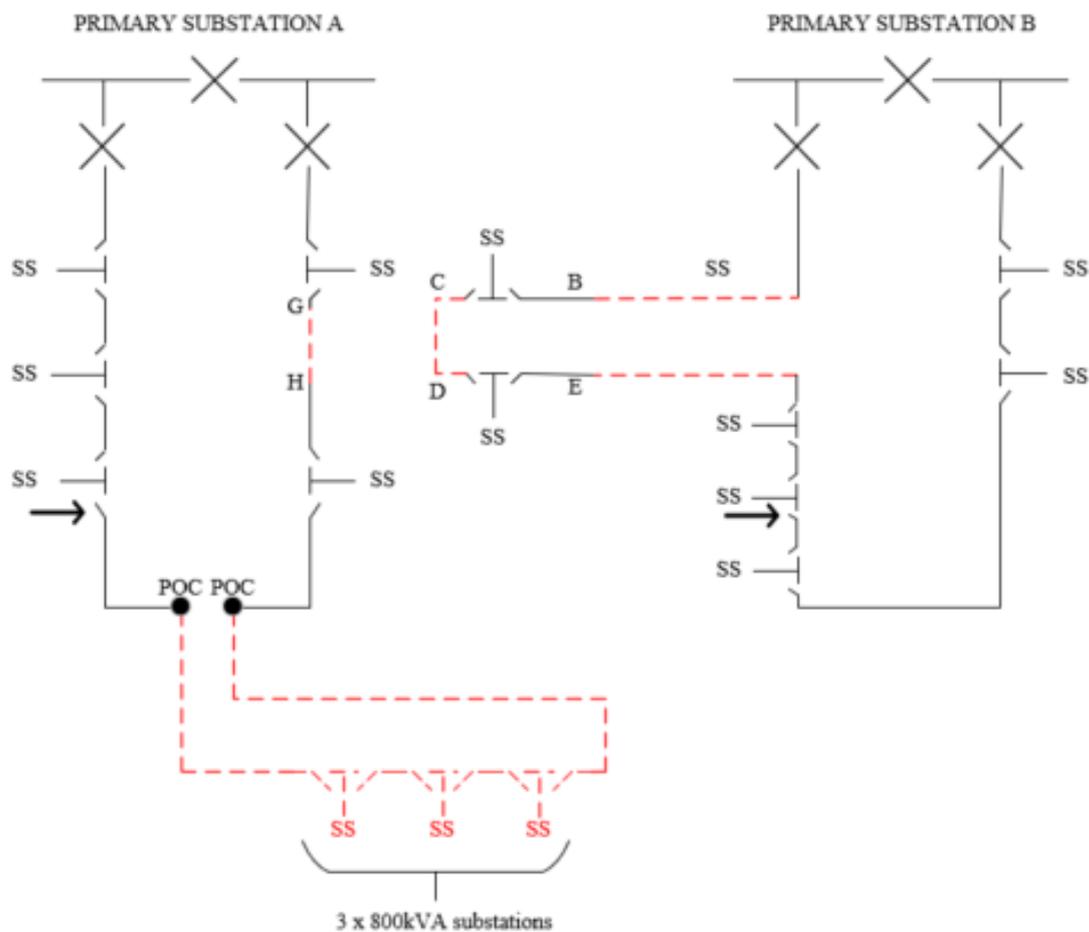
This variation of Example 19 shows the arrangements that will apply where it is necessary to reconfigure the Distribution System so that existing demand may be transferred in order to release capacity for the new connection.

A new housing development has a Required Capacity of 2MVA to serve 900 plots. The local 11kV feeder has a network capacity of 7.7MVA based upon the limitation of the existing 400 Amp circuit breakers at Primary Substation A. The existing load on the circuit is 7.6MVA. It is therefore not possible to connect the new load to this circuit as presently configured.

The figure below shows the original network.



The figure below shows the proposed network.



**Reinforcement:**

It is proposed to reconfigure the Distribution System such that two existing substations may be transferred on to an adjacent network, in order to release capacity so that the new connections can be made. Primary Substation B has sufficient spare capacity to accommodate the two existing substations. New cables are to be installed between points A – B and between points E – F. The existing circuit will be cut at point B & E so that the new joints can be made. The total new cable length between points A – B and points E - F is 100m. The network will be reconfigured by the installation of two short straps C – D and G - H in order to maintain connectivity. As this work involves the transfer of capacity there is no Reinforcement work required.

This transfer of existing demand will allow a POC to be taken from the local 11kV circuit to connect the new development. The newly installed cable to connect the development from the POC is 1200m long. Three 800kVA distribution substations are to be established onsite. The above work represents the Minimum Scheme to provide connections to the new site.

The Connection Charge for this Scheme is calculated as follows:

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
1300m of 11kV cable including A-B, C-D, E-F, G-H and from POC to the development	£390,000	n/a	£390,000
3 by 800kVA distribution substations	£225,000	n/a	£225,000
On site LV mains and services	£24,900	n/a	£24,900
10 by 11kV closing joints at POC and at points A,B,C,D,E,F,G,H	£30,000	n/a	£30,000
<b>Total Extension Asset Cost</b>	<b>£669,900</b>		<b>£669,900</b>

**Total cost of the work = £669,900**

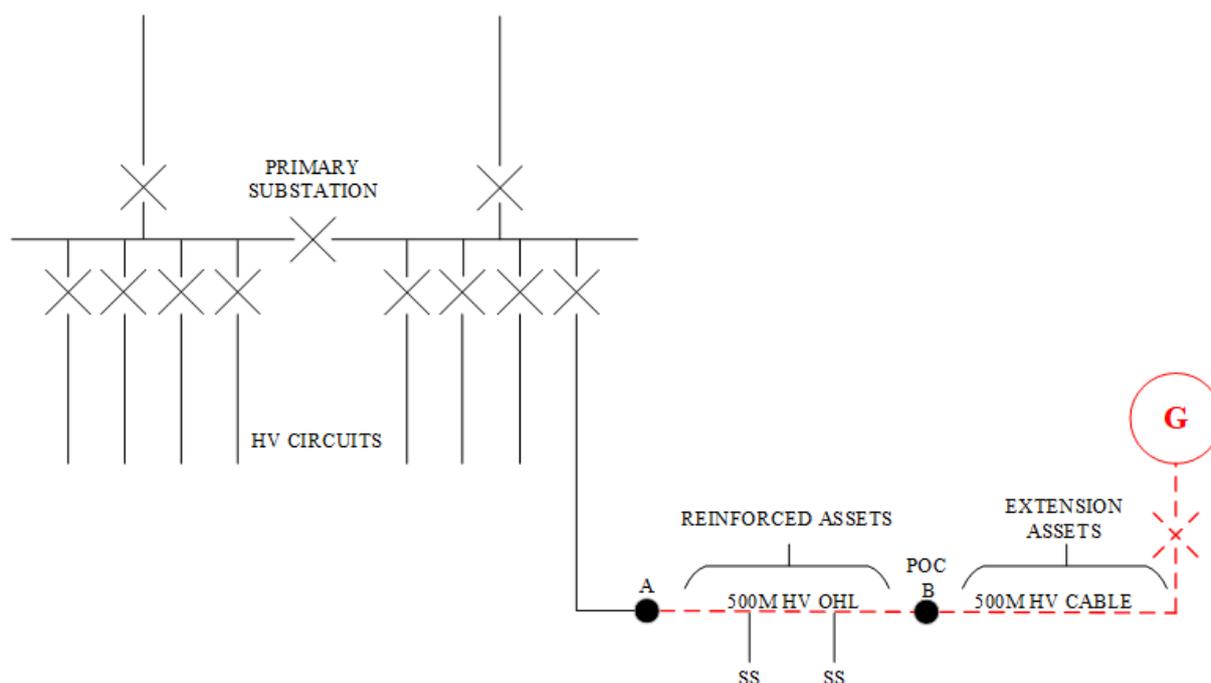
**Total Connection Charge to Customer = £669,900**

**Example 21: A new Generation Connection with an Enhanced Scheme at the DNO's request.**

**Purpose:** To show how the Security CAF calculation is applied where the DNO requests an Enhanced Scheme.

Please refer to Example 11, which is the Minimum Scheme for this project. In this example, a Customer requests a Generation Connection with a Required Capacity for export purposes of 3MW. The Minimum Scheme requires the Reinforcement of 500m of 11kV overhead line between points A and B to provide 7.6MVA of capacity. However, the DNO has decided to install an Enhanced Scheme by increasing the capacity of the 11KV overhead line to 13MVA.

The POC is to the existing 11KV network at point B and it is proposed to install 500m of 11kV underground cable from the POC to the Customer's installation.



**Reinforcement:**

The Relevant Section of Network is the 11kV OHL between points A and B

Security CAF calculation: The numerator in the CAF calculation is based upon the Required Capacity of the new generation, i.e. 3MW. In this example the DNO has decided to install an Enhanced Scheme and the Connection Charge that will apply will be the lower of the Connection Charge associated with the Minimum Scheme (see Example 11) and the Enhanced Scheme. The numerator in the CAF calculation is based upon the Required Capacity of the Customer, i.e. 3MW and the denominator is based on the Enhanced Scheme New Network Capacity following Reinforcement, i.e. 13MVA.

Fault Level CAF calculation: This Scheme does not have any significant Fault Level contribution to the existing shared use distribution network so the Fault Level CAF is therefore not applicable here.

The Connection Charge for this Scheme is calculated as follows:

<b>Reinforcement:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Re-conductor 500m of 11kV overhead line at a higher capacity (13MVA)	£70,000	$3/13 \times 100\%$ = 23.1%	£16,170
<b>Total Reinforcement Cost</b>	<b>£70,000</b>		<b>£16,170</b>

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Installation of 500m 11kV cable	£45,000	n/a	£45,000
11kV circuit breaker at Customer's substation	£25,000	n/a	£25,000
<b>Total Extension Asset Cost</b>	<b>£70,000</b>		<b>£70,000</b>

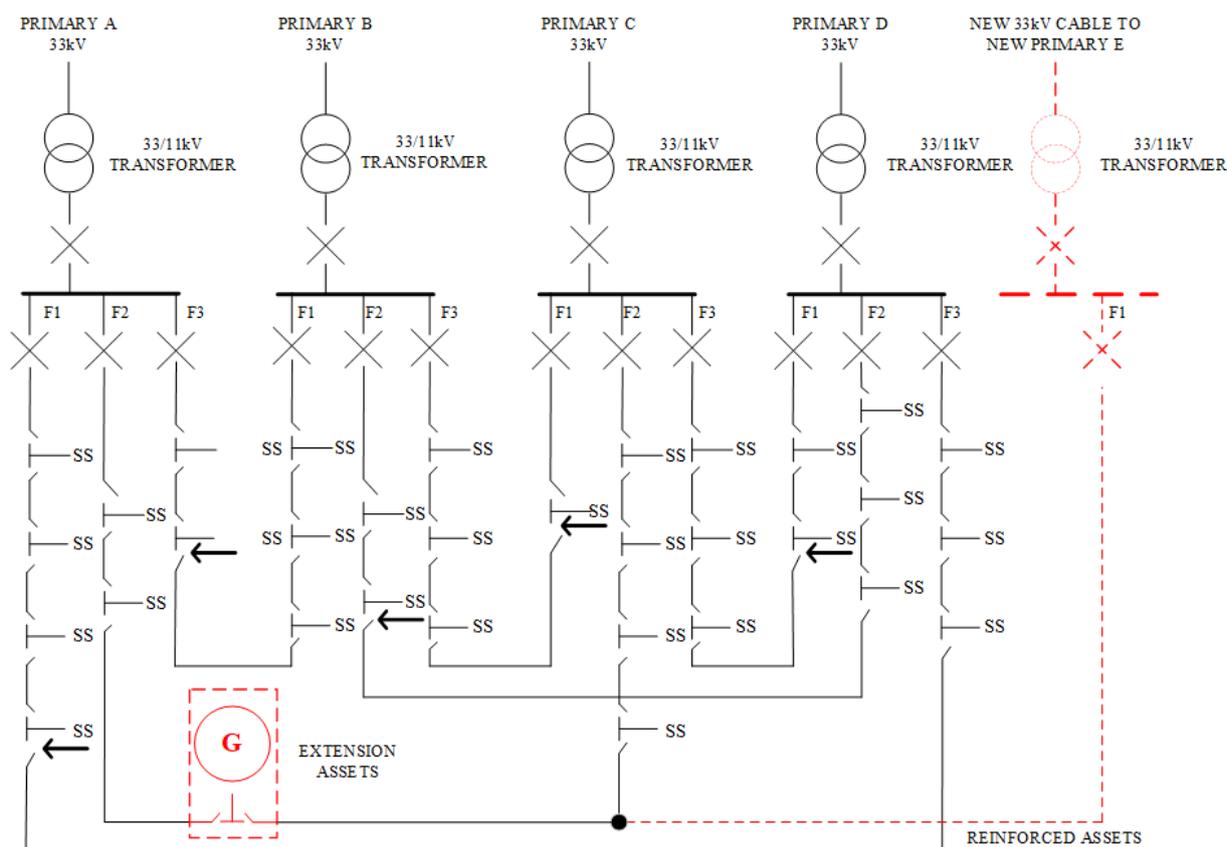
**Total cost of the work** = £70,000 + £70,000 = **£140,000**

**Total Connection Charge to Customer** = £16,170 + £70,000 = **£86,170**

**Example 22: A new Generation Connection on a meshed HV distribution system requiring Reinforcement.**

**Purpose:** To show that a contribution is required where Reinforcement is carried out at the same voltage as the Point of Connection for a Generation Connection.

A Customer requests a new Generation Connection requiring a 4MVA 11kV metered connection. The local 11kV network is of a meshed design whereby the 11kV network is supplied from single 33/11kV primary transformers via 33kV radial feeds as shown below.



The existing network consists of four 10MVA primary transformer substations and associated 11kV switchgear. A new connection of 4MVA has been requested in the vicinity of F2 from Primary A.

The existing relevant primary transformer group is loaded to its secure capacity so the primary transformer group will require Reinforcement to enable the new connection to progress.

To provide the Required Capacity, the 11kV network will be reinforced by the installation of a new primary substation connected to the nearest 33kV circuit. The new primary substation (Primary E) will contain a 10MVA transformer, associated 11kV switchgear and a new 11kV (7.7 MVA) cable installed to interconnect into the existing 11kV network (from F2 at Primary A to F2 at Primary C).

## Reinforcement:

Security CAF calculation: In this example there are two different Security CAFs applied. This is because the Relevant Section of Network is different when considering the New Network Capacity in respect of different elements of the Reinforcement works.

### The Relevant Section of Network for the Reinforcement comprising the 11kV Cable Works:

For the 11kV cable assets the Relevant Section of Network is considered to be the secure three feeder 11KV network from Primary A (Feeder 2), Primary C (Feeder 2) and Primary E (Feeder 1). In this case the New Network Capacity (under secure N -1 conditions) following the Reinforcement works is equal to

$$(3 - 1) \times 7.7\text{MVA} = 15.4\text{MVA}$$

This is due to the fact that following the Reinforcement work both of the existing circuits; Primary A, Feeder 2 and Primary C, Feeder 2 can be loaded to their full capacity and will have the newly installed clean feeder from Primary E to act as a back feed to meet the requirements of P2.

The Security CAF for these assets will therefore be  $4/15.4 \times 100\% = 26.0\%$

### The Relevant Section of Network for the Reinforcement comprising the Primary substation assets:

In this instance the Relevant Section of Network comprises Primary A, C and E within the group that can be used to supply the Customer in normal and abnormal conditions. The New Network Capacity of this Relevant Section of Network (under secure N -1 conditions) following the Reinforcement works is equal to 17.7MVA. (10MVA from either Primary A or Primary C and 7.7MVA from Primary E which is limited by the single 11kV cable connected to it.

The Security CAF for these assets will therefore be  $4/17.7 \times 100\% = 22.6\%$  towards the 11kV assets to be installed.

Due to the voltage rule, contributions will not be required towards the 33kV assets.

Fault Level CAF calculation: This Scheme does not have any significant Fault Level contribution to the existing shared use distribution network and Fault Level CAF is therefore not applicable here.

The Connection Charge for this Scheme is calculated as follows:

**Reinforcement:**

<b>Reinforcement:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
500m 11kV cable from new primary substation E	£150,000	4/15.4 X 100% = 26.0%	£39,000
1 by 11kV closing joints	£3,000	As above	£780
11kV switchgear at new Primary E	£30,000	4/17.7 X 100% = 22.6%	£6,780
Primary transformer	£6,500,000	0%	£0
2.5km of 33kV cable installation	£1,000,000	0%	£0
33kV Circuit Breaker	£80,000	0%	£0
33kV Termination	£30,000	0%	£0
<b>Total Reinforcement Cost</b>	<b>£7,793,000</b>		<b>£46,560</b>

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
11kV ring main unit	£25,000	n/a	£25,000
11kV metering unit	£12,000	n/a	£12,000
500m of 11kV cable	£150,000	n/a	£150,000
2 by 11kV closing joints	£6,000	n/a	£6,000
<b>Total Extension Asset Cost</b>	<b>£193,000</b>		<b>£193,000</b>

**Total cost of the work** = £7,793,000 + £193,000 = **£7,986,000**

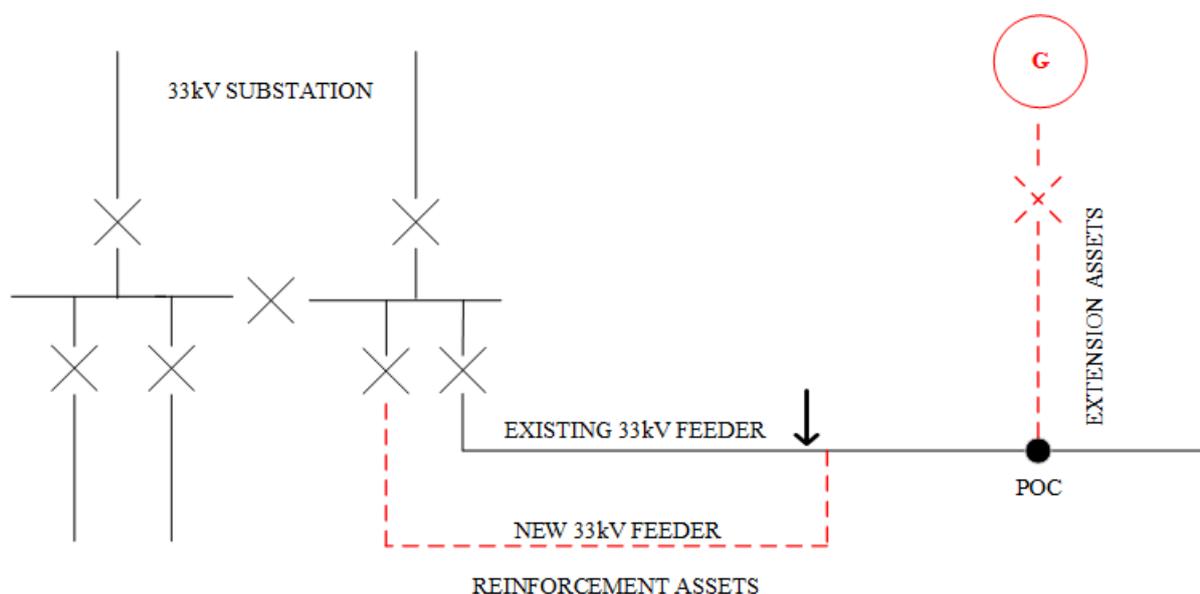
**Total Connection Charge to Customer** = £46,560 + £193,000 = **£239,560**

**Example 23: A non-secure Generation Connection with non-secure Reinforcement.**

**Purpose:** To show that a contribution is required where Reinforcement is carried out at the same voltage as the Point of Connection for a Generation Connection in relation to a non-secure system.

A Customer wishes to connect a new generator (a Generation Connection) with a Required Capacity for export purposes of 5 MVA. The connection of the generator requires the installation of 1,000m of 33kV cable and a 33kV metering circuit breaker, these being Extension Assets. An existing spare circuit breaker at the substation is utilised which, in this case, is not chargeable to the Customer.

As there is insufficient capacity in the existing 24.0 MVA thermal capacity rated 33kV feeder for the new generation due to the presence of existing generation, the connection also requires the installation of a new 33kV feeder, which also has a thermal capacity of 24.0 MVA, as Reinforcement. This is the Minimum Scheme as it is cheaper to do this, to the extent as shown in the diagram below, rather than upgrade the existing 33kV feeder to the same point along it.



**Reinforcement:**

The numerator in the CAF calculation is the Required Capacity of the new generator, which is 5.0 MVA. The RSN in this case is the existing 33kV feeder and the new 33kV feeder. The New Network Capacity is calculated using the non-secure capacity and is therefore the sum of the thermal capacities of the two feeders, which is 48.0 MVA. This is the denominator in the CAF calculation.

The Connection Charge for this Scheme is calculated as follows:

**Reinforcement:**

<b>Reinforcement:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Installation of new 33kV feeder	£500,000	$5.0 / 48.0 \times 100\% = 10.4\%$	£52,000
<b>Total Reinforcement Cost</b>	<b>£500,000</b>		<b>£52,000</b>

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Installation of 1,000m 33kV cable	£400,000	n/a	£400,000
Installation of 33kV metering circuit breaker	£80,000	n/a	£80,000
11kV Jointing x2	£6,000	n/a	£6,000
<b>Total Extension Asset Cost</b>	<b>£486,000</b>		<b>£486,000</b>

**Total cost of the work** = £500,000 + £486,000 = **£986,000**

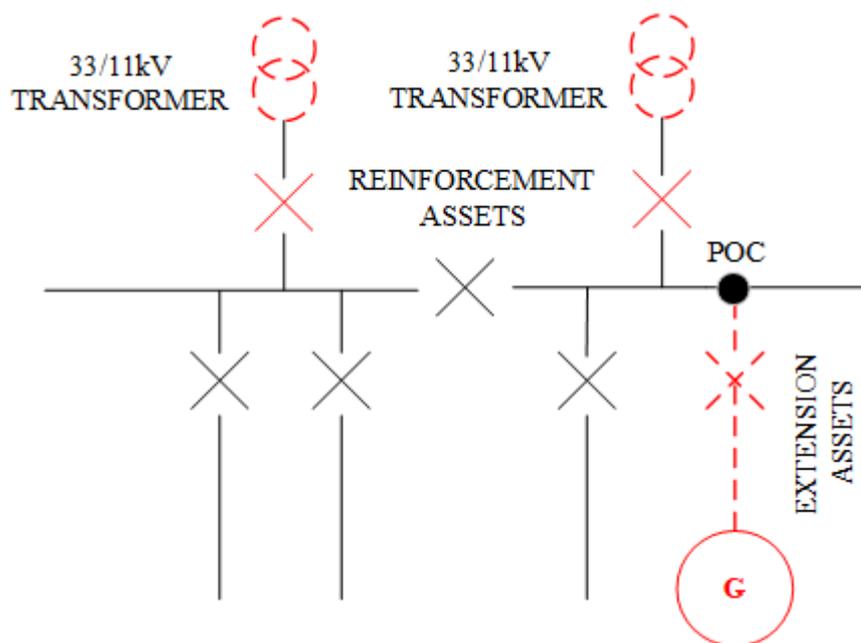
**Total Connection Charge to Customer** = £52,000 + £486,000 = **£538,000**

**Example 24: A new non-secure Generation Connection with secure Reinforcement.**

**Purpose:** To show the application of the apportionment rule where secure Reinforcement is provided but the connection for a Generation Connection is non-secure.

A Customer applies for a new generator (a Generation Connection) requiring an 8 MW metered connection. In this case, the Customer has exercised their option to request non-secure Extension Assets in the provision of the connection.

The existing network comprises a substation which has 2 x 15 MVA 33/11kV transformers. The Minimum Scheme to provide the connection is to install 750m of 11kV cable from the substation to the industrial premises, as Extension Assets. As there is insufficient capacity available from the existing 2 x 15 MVA transformers to provide the new connection, it will be necessary to upgrade the transformers to 2 x 24 MVA units along with their associated 11kV circuit breakers. The Reinforcement is required to ensure the 11kV network load can be maintained during planned or unplanned outages of one of the transformers. Although the Customer wishes to accept a non-secure connection, the substation must provide secure capacity to its Group Demand (which includes the Customer) to comply with the requirements of Engineering Recommendation P2. As the Extension Assets will be provided solely for the Customer, these can be provided on the basis of a single circuit to provide a non-secure connection, at the Customer's request.



**Reinforcement:**

As the transformer Reinforcement is a voltage above, the generator will not contribute towards this part of the works.

The numerator in the CAF calculation is the Required Capacity, which is 8.0 MVA.

The New Network Capacity is the secure capacity of the transformers, which is 24 MVA. This is the denominator in the CAF calculation.

The Connection Charge for this Scheme is calculated as follows:

<b>Reinforcement:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Installation of 2 x 24MVA 33/11kV transformers	£6,500,000	0%	£0
2 x 11kV circuit breakers	£60,000	$8 / 24 \times 100\% = 33.3\%$	£20,000
<b>Total Reinforcement Cost</b>	<b>£6,560,000</b>		<b>£20,000</b>

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
750m 11kV cable	£225,000	n/a	£225,000
11kV metering circuit breaker	£30,000	n/a	£30,000
11kV joints x2	£6,000	n/a	£6,000
<b>Total Extension Asset Cost</b>	<b>£261,000</b>		<b>£261,000</b>

**Total cost of the work** = £6,560,000 + £261,000 = **£6,821,000**

**Total Connection Charge to Customer** = £20,000 + £261,000 = **£281,000**

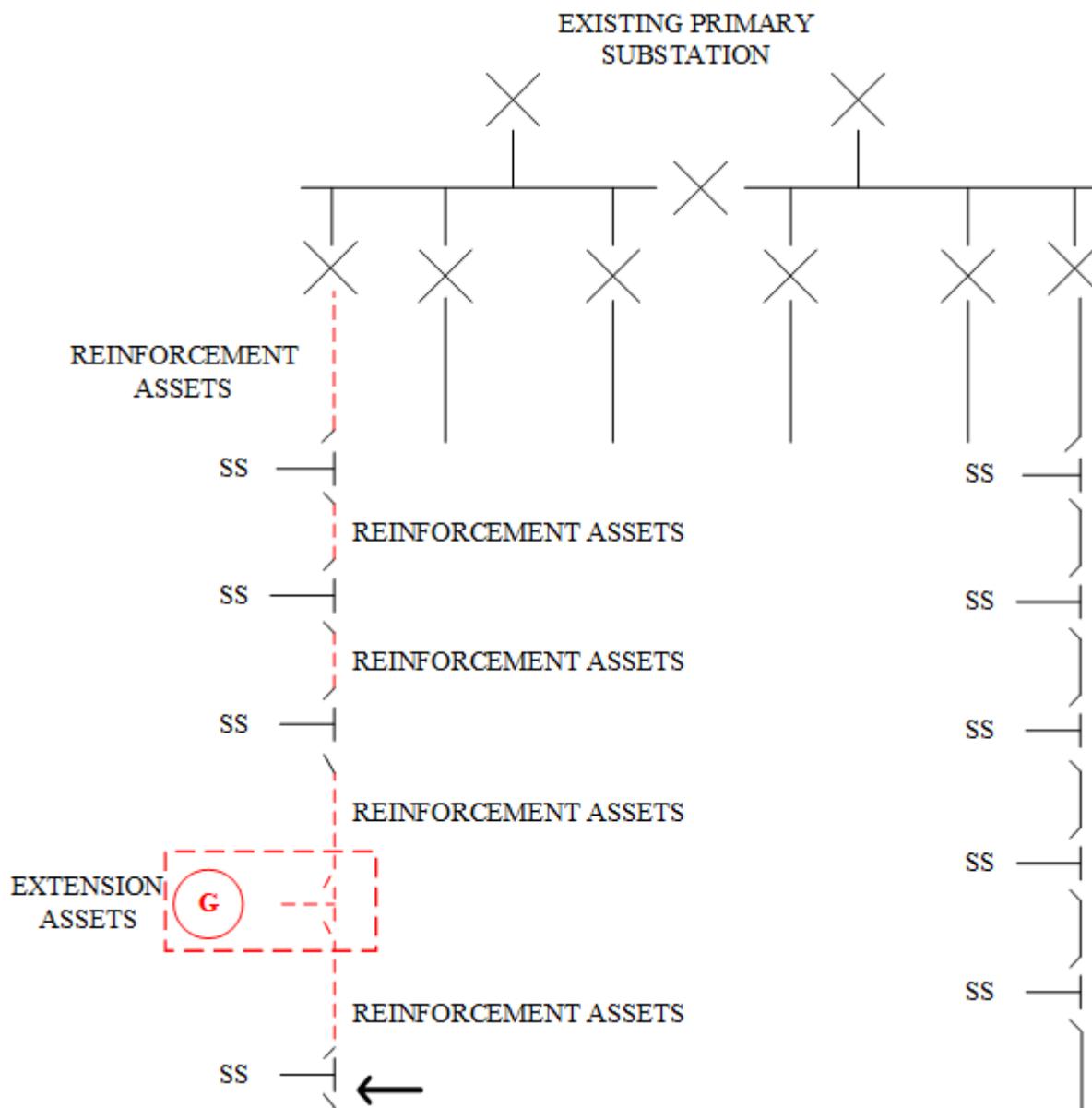
**Example 25: A new Generation Connection with voltage rise triggered Reinforcement.**

**Purpose:** To show that a Generation Connection pays for Reinforcement at the voltage level of connection based on the CAF.

A Customer wishes to connect a new generator (a Generation Connection) with a Required Capacity for export purposes of 2MVA.

The local 11kV feeder has a large amount of generation already connected and will need to be reinforced in order to keep voltage rise within acceptable limits.

The Minimum Scheme requires Reinforcement of the existing 185mm<sup>2</sup> 11kV underground cable with 300mm<sup>2</sup> underground cable and installation of a new substation for connection of the 2MW export capacity. The total length of the reinforced cable is 2km. The thermal rating of the 300mm<sup>2</sup> underground cable is 8MVA. The 11kV underground cable on the other side of the normal open point is already 300mm<sup>2</sup> and does not require to be reinforced.



**Reinforcement:**

The Relevant Section of Network for the Reinforcement is the 11kV feeder.

Security CAF calculation: the numerator in the CAF calculation is the Required Capacity of the Customer, i.e. 2MW. The denominator is the New Network Capacity following Reinforcement, this being the maximum generation that could be connected whilst keeping the voltage rise within acceptable limits, i.e. 8MVA in this case.

Fault Level CAF calculation: this scheme does not have any significant Fault Level contribution to the existing shared use distribution network and Fault Level CAF is therefore not applicable here.

The Connection Charge for this Scheme is calculated as follows:

<b>Reinforcement:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
2km 300mm 11kV Cable	£600,000	$2 / 8 \times 100\% = 25\%$	£150,000
<b>Total Reinforcement Cost</b>	<b>£600,000</b>		<b>£150,000</b>

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
2MVA 11kV Substation	£160,000	n/a	£160,000
2 by 11kV Closing Joints	£6,000	n/a	£6,000
<b>Total Extension Asset Cost</b>	<b>£166,000</b>		<b>£166,000</b>

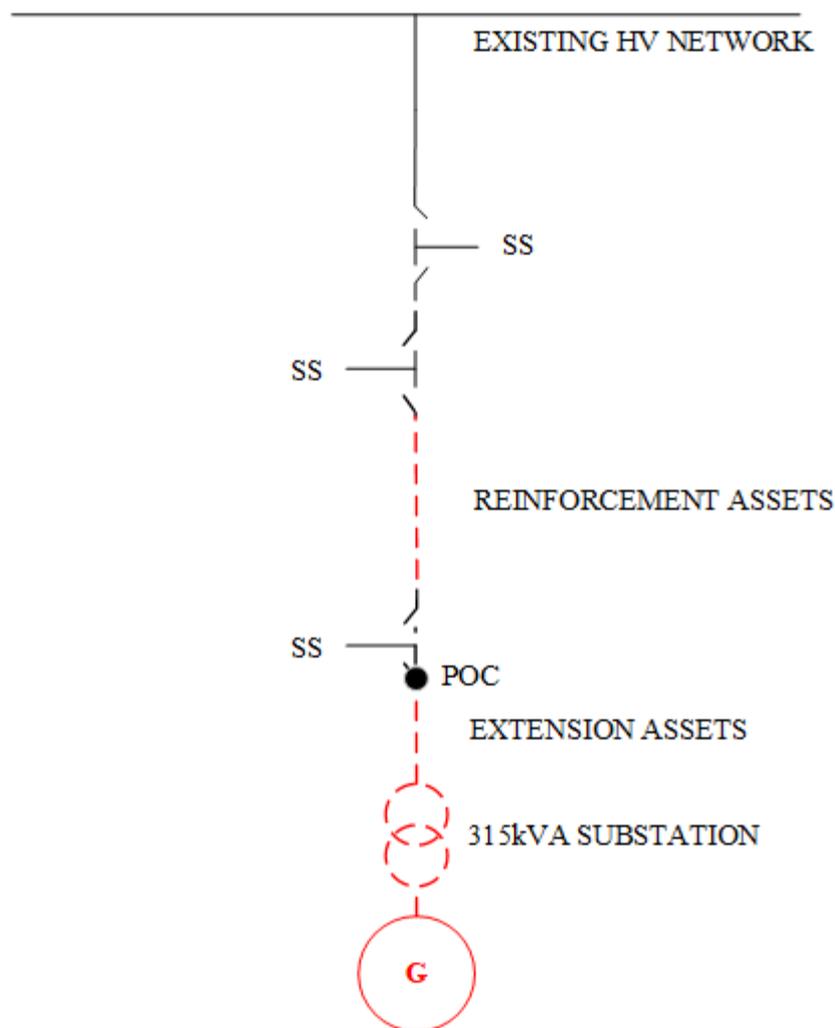
**Total cost of the work** = £600,000 + £166,000 = **£766,000**

**Total Connection Charge to Customer** = £150,000 + £166,000 = **£316,000**

**Example 26 A new Generation Connection with voltage rise triggered Reinforcement.**

**Purpose:** To show that if voltage rise Reinforcement is tailored so that just the amount of network is upgraded to meet the Customer requirements, the CAF is 100% for a Generation Connection.

A Customer wishes to connect a new generator (a Generation Connection) with a Required Capacity for export of 250kW. The Minimum Scheme for connection of the generator requires the local 11kV overhead line to be reinforced with 100mm<sup>2</sup> conductor over part of its length in order to keep voltage rise within acceptable limits. The thermal capacity of the 100mm<sup>2</sup> overhead line is 5MVA. The thermal capacity of the original 50mm<sup>2</sup> overhead line is 3MVA. A new 315kVA ground mounted substation requires to be installed at the premises. The overhead line is 1km in length but only 500m is required to be reinforced in order to keep voltage rise within acceptable limits.



**Reinforcement:**

The Relevant Section of Network for the Reinforcement is the 11kV overhead line

Security CAF calculation: the numerator in the CAF calculation is the Required Capacity of the Customer, i.e. 250kW. The denominator is the New Network Capacity following Reinforcement, this being the maximum generation that could be connected whilst keeping the voltage rise within acceptable limits. As the length of overhead line to be reinforced has been determined to accommodate the 250kW requirement only, then this is also 250kW in this case.

Fault Level CAF calculation: this scheme does not have any significant Fault Level contribution to the existing shared use distribution network and Fault Level CAF is therefore not applicable here.

The Connection Charge for this Scheme is calculated as follows:

<b>Reinforcement:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Replacement 11kV overhead line conductor	£40,000	$250 / 250 \times 100\% = 100\%$	£40,000
<b>Total Reinforcement Cost</b>	<b>£40,000</b>		<b>£40,000</b>

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Provision and installation of 315kV substation	£60,000	n/a	£60,000
11kV joint to network	£3,000	n/a	£3,000
<b>Total Extension Asset Cost</b>	<b>£63,000</b>		<b>£63,000</b>

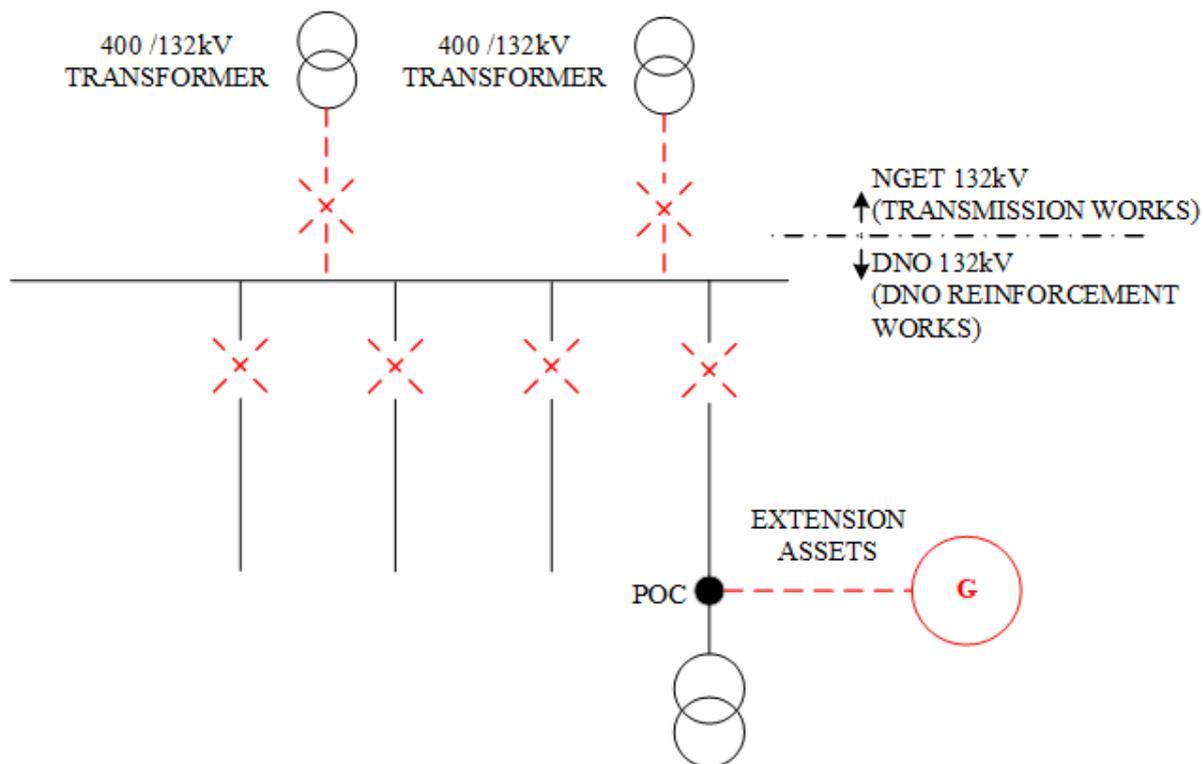
**Total cost of the work** = £40,000 + £63,000 = **£103,000**

**Total Connection Charge to Customer** = £40,000 + £63,000 = **£103,000**

**Example 27: A new Generation Connection with Fault Level Triggered Reinforcement and transmission works.**

**Purpose:** To show how the Fault Level CAF calculation is applied and how the cost of transmission works are treated for a Generation Connection.

A Customer requests a 65MW connection for a new 132kV generator (a Generation Connection) and the 85MVA Fault Level contribution from the generator necessitates Reinforcement works to replace the 132kV switchgear at the existing grid supply point with switchgear of a higher fault level rating. The Fault Level contribution also requires upgrades to the transmission system to replace the 132kV transformer tails and associated switchgear. New 132kV Extension Assets from the existing 132kV system will be required to connect the generator.



**Reinforcement**

In this example the Reinforcement is at the voltage level of the POC and the Fault Level CAF is applied to the DNO works only.

Fault Level CAF calculation: The numerator in the CAF calculation is based upon the Fault Level contribution from the Customer's new generator connection, i.e. 85MVA. The denominator is based upon the New Fault Level Capacity, in this Example the Fault Level capacity of the new 132kV switchgear, i.e. 9,140MVA.

**Transmission**

The cost of the transmission works is fully funded by the Customer.

The Connection Charge for this Scheme is calculated as follows:

<b>Transmission Works:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Replace the 132kV transformer tails and associated switchgear	£5,000,000	N/A	£5,000,000
<b>Total Transmission Cost</b>	<b>£5,000,000</b>		<b>£5,000,000</b>

<b>Reinforcement:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Reinforcement: replace the existing 132kV switchgear	£10,000,000	$3 \times (85/9140) \times 100\% = 2.8\%$	£280,000
<b>Total Reinforcement Cost</b>	<b>£10,000,000</b>		<b>£280,000</b>

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Installation of 200m 132kV underground cable	£400,000	N/A	£400,000
<b>Total Extension Asset Cost</b>	<b>£400,000</b>		<b>£400,000</b>

**Total cost of the work** = £5,000,000 + £10,000,000 + £400,000 = **£15,400,000**

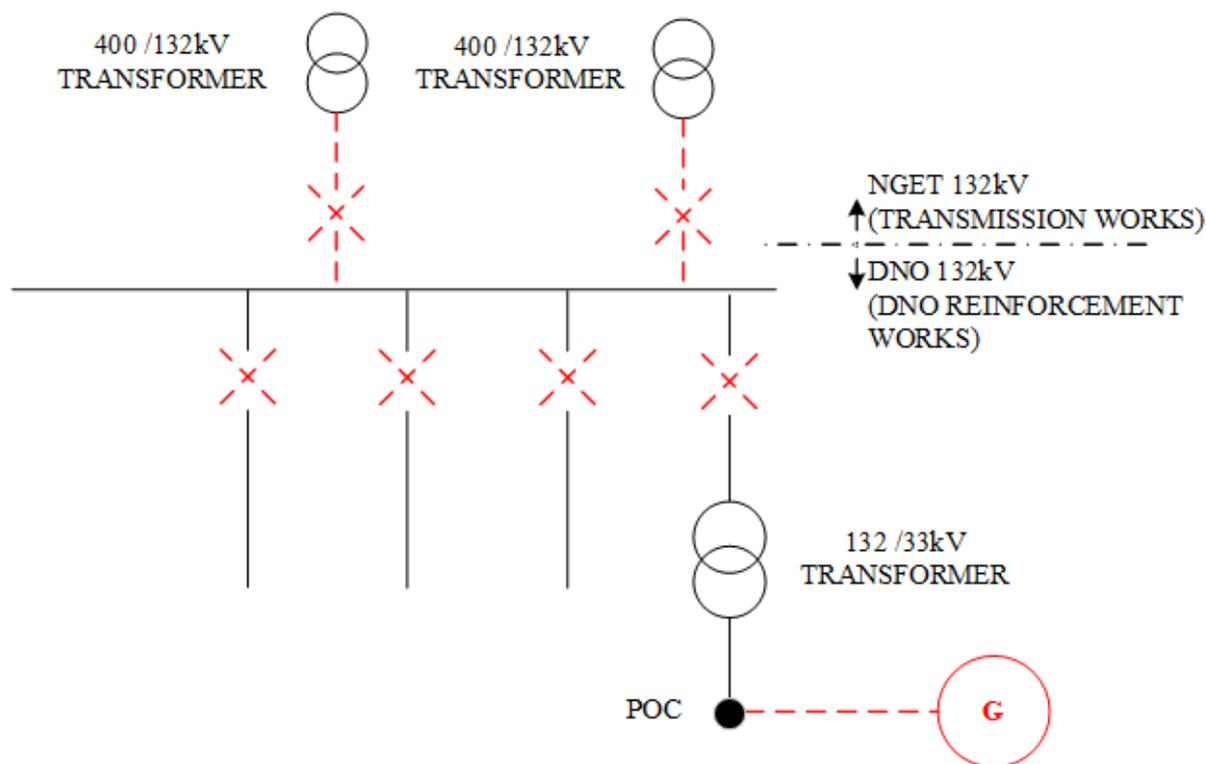
**Total Connection Charge to Customer** = £5,000,000 + £280,000 + £400,000 = **£5,680,000**

This same principle would apply in Scotland where there is no 132kV Distribution System and the connection Customer would pay for any transmission works they trigger.

**Example 28: A new Generation Connection with Fault Level Triggered Reinforcement and transmission works.**

**Purpose:** To show the treatment of Reinforcement costs at more than one voltage level above the POC and the cost of transmission works for a Generation Connection.

A Customer requests an 50MW connection for a new 33kV generator (a Generation Connection) and the 75MVA Fault Level contribution from the generator necessitates Reinforcement works to replace the 132kV switchgear at the existing grid supply point with switchgear of a higher fault level rating. The Fault Level contribution also requires upgrades to the transmission system to replace the 132kV transformer tails and associated switchgear. New 33kV Extension Assets from the existing 33kV system will be required to connect the generator.



**Reinforcement**

In this example the Reinforcement is at the voltage level above the POC and fully funded by the DNO.

**Transmission**

The Connection Charge for this Scheme is calculated as follows:

Transmission Works:	Cost	Apportionment	Customer Contribution
Replace the 132kV transformer tails and associated switchgear	£5,000,000	N/A	£5,000,000
<b>Total Transmission Cost</b>	<b>£5,000,000</b>		<b>£5,000,000</b>

Reinforcement:	Cost	Apportionment	Customer Contribution
Replacement 132kV switchboard (excluding Customer's sole use circuit breaker)	£10,000,000	N/A	£0

<b>Total Reinforcement Cost</b>	£10,000,000		<b>£0</b>

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Installation of a 500m 33kV cable	£40,000	N/A	£40,000
33kV circuit breaker at Customer substation	£25,000	N/A	£25,000
<b>Total Extension Asset Cost</b>	<b>£75,000</b>		<b>£75,000</b>

**Total cost of the work** = £5,000,000 + £10,000,000 + £75,000 =  
**£15,075,000**

**Total Connection Charge to Customer** = £5,000,000 + £75,000 = **£5,075,000**

This same principle would apply in Scotland where there is no 132kV Distribution System and the connection Customer would pay for any transmission works they trigger.

**Example 29: A new Demand Connection that has Reinforcement above the High-Cost Project Threshold.**

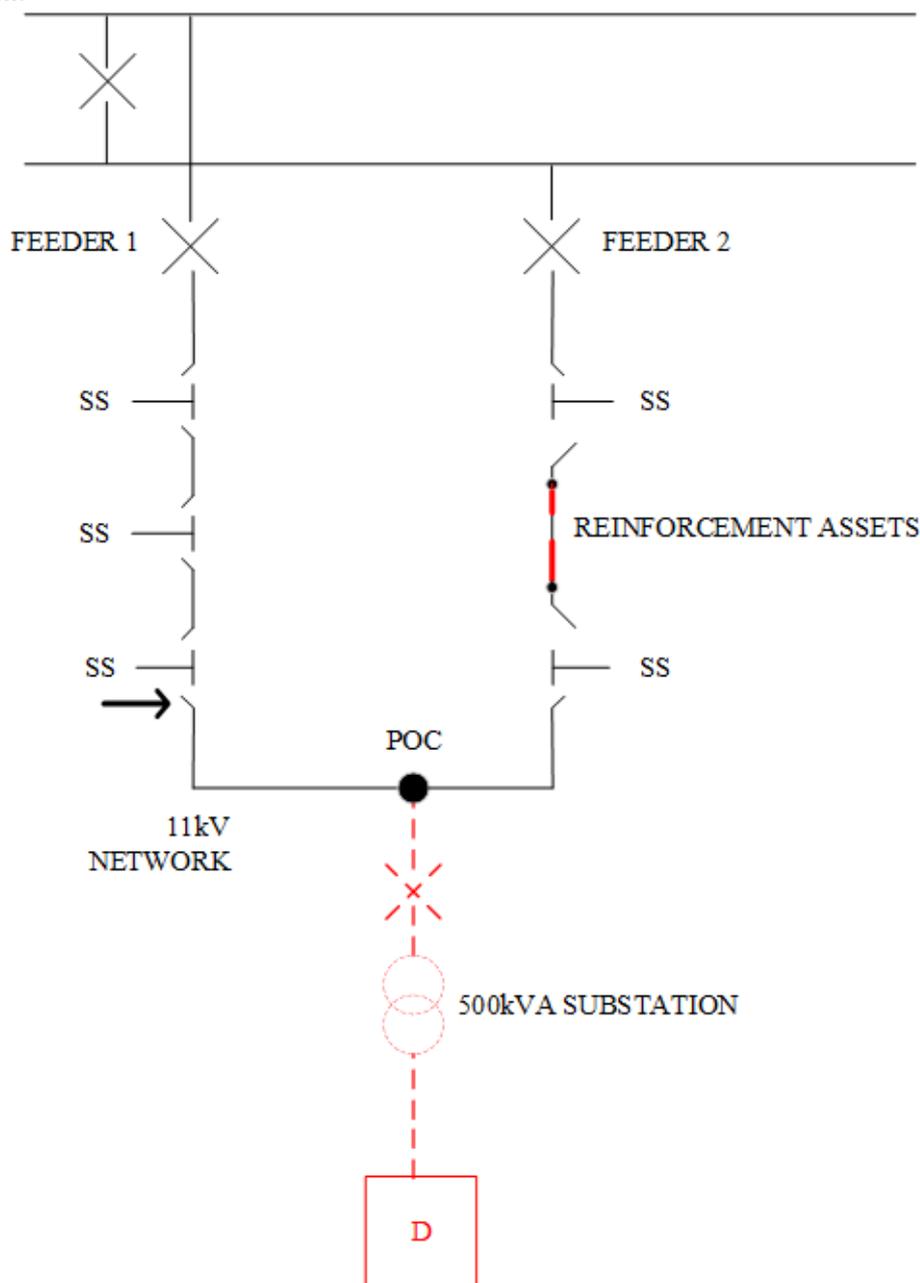
**Purpose:** To show how the Demand High-Cost Project Threshold is applied.

A Customer wishes to connect a new supply to a commercial premise for 70kVA (the Required Capacity). This will be a non-secure Demand Connection to a secure network.

The Minimum Scheme is to overlay part of the nearest 11kV circuit (Feeder 2) which only has spare capacity of 50kVA. The Reinforcement to make the capacity available requires 1200m of existing 11kV cable to be overlaid with a larger capacity cable.

Following the Reinforcement the New Network Capacity will be 8000kVA. (i.e. after Reinforcement, in this particular case, the section of cable with the lowest rating in the ring represented by Feeder 1 and Feeder 2 is rated at 8000kVA).

**Reinforcement:**



The Relevant Section of Network is the two-feeder ring comprising Feeder 1 and Feeder 2.

As this is a Demand Connection, no CAF contribution is required.

The High-Cost Project Threshold (HCPT) applied is the Required Capacity x HCPT of £1,720 per kVA.

In this instance;

$70 \times £1,720 = £120,400$ . The Customer will pay the costs in excess of £120,400 for works up to one voltage above the Point of Connection, therefore £363,000 (i.e, total Reinforcement cost - £120,400 = £242,600).

The Connection Charge for this Scheme is calculated as follows:

<b>Reinforcement:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Overlay 1200m of 11kV cable	£360,000	Total cost exceeding HCPT £363,000- £120,400	£242,600
11kV Jointing	£3,000		
<b>Total Reinforcement Cost</b>	<b>£363,000</b>		<b>£242,600</b>

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
500m 11kV cable	£150,000	n/a	£150,000
500kVA substation	£70,000	n/a	£70,000
Termination of Customer's LV cable	£2,000	n/a	£2,000
LV Metering panel	£4,000	n/a	£4,000
11kV Jointing x2	£6,000	n/a	£6,000
<b>Total Extension Asset Cost</b>	<b>£232,000</b>		<b>£232,000</b>

**Total cost of the work** = £363,000 + £232,000 = **£595,000**

**Total Connection Charge to Customer** = £242,600 + £232,000 = **£474,600**

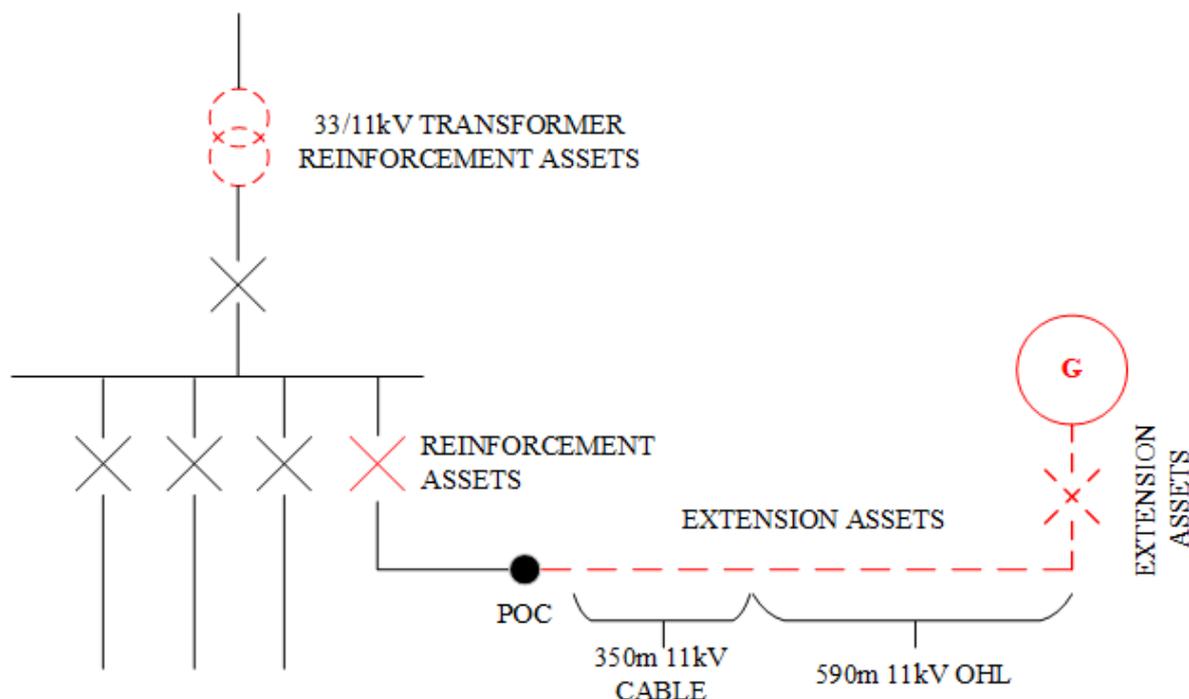
**Example 30: A new Generation Connection that has Reinforcement above the High-Cost Project Threshold.**

**Purpose:** To show how a Generation Connection that triggers the Generation High-Cost Project Threshold is charged when the Reinforcement required is at the same voltage of connection.

A Customer wishes to connect a 225kVA wind farm (a Generation Connection).

In order to connect the wind farm the Minimum Scheme involves the installation of 590m of 11kV overhead line, 350m of 11kV cable and associated jointing and install switchgear into the substation. In addition, Reinforcement is required to replace the 33/11kV transformer to facilitate reverse power flow and the 11kV circuit breaker in the primary substation. The New Network Capacity following Reinforcement is 19,700 kVA. The total cost of the Reinforcement is £505,400.

The High-Cost Project Threshold (HCPT) applies to this connection. The HCPT is £200/kW and costs in excess of this threshold will be charged in full to the Customer.



**Reinforcement:**

Security CAF calculation: the numerator in the CAF calculation is the Required Capacity of the Customer, i.e. 225kVA. The denominator is the New Network Capacity following Reinforcement, this being the maximum generation that could be connected whilst keeping the voltage rise within acceptable limits. This is 19,700kVA.

The High-Cost Project Threshold for Generation Connections is £200/kW.

The Reinforcement required to provide the connection is:

- 33/11kV transformer; and
- 11kV circuit breaker.

The 33/11kV transformer Reinforcement is one Voltage Level above the POC and not subject to the Security CAF. The work is covered by the High-Cost Project Threshold of £200/kW.

HCPT: £200 x 225 = £45,000

£505,400 - £45,000 = £460,400 Customer Contribution

The 11kV circuit breaker Reinforcement of £30,000 is at the Voltage Level of the POC and is subject to the Security CAF. The work is under the High-Cost Project Threshold of £45,000 (£200 x 225) and not covered.

Security CAF:  $(225/19,700) \times 100 = 1.14\%$

$£30,000 \times 1.14\% = £342$  Customer Contribution

The Connection Charge for this Scheme is calculated as follows:

Reinforcement Over High-Cost Project Threshold:	Cost	Apportionment/ HCPT	Customer Contribution
33/11kV Transformer Replacement	£475,400	£505,400- £45,000= £460,400	£460,400
11kV circuit breaker	£30,000		
<b>Total Reinforcement Cost</b>	<b>£505,400</b>		<b>£460,400</b>

Reinforcement Under High-Cost Project Threshold:	Cost	Apportionment/ HCPT	Customer Contribution
11kV circuit breaker	£30,000	$225/19,700 = 1.14\%$	£342
<b>Total Reinforcement Cost</b>	<b>£30,000</b>		<b>£342</b>

Extension Assets:	Cost	Apportionment	Customer Contribution
Electrical substation works	£34,500	n/a	£34,500
Install 590m of 11kV Overhead Line	£53,500	n/a	£53,500
Install 350m of 11kV XLPE cable	£14,000	n/a	£14,000
<b>Total Extension Asset Cost</b>	<b>£102,000</b>		<b>£102,000</b>

**Total cost of the work** = £505,400 + £102,000 = **£607,400**

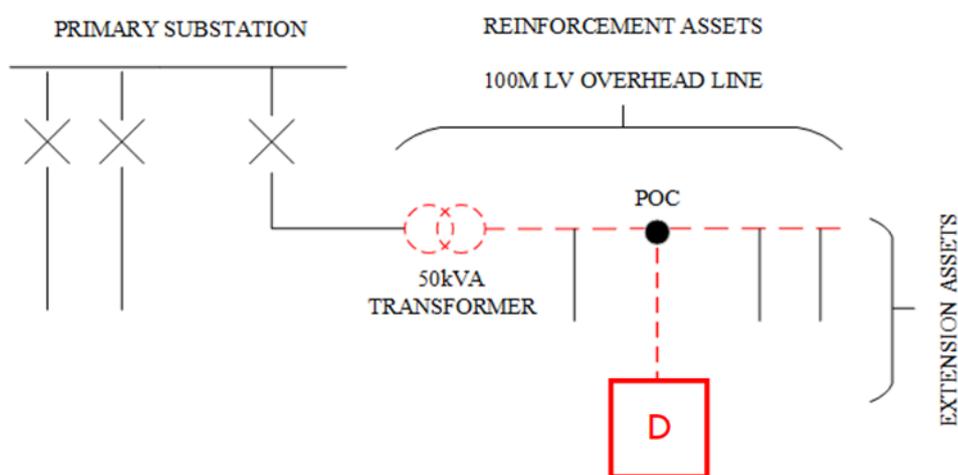
**Total Connection Charge to Customer** = £460,400 + £342 + £102,000 = **£562,742**

**Example 31 The Customer requirements for supply characteristics are greater than the Minimum Scheme.**

**Purpose:** To illustrate that when a Customer specifically requests a three-phase connection, where the existing network is not of a sufficient number of phases, the Customer pays for any Reinforcement.

A Customer with an existing single phase domestic connection with rated at 100 Amps (23 kVA) requests a three-phase connection to allow them to connect a three-phase load (e.g. a three-phase domestic welder). The property is located halfway along on a single phase 100m LV overhead line, which connects to a single phase 50kVA pole-top transformer feeding four properties. The pole-top transformer connects to the local Primary substation via a three-phase underground cable.

The existing network has sufficient capacity to accommodate the Required Capacity but the existing 50kVA pole-top transformer and 100m LV overhead line do not have a sufficient number of phases.



**Reinforcement:**

The Minimum Scheme is to replace the existing 100m LV overhead line in its entirety with a three-phase overhead line. The existing single phase 50kVA pole-top transformer will need to be replaced with a three-phase equivalent. The existing three-phase cable feed and the Primary substation are of sufficient capacity.

As the Reinforcement is only to accommodate the required number of phases, no cost apportionment will be applied.

The Connection Charge for this Scheme is calculated as follows:

<b>Reinforcement:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
Replace existing single-phase LV Overhead Line with new 100m three-phase LV Overhead Line	£12,600	100%	£12,600
New three-phase 50kVA pole-top transformer	£20,000	100%	£20,000
LV Jointing	£300	100%	£300
<b>Total Reinforcement Cost</b>	<b>£32,900</b>		<b>£32,900</b>
Operation & Maintenance @32%* of £32,900	<b>£10,528</b>		<b>£10,528</b>

\*Note, the 32% Operation and Maintenance figure is illustrative.

<b>Extension Assets:</b>	<b>Cost</b>	<b>Apportionment</b>	<b>Customer Contribution</b>
New 30m three-phase 100A service	£1,600	n/a	£1,600
Single service breach joint	£300	n/a	£300
<b>Total Extension Asset Cost</b>	<b>£1,900</b>		<b>£1,900</b>

**Total cost of the work** = £43,428 + £1,900 = **£45,328**

**Total Connection Charge to Customer** = £43,428 + £1,900 = **£45,328**

## Section 2 – Glossary of Terms

<b>Act</b>	the Electricity Act 1989 (as amended).
<b>Adoption Agreement</b>	<p>is an agreement for us to adopt the Contestable Work, subject to the satisfaction of certain conditions. This agreement, amongst other things, addresses a number of fundamental principles:</p> <ul style="list-style-type: none"> <li>• The transfer of title from the asset owner (normally the Customer or the ICP) to us;</li> <li>• The quality and safety of the adopted asset;</li> <li>• Any required sureties;</li> <li>• The transfer of Land Rights;</li> <li>• The procedure for us to Energise the assets installed by the ICP during the works;</li> <li>• The payment of any residual Connection Charges or fees;</li> <li>• Planning permissions and compliance with street works legislation; and</li> <li>• Defect correction processes, where applicable.</li> </ul> <p>The parties to the Adoption Agreement may vary depending on the circumstances and may be between:-</p> <ul style="list-style-type: none"> <li>• us and you</li> <li>• us and your appointed ICP</li> <li>• us, you and your appointed ICP.</li> </ul>
<b>Bilateral Connection Agreement</b>	an agreement between us and another LDNO setting out the terms and conditions under which an embedded network shall be entitled to be and remain connected to the Distribution System.
<b>Business Day</b>	any day other than a Saturday, a Sunday, Christmas Day, Good Friday or a day which is a bank holiday within the meaning of the Banking and Financial Dealings Act 1971 and will be from 9:00am to 5:00pm (GMT or BST as applicable).

<b>CIC Charges</b>	are the charges detailed in parts D, E, G, H, I, and J of Section [7] of this document.
<b>Connection Agreement</b>	<p>the owner/ occupier of the Premises to which the connection is to be provided will be required to enter into a Connection Agreement with us. The Connection Agreement will set out the terms upon which they will be, and remain, connected to our Distribution System. The Connection Agreement will normally be provided on our behalf by the owner/occupier's chosen Supplier for the Premises as part of their application for a supply of electricity.</p> <p>However, in some cases for larger connections, or where non-standard conditions exist, we will provide a site-specific Connection Agreement, which replaces any Connection Agreement put in place via the Supplier, as part of the connection process. This particular Connection Agreement will only take effect upon completion of the connection and will set out, in more detail, our rights and obligations to one another. Additionally, it may contain the technical detail of the installation being connected to the Distribution System and will require the owner/occupier of the Premises to comply with the provisions of the Distribution Code.</p>
<b>Connection Charge</b>	the payment to be made by the applicant to us for the provision of the connection.
<b>Curtailed Connection</b>	means a connection whereby the Required Capacity can be restricted by the Company in accordance with DCUSA Schedule 2D.
<b>CUSC</b>	the Connection and Use of System Code which constitutes the contractual framework for connection to, and use of, the GB Transmission System.
<b>Customer</b>	the person requesting the connection.

<b>DCUSA</b>	the Distribution Connection and Use of System Agreement designated as such by the Authority under condition 22 of the Licence.
<b>Dedicated Scheme</b>	is defined in paragraph 5.40.
<b>De-energise</b>	to deliberately prevent the flow of electricity to or from an Exit/ Entry Point for any purpose other than a system outage on the our Distribution System (and cognate expressions shall be construed accordingly).
<b>Demand Connection</b>	a connection which is not a Generation Connection.
<b>Development Phase</b>	the five year period, unless otherwise agreed with us, commencing on the date of Energisation of an embedded network during which period the development is to be constructed.
<b>Disconnect</b>	means to permanently De-energise an Exit/ Entry Point by the removal of all or part of our equipment (and cognate expressions shall be construed accordingly).
<b>Distributed Generation Connections Guide</b>	the guide produced by us as required by our Licence which provides guidance on the connection process for distributed generation.
<b>Distribution Code</b>	covers, amongst other matters, all material technical aspects relating to: <ul style="list-style-type: none"> <li>• connection to, and the operation and use of, the Distribution System; and</li> <li>• the operation of electrical lines and electrical plant or apparatus connected to the Distribution System.</li> </ul> A copy of the Distribution Code can be downloaded from the Distribution Code website at <a href="http://www.dcode.org.uk">www.dcode.org.uk</a> .
<b>Distribution System</b>	the system (as defined in the Licence) consisting (wholly or mainly) of electric lines owned or operated by us and used for the distribution of electricity.

<b>ECCR</b>	the Electricity (Connection Charges) Regulations 2017 (SI 2017/106) as amended from time to time.
<b>ECCR Prescribed Period</b>	the relevant period from the date on which a connection is made as prescribed by the ECCR, being ten years, for connections made on or after 6 April 2017.
<b>EHV</b>	more than 22kV but not more than 72kV.
<b>Electric Lines</b>	<p>means any line which is used for carrying electricity to or from an Exit/ Entry Point and includes, unless the context otherwise requires:</p> <ul style="list-style-type: none"> <li>(a) any support for such line, that is to say, any structure, pole or other thing in, on, by or from which any such line is or may be supported, carried or suspended;</li> <li>(b) any apparatus connected to such line for the purpose of carrying electricity; and</li> <li>(c) any wire, cable, tube, pipe or other similar thing (including its casing or coating) which surrounds or supports, or is surrounded or supported by, or is installed in close proximity to, or is supported, carried or suspended in association with, any such line.</li> </ul>
<b>Electric Plant</b>	means any plant, equipment, apparatus or appliance used for or for purposes connected with the distribution of electricity (including any metering equipment) other than an Electric Line.
<b>Electricity Storage</b>	is the conversion of electrical energy into a form of energy which can be stored, the storing of that energy, and the subsequent reconversion of that energy back into electrical energy.
<b>Electricity Generation</b>	is the process of generating electricity.
<b>Energise</b>	to deliberately allow the flow of electricity to or from an Exit/ Entry Point where such a flow of electricity has never previously existed (and cognate expressions shall be construed accordingly).

<b>Enhanced Scheme</b>	is defined in paragraph 5.4.
<b>Entry/ Exit Point</b>	a point at which electricity, whether metered or unmetered, enter or exit our Distribution System.
<b>Existing Capacity</b>	is defined in paragraph 5.29.
<b>Extension Assets</b>	are assets installed to connect a party or parties to the existing distribution network but which exclude Reinforcement assets.
<b>Fault Level</b>	the maximum prospective current or power that will flow into a short circuit at a point on the network, usually expressed in MVA or kA.
<b>Fault Level Contribution from Connection</b>	is defined in paragraph 5.29.
<b>Flexible Connections</b>	are connection arrangements whereby a Customer's export or import of electricity is managed (often through real-time control) based upon contracted and agreed principles of available capacity. Flexible Connections typically allow quicker and cheaper connection to the Distribution System but are made on the basis that there is no limit on the extent to which a user's access can be interrupted.
<b>Full Planning Permission</b>	an approval in writing by the relevant planning authority of all of the details of a proposed development such that the proposed development may proceed in accordance with that approval.
<b>GB Transmission System</b>	the system consisting (wholly or mainly) of high voltage electric wires owned or operated by transmission licensees within Great Britain.
<b>Generation Connection</b>	means a connection to a Premises where the primary purpose of the Premises is wholly or mainly Electricity Generation and/or Electricity Storage. In determining such primary purpose we will consider:

	<ul style="list-style-type: none"> <li>i. if the Maximum Capacity of the connection of the Premises to the Distribution System for export is greater than the Maximum Capacity for import;</li> <li>ii. if the Premises has a Generation Licence;</li> <li>iii. if the Premises has a Generation Licence Exemption; and/or</li> <li>iv. any other information we consider relevant.</li> </ul>
<b>Generation Licence</b>	means the owner or occupier of the Premises holds a licence to carry out the activity specified in section 4(1)(a) of the Act.
<b>Generation Licence Exemption</b>	means the owner or occupier of the Premises has an exemption from holding a Generation Licence, including under the Electricity (Class Exemptions from the Requirement for a Licence) Order 2001.
<b>Guaranteed Standards of Performance</b>	the standards of service set out in the Electricity (Standards of Performance) Regulations 2015 (as amended from time to time).
<b>High-Cost Project Threshold</b>	is defined in paragraph 5.16.
<b>HV</b>	more than 1kV but not more than 22kV
<b>Independent Connections Provider (ICP)</b>	a person with sufficient accreditation to carry out all or part of the Contestable Work.
<b>Interruptions Incentive Scheme</b>	the scheme which provides incentives on us to deliver a good level of performance in respect of customer interruptions and customer minutes lost.
<b>Land Rights</b>	all such rights in, under or over Land as are necessary for the construction, installation, operation, repair, maintenance, renewal or use of the Contestable Work or Non-Contestable Work.
<b>Licensed Distribution Network Operator (LDNO)</b>	the holder of a Licence to distribute electricity.

<b>LV</b>	not more than 1kV.
<b>Maximum Capacity</b>	means in relation to any connection the maximum amount of electricity, as agreed with us and expressed in kW or kVA, that can be imported from or exported onto our Distribution System.
<b>Meter Point Administration Number (MPAN)</b>	is a 21 digit reference to uniquely identify Exit/ Entry Point, such as individual domestic residences.
<b>Minimum Scheme</b>	is defined in paragraphs 5.1 to 5.7.
<b>New Fault Level Capacity</b>	is defined in paragraph 5.29.
<b>New Network Capacity</b>	is defined in paragraph 5.29.
<b>NETSO</b>	means the national electricity transmission system operator for Great Britain from time to time.
<b>Non-Curtailable Connection</b>	means a connection which is not a Curtailable Connection.
<b>Outline Planning Permission</b>	a decision in writing by the relevant planning authority on the general principles of how a site can be developed, which is subject to subsequent approval of one or more reserved matters.
<b>Point of Connection (POC)</b>	is the point (or points) of physical connection to our existing Distribution System.
<b>Premises</b>	means any land, building or structure.
<b>Reinforcement</b>	is defined in paragraphs 5.17 to 5.27.
<b>Relevant Section of Network</b>	is defined in paragraph 5.29.
<b>Rent-a-Jointer Services</b>	the service relating to hiring of resource from us to facilitate the provision of unmetered connections.
<b>Required Capacity</b>	is defined in paragraph 5.29.
<b>Scheme</b>	our network design to provide the connection.

<b>Speculative Developments</b>	is defined in paragraph 5.48.
<b>Supplier</b>	a person who holds a Supply Licence.
<b>Supply Licence</b>	a licence granted under section 6(1)(d) of the Act.
<b>Supply Number</b>	a unique identifier of those Entry/ Exit Points on the Distribution System which are used for the purposes of either taking a supply of electricity or for the connection of a distributed generator, and which forms the basis of the metering point record on the Company's registration system.
<b>Temporary Connections</b>	is defined in paragraph 5.24.
<b>Validity Period</b>	the period for which a connection Offer or POC Offer is open for acceptance.
<b>Voltage of Connection</b>	is the voltage at the POC between the existing distribution network and the assets used to provide the connection. For clarity, this is not necessarily the voltage of supply to the Customer.
<b>Voltage Level</b>	is the voltage at the transforming point between two points on the Distribution System that is directly associated with the Customer's connection. The higher voltage is one Voltage Level above the Voltage Level of the POC.
<b>Wide Area Scheme</b>	is defined in paragraph 5.41.
<b>Working Day</b>	any day other than a Saturday, a Sunday, Christmas Day, Good Friday or a day which is a bank holiday within the meaning of the Banking and Financial Dealings Act 1971.

# Section 6 – Our Specific Connection Charging Methodology

## Introduction

- 6.1 This Section sets out Our Specific Connection Charging Methodology.
- 6.2 Any changes to this Section must be in accordance with the provisions set of in Condition 13 of the Licence.

## Competition in Connections

### Non-Contestable Work

6.3 The following works in respect of the existing Distribution System are deemed to be Non-Contestable however, in certain circumstances ICPs will be able to carry out this work as explained in the Competition in Connections Code of Practice. Further information is shown in the Table of Contestable/Non-Contestable Work in paragraph 6.19:

- Processing your application and Distribution System planning for the connection;
- Deciding upon the POC to the Distribution System;
- Connection of Extension Assets to the Distribution System at EHV;
- Connection of Extension Assets to the Distribution System where the connection is made to an overhead line;
- Design, planning and specification of any works for Reinforcement of our Distribution System;
- Carrying out of any works for Reinforcement of our Distribution System where the conditions for such activity being Contestable Work are not met. Reinforcement (other than design, and specification) and diversionary works may be contested when associated with the provision of a connection and subject to the circumstances described in paragraph 6.14);
- Design, planning, specification and carrying out of any works for diversion of the Distribution System where the conditions for such activity being Contestable Work are not met (the design of the diversionary works may be contested when associated with the provision of a connection and subject to the circumstances described in paragraph 6.14); and
- Removal of existing Electrical Plant and Electric Lines.

6.4 The following works in respect of the Contestable Work are deemed to be Non-Contestable:

- Specification of design and installation criteria and materials to be used for Contestable Works;
- Concluding any Land Rights and other consents that we require;
- Approval of the ICP's design however, in certain circumstances ICPs will be able to carry out this work as explained in the Competition in Connections Code of Practice. Further information is shown in the Table of Contestable/Non-Contestable Work in paragraph 6.19;
- Operation, repair and maintenance of the Electrical Plant and the Electric Lines following adoption by us; and

- Inspection, monitoring and testing of any Contestable Work.

## Operational Access

6.5 We will facilitate operational access by ICPs to our existing assets under agreed notification and planning arrangements and limited to the connection of new competitively installed assets. It is a requirement that the ICP enters into a framework adoption agreement and a network access agreement with us.

## Inspection and Monitoring

6.6 We will inspect and monitor some of the Contestable Work provided by the appointed ICP. The number of visits required will be determined according to the actual connection proposals and the inspection regime shown below. Information regarding inspections and the associated charges will be specified within the POC Offer.

6.7 The table below will be used to calculate the actual numbers of inspections to be made where an ICP undertakes the Contestable Work. The number of inspection visits undertaken will be dependent upon two factors:

- The scale and type of work being undertaken; and
- The inspection level that the ICP is operating at.

6.8 We will issue the ICP an invoice based on the actual number of visits carried out for all projects undertaken on a quarterly basis. The charge for each audit is set out in paragraph 7.62.

<b>Inspection levels</b>				
<b>Activity</b>	<b>Inspection (unit rate)</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>
Service installation work including street lighting	5 service installations	20%	10%	5%
Service jointing	5 joints	20%	10%	5%
LV mains installation	250m of cable Installation	50%	20%	10%
LV jointing	3 joints	50%	20%	10%
HV mains installation	250m of cable Installation	50%	20%	10%
HV jointing	Per joint	50%	20%	10%
HV switchgear/transformer installation	Per substation	100%	50%	20%
Switchgear/transformer pre-commissioning checks	Per substation	100%	50%	20%
Overhead line construction	Per scheme	100%	50%	20%
Extra High Voltage - Agreed on project by project basis				

## Factors influencing Competition in Connection (CIC) Charges

6.9 Illustrative costs for Competition in Connection (CIC) Charges are shown in Section 7. Such illustrative charges reflect normal cost situations. The actual charges associated

with specific projects will be based on our estimate of the level of the work required. The factors which influence the actual level of charges include:

- The amount of network analysis required to determine the optimum means of providing connections. The amount of network analysis undertaken would be influenced by, amongst other factors, the number of connections and connection capacity requested by the applicant, characteristics of the load to be connected and the capacity of the existing Distribution System.
- The level of management and job scheduling required for the connection project. The management and job scheduling costs associated with projects that are completed over a long timescale would tend to be higher than those costs associated with projects that are completed over a short timescale.
- The number and complexity of Land Rights required. Some technically simple connections, such as the installation of an LV underground cable, could require more than one wayleave or consent.

## Contestable Work

6.10 In contrast, the following work may be carried out in its entirety either by us or by an ICP, in accordance with the approved design and specification:

- Design of the Contestable Work;
- The procurement and provision of equipment and materials to our current specification for the Contestable Work;
- Trenching and other preparation of the site, including the circuit routes between the development and the POC;
- Construction of the Contestable Work;
- Connection of Extension Assets to the Distribution System and their Energisation at LV only;
- Connection of Extension Assets to the Distribution System at HV only (see paragraph 6.5 Operational Access);
- Recording of work done and of the location of cable routes and other equipment on site or elsewhere (where those assets are installed by the ICP), and the provision of this information to us;
- Reinstatement (both temporary, if appropriate, and permanent); and
- Making provision for the installation of metering equipment.

Under certain circumstances and at our sole discretion, we may agree with you to undertake part of the Contestable Work whilst we carry out the remainder where it is practical to do so.

6.11 The Contestable design element must comply with the appropriate part of Engineering Recommendation G81 and any of our specific requirements (see 6.13). Following receipt of the design of the Contestable Work, we shall either provide confirmation of approval or explanation for rejection. Such approval shall not be unreasonably withheld.

6.12 We may, on occasion, request the ICP to include additional features in the design. Such request shall be made in writing and as soon as is reasonably practicable. Where the ICP accepts this request we will meet the agreed additional cost.

6.13 The specification for design, materials, installation and recording, is governed by Engineering Recommendation G81, a seven part national framework document administered by the Energy Networks Association that is designed to be supplemented

by our specific appendices. Any ICP carrying out such Contestable Work must comply with the specification. The seven parts comprise:

For green field and brown field housing estates:

Part 1: Framework for Design and Planning

Part 2: Framework for Materials Specification

Part 3: Framework for Installation and Records

For industrial and commercial connections:

Part 4: Framework for Design and Planning

Part 5: Framework for Materials Specification

Part 6: Framework for Installation and Records

All of the above must be read in conjunction with our corresponding suite of Appendices that supplement Engineering Recommendation G81.

For diversionary and Reinforcement works:

Part 7: Framework for contestable diversionary and Reinforcement underground and overhead works not exceeding 33kV and HV/LV distribution substations.

These documents are available to view on our website at [www.northernpowergrid.com](http://www.northernpowergrid.com)

## **Contestable Reinforcement and Diversionary Work**

6.14 Certain types of Reinforcement and diversionary work may also be carried out by suitably accredited ICPs for adoption by us. The scope of such work is limited to Reinforcement and diversionary works, associated with a connection, which:

- are new works that are physically and electrically separate from our existing Distribution System;
- do not require access to our existing operational areas;
- are fully funded by the single third party who is seeking the connection; and
- are restricted to works to install overhead lines of standard wood pole construction and underground cables at voltage levels not exceeding 66kV and HV/LV distribution substations. The design of Reinforcement works can require a large volume of information about the Distribution System. The level and complexity of information that would need to be made available to allow the ICP to carry out such design works is likely to outweigh the benefits of including design work within the scope of contestability. The design of connection Reinforcement therefore remains Non-contestable.

6.15 In certain circumstances such as where the diversion is associated with a connection project then:

- a suitably accredited ICP may also carry out the connection of diverted assets to the Distribution System and their Energisation where the connection is made at LV by live jointing to a underground cable section of the Distribution System (see paragraph 6.5 Operation Access); and
- a suitably accredited ICP may also carry out the connection of diverted assets to the Distribution System where the connection is made at HV by jointing to an underground cable section of the Distribution System (see paragraph 6.5 Operation Access).

6.16 For operational reasons, and to enable us to comply with our obligations under the Act and the Licence, there will be site specific circumstances where the works referred to in this Section are deemed Non-Contestable.

6.17 The design of the majority of diversion projects associated with connection projects is likely to be less complex than the design of Reinforcement Schemes. The design of

diversionary works can be contestable for overhead lines and underground cables not exceeding 33kV and for HV/LV distribution substations.

- 6.18 The dismantlement and disposal of our existing assets remains Non-Contestable because it would require access to our existing assets and/or operational areas.

## Table of Contestable/Non-Contestable Work

- 6.19 The following table summarises elements of the work as either Contestable or Non-Contestable and the types of company that can complete the works. In certain circumstances ICPs will be able to carry out elements of Non-Contestable work in line with the Competition in Connections Code of Practice. For further information please contact us.

Ref	Activity	Contestable(C)/ Non- Contestable (N)	NPg	ICP	Applicant or Developer
1	Determine POC to Distribution System	N	Yes	Yes <sup>1</sup>	No
2	Design of Extension Assets	C	Yes	Yes	No
3	Design upstream Reinforcement works associated with new connections.	N	Yes	No	No
4	Design diversionary works associated with new connections	C	Yes	Yes	No
5	Design approval	N	Yes	Yes <sup>1</sup>	No
6	Plant and materials specifications	N	Yes	No	No
7	Procure materials for own works	C	Yes	Yes	No
8	Land Rights negotiations with third party landowners	C	Yes	Yes	Yes
9	Produce wayleave/easement documentation and enter into agreements with third party landowners	N	Yes	No	No
10	Trench excavation and duct installation – on site	C	Yes	Yes	Yes
11	Trench excavation and duct installation – on public highway	C	Yes	Yes	No
12	Construction of substation buildings and other civil works – on site	C	Yes	Yes	Yes
13	Cable laying for own works	C	Yes	Yes	No
14	Substation plant installation for own works	C	Yes	Yes	No
15	Excavation for jointing bay – on site	C	Yes	Yes	Yes
16	Excavation for own works jointing bay – public highway	C	Yes	Yes	No
17	Jointing (dead) of cables within Extension Assets	C	Yes	Yes	No
18	LV jointing (live) to connect Contestable Works to Distribution System (closing joints) <sup>2</sup>	N	Yes	Yes	No
19	Jointing to our existing HV distribution system <sup>2</sup>	N	Yes	Yes	No

20	Operational access associated with jointing to the existing Distribution System (see paragraph 6.5 for further information)	N	Yes	No	No
21	Excavation for joints to connect Contestable Works to Distribution System (closing joints)	C	Yes	Yes	No
22	Live LV jointing on newly adopted New Extension Assets	C	Yes	Yes	No
23	Reinforcement/diversionary work on the existing Distribution System	N	Yes	No <sup>3</sup>	No
24	Quality assurance inspections	N	Yes	No	No
25	Testing of Extension Assets installed by ICP	C	Yes	Yes	No
26	Commissioning and connection of Extension Assets to the Distribution System	N	Yes	Yes <sup>1</sup>	No
27	Recording of installed assets	C	Yes	Yes <sup>4</sup>	No
28	Operations, repairs and maintenance	N	Yes	No	No

- <sup>1</sup> This is one of the activities that may be carried out in line with the Competition in Connections Code of Practice
- <sup>2</sup> LV and HV jointing to the existing distribution system can only be carried out by a suitably accredited ICP subject to our prior agreement and where the connection is not made to an overhead line
- <sup>3</sup> Sole funded Reinforcement and diversionary works associated with the new connection carried out independently of the existing Distribution System will be treated as Contestable Work.
- <sup>4</sup> Only for Contestable Works installed by the ICP

## Payment Terms

6.20 In general we require payment of connection charges in full before we make the connection(s) available for use. For connections where the work is minimal or can be completed quickly we recommend payment along with your acceptance of our quotation, as this will minimise any delays in making the connection(s). We will consider phased payment for high voltage and extra high voltage connections and development projects.

## Connection Offer and POC Offer Terms and Conditions

6.21 Connection Offers and POC Offers are on our standard terms and conditions. Where you require alternative terms and conditions we will negotiate special terms with you as provided for in section 22 of the Electricity Act. Our costs incurred in the negotiation of the special terms, including where we appoint legal advisors, are recoverable from you.

## Operation and maintenance costs

6.22 We may also charge to recover the costs of the anticipated operation, repair, maintenance and replacement of the equipment required for the connection (whether or not provided by us) where those costs will not be recovered through use of system charges. The costs are derived from the estimated costs of work related to the parts of the system used for the connection. They are usually expressed as a percentage of the initial capital value of the assets or an annual sum. Where this includes assets provided by a third party this will be the value of such assets as assessed by us.

6.23 Where we apply such charges, for example in relation to enhanced connections or speculative developments, we will apply a rate of 1.9% for Northern Powergrid (Northeast) and 1.7% for Northern Powergrid (Yorkshire) to the relevant asset value to calculate an annual charge. This rate has been determined to be appropriate from previous analysis of price control data in respect of OR&M costs and overall capital costs.

## Land Rights

6.24 We require the transfer of the freehold or alternatively the grant of long leasehold of any substation site which forms part of the Contestable or Non-Contestable Works.

6.25 We require the grant of a permanent easement (deed of grant) for any Electric Line that forms part of the Contestable or Non-Contestable Works which will not form part of an adopted or prospectively adopted highway. We may in some cases accept a wayleave as an alternative.

6.26 In instances we cannot obtain Land Rights by negotiation; we may exercise our powers of compulsory purchase under the Electricity Act 1989 or apply under the Act to the Secretary of State for a 'Necessary Wayleave'.

## Provision of Data

6.27 We can provide data for specific parts of our Distribution System on request. Details of the additional information and data together with the respective charges can be found in our LC25 Long Term Development Statement (LTDS). The LTDS is available for download, free of charge from our website below:

[www.northernpowergrid.com](http://www.northernpowergrid.com)

## Margin included in Connection Offers

6.28 We are allowed to charge a margin on certain elements of connections work as allowed by our Licence. Margins can only be applied to Contestable Work (construction of Extension Assets and other activities as set out in paragraphs 6.14 to 6.19).

6.29 The margin (if any) is either "regulated" which is set at 4% by our Licence or is "unregulated" which is not set by our Licence. Our ability to apply these two types of margin is governed by the Authority.

6.30 The table below indicates which type of margin is included in our charges for each type of work.

	Regulated Margin	Unregulated Margin
<b>In respect of Metered premises owned or occupied by Demand Customers:</b>		
(i) <b>Single LV Service Demand Connections:</b> defined in Section 7.6	N/A	N/A
(ii) <b>Small Project Demand Connections:</b> defined in Section 7.6	N/A	N/A
(iii) <b>LV work:</b> other low voltage Connection Activities involving only low voltage works.	Yes	No
(iv) <b>HV work:</b> low voltage or high voltage Connection Activities involving high voltage work	No	Yes
(v) <b>HV and EHV work:</b> low voltage or high voltage Connection Activities involving extra high voltage work.	Yes	No
(vi) <b>EHV work and above:</b> extra high voltage and 132kV Connection Activities.	Yes	No

In respect of Metered premises in which <b>Distributed Generation</b> is situated:		
(vii) <b>LV work:</b> low voltage Connection Activities involving only low voltage work.	<b>Yes</b>	<b>No</b>
(viii) <b>HV and EHV work:</b> any Connection Activities involving work at high voltage or above.	<b>Yes</b>	<b>No</b>
In respect of <b>unmetered</b> premises:		
(ix) <b>LA work:</b> New Connection Activities in respect of local authority premises.	<b>Yes</b>	<b>No</b>
(x) <b>PFI work:</b> New Connection Activities under private finance initiatives.	<b>Yes</b>	<b>No</b>
(xi) <b>Other work:</b> all other non-local authority and non-PFI unmetered connections work.	<b>Yes</b>	<b>No</b>

## Credit for equipment recovery associated with Temporary Connections

6.31 The net value referred to in paragraph 5.42 will not be provided where the administrative costs incurred are higher than the value of recovered equipment that we can subsequently reuse (net of depreciation and removal and refurbishment costs). The de-minimus level, below which it is inefficient to provide a refund is £100. This value is based on reasonable costs of:

- Determining whether the equipment can be reused;
- Calculating the refund; and
- Processing any credit.

# Section 7 – Connection Charging Statement

## Introduction

- 7.1 This Section sets out our Connection Charging Statement prepared in accordance with Standard Licence Condition 14 of the Licence.
- 7.2 The purpose of this statement is to enable any person to make a reasonable estimate of the charges liable for the provision of a connection.
- 7.3 The minimum and maximum values of charges shown in the following tables are designed to provide you with an indication of the range of charges that would normally apply to a particular activity and are therefore not absolute limits on the minimum nor the maximum value of charge that may be levied. The actual charge for each activity will be calculated based upon the project specific circumstances which may take account of the cost apportionment rules and other factors that will influence the value of the charge payable by you.
- 7.4 All indicative charges in the tables below are exclusive of VAT.
- 7.5 Connection Charges may contain some or all of the cost elements indicated in the following table. You do not need to have requested a Budget Estimate or Feasibility Study before you request a formal Connection Offer.

	<b>Charge Element</b>	<b>Explanation</b>
A	Budget Estimates	To identify the budget costs for connection to the existing Distribution System in advance of a formal application.
B	Feasibility Studies	To identify options for connection to the existing Distribution System in advance of a formal application.
C	Assessment and Design for all relevant work	To identify the most appropriate point on the existing Distribution System for connection of the Extension Assets, the design of the Extension Assets, any required Reinforcement and prepare the Connection Offer.
D	CIC Assessment and Design of the Non-Contestable Work	To identify the most appropriate point on the existing Distribution System for connection of the Extension Assets, the design of any required Reinforcement and prepare the POC Offer.
E	CIC Design Approval of the Contestable Work	For CIC the approval of an Extension Assets design produced by an ICP.
F	Construction	Electric Lines and Electrical Plant forming part of the Extension Assets and Reinforcement (both Contestable and Non-Contestable Assets).
G	CIC Final Works and Phased Energisation	Final Works means the installation of the connection equipment in such a way that, subject to Energisation, the Premises are physically able to receive a supply of electricity from our Distribution System or (as the case may be) our Distribution System is physically able to receive a supply of electricity from the Premises.  Phased Energisation, in relation to a part only of the Premises, means the physical ability, subject to the completion of Final Works, to allow an electrical current to flow from (or to) our Distribution System to (or from) that part by means of the insertion of a fuse or as a result of a switching operation.

H	CIC Inspection and Monitoring	Inspection and Monitoring by us of the Contestable Work constructed by an ICP.
I	Land Rights	The costs of securing Land Rights in respect of Extension Assets and Reinforcement
J	Other	Other miscellaneous charges associated with the provision of the connection.

7.6 The following definitions are used in this Section.

<b>Single LV Service Demand Connection</b>	an LV demand connection to single Premises, involving a single-phase connection and no significant work other than the provision of a service line and the electricity distributor's fuses.
<b>Service Line</b>	a low-voltage electric line or any part of that line that will, at the time it is provided, be used only for supplying single Premises, excluding any part of the line that, at the time it is provided, is intended by the distributor to be used to enable it to provide a connection to other Premises in respect of which the distributor has received, or would reasonably expect within the following 12 months to receive, a notice under section 16A(1) of the Act.
<b>Small Project Demand Connection</b>	a connection (other than of a load that could reasonably be expected to cause disruption to other customers) (via low-voltage circuits fused at 100 amperes or less per phase with whole-current metering), and where the highest voltage of the assets involved in providing such connection, and any associated works, is low voltage, to – <ul style="list-style-type: none"> <li>a) a development Scheme requiring more than one but fewer than five single-phase connections at domestic Premises and involving only the provision of a service line and the electricity distributor's fuses; or</li> <li>(b) a development Scheme requiring fewer than five single-phase or two-phase connections at domestic Premises and involving an extension of the existing low voltage network; or</li> <li>(c) a single Premises requiring a two-phase or three-phase connection and involving only the provision of a service line and the electricity distributor's fuses.</li> </ul>

## Quotation Accuracy Scheme

7.7 We are required in our Licence to submit from time to time to the Authority for approval a Quotation Accuracy Scheme (QAS). This requirement will come into effect from 1 October 2010. The QAS is intended to provide information so that you can assess whether the specific Connection Charge included within our Connection Offer to you is accurate in terms of consistency with our Connection Charging Statement.

7.8 The QAS only applies to Single LV Service Demand Connections and Small Project Demand Connections. The cost tables for these projects are given in tables F1 and F2.

7.9 The principles of the QAS are as follows:

- The QAS is not intended to be a mechanism for you to challenge the absolute cost of the Connection Charge.

- If the information included in the Connection Offer is sufficient such that the Connection Charge is within the bands of indicative costs then you would not be eligible to challenge the accuracy of the Connection Offer..
  - If the information included in the Connection Offer is such that the Connection Charge is outside the bands of indicative costs then you would be eligible to challenge the accuracy of the Connection Offer. You would be required to provide a statement to explain why you believed the quotation to be outside the range.
  - Absence of information in the Connection Offer does not in itself mean that the Connection Charge is inaccurate but does allow you to enter the QAS. This therefore acts as an incentive for us to include additional information to you to limit the number of customers eligible to enter the QAS.
  - Where we review the Connection Offer and accept that we have not provided enough information and therefore the Connection Charge is outside the bands of indicative costs, the Connection Charge will be deemed inaccurate, a penalty payment will be paid to you and a new Connection Offer issued. The revised Connection Charge may in fact be for the same value but with additional information provided.
  - If we can demonstrate that additional information was provided in the Connection Offer in support of our Connection Charge then no penalty payment will be made.
  - Where we review the Connection Offer and accept that we have made an error, for example in estimating quantities then the Connection Charge will be deemed inaccurate. In these circumstances, a penalty payment will be paid to you and a new Connection Offer issued.
  - If we are able to provide additional information in support of our charges then no payment would be made.
  - The accuracy assessment will work both ways, i.e. any error may be an omission and a re-issued Connection Offer could be higher or lower than the original Connection Charge.
  - Some tolerances for the error would apply, for example within 5% or £150 (whichever is the greater). This prevents a disproportionate effect for say small lengths of cable if our view and your view on the required length differ.
  - The QAS is not intended to introduce standard charges for connections customers.
  - The QAS will have specified time limits whereby you can challenge the Connection Charge but will not preclude you from accepting the Connection Charge.
- 7.10 Where you believe the Connection Offer provided by us is outside the “bandwidth” in the indicative charges tables contained in this statement then you can enter the QAS.
- 7.11 You can enter the QAS by contacting us at the address given in paragraph 1.31.

## A Budget Estimates

7.12 If you are unable to make a formal Application because certain information that we require to make a Connection Offer is not available or if you are not in a position to progress to the construction phase, we can provide an indication of the charge for making the connection by means of a Budget Estimate (see paragraph 2.8 for further details). Our charges associated with the provision of Budget Estimates in advance of a formal Application are set out in the table below:-

Category	Charge
<b>Demand</b>	
Single LV Service Demand Connection <sup>A</sup>	Zero
2 to 4 services single phase LV, no extension to LV network <sup>B</sup>	Zero
1-4 Premises, single phase LV, extension to the LV network <sup>C</sup> required	Zero
1 three phase LV service with whole current metering to a single Premises <sup>D</sup>	Zero
Other LV connection(s) with a total load up to 100kVA LV	£300
Other LV connection(s) with a total load greater than 100kVA and up to 250kVA LV not covered by the above	£300
Connection greater than 250kVA and up to 1MVA at LV	£300
Connection up to 250kVA at HV	£300
Connection greater than 250kVA and up to 1MVA at HV	£300
Connection greater than 1MVA and up to 3MVA at HV	£300
Connection greater than 3MVA and up to 10MVA at HV	£520
Connection up to 10MVA at EHV and at 132kV	£880
Connection greater than 10MVA and up to 50MVA	£880
Connection greater than 50MVA	£880
<b>Generation</b>	
Connection of a single Small Scale Embedded Generator	Zero

Connection of other generation up to 20kVA not covered by the above at LV	£240
Connection of other generation greater than 20kVA and up to 50kVA at LV	£240
Connection of other generation greater than 50kVA at LV	£300
Connection of generation up to 250kVA at HV	£300
Connection of generation up to 1MVA at HV	£350
Connection of generation greater than 1MVA at HV	£440
Connection of generation up to 10MVA at EHV and at 132kV	£1,140
Connection of generation greater than 10MVA and up to 50MVA at EHV and at 132kV	£1,140
Connection of generation greater than 50MVA	£1,140
A Refer to 7.6 above for detailed definition.	
B Refer to 7.6 above, Small Project Demand Connection (a) for detailed definition.	
C Refer to 7.6 above, Small Project Demand Connection (b) for detailed definition.	
D Refer to 7.6 above, Small Project Demand Connection (c) for detailed definition.	

Note 1: “LV”, “HV”, or “EHV” in the table above denotes the highest voltage of assets installed including any associated Reinforcement or diversionary works.

Note 2; “Small Scale Embedded Generator” as defined in 2.33

## B Feasibility Studies

- 7.13 Prior to making a formal Application for a Connection Offer you may request we undertake a Feasibility Study to establish the viability of making a connection to our Distribution System. We will carry out preliminary network analysis and provide an indicative connection assessment which will include the results of the network analysis and an outline of the engineering scheme to allow the connection. We will require payment in advance of the study being made and will notify you of the relevant study charges prior to commencing work.
- 7.14 Our charges associated with the provision of Feasibility Studies involving design in advance of a formal Connection Application are set out in the table below. Charges for any other activities, such as excavation works will be individually assessed and agreed with you before these are undertaken. The Minimum Charge will always apply. Additional charges will only be applicable where the Applicant amends their connection requirements which necessitates us to carry out further analysis or assessment:-

Category	Minimum Charge	Additional Charge per hour
<b>Demand</b>		
Single LV Service Demand Connection <sup>A</sup>	Zero	Zero
2 to 4 services single phase LV, no extension to LV network <sup>B</sup>	Zero	Zero
1-4 Premises, single phase LV, extension to the LV network <sup>C</sup> required	Zero	Zero
1 three phase LV service with whole current metering to a single Premises <sup>D</sup>	Zero	Zero
Other LV connection(s) with a total load up to 100kVA LV	£530	Zero
Other LV connection(s) with a total load greater than 100kVA and up to 250kVA LV not covered by the above	£530	Zero
Connection greater than 250kVA and up to 1MVA at LV	£530	Zero
Connection up to 250kVA at HV	£610	Zero
Connection greater than 250kVA and up to 1MVA at HV	£610	Zero
Connection greater than 1MVA and up to 3MVA at HV	£760	Zero
Connection greater than 3MVA and up to 10MVA at HV	£1,050	Zero
Connection up to 10MVA at EHV and at 132kV	£2,380	

Connection greater than 10MVA and up to 50MVA	£2,380	
Connection greater than 50MVA	£2,380	
<b>Generation</b>		
Connection of a single Small Scale Embedded Generator	Zero	Zero
Connection of other generation up to 20kVA not covered by the above at LV	£360	Zero
Connection of other generation greater than 20kVA and up to 50kVA at LV	£360	Zero
Connection of other generation greater than 50kVA at LV	£450	Zero
Connection of generation up to 250kVA at HV	£530	Zero
Connection of generation greater than 250kVA and up to 1MVA at HV	£530	Zero
Connection of generation greater than 1MVA at HV	£790	Zero
Connection of generation up to 10MVA at EHV and at 132kV	£2,380	Zero
Connection of generation greater than 10MVA and up to 50MVA at EHV and at 132kV	£2,380	Zero
Connection of generation greater than 50MVA	£2,380	Zero
A Refer to 7.6 above for detailed definition.		
B Refer to 7.6 above, Small Project Demand Connection (a) for detailed definition.		
C Refer to 7.6 above, Small Project Demand Connection (b) for detailed definition.		
D Refer to 7.6 above, Small Project Demand Connection (c) for detailed definition.		

Note 1: “LV”, “HV”, or “EHV” in the table above denotes the highest voltage of assets installed including any associated Reinforcement or diversionary works.

Note 2; “Small Scale Embedded Generator” as defined in 2.33

## C Assessment and Design for all relevant work

7.15 For applications received in accordance with Section 2 of this Statement, our charges associated with assessing the impact of the connection on the distribution system, designing any Extension Assets and/ or Reinforcement and processing the application are set out in the table below. We may levy additional assessment and design charges where the work undertaken exceeds the costs included in the minimum charge or requires assessing the impact of the connection on the transmission system. The charges are standard charges based on the size and type of the connection and the highest voltage of assets installed including any associated Reinforcement or diversionary works. The table shows the amount of the charge that is payable in relation to the provision of our connection offer, and the amount of the charge that is payable in relation to acceptance of our connection offer. Further information about the timing of these charges and the circumstances where each applies may be provided elsewhere in this document:-

Category	Minimum Charge	Additional Charge per hour	Timing of charge	
			Connection Offer	Acceptance
<b>Demand</b>				
Single LV Service Demand Connection <sup>A</sup>	Zero	N/A	Zero	Zero
2 to 4 services single phase LV, no extension to LV network <sup>B</sup>	Zero	N/A	Zero	Zero
1-4 Premises, single phase LV, extension to the LV network <sup>C</sup> required	Zero	N/A	Zero	Zero
1 three phase LV service with whole current metering to a single Premises <sup>D</sup>	Zero	N/A	Zero	Zero
Other LV connection(s) with a total load up to 100kVA LV	£660	Zero	£660	Zero
Other LV connection(s) with a total load greater than 100kVA and up to 250kVA LV not covered by the above	£660	Zero	£660	Zero
Connection greater than 250kVA and up to 1MVA at LV	£840	Zero	£840	Zero
Connection up to 250kVA at HV	£840	Zero	£840	Zero
Connection greater than 250kVA and up to 1MVA at HV	£1,220	Zero	£1,220	Zero
Connection greater than 1MVA and up to 3MVA at HV	£1,220	Zero	£1,220	Zero
Connection greater than 3MVA and up to 10MVA at HV	£2,480	Zero	£2,480	Zero

Connection up to 10MVA at EHV and at 132kV	£8,480	Zero	£8,480	Zero
Connection greater than 10MVA and up to 50MVA	£8,480	Zero	£8,480	Zero
Connection greater than 50MVA	£8,480	Zero	£8,480	Zero
<b>Generation</b>				
Connection of a single Small Scale Embedded Generator	Zero	N/A	Zero	Zero
Connection of other generation up to 20kVA not covered by the above at LV	£660	N/A	£660	Zero
Connection of other generation greater than 20kVA and up to 50kVA at LV	£660	N/A	£660	Zero
Connection of other generation greater than 50kVA at LV	£840	N/A	£840	Zero
Connection of other generation up to 250kVA at HV	£1,260	Zero	£1,260	Zero
Connection of generation greater than 250kVA and up to 1MVA at HV	£1,720	Zero	£1,720	Zero
Connection of generation greater than 1MVA at HV	£3,190	Zero	£3,190	Zero
Connection of generation up to 10MVA at EHV and at 132kV	£8,480	Zero	£8,480	Zero
Connection of generation greater than 10MVA and up to 50MVA at EHV and 132kV	£8,480	Zero	£8,480	Zero
Connection of generation greater than 50MVA	£8,480	Zero	£8,480	Zero
A Refer to 7.6 above for detailed definition.				
B Refer to 7.6 above, Small Project Demand Connection (a) for detailed definition.				
C Refer to 7.6 above, Small Project Demand Connection (b) for detailed definition.				
D Refer to 7.6 above, Small Project Demand Connection (c) for detailed definition.				

Note 1: “LV”, “HV”, or “EHV” in the table above denotes the highest voltage of assets installed including any associated Reinforcement or diversionary works.

Note 2; “Small Scale Embedded Generator” as defined in 2.33

## D CIC Assessment and Design of the Non-Contestable Work

7.16 For applications received in accordance with Section 3 of this Statement, our charges associated with the identification of the most appropriate point on the existing Distribution System for connection of the Extension Assets and the design of any Reinforcement and processing the application are set out in the table below. We may levy additional assessment and design charges where the work undertaken exceeds the costs included in the minimum charge or requires assessing the impact of the connection on the transmission system. The charges are standard charges based on the size and type of the connection and the highest voltage of assets installed including any associated Reinforcement or diversionary works. The table shows the amount of the charge that is payable in relation to the provision of our connection offer, and the amount of the charge that is payable in relation to your acceptance of our connection offer. Further information about the timing of these charges and the circumstances where each applies may be provided elsewhere in this document:-

Category	Minimum Charge	Additional Charge per hour	Timing of charge	
			Connection Offer	Acceptance
<b>Demand</b>				
Single LV Service Demand Connection <sup>A</sup>	Zero	N/A	Zero	Zero
2 to 4 services single phase LV, no extension to LV network <sup>B</sup>	Zero	N/A	Zero	Zero
1-4 Premises, single phase LV, extension to the LV network <sup>C</sup> required	Zero	N/A	Zero	Zero
1 three phase LV service with whole current metering to a single Premises <sup>D</sup>	Zero	N/A	Zero	Zero
Other LV connection(s) with a total load up to 100kVA LV	£480	Zero	£480	Zero
Other LV connection(s) with a total load greater than 100kVA and up to 250kVA LV not covered by the above	£610	Zero	£610	Zero
Connection greater than 250kVA and up to 1MVA at LV	£610	Zero	£610	Zero
Connection up to 250kVA at HV	£610	Zero	£610	Zero
Connection greater than 250kVA and up to 1MVA at HV	£1,070	Zero	£1,070	Zero
Connection greater than 1MVA and up to 3MVA at HV	£1,070	Zero	£1,070	Zero

Connection greater than 3MVA and up to 10MVA at HV	£2,000	Zero	£2,000	Zero
Connection up to 10MVA at EHV and at 132kV	£7,690	Zero	£7,690	Zero
Connection greater than 10MVA and up to 50MVA	£7,690	Zero	£7,690	Zero
Connection greater than 50MVA	£7,690	Zero	£7,690	Zero
<b>Generation</b>				
Connection of a single Small Scale Embedded Generator	Zero	Zero	Zero	Zero
Connection of other generation up to 20kVA not covered by the above at LV	£480	N/A	£480	<u>Zero</u>
Connection of other generation greater than 20kVA and up to 50kVA at LV	£480	N/A	£480	<u>Zero</u>
Connection of other generation greater than 50kVA at LV	£610	N/A	£610	<u>Zero</u>
Connection of generation up to 250kVA at HV	£1,070	Zero	£1,070	Zero
Connection of generation greater than 250kVA and up to 1MVA at HV	£1,370	Zero	£1,370	Zero
Connection of generation greater than 1MVA at HV	£2,790	Zero	£2,790	Zero
Connection of generation up to 10MVA at EHV and at 132kV	£7,690	Zero	£7,690	Zero
Connection of generation greater than 10MVA and up to 50MVA at EHV and at 132kV	£7,690	Zero	£7,690	Zero
Connection of generation greater than 50MVA	£7,690	Zero	£7,690	Zero
A Refer to 7.6 above for detailed definition.				
B Refer to 7.6 above, Small Project Demand Connection (a) for detailed definition.				
C Refer to 7.6 above, Small Project Demand Connection (b) for detailed definition.				
D Refer to 7.6 above, Small Project Demand Connection (c) for detailed definition.				

Note 1: “LV”, “HV”, or “EHV” in the table above denotes the highest voltage of assets installed including any associated Reinforcement or diversionary works.

Note 2; “Small Scale Embedded Generator” as defined in 2.33

## E CIC Design Approval of the Contestable Work

7.17 For application received in accordance with Section 3 of this Statement, our charges associated with the approval of an Extension Asset design produced by an ICP are set out in the Table below:-

Category	Charge
<b>Demand</b>	
Single LV Service Demand Connection <sup>A</sup>	£122
2 to 4 services single phase LV, no extension to LV network <sup>B</sup>	£122
1-4 Premises, single phase LV, extension to the LV network <sup>C</sup> required	£122
1 three phase LV service with whole current metering to a single Premises <sup>D</sup>	£122
Other LV connection(s) with a total load up to 100kVA LV	£366
Other LV connection(s) with a total load greater than 100kVA and up to 250kVA LV not covered by the above	£366
Connection greater than 250kVA and up to 1MVA at LV	£361
Connection up to 250kVA at HV	£481
Connection greater than 250kVA and up to 1MVA at HV	£481
Connection greater than 1MVA and up to 3MVA at HV	£601
Connection greater than 3MVA and up to 10MVA at HV	£962
Connection up to 10MVA at EHV and at 132kV	POA
Connection greater than 10MVA and up to 50MVA	POA
Connection greater than 50MVA	POA
<b>Generation</b>	
Connection of a single Small Scale Embedded Generator	Zero
Connection of other generation up to 20kVA not covered by the above at LV	£366
Connection of other generation greater than 20kVA and up to 50kVA at LV	£366

Connection of other generation greater than 50kVA at LV	£481
Connection of generation up to 250kVA at HV	£481
Connection of generation greater than 250kVA and up to 1MVA at HV	£481
Connection of generation greater than 1MVA at HV	£962
Connection of generation up to 10MVA at EHV and at 132kV	POA
Connection of generation greater than 10MVA and up to 50MVA at EHV and at 132kV	POA
Connection of generation greater than 50MVA	POA
A Refer to 7.6 above for detailed definition.	
B Refer to 7.6 above, Small Project Demand Connection (a) for detailed definition.	
C Refer to 7.6 above, Small Project Demand Connection (b) for detailed definition.	
D Refer to 7.6 above, Small Project Demand Connection (c) for detailed definition.	

Note 1: “LV”, “HV”, or “EHV” in the table above denotes the highest voltage of assets installed including any associated Reinforcement or diversionary works.

Note 2; “Small Scale Embedded Generator” as defined in 2.33

## **F Construction**

### **F1 Connections covered by Quotation Accuracy Scheme**

- 7.18 Our charges associated with the construction of small connections (as defined in 7.6) are set out below:-
- 7.19 Please note that you will also need to include charges for Assessment and Design, if any, as outlined in paragraph 7.15.
- 7.20 These charges are covered by the Quotation Accuracy Scheme outlined under paragraphs 7.7 to 7.11 of this Section.
- 7.21 Charges in the tables below include:
- Both the Contestable Work and Non-Contestable Work, however these will be identified as separate elements within your Connection Offer
  - Liaison with the highways authorities, submitting street works notices and/or permit applications
  - Providing and setting out signing, lighting and guarding
- 7.22 The minimum and maximum values of charges shown in the following tables are designed to provide you with an indication of the range of charges that would normally apply to a particular activity and therefore not absolute limits on the minimum and maximum value of charge that may be levied.
- 7.23 Additional costs sometimes need to be included within your quotation to meet your specific connection requirements and these are excluded from the min/max range of potential connection charges set out below. Where additional costs have been included we will provide an explanation. Examples of these additional costs can include, but are not limited to:
- Easements, wayleaves or land transfers if required, as detailed in Table I, Land Rights
  - Traffic management costs, e.g. temporary traffic lights and road closures
  - Lane rental charges and permit costs imposed by local authorities
  - Works outside of normal business hours (including weekends, bank holidays and night working)
  - Shutdowns to isolate existing sections of network to enable the works to be carried out safely, when required
  - Cable routes with engineering difficulties, e.g. river and rail crossings
  - Same day reinstatement of excavated grounds, where requested by yourselves or the Local Authority
- 7.24 What factors influence the cost:
- The size and length of cable we are required to install to facilitate your required load
  - The location of the point of connection onto our existing network
  - The type of footpath we are required to excavate and reinstate, e.g. a tarmac footpath would be cheaper to excavate and reinstate than a footpath made up with paving slabs which may need to be temporarily removed from site for the duration of the works

- The type of carriageway we are required to excavate and reinstate, e.g. a cul-de-sac could be cheaper to excavate and reinstate than a main road passing through a city centre
- Charges levied by third parties in association with a connection, e.g. fees requested by the Local Authority for road closure applications

7.25 How you can minimise the connection cost:

- You can carry out any excavation works required within your own land ownership boundary. We will specify the requirements such as trench depths/widths and the type of ducting to be utilised, where required.
- Ask your nominated electrician to calculate your load requirements, allowing for diversity. This will ensure you do not request a connection larger than you need.
- Consider your proposed service termination location. The greater the distance between the existing network and your required termination, the greater the connection cost could be. If you are unsure of where the existing network is located in regards to your property, please request network plans for the area.

7.26 Further information can be found on our website:

<http://www.northernpowergrid.com/>

**Range of potential charges for underground connection works**

Area			Yorkshire	
Activity	Surface Type/Engineering Task	Unit	Min	Max
<b>Single phase underground service;</b> Inclusive of connecting new service cable onto the mains and termination of the service cable. Where surface types are specified, the cost is inclusive of excavation and reinstatement of a joint hole to expose the existing cable.  Costs are exclusive of cable installation – Please refer to ‘Cable Installation’ section below for cable provision, installation and trenching costs.	Typical footpath	#	£1,170	£1,170
	Typical unmade ground / grass verge	#	£878	£878
	Typical carriageway	#	£1,278	£1,519
	Service connection requiring no excavation by DNO*	#	N/A	N/A

<p><b>Three phase underground service (up to 55kVA);</b></p> <p>Inclusive of connecting new service cable onto the mains and termination of the service cable. Where surface types are specified, the cost is inclusive of excavation and reinstatement of a joint hole to expose the existing cable.</p> <p>Costs are exclusive of cable installation – Please refer to ‘Cable Installation’ section below for cable provision, installation and trenching costs.</p>	Typical footpath	#	£1,311	£1,311
	Typical unmade ground / grass verge	#	£1,001	£1,001
	Typical carriageway	#	£1,334	£1,575
	Service connection requiring no excavation by DNO*	#	#N/A	#N/A
<p><b>Low voltage underground mains cable extension;</b></p> <p>Inclusive of connecting a new mains cable onto the existing mains cable and terminating to a bottle end. Where surface types are specified, the cost is inclusive of excavation and reinstatement of a joint hole to expose the existing cable.</p> <p>Costs are exclusive of cable installation – Please refer to ‘Cable Installation’ section below for cable provision, installation and trenching costs.</p>	Typical footpath	#	£2,060	£4,060
	Typical unmade ground/grass verge	#	£1,612	£2,497
	Typical carriageway	#	£2,570	£4,150
	Mains extension requiring no excavation by DNO*	#	N/A	N/A
<p><b>Cable Installation;</b></p> <p>For trench works beyond the joint hole, inclusive of the provision and installation of cable. Where surface types are specified, the cost is inclusive of ground excavation and reinstatement. Additional metres of LV mains cable</p>	Typical footpath	m	£190	£220
	Typical unmade ground/grass verge	m	£123	£152
	Typical carriageway	m	£301	£402
	Cable installation requiring no excavation by DNO*	m	£74	£104

\* In some circumstances, sections of excavation works will not necessarily need to be carried out by the DNO. This can include excavation within your own land ownership boundary which you can arrange to carry out yourself.

**Range of potential charges for overhead connection works**

Area				Yorkshire	
Activity	Surface Type/ Task	Engineering	Unit	Min	Max
<b>Aerial service connection;</b> New overhead connection with pole termination, up to 10 metres of overhead cable and termination of the service cable. No costs are included for any replacement or additional poles.	Single phase		#	£1,339	£1,339
	Three phase		#	£583	£583
<b>Overhead to underground service connection;</b> New underground service with termination to a pole, including up to 10 metres of cable up the pole and termination of the service cable. No costs are included for any replacement or additional poles.  Costs are exclusive of underground cable installation – Please refer to ‘Cable Installation’ section above for underground cable provision, installation and trenching costs	Single phase		#	£1,515	£1,515
	Three phase		#	£1,578	£1,578
<b>Low Voltage overhead mains cable extension;</b> Inclusive of connecting a new span of three phase low voltage overhead line, a single new pole and stay wire.	Single span overhead mains extension		#	£5,148	£8,826
<b>Overhead to underground low voltage mains cable extension;</b> Inclusive of connecting a new three phase low voltage mains cable to a pole, including up to 10 metres of cable up the pole and termination of the service cable. No costs are included for any replacement or additional poles.  Costs are exclusive of underground cable installation – Please refer to ‘Cable Installation’ section above for underground cable provision, installation and trenching costs	Underground to overhead point of connection mains extension		#	£866	£2,551

## **F2 Service Alterations**

- 7.27 Our charges associated with changes of service positions for single services (as defined in 7.6) are set out below.
- 7.28 Please note that you will need to include charges for Assessment and Design, if any, as outlined in paragraph 7.15.
- 7.29 These charges are covered by the Quotation Accuracy Scheme outlined under paragraphs 7.7 to 7.11 of this Section.
- 7.30 Charges in the tables below include:
- Both the Contestable Work and Non-Contestable Work, however these will be identified as separate elements within your Connection offer
  - Liaison with the highways authorities, submitting street works notices and / or permit applications
  - Providing and setting out signing, lighting and guarding
- 7.31 The minimum and maximum values of charges shown in the following tables are designed to provide you with an indication of the range of charges that would normally apply to a particular activity and are therefore not absolute limits on the minimum nor the maximum value of charge that may be levied.
- 7.32 Additional costs sometimes need to be included within your quotation to meet your specific connection requirements and these are excluded from the min/max range of potential service alteration charges set out below. Where additional costs have been included we will provide an explanation. Examples of these additional costs can include, but are not limited to:
- Easements, wayleaves or land transfers, if required, as detailed in Table I, Land Rights
  - Traffic management costs, e.g. temporary traffic lights and road closures
  - Lane rental charges and permit costs imposed by local authorities
  - Works outside of normal business hours (including weekends, bank holidays and night working)
  - Shutdowns to isolate existing sections of network to enable the works to be carried out safely, if required
  - Cable routes with engineering difficulties, e.g. river and rail crossings
  - Same day reinstatement of excavated grounds, where requested by yourself or the Local Authority
- 7.33 What factors influence the cost:
- The size and length of cable we are required to install to facilitate your required load
  - The location of the point of connection onto our existing network
  - The type of footpath we are required to excavate and reinstate, e.g. a tarmac footpath could be cheaper to excavate and reinstate than a footpath made up with paving slabs which may need to be temporarily removed from site for the duration of the works
  - The type of carriageway we are required to excavate and reinstate, e.g. a cul-de-sac could be cheaper to excavate and reinstate than a main road passing through a city centre

- Charges levied by third parties in association with a service alteration, e.g. fees requested by the Local Authority for road closure applications

7.34 How you can minimise the service alteration cost:

- You can carry out any excavation works required within your own land ownership boundary. We will specify the requirements such as trench depths / widths and the type of ducting to be utilised, where required.
- Consider your proposed new service termination location. The greater the distance between the existing network and your required new termination position, the greater the service alteration cost could be.

7.35 Further information can be found on our website:

<http://www.northernpowergrid.com/>

**Range of potential charges for underground service alteration works**

Area			Yorkshire	
Activity	Surface Type / Engineering Task	Unit	Min	Max
<b>Single phase underground service alteration;</b> Inclusive of connecting new service cable onto the existing service cable and termination. Where surface types are specified, the cost is inclusive of excavation and reinstatement of a joint hole to expose the existing service cable.  Costs are exclusive of cable installation – Please refer to ‘Cable Installation’ section below for underground cable provision, installation and trenching costs.	Typical footpath	#	£969	£969
	Typical unmade ground / grass verge	#	£714	£714
	Typical carriageway	#	£1,048	£1,085
	Service alteration requiring no excavation by the DNO*	#	£661	£661
<b>Three phase underground service alteration (up to 55kVA);</b> Inclusive of connecting new service cable onto the existing service cable and termination. Where surface types are specified, the cost is inclusive of excavation and reinstatement of a joint hole to expose the existing service cable.  Costs are exclusive of underground cable installation – please refer to ‘Cable Installation’ section below for underground cable provision, installation and trenching costs	Typical footpath	#	£1,011	£1,011
	Typical unmade ground / grass verge	#	£836	£836
	Typical carriageway	#	£1,090	£1,127
	Service alteration requiring no excavation by the DNO*	#	N/A	N/A

<b>Overhead service alteration;</b> Including removal of existing service, connection of replacement service with up to 10 metres of overhead cable and termination of the service. Assumes no additional pole required.	Single phase	#	£840	£840
	Three phase	#	£956	£956
<b>Overhead to underground service alteration;</b> Including removal of the existing overhead service and installation of new underground service with connection to a pole, up to 10 metres of cable up the pole and termination of the service cable. No costs are included for any replacement or additional poles.  Costs are exclusive of underground cable installation – Please refer to ‘Cable Installation’ section below for underground cable provision, installation and trenching.	Single phase	#	£2,630	£2,630
	Three phase	#	£2,696	£2,696
<b>Cable installation;</b> For trench works beyond the joint hole or pole termination, inclusive of the provision and installation of cable. Including excavation and reinstatement of a trench in a typical surface type, unless specified as requiring no excavation by the DNO.	Typical footpath	m	£109	£109
	Typical unmade ground / grass verge	m	£56	£57
	Typical carriageway	m	£188	£188
	Cable installation requiring no excavation by DNO*	m	£15	£16

\* In some circumstances, sections of excavation works will not necessarily need to be carried out by the DNO. This can include excavation within your own land ownership boundary which you can arrange to carry out yourself.

**F3 Other LV Services not covered by the QAS**

- 7.36 Our charges associated with construction of services to the Entry/ Exit Point that are not covered by the Quotation Accuracy Scheme are given in Table below. These charges are for the connection of the service cable only.
- 7.37 Charges below cover both the Contestable and Non-Contestable Work, however these will be identified separately on your Connection Offer/ POC Offer. Note that your Connection Offer will also include charges for Assessment and Design as outlined in paragraph 7.15 and may include other charges.
- 7.38 The charges in the table below are inclusive of liaison with highway authorities, sending street works notices and signing, lighting and guarding. These charges exclude traffic management costs eg temporary traffic lights, road closures etc and Traffic Management Act costs. Where these additional charges are relevant, these will be included in your connection charge.
- 7.39 These charges exclude charges for any easement, wayleaves or land transfers that are required and these are detailed in Table I Land Rights.

Area			Northern Powergrid (Yorkshire)	
Activity	Description	Unit	Min	Max
<b>Single phase service, upto 100A [20kVA]</b>	One single phase service, from a passing or extended main, including service cable, mains service joint, and termination. Service cable length up to 5 metres per service. Duct installation, excavation and backfill joint hole undertaken by third party.	#	£1,526	£1,902
	Multiple single phase services, from an extended main, including service cable, mains service joints, and termination. Service cable length up to 5 metres per service. Duct installation, excavation and backfill joint hole undertaken by third party.	#	£1,586	£1,647
	Excavation and backfill of joint hole	#	£322	£809
	Additional metres of service cable	m	£15	£31

<b>Three phase service up to 100A per phase [55kVA]</b>	A single three phase service, from a passing main, including service cable, mains service joint, and termination. Service cable length up to 5 metres per service. Duct installation, excavation and backfill joint hole undertaken by third party.	#	£1,428	£1,922
	Excavation and backfill of joint hole	#	£322	£809
	Additional metres of three phase service cable	m	£17	£34
<b>Three phase service up to 200A per phase [120kVA]</b>	A single three phase service, from a passing main, including service cable, mains service joint, and termination. Service cable length up to 5 metres per service. Duct installation, excavation and backfill joint hole undertaken by third party.	#	£2,282	£3,357
	Excavation and backfill of joint hole	#	£322	£1,386
	Additional metres of three phase service cable	m	£36	£55
<b>Three phase service up to 300A per phase [180kVA]</b>	A single three phase service, from a passing main, including service cable, mains service joint, and termination. Service cable length up to 5 metres per service. Duct installation, excavation and backfill joint hole undertaken by third party.	#	£2,361	£3,357
	Excavation and backfill of joint hole	#	£322	£1,386
	Additional metres of three phase service cable	m	£52	£55
<b>Three phase service up to 300A per phase [240kVA]</b>	A single three phase service, from a passing main, including service cable, mains service joint, and termination. Service cable length up to 5 metres per service. Duct installation, excavation and backfill joint hole undertaken by third party.	#	£2,361	£3,357
	Excavation and backfill of joint hole	#	£322	£1,386
	Additional metres of three phase service cable	m	£52	£55

<b>Three phase service over [240 kVA]</b>	A single three phase service, from a suitable source, including mains or service cable terminations in heavy duty cut-out. Service cable length up to 5 metres per service. Duct installation, excavation and backfill joint hole undertaken by third party.	#	£2,425	£3,357
	Excavation and backfill of joint hole		£322	£1,386
	Additional metres of three phase service cable	m	£59	£55
<b>Services to Multi-occupied Premises</b>	Installation of a multi-way cut-out up to 10 way from a passing or extended main, including cables for adjacent communal metering, mains service joint, and termination. Service cable length up to 5 metres per service. Duct installation, excavation and backfill joint hole undertaken by third party.	#	£3,357	£4,108
	Installation of a multi-way cut-out of greater than 10 way from a passing or extended main, including cables for adjacent communal metering, mains service joint, and termination. Service cable length up to 5 metres per service. Duct installation, excavation and backfill joint hole undertaken by third party.	#	N/A	N/A
	Installation of rising mains and laterals excluding civils and containment work.	M	N/A	N/A
	Excavation and backfill of joint hole	#	£322	£1,386
	Additional metres of three phase service cable	m	£36	£55

Note 1: Reinstatement costs for cobbles, granite setts, large flag stones etc. will be higher and will be reflected in the Connection Charge

#### **F4 Unmetered Supplies**

- 7.40 Our charges associated with construction activities in respect of unmetered supplies.
- 7.41 Charges below cover both the Contestable and Non-Contestable Work, however these will be identified separately on your Connection Offer/ POC Offer. Note that your Connection Offer will also include charges for Assessment and Design as out lined in paragraph 7.15 and may include other charges.
- 7.42 The charges in the table below are inclusive of liaison with highway authorities, sending street works notices and signing, lighting and guarding. These charges exclude traffic management costs eg temporary traffic lights, road closures etc and Traffic Management Act costs. Where these additional charges are relevant, these will be included in your connection charge.

7.43 These charges exclude charges for any easement, wayleaves or land transfers that are required and these are detailed in Table I Land Rights.

Area			Northern Powergrid (Yorkshire)	
Activity	Description	Unit	Min	Max
<b>Unmetered Supplies</b>	New connection up to 5 metres excluding excavation and reinstatement	#	POA	POA
	Disconnection excluding excavation and reinstatement	#	POA	POA
	Transfer or reconnection up to 5 metres excluding excavation and reinstatement	#	POA	POA
	Additional metres of services cable excluding excavation and reinstatement	m	£20	£20
<b>Unmetered Supplies</b>	New connection up to 5 metres on same side of road including excavation and reinstatement	#	£1,181	£2,021
	New connections up to 10m on other side of road including excavation and reinstatement		£3,296	£4,332
	Disconnection including excavation and reinstatement	#	£661	£962
	Transfer or reconnection up to 5 metres including excavation and reinstatement	#	£762	£1,095
	Additional metres of services cable including excavation and reinstatement	m	£57	£156
<b>Unmetered Supplies</b>	Rent-a-Jointer team (excluding materials)	day	POA	POA
<b>Unmetered Supplies</b>	Administrative charge for ICP work	#	POA	POA

Note 1: Reinstatement costs for cobbles, granite setts, large flag stones etc. will be higher and will be reflected in the Connection Charge

### F5 Mains Cables

7.44 Our charges associated with cables are set out in the table below:-

7.45 Charges below cover both the Contestable and Non-Contestable Work, however these will be identified separately on your Connection Offer/ POC Offer. Note that your Connection Offer will also include charges for Assessment and Design as out lined in paragraph 7.15 and may include other charges.

- 7.46 The charges in the table below are inclusive of liaison with highway authorities, sending street works notices and signing, lighting and guarding. These charges exclude traffic management costs eg temporary traffic lights, road closures etc and Traffic Management Act costs. Where these additional charges are relevant, these will be included in your connection charge.
- 7.47 These charges exclude charges for any easement, wayleaves or land transfers that are required and these are detailed in Table I Land Rights.
- 7.48 Where the cable charges are associated with the connection there will be an additional charge for the Final Connection to our existing Distribution System and these charges are identified in 7.50.

Area			Northern Powergrid (Yorkshire)	
Activity	Description	Unit	Min	Max
<b>Extension of LV mains cable of 95mm<sup>2</sup> or less</b>	Lay 10m cable or less including jointing onto existing main in prepared trench or pulling through duct installed by others. All backfill and reinstatement by others.	#	£2,009	£2,701
	Additional metres of mains cable	m	£36	£40
	Lay 10m cable or less in typical* footpath or carriageway, including excavation and reinstatement to match the existing surface	#	£3,560	£7,604
	Additional metres of mains cable	m	£124	£264
	Lay 10m cable or less in unmade ground, including excavation and reinstatement to match the existing surface	#	£2,376	£3,069
	Additional metres of mains cable	m	£73	£128
<b>Extension of LV mains cable of between 95mm<sup>2</sup> and 185mm<sup>2</sup></b>	Lay 10m cable or less in prepared trench or pulling through duct installed by others. All backfill and reinstatement by others including jointing onto existing main.	#	£2,166	£2,819
	Additional metres of mains cable	m	£52	£52
	Lay 10m cable or less in typical* footpath or carriageway, including excavation and reinstatement to match the existing surface	#	£3,503	£7,833
	Additional metres of mains cable	m	£140	£276
	Lay 10m cable or less in unmade ground, including excavation and reinstatement to match the existing surface	#	£2,319	£3,187
	Additional metres of mains cable	m	£89	£89
<b>Extension of LV mains cable of</b>	Lay 10m cable or less in prepared trench or pulling through duct installed by others. All backfill and reinstatement by others including jointing onto existing main.	#	£2,264	£2,855
	Additional metres of mains cable	m	£59	£55

<b>greater than 185mm<sup>2</sup></b>	Lay 10m cable or less in typical* footpath or carriageway, including excavation and reinstate to match the existing surface	#	£3,816	£7,869
	Additional metres of mains cable	m	£146	£280
	Lay 10m cable or less in unmade ground, including excavation and reinstate to match the existing surface	#	£2,632	£3,223
	Additional metres of mains cable	m	£95	£92

<b>Extension of HV mains cable</b>	Lay 20m cable or less in prepared trench or pulling through duct installed by others. All backfill and reinstatement by others including jointing onto existing main.	#	£4,695	£6,656
	Additional metres of mains cable	m	£57	£68
	Lay 20m cable or less in typical* footpath or carriageway, including excavation and reinstate to match the existing surface	#	£7,328	£13,619
	Additional metres of mains cable	m	£145	£292
	Lay 20m cable or less in unmade ground, including excavation and reinstate to match the existing surface	#	£5,430	£7,391
	Additional metres of mains cable	m	£94	£105
<b>Extension of 33kV mains cable</b>	Lay 30m cable or less in prepared trench or pulling through duct installed by others. All backfill and reinstatement by others including jointing onto existing main.	#	POA	POA
	Additional metres of mains cable	m	POA	POA
	Lay 30m cable or less in typical* footpath or carriageway, including excavation and reinstate to match the existing surface	#	POA	POA
	Additional metres of mains cable	m	POA	POA
	Lay 30m cable or less in unmade ground, including excavation and reinstate to match the existing surface	#	POA	POA
	Additional metres of mains cable	m	POA	POA
<b>Extension of 66kV mains cable</b>	Lay 30m cable or less in prepared trench or pulling through duct installed by others. All backfill and reinstatement by others including jointing onto existing main.	#	POA	POA
	Additional metres of mains cable	m	POA	POA
	Lay 30m cable or less in typical* footpath or carriageway, including excavation and reinstate to match the existing surface	#	POA	POA
	Additional metres of mains cable	m	POA	POA
	Lay 30m cable or less in unmade ground, including excavation and reinstate to match the existing surface	#	POA	POA

	Additional metres of mains cable	m	POA	POA
<b>Extension of 132kV mains cable</b>	Lay 40m cable or less in prepared trench or pulling through duct installed by others. All backfill and reinstatement by others including jointing onto existing main.	#	POA	POA
	Additional metres of mains cable	m	POA	POA
	Lay 40m cable or less in typical* footpath or carriageway, including excavation and reinstate to match the existing surface	#	POA	POA
	Additional metres of mains cable	m	POA	POA
	Lay 40m cable or less in unmade ground, including excavation and reinstate to match the existing surface	#	POA	POA
	Additional metres of mains cable	m	POA	POA

Note 1: These charges exclude special reinstatement requirements for example cobbles, granite sets, large flag stones etc

### F6 Overhead Lines

- 7.49 Our charges associated with overhead lines are set out in the table below.
- 7.50 Charges below cover both the Contestable and Non-Contestable Work, however these will be identified separately on your Connection Offer/ POC Offer. Note that your Connection Offer will also include charges for Assessment and Design as outlined in paragraph 7.15 and may include other charges.
- 7.51 The charges in the table below are inclusive of liaison with highway authorities, sending street works notices and signing, lighting and guarding. These charges exclude traffic management costs eg temporary traffic lights, road closures etc and Traffic Management Act costs. Where these additional charges are relevant, these will be included in your connection charge.
- 7.52 These charges exclude charges for any easement, wayleaves or land transfers that are required and these are detailed in Table I Land Rights.
- 7.53 Where the overhead line charges are associated with the connection there will be an additional charge for the Final Connection to our existing Distribution System and these charges are identified in 7.61.

Area			Northern Powergrid (Yorkshire)	
Activity	Description	Unit	Min	Max
<b>Extension of L:V overhead lines</b>	Erect a single span LV overhead line including termination pole (typical span length 50 m)	#	£3,046	£6,893
	Erect additional span LV overhead line (typical span length 50 m)	#		
<b>Extension of HV overhead lines</b>	Erect a single span HV overhead line including termination pole (typical span length 80 m)	#	£8,207	£14,223
	Erect additional span HV overhead line (typical span length 80 m)	#	£1,313	£5,245

<b>Extension of 33kV overhead lines</b>	Erect a single span 33kV overhead line including termination pole (typical span length x m)	#	POA	POA
	Erect additional span 33kV overhead line (typical span length x m)	#	POA	POA
<b>Extension of 66kV overhead lines</b>	Erect a single span 66kV overhead line including termination pole (typical span length x m)	#	POA	POA
	Erect additional span 66kV overhead line (typical span length x m)	#	POA	POA
<b>Extension of 132kV overhead lines</b>	Erect a single span 132kV overhead line including termination pole (typical span length x m)	#	POA	POA
	Erect additional span 132kV overhead line (typical span length x m)	#	POA	POA

## F7 Substations

7.54 Our charges associated with substations are set out in the table below:-

7.55 Charges below cover both the Contestable and Non-Contestable Work, however these will be identified separately on your Connection Offer/ POC Offer. Note that your Connection Offer will also include charges for Assessment and Design as outlined in paragraph 7.15 and may include other charges.

7.56 The charges in the table below are inclusive of liaison with highway authorities, sending street works notices and signing, lighting and guarding. These charges exclude traffic management costs eg temporary traffic lights, road closures etc and Traffic Management Act costs. Where these additional charges are relevant, these will be included in your connection charge.

7.57 These charges exclude charges for any easement, wayleaves or land transfers that are required and these are detailed in Table I Land Rights.

<b>Area</b>			<b>Northern Powergrid (Yorkshire)</b>	
<b>Activity</b>	<b>Description</b>	<b>Unit</b>	<b>Min</b>	<b>Max</b>
<b>HV/ LV substation up to 200kVA</b>	Install pole mounted transformer up to 100kVA including pole & stays	#	£8,337	£20,617
	Install pole mounted transformer greater than 100kVA including pole & stays	#	£15,270	£22,854
	Install a pad mounted transformer up to 200kVA	#	N/A	N/A
	Transformer change	#	£7,618	£23,393
<b>HV/ LV substation</b>	Install ground mounted transformer up to and including 315kVA including RMU and LV fuse board or circuit breaker.	#	£76,460	£95,244

<b>greater than 200kVA</b>	Install ground mounted transformer greater than 315kVA and up to and including 500kVA including RMU and LV fuse board/ cabinet or circuit breaker.	#	£83,697	£97,951
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	Install ground mounted transformer greater than 500kVA and up to and including 800kVA including RMU and LV fuse board/ cabinet or circuit breaker.	#	£93,254	£108,324
	Install ground mounted transformer greater than 800kVA and up to 1000kVA including RMU and LV fuse board/ cabinet or circuit breaker.	#	£91,600	£103,673
	Install ground mounted transformer greater than 1000kVA including RMU and LV fuse board/ cabinet or circuit breaker.	#	POA	POA
	Transformer change	#	£71,013	£107,151
HV only substation (customer owned HV/LV transformer)	Install an internal HV switchgear (e.g. RMU) and metered circuit breaker.	#	£61,821	£79,645
	Install an external HV switchgear (e.g. RMU) and metered circuit breaker.	#	N/A	N/A
EHV/ HV primary substation	New indoor single transformer substation	#	POA	POA
	New indoor double transformer substation	#	POA	POA
	New outdoor single transformer substation	#	POA	POA
	New outdoor double transformer substation	#	POA	POA
	Add an additional transformer at existing indoor substation	#	POA	POA
	Add an additional transformer at existing outdoor substation	#	POA	POA
	Change transformer	#	POA	POA
	Change HV switchgear	#	POA	POA
132kV/ EHV substation	New indoor single transformer substation	#	POA	POA
	New indoor double transformer substation	#	POA	POA
	New outdoor single transformer substation	#	POA	POA
	New outdoor double transformer substation	#	POA	POA
	Add an additional transformer at existing indoor substation	#	POA	POA
	Add an additional transformer at existing outdoor substation	#	POA	POA
	Change transformer	#	POA	POA
	Change HV switchgear	#	POA	POA

## G CIC Final Works and Phased Energisation

7.58 The charges set out in the table below set out the final connections to our network.

7.59 Charges below cover Non-Contestable Work or where we are asked to under-take live jointing on Contestable Assets, and will be identified separately on your Connection Offer. Note that your Connection Offer will also include charges for Assessment and Design as out lined in paragraph 7.15 and may include other charges.

7.60 These charges exclude charges for any easement, wayleaves or land transfers that are required and these are detailed in Table I Land Rights.

7.61 The charges below are exclusive of all cable laying or substation installation costs and all joint hole excavation and reinstatement. These will have been covered by separate charges or have been carried out by your ICP.

Activity	Description	Unit	Min	Max
<b>Service Connections</b>	Low voltage service joint to all sizes of low voltage main inclusive of service polarity and earth loop impedance test at the service position	#	£565	£1,166
<b>LV Mains Energisation</b>	Low voltage mains Energisation of all sizes by a mains joint to an existing cable of any size	#	£573	£1,305
	Low voltage bottle end to mains cable, any size	#	£233	£243
	Low voltage mains Energisation of all sizes by terminating to an existing piece of low voltage switchgear, including all associated operating costs	#	£1,858	£2,922
	Low voltage mains Energisation of all sizes by connection to an overhead line	#	£896	£3,285
<b>HV Mains Energisation</b>	High voltage cable Energisation of all sizes by a joint to an existing cable of any size including all associated operational costs	#	£1,814	£5,629
	High voltage cable Energisation of all sizes by connection to an existing overhead line including all associated operational costs	#	£2,188	£4,914
	High voltage cable Energisation of all sizes by termination to an existing piece of switchgear including all associated operational costs	#	£2,292	£5,718

<b>Operational work</b>	LV operational work including for identification of cables requiring LV operations only	#	POA	POA
	LV commissioning work including switching to commission LV assets installed by ICPs	#	POA	POA
	HV operational work including for identification of cables requiring HV operations	#	POA	POA
	HV commissioning work including all operational work required to isolate network and commission HV assets installed and jointed by ICPs	#	POA	POA

## H CIC Inspection and Monitoring of the Contestable Works

7.62 Our charges associated with site visits to inspect and Monitor the construction of the Extension Asset by ICPs are set out in the Table below. The frequency of inspection is set out in Section 6.

<b>Category</b>	<b>Unit</b>	<b>Charge</b>
LV Network	per site visit	£198
HV Network	per site visit	£198
EHV Network	per site visit	POA
132kV Network	per site visit	POA
HV/ LV Substation	per site visit	£198
EHV/ HV Substation	per site visit	POA
HV/ LV Civils	per site visit	£198
EHV/ HV Civils	per site visit	POA

## I Land Rights

7.63 Our charges associated with Land Rights are set out in the Table below. These charges excluded the cost of any compensation payable to third parties

7.64 Where your ICP chooses to negotiate Land Rights on our behalf the charges shown below will be reduced to cover our cost to process the documentation for forwarding to our solicitors.

Category	Charge	
	Min	Max
Residential development substation site from developer (including easements from developer)	£1327	POA
Commercial/industrial development substation site from developer (including easements from developer)	£1494	POA
Residential/commercial/industrial development substation site from third party owner(s) (including easements from same third party owner(s))	£2388	POA
Wayleave(s)/easement(s) only on a residential site from Developer	£50	POA
Wayleave(s)/easement(s) only on a commercial/Industrial site from Developer	£50	POA
Wayleave(s)/easement(s) from third party owner(s)	£50	POA
Acquisition of Consents specifically associated with overhead lines e.g. Section 37 of the Electricity Act approval to erect overhead lines etc	£50	£1135
Survey associated with overhead lines e.g. determination of pole positions, tree clearance etc.	£53/hr	£135/hr
Route marking prior to construction e.g. pegging of overhead line route and pole positions etc.	£53/hr	£135/hr
Acquisition of specific Environmental Consents e.g. Conservation Area, Listed Buildings etc.	POA	POA
Negotiations with individuals or organisations concerning nationally recommended compensation payments e.g. crop loss or land damage. This excludes any third party commercial compensation payment charges which will have to be negotiated separately by the Customer or their Agent.	POA	POA
Traffic Management Act Costs eg permits, lane rental	POA	POA

## J Other

7.65 Our miscellaneous charges associated with the provision of the connection are set out in the Table below..

<b>Category</b>	<b>Charge</b>
Negotiation of special terms	POA
Meetings not covered by other charges	POA
Abortive Visit	POA
Planning approval	POA
Traffic management costs eg temporary traffic lights, road closures, etc	POA

7.66 The Operation and Maintenance Percentage referred to in 5.12 is given in Section 6.

## Section 8 – Glossary of Terms

<b>Act</b>	the Electricity Act 1989 (as amended)
<b>Adoption Agreement</b>	is defined in paragraph 1.15
<b>Affected Parties</b>	is defined in paragraph 2.22.
<b>Application Date</b>	is defined in paragraph 2.22.
<b>Bilateral Connection Agreement</b>	an agreement between us and another LDNO setting out the terms and conditions under which an embedded network shall be entitled to be and remain connected to the Distribution System
<b>Budget Estimate</b>	Is defined in paragraph 2.8 and <b>Error! Reference source not found.</b>
<b>Business Day</b>	any day other than a Saturday, a Sunday, Christmas Day, Good Friday or a day which is a bank holiday within the meaning of the Banking and Financial Dealings Act 1971 and will be from 9:00am to 5:00pm (GMT or BST as applicable).
<b>Committed Network</b>	is defined in paragraph 2.22.
<b>Competition in Connections (CIC)</b>	is defined in paragraph 1.7.
<b>CIC Charges</b>	are the charges detailed in parts D, E, G, H, I, and J of Section 7.
<b>Connection Agreement</b>	is defined in paragraphs 1.16 to 1.17.
<b>Connection Charge</b>	the payment to be made by the applicant to us for the provision of the connection.
<b>Connection Offer</b>	is defined in paragraph 1.13.
<b>Contestable Work</b>	is defined in paragraphs 6.10 to 6.19.
<b>Curtailed Connection</b>	means a connection whereby the Required Capacity can be reduced by the Company.
<b>CUSC</b>	the Connection and Use of System Code which constitutes the contractual framework for connection to, and use of, the GB Transmission System.
<b>Customer</b>	the person requesting the connection.
<b>DCUSA</b>	the Distribution Connection and Use of System Agreement designated as such by the Authority under condition 22 of the Licence
<b>Dedicated Scheme</b>	Is defined in paragraph 5.40.
<b>De-energise</b>	to deliberately prevent the flow of electricity to or from an Exit/ Entry Point for any purpose other than a system outage on the our Distribution System (and cognate expressions shall be construed accordingly).
<b>Demand Connection</b>	a connection which is not a Generation Connection.
<b>Development Phase</b>	the five-year period, unless otherwise agreed with us, commencing on the date of Energisation of an embedded network, during which period the development is to be constructed.
<b>Disconnect</b>	means to permanently De-energise an Exit/ Entry Point by the removal of all or part of our equipment (and cognate expressions shall be construed accordingly).
<b>Distributed Generation Connections Guide</b>	The guide produced by us as required by our Licence which provides guidance on the connection process for distributed generation.
<b>Distribution Code</b>	is defined in paragraph 1.18.

<b>Distribution System</b>	the system (as defined in the Licence) consisting (wholly or mainly) of electric lines owned or operated by us and used for the distribution of electricity.
<b>ECCR</b>	the Electricity (Connection Charges) Regulations 2002 (SI 2002/93) as amended from time to time, or the Electricity (Connection Charges) Regulations 2017 (SI 2017/106) as amended from time to time, or the Electricity (Connection Charges) Regulations 2022 (SI 2022/1265) as amended from time to time, as applicable.
<b>ECCR Prescribed Period</b>	the relevant period from the date on which a connection is made as prescribed by the ECCR, being either (a) five years, for connections made prior to 6 April 2017; or (b) ten years, for connections made on or after 6 April 2017.
<b>EHV</b>	more than 22kV but not more than 72kV
<b>Electric Lines</b>	means any line which is used for carrying electricity to or from an Exit/ Entry Point and includes, unless the context otherwise requires: (a) any support for such line, that is to say, any structure, pole or other thing in, on, by or from which any such line is or may be supported, carried or suspended; (b) any apparatus connected to such line for the purpose of carrying electricity; and (c) any wire, cable, tube, pipe or other similar thing (including its casing or coating) which surrounds or supports, or is surrounded or supported by, or is installed in close proximity to, or is supported, carried or suspended in association with, any such line.
<b>Electric Plant</b>	means any plant, equipment, apparatus or appliance used for or for purposes connected with the distribution of electricity (including any metering equipment) other than an Electric Line.
<b>Energise</b>	to deliberately allow the flow of electricity to or from an Exit/ Entry Point where such a flow of electricity has never previously existed (and cognate expressions shall be construed accordingly).
<b>Enhanced Scheme</b>	is defined in paragraph 5.4
<b>Entry/ Exit Point</b>	A point at which electricity, whether metered or unmetered, enter or exit our Distribution System.
<b>Existing Capacity</b>	is defined in paragraph 5.29
<b>Existing Network</b>	is defined in paragraph 2.22
<b>Extension Assets</b>	are assets installed to connect a party or parties to the existing distribution network but which exclude Reinforcement assets.
<b>Fault Level</b>	the maximum prospective current or power that will flow into a short circuit at a point on the network, usually expressed in MVA or kA.
<b>Fault Level Contribution from Connection</b>	is defined in paragraph 5.29
<b>Feasibility Study</b>	Is defined in paragraph <b>Error! Reference source not found.</b> and <b>Error! Reference source not found.</b>
<b>Flexible Connections</b>	are connection arrangements whereby a Customer's export or import of electricity is managed (often through real-time control) based upon contracted and agreed principles of available capacity. Flexible Connections typically allow quicker and cheaper connection to the

	Distribution System but are made on the basis that there is no limit on the extent to which a user's access can be interrupted.
<b>Full Planning Permission</b>	an approval in writing by the relevant planning authority of all of the details of a proposed development such that the proposed development may proceed in accordance with that approval.
<b>GB Transmission System</b>	the system consisting (wholly or mainly) of high voltage electric wires owned or operated by transmission licensees within Great Britain.
<b>Generation Connection</b>	means a connection to a Premises where the primary purpose of the Premises is wholly or mainly Electricity Generation and/or Electricity Storage. In determining such primary purpose we will consider: <ul style="list-style-type: none"> <li>i. if the Maximum Capacity of the connection of the Premises to the Distribution System for export is greater than the Maximum Capacity for import;</li> <li>ii. if the Premises has a Generation Licence;</li> <li>iii. if the Premises has a Generation Licence Exemption; and/or</li> <li>iv. any other information we consider relevant.</li> </ul>
<b>Generation Licence</b>	means the owner or occupier of the Premises holds a licence to carry out the activity specified in section 4(1)(a) of the Act.
<b>Generation Licence Exemption</b>	means the owner or occupier of the Premises has an exemption from holding a Generation Licence, including under the Electricity (Class Exemptions from the Requirement for a Licence) Order 2001.
<b>Guaranteed Standards of Performance</b>	standards of service backed by a guarantee and set out in the Electricity (Standards or Performance) Regulations 2005 (as amended).
<b>High-Cost Project Threshold</b>	is defined in paragraph 5.16.
<b>HV</b>	more than 1kV but not more than 22kV
<b>Independent Connections Provider (ICP)</b>	a person with sufficient accreditation to carry out all or part of the Contestable Work.
<b>Interactive Connection Applications</b>	is defined in paragraph 2.22
<b>Interactive Connection Offers</b>	is defined in paragraph 2.22
<b>Interactive Queue</b>	is defined in paragraph 2.22
<b>Interruptions Incentive Scheme</b>	the scheme which provides incentives on us to deliver a good level of performance in respect of customer interruptions and customer minutes lost.
<b>Land Rights</b>	all such rights in, under or over Land as are necessary for the construction, installation, operation, repair, maintenance, renewal or use of the Contestable Work or Non-Contestable Work.
<b>Licensed Distribution Network Operator (LDNO)</b>	the holder of a Licence to distribute electricity.
<b>LV</b>	not more than 1kV
<b>Maximum Capacity</b>	means in relation to any connection the maximum amount of electricity, as agreed with us and expressed in kW or kVA, that can be imported from or exported onto our Distribution System.

<b>Meter Administration Number (MPAN) Point</b>	is a 21 digit reference to uniquely identify Exit/ Entry Point, such as individual domestic residences.
<b>Minimum Scheme</b>	is defined in paragraphs 5 to 5.7.
<b>National Electricity Registration Scheme</b>	is defined in paragraph 3.3
<b>New Fault Level Capacity</b>	is defined in paragraph 5.29
<b>New Network Capacity</b>	is defined in paragraph 5.29
<b>NETSO</b>	means the national electricity transmission system operator for Great Britain from time to time
<b>Non-Contestable Work</b>	is defined in paragraphs 6.3, 6.4 and 6.19.
<b>Non-Curtailable Connection</b>	means a connection which is not a Curtailable Connection.
<b>Notice of Interactivity</b>	is defined in paragraph 2.22
<b>Outline Planning Permission</b>	a decision in writing by the relevant planning authority on the general principles of how a site can be developed, which is subject to subsequent approval of one or more reserved matters.
<b>POC Offer</b>	is defined in paragraph 1.14
<b>Point of Connection (POC)</b>	is the point (or points) of physical connection to our existing Distribution System.
<b>Premises</b>	means any land, building or structure
<b>Reinforcement</b>	is defined in paragraphs 5.17 to <b>Error! Reference source not found..</b>
<b>Relevant Section of Network</b>	is defined in paragraph 5.29
<b>Rent-a-Jointer Services</b>	the service relating to hiring of resource from us to facilitate the provision of unmetered connections.
<b>Required Capacity</b>	is defined in paragraph 5.29
<b>Scheme</b>	our network design to provide the connection.
<b>Service Line</b>	is defined in paragraph 7.6
<b>Single LV Service Demand Connection</b>	is defined in paragraph 7.6
<b>Small Project Demand Connection</b>	is defined in paragraph 7.6
<b>Speculative Developments</b>	is defined in paragraph 5.48
<b>SSEG</b>	is defined in paragraph
<b>Supplier</b>	a person who holds a Supply Licence.
<b>Supply Licence</b>	a licence granted under section 6(1)(d) of the Act.
<b>Supply Number</b>	a unique identifier of those Entry/ Exit Points on the Distribution System which are used for the purposes of either taking a supply of electricity or for the connection of a distributed generator, and which forms the basis of the metering point record on the Company's registration system.
<b>Temporary Connections</b>	is defined in paragraph 5.24

<b>Validity Period</b>	The period for which a connection Offer or POC Offer is open for acceptance.
<b>Voltage of Connection</b>	is the voltage at the POC between the existing distribution network and the assets used to provide the connection. For clarity, this is not necessarily the voltage of supply to the Customer
<b>Voltage Level</b>	is the voltage at the transforming point between two points on the Distribution System that is directly associated with the Customer's connection. The higher voltage is one Voltage Level above the Voltage Level of the POC.
<b>Wide Area Scheme</b>	Is defined in paragraph 5.41.
<b>Working Day</b>	Any day other than a Saturday, a Sunday, Christmas Day, Good Friday or a day which is a bank holiday within the meaning of the Banking and Financial Dealings Act 1971.