

## Option 4 – DCP 172 Draft Legal Text

### Schedule 22 Clause 1.24 – Amend the table as follows

<b>New Network Capacity</b>	<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 12.</p> <p>The capacity to be used will be based on our assessment of the thermal ratings, voltage <del>changed</del><del>drop</del> 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>
<b>Relevant Section of Network (RSN)</b>	<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. See Example 13.</p>

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	There may be more than one RSN (e.g. at different voltage levels).
<b>Required Capacity</b>	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.
<u>Complete Asset</u>	<u>HV and above assets</u>
<u>Demand Dominated Network</u>	<u>Where our assessment is that the maximum demand exceeds the maximum generation</u>

- 1.23 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.

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

- 1.24 For generation connections, where the reinforcement is required to keep the voltage rise within acceptable limits only, the voltage rise limit will be used to calculate the New Network Capacity except where the reinforcement:

- is a Complete Asset, and
- provides connection to a Demand Dominated Network

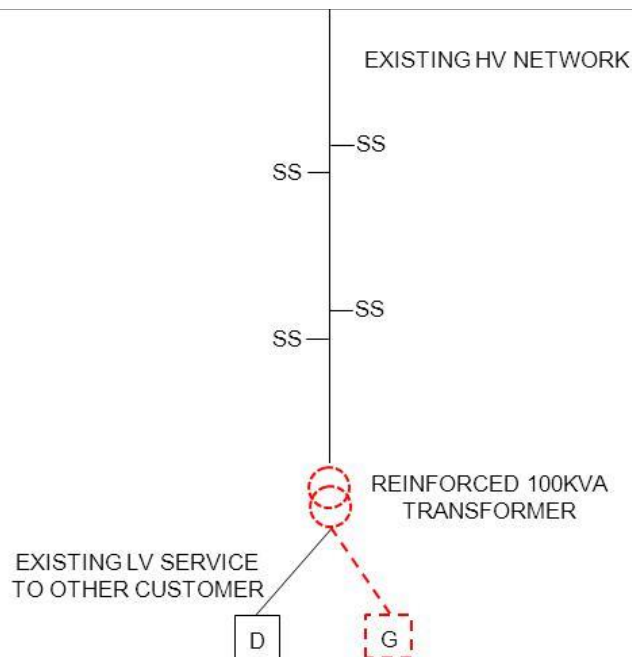
Where both of the above conditions are met then the thermal capacity calculation will be used.

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### Insert New Example X: New 25kVA Generation Connection, Voltage Rise Triggered Reinforcement

An existing Customer wishes to connect a new generator with a Required Capacity of 25kVA. The connection of the generator will require the local 25kVA pole mounted transformer to be reinforced with a 100kVA split phase transformer in order to keep voltage rise within acceptable limits. A new 95mm service cable is to be installed to the premises.

The Minimum Scheme is to provide a new service cable and to replace the 25kVA transformer at the local substation with a 100kVA transformer.



### Reinforcement:

The RSN for the Reinforcement is the HV/LV transformer.

Security CAF calculation: the numerator in the CAF calculation is based upon the Required Capacity of the Customer, i.e. 25kVA. The denominator is based on 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. 40kVA in this case. The voltage rise method

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is used because the reinforcement does not provide connection to a Demand Dominated Network.

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
<b>Non Contestable Work</b>			
Replacement 100kVA transformer	£15,000	$25/40 \times 100\% = 62.5\%$	£9,375
<b>Total Reinforcement Cost</b>	£15,000		<b>£9,375</b>

### Extension Assets:

	Cost	Apportionment	Customer Contribution
<b>Contestable Work</b>			
Provision and installation of LV service cable	£1,500	n/a	£1,500
<b>Non-Contestable Work</b>			
LV joints to network	£500	n/a	£500
<b>Total Extension Asset Cost</b>	£2,000		<b>£2,000</b>
<b>CIC Charges</b>			£200

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**Total Connection Charge = £9,375 + £2,000 = £11,375**

**(Note – for clarity the generation £200/kW rule has been ignored in this example but would apply in respect of the costs illustrated. Refer paragraph 1.15.)**

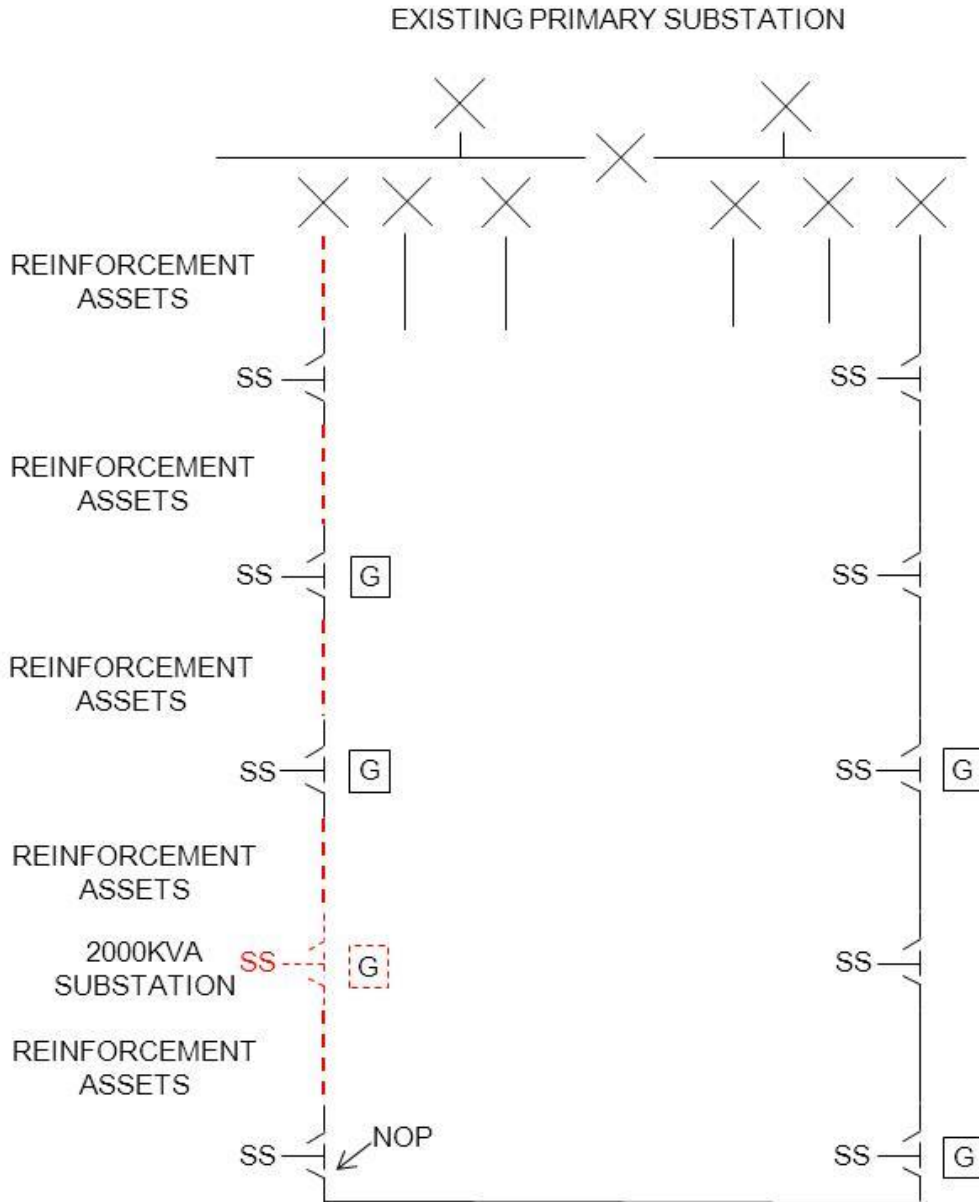
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### **Insert New Example Y: New 2MVA Generation Connection, Voltage Rise Triggered Reinforcement**

A Customer wishes to connect a new generator 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. It is proposed to reinforce the existing 185mm 11kV underground cable with 300mm underground cable and install a new substation for connection of the 2MVA export capacity. The total length of the reinforced cable is 2km. The thermal rating of the 300mm underground cable is 8MVA. The 11kV underground cable on the other side of the normal open point is already 300mm and does not require to be reinforced.

The Minimum Scheme is to provide a new substation and to replace the 185mm 11kV cable with a 300mm cable.

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### Reinforcement:

The RSN for the Reinforcement is the 11kV feeder.

Security CAF calculation: the numerator in the CAF calculation is based upon the Required Capacity of the Customer, i.e. 2MVA. The denominator is based on the New Network Capacity following Reinforcement, this being the secure thermal capacity of the network i.e. 8MVA in

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this case. The thermal capacity method is used because the reinforcement; is a Complete Asset, and provides connection to a Demand Dominated Network.

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
<b>Non Contestable Work</b>			
2km 300mm 11kV cable	£200,000	2/8 x 100% = 25%	£50,000
<b>Total Reinforcement Cost</b>	£200,000		<b>£50,000</b>

##### Extension Assets:

	Cost	Apportionment	Customer Contribution
<b>Contestable Work</b>			
2MVA 11kV substation	£40,000	n/a	£40,000
<b>Non-Contestable Work</b>			
2 by 11kV closing joints	£5,000	n/a	£5,000
<b>Total Extension Asset Cost</b>	£45,000		<b>£45,000</b>
<b>CIC Charges</b>			£200

**Total Connection Charge = £50,000 + £45,000 = £95,000**

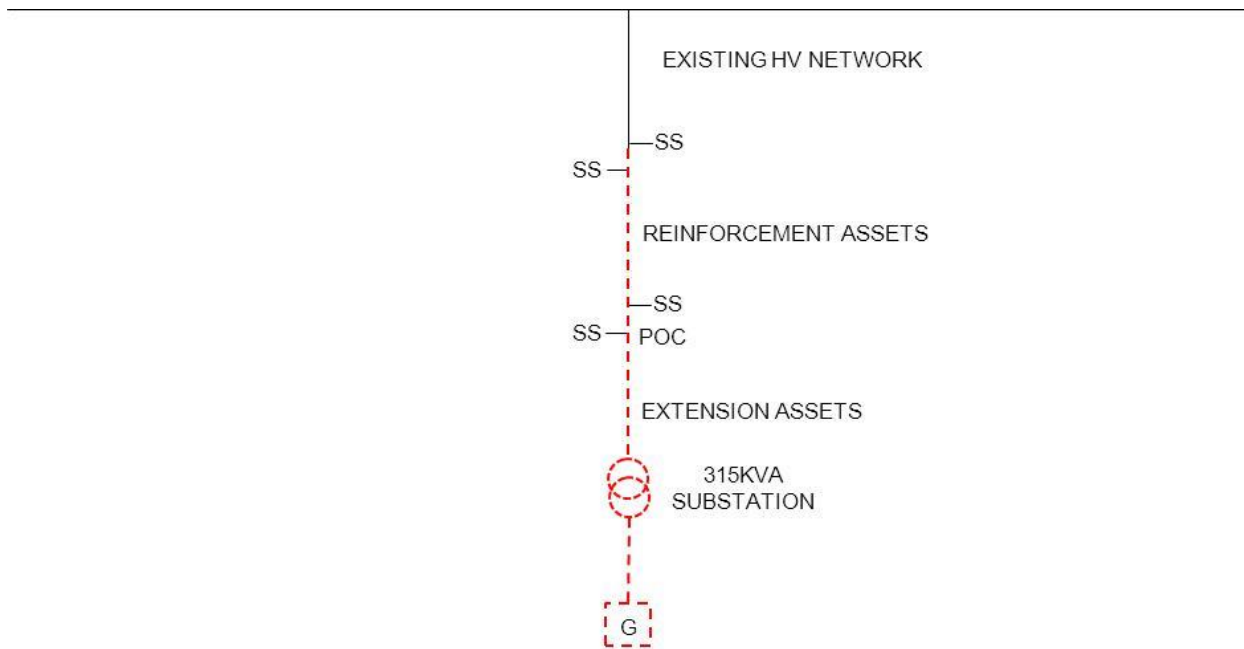


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### Insert New Example Z: New 250kVA Generation Connection, Voltage Rise Triggered Reinforcement

A Customer wishes to connect a new generator with a Required Capacity of 250kVA. The connection of the generator will require the local 11kV overhead line to be reinforced with 100mm conductor over part of its length in order to keep voltage rise within acceptable limits. The thermal capacity of the 100mm overhead line is 5MVA. The thermal capacity of the original 50mm overhead line is 3MVA. A new 315kVA ground mounted substation is 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.

The Minimum Scheme is to provide a new ground mounted substation and to replace part of the existing overhead line with 100mm conductor.



### Reinforcement:

The RSN for the Reinforcement is the 11kV overhead line.

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Security CAF calculation: the numerator in the CAF calculation is based upon the Required Capacity of the Customer, i.e. 250kVA. The denominator is based on the New Network Capacity following Reinforcement, this being limited to 1MVA by the security of supply limitation within Engineering Recommendation P2/6.

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
<b>Non Contestable Work</b>			
Replacement 11kV overhead line conductor	£25,000	$250/1000 \times 100\%$ $= 100\%$	£6,250
<b>Total Reinforcement Cost</b>	£25,000		<b>£6,250</b>

##### Extension Assets:

	Cost	Apportionment	Customer Contribution
<b>Contestable Work</b>			
Provision and installation of 315kVA substation	£50,000	n/a	£50,000
<b>Non-Contestable Work</b>			
11kV joint to network	£1,000	n/a	£1,000

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<b>Total Extension Asset Cost</b>	£51,000		<b>£51,000</b>
<b>CIC Charges</b>			£200

**Total Connection Charge = £6,250 + £51,000 = £57,250**