



## Policy

## New or Modified Connections and Extensions

### **Key topics covered:**

- Technical requirements for new connections to the network
- Commercial terms for new, modified connections and network extensions
- Capital Contributions

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## 1 Introduction

This policy document outlines the commercial terms EA Networks Limited (EAL) applies for extensions to its network, for new connections in areas with existing supply, and for alterations to existing connections. EA Networks has introduced these commercial terms to apply from 1<sup>st</sup> September 2011.

EA Networks network is continuing to grow with demand for new connections and increased loads at existing connections. To be fair and reasonable to the established consumers, EA Networks believes it is important that future network connections and extensions should pay a contribution towards the cost of the connection or extension. This document outlines the economic considerations EA Networks has incorporated when establishing these commercial terms along with the appropriate technical requirements.

Please note: EA Networks and the Landowner) have on-going responsibility for public safety and operation relating to plant ownership and location.

Our economic aim is to apply efficient pricing policies which reflect the economic costs of providing our delivery service. With this approach, consumers (particularly prospective consumers) make efficient decisions about which form of energy to use, and where to locate new load.

Ideally, each new connection would pay for any necessary extension and reinforcement through its future delivery charges. However, many factors prevent this balance from occurring:

- Price averaging must be applied over large groups of connections, because it is not practical to single out individual connections for cost-specific delivery pricing;
- The life and future utilisation of new connections are not known, so the present value of future delivery charges cannot be calculated with certainty;
- The assets involved have very long lives and it is not viable to lock consumers into a contract over a matching period;
- Network enhancement is incremental - it is often more efficient to add large amounts of capacity at a time;
- Dedicated assets often become shared assets as the network expands. Existing consumers should share in the benefit of greater utilisation of shared assets (and other enhanced economies of scale);
- Some spare capacity must be available before it is required to ensure that developments are not unduly delayed.

## **2 Definitions**

### **2.1 Network**

For the purpose of this policy reference to network means the electricity distribution network owned and operated by EA Networks.

### **2.2 Network Connection Point. (NCP)**

Is the point where the customers supply is physically connected to the network. This will generally be via a fuse, switch, or circuit breaker located in the road reserve.

### **2.2. Installation Control Point. (ICP)**

Is the energy retailers metering and isolation point and has an associated unique number that identifies it as an individual power connection on the national electricity system.

## **3 Technical requirements for new connections to the network**

### **3.1 Compliance**

All works for which EA Networks is responsible will be carried out in accordance with the current Electricity Safety Regulations and its amendments. All practicable steps will be taken to prevent injury to the public or damage to equipment.

### **3.2 Method of Connection**

EA Networks has an on-going program to improve the security and reliability of its network. In general, the EA Networks distribution network does not extend on to private property, the line/cable from the property boundary is owned by the land owner/electricity customer. For practical and economic reasons EA Networks will allow its distribution substations to be located on private property.

Experience over a large number of years and in particular the snow storm of 2006 has shown that the on-property lines cause a significant number of network outages (which affect other customers) and delays in restoring network operation post a major event.

As from 11th February 2009, ALL new connections to the EA Networks Distribution network must be connected by underground cable and ALL new transformers and associated equipment located on private property shall be ground mounted. Any connection between the EA Networks network or from an existing private network to any new EA Networks owned equipment will be by underground cable.

A further advantage of having all new connections (and ultimately all connections) supplied underground is an improvement in safety by the avoidance of contact with live overhead lines.

The installation of all equipment must comply with all appropriate industry and safety regulations.

### 3.3 Minimum Cable Size

To provide thermal resilience to faults in on property installations the minimum 11kV or 22kV cable size permitted to be connected without approval is cable with a minimum of 35 mm<sup>2</sup> Aluminium (or equivalent) cross sectional area for both cable and where screen is fitted.

Upon request EA Networks will consider approving connection of smaller sized cables where the thermal let through (I<sup>2</sup>t) from the Network can be sufficiently limited within the network.

The minimum 400V cable that can be connected to the Network without engineering approval is 6.0mm<sup>2</sup> Copper or equivalent.

### 3.4 Motor Starting

To avoid interference to other customers during motor starting EA Networks may specify a maximum motor starting current which cannot be exceeded under any circumstances.

#### 3.4.1 Induction Motors

- (a) Where a motor is supplied from a transformer which does supply only the motor and associated equipment the following limits will apply:

Motor output (kW)	Type of Starter	Specified Current Limit
Up to 25	Direct on Line (DOL)	Not applicable
Above 25	Dependent on Motor Size and Location	Will be determined by EA Networks

The requirement for a specified current limit depends on the installation's location with the EA Networks network. A "Motor Installation Details" form (MS2) is to be completed and submitted to EA Networks for all motors with full rated output greater than 25kW. Under certain circumstances the specified current limit may allow "Direct on Line" starting

- (b) Where a three-phase motor larger than 4kW or a single-phase motor larger than 1.5kW is supplied by a transformer which also supplies other customers, a current limit may be specified. A "Motor Installation Details" form (MS2) is to be completed and submitted to EA Networks for such motors.

#### 3.4.2 Motors other than Induction Motors

Refer to EA Networks for individual determination

## 4 Interference to other customers

Regardless of the guidelines given above, where an installation causes interference to other customers, EA Networks retains the right to require additional limits on any installation at any time.

### 4.1 Harmonics

In addition to requirements in this policy all new or updated supplies in the rural area must comply with EA Networks Rural Harmonics Standard.

### 4.2 Power Factor

All connections will maintain a power factor of between 0.95 lagging and 0.95 leading always. For the purposes of this policy power factor is defined as true power factor kW/kVA not displacement power factor  $\cos \phi$ .

## 5 Commercial terms for new-modified connections and network extensions

Standard terms apply for broad categories of extensions and new connections. More specific consideration applies for other or larger connections which do not fit within these categories. We reserve the right to alter the terms for any extension or new connection proposal where we consider or agree that economic factors warrant an alternative approach. Alterations may result in terms that are either more or less favourable than the standard terms.

EA Networks will endeavour to provide new connections and enhanced capacity wherever it is economically viable, and this network extension policy sets out to establish this economic viability. However, there may be situations where it is imprudent, environmentally unsound or physically impracticable to provide supply or enhanced capacity, and we reserve the right to refuse to provide new connections or enhanced capacity in these situations.

Please note that we consider all newly established Installation Control Points (ICP's) (the industry's unique numbering system for all electrical connections) as *new connections*, even where the new ICP replaces a previously decommissioned ICP. EA Networks may charge up to a maximum of three new connections fees for individual connections supplied from one privately owned low voltage cable.

### 5.1 Ownership

All network extensions and connection equipment located on public property and all substations and other equipment on private property paid for by EA Networks remain the property of EA Networks irrespective of any contribution made by a customer.

This policy sets out the basis on which EA Networks will contribute toward network extensions and upgrades.

## **5.2 Urban Low Voltage Connections up to 100 Amps per phase**

This policy category covers the majority of new connections, which are individual connections within our existing urban LV reticulation areas (including rural townships). The policy provides a straight-forward process under which we are responsible for providing the new connection and the customer makes a capital contribution toward the cost of those assets.

*Applies to:* New connections within urban residential, commercial or industrial areas (as designated by the relevant council authority), within 30m of our existing LV reticulation, and with a supply capacity of up to 3 x 100 amps (fuse rating) *except* unmetered and/or public utility connections (such as street lights or traffic lights).

*EA Networks contribution:* We will design, arrange and pay for all low voltage extensions from the customer's boundary to our network and will carry out any upstream network reinforcement necessary to accommodate the new connection. EA Networks will supply and install the service protective fitting and connect the customer's electrical installation.

*Customer's contribution:* The customer must provide a capital contribution to EA Networks toward the cost of assets that we provide or already have in place as detailed in Schedule A.

Customers are also responsible for their own electrical installation, including the provision of the cable to the network connection point.

Note that this capital contribution requirement does not apply for connections already provided in new subdivision developments under section 4.7 below.

## **5.3 Urban Low Voltage Connections Greater than 100 Amps per phase**

This policy category covers any new connections, which are individual connections within our existing urban reticulation areas (including rural townships). The policy provides a straight-forward process under which we are responsible for providing the new connection and the customer makes a capital contribution toward the cost of those assets.

*Applies to:* New connections within urban residential, commercial or industrial areas (as designated by the relevant council authority), within 30m of our existing reticulation, and with a supply capacity greater than 100 amps per phase (fuse rating).

*EA Networks contribution:* We will design, arrange and pay for all low voltage extensions from the customer's boundary to our network and will carry out any upstream network reinforcement necessary to accommodate the new connection. EA Networks will supply and install the service protective fitting and connect the customer's electrical installation.



Customer's contribution: The customer must provide a capital contribution to EA Networks toward the cost of assets that we provide or already have in place as detailed in Schedule A.

Customers are also responsible for their own electrical installation, including the provision of the cable to the network connection point. EA Networks Ltd will take ownership and responsibility, as well as record location details for any cable/line installed within a public road or road reserve. That responsibility does not extend to failures of materials or workmanship that is beyond EA Networks Control.

In many cases new connections of this size may require a substation located on the customers property. In consultation with the customer/land owner EA Networks will establish the number of substations, location and land requirements that may be required. The number, size and type of any substations required will be at EA Networks discretion. Where EA Networks owns the substation and associated equipment it will take responsibility for the ongoing compliance and maintenance of this equipment.

Where a substation is located on private property all equipment installed and owned by the customer must be capable of operating at 22kV unless approved in writing by EA Networks.

For details of land requirements refer to section 4.8 below.

Note that this capital contribution requirement does not apply for connections already provided in new subdivision developments under section 4.7 below.

#### **5.4 Rural & Rural Residential Connections up to 300 kVA**

Rural and Rural residential connections, including irrigation connections, are generally less economic to supply and often require a more significant extension to our network.

Applies to: New connections in Rural and Rural residential areas that require a supply capacity of up to 300 kVA.

EA Networks contribution: We will:

- Connect to existing LV supplies if available and of suitable capacity.
- Provide a substation if required of sufficient capacity either directly on the network or on the customers property to supply the new connection and any existing connections supplied from the same point,
- Provide any high voltage switchgear (circuit breakers, drop-out fuses, RMUs, earthing and any other equipment) which is required on our side of the network connection point,
- Ensure that there is sufficient upstream capacity available for the new connection.

Customer's contribution: The customer must provide a capital contribution to EA Networks toward the cost of assets that we provide or already have in place as detailed in Schedule A.

Customers are also responsible for their own electrical installation, including the provision of the cable to the network connection point.

EA Networks Ltd will take ownership and responsibility, as well as record location details for any cable/line installed within a public road or road reserve. That responsibility does not extend to failures of materials or workmanship that is beyond EA Networks Control.

In many cases new connections of this size may require a substation located on the customers property. In consultation with the customer/land owner EA Networks will establish the number of substations, location and land requirements that may be required. The number, size and type of any substations required will be at EA Networks discretion.

Where a substation is located on private property all equipment installed and owned by the customer must be capable of operating at 22kV unless approved in writing by EA Networks.

For details of land requirements refer to section 4.8 below.

## **5.5 Rural & Rural Residential Connections greater than 300 kVA**

Rural & Rural residential connections, including irrigation connections, are generally less economic to supply and often require a more significant extension to our network. Customers are required to make a larger contribution but are also able to minimise their total outlay by selecting the most competitive approved contractor to carry out the extension work.

Applies to: - New Connections in Rural & Rural residential areas that require a supply capacity of greater than 300 kVA.

EA Networks contribution: We will:

- provide a substation of sufficient capacity either directly on the network or on the customers property to supply the new connection and any existing connections supplied from the same point,
- provide any high voltage switchgear (circuit breakers, drop-out fuses, RMUs, earthing and any other equipment) which is required on our side of the network connection point,
- ensure that there is sufficient upstream capacity available for the new connection.

Customer's contribution: The customer must provide a capital contribution to EA Networks toward the cost of assets that we provide or already have in place as detailed in Schedule A.

Customers are also responsible for their own electrical installation, including the provision of the cable to the network connection point. EA Networks Ltd will take ownership and responsibility, as well as record location details for any cable/line installed within a public road or road reserve. That responsibility does not extend to failures of materials or workmanship that is beyond EA Networks Control.

In most cases new connections of this size will require a substation located on the customers property. In consultation with the customer/land owner EA Networks will establish the number of substations, location and land requirements that may be required. The number, size and type of any substations required will be at EA Networks discretion.

Where a substation is located on private property all equipment installed and owned by the customer must be capable of operating at 22kV unless approved in writing by EA Networks.

For details of land requirements refer to section 4.8 below.

## **5.6 Extensions of the Network in areas not part of a sub-division**

All extensions to the EA Networks network will be based at cost and will exclude any new connection fees which are additional. The extension only will attract a reappointment cost based on straight line depreciation over 10 years. This apportionment will be recovered on the basis that the customer who originally paid for the extension still owns the property at the time of the additional connection, and will exclude any new connection fees.

## **5.7 Urban Subdivision Developments**

All new network work will be at actual cost.

Price will exclude transformers, substation fusing, and covers but include non-recoverable items such as concrete pad and earths. EA Networks will take ownership of the installation when complete and be responsible for future repairs and maintenance. (Excludes any on property installations)

## **5.8 Land and Easements**

Network extensions often require new land or easements. Unless we specifically state otherwise, we will require the customer or developer to provide or obtain any necessary land or easements.

Where substation sites or easements are required to service one customer only and the easement or site is on that customer's property then EA Networks will not contribute towards the cost of any easement or site. Where the easement or site will be used to supply other customers as well EA Networks will contribute towards these costs.

## **5.9 Livening New Connections**

To facilitate our compliance with safety requirements and regulatory and market reporting requirements, EA or our approved contractor, are the sole providers of the livening service, the final step in providing a new connection.

## **5.10 Temporary Connections**

We do not contribute to the cost of installing temporary connections and builder's temporary supplies. Options for temporary supplies are available through EA Networks and other contractors.

## **5.11 Modifications to existing Network or Network Connections**

### **5.11.1 No Increase in Capacity**

We accommodate changes to the route or configuration of our existing network (to supply substantially the same load) where the person requiring the changes pays for the entire cost of the alterations.

### **4.11.2 Increase in Capacity**

We individually consider contributions toward the costs of enhancing the capacity of an existing supply. All existing network connection work that requires an upgrade will be at actual cost. Price will exclude transformer, fusing and cover, but include unrecoverable items such as concrete pad and earths.

### **4.11.3 Decrease in Capacity**

Where a customer requests a decrease in capacity EA Networks may, at its discretion, replace an existing HV connection with a LV connection that meets the customers capacity requirements. This will then be considered the permanent connection to the ICP and any future increases in capacity requirements would be treated in the normal manner.

Should a customer wish to retain a high voltage connection then any costs above what a low voltage alternative would be would/may be charged to the customer.

## **5.12 Design Variations**

Our contribution to network extensions is based on and limited to our standard design practices utilising the appropriate lowest cost construction methods and supply route consistent with industry best practice. We are willing to accommodate design enhancements or variations where the customer pays for the difference between the actual cost and the cost using our standard practice.

## **5.13 Other Situations**

We will individually consider all new connection proposals that do not fit within one of the standard categories above (4.2 to 4.6). Our consideration will follow economic principles consistent with the framework for standard categories.

## 6 Documentation Revision Control

Document Version	Description	Name	Date
Version 001	Initial Procedure document	CJC	10/06/09
Version 002	Various changes including Public Safety and Compliance	KWS	12/12/11
Version 003	Update company name and insert document change request	KWS	10/1/14
Version 004	Change document name, add modifications	KWS	19/4/18

## 7 Document change request

**Memo To:** Network Manager  
EA Networks  
Private Bag 802  
Ashburton

**Change Details:**  
(Attach separate sheets as necessary).

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**Paragraphs Affected:**

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**Priority:**

**Urgent**   
(Within 1 week)

**Routine**   
(Within 12 months)

**Low**   
(Next Review)

<b>Submitted By</b> (Print Name)	<b>Date</b>
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### Document Change Request - Acknowledgement

Dear .....

Thank you for your suggestion regarding changes to the above-mentioned document.

Your request has been noted and added to our works program. Should we require any additional information regarding your notification then we will be in contact with you.

Thank you for your contribution to improving the standard of EA Network's documentation.  
Regards,

.....  
**Network Manager**

**Date**

## 8 Schedule A – Capital Contributions (As at 1/10/2010)

### 7.1 Urban Low Voltage connections up to 100Amps

<b>Required capacity</b> (Fuse rating)	<b>Capital contribution</b> (Per connection)
Single phase, up to 63 amps	\$868.90 Inc GST
Three phases, up to 100 amps per phase	\$868.90 Inc GST

### 7.2 Urban Low Voltage Connections over 100Amps per phase

<b>Required capacity</b> (Fuse rating)	<b>Capital contribution</b> (Per connection)
As required	Price on application. (Min \$868.90 Inc GST)

### 7.3 Rural & Rural Residential Connections up to 300 kVA

<b>Required capacity</b> (Fuse rating)	<b>Capital contribution</b> (Per connection)
From existing LV reticulation	\$1512.90 Inc GST
New Substation required	\$2013.78 Inc GST

### 7.4 Rural & Rural Residential Connections greater than 300 kVA

<b>Required capacity</b> (Fuse rating)	<b>Capital contribution</b> (Per connection)
All Capacities	Price on application (Min \$2013.78 inc GST)