



Guide

Cut Outs for Electrification of Domestic Heat & Transport

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Document Number:	DOC-050721-GXB	Version:	1.0
Document Status:	Approved	Status Date:	09/12/2022

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Contents

i.	Scope	2
ii.	Mandatory References.....	2
1.	Background.....	2
2.	Key Initial Recommendations.....	3
2.1	General.....	3
2.2	Connection of an EVSE from an Outside Meter Cabinet in Existing Installations	3
2.3	Use of Load Management / Load Limiting function on the EVSE.....	3
2.4	Adequacy of supply.....	3
2.5	Cost Quotations	5
3.	Looped Services.....	5
4.	Guidance for Cut-Out Types & Ratings	7
4.1	Cut Out Types and Ratings.....	8
	Annex A. (Informative) Diagram of Equipment Responsibility	10
A.1.	Standalone Isolator	10
	Annex B. (Informative) References and Standards	11
	Electromagnetic compatibility (EMC)	11
	Derogations	12
	Contributors.....	13
	Terms, Definitions & Symbols Used	13

i. Scope



CAUTION:
Check ESB Networks' website (www.esbnetworks.ie)
for the latest version of this document

This document applies to domestic premises, connected on a single phase Low Voltage (LV) 230V connection, where it is planned to increase the installed load with equipment or appliances of total increase by 3 kW or greater, including in particular the installation of new Low Carbon Technology (LCT), such as an Electric Vehicle Supply Equipment (EVSE) or charge point as it is also commonly referred to as a Heat Pump (HP).

Connections to commercial and industrial premises, or premises connected on three phase LV or Medium Voltage (MV) at 10 kV or 20 kV connections, are not covered by this document.

ii. Mandatory References

Not Applicable

1. Background

With electricity becoming an increasingly low carbon fuel, the electrification of heat and transport will prove one of the most economic and practical ways for Republic of Ireland to meet its decarbonisation targets. As our customers choose LCT including Electric Vehicles and Heat Pumps, additional load will be passing through the existing ESB Networks equipment (service cable, cut-out and fuse) in domestic premises, which can introduce new issues at the site due to the potential unsuitability of the cut out device.

The aim of this document is to assist Heat Pump and EV Supply Equipment installers by providing photographic examples of the various types of ESB Networks' cut-out devices and their suitability to accommodate the increased load from new LCT devices installed in consumers' homes.

In accordance with Safe Electric and I.S. 10101:2020, the installation of EV Supply Equipments can only be carried out by Registered Electrical Contractors (RECs) and capable of assessing the overall power requirements of the premises, including the new loads, in accordance with a recognised methodology and standard.

This document is relevant to those installations at domestic premises, where there is a single phase supply and where the overall load in the premises after the EVSE or Heat Pump is connected, has been calculated by the installer to be less than the Maximum Import Capacity (MIC) already in effect, be that 8kVA, 12 kVA, 16 kVA, 20 kVA or 29 kVA. If unsure about the MIC, a load management system should be installed by an REC to limit the overall load on the premise to 8 KVA.

If the load is calculated to be greater than the MIC already in effect, e.g. 8 kVA, then the customer or the REC on behalf of the customer should request an increase in their MIC by completing an increase in capacity form available online on ESB Networks website. ESB Networks subsequently provide a quotation to the customer for completion of necessary upgrade works and a timeline for their completion.



CAUTION:

The customer loads should remain within the Maximum Import Capacity agreed with ESB Networks

With significant loads such as an EV Charger it can be difficult to assess possible clashing with other loads so consideration should be given to the use of a managed EV Charge arrangement which modulates the EV charge load in relation to overall house load and so ensures that customers overall load is always within the contracted MIC.

2. Key Initial Recommendations

2.1 General

In accordance with the National Rules for Electrical Installations, all electrical installations should comply with:

- I.S. 10101:2020 Part 722 contains additional requirements for the installation of EVSE;
- IEC 61000-3 – Electromagnetic Comptibility
- [ESB Networks Distribution Code](#) – DOC-060416-CEY version 7
- [ESB Networks – National Code of Practice for the Customer Interface – Version No. 5 April 2021](#) - DOC-030303-AEN

2.2 Connection of an EVSE from an Outside Meter Cabinet in Existing Installations

While this is not the preferred solution, in existing installations it is now permissible by SafeElectric and ESB Networks to connect an EVSE at the customer’s outside meter cabinet, as set out in the [Safe Electric April 22nd Newsletter](#).



CAUTION:

REC’s carrying out EVSE installations for customers with Pre-Pay meters should remind the customer of the need to inform their Electricity Supplier of the installation of an EVSE from the outside meter cabinet.

2.3 Use of Load Management / Load Limiting function on the EVSE

To ensure the MIC of the premises is not exceeded, the REC should install a device or enable a load limiting function to control the demand of the LCT. The load control is covered by I.S. 10101:2020 in the Annex 8 Energy Efficiency section. The setting on the load limiting device/function should be programmed by the REC, on installation, to always maintain the MIC within the contracted value.



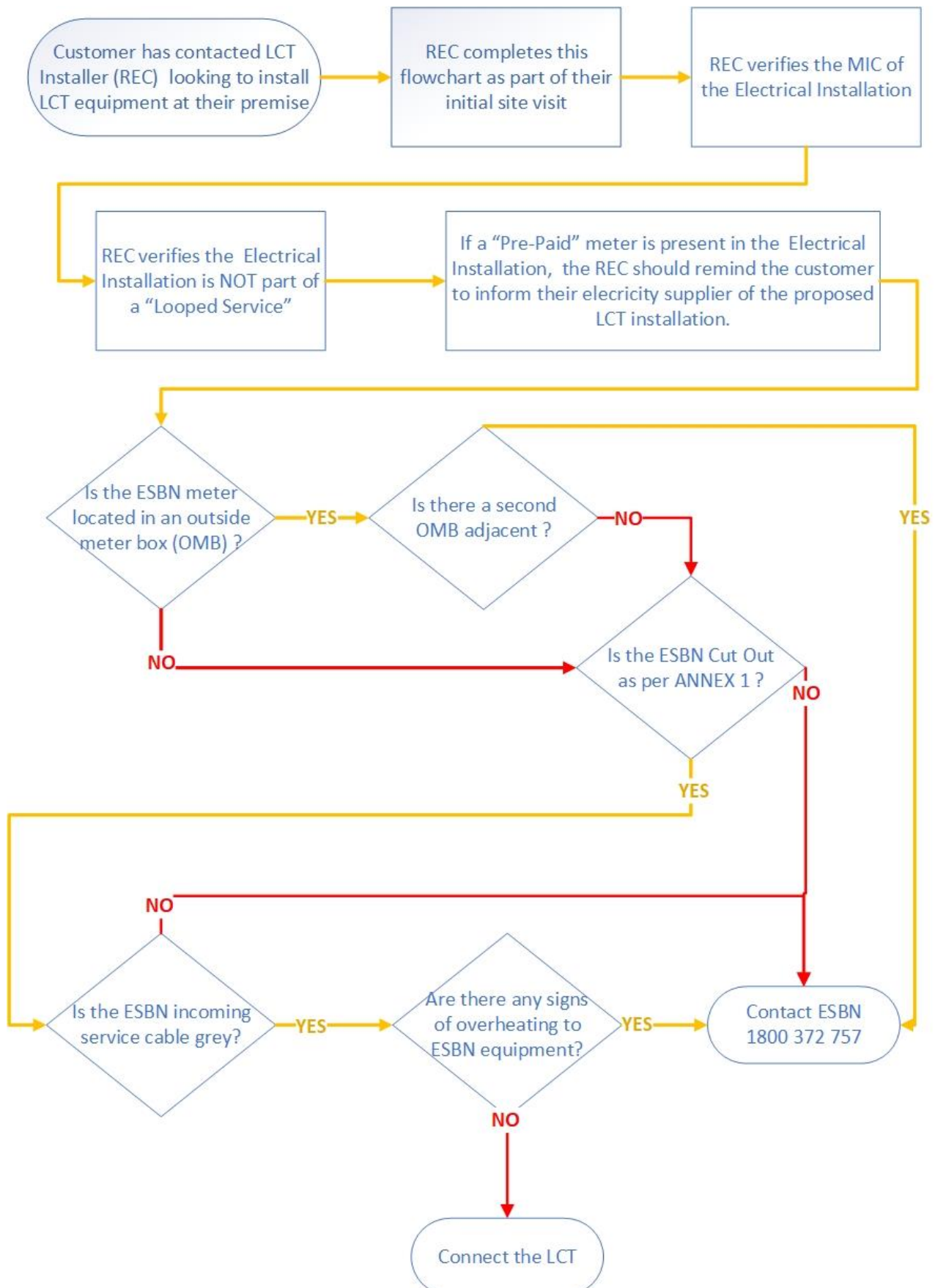
CAUTION:

The setting on the load limiting function on the EVSE should not be altered by the customer. This could lead to the customer inadvertently breaching their MIC connection agreement with ESB Networks

2.4 Adequacy of supply

It is the responsibility of the REC to determine that the maximum demand of the existing supply will not be exceeded with the installation of additional EV charging equipment or Heat Pump. The REC should first assess the capacity of the existing supply – see Figure 1: Installation Assessment Process Flowchart on. If this cannot be determined, or no records are available, then ESB Networks should be contacted by calling 1800 372 757.

Figure 1: Installation Assessment Process Flowchart



If a smart meter is fitted and the colour of the service cable is not visible, this situation requires ESB Networks to be contacted to confirm the capacity available. This can be arranged by calling 1800 372 757.

If the REC inspection above identifies an issue with the adequacy of ESB installation, the REC should contact ESB Networks by calling 1800 372 757 to discuss the specifics of the works required.

2.5 Cost Quotations


Quotations are in line with [DOC-101209-AXR : Company Standard - ESB Networks Statement of Charges](#) approved by the Commission for Regulation of Utilities (CRU).

There may be a fee for an increase of MIC and a quotation will be provided to the customer following receipt and processing of the customer application. The step-by-step guide is available [here](#) on ESB Networks website.

In cases of a 'Looped Service' (see Section 3), ESB Networks should be contacted as it may be necessary to make adjustments to the ESB installation, for example, provide a second service so that each customer has their own service cable connection direct to the DSO network. In such cases a duct may be required to be provided by the customer from the meter box or internal meter to the footpath if a new service cable is to be installed.

Charges are as per the above referenced ESB Networks Statement of Charges available on ESB Networks website.

3. Looped Services

	<p>In the vast majority of cases each Customer has its own independent supply through a single service cable.</p> <p>However, there are some scenarios still in existence where two Customers share the same service cable, this is known as a Looped Service.</p> <p>In these circumstances, no additional load such as an EVSE or a Heat Pump should be added to either Customer's electrical installation, without first consulting with ESB Networks.</p>
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A schematic of a possible looped service situation is depicted in Figure 2.

An example of a looped service is shown in Figure 3 **Error! Reference source not found.**

This shows the origin of the looped service into Premises 1 ('Cable from street') with the service into Premises 2 also visible ('Cable to next door').

In Premises 2, which is fed from the looped service only one service will be seen entering the cut-out so it will not be apparent it is fed from Premises 1. Accordingly, in houses which may contain looped houses (typically older pre-1976 houses) the cut-out in the adjoining premises should also be checked to establish whether a looped Service exists.

Another possible looped service could arise in family apartment connections where the addition of LCT's may exceed the contracted MIC.

Figure 2 : Looped Services

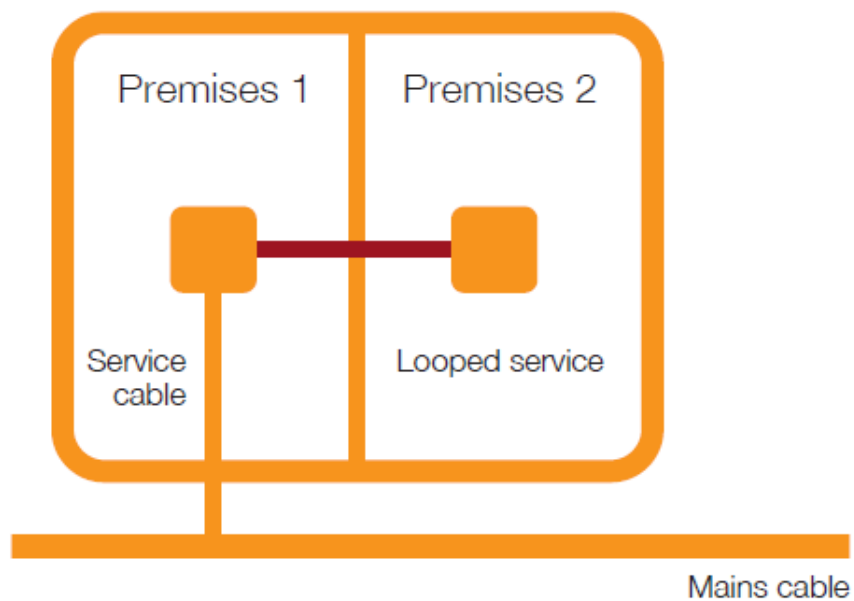
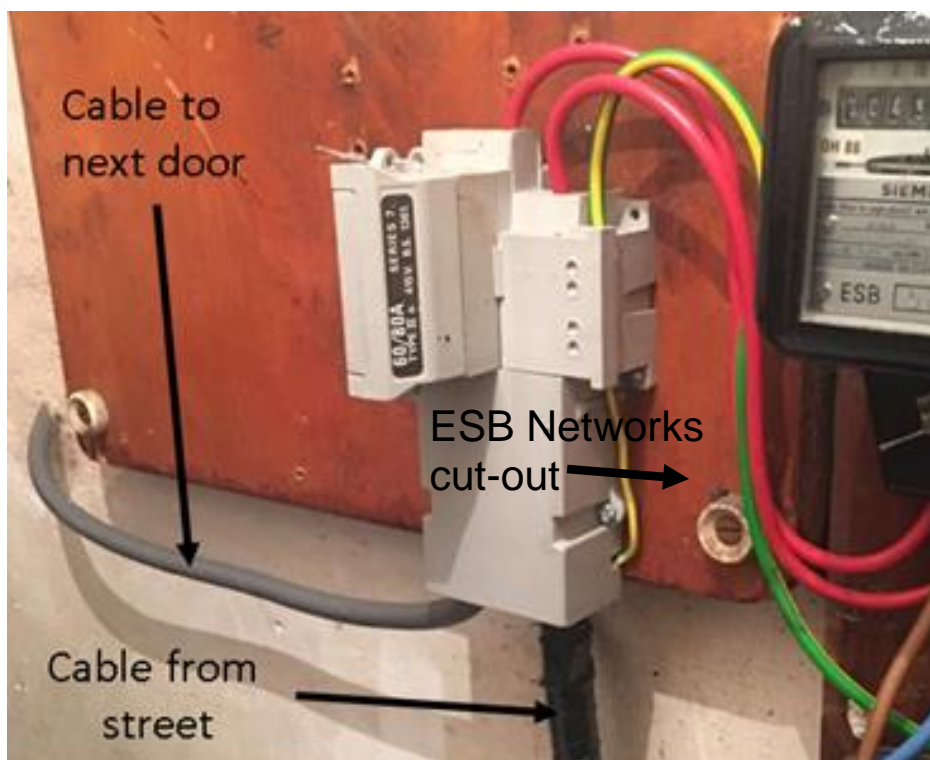


Figure 3: Example of a Looped Service in a domestic premises



4. Guidance for Cut-Out Types & Ratings

In terms of ESB Networks cut-out suitability for additional load arising from newly connected LCT devices, there are various scenarios that may be encountered. For simplicity this document shows, in Table 1 below, common cut-outs used by ESB Networks.





If presented with any other type of cut-out the LCT device installer (REC) should assume that the cut-out is unsuitable for the additional load. In all these cases the customer / installer (REC) should contact ESB Networks to request an appointment for cut-out replacement. This can be done by calling 1800 372 757.




Following the site assessment, if the installer identifies anything that they consider unsafe either on the ESB Networks side or on the customer side of the meter they should not proceed with the installation until the defect has been made safe.

In case of the defect being on ESB Networks side, the installer (REC) should notify ESB Networks of the issue by calling 1800 372 757 and arranging for ESB Networks to call and rectify the defect. If there is an emergency, please call ESB Networks emergency number 1800 372 999.

4.1 Cut Out Types and Ratings

Table 1: Common cut-out types


	Make/Model	Note	Picture
1	Renley	<p>This cut-out type is always suitable for an EV Charge Point or Heat Pump.</p> <p>Used with 20 kVA and 29 kVA supplies.</p> <p>Also used with 16 kVA where ESB service cable is 70/50mm or greater.</p>	
2	AEI	<p>May be suitable subject to service cable rating.</p> <p>Fuse carrier minimum rating of 80A</p>	
3	BICC 'BICC' logo on right hand side of cut out.	<p>May be suitable subject to service cable rating.</p> <p>Fuse carrier minimum rating of 80A.</p>	
4	Henley series 5	<p>May be suitable subject to service cable rating.</p> <p>Fuse carrier minimum rating of 80A</p> <p>Cut out used with 12 kVA supplies.</p>	
5	Henley Series 7	<p>May be suitable subject to service cable rating.</p> <p>80A fuse carrier used with 12 kVA supplies.</p> <p>100A fuse carrier used with 16 kVA supplies and 35/25mm service cable.</p>	

			
6	Pirelli	<p>May be suitable subject to service cable rating.</p> <p>80A fuse carrier used with 12 kVA supplies.</p>	
7	Henley BS88	<p>May be suitable subject to service cable rating.</p> <p>Fuse carrier minimum rating of 80A</p>	

Annex A. (Informative) Diagram of Equipment Responsibility

The following diagram in Figure 4 shows typical domestic interfaces, such as those found in outside meter cabinets.

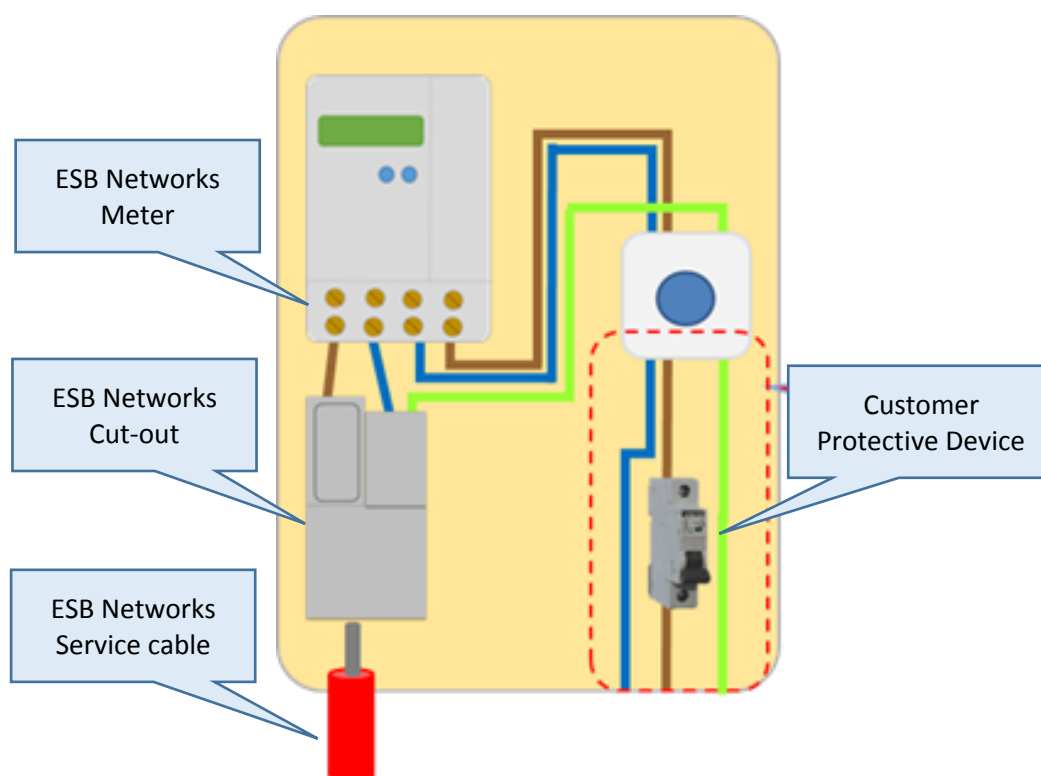
The aim of the diagram is to clarify boundaries of responsibility.

	<p>Circuits shown are for example only. In all cases the current version of the “National Rules for Electrical Installations” and “National Code of Practice for the Customer Interface” will apply.</p>
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A.1. Standalone Isolator

- The equipment within the **red** broken area is the customer’s equipment.
- The equipment outside the **red** broken area is ESB Networks equipment.

Figure 4: Equipment Responsibility (Standalone isolator)



Annex B.(Informative) References and Standards

The following documents are referred to in the text in such a way that some or all of their content constitutes useful information for this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document applies.

Table 2 : References and Standards

Document No.	Title
I.S. 10101:2020	National Rules for Electrical Installations
DOC-030303-AEN	National Code of Practice for the Customer Interface
quick-user-guide-smart-electric-vehicle-charging-with-vehicle-to-grid-capability.pdf (esbnetworks.ie)	ESB Networks NNLC – Smart Electric Vehicle Charging
Distribution Code Version 7 (esbnetworks.ie)	ESB Networks Distribution Code
IEC 61000-3:2022	Electromagnetic compatibility (EMC)

Derogations

No Derogations are recorded against the Requirements of this document.

Contributors

The following individuals supported the development of this version of the document.

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Terms, Definitions & Symbols Used

For the purposes of this document, the following terms and definitions apply.

Table 4: Terms & Definitions

Term / Symbol	Definition
Shall	Designates a Company Requirement, hence conformance is mandatory.
Should	Designates a Company Recommendation where conformance is not mandatory, but is recognised as best practice.
May	Designates a Permissive Statement - an option that is neither mandatory nor specifically recommended.
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
HP	Heat Pump
LCT	Low Carbon Technologies
LV	Low Voltage
MIC	Maximum Import Capacity
MV	Medium Voltage
OMB	Outside Meter Box
REC	Registered Electrical Installer



CAUTION: Used to give the end user information on what can happen, why and the consequences of ignoring the caution.



Used to give the end user specific, important information to help complete the task or procedure correctly.



This is a stop or critical point in the procedure.
It contains a rule that shall be followed by the end user.

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