

4 EVCP Connection Process

The flowchart shown in Figure 4-1 provides guidance on the EVCP connection process for installers intending to connect EVCP equipment to an existing supply.

The installer is required to assess the supply to establish if the connection can be made without referral to UK Power Networks. For guidance on supply capacity and requirements for UK Power Networks assessment, refer to Section 5.

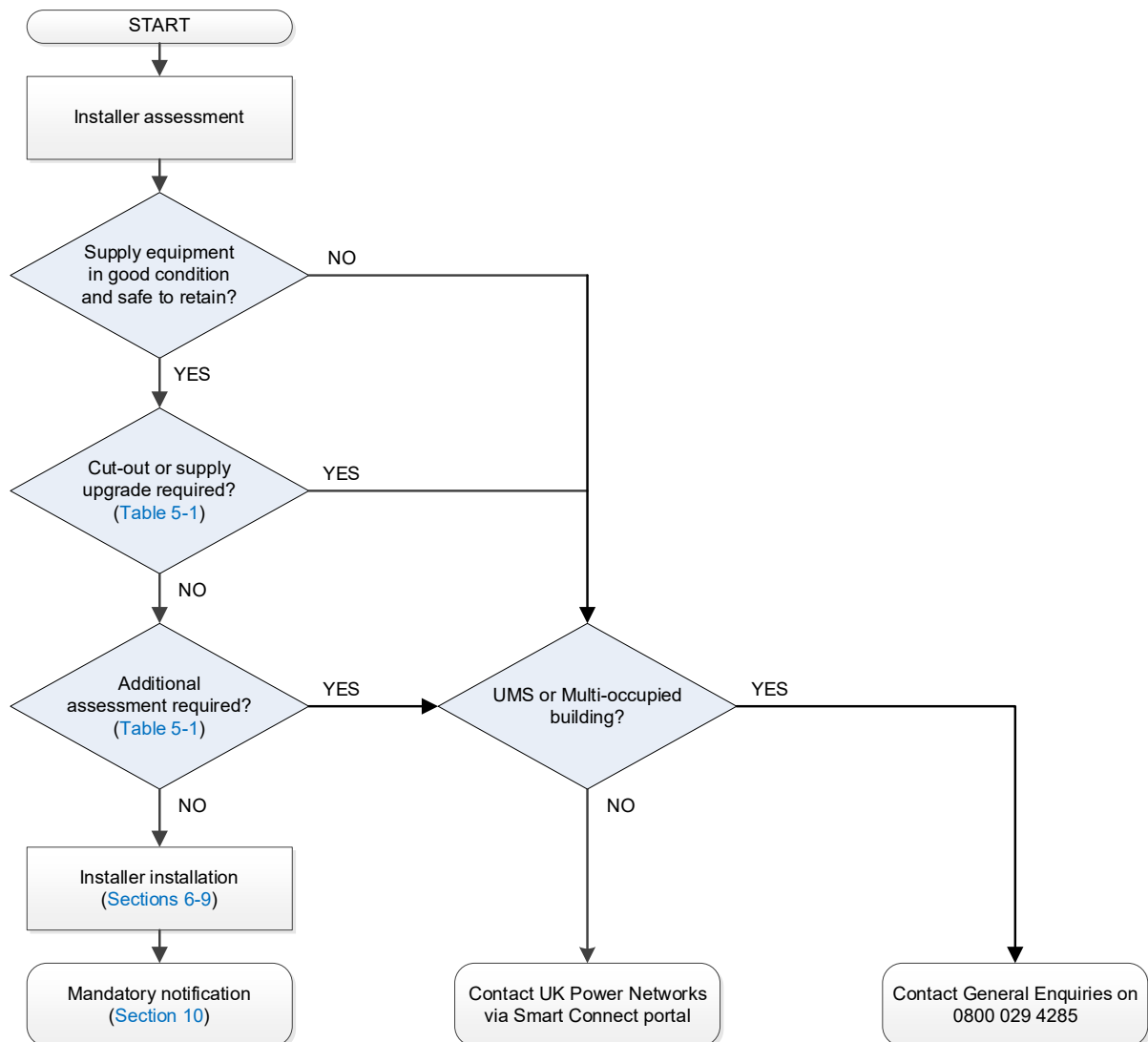


Figure 4-1 – Installer Assessment Process

5 Supply Overview

Table 5-1 specifies the supplies that are required for various EVCPs. The table also specifies the instances where thermal capacity and power quality assessments shall be completed by UK Power Networks.

For additional connection requirements, refer to Section 6.

Table 5-1 – EVCP Supply Overview

Type	Total MPR Available (kVA)	Max. EVCP (Typical EVCPs)		Standard	Typical Earthing (Section 7)
		Max. without assessment*	Max. with assessment**		
25A UMS (Section 6.1)	5.75	5kW***	n/a	EDS 08-2102	TT
100A Single-phase (Public Highway)	23	7kW	22kW	EDS 08-2101	TT
100A Three-phase (Public Highway)	69	7kW (per phase)	50kW	EDS 08-2101	TT
80A Single-phase (Section 6.2)	18	3.6kW	7kW	EDS 08-2101	PME
80A Three-phase	55	7kW (per phase)	15kW	EDS 08-2101	PME
100A Single-phase (Section 6.2)	23	7kW	15kW	EDS 08-2101	PME
100A Three-phase	69	7kW (per phase)	50kW	EDS 08-2101	PME
Large LV (200A+)	≤1500	n/a	up to 1500kVA	EDS 08-2100	Case specific
HV Supplies	Limited by MPR	n/a	All load	EDS 08-3100	Case specific
EHV Supplies	Limited by MPR	n/a	All load	EDS 08-3100	Case specific
Multi-occupied Building (including car parks)	Limited by MPR	n/a	All load	EDS 08-1103	Case specific
<p>* Possible to connect without additional assessment.</p> <p>** Possible to connect subject to thermal capacity and power quality assessment (Section 8.2). Max. values assume other load is connected, the total MPR may be considered for dedicated EVCP supplies.</p> <p>*** Refer to Table 6-1 for fuse and cable requirements.</p>					

Table 6-1 – Unmetered EVCP Requirements

Max EVCP (kW)	Fuse Size (A)	Max. Phase to Neutral Loop Impedance (Ω) ⁽¹⁾	Max. Earth Fault Loop Impedance (Ω) ⁽²⁾	
			CNE Cable	SNE Cable
1	6	1.5	1.5	12
3	10	1.38	1.38	6.8
5	25	0.55	0.55	2.2

⁽¹⁾ The phase-neutral fault loop impedance applies to all connections (TN-C-S, TN-S, TT) and has been selected to ensure the maximum volt drop is 6% and to reduce voltage rise on the metalwork.

⁽²⁾ The earth fault loop impedance applies to TN-C-S/TN-S connections and has been selected to ensure the fuse operates within the required time to protect the cable. For higher values of earth fault loop impedance, a smaller fuse may be required to comply with EDS 08-2102.

6.2 Single-Phase Supplies

EVCP connections shall comply with the requirements of Section 5. This section details the additional requirements for the connection of EVCPs to existing single-phase supplies.

For earthing requirements, refer to Section 7.

6.2.1 Pup Fuses

Existing UK Power Networks approved 100A single-phase cut-outs may include the facility for a parallel 30A fuse or 'pup fuse' (refer to Section 3). Where included, the pup fuse may be used to provide a direct connection of an EVCP (up to 7kW) in accordance with EDS 08-2101.

Note: The pup fuse shall only be used on an existing single-phase service. Pup fuses shall **not** be installed retrospectively to facilitate direct connections to EVCP equipment.

6.2.2 Service Upgrades

For existing single-phase supplies, a service upgrade to 100A (single-phase or three-phase) is required in accordance with EDS 08-2101 to accommodate the additional load where the:

- MPR of the EVCP combined with the existing load exceeds 18kVA (for an 80A service).
- MPR of the EVCP combined with the existing load exceeds 23kVA (for a 100A service).

7 Earthing Requirements

The earthing requirements for EVCPs will depend on the earthing arrangements of the electrical supply to the charge point and the location of the charge point. The requirements for EVCPs in the public highway and buildings are detailed in Sections 7.1 and 7.2 below.

Further guidance on TT earthing is included in Section 7.3.

For further guidance on earthing, refer to EDS 06-0017.

7.1 Public Highway

EVCP supplies in the public highway, public car parks and similar locations or those constructed to a no lesser standard than a public highway/car park shall be earthed in accordance with Table 6-1.

Table 7-1 – EVCP Earthing Arrangements in the Public Highway

Supply	TN-C-S	TN-C-S + OPDD (Appendix B)	TN-S	TT (Section 7.3)
25A UMS	✗	✓	✗	✓
100A Single-phase	✗	✓	✗	✓
100A Three-phase	✗	✓	✗	✓
Large Supply (cut-out)	✗	✓	✗	✓
Large Supply (substation)	✗	✗	✓	✗

7.2 Buildings

EVCPs shall be earthed in accordance with the existing building earthing arrangement and may use TN-C-S, TN-S or TT as appropriate.

A TN-C-S (PME) earth terminal may be provided to a premise with an EVCP that is not electrical street furniture (e.g. domestic or small commercial installation) subject to the general requirements of BS 7671 Regulation 722.411.4.1 (limitation of earth potential rise to 70V). The customer's electrical designer/installer is responsible for ensuring that any TN-C-S (PME) earth terminal is used appropriately and conforms to the requirements of BS 7671.

It is the responsibility of the EVCP installer to ensure that:

- The earthing and bonding arrangements comply with the requirements of BS 7671.
- Any earth terminal provided for the premise is used appropriately.

7.3 TT Earthing

Any TT earthing system (and anything connected to it) shall be segregated by a minimum of 2.5 metres from all other earthing systems (TN-C-S, TN-S, TT). This can usually be achieved by ensuring there is 2.5 metres separation above ground between earthed metalwork.

The TT earthing system shall also be segregated by a minimum of 8m from any substation with separate HV-LV earths and associated cables to limit the effect of transfer voltage between earthing systems. Where reasonably practicable, consideration should also be given to the presence of underground earth electrodes.

The intention of these requirements is to ensure that significant hand-to-hand or hand-to-feet shock risk does not arise due to voltage differences between two different earthing systems.

Note: Refer to the *IET Code of Practice on Electric Vehicle Charging Equipment Installation* for further guidance on separation of EVCP earthing systems.

The supply, installation and maintenance of a TT earthing system is the responsibility of the customer.

8 General Requirements

8.1 Network Reinforcement

For network reinforcement costs, refer to CCCMS (external) and/or CON 00 024 (internal).

8.2 Power Quality and Disturbing Loads

Where required by Table 5-1 the connection of potentially disturbing equipment to the distribution network shall be assessed in accordance with ENA EREC G5. Disturbing equipment is any equipment that has the potential to cause voltage harmonic distortion. The majority of equipment used to charge electric vehicles falls into this category.

The data collection form in EDS 08-5055 shall be completed and submitted to UK Power Networks with an EVCP application. For multiple variants of different/unique chargers, a data collection form shall be submitted for each different type of charger. UK Power Networks shall subsequently carry out a power quality assessment in accordance with EDS 08-5055. Where power quality is not a constraining factor for the connection of chargers, the number of chargers to be connected should be assessed via a thermal assessment.

8.3 Ownership Boundaries

In all instances, the ownership boundary shall be at the outgoing terminals of the cut-out. Appendix C includes a diagram of a typical domestic supply set-up, and the ownership boundaries between the customer, supplier and DNO.

The ownership boundary shall be indicated on site using the approved boundary label 20042K (refer to EAS 07-0021).

For supplies in the public highway, inspection and reporting of service termination issues will be required by the customer or public lighting authority.

8.4 Legal Requirements

All necessary consents relating to the service cables and access arrangements shall be provided by the customer. If UK Power Networks equipment is to provide a strategic purpose additional to the function of a supply point for an unmetered supply customer, UK Power Networks shall ensure that its interests are adequately protected by the agreed tenancy arrangements. Necessary land rights shall be secured before starting construction.

9 Commissioning, Energisation and Disconnection

Refer to the appropriate connection standard for the correct commissioning, energisation and disconnection procedures required for each supply, including the requirements for MPANs where required.

10 Mandatory Notification Process

Installers are required to notify UK Power Networks of intended EVCP connections at the earliest opportunity and no later than the date of installation. This applies to all EVCP connections unless the connection is already known to UK Power Networks as part of a new development connection application.

EVCP connection notifications shall be archived and recorded by UK Power Networks in the central data repository where the data can be used for regulatory reporting and analysis.

For domestic and small business EVCP connections (up to 100A):

- Regional installers shall notify UK Power Networks via the online [Smart Connect](#) portal.
- National installers shall notify UK Power Networks via the [ENA Connect Direct](#) portal.

For all other EVCP connections (large commercial schemes, UMS, multiple installations, and multi-occupied buildings), installers shall complete and submit the ENA notification form (see Appendix A) to evnotifications@ukpowernetworks.co.uk.

If an installer is unsure of the EVCP connection type, contact the Connections Gateway on 0203 324 1460.

Appendix B – Assessed Open PEN Detection Devices

Table B-1 provides details of the assessed OPDDs for use on the UK Power Networks distribution network.

Evidence has been provided by the manufacturer/supplier that the devices listed satisfy the criteria detailed in ENA EREC G12 Issue 5 Section 6.2.16.2.

For guidance on the application and assessment of open PEN devices, refer to EBB 06-0106.

Table B-1 – Assessed OPDDs

Manufacturer	Address	Device	Date Added
Char.gy Ltd	55 King William St London EC4R 9AD	On Door Charge Point (ODCP) CP-X-002, CP-X-003.	03/07/2025
CityEV Ltd	Technopole Kingston Crescent Portsmouth PO2 8FA	Cityline and EVline Safevolt® 100 models. Cityline and EVline Safevolt® 300 models.	20/09/2023
Matt:e Ltd	Unit 1 Langley Brook Business Park Middleton Tamworth B78 2BP	MTE/A 5P, MTE/A 3P, MTE/A 13-32G, O-PEN Monitor.	01/05/2023
Any additional devices provided by the manufacturers above that fundamentally use the same core technology as the devices listed is also considered assessed and approved for use on the UK Power Networks distribution Network.			