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ENGINEERING DESIGN STANDARD

EDS 08-2101

LV CUSTOMER SUPPLIES UP TO 100A

Network(s): EPN, LPN, SPN

Summary: This standard provides guidance on the provision of new single-phase and three-phase low voltage (LV) customer supplies up to 100A (69kVA). The guidance includes service alterations, fuse upgrades, and disconnections.

Author: John Mason **Date:** 08/12/2025

Approver: Paul Williams **Date:** 15/12/2025

Applicable To:

UK Power Networks

☒	Asset Management	☐	Information Systems
☐	Capital Programme	☐	Innovation
☒	Connections	☐	Legal
☐	Customer Services	☒	Network Operations
☐	DSO	☐	Procurement
☐	Finance / Income Management	☐	Strategy & Regulation
☐	Health & Safety	☒	Technical Training

External

☒	G81 Website	☐	Contractors
☒	ICPs/IDNOs	☒	Meter Operators

Revision Record

Version	14.0	**Review Date**	08/11/2030
Date	08/12/2025	**Author**	John Mason

Reason for update: Business feedback and alignment with other standards.

What has changed:

- Section 1 revised and guidance on the application of this standard added.
- Section 3 updated to include new abbreviations.
- Section 4 design flowchart revised (Figure 4-1).
- Section 5.2 LV cable identification guidance introduced.
- Section 5.3 note added for cable route clarification.
- Section 5.7 revised to clarify the supply, connection, and responsibility of meter tails.
- Section 5.8 revised to provide further guidance on intake positions.
- Section 5.8.2 note added to clarify the use of freestanding kiosks (i.e. dedicated services only).
- Section 5.8.3 revised to clarify the use of form EDS 08-2101A.
- Section 5.10 amended to allow 3-phase cut-out to serve multi-occupied buildings with < 4 MPANs.
- Section 5.14 guidance on supplies to premises within parks refined and footnote added.
- Section 5.15 revised to provide further guidance on supplies to street furniture.
- Section 6.3.2 amended to clarify that service alteration joints can be laid in private land.
- Section 6.3.3 service retention amended to align with alterations to underground services.
- Section 6.4 restructured to provide new guidance on temp. disconnections of U/G services.
- Section 7.3 Class 5/6 flexible conductors unsuitable for cut-out termination.
- EDS 08-2101A amended to align with document update.
- Document reviewed.

Version	13.0	**Review Date**	19/11/2029
Date	19/11/2024	**Author**	John Mason

Reason for update: Document reviewed and updated following an update of EDS 08-2000, the withdrawal of EBB 08-0065 and feedback from the business.

What has changed:

- Section 3 revised and updated to include new abbreviations.
- Section 4 design flowchart updated (Figure 4-1).
- Section 5.2 maximum service cable examples added (Figure 5-1).
- Section 5.6 customer cables connection to isolator replaced with customer boundary.
- Section 5.9 typical multi-occupied 100A service arrangement reformatted (Figure 5-2).
- Section 5.10 temporary main pot-end requirements removed and replaced with reference to EDS 08-2000.
- Section 6.1 introduced to clarify the design approach for existing services.
- Section 6.2 content removed and replaced with reference to EBB 08-0068.
- Section 6.7 requirement added to remove any pup fuse found at a prospective BNO installation and reference to EOS 03-0072 corrected to ECS 13-0072.
- All references to EBB 08-0065 replaced with EDS 08-2000.
- Document reviewed.

Version	12.0	**Review Date**	04/04/2029
Date	04/04/2024	**Author**	John Mason

Reason for update: Document updated to include three-phase 100A supplies and to incorporate the applicable requirements of EBB 08-0065.

What has changed:

- Document title, summary, introduction, and scope amended to include three-phase 100A supplies.
- Section 1 diagram amended to include a three-phase typical supply arrangement (Figure 1-1).
- Section 4 design flowchart amended (Figure 4-1).
- Section 5.2, 5.3 & 5.4 rearranged.
- Section 5.2 includes LV main extension and service cable route requirements.
- Section 5.3 amended to include Table 5-1 and three-phase duct requirements.
- Section 5.5 added to provide guidance on the provision of earth terminals and cut-out earthing.
- Section 5.6 & 5.9 footnotes 2 & 7 added to provide further detail on the protection of meter tails.
- Section 5.7 revised to include further information on intake requirements.
- Section 5.9 diagram amended to include a three-phase typical multi-occupied supply arrangement (Figure 5-1).
- Section 6.2 revised to include service alterations on undersized sized mains.
- Section 7.3 footnotes 8 & 9 added to clarify why Armoured and Tri-rated cables are unsuitable for termination in a cut-out.
- Document reviewed.

Version	11.2	**Review Date**	13/03/2028
Date	24/07/2023	**Author**	Stephen Tucker

Reason for update: New guidance on looped services.

What has changed:

- Section 6.1 fuse upgrades for looped services revised.
- Section 6.4 looped service guidance content replaced with a reference to EBB 08-0066.
- Section 8 references updated.

Section Version	11.1	**Review Date**	13/03/2028
Date	19/04/2023	**Author**	Stephen Tucker

Reason for update: Cross-references corrected.

What has changed:

- Section 6.2.1, 6.4.1, 6.6 & 7.3 cross-references to Section 5.7 and 5.9 corrected.

Version	11.0	Review Date	13/03/2028
Date	13/03/2023	Author	Stephen Tucker

Reason for update: Updates to clarify provision of supplies to multi-occupied buildings, fuse upgrades and alterations/disconnections of existing services.

What has changed:

- Fuse upgrade option highlighted (Sections 1, 5.1 & 6.1).
- Fuse upgrade definition added (Section 3).
- Multi-occupied building process updated in Figure 5-2 to include alternative options (Section 5.9).
- Multi-occupied building supply requires a mandatory isolator (Section 5.9).
- Multi-occupied building supply requires a boundary label (Section 5.9).
- Multi-occupied building supply service/fuse size clarified (Section 5.9).
- Existing services section restructured (Section 6).
- 80A and 100A service/fuse upgrades clarified (Section 6.1).
- Looped service fuse upgrade clarified (Sections 6.1 & 6.4).
- Service alterations and disconnections sections restructured and revised (Sections 6.2 & 6.3).
- Looped service section revised (Section 6.4).
- Distributed energy resources notification updated (Section 7.5).
- General requirements section removed, and relevant content moved into other sections.
- Legacy charging guidance removed (Appendix A).

Version	10.0	Review Date	11/10/2026
Date	11/10/2021	Author	Stephen Tucker

Reason for update: Minor update to address business feedback following the publication of v9.0.

What has changed:

- Electric vehicle reference added to scope, flowchart and design requirements (Section 2, 4 & 5.12).
- Fuse size included (Section 5.2).
- Steel duct requirement removed (Section 5.4).
- Supplies to rooftop communication equipment added as new section (Section 5.8).
- Reference to multi-occupied added to existing services section (Section 6.1).
- Internal intake form applicable to both new and existing services (Section 6.1 & EDS 08-2101A).
- Overhead line manual reference note added (section 6.3).
- Fuse upgrade clarification note added to Table 6-2 (Section 6.5).
- Document reviewed.

Version	9.0	**Review Date**	10/06/2026
Date	02/06/2021	**Author**	Stephen Tucker

Reason for update: Further clarification on intake positions and multi-occupied building supplies.

What has changed:

- Guidance flowchart introduced (Section 4).
- New supplies from legacy 2/3kV networks included (Section 5.1).
- Cable duct types and sizes revised including the requirements inside buildings (Section 5.4).
- Intake position criteria clarified and internal intake justification form EDS 08-2101A added (Section 5.5).
- Communication cabinet supplies included (Section 5.6.4).
- Multi-occupied building responsibilities clarified (Section 5.7 and 8.3).
- Multi-occupied building supply diagram and process added (Section 5.7).
- Supplies to rooftop communication equipment referenced (Section 5.7).
- Supplies to new developments added (Section 5.9).
- Meter position location for existing services clarified (Section 6.1).
- Overhead service alteration guidance amended and flowchart added (Section 6.2).
- Table 6-2 reworked to apply to underground and overhead services (Section 6.5).
- Customer general responsibilities added (Section 8.1).
- Charging guidance moved to appendix (Appendix A).

Version	8.0	**Review Date**	25/02/2025
Date	25/02/2020	**Author**	Stephen Tucker

Reason for update: Business feedback and alignment with other standards.

What has changed:

- Intake position criteria revised. Internal meter position requires director approval (Section 4.5.1).
- Street furniture included (Section 4.5.2).
- Guidance on supplies to multi-occupied buildings included (Section 4.7).
- Alterations to underground services simplified (Section 5.3).
- Pup fuse provision clarified (Section 6.4).
- Reference ECS 06-0026 earth provision (Section 6.5.4).
- New customer responsibilities section added (Section 7).
- Document reviewed and minor amendments throughout.

Version	7.0	**Review Date**	20/12/2022
Date	13/11/2017	**Author**	Stephen Cuddihey

Reason for change: Re-alignment of LV design standards.

What has been changed:

- References to LV design standards updated throughout.
- Document renumbered from EDS 08-0129 to EDS 08-2101.
- SNE services updated in accordance with EDS 06-0016.

Version	6.0	**Review Date**	01/09/2021
Date	18/01/2017	**Author**	Stephen Cuddihey

Reason for change: Updated to provide guidance on the use of pup fuses.

What has been changed: Pup fuse guidance added to Section 6.4.

Version	5.0	**Review Date**	01/09/2021
Date	02/09/2016	**Author**	S. Cuddihey

Reason for change: EBP 08-0015 has been incorporated into EDS 08-0129 and a recent DCUSA addition has altered the position on meter responsibility.

What has been changed:

- Section 4 references to overhead services now removed to provide an open, easier position for new services.
- Section 4.5 incorporates new guidance for meter positions.
- Section 5.4.3 no longer comments on UK Power Networks meter responsibility.
- Section 5.5 includes a reminder that meter tails and customer wiring may require additional work if fuse upgrades are provided.
- Section 5.7.1 guidance on looped services ownership clarified.
- The previous Section 6 on looped services has now been incorporated into Section 5.7 and rearranged for easier use.
- Section 7.4 contains updated guidance on the provision of small services across the UK Power Networks license areas. This information differs from the now withdrawn EBP 08-0015.

Version	4.0	**Review Date**	01/08/2018
Date	04/08/2015	**Author**	Stephen Cuddihey

Reason for change: Periodic review and clarification of some requirements of the standard to provide guidance on common issues.

What has been changed:

- Clarification of internal meter positions.
- Clarification of meter ownership.
- Disconnections aligned with EDS 08-0133 practice.
- Refinement of loop services guidance.
- Guidance provided for cladded properties.
- Guidance provided for fuse downgrade requests.

Version	3.0	**Review Date**	01/09/2014
Date	17/06/2013	**Author**	S. Cuddihey

Clarification of meter box provision, clarification of hockey stick requirements, clarification of small service scope. Appendix K & L moved to EDS 08-0123.

Version	2.0	**Review Date**	01/06/2013
Date	03/05/2012	**Author**	Ron Cordwell

Amendment to section 5.1, Appendix C added. Appendix B & G amended, Amendment made to section 4.1.3.

Version	1.0	**Review Date**	
Date	12/12/2011	**Author**	Ron Cordwell

Original.

Contents

Tables

Figures

1 Introduction

This standard provides guidance on the provision of new single-phase and three-phase low voltage (LV) customer supplies up to 100A (69kVA). The guidance includes service alterations, fuse upgrades, and disconnections.

If a customer requests an increase in capacity and the existing service has a 60A or 80A fuse, a fuse upgrade should be considered in the first instance (refer to Section 6.2).

A range of existing service arrangements may be encountered across UK Power Networks three licence areas, this standard provides a common approach to all new services and alterations to existing services. Typical service arrangements are provided in Section 5.7.

Arrangement of the customer installation is entirely at the discretion of the customer. The Electricity at Work Regulations (EAWR) 1989 and The Building Regulations 2010 (Part P) require electrical installations to be designed, installed, and maintained to prevent danger. BS 7671 is the accepted standard to satisfy this requirement.

UK Power Networks is not an enforcing or advisory body for BS 7671. Where questions of the adequacy of the customer's installation need to be resolved, the electrical contractor should seek advice from the trade body providing their accreditation.

How to apply this standard...

This standard establishes the requirements for LV customer supplies up to 100A. The flowchart in Section 4 provides an overview of the standard, which includes new supplies (Section 5), existing services (Section 6), and customer responsibilities (Section 7).

Where the term **shall** is used in this standard the requirement is mandatory and the term **should** is used to express a recommendation due to consideration of cost, time and effort.

2 Scope

This standard applies to new and existing LV customer supplies up to 100A (69kVA) only, where a capacity of 1kVA to 69kVA is required.

For all other LV connections refer to:

- EDS 08-2100 for supplies above 100A (69kVA).
- EDS 08-2102 for unmetered supplies (including street-lights and street furniture).
- EDS 08-5050 for supplies to electric vehicles.

This standard is designed to be read in conjunction with the LV network design standard EDS 08-2000.

This standard does not apply to IDNO LV supply arrangements, refer to EDS 08-1101.

3 Glossary and Abbreviations

Term	Definition
BNO	Building Network Operator. Refer to EDS 08-1103 for further information
Basic Insulation (From BS 7671)	Insulation applied to live parts to provide basic protection and which does not necessarily include insulation used exclusively for functional purposes
Class I Equipment (From BS 7671)	Equipment in which protection against electric shock does not rely on basic insulation only, but which includes means for the connection of exposed-conductive-parts to a protective conductor in the fixed wiring of the installation (refer to BS EN 61140)
Class II Equipment (From BS 7671)	Equipment in which protection against electric shock does not rely on basic insulation only, but in which additional safety precautions such as supplementary insulation are provided, there being no provision for the connection of exposed metalwork of the equipment to a protective conductor, and no reliance upon precautions to be taken in the fixed wiring of the installation (refer to BS EN 61140)
CNE	Combined Neutral Earth
Development	A project or connection that is completed in stages
EAWR	Electricity at Work Regulations
ENA	Energy Networks Association
ESQCR	Electricity Safety, Quality and Continuity Regulations 2002
Fuse Upgrade	The replacement of an existing fuse with a higher value fuse (e.g. 60A to 80A or 100A)
Hockey Stick	Domestic service duct into the customer's property (refer to EAS 02-0000)
ICP	Independent Connection Provider
Looped Service	A looped service occurs where two or more properties share the same service, e.g. a connection to the live-side of the cut-out or a connection to the service. This includes where a pup fuse is used to supply a separate premise
LV	Low Voltage. A voltage exceeding 50V (rms) measured between phases (or phase to earth) but not exceeding 1000V phase to phase or 600V phase to earth (as defined by The Electricity Safety Quality and Continuity Regulations 2002)
Main	A low voltage underground cable or overhead line which connects a substation to either a pot end earth, an overhead line earth or to another substation
MPAN	Metering Point Administration Number. A unique number for each metering point, issued by a licensed distributor for use in the settlement system
MPBS	Mobile Phone Base Station
Multi-Occupied Building (from ENA EREC G87)	Any single building that has been sub-divided into more than one premise, for example flats (including conversions) or buildings that have been broken up into smaller industrial units. It includes communal areas (if any)
Multiple Services	Multiple services refers to more than one service to the same property/customer
NRSWA	New Roads and Street Works Act
Park	A large public garden or area used for recreation
PILC	Paper Insulated Lead Sheath Cable

Term	Definition
Plant Room	A plant room refers to a dedicated space within a building where various mechanical and electrical equipment is housed. This equipment may include items such as boilers, pumps, air conditioning units, electrical distribution equipment, gas distribution equipment and other machinery related to the building's operation
PME	Protective Multiple Earthing
Pot-end	A protective cover fixed over the end of a cable, to provide mechanical protection and prevent the ingress of water. Pot-ends are constructed from heat-shrink, resin or other, similar approved jointing materials and can be used on live or dead cables
Premise	Any area or building occupied by the customer
Pup Fuse	A fuse way, which is connected to an approved 100A cut-out to provide a secondary supply or additional supply point. For an additional supply point, the fuse way forms the point of isolation
Service	A low voltage underground cable or overhead line, which connects a customer to a main or directly to a substation
Supply	An electrical connection from a service
SNE	Separate Neutral Earth Refers to a cable with a separate neutral and earth conductor
TBS	Temporary Building Supply
TN-S	Terre Neutral Separated A system having separate neutral and protective conductors throughout the system. A DNO earth terminal can be provided at the customer's installation
UK Power Networks	UK Power Networks Ltd consists of three electricity distribution networks: • Eastern Power Networks plc (EPN). • London Power Network plc (LPN). • South Eastern Power Networks plc (SPN).

4 Design Flowchart

The flowchart in Figure 4-1 provides guidance on how to apply this standard and the applicable sections for new services or service alterations.

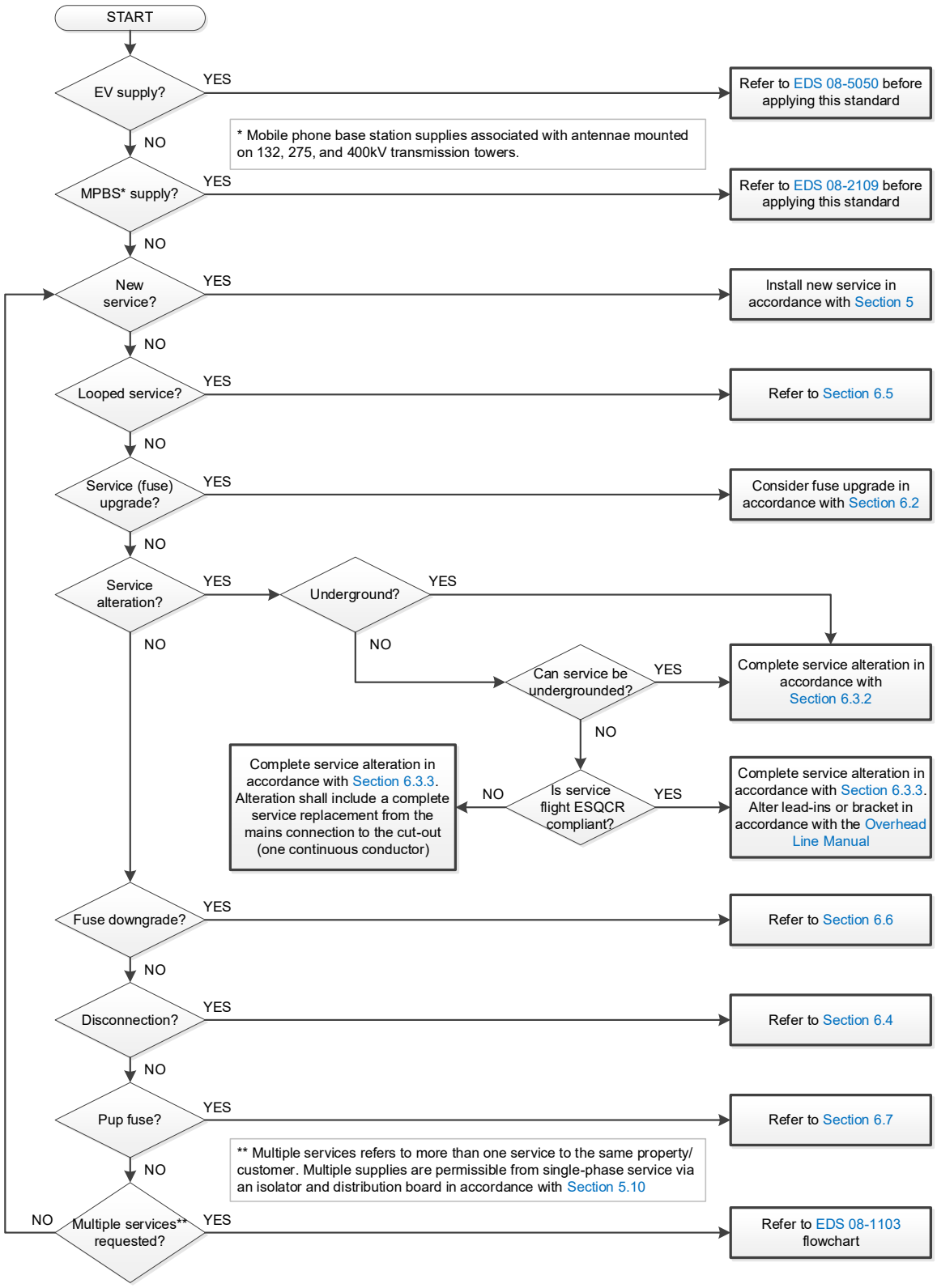

Figure 4-1 – New Service and Service Alteration Flowchart

5 New Supplies

5.1 General

If a customer requests an increase in capacity and the existing service has a 60A or 80A fuse, a fuse upgrade should be considered in the first instance (refer to Section 6.2).

UK Power Networks prefer new supplies to be 'underground' and supplied via an underground service cable which is directly connected to a compliant underground mains cable.

For additional information regarding underground mains, refer to EDS 08-2000.

Note 1: A service shall only be connected to a cable designated as a main and not another service cable.

Note 2: A pole down service eliminates 50% of the working at height required for an overhead service and shall be considered before a service flight is accepted.

UK Power Networks does not permit access to its equipment by uncontrolled parties. Only the supplier appointed meter operator, UK Power Networks staff, representatives or ICPs with appropriate authorisation are permitted to make connections to a UK Power Networks cut-out, including the earth terminal. Where appropriate, an earth block adjacent to the cut-out will be provided by UK Power Networks (or by an ICP) for the customer to use.

5.2 LV Cable Identification

For planned works, LV cable identification shall be considered at the design stage. Where practicable, the designer shall indicate the probable method of LV cable identification and incorporate it into the design (i.e. 1:500 drawing).

Refer to DSR 01 018 for further guidance on LV cable identification.

5.3 Service Cable, Length and Route

All new services shall use an approved 35mm^2 aluminium cable. For a list of approved 35mm^2 aluminium cables, refer to EAS 02-0000.

The overall length of a new 35mm^2 service shall be as short as possible and shall **not** exceed 43 metres (including the length of the hockey stick, down pole etc. as shown in Figure 5-1) to ensure a maximum voltage drop of 6% at the outgoing terminals of the cut-out.

Where a service requires an extension of the LV main, every opportunity shall be taken to lay the new LV main to a position where the service cable can be kept as short as possible. Any LV main extension shall be carried out in accordance with EDS 08-2000.

When designing a service cable route, the following land hierarchy shall be considered:

1. Land belonging to the property that the service supplies.
2. Public or communal land (shared driveways etc.).
3. Third-party land requiring legal consent.

Note: Service cable routes shall **not** be designed to pass beneath or within third-party buildings.

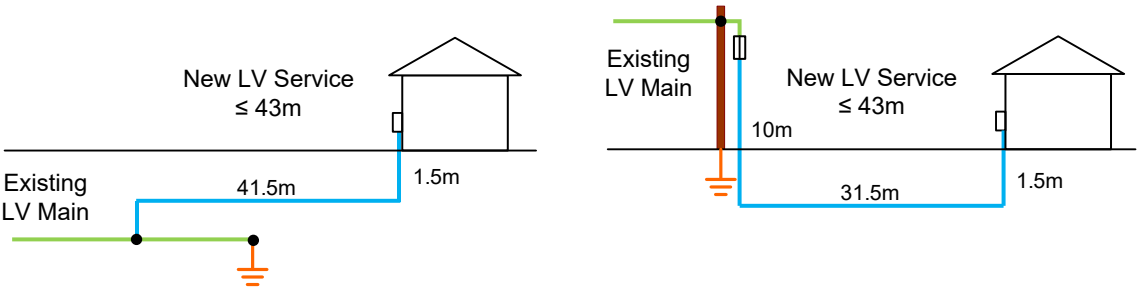

Figure 5-1 – Maximum Service Cable Length Examples

5.4 Cable Ducts

The service cable shall be installed in an approved plastic duct for its entire length in accordance with Table 5-1. For a list of the approved plastic ducts, refer to EAS 02-0000.

Table 5-1 – Cable Ducts

Service	Without Road Crossing[1]	With Road Crossing
100A Single-phase	32mm Coilable	125mm Rigid
100A Three-phase	50mm Coilable	125mm Rigid

The cable duct shall be installed with a non-corrosive draw cord. All cable ducts shall be installed and sealed in accordance with ECS 02-0019 and the relevant EDS 08-2110 drawing.

5.5 Cut-out and Fuse

All new services shall terminate in an approved 100A cut-out with a 100A fuse installed. For a list of the approved 100A cut-outs, refer to EAS 13-0000.

Typical service arrangements are shown in Section 5.7.

5.6 Earthing

5.6.1 Earth Terminal

A TN-C-S (PME) earth terminal can be provided for supplies originating from the distribution network where appropriate in accordance with EDS 06-0017.

Where a TN-C-S (PME) earth terminal is not appropriate, a TT earthing system should be used and access to the earth terminal should not be provided. Refer to EDS 06-0017.

5.6.2 Cut-out Earth

An additional cut-out earth is not required on a 100A cut-out, refer to ECS 06-0026 for further guidance.

[1] 32mm and 50mm cable ducts shall **not** be used as part of a road crossing, due to their inferior mechanical strength.

5.7 Typical Service Arrangements

Typical service arrangements and ownership responsibilities are shown in Figure 5-2.

Typically, the supplier appointed meter operator will provide, connect, and be responsible for the BS 7671 25mm^2 copper PVC/PVC meter tails between the UK Power Networks cut-out and the supplier's meter.

The customer shall provide and be responsible for the BS 7671 25mm^2 copper PVC/PVC meter tails between the supplier's meter and customer ownership boundary.

Note: The customer cables should be terminated at the meter by the supplier appointed meter operator.

If the distance between the cut-out and the consumer unit is greater than 3 metres, an additional point of overcurrent protection (e.g. switch fuse etc.) shall be installed to ensure adequate protection of the meter tails is afforded[2]. However, it is recommended that an additional point of isolation is always provided to allow independent operation of the customer installation without recourse to UK Power Networks.

Meter tails shall **not** be installed or run inside the cavity wall of a building other than passing directly through the wall[3].

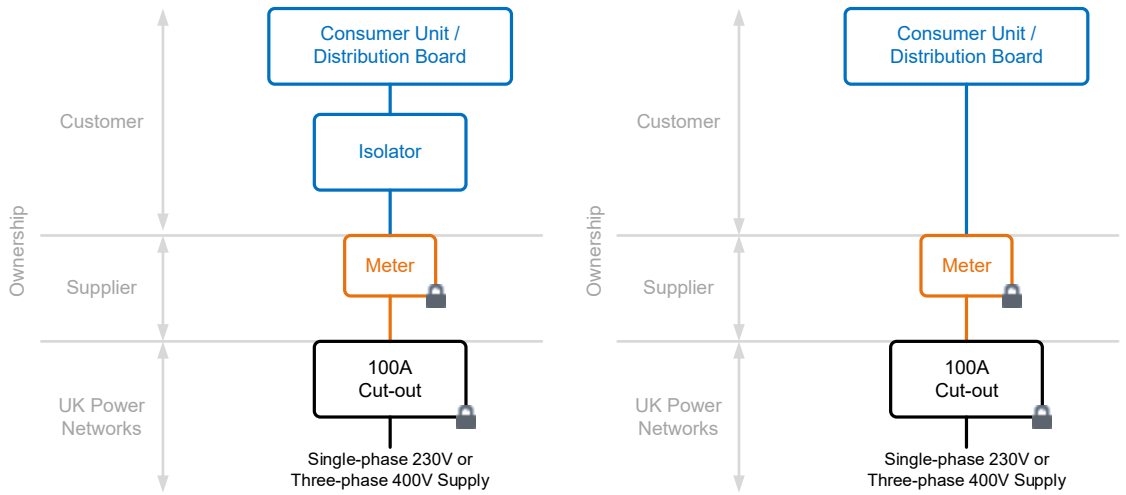

Figure 5-2 – Typical Service Arrangements

[2] BS 7671:2018+A2:2022 (regulation 434.3) states that a device for protection against fault current may be omitted if the DNO agrees that the protection at the origin of the installation (cut-out fuse) affords protection up to the main distribution point and that the wiring between the origin and main distribution point is carried out in such way as to reduce the risk of a fault to a minimum. As per BS 7671:2018+A2:2022 (regulation 434.2.1), UK Power Networks considers a distance not exceeding 3m (between the cut-out and main distribution board) sufficient to minimise the risk of a fault or damage occurring.

[3] Standard meter tails do not include any additional protection (e.g. armoured) and therefore may be damaged during installation or due to flora/fauna if installed in cavity walls. The cavity may also reduce the rating of the cable which could cause the cable to overheat.

5.8 Intake Position

5.8.1 General

An external electricity intake position is the UK Power Networks preferred and approved option for LV customer supplies up to 100A for the following reasons:

- It complies with the requirements of the Electricity Safety, Quality and Continuity Regulations 2002 and in particular Part 1 Regulation 3[4].
- It reduces the risk from fire and reduces the risk of future injury and/or fatalities.
- It removes the need to install UK Power Networks cables in customer premises.
- It allows 24-hour access for UK Power Networks and the supplier.
- It allows easier supply restoration during a fault.
- It provides a standard minimum cost solution.

An external intake position shall be provided in accordance with Section 5.8.2.

An internal intake position may be required or requested but shall be subject to UK Power Networks assessment. The following are examples of where an internal intake position may be suitable:

- A building with a dedicated plant room.
- A building without an appropriate fixing position for a meter box.
- A building without and appropriate landing position for a kiosk.

An internal intake position shall be provided in accordance with Section 5.8.3.

Note: Service equipment shall be installed by UK Power Networks in accordance with the approved LV electrical service drawings (EDS 08-2110). UK Power Networks are unable to provide/install service equipment at intake positions located above ground level or below basement level.

For supplies to street furniture, refer to Section 5.15.

In all cases, the location of the intake position shall be agreed with UK Power Networks at the design stage.

[4] Electricity Safety, Quality and Continuity Regulations 2002 Regulation 3:
3. General adequacy of electrical equipment
(1) Generators, distributors and meter operators shall ensure that their equipment is:
(a) sufficient for the purposes for and the circumstances in which it is used; and
(b) so constructed, installed, protected (both electrically and mechanically), used and maintained as to prevent danger, interference with or interruption of supply, so far as is reasonably practicable.

5.8.2 External Intake Requirements

The customer shall install and maintain an approved surface or flush mounted meter box and hockey stick (refer to EAS -13-0000), on an agreed external facing wall of the property. The meter box shall only house the:

- Service cut-out.
- Metering equipment (including electricity smart meter communications hub and/or gas meter communications hub).
- Customer's isolating switch or switch fuse (if fitted).
- Customer's earth wire and earth block (if fitted).

Alternatively, one of the following freestanding kiosks[5] (located externally to the building) may be used:

- UK Power Networks approved GRP kiosk (refer to EDS 08-2110-13a and EAS 07-0000).
- Customer specified GRP kiosk (refer to EDS 08-2110-13a/b).
- Brick-built kiosk (refer to EDS 08-2110-13c).

For surface and flush mounted meter box arrangements and freestanding kiosk requirements, including any specific requirements and exclusions relating to the type of building construction (e.g. wood, single skin etc.), refer to the relevant EDS 08-2110 drawing.

Note: Freestanding kiosks shall only be used to provide dedicated services (i.e. a single customer or BNO).

5.8.3 Internal Intake Requirements

Where an internal intake position has been approved by UK Power Networks, the following requirements apply to ensure the safe installation, operation, and maintenance of the service equipment.

The intake position shall be:

- Sited on or as close as possible to an external wall nearest to the direction of cable entry to the building, ensuring the shortest possible length of incoming cable inside the building.
- Segregated from any water pipework and equipment by a minimum of 150mm.
- Segregated from any gas pipework and equipment by a minimum of 150mm[6].
- Inclusive of a dedicated cupboard (suitably labelled) to house the electrical distribution equipment, unless the intake position is within a plant room.
- Of sufficient space and lighting to accommodate the service and metering equipment as shown on the relevant EDS 08-2110 drawing.
- Accessible to UK Power Networks, the supplier, and any appointed staff.
- Of sufficient headroom (2m) to comply with the escape route requirements in Building Regulations Part B1.
- Compliant with all other relevant Building Regulations.

[5] Metallic enclosures are not permitted due to the difficulty in managing and ensuring the integrity of the earthing required to mitigate the touch potential risk associated with a metallic enclosure.
[6] BS 6891 (Section 8.4.2) stipulates that that all gas pipework shall be spaced at least 150mm away from electricity supply equipment such as service cut-outs, metering equipment, isolators, distribution boards and consumer units.

The intake position shall **not** be:

- Located in a confined space as defined in the Confined Space Regulations 1997.
- In an area which constitutes a hostile environment e.g. where water, steam, water vapour, or chemical fumes are present.
- At a location without sufficient working space, access, and egress (refer to EDS 08-2110).
- In an area that could impede exit from the building during a fire.
- Directly beneath, within, or immediately adjacent to the bottom of a vertical service duct containing a water pipe where a leak could result in water ingress to the equipment.
- In an area where it may be subjected to mechanical damage e.g. behind a door which when opened could strike the equipment.
- Located where vehicular access/use of mobile equipment could cause damage by impact. It is particularly important that a free-standing intake position (building, cubicle, or cupboard) is located in a safe and secure location inaccessible to impact from vehicles.

For all domestic supplies, the customer or developer shall complete form EDS 08-2101A and submit it to UK Power Networks for approval.

Note: Commercial and multi-occupied buildings are subject to the requirements of the Regulatory Reform (Fire Safety) Order 2005 (FSO). The FSO places legal duties on the responsible party to undertake and record a fire risk assessment, implement general fire precautions, and maintain fire safety systems.

5.9 Looped Services

New looped services shall **not** be installed.

5.10 Supplies to Multi-occupied Buildings

Supplies to multi-occupied buildings shall be provided in accordance with the service arrangement shown in Figure 5-3. The only exception is a multi-occupied building with less than 4 MPANs (including a landlord supply), where a UK Power Networks approved three-phase cut-out may serve as a distribution board/isolator.

UK Power Networks preferred solution for supplies to a multi-occupied building is a three-phase supply. However, supplies to a multi-occupied building may be provided from a single-phase cut-out with an appropriate fuse (60A, 80A or 100A) as shown in Figure 5-3.

The process for determining the supply arrangement is outlined in Figure 5-4.

Where a larger supply is required to meet the desired capacity, refer to EDS 08-2100.

Note 1: The customer should confirm with their supplier that a multiple meter arrangement is acceptable.

Note 2: This solution shall **not** be provided from an existing looped service.

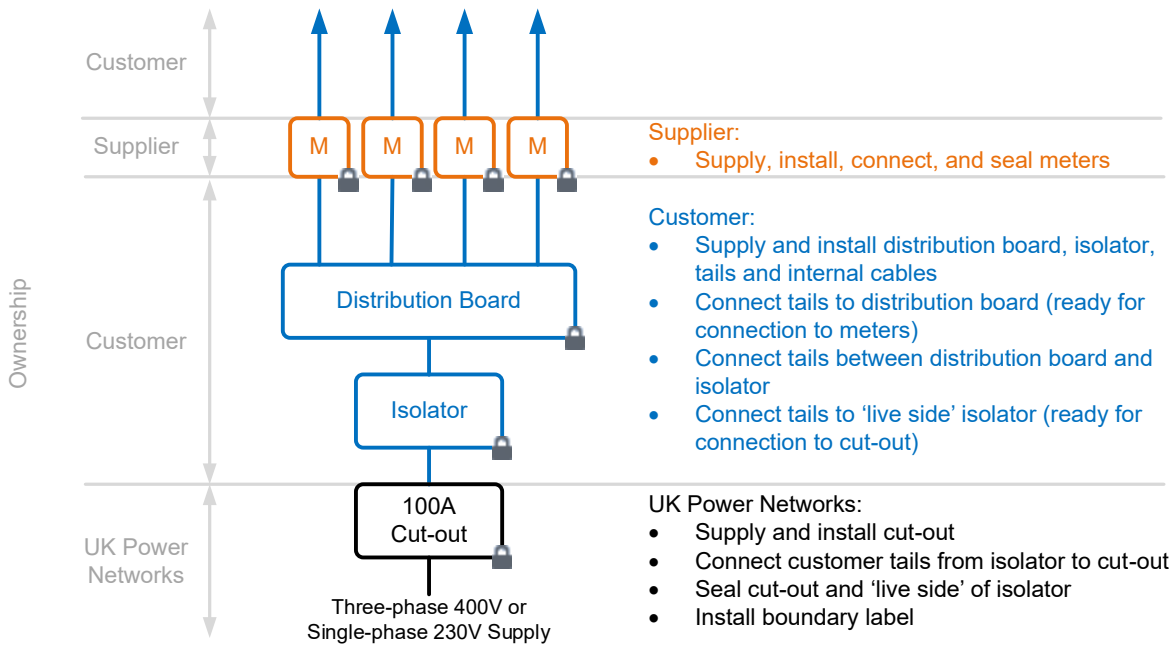

Figure 5-3 – Typical Multi-occupied 100A Service Arrangement

Note: Where additional supplies are requested to existing buildings with a steel-frame, shared metallic services or rooftop communications equipment, careful consideration is required to ensure that the supplies and the method of earthing are consistent and appropriate for the installation. Refer to EDS 08-1103 for further guidance.

The customer shall provide, install (in accordance with Figure 5-3), and be responsible for the following cables and equipment:

- A suitable distribution board and isolator.
- BS 7671 25mm^2 copper PVC/PVC insulated conductors from the distribution board to the meters.
- BS 7671 25mm^2 copper PVC/PVC insulated conductors from the distribution board to the isolator.
- BS 7671 25mm^2 copper PVC/PVC insulated conductors from the isolator to the cut-out.

If the distance between the cut-out and the distribution board is greater than 3 metres an additional point of overcurrent protection (e.g. switch fuse etc.) shall be installed to ensure adequate protection of the meter tails is afforded[7].

The UK Power Networks ownership boundary shall be at the outgoing terminals of the cut-out and shall be clearly labelled onsite using the approved boundary label 20042K (refer to EAS 07-0021).

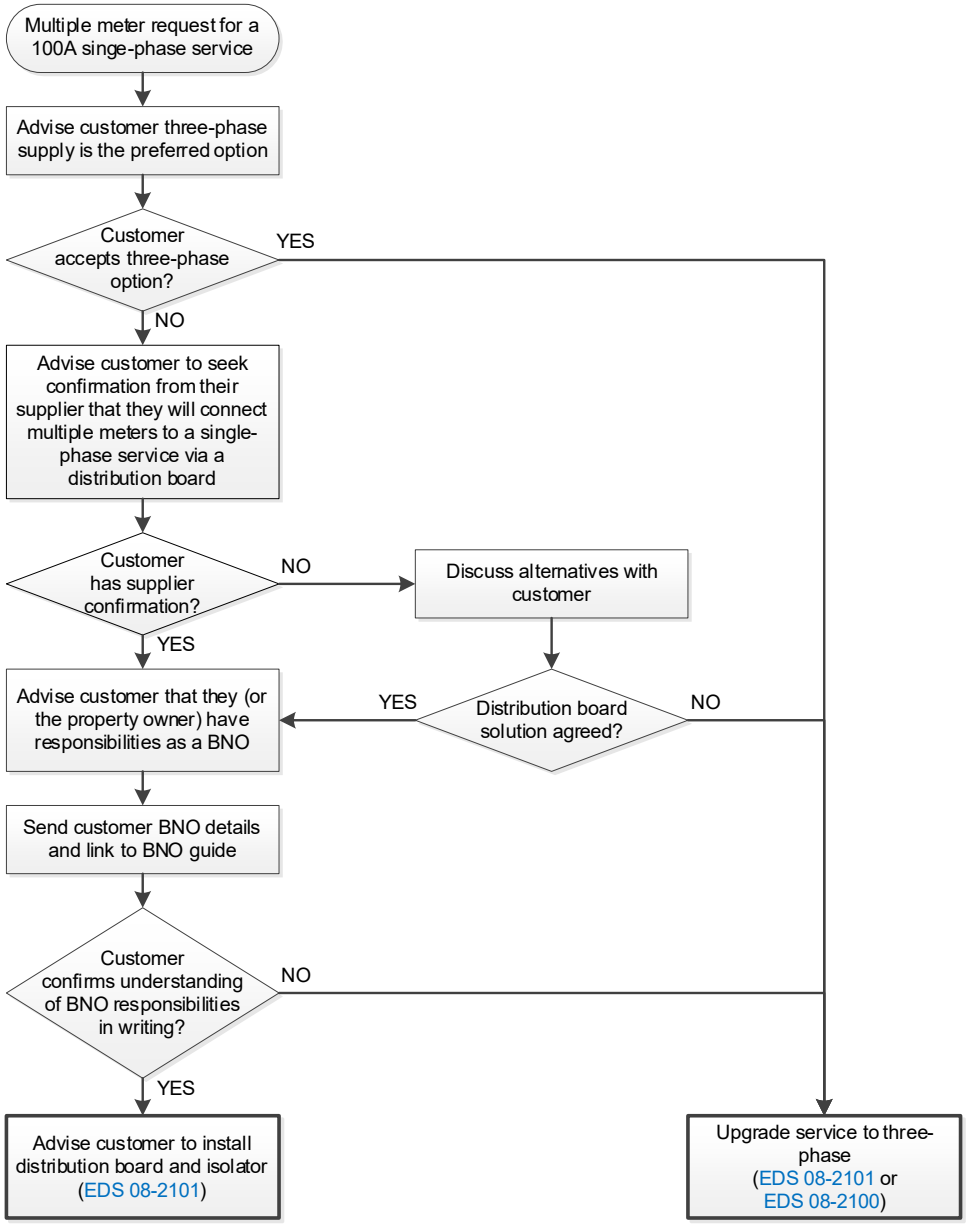

Figure 5-4 – Multi-occupied Building Request Process

[7] BS 7671:2018+A2:2022 (regulation 434.3) states that a device for protection against fault current may be omitted if the DNO agrees that the protection at the origin of the installation (cut-out fuse) affords protection up to the main distribution point and that the wiring between the origin and main distribution point is carried out in such way as to reduce the risk of a fault to a minimum. As per BS 7671:2018+A2:2022 (regulation 434.2.1), UK Power Networks considers a distance not exceeding 3m (between the cut-out and main distribution board) sufficient to minimise the risk of a fault or damage occurring.

5.11 Supplies to New Developments

Supplies to new developments should be planned to allow mains and services to be delivered without the need to install temporary pot-ends within the development site. Pot-ends can be difficult to locate once buried and may end up in the incorrect position (e.g. in the middle of a future carriageway, crossing a private garden etc.).

Services shall **not** be pot-ended within a development site. Refer to EDS 08-2000 for temporary main pot-end requirements.

TBS kiosks shall be sited as close to the main site boundary as possible and ideally within 2m.

5.12 Supplies to Rooftop Communication Equipment

Refer to the relevant section in EDS 08-1103.

5.13 Supplies to Electric Vehicles

Refer to EDS 08-5050 before using this standard to provide a service for an electric vehicle charging point.

5.14 Supplies to Premises within Parks

Supplies to premises within parks require additional consideration to ensure that the supply is accessible to UK Power Networks and suitably protected against damage, vandalism, and unauthorised access.

Services shall be provided in accordance with Section 5.3 with the additional criteria that all cables laid within the park shall be:

- Installed within approved ducts (refer to EAS 02-0000).
- At normal agricultural depth (1050mm minimum).
- Covered by a cable tile marker ‘Stokboard’ (refer to ECS 02-0019).

The service shall be terminated in an approved GRP or brick-built enclosure[8] (refer to EDS 08-2110) immediately adjacent to the customer service position. Metallic enclosures are not acceptable.

[8] Meter boxes do not provide the required level of security and protection for supplies to premises within parks.

5.15 Supplies in the Public Highway (Street Furniture)

5.15.1 General

Supplies in the public highway require careful consideration to safeguard the public, UK Power Networks staff, controlled parties, and the service equipment. This section provides additional requirements for street furniture supplies in the public highway and include supplies to:

- Public footways, footpaths, car parks, and carriageways.
- Private roads/car parks (inc. industrial estates) constructed to no lesser standard than the public highway.

Note: This section is only applicable to metered street furniture supplies (EVCPs, telecommunications equipment, advertisement hoardings, etc.). For supplies to unmetered street furniture (CCTV, streetlighting columns, ticket machines, etc.), refer to EDS 08-2102.

Street furniture supplies shall **not** be used to provide connections to domestic, residential, or commercial buildings.

Supplies to communication equipment enclosures exceeding 23kVA should preferably be three-phase. However, where impractical (i.e. there are separate third-party end-users with their own metering requirements) multiple single-phase services with neutrals bonded to a common earth, may be provided to a single enclosure. The design and installation for multiple services into one cabinet shall adhere to the guidance in EDS 08-1103.

5.15.2 Service Location

Supplies to street furniture shall be provided to safe and accessible locations (adjacent to a continuous public footpath) to ensure safe installation, operation, and maintenance of the supply.

Street furniture supplies shall **not** be provided to dangerous or inaccessible locations such as:

- On a roundabout.
- Within a central reservation.
- On a motorway.
- Mounted on a wall.
- In compartments placed below ground.
- Other locations at risk of vehicular damage.

Sites that fall into these criteria shall be supplied from a safe location via a suitable enclosure (refer to Section 5.14.3) provided by the customer or ICP.

Note: For street furniture located on a motorway (or equivalent dual carriageway), safe access to the enclosure shall be provided from land adjacent to the motorway. Access shall **not** be provided from the hard shoulder.

5.15.3 Enclosures

Whilst the use of metallic (or Class I[9]) enclosures is discouraged for safety and operational reasons, supplies to street furniture may be housed in a metallic enclosure to provide additional protection against damage. Metallic enclosures shall be earthed in accordance with the relevant street furniture section of EDS 06-0017.

Alternatively, where the risk of damage is negligeable or additional mechanical protection is provided, a GRP (or Class II[10]) enclosure should be used.

Refer to EDS 08-2110-15 for typical cut-out arrangements for street furniture.

[9] Class I enclosures are constructed from a conductive material and rely on the earthing system to provide touch protection under fault conditions.
[10] Class II enclosures are constructed from an insulative material and rely on the insulation to provide touch protection under fault conditions.

6 Existing Services

6.1 General

It is not intended that the provisions of this standard are applied retrospectively to existing installations (including any works requiring the temporary disconnection and reconnection of customer cables). However, the design principles should be applied where possible and should form the starting point for any modification.

6.2 Service (Fuse) Upgrades

For guidance on fuse upgrades, refer to EBB 08-0068.

For fuse upgrades on looped services, refer to Section 6.5.

6.3 Service Alterations

6.3.1 General

When requested or required, UK Power Networks shall undertake the replacement or relocation of services. Service upgrades shall be carried out in accordance with Section 6.2.

All underground cable and overhead line service alterations shall be carried out in accordance with Sections 6.3.2, 6.3.3 and 6.3.4.

For supplies to multi-occupied buildings, refer to Section 5.10 before proceeding.

A new intake position shall be agreed with UK Power Networks in accordance with Section 5.8. Where an internal intake position is to be retained, it shall comply with the internal intake requirements detailed in Section 5.8.3 and, for domestic installations, include completion of form EDS 08-2101A if the work is driven by a customer request.

Existing external intake positions should not be relocated internally but may be considered provided that the requirements of Section 5.8.3 are satisfied.

Relocation of the intake position may require alterations to the customer wiring. Refer to Section 5.7 for additional guidance.

A TN-C-S (PME) earth terminal can be provided in accordance with Section 5.6.1 where appropriate.

If the customer has a TN-S earth terminal from an SNE service cable and wishes to retain it or upgrade to a TN-C-S (PME) earth terminal, refer to ECS 06-0026.

6.3.2 Alterations to Underground Services

A 100A service should be provided at every opportunity. However, a like-for-like alteration may be provided if the existing service cable is rated below 100A.

All alterations to underground services shall be carried out as follows:

- The existing service cable shall be traced back to a suitable position (within private or public land) where the cable can be cut and the new service extension safely jointed.
- If possible, discarded sections of cables shall be recovered from the customer property.
- If any part of the service cable is rated below 100A, an appropriate fuse shall be selected, and a label applied in accordance with Section 6.6.
- If the overall service length (from the main) exceeds 43-metres it may be retained or shortened (but not extended) provided a network study is carried out to confirm it complies with the requirements of EDS 08-2000. If the service is not compliant, the main shall be extended in accordance with EDS 08-2000.

Note: LV joints shall **not** be installed within or beneath a building.

6.3.3 Alterations to Overhead Services

Overhead services should be removed at every opportunity and replaced with an underground service in accordance with Section 5. However, if an underground service is not practical or feasible, a like-for-like overhead service may be provided as follows:

- The complete service from mains connection to the cut-out should be replaced with a continuous run of conductor. Alternatively, the existing service flight and/or lead-in may be used where it is ESQCR compliant (refer to ECS 01-1006).
- Any oversail across third party land shall be removed if a feasible alternative is possible.
- If any part of the service cable is rated below 100A, an appropriate fuse shall be selected, and a label applied in accordance with Section 6.6.
- If the overall service length (from the main) exceeds 43-metres, it may be retained or shortened (but not extended) provided a network study is carried out to confirm it complies with the requirements of EDS 08-2000. If the service is not compliant, the main shall be extended in accordance with EDS 08-2000.
- The service shall be installed in accordance with the overhead line manual (ECS 01-1006).

6.3.4 Alterations to Services on Undersized Mains

Existing customers connected to LV mains that are smaller than the minimum size specified in EDS 08-2000 may have alterations to their services and continue to utilise their connection providing the following criteria is satisfied:

- There is no increase in capacity.
- An appropriately sized fuse is installed for the cable size.

An example of this is an alteration to an underground or overhead service cable, where it is more practical to disconnect the existing service at the LV main and create a new connection closer to the new intake position as shown in Figure 6-1.

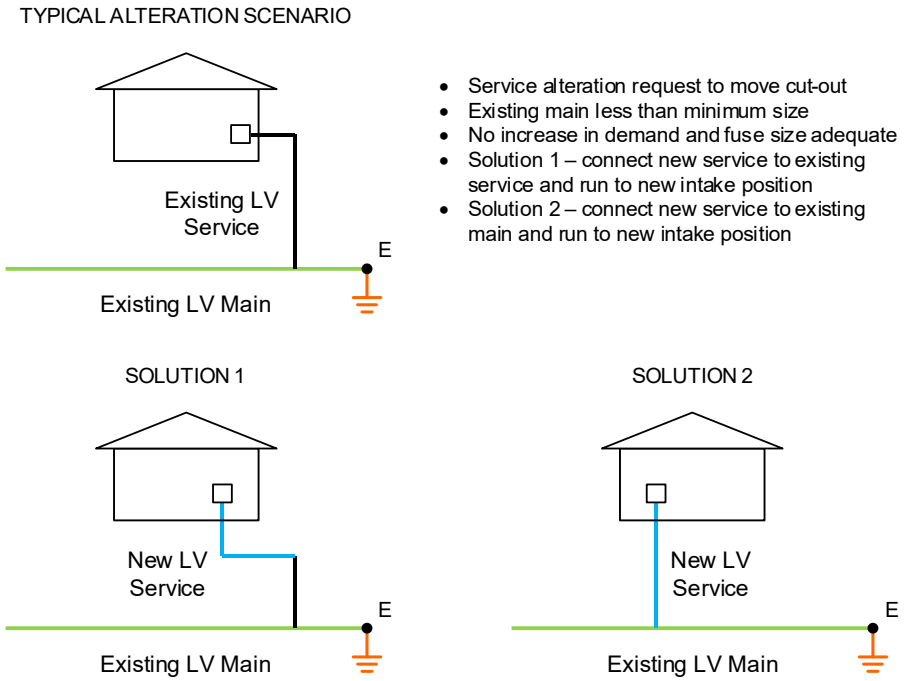

Figure 6-1 – Alteration to Service on an Undersized Main

6.4 Service Disconnections

6.4.1 General

This section provides the requirements for service disconnections and includes the removal of service cables and associated equipment. Refer to:

- Section 6.4.2 for temporary disconnection of underground services.
- Section 6.4.3 for permanent disconnection of underground services.
- Section 6.4.4 for temporary disconnection of overhead services.
- Section 6.4.5 for permanent disconnection of overhead services.

A temporary de-energisation of the customer installation may also be provided by the removal of fuses at the cut-out. This may be undertaken by either UK Power Networks or the supplier appointed meter operator.

In all instances of permanent disconnection, the appropriate LV mains record shall be updated with the alteration. Refer to HSS 40 052 for further information.

6.4.2 Temporary Underground Service Disconnections

Underground services may be temporarily disconnected subject to the following criteria:

- The service shall be reinstated within 5 days[11] of temporary disconnection.
- The service cable pot end excavation shall remain open and suitably protected in accordance with the New Roads and Street Works Act 1991 (NRSWA).
- The service cable pot-end shall remain visible.

6.4.3 Permanent Underground Service Disconnections

If the customer has requested a permanent disconnection of an underground service:

- The service cable and any LV mains extension shall be traced back to the LV main in public land, cut and pot-ended in accordance with jointing manual (ECS 02-0415).
- The pot-ended cable shall be strapped to the mains cable with cable ties if it is safe and practical without damaging the service cable/joint.
- The cut-out shall be removed.
- Any remaining dead cable should be removed where possible.

In the rare event that that the original service joint cannot be located, or it is impractical to expose the service joint (for example, it is obstructed by other services or encased in concrete) the existing service shall be cut and pot-ended as near as possible to the LV mains cable and the position of this pot-end marked and identified on the LV mains record.

Note: The removal of LV mains may require a diversion to ensure continuity of supply.

6.4.4 Temporary Overhead Service Disconnections

Overhead services may be temporarily disconnected in accordance with the following criteria:

- ESQCR compliant design – the service shall be disconnected from the LV network at the pole top, coiled at the customer end and reconnected on completion of the works.
- Non-ESQCR compliant – the service shall be removed and replaced with a compliant service in accordance with ECS 01-1006 on completion of the works.
- Underground service via an overhead line – the descending cable shall be left intact and the underground service shall be disconnected in accordance with Section 6.4.2.

6.4.5 Permanent Overhead Service Disconnections

If the customer has requested a permanent disconnection of an overhead service:

- The cut-out, lead-ins and termination point shall be removed.
- The dead service cable should be removed where possible.
- The supply pole, stays, and any LV mains extension shall also be removed.

Note 1: The removal of LV mains may require a diversion to ensure continuity of supply.

Note 2: Customers are not permitted to remove or retain poles under the ownership of UK Power Networks. If a third-party wishes to retain a used pole, an application shall be made under HSS 01 160 or ENA EREC EB/TP.

[11] Excavations required for temporary disconnections in private land shall be treated the same as excavations in public land with 5 days being the typical duration of an NRSWA permit.

6.5 Existing Looped Services

For guidance on looped services, refer to EBB 08-0066.

6.6 Fuse Downgrades

Customers and suppliers may request the replacement of 100A fuses with 80A or 60A fuses (refer to EAS 13-0000). The customer shall be made aware that de-rating of their supply will limit their maximum load and reduce the scope of equipment typically found within domestic properties.

An approved fuse only label (refer to EAS 07-0021) shall be applied to the cut-out.

6.7 Pup Fuses

An approved 100A cut-out includes a facility to allow an **existing single-phase service** to provide a primary supply via a 60A main fuse and a secondary supply via a 30A pup fuse.

The secondary 30A supply from the pup fuse may be used to supply a dedicated domestic service that cannot be provided via a BS 7671 domestic consumer unit and is suitable for:

- Electric vehicle charging points.
- External lighting.
- Dwellings within the curtilage of an existing property covered by class E of the General Permitted Developments Order 2015 (e.g. garages, enclosed swimming pools, sheds, other outbuildings etc.).

Note: The local council planning officer should be consulted for further information on class E developments.

The pup fuse shall only be used on an **existing single-phase service**. New multiple supplies shall be provided in accordance with Section 5.10. The load of both the 60A primary supply and 30A secondary supply shall be assessed before a pup fuse is installed.

The 30A secondary supply is unsuitable for flats or other domestic dwellings that require the typical suite of facilities (e.g. kitchens, heating etc.). Additionally, the 30A secondary supply shall **not** be used for loop supplies or landlord supplies within a multi-occupied building.

Any pup fuse found to be installed at a prospective BNO installation (i.e. upon request for the installation of a distribution board) shall be removed.

The primary 60A supply and the secondary 30A supply shall comply with either Section 5 or Section 6 as appropriate.

The earthing for both primary and secondary supply shall be in accordance with Section 5.6.

For technical guidance on the provision of pup fuse supplies, refer to ECS 13-0072.

7 Customer Responsibilities

This section provides a summary of the customer responsibilities for the LV supplies provided in accordance with this standard.

7.1 General

The customer should seek professional electrical advice to determine the protection equipment that is appropriate given the impedance at the cut-out and the design of their installation as UK Power Networks is unable to provide advice on these aspects.

7.2 Overcurrent Protection/Point of Isolation

The customer shall provide a suitable means of overcurrent protection and/or point of isolation between the meter and the consumer unit where required in accordance with Section 5.7.

7.3 Customer Cables and Equipment

The customer shall provide cables (meter tails) (for connection by others) in accordance with Section 5.7. For a multi-occupied building supply, the customer shall provide and install a distribution board, isolator and provide meter and cut-out tails (for connection by others) in accordance with Section 5.10.

The size and number of cables (and trunking if required) shall be designed and installed in accordance with BS 7671.

Armoured[12] and flexible conductors to BS EN IEC 60228:2024 (Classes 5 and 6)[13] are **not** suitable for termination in a cut-out.

7.4 Energisation

The customer shall appoint an energy supplier before the supply can be energised.

The customer shall provide a formal request for energisation in writing and shall provide evidence that their electrical installation is installed and tested in accordance with BS 7671 immediately prior to energisation.

The customer shall grant access to confirm satisfactory compliance when requested.

7.5 Notification

The installation of distributed energy resources (e.g. generation), electrical vehicle charging points, heat pumps and other low carbon technology may require notification in accordance with ENA EREC G99.

Further information and the relevant forms can be found on the UK Power Networks or ENA websites.

[12] The approved cut-outs do not include a facility to effectively terminate the steel wire armours and ensure that the armours are at earth potential and are single point bonded.
[13] Class 5/6 flexible conductors are susceptible to damage when terminated in a cut-out.

8 References

8.1 UK Power Networks Standards

DSR 01 018	Identification of LV Cables
ECS 01-1006	Overhead Line Manual – Erect Conductors and Pole Top Equipment
EAS 02-0000	Approved Equipment List - Cables and Joints
ECS 02-0019	Installation of Underground Cables - LV to 132kV
ECS 02-0415	LV Jointing Manual
EDS 06-0017	Customer LV Installation Earthing Design
ECS 06-0026	LV Supply Earthing Guide
EAS 07-0021	Operational Signs and Labels Material List
EBB 08-0066	Looped Services Guidance including LCT Connections
EBB 08-0068	Fuse Upgrade Guidance
EDS 08-1101	IDNO Networks
EDS 08-1103	Multiple Occupancy Building Supplies
EDS 08-2000	LV Network Design
EDS 08-2100	LV Customer Supplies above 100A
EDS 08-2101A	Electricity Intake Position Justification Form
EDS 08-2102	LV Customer Unmetered Supplies
EDS 08-2109	LV Supplies to Mobile Phone Base Stations Mounted on Transmission Towers
EDS 08-2110	LV Electrical Service Drawings
EDS 08-5050	Electric Vehicle Connections
EAS 13-0000	Approved Equipment List - LV Plant and Metering
ECS 13-0072	Pup Busbar for WT Henley Cut-Outs
HSS 01 160	Management of Pole Stores and the Safe Handling of Wood Poles
HSS 40 052	Energisation and Disconnection of Electrical Apparatus and Plant including all Cables

8.2 National and International Standards

Where references within the document are dated, only the cited edition applies. For all undated references, the latest edition (including any amendments) applies.

BS 6231	Electric cables. Single core PVC insulated flexible cables of rated voltage 600/1000 V for switchgear and controlgear wiring
BS 6891	Specification for the installation and maintenance of low pressure gas installation pipework of up to 35mm (R1¼) on premises
BS EN 61140	Protection against electric shock. Common aspects for installation and equipment
BS EN IEC 60228	Conductors of insulated cables
BS 7671	Requirements for Electrical Installations. IET Wiring Regulations
CDM	The Construction (Design and Management) Regulations 2015
CSR	The Confined Space Regulations 1997
EAWR	The Electricity at Work Regulations 1989
ENA EREC G87	Guidelines for the Provision of Low Voltage Connections to Multiple Occupancy Buildings
ENA EREC G99	Requirements for the connection of generation equipment in parallel with public distribution networks on or after 27 April 2019
ENA EREC EB/TP	Telecommunication Providers and Distribution Network Operators joint use of poles
FSO	The Regulatory Reform (Fire Safety) Order 2005
GDPO	General Permitted Development Order 2015 (as amended)
SI 1989 No. 635	The Electricity at Work Regulations 1989
SI 2002 No. 2665	The Electricity Safety, Quality and Continuity Regulations 2002
	Building Regulations Approved Document B1