

CATEGORY 2: PRACTICAL ELECTRICAL UPGRADES & TECHNICAL EXECUTION

Case Study 3: Consumer Unit Upgrade & RCD/SPD Protection Retrofit

AUTHOR & CONSULTANCY OVERVIEW

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Practice: St George Consultancy Services | **Web:** <https://stgeorgeconsultancy.co.uk>

1. The Client & Challenge

A light commercial property operating as a local administrative headquarters relied on an obsolete distribution setup consisting of a BS 3036 rewirable fuse board. The installation lacked residual current device (RCD) protection, surge protection devices (SPD), and adequate circuit separation for modern IT equipment.

- **Sector:** Light Commercial / Office Infrastructure.
- **Existing Setup:** Legacy rewirable re-fusable bridge boards with degrading thermal insulation.
- **Requirement:** Modernization to support sensitive IT electronics and fulfill statutory fire/shock protection standards.

2. The Risk & Problem

The legacy distribution board presented severe risks of electrical fire due to incorrect fuse wire sizing and slow fault clearing times. Additionally, the lack of surge protection left sensitive server hardware vulnerable to transient overvoltages, while missing RCDs created significant risk of fatal electric shock under earth fault conditions.

- **Fire Hazard:** BS 3036 fuses exhibit poor overcurrent tripping profiles compared to modern circuit breakers.
- **Electric Shock Risk:** Total absence of 30mA RCD protection on socket-outlet and direct supply circuits.
- **Data & Hardware Vulnerability:** Risk of corporate IT infrastructure loss due to lightning or switching surges.

3. The Technical Solution

Executing full safe isolation and testing protocols, St George Consultancy engineered and installed a fully compliant, modern electrical distribution unit.

- **Safe Isolation & Removal:** Verified dead working conditions following GS38 safe isolation procedures before dismantling legacy equipment.
- **Enclosure Selection:** Installed an 18th Edition BS 7671 Amendment 2 compliant metalclad consumer unit with integrated Type A RCBOs (offering individual circuit RCD/MCB protection).
- **Surge Protection Retrofit:** Integrated a Type 2 Surge Protection Device (SPD) to safeguard sensitive electronic systems.
- **Dead & Live Verification:** Conducted full verification testing including Continuity of Protective Conductors (R1+R2), Insulation Resistance (500V DC), Earth Fault Loop Impedance (Zs), and prospective fault current (PFC).

4. The Results & Business Value

The installation brought the facility's power distribution setup to state-of-the-art safety standards while minimizing operational downtime.

- **BS 7671 Amendment 2 Compliance:** Brought the property's complete distribution board up to modern electrical standards.
- **EIC Certification:** Issued a formal Electrical Installation Certificate (EIC) complete with full schedule of test results.

- **Enhanced Fire & Shock Safety:** Individual 30mA RCBO protection eliminated nuisance tripping while providing maximum personal shock protection.
- **Asset Protection:** Integrated SPD safeguard guaranteed protection for over £50,000 in office IT and network hardware.