Department for Infrastructure | An Roinn Bonneagair

Director of Engineering Memorandum DEM 184/22

Title	Provision and Maintenance of ITS Electrical Supplies
Version	3
Purpose	This memorandum provides information on the procedures for ITS providers, in conjunction with Street Lighting sections, to follow to provide and maintain electrical supplies associated with ITS equipment such as traffic signal controllers, SRS signs, VAS, VMS, CCTV cameras, ANPR cameras etc.
Date Issued	13 June 2022

All enquiries or comments to:

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BT3 9DY

Email: Belfast.ticc@infrastructure-ni.gov.uk
Phone: 028 9025 4517

Definitions

ANPR - Automatic Number Plate Recognition

CCTV - Closed Circuit Television

DNO - Distribution Network Operator

ITS - Intelligent Transport Systems

NIE - Northern Ireland Electricity

SRS - Safer Routes to School

VAS - Vehicle Activated Signs

VMS - Variable Message Signs

Scope

This memorandum applies to everyone involved in the design of schemes and the deployment of ITS including DfI Roads staff, developers, and contractors / consultants working on behalf of DfI Roads.

Background

In the past electrical supplies for ITS installations were often shared with supplies for the street lighting network. To reduce the risk of accidental switch-off when either Street Lighting or ITS contractors are working on their respective parts of the installation, the separation of these supplies is now sought wherever possible.

Consequently, where sites with existing supplies are undergoing significant maintenance or upgrade work, ITS providers and Street Lighting sections should work together, where funding permits, to put in place programmes to separate electrical supplies that are shared with the street lighting network.

New electrical supplies should always be separate from the street lighting network. The use of a shared supply should only be considered by exception and then only where doing so would result in a significant cost saving to the Department.

Electrical safety

All electrical work must comply with the requirements of the 'Electricity Safety, Quality and Continuity Regulations (NI) 2012' and the current versions of BS 7671 Requirements for Electrical Installations, and BS 7430 - Code of practice for protective earthing of electrical installations.

ITS providers are responsible for ensuring that the periodic electrical inspection and testing for highway power supplies and street furniture complies with the requirements BS7671. These inspections and tests are to be carried out by ITS contractors with G39 Level 2 training.

It is a contractual requirement for ITS contractors to have National Highways Sector Scheme 8 and G39 Electrical Safety certification.

It must be noted that the scope of the G39 certification in Northern Ireland does not extend to the ITS contractor removing and / or replacing DNO (NIE) cut-out fuses.

In all cases where the existing ITS cabinet has a direct NIE supply, the ITS contractor cannot carry out work on the NIE equipment. If the NIE equipment is damaged it must be referred to NIE for action immediately on 03457643643.

Access to ITS cabinets and supply mini pillars

No access to ITS cabinets or supply mini pillars is permitted unless successful G39 training has been undertaken.

The level of access is determined by the level of G39 training received:

Level 1 – *staff with awareness training in 210.1 Work in the vicinity of DNO/IDNO Equipment G39*

Staff who need unaccompanied access to ITS cabinets or supply mini pillars must have minimum Level 1 training. Staff with Level 1 training may only access supply mini pillars for the purposes of visual inspection, no further action is permitted.

Staff without G39 level 1 training can be permitted access to ITS control cabinets if they are accompanied by someone with G39 level 1 training.

Level 2 – *staff trained in 210 Work in the vicinity of DNO / IDNO Equipment including G39*

Level 2 access is required for staff who need access to ITS cabinets or supply mini pillars for the purpose of:

- Testing for Earth Loop Impedance (Ze, Zs), voltage, polarity and insulation resistance. Testing must be carried out in accordance with the current version of BS7671
- Removing and replacing fuses at the consumer end only. No work shall be undertaken involving DNO (NIE) fuses or other equipment.

Access to supply mini pillars is not a routine activity and should not be treated as such.

Procedure A - New sites

ITS providers should apply online to NIE directly using the link below:

https://www.nienetworks.co.uk/connections/business-connection

The total circuit wattage for the complete installation (e.g. traffic controller, signal heads, etc.) will be required for this application. The supplier of the ITS equipment will have this information. The GMPRN number 9155360978 must also be quoted in this application.

NIE will carry out a design, estimate and create a quotation for providing the supply to the new mini pillar and will issue '*Acceptance of Terms and Conditions 'Unmetered Connection*' form and costs to the requester named on the quotation form. This will include the TMPRN number (71xxxxxxxxx) for the supply mini pillar.

The ITS provider should keep a register of TMPRN numbers issued by NIE, together with their associated site locations and include this information on their quarterly energy returns for the equipment to Network Lighting HQ. This information along with the detailed equipment inventory will enable validation of an energy return to NIE.

Upon receipt of the '*Acceptance of Terms and Conditions*' form the requester must complete and return the form along with a 'Connection Card' for the installation. The Connection Card must be completed by the electrical contractor responsible for fitting out the new supply mini pillar. The Connection Card can be accessed via the attached link:

http://www.nie.co.uk/Connections/Connection-cards

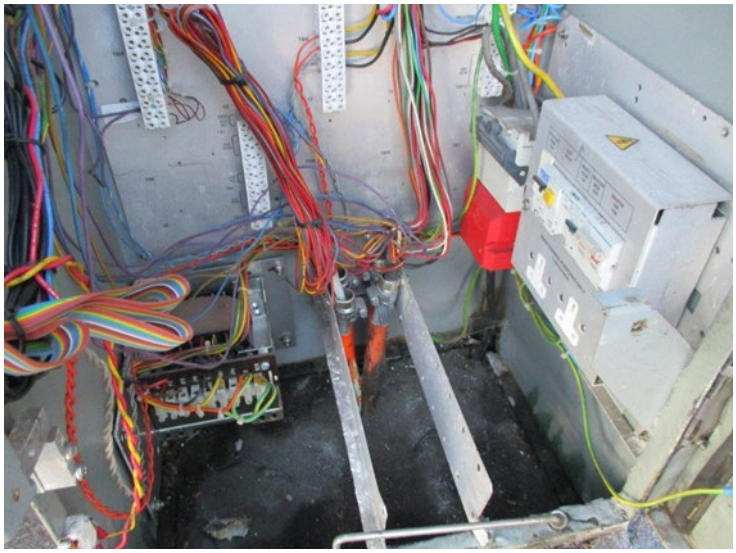
ITS providers should arrange for the installation of a new supply mini pillar cabinet, together with the associated ducting and cabling linking it to the ITS equipment requiring a power supply. Ducting should also be provided to cater for the incoming DNO supply.

The mini pillar cabinet must be fitted out to comply with requirements of BS 7671 for the highway supplies and street furniture that it is intended for (see typical schematic layout in Appendix 1). This work will be carried out by the Department's authorised Street Lighting contractor who may also install the mini pillar cabinet if required.

NIE will contact the requester and agree a date to install the NIE service cable and cut-out. NIE will complete their connection and energise the supply. Final connection may be made by the Department's authorised street lighting contractor or NIE, as required.

Once the work is complete, the NIE invoice should be processed for payment.

Procedure B – Where the NIE supply goes directly into an ITS controller cabinet.



Where the NIE supply goes directly into an ITS controller cabinet, ITS providers should make it a high priority to instigate a programme of work to transfer the NIE cut-out to a separate supply mini pillar.

This may be done without upgrading the ITS equipment but must always be done when ITS equipment is being replaced or upgraded.

The transfer of the NIE cut-out will be carried out the Department's authorised street lighting contractor who will supply and fit out the new supply mini pillar.

Costs incurred by the street lighting contractor shall be met by the ITS provider.

Note: if the existing NIE cut-out or the supply cable is damaged in any way, this work must be carried out by NIE.

All new or modified ITS supply mini pillars must be configured as per the typical schematic layout in Appendix 1.

Procedure C- Where the supply comes from a supply mini pillar shared with the street lighting network

Where the supply for existing ITS equipment comes from a supply mini pillar shared with the street lighting network, consultation should take place with the local Street Lighting office, to plan how and when the necessary adjustments can be made, to ensure there is the necessary separation between street lighting and ITS cable systems. Such separation will reduce the risk of accidental switch-off, when either the street lighting or ITS contractors are working on their respective parts of the installation.

Any such programme of work will be subject to funding and workload constraints, but should see some degree of progress annually. Work to separate supplies may be initiated by ITS providers or Street Lighting sections, or through combined initiatives. Given the live working restrictions placed on ITS providers, this work will involve the use of the Department's authorised street lighting contractor.

Where new supplies are sought the initiator should follow the same lines as those in Procedure A. All new or modified ITS supply mini pillars must be configured as per the typical schematic layout in Appendix 1.

Where an existing shared electricity supply is being separated into two separate supplies, a comprehensive approach should be adopted to ensure that both supply mini pillars (new and existing) meet current standards. This should include the removal of 3-phase equipment where a 3-phase supply is no longer required. Where an ITS or Street Lighting supply is being removed from a shared 3-phase supply, provision should be made to remove the remaining 3-phase equipment and share the costs between the sections involved.

Where a shared supply mini pillar remains in use and the ITS contractor requires access for maintenance or routine testing purposes, they must agree and arrange access with the local Street Lighting office. All such access is dependent on the ITS contractor being G39 Level 2 trained.

Procedure D – Switched mains supplies

In instances where solar powered ITS equipment is impractical to install, ITS providers should apply for an independent electricity supply as in Procedure A.

In those cases where the provision of an independent electricity supply is cost prohibitive and a street lighting cable network is available, ITS providers may consult with the Street Lighting section, to see if a switched mains connection would be possible to allow trickle charging of the batteries during the time of street lighting operation. Where the street lighting network is unsuitable and requires upgrading, the ITS provider may be required to provide some or all the funding necessary to upgrade it.

In the event of battery failure, if a fault is suspected in a switched mains supply, the ITS contractor should contact the appropriate street lighting section, who will arrange for the supply to be temporarily energised for investigation. If a fault is identified on the supply cable, the street lighting contractor will carry out remedial works to restore the supply.

Where the works required to restore a supply are extensive, consideration should be given to the provision of a separate supply.

In general switched mains supplies are not a preferred option and should only be used by exception.

Procedure E – Modification of existing ITS mini pillar equipment

Where the equipment in an existing ITS supply mini pillar requires modification (e.g. to install the additional cut out indicated in the typical schematic layout in Appendix 1), the assistance of the Department's authorised street lighting contractor will be required to carry out this work. Costs incurred by Street Lighting sections shall be met by the ITS provider.

Equality

Equality issues were considered for this DEM and no Section 75 equality issues arise from the introduction of this Memorandum, as it provides internal guidance in line with existing planning / roads legislation and policy and will not have any differential impact on Section 75 groups.

Rural Needs

There are no impacts for rural communities arising from this DEM.

Privacy

No personal data is being sought and therefore not being recorded so privacy impact screening is not required.

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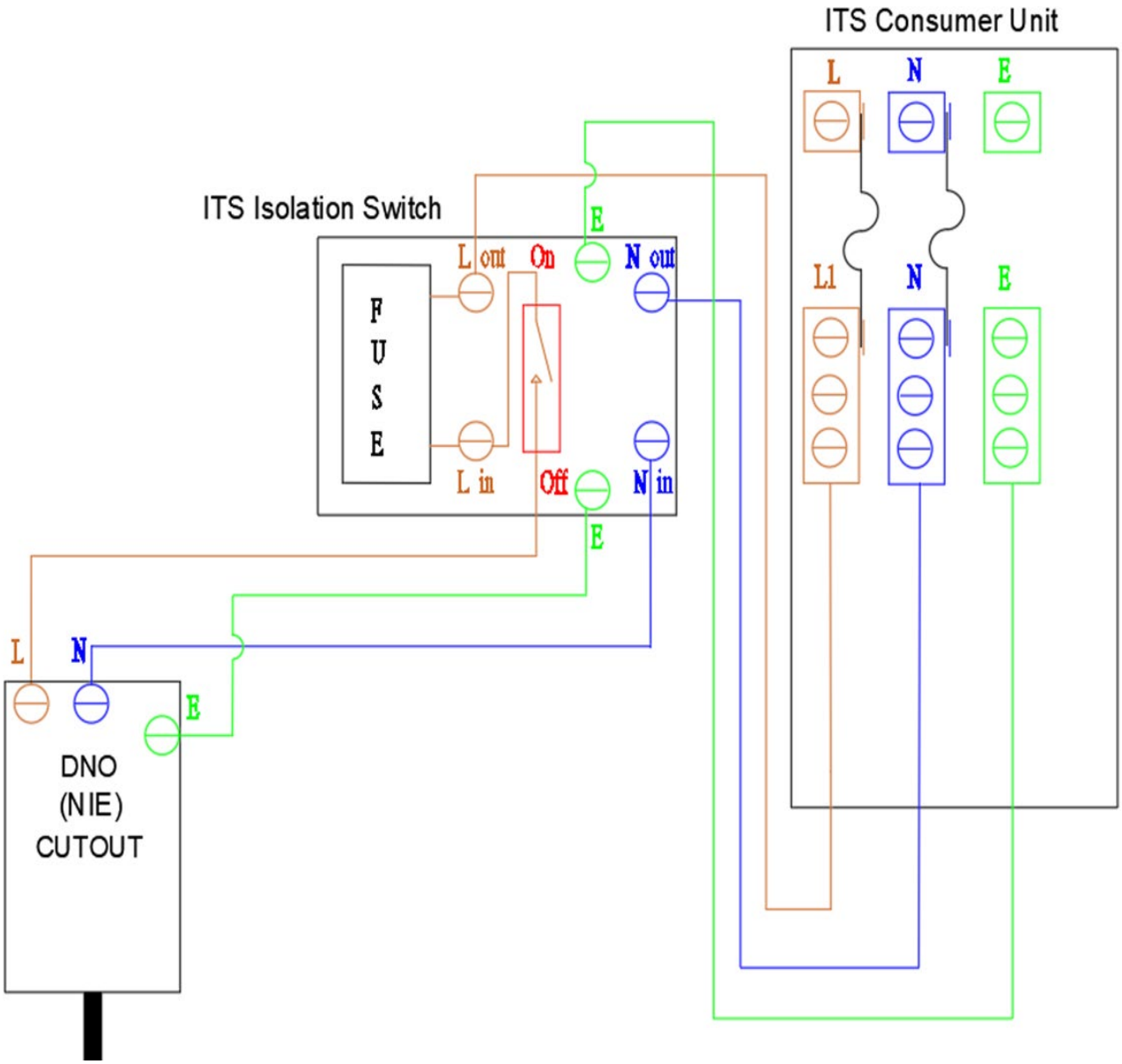
13 June 2022

Appendix 1 – typical supply mini pillar schematic layout




ITS
isolation
switch
Main Switch
ITS
consumer
unit
DNO (NIE)
cut-
out