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PRINCIPLES FOR THE PLANNING, CONNECTION AND OPERATION OF ELECTRICITY DISTRIBUTION NETWORKS AT THE INTERFACE BETWEEN DISTRIBUTION NETWORK OPERATORS (DNOs) AND INDEPENDENT DISTRIBUTION NETWORK OPERATORS (IDNOs)

www.energynetworks.org

Operations Directorate
Energy Networks Association
6th Floor, Dean Bradley House
52 Horseferry Rd
London
SW1P 2AF

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1. PURPOSE

The Utilities Act 2000 introduced distribution as a separate activity requiring authorisation. As a consequence, any person can apply for a licence to operate existing or newly built distribution networks.

Independent Distribution Network Operators (IDNOs) own and operate electricity distribution networks which are predominately network extensions connected to the existing distribution networks owned by the 14 Distribution Network Operators (DNOs). For the purposes of this document a DNO operating “out of area” is regarded as an IDNO.

This was an important change for the electricity distribution business and customers are now supplied by both DNO and IDNO Distribution Networks. Operational interfaces are therefore required between DNOs and IDNOs to ensure continuity of supply.

This document sets out the arrangements to ensure:

- The safety of the public.
- The safety of staff working on DNO and IDNO networks.
- The provision of a high level of customer service in an economic and efficient manner.
- The development and maintenance of an efficient, co-ordinated and economic system of electricity distribution.

This Engineering Recommendation established good practice of the Operational and Technical issues at the interface between IDNOs and DNOs. The Working Group that developed this Engineering Recommendation included representatives from DNOs, IDNOs, the Health and Safety Executive (HSE) and Ofgem, with the work facilitated by Energy Networks Association (ENA).

The first issue of this document was published in 2009.

This second issue, prepared by the DNO/IDNO Working Group includes changes arising from alterations to the metering requirements between DNO and IDNO networks. The DNO/IDNO Task Group was reconvened to consider the practical application of these changes. The Task Group also took the opportunity to review the general requirements in EREC G88 following experience of DNOs and IDNOs working together on technical interface issues.

2. SCOPE

This document is only applicable to licensed DNOs and IDNOs as it is underpinned by many other detailed mandatory requirements on licence holders. Consequently this document is not applicable to non licence holders and any subsequent reference to DNOs/IDNOs refers to licensed DNOs/ IDNOs.

This document sets out high level principles for the DNO/IDNO interface and complements statutory, regulatory and contractual requirements which will always take precedence, e.g. The Electricity Act 1989, Distribution Licence, GB Distribution Code (DCode), The Distribution Connection and Use of System Agreement (DCUSA) and The Bilateral Connection Agreement (BCA).

The detailed arrangements in this document assume that the flow of energy is from DNO to IDNO. Where this is not the case, the broad principles laid out here shall be applied, and detailed arrangements agreed between parties.

Although currently not covered in this document, there is a need for DNOs and IDNOs to discuss and agree how they can best comply with their Grid Code obligations in relation to OC6 Demand Control. Typically IDNO networks are sufficiently embedded in a DNO network such that when the DNO implements a Demand Control instruction issued under Grid Code OC6, the actions are implicitly applied to IDNO networks. However in some situations e.g. in the case of an IDNO 33/11kV substation specific arrangements will need to be made between the DNO and IDNO to ensure OC6 Demand Control instructions are implemented properly. For new installations, the expectation is that on receipt of an OC6 Demand Control instruction from National Grid, the DNO will provide an instruction to an IDNO so that they can implement the required action automatically and hence meet the implementation timescales prescribed in the Grid Code.

3. GOVERNANCE

Issue 1 and issue 2 of this document was drafted by a Working Group comprising representatives of all mainland UK DNOs and IDNOs holding Distribution Licences, with guidance from Ofgem and the Health & Safety Executive.

The Joint Working Group was facilitated by ENA and supported by Ofgem and HSE.

The Joint Working Group will reconvene as required to resolve future issues.

4. PLANNING REQUIREMENTS

4.1 General Requirements

Where an IDNO, or their appointed agent, wish to carry out all of the contestable connection works between the POS and the POC under Competition in Electricity Connections, the DNO shall administer the application for connection in accordance with Condition 15 of its Distribution Licence (Standards for the provision of Non-contestable connection services). Where the IDNO, or their appointed agent, do not specify the Competition in Electricity Connections option, then the application will be administered in accordance with Section 16 of the Electricity Act 1989 and Condition 15a of its Distribution License. In either case the DNO will comply with its connection charging methodology which it must determine in accordance with Condition 14 of its Distribution Licence. The following information requirements have been set out on the basis that the DNO will undertake the relevant assessment to determine the location of the POC to the DNO’s distribution system including

any associated reinforcement works. This activity may be contestable in future, in which case the same information detailed below would be required by the IDNO if it were to determine the POC location.

IDNO Requirements and the Point of Connection

- The IDNO shall specify the site to be supplied, the required demand to be met and the preferred location of the Point (or Points) of Supply (POS) to the IDNO network. Wherever reasonably practicable, DNOs will ensure that the POS meets the requirements of the IDNO taking account of the DNOs wider obligations, including under the Electricity Act and its Distribution Licence.
- The Point of Connection (POC) will be determined taking into account all the IDNO's requirements and the DNO's wider obligations. At this stage the IDNO will inform the DNO of the future anticipated required capacity for the development. The information requirements for phased capacity to IDNO networks are covered in the DNO's Statement of Methodology and Charges for Connection to the DNO's Distribution System.

The IDNO or its appointed Agent/ICP shall confirm:

- Whether the quotation they require is covered by Standard Licence Condition (SLC) 15 or Section 16 of the Electricity Act 1989. In particular, whether the quotation they require should include any contestable works by the DNO (between the POC and the POS).
- The site to be supplied, its boundaries, the required capacity to be met and the preferred location of the Point (or if possible Points) of Supply (POS).
- Their required import and export capacity which should subsequently be confirmed in the Bilateral Connection Agreement (BCA) with the DNO.
- Potential Maximum Demand (expressed in kVA), both in magnitude and type (e.g. Domestic unrestricted, supplier-specific flexible tariffs or general commercial). For phased developments, or where the take up of capacity may grow over a period of time as a site develops, this requirement shall be defined as either:
    - The initial capacity to be provided forthwith.
    - Capacity ramping during the entire construction phase of the project or the total anticipated scheme capacity to be provided.
- Generation to be connected including voltage of connection and the prospective fault level contribution in accordance with the requirements of The Distribution Connection and Use of System Agreement (DCUSA Section 49), the Distribution Code (DPC 7.1.1) and the Bilateral Connection Agreement.
  Note – following the establishment of an IDNO network the IDNO take all reasonable steps to provide to the DNO with information regarding any changes to generation or planned changes to generation connected under ENA EREC G83 or G59.
- Disturbing Loads, i.e. outside the scope of stage 1 of ENA publications G5, P28 and P29, together with relevant network information.
  Note:- Following the establishment of an IDNO Network, IDNOs will also provide information to DNOs on any Disturbing Loads they wish to connect at a later stage.
- Any other specific supply characteristics required (e.g. required volt drop at the POS, maximum fault impedances and fault levels).
- In the case of single supplies at HV, the IDNO will state if the arrangements specified in Section 5.3 (c) will apply, in which case the Point of Supply will be at the HV terminals of the HV ring main equipment tee-off circuit breaker. This will allow DNO and IDNO to agree emergency trip and protection arrangements.

- Proposed protection arrangements and settings on IDNO interface equipment for grading purposes. Protection settings to be agreed and co-ordinated pre-energisation. (See also 4.2 below)
- Required connection date and work programme affecting the interface.

4.2 Standard Planning Detail required from the DNO

The DNO will respond at the appropriate time with some or all of the following, as applicable:

- Where appropriate, confirmation that the scheme is to be provided under Standard Licence Condition (SLC) 15 or Section 16 of the Electricity Act 1989. If under SLC 15, then confirmation of the classification as LV, HV, EHV with/without generation.
- Yes/No indication of whether the request is or becomes interactive with related developments. For the purposes of this section, offers for the same site are not interactive.
- Technical summary of other loads to be connected to the DNO network that affect the specific connection quotation at hand. This will generally be confined to recognition in the DNO system model of a point load in MVA and will be subject to the requirements of commercial confidentiality.
- The reinforcement, diversion, joint and sole connection works reasonably required to provide these various connections, having regard to developing an efficient, coordinated and economical system of electricity distribution.
- Geographic and schematic diagrams reflecting the above, showing existing/authorised system and proposed works, modified as required to protect confidentiality.
- Existing and proposed electrical arrangement(s) including interface metering (where required by the DNO).
- Physical location of the POS and its relationship to the POC.

- Anticipated design Voltage Drop under maximum load conditions and, where applicable, the anticipated design Voltage Rise under minimum load / maximum generation conditions.
- Anticipated earth fault Loop Impedance /fault Level at the POS.
- Method and classification of earthing.
- Protection settings and type of protection device on DNO interface equipment, for grading purposes, after scheme acceptance and relevant information has been provided by the IDNO to the DNO.
- A breakdown of the non-contestable charges, in the same format as Ofgem seeks for ICP quotations.
- An indication of the likely elapsed time to first energisation from the date of acceptance of a quotation**.** A construction programme will be provided following acceptance.
- If the DNO cannot offer a single POS as requested at LV, the DNO will discuss the issues with the IDNO and will provide the least cost alternative, comprising either multiple LV connections or an HV connection*.* Operational arrangements to prevent inappropriate paralleling or back-feeding of networks shall be subject to agreement between the DNO and the IDNO.

4.3 DNO Long Term Development Statement (LTDS)

It should be noted that the DNOs publish Long Term Development Statements (LTDS) which provide details of maximum demand and major projected investments. LTDS also describe how more detailed information on HV systems can be obtained.

5. BOUNDARY ARRANGEMENTS

5.1 Principles

This document sets out the principles for boundary arrangements and ownership matters by providing examples of the most common arrangements. Any other arrangement should follow the principles set out in this document.

It should be noted that the DNO cannot transfer ownership of existing assets except under the terms of Standard Licence Condition 26.

It will always be necessary for the IDNO and the DNO to agree details of protection and operational issues relating to the interface assets. These shall be captured within a formal agreement such as the Bilateral Connection Agreement (BCA) or Site Responsibility Schedule (SRS).

Where reference is made to any installations being undertaken by or on behalf of the IDNO for adoption by the DNO; these installations shall be carried out in accordance with the requirements stated in the DNO's Statement of Methodology and Charges for Connection to the DNO's Distribution System. The network operator who will have responsibility for the substation building/enclosure will also have responsibility for compliance with the Electricity Safety Quality and Continuity Regulations 2002 as amended (ESQCR) with respect to those matters within their control. They shall ensure the environmental conditions in the substation meet the operating criteria of installed equipment, including the provision and maintenance of sufficient ventilation to ensure the design rating of all the electrical equipment in the substation is safeguarded.

LV auxiliary supplies to shared substations will be provided by considering the economic design that satisfactorily meets both Network Operators' technical requirements including security of supply and fault response.

Substations and equipment shall be designed and installed to provide a level of safe access and egress that will allow work including, switching, inspection, meter reading and maintenance, to be carried out safely in accordance with statutory requirements.

The phase rotation on any IDNO LV network will match the rotation on the local DNO network.

These boundary arrangements recognise that the HSE are of the view that the ESQCR do not require any additional points of isolation or protection by virtue of a change of ownership of the network (beyond that which would be provided were the whole network in the same ownership), providing that isolation and protection can be achieved by appropriate agreed operating procedures and protection settings.

Where supplies are provided by the DNO at HV or EHV the DNO may require metering. This equipment will be specified and funded by the DNO.

5.2 66kV and 33kV supplies from substations, ring or overhead systems and HV supplies from primary substations

This section covers supplies provided directly at substations and also via discrete cable connections from substations.

Unless the IDNO is the Majority Asset Owner of a new grid or primary substation, the substation and all assets within it, including HV metering (when required), incorporating CTs/VTs and meter panel, shall be owned, designed, installed, commissioned, maintained and replaced by the DNO, save for the items described below:

- The design, functional specification and settings of the protection on the feeders supplying the IDNO shall be agreed between IDNO and DNO.
- The ownership of the 66kV/33kV/HV cable feeding the IDNO network shall be agreed between DNO and IDNO and the decision will need to balance the requirements of the IDNO with the ongoing development of the DNO's distribution system in the area.
- When the ownership boundary is located at the grid or primary substation it shall typically be at the gland of the cable box.
- SCADA will normally be provided by the DNO, following a request from an IDNO. Remote switching will normally be carried out by the DNO Control Centre at the request of the IDNO, unless otherwise agreed

The DNO will hold the site duties under the ESQCR.

The DNO works within the grid or primary substation are non-contestable However; the IDNO can provide and install its 66kV/33kV HV cables up to the circuit breaker cable box, subject to this not conflicting with the DNO's licence obligations and subject to agreement with the DNO over access and working arrangements.

Where ownership of the 66/33kV/HV cables feeding from the grid/primary substation to the IDNO network is to be held by the DNO, the cables may, subject to meeting the requirements and procedures under Engineering Recommendation G81, be provided and installed under Competition in Connections by the IDNO for adoption by the DNO.

When there is a supply via a DNO cable to an IDNO HV substation:

a) If metering is incorporated in the IDNO equipment, as shown typically in Diagram 5, the ownership boundary will be on the gland of the IDNO equipment incoming cable box,
b) If DNO equipment is installed with metering CTs and VTs as appropriate, the ownership boundary will be located on, or as near as practicable to the downstream connections of this equipment as agreed by the respective DNO and IDNO.
c) If IDNO/DNO equipment is installed with protection CTs and VTs as appropriate, the ownership boundary and operational responsibilities will be defined in the Site Responsibility Schedules included within the Bilateral Connection Agreement.

Where the IDNO is the Majority Asset Owner of a new grid or primary substation and a DNO requires a connection to the IDNO system, the reciprocal to the above shall apply.

Supplies from 66kV/33kV rings or overhead systems will be subject to individual agreement within the general principles of this document.

Typical layout arrangements are shown in Diagrams 1 and 2.

5.3 HV Supply from DNO HV Feeder/ Circuit or Ring Supply

There are three basic requirements:

a) DNO provides an HV connection to a single IDNO transformer.
b) DNO provides one or more HV connection to an IDNO HV network.
c) DNO provides an HV connection to a single IDNO Customer.

These requirements can be satisfied by installing:

- One or more HV Ring Main Units.
- One or more HV teed circuit breakers.
- An extensible switchboard.

A typical arrangement set out here is an RMU type HV/LV substation feeding the IDNO network. (Diagram 6) However, these principles should also be applied to all other arrangements.

The IDNO shall have the option to design procure and install the full RMU substation including HV metering and building / housing, following the requirements and procedures under Engineering Recommendation G81 for the following:

- HV Ring main unit or HV teed circuit breaker.
- HV cable tails to point where they meet the existing DNO HV ring
  (Closing joint to be made by DNO or by ICP where this activity is deemed to be contestable).
- HV Metering unit / facility (not part of HV/LV transformer).
- Substation earthing.

The DNO will adopt the assets necessary to retain full ownership and control of the DNO's HV ring to which the substation is connected.

The ring switches on the RMU will have DNO operational locks and the tee off may be covered by dual locking (allowing IDNOs to request DNO authorisation for their staff to operate the DNO equipment) subject to the terms of the BCA.

The ownership boundary will be on the rear flange of the RMU tee-off or, if cabled, on the outgoing cable box gland. Where a directly mounted metering unit, owned by the DNO is fitted, the boundary will be on the rear flange of the metering unit or if cabled, on the outgoing cable box gland.

Where a directly mounted metering unit, owned by the IDNO is fitted, the boundary will be on the rear flange of the RMU tee-off.

Unless otherwise agreed, responsibility for the building/enclosure will be accepted by the Majority Asset Owner, who will hold the site duties under the ESQCR; their name and 24 hour telephone number will be displayed on the door. (This is the only telephone number to be displayed).

The name of all other owners of plant and equipment in the substation must also be displayed on the door.

Because of the requirement to agree a minimum overall cost scheme, DNOs and IDNOs agree that joint access to a single substation enclosure will be the standard arrangement.

Where appropriate equipment is available, subject to technical and commercial agreement the DNO and IDNO switchgear/metering units/transformers will normally be close-coupled. In these circumstances all equipment and the enclosure must be compliant with ENA Engineering Recommendation G81 as applicable to the relevant asset owner. The DNO would not normally need access to the transformer or LV cabinet for operational requirements but may require access to the lighting and socket outlet facility.

An IDNO may request that the DNO provide an HV Connection from a single DNO ring main equipment to an IDNO metering unit and single IDNO customer in accordance with Diagram 7, 7(a) and notes. Any such arrangement is subject to appropriate commercial and legal undertakings being agreed between the DNO and IDNO in the Bilateral Connection Agreement (BCA), and is also subject to applicable licence and statutory requirements.

5.4 LV supply from point on existing DNO LV cable network

In all of the above arrangements there is isolation and protection between the customers of the IDNO and those of the DNO, and this protocol is maintained for LV connections. This safeguards both sets of customers by facilitating means for both parties to take action to restore supplies in the event of a fault, by sectionalising, reconfiguring where the facility exists, or by the use of generation. This also addresses Ofgem IIS (Interruptions Incentive Scheme) performance issues.

An LV link box, cabinet or feeder pillar may be installed, maintained and operated by the DNO or IDNO.

A single item of isolation and protection equipment may be required and if so shall be subject to Competition in Connections, ENA ER G81 protocols.

Where grading can be achieved, the isolation and protection shall incorporate fuses or circuit breakers, arranged to grade with the upstream DNO fuses or circuit breakers. This shall be agreed between IDNO and DNO. Otherwise, the isolation shall be a set of LV links, but only where there is agreement with the DNO that their upstream fuse arrangements afford protection. These facilities may be in an underground link box or roadside cabinet. If the DNO fuses do not afford protection and grading cannot be achieved, the DNO and IDNO will agree and take necessary measures to ensure circuits are appropriately protected.

These provisions should not preclude the situation where the minimum overall cost scheme might involve two sets of LV cut-outs in a feeder pillar/cabinet in which case the DNO cut-out would contain links and IDNO cut-out fuses.

Note: Because the POS/POC can be considered to be the end of the DNO network, in order to comply with PME requirements, an earth electrode is required and this should be installed with the LV link box, cabinet or feeder pillar.

The ownership boundary shall be downstream of all DNO Customers and shall be at the POS which can be upstream or downstream of the isolation equipment in the underground link box or cabinet/feeder pillar. The boundary may be at the point of connection (POC) to the existing DNO LV network, or, with the agreement of the IDNO, at a point further downstream. Where the boundary is not at the POC, the new LV cable may, at the IDNOs discretion, be provided and installed under Competition in Connections by the IDNO for adoption by the DNO up to the isolation equipment. In that case, the requirements and procedures under Engineering Recommendation G81 shall apply.

5.5 LV supply from DNO HV/LV substation

This scenario covers an HV/LV substation owned by the DNO and having a transformer mounted LV cabinet or freestanding LV feeder pillar with LV fuse-ways feeding DNO Customers. (If the LV fuse-ways solely feed IDNO Customers then the ownership of the transformer and LV cabinet would normally rest with the IDNO.)

Given the range of types and ages of LV fuse gear, unless otherwise agreed between the DNO and IDNO, the LV POS to the IDNO network shall be from a separate LV cabinet or feeder pillar, fed from the DNO LV cabinet/feeder pillar. As the LV connection into the DNO LV cabinet involves work within the operational compound to install a cable connection to DNO LV fuse gear, it shall be made by the DNO. The ownership boundary (POS) shall be at the gland/entry of that cable into the IDNO cabinet unless otherwise agreed.

The IDNO LV cabinet or feeder pillar shall be designed, installed, owned, maintained replaced and operated by the IDNO. Ideally it shall be situated outside the DNO HV/LV substation enclosure/compound to avoid the need for joint access. If however the IDNO LV cabinet or feeder pillar is situated within the DNO enclosure/compound, the external design/security and the IDNO arrangements for inspection and maintenance of the equipment will need to be agreed with the DNO as it would have overall ESQCR responsibility for the site.

Where grading can be achieved, the isolation and protection shall incorporate fuses or circuit breakers, arranged to grade with the upstream DNO fuses or circuit breakers. This shall be agreed between IDNO and DNO. Otherwise, the isolation shall be a set of LV links but only where there is agreement with the DNO that their upstream fuse arrangements afford protection. If the DNO fuses do not afford protection and grading cannot be achieved, the DNO and IDNO will agree and take necessary measures to ensure circuits are appropriately protected.

Where the IDNO has responsibility for all of the customers and LV network fed from a substation **and own the transformer and LV Fuse Cabinet**, the IDNO will specify the Earthing arrangement taking into account the DNOs HV requirement to provide an overall HV earth resistance value. The design for the LV earthing arrangement will be to the IDNO's specification. The DNO will provide earthing information for the HV network that the IDNO is connecting so that the IDNO can design the work correctly.

6. OPERATIONAL CONTROL AND ACCESS

6.1 General requirements

In the following operational arrangements, the priority of response will be identical for all downstream networks regardless of ownership.

Inside a substation, the convention adopted will be that, unless otherwise indicated, all items of plant within the substation will be solely owned, operated and controlled by the Majority Asset Owner.

6.1.1 Access

Access to shared enclosures will be specified in the BCA. Typically, access will be via a dual locking arrangement. DNO and IDNO staff will be authorised under their respective Distribution Safety Rules. The DNO and IDNO will have a shared responsibility for communicating any relevant Suspensions of Operational Practice to both Distributors' staff within the same general timescale.

6.1.2 Substation Labels

Where there is equipment in a jointly equipped/accessible substation with different owners/operators/controllers there is a requirement to ensure that the ownership and operational responsibilities of all items in the substation is clearly understood by those Authorised Persons who have access to the substation. This will be achieved by permanently fixing Danger of Death labels in a prominent position on the external surface of the substation doors showing the substation name and/or number, including 24 hour emergency contact information, of the Distributor with ESQCR responsibility for the substation as shown in Appendix 4, figure 1. Unless otherwise agreed between both parties this will be the Majority Asset Owner.

The other relevant Distributor(s) will also provide Danger of Death labels adjacent to those of the Majority Asset Owner. In accordance with the advice provided by the Health and Safety Executive, these labels will not show emergency contact details. Labels shall be designed as per the sample shown in Appendix 4, figure 2. The same substation name shall be used by both DNO and IDNO and will normally be proposed by the host Distributor. In any event this name must be agreed by both parties prior to commissioning and held in the BCA for the interface substation.

6.1.3 Plant Labels

Equipment in a combined substation site should be clearly marked by the asset owner to indicate ownership of each asset and be clearly specified in the site responsibility schedule of which a copy will be left on site.

Where IDNO operation of a DNO owned circuit breaker has been authorised, and therefore dual operation applies, a suitable label shall indicate this status.

6.1.4 Working across boundaries

For work involving EHV equipment across boundaries, DNOs and IDNOs will adopt the RISSP (Record of Inter-System Safety Precautions) system which is considered current best practice. This procedure and associated documentation is used by DNOs at the interface with NGET and is a well established approach to managing safety via Control centres. These arrangements may also be extended to work at other voltages, with both parties agreement.

6.1.5 Failure of an Asset at the DNO/IDNO Interface

The principles covering the failure of an asset at the interface between a DNO and an IDNO are shown in Appendix 3.

6.1.6 Authorisation under other party's procedure

If the parties mutually agree, it may be possible for suitably qualified and experienced staff of one party to gain authorisation under the other party's procedures, to switch on the other's assets under the direction of the other's Control. (Section 5.4 refers) Local procedures shall then apply to operational control, access etc., such as:

- Dual locking for access, with site-specific locks accessed via a dual-locking key safe on the relevant switchgear (but other switchgear locked off by the DNO.(For the interface at link boxes, fuse cabinets and feeder pillars a key safe may not be appropriate.)
- Issue of DNO keys to IDNO staff, subject to authorisation.

6.1.7 Identification and Separation of Underground Cables

DNO and IDNO staff will identify cables on which work is to be carried out using the safety rules and procedures applicable within the company that employs them.

If DNO or IDNO staff are required to spike cables in proximity to cables from another network they shall make all reasonable endeavours to ensure that relevant Control Centres are advised immediately before and after the spiking.

DNOs and IDNOs will take all reasonable measures to ensure the maximum physical separation of their respective underground cables, for example on opposite sides of a road. The “second comer”, whether DNO or IDNO, shall ensure that there is a suitable means of identifying their cables, normally via the marker tape.

6.2 Interface at Grid and Primary Substations or on Grid and Primary Overhead Systems

This section covers supplies provided directly at Grid and Primary substations and also via cable connections from Grid and Primary substations.

At grid and primary substations, the Network Operator responsible for the site (generally the DNO) shall own and control all apparatus. The ownership boundary to the embedded licensed network (generally the IDNO) shall typically be at or about the outgoing cable box gland of the relevant feeder circuit breaker(s).

Normally, only DNO staff and direct contractors shall have access to, and be permitted to operate in, the substation. Routine open/close operations on the relevant feeder circuit breaker(s) may be carried out by the DNO Control via SCADA at the request of the IDNO Control. Similarly, operations required on the IDNO system (e.g. to facilitate primary circuit breaker trip tests) shall be carried out by IDNO staff at the request of the DNO.

During restoration following fault switching, unless otherwise agreed with the DNO, the IDNO shall first ensure that the faulted section has been identified and isolated before requesting the DNO to re-close the source circuit breaker.

When isolation and earthing is required, in the absence of a RISSP issue procedure being in place, the owner of the relevant assets will issue an Isolation and Earthing Certificate across the control boundary.

The above arrangements do not require access by one party to equipment owned by the other, except for access to cables in the grid or primary substation compound. Consequently there is no inherent requirement for access by staff and hence no need for staff to hold authorisation from the other party although this is also permissible as detailed under 6.1.6.

Where ownership of the HV cables feeding from the primary substation to the IDNO network is to be held by the DNO and the ownership boundary is located at the end of a DNO cable connection, the operational interface will be as indicated in Diagram 5.

Interfaces with 66/33kV rings or overhead systems will be subject to individual agreement within the general principles of this document.

6.3 Interface at HV Switching Stations

At HV switching stations, it shall be agreed who shall own, control and operate all assets.

During restoration following fault switching, unless otherwise agreed with the DNO, the IDNO shall first ensure that the faulted section has been identified and isolated before requesting that the DNO re-close the source circuit breaker.

When isolation and earthing is required, this shall be carried out by the owner of the relevant asset and a safety document issued across the control boundary unless the requirements of 6.1.4 are applied.

Where a DNO provides an HV Connection from a single DNO ring main equipment to an IDNO metering unit and single IDNO customer in accordance with Diagram 7, 7(a) and notes, then the DNO shall own, control and operate those assets required to maintain the safety and integrity of his system, i.e. ring switches and outgoing circuit breaker to IDNO metering unit.

However, under this connection arrangement the ESQCR responsibility for the single substation enclosure containing the connection equipment will lie with the IDNO. The BCA between the IDNO and DNO must include a joint access arrangement to control entry into the substation.

6.4 Interface at Distribution Substations

At HV/LV substations dedicated to one IDNO operator, the DNO shall own, control and operate those assets required to maintain the safety and integrity of his system, i.e. ring switches and transformer circuit breaker. The IDNO shall own the transformer and own, control and operate the LV fuse gear. The ring switches on the RMU and the tee off will have DNO operational locks.

When isolation and earthing is required, this shall be carried out by the owner of the relevant asset and a safety document issued across the control boundary unless the requirements of 6.1.4 are applied.

At HV/LV substations with multiple LV POSs the DNO shall own and control all assets. Unless separate isolation equipment is provided outside the substation the IDNO shall submit staff for authorisation under the DNO's rules to operate the LV fuse gear. Local procedures shall then apply to operational control, access etc. as above.

With prior agreement between the DNO and IDNO the IDNO operational authorisation may be accepted for limited operations on the DNO owned transformer circuit breaker. In such instances, a process shall be agreed between the DNO and IDNO on contact arrangements to facilitate any routine operations.

6.5 Interface at Link Boxes, Fuse Cabinets and Feeder Pillars

Where the IDNO supply is at an existing DNO link box or feeder pillar, the DNO shall own and control the fuse-gear or circuit breakers. In this case the DNO may provide a label in the link box indicating that the equipment is the property of "A" DNO and forms the ownership boundary.

For new LV network connections, the IDNO may own the LV link box or feeder pillar and may own and control the fuse-gear or circuit breakers. In these cases, the IDNO will recognise the authorisation level of DNO staff and permit them to operate the IDNO equipment under the DNO's Distribution Safety Rules.[1]

Local procedures shall then apply to operational control, access etc., such as:

- Dual locking for access; or
- Issue of IDNO keys to DNO staff, subject to written acceptance that the IDNO will accept the authorisation level of DNO staff.

The scope of the DNO's operation of the IDNO's link box/feeder pillar will be agreed between the IDNO and DNO. Typically, DNO operation will be restricted to:

a) removal of fuses to allow fault sectioning of earth or phase to phase faults, and potentially the reinsertion of these if the fault is proven to be on the DNO network.
b) removal of fuses to safeguard public from danger.

If the arrangement comprising two sets of LV cut-outs in a Feeder pillar is deployed, or a free standing pillar, the DNO equipment will contain links and IDNO equipment will contain fuses.

Where there is the possibility of generation being connected to the IDNO distribution system, associated with the restoration of supplies, this could cause potential problems i.e. back-feeds onto the DNO distribution system. In these circumstances, it will be the responsibility of the IDNO to provide, on request, a site specific documented procedure to ensure the safety and integrity of both parties' distribution systems is maintained.

[1] Note that the suitably authorised staff must be familiar with the relevant equipment and have sufficient information to satisfactorily complete an on-site risk assessment.