PROFILED CONNECTIONS

Frequently Asked Questions (FAQ)

November 2025

DSO | UK Power Networks Delivering your electricity

Profiled Connection FAQ

November 2025

V1.0

1 Contents

2 What is a Profiled Connection?

A **Profiled Connection** is a **non-firm access product** that enables a faster and more cost-effective connection. It allows demand sites to connect **ahead of, or defer, any associated network reinforcement** by accepting that operationally your site can be curtailed down to a minimum pre-defined fixed profile (24-hour Profile). This connection product is also suitable where your demand **does not require a continuous 24/7 import profile**, due to the nature of your load, for example, Electric Vehicle (**EV) charging, transport depots, or other time-flexible operations**.

Unlike **Flexible Connections**, where demand customers can be curtailed down to zero during periods of network constraint, a **Profiled Connection** guarantees that your site's import capacity will **not be reduced below the minimum contractual level** defined in your **Connection Agreement**. This provides greater certainty over **when** and **by how much** your site may be curtailed.

2.1 Which type of customer is best suited to a Profiled Connection?

This connection type is designed for **demand-only technologies** that can **vary their electricity use throughout the day**, such as **electric vehicle (EV) charging stations**, **data centres**, **hydrogen electrolysers**, **heat networks**, and **industrial sites**. It is **not suitable** for **critical or inflexible loads** that require a **guaranteed level of import capacity at all times**.

2.2 Is there a minimum voltage/import capacity for a Profiled Connection?

Yes, currently we can offer a Profiled Connection to customers connecting to the High Voltage (HV) network (11kV and 6.6 kV) or Extra High Voltage (EHV) network (33kV and 132kV). This means that site capacity is likely to be above 500kVA.

2.3 Are Profiled Connections available for IDNO connections?

Yes. We are able to offer Profiled Connections to customers connecting to an Independent Distribution Network Operators (IDNO) network. Some of the DERMS equipment needs to be located in the IDNO substation, please see **EDS 08-5063 DERMS IDNO DER REQUIREMENTS.**

2.4 Is a Profiled Connection an interim or enduring arrangement?

A Profiled Connection can be used to manage constraints on an interim basis until network reinforcement occurs or on an enduring basis where network reinforcement is being deferred

2.5 How many time windows are available for a Profiled Connection?

At present, a **Profiled Connection** includes **two time windows** (**peak** and **off-peak**) which remain the same across all seasons. If no specific time window is requested, the following default applies:

- **06:00–22:59** Peak demand
- **23:00–05:59** Off-peak demand.

Additional time windows can be requested through the Connections PM if a more granular profile is required.

3 What is the difference between Profiled vs Timed Connection?

Profiled Connection replaces the earlier **Timed Connection** product previously offered by UK Power Networks, providing greater flexibility and access to real-time network capacity. With a **Profiled Connection**, your site benefits from **real-time network monitoring** through UK Power Networks' Distributed Energy Resources Management System (DERMS). This means that if additional capacity becomes available in real time, you'll be able to **import up to your full capacity**, rather than being restricted to a fixed schedule. Figure 3-1 shows some of the key changes introduced by the Profiled Connection offering.

	Timed Connection	Profiled Connection
Currently offered	No	Yes
Can be offered to	Demand	Demand
Logic hosted	DER Remote Terminal Unit	Centrally in DERMS
Can be offered to	Demand	Demand
Voltage Level Connection	HV	HV and EHV
Profile granularity	Two slots per day (day & night)	Two slots per day (day & night). Granularity will be increased in the future.
Static vs dynamic profile	Site needs to stick to the pre-defined profile	Based on real time loading, if no constraint, full capacity can be utilised

Figure 3-1 Timed and Profiled differences

4 How will I know how much I am expected to be restricted by and when?

UK Power Networks will assess whether your requested profile can be accommodated within the available network capacity.

- If it can, your profile will be included in your **Connection Offer** and **Connection Agreement**.
- If it cannot be fully supported, we'll provide a revised profile that reflects what the network can safely deliver.

Figure 4-1 shows an example of a Profile Connection offer, with a Maximum Import capacity (MIC) requested of 3,000 kVA having the following windows:

- Window 1: 20:00 – 06:00 **3,000 kVA**
- Window 2: 06:00 – 20:00 **900 kVA** (constrained)

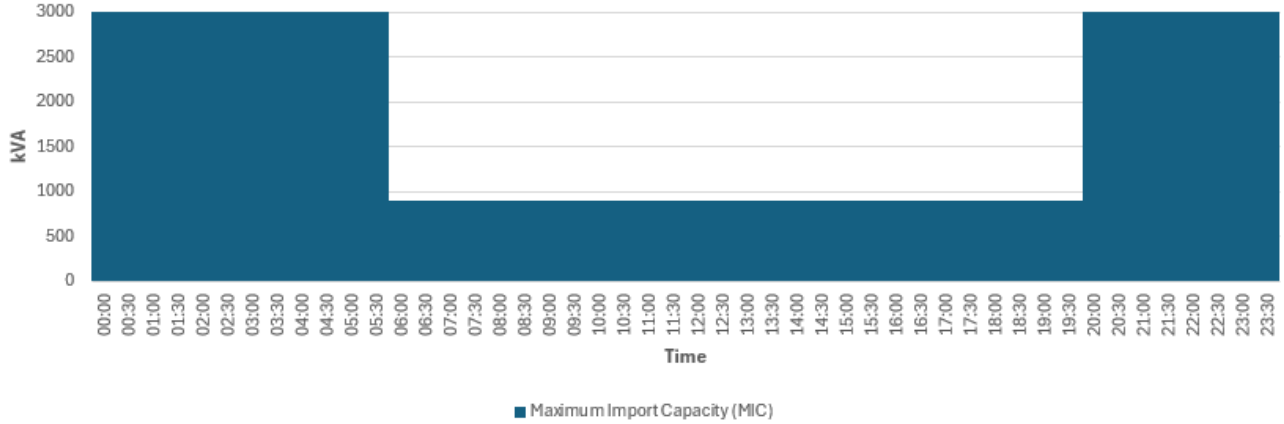

Figure 4-1 Example Capacity Profile

5 Profiled Connection interface options

Customers connecting under a **Profiled Connection** can choose between two interface options, depending on whether they wish to make use of real-time flexible capacity.

- **Option A: Real-time flexible capacity (with DNP3 communication interface to UK Power Networks)**

If there is additional capacity available on the network in real time and you wish to make use of it rather than sticking to your predefined profile, this option enables that flexibility. By installing a Distributed Network Protocol 3 (DNP3) communication interface, UK Power Networks can send upper kW setpoints directly to your site controller, allowing you to temporarily increase your import up to your Maximum Import Capacity (MIC) whenever there is capacity available.

Figure 5-1 below illustrates the capacity range. The blue represents the Maximum Import Capacity (MIC) for the site. The orange represents the 'Flexible Capacity' range that could be offered during network periods where there is no constraint active.

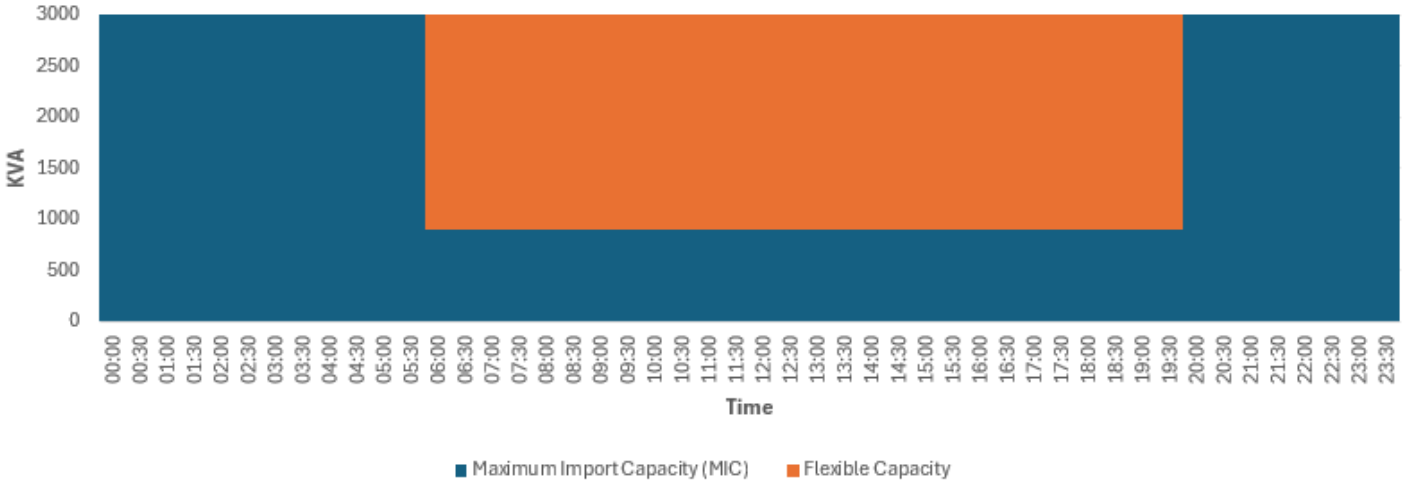

Figure 5-1 Capacity profile with flexible window (DNP3 interface)

- **Option B: Fixed capacity windows (without DNP3 communication interface)**

Alternatively, you can choose **two fixed capacity windows** without a DNP3 communication interface. In this case, **DERMS will still monitor network constraints**, but any **additional capacity available in real time** cannot be offered to your site, as there is **no communication link** between your controller and UK Power Networks Remote Terminal Unit (RTU).

You will need to **self-regulate your import** in line with the agreed capacity profile defined in your **Connection Agreement**.

If a **network constraint** is active and you are operating **within your predefined profile**, no further action will be taken.

However, if a constraint is active and your site is **importing above the contracted capacity**, DERMS will issue a **curtailment instruction**. Since there is **no communication interface**, this will trigger a **cascading control sequence in the local remote terminal unit (RTU):**

1. If the customer has a dedicated Circuit Breaker (CB) for the Profiled Connection, they can opt to install a hard-wire between the Customer Interface Wall Box in the UK Power Networks substation and the customer CB relay to trip for non-compliance. Alternatively, we can arrange for the UKPN incomer CB to trip.

2. If the customer does not have a dedicated CB or chooses not to install a hard-wire for trip functionality (e.g. the site does not have any other power requirements, auxiliary needs) then we would install a hard-wire trip to the UKPN incomer CB.

This configuration therefore operates on a more **"on/off" basis**, offering less flexibility than the real-time interface option.

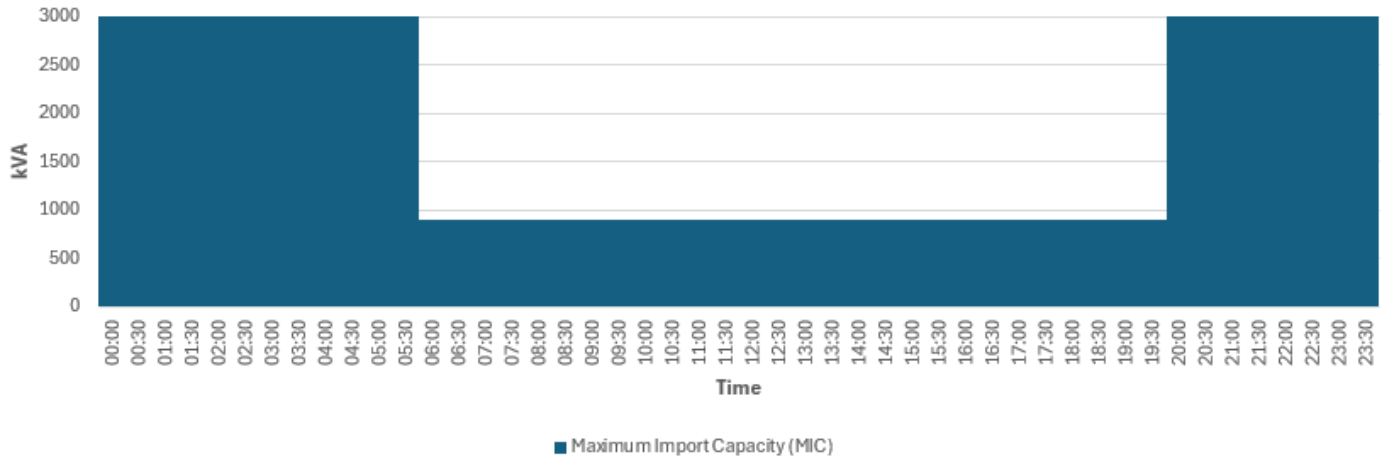

Figure 5-2 Capacity profile with fixed windows (no DNP3 interface)

6 What technical requirements must my site meet?

Detailed specifications are set out in UK Power Networks' **Engineering Design Standards (EDS)**, available on our **G81 Technical Library** here: Home - Document Library - UK Power Networks.

- EDS 08-5060 Distributed Energy Resources Management System (DERMS) - DER Connection Requirements
  - EDS 08-5060a Flexible Connection Interface Schedule
- EDS 08-5061 DERMS Flexible Connection Design

7 What equipment is needed for a Profiled Connection?

This section outlines the equipment required to enable **Profiled Connections** managed by the DERMS. The equipment requirements vary depending on whether the site uses **real-time flexible capacity control** with DNP3 communications (Option A) or operates under **fixed capacity windows** without DNP3 (Option B). These requirements apply to both **DNO-connected** and **IDNO-connected** sites. For IDNO connections, the technical requirements are the same; however, the DERMS equipment is installed on the **IDNO network** rather than the DNO network. For detailed requirements specific to IDNO schemes, please refer to **EDS 08-5063, DERMS IDNO Flexible Connection Requirements**.

7.1 Option A – Real-time flexible capacity (with DNP3 communication interface to UK Power Networks)

Your site must be equipped with the necessary **communications and control interfaces** so that the Distributed Energy Resources Management System (DERMS) can send control signals and monitor compliance.

1. Mainline communication either fibre to the Primary or Very Small Aperture Terminal (VSAT) satellite
2. DERMS HV Telecontrol Equipment Cubicle (TEC) Remote Terminal Unit (RTU)
3. DER communication link – single mode fibre terminated into Optical Distribution Frame (ODF)
4. Distributed Networks Protocol 3 (DNP3) interface programmed into Local Control System (LCS)
5. Transducer/Meter
6. Customer Interface Wall Box – volt free contacts required for Circuit Breaker (CB) open command and CB status/readback. The customer can choose to trip the customer CB or Incomer/Metering CB for Failsafe 4.
    a. If the customer choses to trip the customer CB, they need to install volt free contact between the demand relay and Customer Interface Wall Box.
    b. If the customer choses to trip the Incomer/Metering CB, UK Power Networks will terminate the contacts.

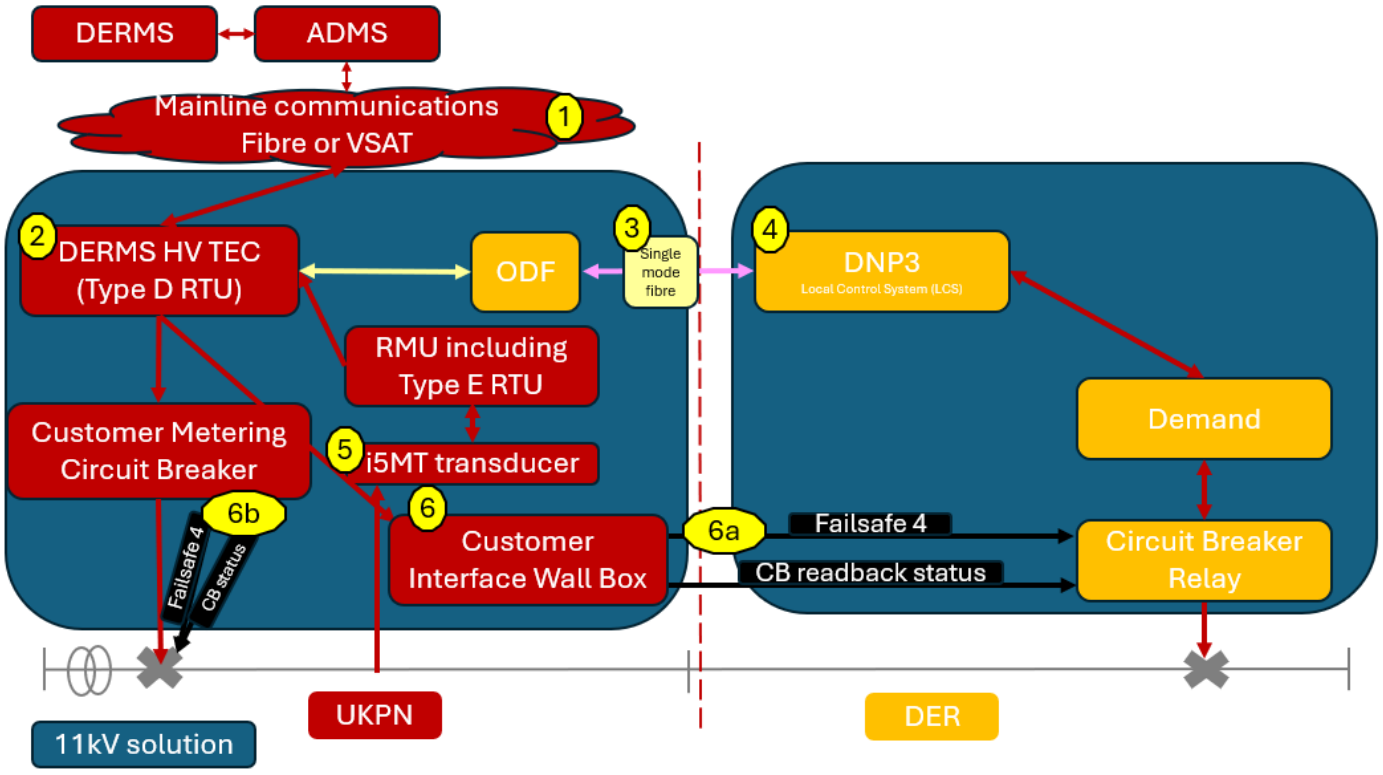

Figure 7-1 DNO 11kV connection with DNP3

If you are connecting at 33kV or 132kV, we only require the DERMS HV TEC RTU. i.e. there is no requirement for the Type E RTU.

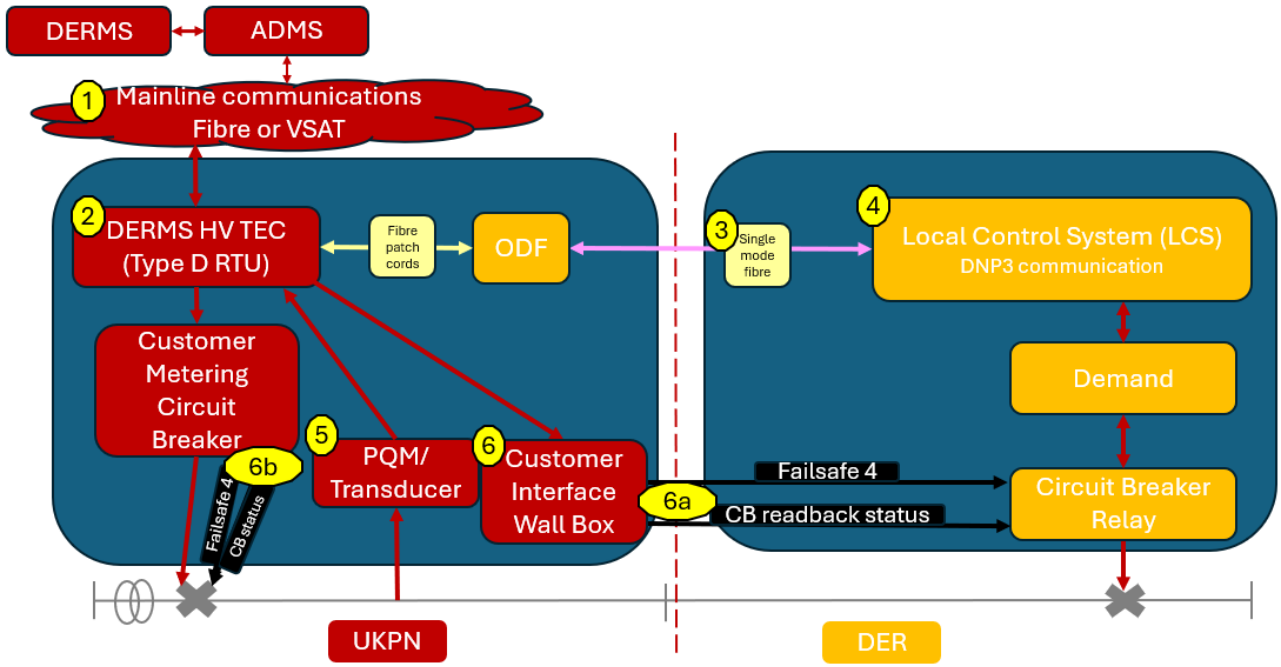

Figure 7-2 DNO 33kV or 132kV connection with DNP3

7.2 Option B – Fixed capacity windows (without DNP3 communication interface)

The profile will be programmed into the DERMS HV TEC Remote Terminal Unit (RTU). The Point of Connection (PoC) measurements will be feed into the RTU which will monitor the upper kW limit and alarm if this capacity is exceeded. In turn, UK Power Networks will take action and trip either the demand CB or Incomer/Metering CB depending on the option chosen.

1. Mainline communication either fibre to the Primary or Very Small Aperture Terminal (VSAT) satellite
2. DERMS HV Telecontrol Equipment Cubicle (TEC) Remote Terminal Unit (RTU)
3. Transducer/Meter
4. Customer Interface Wall Box – volt free contacts required for Circuit Breaker (CB) open command and CB status/readback. The customer can choose to trip the customer CB or Incomer/Metering CB for Failsafe 4.
    a. If the customer choses to trip the customer CB, they need to install volt free contact between the demand relay and Customer Interface Wall Box.
    b. If the customer choses to trip the Incomer/Metering CB, UK Power Networks will terminate the contacts.

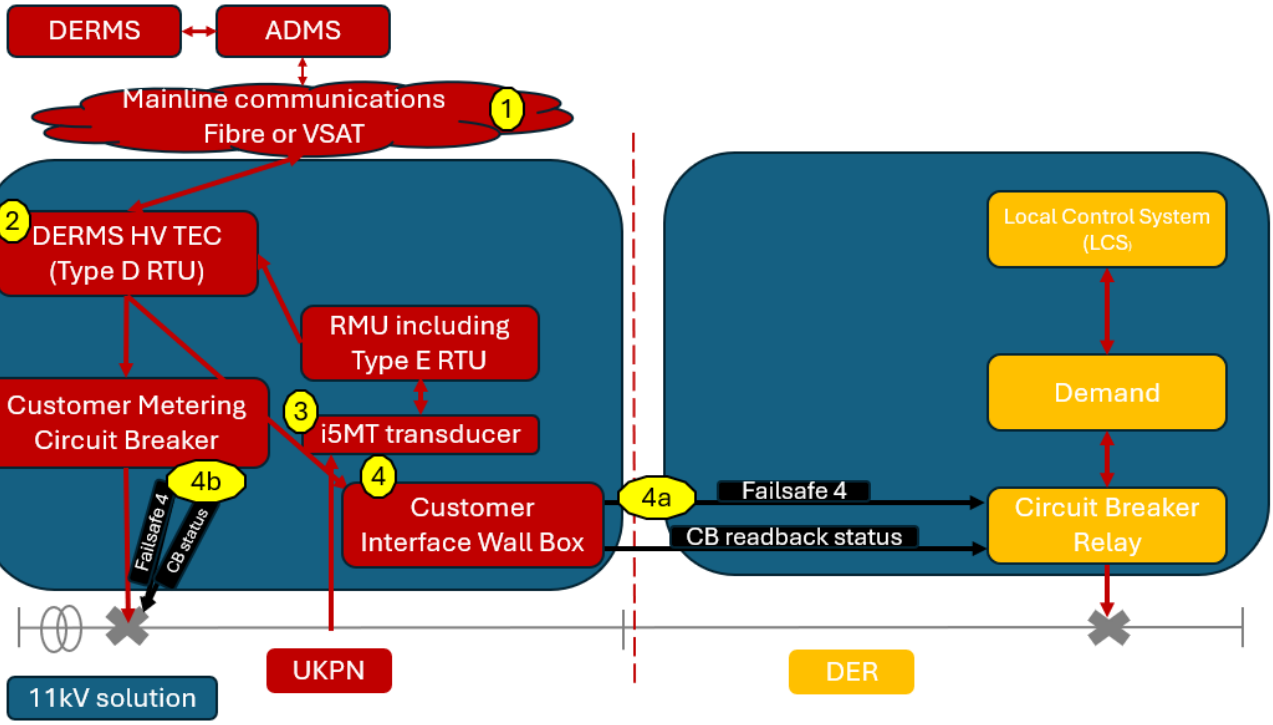

Figure 7-3 DNO 11kV connection - no DNP3 interface

If you are connecting at 33kV or 132kV, we only require the DERMS HV TEC RTU. e.g. there is no requirement for the Type E RTU.

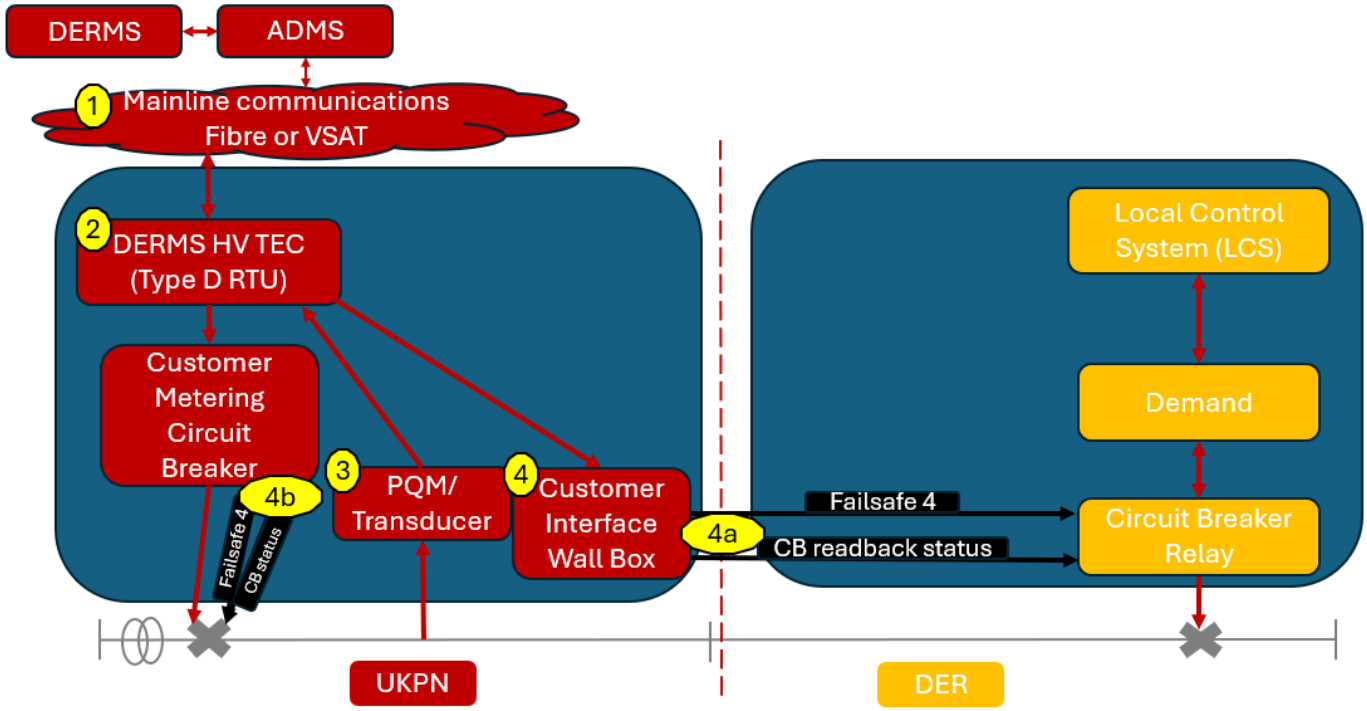

Figure 7-4 DNO 33kV or 132kV connection - no DNP3 interface

8 What is the Distributed Energy Resources Management System?

DERMS is a technology employed by UK Power Networks to connect more customers to our networks faster and at a lower cost by avoiding the need for reinforcement. It achieves this by managing participating customers in real-time to keep the network within safe operational limits.

DERMS is fully integrated into UK Power Networks Advanced Distribution Management System (ADMS) which communicates to the Distributed Energy Resources (DER) through our communication network and Remote Terminal Unit (RTU).

Figure 8-1 System integration

8.1 How does DERMS manage Profile Connection sites?

Once a **Profiled Connection** customer is commissioned under **DERMS**, the system continuously monitors the **network constraints** identified during the connection assessment. DERMS compares real-time network loading against pre-defined constraint limits and when a constraint is breached, DERMS automatically issues a **demand reduction instruction** to the Profiled Connection customers linked to that constraint, following a **Last In, First Out (LIFO)** principle of access. The required demand reduction can be achieved either by **reducing demand** or by **increasing on-site generation** (behind the meter). DERMS will not normally request a reduction below the **minimum value** specified in your **Connection Offer and Agreement**, unless the network is in an abnormal running arrangement. For further details on **DERMS operational behaviour**, please refer to Curtailment and DERMS - UKPN DSO

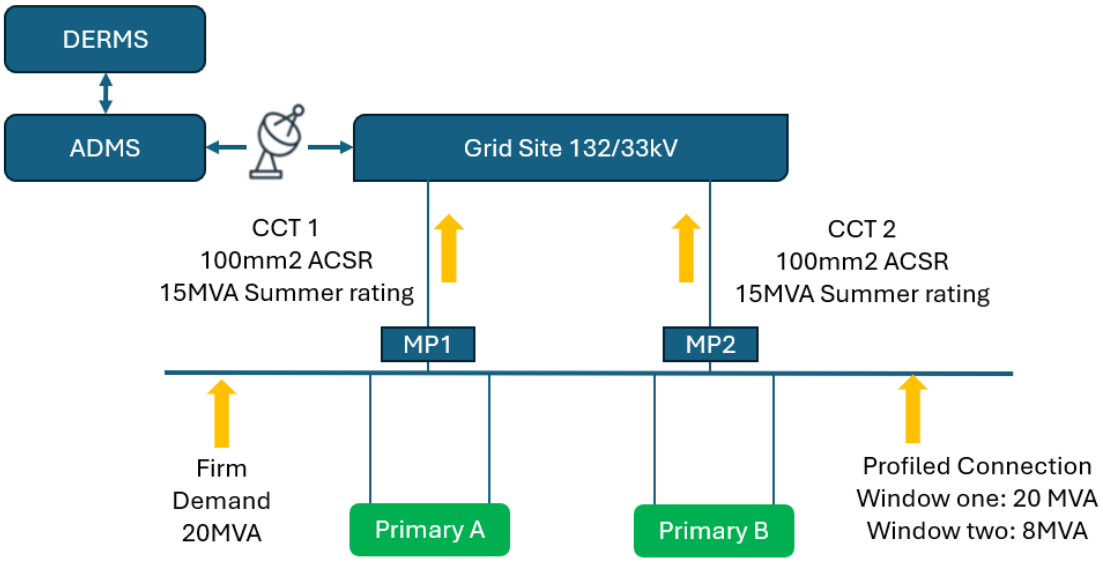

Figure 8-2 DERMS operation

9 How are restrictions enforced?

By accepting a Profiled Connection, you are signing up to pre-determined capacity windows for network access. The capacity windows have been created based on historic background power flows which calculate the Maximum Import Capacity (MIC) allowable for each window. To keep the network in safe running limits, these capacity windows need to be adhered to, if not, there is a risk to the network.

DNP3 interface arrangement
We will be monitoring the import capacity to the site, and should this deviate from the Maximum Import Capacity (MIC) allowable, a signal will be sent to the site controller requesting compliance with the allowable limit.

Failsafe actions

1. UK Power Networks informs the customers DNP3 interface that there is non-compliance – site outside of kW upper limit
2. UK Power Networks informs the customers DNP3 interface that there is non-compliance and the site should reduce to contractual values – window capacity compliance
3. UK Power Networks requests the customers DNP3 interface to reduce the site import to 0kW
4. UK Power Networks sends a volt free contact to the customers Circuit Breaker to open or if this is terminated to the UKPN incomer/metering CB this will trip the whole site
5. UK Power Networks DSO Operations team reviews the incident and depending on the risk to the network, may open the incomer Circuit Breaker.

No DNP3 interface
When a customer decides not to utilise a DNP3 interface, we are unable to send signals/alarms informing them of non-compliance. Therefore, the only actions available to us is to open either the incomer Circuit Breaker or customer CB if this option has been selected, this is to keep the network within safe operating limits.

10 Can I combine a Profiled Connection with Flexibility Services?

Yes. You can have a Profiled Connection for physical access to the network and also participate in flexibility markets (subject to eligibility) to receive payments for responding to network needs. Please visit: Flexibility - UKPN DSO to find out more.

11 Am I able to Import prior to DERMS commissioning?

Yes, this is permissible for testing purposes but will need to be planned and managed by the DSO Operations team. Once testing is completed, the site will be restricted to zero import until the site is commissioned to the DERMS.

1. The commissioning test plan should also be emailed to the DSO Operations team dsooperations@ukpowernetworks.co.uk.
2. The team will check the network outage planning tool (Network Vision) to see if there is any planned works which would impact the testing from proceeding.
3. The DSO Operations will respond to the request to import, providing maximum import capacities for each given day.

This above process ensures the network remains within safe operating limits and prevents existing DERMS customers from being impacted.

12 What happens if my usage pattern changes?

If you require additional capacity, you will need to apply so we can complete a new network referral assessment and provide you with a quote.

13 How much will it cost to apply for a Profiled Connection?

The process is the same as for unconstrained connections:

- **Budget Estimate:** Free of charge. A Budget Estimate is not a formal Connection Offer and cannot be accepted.
- **Formal Quote:** Subject to an Assessment & Design (A&D) payment.

You can find out more about Common Connection Charging here: Regulatory information | UK Power Networks

You can apply here: UK Power Networks

14 How do I apply for a Profiled Connection?

You can apply for a Profiled Connection through the **Connection Gateway portal** (for new demand connections between 300 kVA and 2.5 MVA) **or by completing the Standard Application Form (SAF)**. When submitting your application, please **tick the box** to indicate your interest in a **Profiled Connection**, you'll also be asked to provide your **preferred time windows** and the **minimum import capacity** your site requires, which forms part of the **minimum information** required to carry out the assessment. This information will help UK Power Networks assess whether your requested profile can be accommodated within the available network capacity.

15 Who can I contact if I have a question that hasn't been addressed?

We're here to help! If you have any questions or need clarification, please email: NetworkAccess@ukpowernetworks.co.uk