



> PROGRESSIVE ENGINEERING

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1 WATER METERING STRATEGY

Water metering across all BCWS supplies will be used for several purposes and functions across billing, leak detection and landlords monitoring.

1.1 Incoming Water Supply

The primary water supply will be metered from a single Thames Water Bulk meter at the point of entry to the site. Additionally, each of the commercial units will also be served via a dedicated Thames water meter in order to ensure accurate billing throughout the development and ensures adequate coverage and billing across all use cases, included where private tenants are involved.

1.2 Sub Metering

Multiple areas are sub metered in order to ensure adequate monitoring of usage patterns across the development. This includes all potable water supplies to both fixtured and HIUs, ensuring that all hot and cold floor plates are captured. The configuration of these meters have been arranged by metering the supply on each floor of each core, essentially metering each cluster across printworks and 807. The high road buildings differ slightly from this as they are not arranged in a typical cluster arrangement which has facilitated the need for individual water metering to each of these rooms.

The development includes a number of landlord water supplied for irrigation and miscellaneous applications such as plantroom washdown and top up. These have also been sub metered in order to give the landlord full visibility and oversight of water usage patterns and consumption associated with servicing and maintaining normal day to day building operation.

1.3 Leak Detection

The main incoming supply to the development will also be fitted with a secondary pulsed output water meter in order to act as leak detection and protection, should there be leak between the site boundary and the tank room. This functions by monitoring water consumption for a set period of time in order to establish a pattern of usage and baseline consumption data for the building. This data is then used to compare subsequent consumption in order to detect abnormally high consumption at off-peak times in order to alert building management of the presence of a possible leak and that further examination is required.

2 ENERGY METERING

Heat (energy) metering will be provided throughout the developments LTHW and CHW networks. These shall include meters at the point of generation immediately downstream of main drivers as well as along the primary distribution to points of end use.

Each of the 2no ASHPs and Chiller located on the roof of Block C have energy meters in order to monitor the heat generation from each unit. These have been placed such that the total energy generation is captured immediately after the source before LTHW and CHW can re-enter the building and energy centre. Additionally, the total energy leaving the ground floor energy centre is also monitored in order to capture and highlight any discrepancies between the ASHPs / Chillers themselves and distribution to the rest of the development. It should be noted that LTHW and CHW supplies to the commercial units also have dedicated individual meters in order to inform accurate billing of private tenants. These will also enable the landlord to have full visibility of the total energy consumption within the commercial units. With meters positioned in these locations, the total consumption for all landlords and domestic heating and cooling can be ascertained.

3 DATA COLLECTION

All energy meters and water meters are monitored by the BMS, allowing access to both live and historical data. This allows for the inclusion of automated consumption patterns and reporting. In the context of commercial units, energy metering informs tenant sub billing by the landlord negating the need for manual data collection. Additionally, this system allows for monitoring to be carried out against predefined limits and consumption values/patterns. This will give the landlord the ability to be alerted to any excessive inefficiencies or defects within the system. The system will use a standard protocol allowing for the integration of field equipment back to central controllers and head ends. The protocol shall be an open protocol in order to allow for the integration of multiple subsystems back to a centralised point.

4 ELECTRICITY METERING

The development is supplied from a single UK Power Networks (UKPN) 1000kVA substation. The substation feeds SB-TX1 which provides separate low voltage supplies to the Printworks building and the 807 High Road building as follows:

- A dedicated 1250A MCCB low voltage supply serving the Printworks building;
- A dedicated 315A fused low voltage supply serving the 807 High Road building;
- Separate 100A metered supplies serving Retail Unit 1 and Retail Unit 2 from SB-TX1;
- A separate 100A metered supply serving the 807 High Road commercial unit directly from the UKPN low voltage network.

High voltage infrastructure is limited to the UKPN substation only, with all landlord and tenant electrical distribution systems within the development operating at low voltage.

4.1 Smart Metering and Utility Metering

All utility metering associated with the development shall comprise smart meters installed in accordance with current utility provider and UK industry standards.

Separate fiscal utility metering is provided for:

- Retail Unit 1;
- Retail Unit 2;
- The commercial unit within the 807 High Road building.

The student accommodation is operated as a commercial residential development with landlord-operated electrical distribution arrangements.

4.2 Electrical Check Metering Strategy

Electrical check metering is incorporated throughout the development to facilitate operational energy monitoring in accordance with the GLA Be Seen guidance and CIBSE TM39 principles.

Check metering shall be provided for the following systems and distribution equipment:

- All outgoing ways from the principal landlord switchboards;
- Residential room cluster distribution boards;
- Lighting control panels;
- Heating and cooling plant;
- Landlord lighting distribution boards;
- Landlord small power distribution boards;
- Lift installations;
- Ventilation systems;
- Smoke extract systems;
- Heat pump installations;

- Booster pump installations;
- External lighting installations.

The proposed metering arrangement has been developed to enable monitoring and reporting of landlord energy consumption, end-use energy demand, and major plant energy consumption in accordance with Be Seen reporting requirements.

4.3 Renewable Energy Metering

The development incorporates a roof-mounted photovoltaic installation with an approximate installed capacity of 55.5kWp.

The photovoltaic installation includes:

- Generation metering;
- Export metering.

This will enable renewable energy generation and exported energy data to be monitored and reported in accordance with the GLA Be Seen guidance.

4.4 BMS Integration and Data Reporting

A Building Management System (BMS) is incorporated within the development to facilitate centralised monitoring of building systems and energy consumption.

Electrical meters are integrated via Modbus communications to allow automated data collection, monitoring, trending and reporting. The metering strategy has been developed to support operational energy monitoring and future reporting requirements associated with the London Plan Be Seen policy framework.

4.5 Meter Quality Assurance, Calibration and Commissioning

Metering installations shall be installed, commissioned and verified in accordance with current UK industry best practice and applicable manufacturer recommendations.

All fiscal and check meters, where applicable, shall be MID approved and factory calibrated prior to installation.

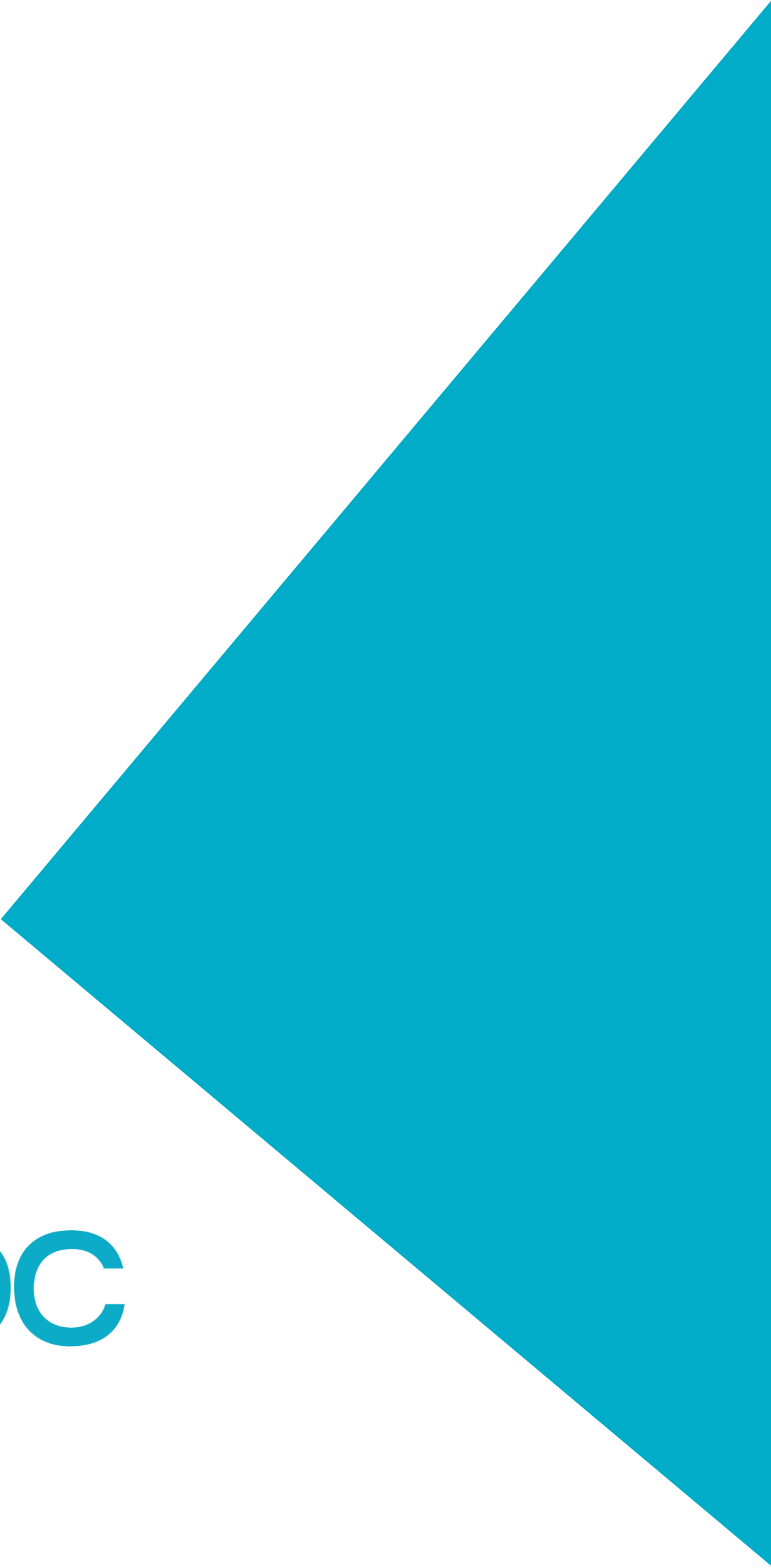
The metering installation shall be subject to commissioning and verification procedures to confirm:

- Correct meter installation and configuration;
- Correct communications integration and meter addressing;
- Accurate reporting to the Building Management System;
- Correct calibration and operational functionality.

The metering installation and commissioning process shall be coordinated with the overall building commissioning strategy to ensure the development is capable of monitoring and reporting operational energy performance in accordance with the approved Be Seen requirements.

4.6 Supporting Information

The electrical metering strategy is supported by the project low voltage schematics identifying the principal incoming supplies, distribution arrangements and metered systems associated with the development.

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EDC