Kilburn High Road

Energy Strategy

1.0 INTRODUCTION

A residential led mixed-use redevelopment located in North West London and backing on to Kilburn Grange Park.

The scheme for the site has been categorised into 3 blocks; Block A, B and C. They are all 6 storeys (ground to fifth) with the residential apartments located on the first floor and above. The ground floor of the main building is made up of mostly commercial units, a bin store and landlord's areas.

2.0 ENERGY STRATEGY

An energy strategy was prepared by Price & Myers consulting Engineers in March 2015 for the planning application. Their strategy explored passive design features, energy efficiency measures, plus low and zero carbon technologies. The report concluded that community heating was a viable solution for a development of this scale and provided greater efficiency than individual systems. We will be taking on board their recommendations for mechanical ventilation with heat recovery, community heating with centralised gas boilers, hot water cylinders and 100% low energy lighting.

However, the low and zero carbon technologies feasibility study proposed that 184 PV panels were to be installed on the roof for the residential units, which will simply not fit on the roof area available. The maximum output that can be achieved is with 43 panels, providing a site-wide output of 14.06kWp, which is a reduction of 39.64kWp to what is stated in the energy strategy. Ten sample SAP calculations to Part L1A 2013 of the Building Regulations reveal that an average improvement of 10.03% is achieved over the TER with 14.06kWp of PV, compared to the 37.6% target.

A CHP engine is, therefore, required to meet the CO2 emission reduction targets. A Bosch CE19-2NA CHP engine, with a thermal output of 32kWth and electrical output of 19kWe, provides a 41.06% CO2 emission reduction and the PV can be omitted altogether.

3.0 SERVICES STRATEGY

The landlord's areas include a meter room, which will also house door entry/access systems, controls systems and television distribution systems for the site, including the satellite head end, main amplifier and multi-switches to distribute signals to individual apartments. There is also a plant room for the water tank and booster set. Both these rooms are located in core C, close to the entrance road where the incoming services will be entering the site underground. The GRP tank will be provided in two sections to allow for cleaning and sterilisation during occupation, without disrupting supplies to the residents. Variable speed inverter driven pump sets shall be provided to serve all apartments, which will ensure that water can be distributed continuously, regardless of occupation percentages. Commercial units and offices will have metered water supplies served directly from individual water mains from the street.

There is also another single storey area allocated for services remote from the main apartment block. This was originally going to be the electrical substation and boiler room. Unfortunately, the boilers can not be located here, as the flues must terminate above the level of the windows in the surrounding buildings. Consequently, this area will remain an electrical substation, but will also be a switch room and management store. The final design of the low voltage distribution system is yet to be determined and will be designed in accordance with the selected DNO/IDNO's requirements. Generally, supplies will be distributed via heavy duty J-type fuse distribution boards to serve MSDB's or heavy duty cut outs. Supplies in excess of 100A will be metered via CT metering. On site generation produced by the CHP will be fed back into the low voltage distribution systems via metered landlord supplies. Within each apartment, a dedicated consumer unit will be provided to serve the apartment, fed from MSDB's

The heating plant will instead move to the roof space, above the fifth floor, where the flues can terminate vertically through the roof without causing any nuisance. The LTHW plant room will be provided with 6No. 100 kW natural gas boilers and 1No. CHP engine, described above. Using 6No. smaller boilers, as opposed to one or two larger boilers, means that one boiler can be switched off for maintenance while the other five can carry the load, plus it can fit in the lift if it needs replacing. To ensure the most efficient operation of the CHP engine, 8,000L of thermal storage vessels will be provided and no heat will be lost to atmosphere through heat dump radiators. The plant room will also contain pumps, expansion vessels, pressurisation units and filtration units. Two pipes, a flow and a return, run in the ceiling voids of the common areas from the vertical pipes in the risers and branch off at each flat with isolation valves. These valves are outside the front doors and will need to be accessible. The distribution network will serve the HIU located within the apartment to further separate the static pressure between the primary distribution network and apartment network. This will also provide a separate ownership and responsibility between the primary network and apartment owners heating system. The primary system will be controlled via the Trend IQ4 range of controllers linked to a central display panel located on the panel fascia to facilitate set point adjustments etc. The installation is capable of being linked to a central computer in the concierge to enable set point, time schedule change, and enhanced display information. This will also include the ability to store and view logged data from all sensors.