KUT

SERVICES STRATEGY

MECHANICAL, PUBLIC HEALTH AND ELECTRICAL ENGINEERING SERVICES

at

KAY COURT
368 – 372 FINCHLEY ROAD
LONDON NW3

CF/5822rev3
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1.0 GENERAL

1.1 Introduction;

This document provides a summary of the proposals for the mechanical, public health and electrical installations associated with the development of Kay Court.

1.2 Property Details:

The address of the site is Kay Court, 368 – 372 Finchley Road, London NW3.

The project involves the demolition of existing buildings and erection of a new residential development block arranged over basement to fourth floors and comprising 18 private and 6 affordable units. Refer to the Architects drawings for the schedule of accommodation.

2.0 SERVICES OVERVIEW

2.1 Utilities:

Utility search maps have been obtained by Kut and will be made available upon request. These outline the services provision within the locality of the site; however they will not show the supplies within the site boundary.

It will be the Main Contractor's responsibility to locate and isolate/disconnect the services on site prior to construction. Similarly the Main Contractor will be required to liaise with the utility companies for provision of temporary builder's supplies as required.

Applications for the new dedicated supplies will be arranged for the site to meet the full demand of the new development, including gas, water, electrics, telecoms and communications.

2.2 Regulations:

The building services design & installation will comply with all the latest regulations and associated design guides.

2.3 Scope of Works:

The work will include the design and installations of a fully satisfactory and operational scheme in-line with this strategy, the energy report and subsequent specification and drawings.

The scope of the works for the building services covers the following:

- Mechanical services including space heating, ventilation, gas services, hot and cold water services and all associated pipework and distribution.
- Centralised mechanical systems including boosted cold water, gas fired-boiler systems, combined heat and power, centralised hot water service, and metering provision for the heating and hot water.
- Electrical services; mains intake, mains distribution, power, internal lighting, external lighting, wiring system, emergency lighting, access & security systems, provision of terrestrial and satellite television, fire alarm and telephone/data wiring.
- Utility connections with new service provisions including gas, water, electrics, telecoms and satellite.

- Sanitary plumbing and rainwater (please note that the specification for the underground drainage is by the Structural Engineers).

To provide a coordinated scheme in-line the latest regulations and any specific Planning, Building Regulations and Energy Report requirements to include the following:

- Code Pre-Assessment.
- Below ground drainage by Structural Engineers.
- Opening vents (OV's) and automatic opening vents (AOV's) by Architect and specialists.
- Acoustic Engineers – tbc.
- Building Control Officer – tbc.

3.0 ENVIRONMENTAL STRATGEY

3.1 Sustainability / Renewables:

The proposal is for the new development to meet Code for Sustainable Homes Level 3 as per Camden's policy. However for detailed requirements across the entire site please refer to all Energy Reports as well as the Code Pre-Assessment by Metropolis Green.

The sustainability design for meeting the Code includes a centralised Combined Heat and Power unit (CHP) as well as photovoltaic panels (PV), all outlined in the Energy report.

Approved 'Energy Display Devices' will be fitted to the incoming services to monitor the energy consumption and display them appropriately to the residents.

4.0 MECHANICAL SERVICES

4.1 Ventilation Systems:

There is no proposal to generally ventilate common circulation areas beyond the opening of windows and by natural air infiltration. However an AOV system will be provided to meet the requirements of the Fire Strategy.

The basement carparking area will be naturally ventilated as detailed on the Architects drawings.

Basement Plant areas will be naturally ventilated with louvred doors and additional grills in the Plant Room. The free areas for ventilation of these areas must be permanently open to provide adequate ventilation for combustion of the boilers and CHP unit. All louvred sections will have an insect screen to avoid ingress of insects.

Refuse Stores will be naturally ventilated with louvred or grilled doors. The free area for ventilation of this area must also be permanently open to provide adequate ventilation for odour control. All louvred sections will have an insect screen to avoid ingress of insects.

The flats ventilation will be designed to operate under Building Regs Part F System 3, continuous mechanical extract, with fresh air inlets by trickle vents in the windows, and extract from all wet rooms by a Mechanical Extract Ventilation unit (MEV) in each flat.

The MEV units will be SAP Appendix Q rated installed within an appropriate location of each flat. The systems are to run at a low trickle rate providing background extract ventilation from the bathrooms and en-suites via extract disc valves and proprietary flat section ducting (204x60mm or equal), with fire wraps where necessary. All MEV units will be interlocked with light switches/PIR's or remote ceiling mounted humidistats in bathrooms and en-suites to trigger a boost extract rate from the MEV systems.

It is proposed that kitchens within the flats are provided with a recirculation cooker extractor hood with integral lighting and fan speed controller. The MEV systems will be extended to include a disc valve local to the cooker hob (plus remote switching for MEV boost rate), with the cooker extractors operated for purging odours.

The MEV unit ductwork will terminate on the façades of the buildings in the approximate positions to be shown on the Architects drawings, discharging through airbricks to match the external brickwork or cladding.

4.2 **Air Conditioning Systems:**

There is no proposal for air-conditioning systems within the flats.

4.3 **Heating Systems:**

The heating system will comprise 2No. condensing gas-fired room sealed boilers, with boiler sequencer to rotate the role of the boilers (alongside the CHP unit). The boiler arrangement will be located in the Plant Room and overall will be sized such that it can meet the full demand for space and water heating to all flats.

Additionally a gas-fired combined heat and power unit (CHP) will be provided in the Plant Room to operate as lead boiler. In order to obtain the best efficiency from the CHP unit it must be operated for long periods, with the heat generation directed towards hot water heating, and the electricity generation fed into the Landlord's distribution panel.

Please note that the Code Pre-Assessment has been generated against the performance criteria of a Baxi Dachs 5.5kWe CHP unit complete with any necessary acoustic treatment and condensing heat exchanger.

The gas-fired boilers are to connect to a flue header before discharge flue gases are directed up out of the enclosure in a proprietary flue system to above roof line. Similarly the CHP flue will consist of a steel flue run in a continuous length according to the CHP manufacturer's requirements.

The heating arrangement will include boiler manifold kits, primary circulation pump and low loss header, pressurisation unit, expansion vessel, dosing pot and all associated valves and controls on the LTHW primary side. The secondary side will include pumped Landlord's heating circuit, and pumped supply to the hot water calorifiers both fed from the low loss header arrangement.

Space heating to the flats will be served by the Landlord's heating circuit up through the service riser and onto each floor, where it will connect to an indirect community heat interface unit (HIU) in each flat, typically mounted at 750mm or greater above FFL within cupboards.

Heat metering will be connected back to an M-Bus monitoring system.

The HIU's will provide heating to each flat in the form of wet radiator (Affordable) or under-floor (Private) heating circuits, using copper pipework or certified plastic pipe systems as an alternative.

4.4 **Cold Water Services:**

An unmetered bulk mains cold water supply to a central cold water storage/break tank within the plant room will be provided.

The storage tank will provide water for all flats and the Landlord's service by means of a centralised packaged cold water booster arrangement consisting of inverter driven pumps, expansion vessel, controls, and all associated fittings and bellows.

The booster pump set will be designed to allow minimum 1½bar water pressure in all flats, all achieved by pressure reducing valves in the riser cupboards.

The actual selected fittings will be determined by the mandatory water consumption rates required by the Code for Sustainable Homes and thus highlighted in the Code Pre-Assessment.

The cold water, and the hot water by the nature of cold feed to the calorifiers, will be protected from excessive limescale build-up by the inclusion of an electro-magnetic water conditioner(s) as Hydrotec 'Hydromag' or equal. Typically this will be installed in between the storage tank and the booster set.

Cold water will be distributed up the service risers with branch tee's on each floor serving the flats. Each flat will have its own individually metered cold water supply, with Thames Water meter arrangements in the relative riser cupboards, double stacked where necessary for spatial reasons.

The cold supply to each flat shall enter from the corridor within the ceiling void before running to a suitable position, where it will connect onto to the various outlets via will a stop cock.

Lockable recessed washdown points will be provided within the Refuse Stores, the rear courtyard, and Roof Level (for wash down of the PV panels, annually).

4.5 **Hot Water Services:**

Hot water generation will be by centralised indirect hot water calorifiers in the Plant Room.

The hot water cylinders are to have connections from the LTHW heating circuit, with the intention that the CHP unit will act as lead boiler and provide the majority of the hot water demand.

Cold feed to the calorifiers will be provided from the cold water booster set, and will be protected from excessive limescale build-up by the electro-magnetic water conditioner.

The calorifiers will be suitably rated to allow for test pressures of at least 1½ times both the working pressure of the LTHW system and the booster set cold water design pressure, as well as the booster set closed valve pressure.

Back-up electric immersion elements will be included in the calorifiers in the event of the loss of the gas supply at any time.

Centralised hot water distribution will rise up the service risers, branching off into the corridor on each floor before entering the flats where it will be metered to determine actual hot water consumption. Hot water metering will be connected back to an M-Bus monitoring system.

Hot water will be stored at 60ºC min. for distribution at 55ºC min. Additionally a centralized pumped hot water return circuit will be included to ensure hot water draw-off at each fitting results in water at 50ºC within 30 seconds of opening the tap, all in accordance with the WRAS Water Regulations Guide (final temperature of tap water will be subject to the installation of TRV's).

4.6 **Gas Supply:**

A dedicated fully ventilated Gas Meter Room will need to be constructed to support the landlord's communal installation. The Gas Meter Room will be naturally ventilated by louvred doors complete with insect screen and in keeping with those for the Plant Room.

A new metered gas supply will be provided. The gas supply will feed the gas-fired boiler arrangement and CHP unit.

It is anticipated that there will be no gas cooking allowance within the flats and therefore no requirement for a gas supply to each dwelling.

4.7 **Controls Strategy:**

The main items of mechanical plant will be fed from a Motor Control Centre (MCC) in the Plant Room, to include all starters, relays, and hand switches. The MCC will show the operational status of all the major items of plant including:

- Cold water booster.
- Boilers.
- CHP unit.
- Primary LTHW circulator.
- Secondary LTHW circulators.
- Hot water return pump.
- Electric immersion elements.

An M-Bus energy monitoring system will be installed with telecoms point for remote dial in by an appointed Energy Monitoring company.

This will allow for the Energy Monitoring Company to upload information on the heating and hot water usage to each flat, as well as the gas consumption to the heating systems to allow the consumption to be pro-rata'd for the flats for adding in to the service charge as may be required by the client.

All MEV fans to be controlled via light switches/PIR's or ceiling-mounted humidistats to enable background ventilation rates when boost rate is not required.

All radiators to include thermostatic radiator valves (TRV's) with the exception of those in the entrance halls. Under-floor heating to include a room thermostat for operation of the relative space heating systems.

5.0 **PUBLIC HEALTH SERVICES**

5.1 **Sewer Connections/Sewerage Infrastructure:**

The below ground drainage design will be provided the Structural Engineers.

5.2 **Above Ground Sanitation Systems:**

The sanitation system will operate by means of gravity drainage system.

High density polyethylene soil/waste stacks with anti-siphon/relief vents will collect discharges from all the fixtures within each building.

The design will seek to avoid the use of automatic air admittance valves.

Vent pipes will terminate through the roof or approved locations to atmosphere, coordinating with the PV layout.

Above ground sanitation systems include:

- Separate sanitation and rainwater system.
- Drainage routed by gravity to sewer connection.

Hose connections from dishwashers will be allowed in all kitchens, as well as connections for washing machines. Drainage will also be allowed in each flat from the heat exchangers (HIU's) to allow temperature/pressure relief as well as drain down for maintenance.

Intumescent fire collars will be provided where stacks pass through fire compartments.

5.3 **Above Ground Rainwater Systems:**

The number of rainwater down-pipes required will be based on the total area of the roof. Rainwater pipes are to typically sized at 100mmØ, routed from the Roof Level to the basement drainage system. All internal rainwater down pipes and soil stacks are to be thermally and acoustically insulated.

6.0 ELECTRICAL SERVICES

6.1 **Electrical Service:**

A 3-phase electric service to the buildings Electrical Intake will be provided. Landlord's meter and a main multi-head cut-out together with Ryefield distribution board will be installed to serve the dwellings. A Landlord's distribution board will be installed and serve a photo-cell controlled external lighting unit within the electrical intake.

A lift distribution board will be installed within the lift shaft.

6.2 **Lighting:**

Light fittings will be low energy types. There is no longer a Code - Low Energy Lighting (LELE) requirement, this is now set in Building Regulations at 75% but in terms of the pre-assessment 100% LEL will be assumed for the energy strategy calculation.

<u>Common Areas</u>

Good quality lighting will be provided to both 'internal' common areas and external areas including the entrances, refuse areas, bicycle storage, and all amenity spaces.

It will comprise of the following:

All light fittings to be vandal-resistant and easily maintained.
All light fittings to be of a low energy type.
All light fittings to be movement sensor controlled unless particular areas benefit from continuous light after dark for security reasons.

Dwellings

Typically wall or pendant fittings will be provided in the living room area, bedroom and hallway. Wall mounted lights / shaver-lite above the mirror and ceiling light fittings will be provided in the bathroom. All fittings will be operated by a light switch next to the opening section or handle of the door to each room.

External lighting will be designed to avoid light pollution and nuisance to neighbouring properties. External lighting will be under the control Daylight cut-off sensors / timers.

Note: The Low Energy Lighting (LEL) issue in the Code for Sustainable Homes Pre-Assessment, has been replaced with a requirement for Energy Display Devices.

6.3 **Small Power & Outlets:**

Sockets and Switches

Mounting heights / Part M: Socket and switch heights to comply with Part M.

Home Offices - within rooms designated as the 'home office' Code compliant services will be provided, including: two double power sockets and two telephone points (or double telephone point), or one telephone point where cable or broadband is available.

6.4 **Security Systems:**

To be designed by a specialist and to include:

- Video camera access systems as necessary to meet any requirements of 'Secured by Design'.
- Access Controls.

6.5 **Telephone Installations:**

The main incoming and distribution point will be within Plant Room. Infrastructure and wiring links to each dwelling will be installed.

6.6 **Renewable Energy:**

Local Authority renewable energy requirements have been assessed by the Metropolis Green report.

The report proposes both combined heat and power (CHP) and photovoltaics (PV's) as potential renewable energy sources to achieve the required Code for Sustainable Homes rating. The CHP unit has been selected to work in conjunction with a centralised heating system and similarly centralised hot water system has been proposed to provide a use for the heat generated by the CHP engine.

The PV's will be mounted on the roof for electricity generation, which alongside that generated by the CHP unit will be used for Landlord areas and common circulation areas.

6.7 **Door Entry Installation:**

Door entry panel:-

To provide visual and two way audio communications.
Digital panel.
Magna locks on doors – press to exit button.
Handset in flat hall.

6.8 **TV:**

A communal TV and radio aerial / satellite dish to be installed on the roof in a non-visible location.

Amplification equipment and distribution to provide TV/DAB/Sat services at all outlets within dwellings.

6.9 **Fire Detection and Alarm:**

A mains-operated fire detection and alarm system with a battery backup is to be installed within each flat at least a Grade D Category LD2 standard in accordance with the recommendations of BS 5839 Part 6: 2004. One smoke alarm detector/sounder will be sited within the hallway of each unit together with a heat detector/sounder in the kitchen zone.

For Landlord's areas: Smoke venting as required including smoke detectors, OV's and AOV's (all as per Architect's specification).

Additional requirements to be advised by the Architect's Fire Consultant.

6.10 **Carbon Monoxide / Gas Monitoring:**

No gas service is proposed for the flats in this development, therefore there is no requirement for carbon monoxide monitoring systems.

6.11 **Intruder Alarms:**

Intruder alarms are not proposed for each flat, however there will be an allowance for a spur outlet local to the distribution board in the cupboard of each flat, for the tenant to provide an intruder alarms if required at a future date.

7.0 **LIFT INSTALLATION**

7.1 The new lift will be provided to access to all levels as indicated on the Architects drawings.

8.0 **DRY RISER**

8.1 Subject to the Building Control and Fire Strategy requirements a dry riser system will be incorporated into the scheme. It will be necessary to locate outlets at each level within the main staircase. Dry risers will also require an inlet cabinet to be provided on the front of the building associated with the service road that the Fire Brigade will use when attending a fire at the building.