



MECHANICAL, ELECTRICAL AND PUBLIC HEALTH
SERVICES INSTALLATIONS

DESIGN DEVELOPMENT DOCUMENT FOR
SHUDEHILL STREET APARTMENTS, MANCHESTER

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Mechanical, Electrical and Public Health
Services Installations
Design Development Document for
Shudehill Street Apartments, Manchester

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1. INTRODUCTION

This document is intended to identify the scope of works for the Mechanical, Electrical and Public Health Engineering services for the proposed new Apartments at 56 Shudehill, Manchester, M4 4AA.

This document has been produced for comment and continual update and will be developed, as each element of the building services installation is evaluated. For each element of the works the following considerations will be given.

- Technical aspects
- Environmental issues (in particular energy consumption)
- Flexibility and adaptability
- Costs
- User comfort
- Billing
- Future maintenance

The above will identify the level of specification to be adopted.

2. UTILITY SUPPLIES

2.1. EXISTING SERVICES

Existing services information has been received for the area of the site. Please refer to our separate Existing Incoming Services Report document in respect of this.

2.2. NEW SERVICES SUPPLIES

2.2.1. Electricity

We have advised the incoming services provider C2E that we require the following;

	Landlord	Retail	Apartment	kVA	Comments
Ground	1	1		88	20 Landlord, 68 Retail (100A TP/N)
First floor			2	20	Approx. 10kVA each when in use
Second floor			2	20	
Third floor			2	20	
Fourth floor			2	20	
Fifth floor			2	20	
				188	Total anticipated capacity

2.2.2. Water

We have advised the incoming services provider C2E that for the residential supply we require the following;

	Loading Units	No. of fittings	Item total
Water Fitting			
WC Flushing Cistern	2	10	20
Wash basin in a House	1.5	10	15
Wash basin elsewhere	3		0
Bath (tap 3/4"/20mm)	10		0
Bath (tap >3/4"/20mm)	22		0
Shower	3	10	30
Sink (tap 1/2"/15mm)	3	10	30
Sink (tap > 1/2"/15mm)	5		0
Spray Tap	0.5		0
Bidet	1.5		0
Domestic appliance	3	10	30
Communal or commercial appliance	10		0
Any other water fitting or outlet	3		0
Total			125
Flow rate (l/s)			1.46

2.2.3. Gas

We have advised the incoming services provider C2E that the development requires a 100kW incoming gas supply to serve the commercial kitchen on the ground floor. It is our understanding that no gas supply shall be required for the residential properties.

2.2.4. Telecoms

The Client shall confirm the specific telecoms provision required (copper/fibre, intercoms, etc.), however it is assumed that an infrastructure to facilitate high speed internet will be required.

3. MECHANICAL SERVICES INSTALLATIONS

3.1. HEATING INSTALLATIONS

We believe that on undertaking block compliance SAP calculations (by others), the requirements to meet Building Regulations Part L 2013 can be met by using electric panel heating by providing increased levels of thermal performance. This will be confirmed on completion of the SAP calculations.

Decorative panel radiators will be selected, alongside the project architect, e.g., The Adax Neo range, as below.



These will be controlled via a digital 24-hour, 7-day control unit, located in the entrance hall of each apartment.

3.2. HOT AND COLD WATER SERVICES

A new mains cold water supply is to serve the building to supply a cold-water tank and booster set, given the building height. Individual meters will be located in an accessible location within each apartment.

A Cat 5 water supply will be provided for Bin Store wash down.

A separate new mains cold water supply is to serve the commercial kitchen with a meter located locally within the kitchen area.

Hot water is proposed to be provided via local electric hot water heaters. This shall consist of electrically heated showers and under-sink water heaters located in the kitchen of each apartment.



3.3. VENTILATION

Mechanical whole house ventilation, incorporating heat recovery shall be provided in order to help achieve the requirements of Part L1A of the Building Regulations. Extract ventilation shall be provided to wet areas such as bathrooms and kitchen areas. This is utilised to control humidity and remove unwanted odours from the space. Supply air shall be provided to habitable rooms such as living room and bedrooms. Flat duct is to be used in order to minimize ceiling void depth required.

We are proposing to ventilate each apartment via the building façade utilizing discrete external grilles, the final detail of which will be agreed with the project architect.

It is proposed that each room will be provided with a ceiling mounted air valve, as below.



It is proposed that the MVHR units will be of the horizontal type and will be sited within a bulkhead within each apartment, subject to the space available. These require a void of circa 300mm deep, with access to the fan above.

Condition 7 of the Manchester City Council planning permission document requires that the residential premises are acoustically insulated from noise from the adjacent roads, therefore openable windows cannot be used to provide purge ventilation. The MVHR units will incorporate a summer bypass and controls to provide purge ventilation to minimise overheating within the apartments and provide rapid ventilation, with the windows remaining closed.

Extract ventilation will be provided to the commercial kitchen area via an in-line axial fan. A dedicated kitchen extract riser located adjacent to the kitchen will contain the ductwork that will terminate at roof level.

3.4. ABOVE GROUND DRAINAGE

Soil and waste stacks shall be provided to suit the proposed apartment layouts, in order to serve water outlets. These shall discharge into a common stack located in the bathroom area of the apartments.

All appliances shall include where necessary anti-siphonage traps, this may include ventilation units.

Fire stopping will be provided where the pipes pass through a fire compartmentation.

A floor gulley will be required within the bin store to drain water below ground.

Acoustic parameters will be considered within the apartments and the ground floor areas, with soil stacks boxed in an acoustic enclosure.

3.5. FIRE SERVICE INSTALLATIONS

A dry riser will be required to serve the building, given its height to the uppermost floor level. This will require an inlet breaching at Ground Floor level and landing valve at each level.

Smoke ventilation will require reviewing as part of the developments overall Fire Strategy. A natural smoke shaft is currently indicated, which will incorporate locally opening louvres, linked to detection within the apartment lobbies.

A Plumis type mist system will be required within the residential premises, given the building height and lack of space for water storage, in line with the buildings overall Fire Strategy. A fire suppression system will also be required within the commercial kitchen and bin store areas, in line with Building Control requirements.

From the existing services records, there appears to be a Fire Hydrant locally on Shudehill. We believe that this will be sufficiently close to the main fire-fighting building entrance and will not require any new hydrants providing.

3.6. TESTING AND COMMISSIONING

The whole of the Mechanical and Electrical services installation shall be fully tested and commissioned in accordance with CIBSE Commissioning Codes, the IEE recommendations, all relevant codes of practice and British Standards, CIBSE and IOP guidelines.

Upon completion of the works three full sets of 'as-installed' drawings shall be provided with a manual containing manufacturer's literature and operating and maintenance instructions for the equipment installed.

4. ELECTRICAL SERVICES INSTALLATIONS

4.1. LV DISTRIBUTION

A new incoming electrical supply has been requested as described within section 2.2.1. The new electrical supply would comprise one supply/meter for each Apartment, a metered Landlord supply for the common areas and a 68kVA 3-phase supply for the commercial space, for future metering by a tenant. At this stage the incoming supply location is likely to be the ground floor electrical cupboard and it is hoped that apartment metering could be located within each apartment for convenience, however the metering strategy will need to be confirmed with the Building Network Operator.

From this incoming supply location, new supplies to each apartment shall be provided via the electrical risers, terminating in a new consumer unit located within the apartment. The preference would be for the meters to be located within each apartment for ease.

A new Landlord's distribution board shall be provided to serve the common areas. This distribution board shall be suitably sized and rated and shall provide power for the Landlord's lighting, small power, and ancillary services (Fire Alarm, Lift etc) to all floors.

All sub-main cables from the Landlord's board shall be XLPE/SWA/LSHF cables fixed by metal cable clips to cable trays within electrical riser/ceiling voids where possible.

Supplies to apartments shall be BNO cabling if metering is located within each apartment, or shall also be XLPE/SWA/LSHF submains if meters are located in the common electrical cupboard.

4.2. LIGHTING

A new lighting system shall be provided internally throughout the building, to suit the illumination requirements of the specific area, all generally based on CIBSE/SLL guidelines.

Internal Lighting

Apartments would be provided with low energy LED pendant lamps and low energy recessed IP rated LED luminaires within bathrooms and kitchens in line with the Interior Designers requirements. The circuits shall emanate from the apartment's dedicated consumer unit within the apartment.

The lighting to the Landlord's circulation area shall be by a mixture of surface low energy lighting to create the desired atmosphere. Luminaires shall be of the 'corridor mode' type with integral sensors for switching and incorporating multi-stage dimming to reduce the output when no occupancy is detected, before turning off after a pre-defined time. The circuits shall emanate from the Landlord's distribution board.

Wiring to lighting within the Apartments and Landlord's areas shall consist of LSHF twin and earth cabling contained within galvanised steel basket and conduit and shall be concealed within the building fabric at all times.

Accessories to the Apartments and Landlord's areas shall be recessed white plastic.

Emergency Lighting

A new emergency lighting installation shall be provided to the Landlord areas only. The luminaires shall be incorporated into the mains normal surface mounted fittings as Landlord areas are largely limited to lift lobbies and stairs, meaning emergency illumination is required at most points in order to comply with BS5266, An LED within the fitting shall identify these luminaires. Lighting test key switches shall be provided at suitable locations throughout the building.

Illuminated exit signs shall also be provided to guide building occupants safe egress from the building.

Wiring to illuminated exit signs shall consist of XLPE/LSHF singles contained within galvanised steel trunking and conduit.

Emergency lighting shall be installed along all notional escape routes and toilet areas to provide of minimum service luminance of 1.0 lux.

Emergency lighting shall be provided by the following luminaires.

- i) Fire exit signs on all fire exit doors consisting of approved ICEL luminaires operating in a maintained mode, both inside and outside.
- ii) All other areas to have integral self-contained lighting inverter/battery pack to illuminate part of the general lighting luminaires on mains failure.

All emergency lighting shall be provided with local key switches to enable testing of the lighting.

External Lighting

The project will include illumination of each balcony with an overdoor downlighter. As the property is directly off the street, no other external building illumination will be provided.

4.3. SMALL POWER

A new small power system shall be provided to the Landlord's areas (entrance/corridors/stairs) of the building comprising supplies to socket outlets, access control units, any CCTV camera's, mechanical services and the like. The accessories shall be to a recessed metalclad standard. The system shall be cabled in new LSHF twin and earth wired in new galvanised basket and conduit and shall be concealed within the building fabric at all times. The circuits shall emanate from the Landlord's distribution board.

Adequate quantities of socket outlets shall be provided for maintenance and cleaning with dedicated RCD protection at the distribution board. Sockets within the communal space will either be individually lockable or isolated from a single central point, adjacent to the Landlord's distribution board.

A new small power system shall be provided to each Apartment comprising general purpose sockets, supplies to shaver sockets, fridge/freezers, washing machines, security panels, ventilation systems and the like. The accessories shall be to a recessed white plastic standard. The system shall be cabled in new LSHF twin and earth wired in new galvanised basket and conduit and shall be concealed within the building fabric at all times. The circuits shall emanate from the apartment's dedicated consumer unit within the apartment.

4.4. FIRE ALARMS

A new fire alarm system shall be provided to the development comprising two parts, the Landlord area system and the Apartment system: -

The system to the Landlord's areas is to be designed and installed to B.S. 5839 Part 1 to a Category L1 standard and to the requirements of the overall Fire Strategy with consideration of the Building Control Officer and the Client's insurers. Consideration should be given to the Landlord's fire alarm system's relationship with the Retail Unit.

Until confirmed otherwise by the Fire Strategy document, we will include for provision of sounder/beacons within the common areas. Should the strategy require omission of the sounder/beacons, this would revise the system classification to a Category L5 standard.

Sounder beacons are proposed to be installed at each roof terrace, linked to detection within the apartment lobbies.

It is anticipated that each Apartment shall be provided with a mains/battery back-up combined smoke detector/sounder/beacon with the main area as the apartments are fully open plan. This is anticipated to be to BS5839-6 Grade D1 Category LD2; however, this shall be confirmed by the Fire Consultant's overall Fire Strategy.

Unless requested within the Fire Strategy document, the domestic detection will not interlink to the Landlord system.

4.5. SECURITY INSTALLATIONS

The building shall be provided with a new complete security system, which shall be broken down into the following systems: -

CCTV

It is assumed at this stage that a CCTV system is not required.

Security Detection And Alarm

A new intruder alarm system shall be provided to all Apartments comprising door contacts and PIR detectors to suit the Apartment layout.

Door Entry System

A new video door entry system shall be provided from the building entrance door to each Apartment via a dedicated video call point system. This shall comprise the main entrance call panel which shall be vandal resistant, with a video phone located within each apartment.

4.6. COMMUNICATIONS/TV SYSTEM

A new communication system shall be provided throughout the building. It is anticipated that this shall comprise a new CAT6 cabling infrastructure both within and into each Apartment, which shall provide a complete system for TV, telephone and broadband facilities. Optical network terminators may be provided by BT which will further improve speeds.

Consideration should be given to the need for Openreach, Virgin media and Sky facilities.

4.7. EARTHING, BONDING, EMC MEASURES AND SURGE PROTECTION

A new complete earthing, bonding network shall be provided comprising main and equipotential bonding conductors throughout the building with particular regard to the following;

- All flexible connections,
- Cable trays and trunking,
- Light fittings,
- Plant,
- Ductwork,
- Main switchgear,
- Main water and gas,
- Extraneous conducting parts.

4.8 TESTING AND COMMISSIONING

The whole of the mechanical and electrical services installation shall be fully tested and commissioned in accordance with the IET recommendations, all relevant codes of practice and British Standards, CIBSE and IOP guidelines.

Upon completion of the works three full sets of 'as-installed' drawings shall be provided with a manual containing manufacturer's literature and operating and maintenance instructions for the equipment installed.

5. DESIGN CRITERIA

REGULATIONS AND STATUTORY AUTHORITIES

In respect to the services installation, materials, components, equipment and workmanship, the works undertaken shall comply with all current issues, including amendments, of relevant British Standards and Codes of Practice. Where a British Standard has been superseded and a European Standard adopted within the United Kingdom (BSEN), then the replacement standard shall take precedence.

All electrical services installations and any electrical services associated with the installation of mechanical plant, including controls, shall comply fully with BS 7671.

The requirements of the following shall be fully complied with;

- i) Government legislation, Local Authority Regulations, Recommendations, Requirements and Byelaws.
- ii) Water, Gas, Electricity, Fire Officer, British Telecom and all Public Authority and Statutory Regulations and recommendations.
- iii) Health & Safety at Work Act, including current regulations and statutory instructions issued by the Health & Safety Executive.
- iv) Chartered Institute of Building Services Engineers Guides and current recommendations.
- v) The Institute of Plumbing Guide.
- vi) The Heating and Ventilating Contractors Association ductwork specifications in particular DW144.
- vii) The current CDM regulations.
- viii) The current British Standards and legislation associated with access for the disabled.