



BUXTON CRESCENT & SPA

Mechanical and Electrical services Descriptions for Planning Application

Mechanical Services

Mechanical Services will be designed to meet the recommendations of the CIBSE (Chartered Institute of Building Services Engineers) and will be designed to comply with the relevant sections of the Building Regulations Requirements L2 and local water bylaws.

Incoming Services

Incoming Gas and Potable water supplies exist at present in the building but will need enhancing to suit the new needs of the building. Following the initial load assessment of the building, negotiations have commenced with the local water company and gas shipper to arrange for enhanced supplies.

Foul Drainage System

The surface water drainage systems design will be carried out by others. Soil stacks from the Crescent bedrooms will be connected at high level in the basement and run to suitable below ground drainage connections. Additional waste services pipework will be provided to the toilets etc and function suite facilities as applicable. At basement level throughout the Crescent and Spa a vacuum drainage system will be incorporated to remove the foul waste from toilets, Treatment rooms and kitchen areas.

LPHW Heating

A new basement plantroom will be created at the rear of the building and this will house sectional gas-fired steel boilers. The system will be pressurised utilising packaged pressurisation units. The water will be distributed to the hotel providing both variable temperature circuits to radiators and constant temperature circuits to heater batteries located within the air handling units situated throughout the Hotel area.

Constant temperature water will be provided to serve the numerous pool water heat exchangers located in a section of the basement plantroom.



Mains Cold Water Domestic Hot Water

A new mains cold water storage tank will be located within the basement of the Crescent and this will provide a storage facility in the event of mains failure. Water will be transferred from the potable cold water storage tank to a packaged booster set which will provide boosted water supplies to serve water outlets throughout the complex and also to provide pressurised water to the domestic hot water hi-flow heat exchangers. The final arrangement will be subject to agreement with United Utilities Water Supply Authority.

The domestic hot water will be produced via semi-storage fast recovery vessels complete with twin plate heat exchangers linked to a common buffer vessel to ensure an adequate supply of domestic hot water throughout the Hotel.

Spa Water

Spa water required for the operation of the new Spa facilities will be collected and stored in a new Spa water holding tank located at basement level within the Natural Baths. From this point a spa water supply shall be taken into the "Yellow" basement of the Crescent where it will distribute internally to connect to the pool filtration pre-treatment system.

Cooling Systems

Mechanical cooling will be provided to the Assembly Room, Conference Rooms, reception and restaurant area.

Fan coil comfort cooling will be provided to the bedrooms as required. The majority of the cooling will be introduced into the spaces via fan coil units or displacement ventilation systems as applicable with cooling being provided from a centralised air cooled water chiller plant located in the "Old Bakery" located at the rear of the Crescent. The chiller plant area will be provided with suitable acoustic treatment to comply with the Acoustic Report. The plant will be complete with a pressurisation unit and chilled water buffer vessel and circulating pumps.

Ventilation Services

Ventilation will be provided to a number of areas with the majority of plant being located in the "yellow" basement plantroom at the rear of the Crescent building and also in strategic locations throughout the Hotel. Ventilation will be provided to the ground and first floor Spa areas, Restaurant, Conference Rooms, Assembly



Room, and in addition supply ventilation will be provided to the basement staff areas, i.e. changing areas etc.

Because of the unique nature of the building it will be necessary for some of the air handling plant to be purpose made in order to fit the limitations imposed by the structure. Air handling plant will comprise of pre-filters, bag filters, pre-heaters, heating / cooling coils, supply and extract fans.

Where physically possible, heat recovery systems will be used throughout either in the form of crossflow heat exchangers or run around coils dependent upon space limitations.

Kitchens will be ventilated in accordance with the CIBSE Regulations and vitiated air will be discharged to atmosphere, where there is a risk of food smells emanating to surrounding areas, installations will be complete with carbon filters to reduce any smell nuisance.

A great deal of detail will be built into the design particularly where services are on show to ensure that these are aesthetically pleasing and in keeping with the building design.

Controls

The mechanical services installation throughout will be controlled from a central Building Management System, which will provide the facility to monitor remotely, located plant and which will provide alarm facilities for temperature control throughout all areas. In addition, the system will be linked into the pool filtration plant and will provide remote readout of main control parameters, i.e. pool water temperatures, free chlorine and pH levels.



Spa Area

Because of the compact nature of the Spa located at ground and first floor levels, packaged ventilation plant comprising of filters, fans, heaters, cooling coils, dehumidification plant and heat pumps will be utilised, these will be located within the “yellow” basement plantroom or on a ground floor mezzanine plant deck within the Natural Baths. Due to the physical constraints of the building, the ventilation units will only provide the minimum air for occupancy.

It will be necessary to control the humidity levels during operation of the Spa to minimise the impact of high humidity levels on the building fabric and maintain comfort levels, and wherever possible local de-humidifiers will be located around the pool areas and heat recovery techniques will be incorporated.

Throughout the Spa area, where possible, under floor heating will be utilised to ensure that the pool surrounds are kept to a comfortable temperature and also to ensure the surrounds are kept as dry as possible to minimise the risk of slipping.

Bedrooms & Suites services

The bedrooms within the Crescent will be provided with cooling / heating fan coil units located above the bathrooms, with radiators positioned below windows to prevent draughts from the existing single glazed window units.

Where sitting rooms are indicated, suitably encased wall mounted fan coil units will be considered.

The fan coil units may be linked to a card access system if required.

Bathrooms will be provided with dual fuel towel radiators.

With the exception of the attic level, it is proposed that the bathroom extracts will utilise the existing chimneys as the route to the attic roof voids where the toilet extract fans will be located. The bathroom extract ductwork at Attic level will distribute within the pitched roof above the bedrooms.

Generally the bedrooms will be provided with natural ventilation via openable windows.

All the hot and cold water services will be pressurised from the central plant located in the yellow basement plantroom providing balanced pressures for showers and mixer taps to operate correctly.



Conference Rooms and Assembly Room

The Assembly room and Conference rooms indicated will be provided with heating and cooling from the central plant via suitably encased wall mounted fan coil units will or units mounted in the floor void (if access for regular maintenance can be provided).

These rooms will be provided with the minimum outside air ventilation for the occupants.

Kitchen Services

The main kitchen is located at Basement level with a re-heat kitchen area at first floor in the east of the Crescent and a finishing kitchen at first floor in the west of the Crescent. The basement kitchen does have a limited floor to ceiling height and the use of specially constructed canopies will be considered. Extract ventilation from the main kitchen will have carbon filters to reduce the odours and will be routed to discharge at ground floor low level.

The supply and extract ductwork to and from the first floor re-heat kitchen and finishing kitchen shall be taken through the Crescent to rise to roof level where they shall terminate onto opposite sides of a penthouse style louvre.

Legislation on kitchen ventilation requires that the supply and extract ventilation systems must be working correctly to enable the gas equipment to be operated. The necessary interlocks and gas valves will be fitted as required.

Domestic services, gas and drainage will be provided to suit the requirements of the kitchen specialist with the kitchen equipment having grease converters where there is a risk of fat build up prior to discharging into the vacuum drainage system.

Ground Floor Lounge and Restaurant

Heating and cooling to these areas will be via suitably concealed fan coil units ceiling void mounted to offset the room heat gains / losses.

Supply air will be provided on to the rear of the ceiling mounted fan coil units, with high level extract to remove the vitiated air.



Basement Change area & Staff area

It is envisaged that mechanical supply air will be supplied to the rear services corridor area via fans located in the roof of the corridor, with natural extract being drawn through rooms and discharging vitiated air to atmosphere utilising the existing ventilation shafts terminating at pavement level on the front of the Crescent.

Electrical Services

Mains Supply

A new stand alone substation will be located in the old Bakery building at the rear of the Crescent and from this position a suitably sized connection will be brought into a new switch panel positioned in the yellow basement plantroom. The metering equipment will be located in the basement plantroom along with the main distribution switchboard to serve the entire Hotel and Retail units electrical services and mechanical services plant. Outgoing submain feeds will be fitted with individual kWh metering linked to the BMS system to provide energy monitoring as required by Building Regulations Part L2.

Lighting

Lighting systems will be provided throughout to comply with the requirements of the CIBSE Code for Interior Lighting and associated design guides and Part L2. Great care and attention will be provided to lighting throughout particularly in public areas and hotel bedrooms to create the ambience one would expect of a high standard hotel.

Bedrooms will be illuminated with a mixture of downlights, wall lights and table lamps with multiple switching which will allow the guest to select their preferred ambience.

Lighting to the function suites will comprise of a combination of decorative and functional lighting complete with dimming control gear as appropriate. This will provide various selectable scenes from brighter conference to intimate dining.

Lighting to the spa area will be by recessed compact source but being suitable for installation in a high temperature humidity environment. This will be achieved via a mixture of ceiling and wall lighting as appropriate.

Basic lighting system will be provided to the retail premises.



Lighting control movement / daylight sensors will be provided to the building in areas as appropriate to comply with building regulations.

The light fittings will be high energy efficiency.

Selected luminaires will be provided with integral emergency control gear, in addition maintained emergency luminaires will be provided to public areas to comply with the requirements of BS5266. High risk areas will be provided with emergency lighting to comply with the requirements of BS 5266 Part 10.

External lighting comprising lanterns and some up-lighting will be provided and will compliment the important aesthetic façade of the building. External lighting will be controlled via time clock, photocell, and override switches.

Staff areas will be illuminated in a functional manner unless visible to the customer where aesthetics will be considered.

Small Power

Small power throughout will be provided by means of recessed wall mounted 13 Amp switch socket outlets and fused connections to all areas.

Function rooms and Interpretation areas will be provided with additional wall mounted power outlets for presentation and display purposes including 30 Amp three phase and 16 Amp single phase supplies to provide supplies to portable media/conferencing equipment. Additional wireways will be provided within the ceiling voids for audio-visual cabling.

Bedrooms will be provided with a high standard of electrical installation with specific supplies for TV, hairdryers, trouser presses, ironing boards, tea making facilities, etc.

Small power socket outlets and electrical supplies will be provided to serve all the kitchen equipment

Basic small power socket outlets will be provided in the retail premises

Data/Voice Wiring Facilities

A system of wireways will be provided for data and voice wiring from the intake position to data and telephone points throughout the area. The services provided to the new hotel bedrooms will comprise of voice and data outlets utilising Cat 6A quality cable to patch panels located in positions to be agreed with the Architect, facilities to serve bedrooms, function suites etc.



Data/voice wiring will be provided to general/staff areas as required for building management and public use. Data cabling will be terminated at the outlet and collectively into a patch panel system to allow hardware provision and connection into the cabling system by the client.

Fire Alarms

A new addressable fire alarm system shall be installed throughout all areas to the requirements of BS5839:2008 and to the satisfaction of the local fire officer. The fire alarm control and indicating panel will be located in the Reception area.

The wiring installation throughout will comply with the local fire officer and the building control requirements, however in this instance, the building will require an enhanced cabling system due to the multiple function nature of the building and phased evacuation requirements.

Security Alarms

A new security alarm shall be installed throughout all areas to the requirements of DD243:2002 and European standards.

The security alarm control and indicating panel will be located in a suitable position in the building.

The security alarm system will comprise of door contacts, passive infra red detectors and dual technology detectors.

CCTV

A system of CCTV cameras will be installed within the building and to the external elevations. The cameras will terminate into a nominated monitoring and control station.

Twenty-four hour recording will be provided.

The main cctv equipment will be located in a secure locked room.

Door Access system

A door access system will be provided to all bedrooms, access is gained using card reader which will also be used to switch on the lighting in the rooms.



The main door access equipment will be located in a secure locked room.

Public Address system

A public address system will be installed throughout the building, the main circulation areas, restaurant, bar areas. The bar and restaurant areas will have the facility to play local music. At the main reception area a microphone shall be provided. The main public address equipment will be located in a secure locked room.

TV / Satellite

A TV / Satellite system will be provided to the building to serve Bar, Restaurant, Spa Area, Conference Area, Assembly Room and bedrooms.

Lightning Protection

Lightning protection will take the form of roof tapes and down conductors to the perimeter of the building with copper mats buried into the ground complying with BS EN 62305:2006. Due to the nature of the building and its listed status, and ground condition each applied tape will need to be considered individually in relation to location and visibility.

Lifts / Food Hoists

Refer to the lift matrix for the size and locations of the passenger lifts and food hoists.