

112A GREAT RUSSELL STREET

OVERVIEW OF PROPOSED MECHANICAL AND ELECTRICAL SYSTEMS



CONTENTS

INTRODUCTION

MECHANICAL SYSTEMS

Heating and Cooling

Ventilation

Cold Water Services

Domestic Hot Water Services

Sprinklers

Drainage

Building Management Systems (BMS)

ELECTRICAL SYSTEMS

Small Power Supplies

Stand By Power Supplies

Lighting and Emergency Lighting

Fire Alarms

Telecomms Supplies

IT Supplies

Access Control

CCTV

INTRODUCTION

The project is to convert two basement parking floors into hotel accommodation. Access to the accommodation will be provided by stairs and lift off Great Russell Street to a basement reception.

There will be a total of 166 bedrooms, comprising 76 at -4 and 90 at -5.

There are existing mechanical services on level -4 which are required to be retained. The location of the bulk of the pipework services is indicated on the architect's drawings in the area without rooms to facilitate access and maintenance. Existing "outdoor" units and walk in refrigerators/freezers serving "third party" areas are shown on the "Services" drawings along with, where required, their relocated positions. All "third party" equipment will have service access provided from the exiting ramps and access zone around the perimeter of level -4.

The existing car park ramps will be used for general servicing and mechanical and electrical plant distribution.

Due to lack of access through the building to roof level gas fired boiler plant and combined heat and power units are not a solution that can be considered, therefore an all electric system that utilises air source heat pump technology is proposed.

All systems will be designed with due regard to the sustainability report and BREEAM rating.

MECHANICAL SYSTEMS

Heating and Cooling

Heating and cooling will be provided to all occupied areas. The systems will be designed to operate at 22°C as a set point, with a dead band setting for heating and cooling.

The indoor units located above the ceilings will be connected to the outdoor units via refrigeration pipework and electrical cable. The outdoor units will be located on the existing car ramp as indicated in the drawings. The car park ramp will become redundant for vehicular access with the development of the hotel. Air for the outdoor units will be provided through new street level louvres. The system will be air source heat pumps. Units will be selected for the required heating/cooling/acoustic performance.

Heated or cooled air will be supplied to the spaces by ceiling void mounted fan coil units, distribution ductwork and ceiling or bulkhead mounted grilles/diffusers. Air will be returned to the units through grilles/perforated ceiling tiles and the ceiling void acting as a plenum.

Refrigeration pipework and electrical cables will distribute to the spaces via horizontal service zones in the ceiling voids, created in the areas with shallow beams.

Ventilation

Fresh air is provided to each of the rooms and public areas from ductwork and air handling units located on each floor.

Due to the lack of vertical risers and access through third party demises, intake ductwork will be provided at ground floor level and connected to the vertical external louvres. To minimise potential pollution the louvres are located on the façade with least traffic, this being Adeline Place. The ductwork system will take air from the louvre, down the car park ramp to each of the air handling units. Each air handling unit will be provided with a filtration system to remove particulate matter and reduce NO_x levels to that required for the occupants in line with Camden Council's EHO advice and as detailed in the Air Quality Report. The air volumes will be provided on the basis of 10l/s/person, based on the occupancy of two people per bedroom. Additional air will be provided to the reception area and corridors.

Air will be distributed through ductwork located in a perimeter distribution zone. Branch ducts will provide fresh air to each of the bedrooms.

Air will be extracted through the en-suite bathrooms. The air will pass through the air handling units' heat recovery system before being discharged into the service ramp. Exhaust fans will be located at the top of the service ramp to provide a negative pressure on the ramp and extract/discharge the air to atmosphere.

The reception area will be provided with supply and extract ventilation for the occupants through branch ducts off the main system.

The drawings indicate the duct locations and sizes and ventilation equipment locations and sizes.

Fire fighting shafts will be provided with mechanical ventilation systems discharging air at ground level.

Cold Water Services

A boosted tank cold water supply will be provided to all bedrooms and landlord's services and sized for hotel requirements.

Domestic Hot Water

Domestic hot water will be provided to all bedrooms and landlord's services. The hot water will be generated by an air source heat pump system. Storage will be provided that optimises the plant size in relation to peak flow and regeneration time. The capacity will be designed for hotel requirements.

Sprinklers

As per the fire engineering report, sprinklers are not required.

Drainage

MECHANICAL AND ELECTRICAL SYSTEMS

All fan coil units will be provided with condensate drains.

Drainage will be provided from the bathrooms and landlord's WCs to connect to the main drainage system.

Due to potential issues of penetrating the existing basement slab, all foul drainage will be undertaken through the use of vacuum drainage. Plant space for this system has been allocated and the storage capacities and connection to the existing pumped discharge and Thames Water's main system assessed and reported in the civil engineer's report.

Building Management System

The mechanical systems will be provided with a Building Management System (BMS) for automatic control and notification of service intervals/faults of systems provided to the hotel's management system.

Control of the supply air temperature will be achieved through the individual air handling unit's sensors interfacing with their heating and cooling systems via the BMS.

Domestic hot water generation will be controlled through storage tank located thermostats interfacing with the heat pumps.

All "service" and "alarm" conditions will be forwarded to the hotel's management system.

Monitoring and coding of the access control devices will be through the BMS.

ELECTRICAL SYSTEMS

Small Power

Following discussions with UKPN, a new substation will be provided in the location shown on the architect's drawings. A switchboard will distribute power from the substation to local distribution boards.

Small power will be provided from distribution boards to serve the landlord's systems and the switch units in each bedroom. The switch units in each bedroom will serve the small power socket outlets, lights and mechanical systems.

Stand By Power Supplies

A standby generator will be provided for the fire fighting lift and shaft. The generator will be located at ground floor level with the exhaust discharging through the louvres on Adeline Place.

Telecomms Supplies

Telecom supplies will be provided for the hotel management and emergency telephone in the lifts.

Lighting and Emergency Lighting



Lighting will be provided to all bedrooms and landlord's areas.

Emergency lighting will be through individual battery operated units with connection of fire fighting lighting to the generator.

IT Systems

IT systems will be provided to the landlord's areas. A Wi Fi system will be incorporated for the public areas and bedrooms.

Access Control

Access control will be provided to all landlord areas and individual bedrooms.

CCTV

CCTV will be provided to all corridors, reception area and ground floor perimeter levels associated with the hotel operation.