40-46 Princess St, Manchester

Planning Submission
Energy Strategy and External Plant Statement

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1.0 Site Description

The purpose of this document is to provide an overview of the mechanical and electrical services strategy for the proposed refurbishment at 40-46 Princess St, Manchester.

The building is proposed to consist of basement and ground floor retail space; ground floor reception and open plan offices space over 6 storeys with a nett internal floor area of circa 4,800m^2 with the total building area being 5830m^2.

The building is proposed to retain the existing structure to all sides with the following works envisaged:

- Extension to 4th offices
- Modifications to front entrance
- Opening up windows in the external façade
- Opening up the lightwell in the centre of the building
- New utility sub-station
- Scenic lift installation

The 40-46 Princess St building is listed and as a result alternations to the external façade will be limited, for example existing single pane windows will be retained as part of the refurbishment.

2.0 Mechanical and Electrical Services Strategy

It will be proposed that all mechanical and electrical systems installed as part of the refurbishment will be energy efficient and were appropriate use energy saving facilities/technologies.

It is the intension of the developing design to reduce to a minimum or remove completely heating requirements to the Landlord areas (core areas, toilets, corridors, staircores, etc). However heating may still be required to the following areas:

- Main entrance/reception area
- Plantrooms (frost protection only)
- Lowest level of each staircore

As part of the refurbishment works the incoming electrical supplies are being rationalized and a new transformer will be installed by the utility company. All new utility transformers are classed as 'eco' transformer to reduce the amount of heat rejected.

2.1 Heating and Cooling

Heating and comfort cooling to the office areas is proposed to be via Variable Refrigerant Flow (VRF) Air Source Heat Pump (ASHP) systems that will be designed to the British Council of Offices (BCO) guidelines.

The VRF system will be chosen to be energy efficient using the latest controls and technologies including heat recovery. The design of the internal temperatures with the office areas will be to remove peak high temperatures only and will not be designed to provide full cooling down to lower temperatures. The internal temperatures used for the office conditions will be taken from the BCO guidelines.

It is proposed that each individual Tenant (as identified on the Architects plans) will have a separate controllable VRF system that allows individual metering of their space to enable energy usage to be determined. This will also enable systems to be turned off or set back when the tenancy is unoccupied, hereby reducing energy usage.

Refrigerant pipework will distribute heating and cooling to the offices areas via services riser to the ground floor and roof. The refrigerant pipework will serve internal Fan Coil Units (FCU) that will be exposed at high level.

The VRF systems are envisaged to be more energy efficient than the existing gas-fired boilers for heating the building and should reduce the energy used over the heating season. They are also expected to be more energy efficient than the existing DX split refrigerant comfort cooling installed within the building as they will be using the latest technologies and they will not have the potential fight the heating system.

A limited plant area will be provided to allow the tenant to install cooling for comms rooms, etc.

2.2 Lighting

The office areas will be provided with a lighting installation in the spirit of LG7.

New energy efficient LED lighting will be proposed with the use of appropriate lighting controls to reduce the electrical energy consumption of the building.

Lighting will be designed in accordance with the Industry Standard (Society of Light & Lighting) Guidance with particular relevance to CIBSE guide LG7 to the office areas. Emergency lighting will be provided throughout the building in line with BS5266-1:2016.

2.3 Small Power

The new electrical installations will be provided with sub-metering to comply with Building Regulations and CIBSE TM39 to allow monitoring of the buildings electrical load.

3.0 Retail Services Strategy

The proposed retail units will be located at basement and ground floor levels. The incoming Tenant will be responsible for the fit-out of the unit, the Landlord will provide a shell only with provision for incoming utilities.

3.1 Mechanical Services

Generally the mechanical services required for the retail units will be located within the unit itself; except for heat rejection equipment and supply ventilation for the basement unit (subject to detailed survey on vacant possession). External plant for the retail units is proposed to be located within the Courtyard area. External louvres required to serve the retail units will also be located in the Courtyard elevation.

The following services are considered to be required for the retail units:

- Comfort cooling (external condenser/chiller units)
- General supply and external (mainly internal)
- Kitchen extract (route determined with discharge at roof level)
- Toilet extract ventilation (internal units)
- Incoming utilities and communications

3.2 Electrical Services

The new main panel board will feed all new retail units with individually metered electrical supplies.

Each retail unit will be provided with an fire alarm interface to allow them to install their own system linked to the main building system.

4.0 External Plant and Equipment Locations

The building has limited areas to locate external plant, these areas are listed below:

- Courtyard Elevation
- Harter St Elevation
- Ground Level within the Courtyard
- Roof Area

4.1 Courtyard Elevation

There are several items of plant located and supported by the Courtyard external façade. There are also several ventilation ducts distributing externally up the building to the roof.

Due to the listed nature of the building we do not consider this option is appropriate to locate plant. Also the units would be too close to the opening windows and could create noise and heat gain issues.

This option has been discounted for the location of plant.

The elevation is proposed to be used for locating any boiler flue required by the basement retail unit.

This elevation is proposed to be used for the majority of the external louvres required to provide intake and discharge air to service the building. The elevation is also provide to intake locations for duct/pipework distributing services into the building.

4.2 Harter St Elevation

There is currently no existing plant items located on the Hater St external façade. There are however external louvres and window fans located at low level.

Due to the listed nature of the building we do not consider it is appropriate to locate plant on this elevation. Also the units would be too close to the opening windows and could create noise and heat gain issues.

This option has been discounted for the locating of plant and distributing services.

This elevation is proposed to have louvred double doors to serve the new ground floor substation and high level louvres at 4th floor for intake and/or discharge air.

It is envisaged that the incoming utility gas supplies required to serve the retail units will enter the building at low level off Harter St (this will be confirmed upon application).

4.3 Ground Level within Courtyard Area

There are existing external plant items located at ground level within the Courtyard area. There are also external louvres located in several areas within the façade.

It is the intension to locate plant at ground level within the Courtyard area. The plant will mainly consist of condensers supported by the Courtyard ground structure.

4.4 Roof Area

There is currently limited external plant located on the roof.

The roof is the preferred location to position external plant, as it is proposed to be less obtrusive and is located the furthest away from surrounding buildings and windows in the building's façade. However there is limited space available for the plant deck to be located. Therefore the remaining plant that does not fit will be located at ground level within the Courtyard as discussed above.

5.0 Building Regulations

As the building is listed the performance of the existing external façade and windows will not be improved as part of the refurbishment.

The extension and all new windows will be will be installed to meet the requirements of Building Regulations (2013) Part L.

It is the intension of the refurbishment that all installed plant and equipment will comply with the requirements of the Non-domestic Building Services Compliance Guide and with the intent of the fixed services elements within Building Regulations (2013) Part L2B for non-residential buildings (where practical due to the limitation of the building and its listed nature).