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58 Mosley Street, Manchester

Refurbishment

Energy & Sustainability Strategy

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Revision Record

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1.0 Executive Summary

The Energy & sustainability strategy outlines the client's aspirations in relation to the building services design, implementation, and eventual energy use.

As the concept design evolves each of the proposed systems will be evaluated and assessed using the latest building modelling software to establish their suitability and function.

The building services are proposed to be updated to provide the building with an energy-efficient heated, cooled, ventilated, and lit space to meet the user's needs and reduce operational energy use.

2.0 Introduction

58 Mosley Street is proposed to undergo an extensive refurbishment to the reception, landlord's cores, office floors 3-7, basement amenity areas, and new roof terrace. The works are not proposed to include floors occupied by the tenant's DWP or the retail space.

The intention is to fully refurbish/ renew the existing building services systems throughout the areas noted, with the result of providing a well-ventilated and treated space resulting in the reduction of energy/ carbon in use. Materials will be re-used where appropriate to reduce the embodied Carbon aspects of the refurbishment.

Crookes Walker Consulting (CWC) have produced this report to demonstrate the client's aspirational energy strategy noting the following principle aims:

- Reduce carbon in use
- Reduce embodied carbon consumption
- BREEAM assessment (minimum V Good)
- Reduce the use of fossil fuels and increase the amount of renewable energy sources.
- Any new elements to be installed will exceed minimum building regulation requirements.
- Improve the building energy metering in line with CIBSE TM39.
- Reduction in car parking provision and increase in cycling facilities
- Creation of well-being & amenity areas to encourage sustainable means of travel and improve occupants' mental health.
- Seek to use natural building materials with less Volatile organic compounds and increased use of Biophilia.
- Improve the current building EPC rating.

3.0 Energy Methodology

In order to achieve the above aspirations, a methodology is set out as below:

- The incorporation of energy efficiency measures through the design of services
- Calculation of the predicted design energy consumption rates and associated annual CO2 emissions for the development in comparison with the Building Regulations
- Assessment of the viability of incorporating low and zero-carbon energy sources

3.1 Energy Efficient Services

The aim is to reduce energy consumption by selecting efficient mechanical and electrical systems and efficient controls to manage the energy used during operation.

On the basis of good practice, the following principles may be adopted or considered at the next stage:

3.1.1 Heating & Cooling

Subject to final design evaluation, the existing 4 pipe gas-fired LTHW and chiller system is proposed to be replaced with a modern high-efficiency heat pump-based technology serving both heating and cooling.

3.1.2 Mechanical ventilation with Heat Recovery

An analysis has been undertaken to review the opportunities for the building to be naturally ventilated.

The study concluded that due to the adjacent tram line creating excessive noise and the cost & embodied carbon associated with replacing significant portions of the existing façade, this was not a viable option.

To minimise the heating load associated with the fresh air, central and local mechanical ventilation systems are proposed to be provided with heat recovery to extract waste heat from the exhaust air and use this to preheat the supply air.

Part of the building's car park is proposed to be refurbished to provide well-being and amenity space. The existing car park is provided with mechanical extract and impulse fans to circulate the air through to external louvres. The existing system is proposed to be modified to suit the adjusted car park area and designed to meet Building Regulations.

3.1.3 Building Services Insulation

Thermal insulation is to be provided for the following functions:

- Reduce heat loss and hence conserve energy on all heated water and air systems
- Inhibit freezing
- Prevent the formation of condensation on pipework, ductwork, or equipment
- To protect personnel from exposure to extremes of temperature
- Control process temperatures
- All thermal insulation may be made from materials with zero ozone depletion potential (CFC and HCFC free)
- Insulation may also be used for acoustic reasons, particularly on rainwater and foul drainage systems
- Where LTHW or DHW services run along corridors, these services may be provided with 20% more insulation, over and above the British Standard, to prevent nuisance heat gains into the corridors.

3.1.4 Motor Efficiency

All pumps and fans are to be provided with high-efficiency motors to reduce energy consumption and energy costs.

Where variable speed pumps and fans are provided, the flow volumes are to be set during the commissioning period by varying the fan / pump speed rather than by increasing the system resistance by means of regulating valves or balancing dampers.

3.1.5 Lighting Efficacy and Controls

Presence/ absence lighting sensors may be installed to prevent unwarranted usage of lighting in communal areas and internal circulation zones. Daylight linking may be provided to zones next to external windows.

3.1.6 Low and Zero Carbon Technologies

At this stage, heat pump technology is being considered to provide heating and cooling.

3.1.7 Building energy management

A new building energy management system is proposed to control and monitor system performance throughout the Landlord areas.

3.1.8 Water use

Minimising the water consumption of the site is of utmost importance and this may be addressed using flow-restricted fittings and dual flush WCs.

3.1.9 Metering

The existing metering is provided with metering. The development may consider updating the existing metering to ensure all energy utilised can be identified and assessed accurately. The following measures may be incorporated to ensure more than adequate metering is incorporated:

Metering and sub-metering to BREEAM standards will be incorporated
In line with Part L, at least 90% of the estimated annual energy consumption of each fuel will be accounted for.

A metering data collection system via the BMS will be installed to ensure quality real-time data is available to the proposed monitoring and targeting system to identify avoidable wastage. The metering installation would follow the guidance of CIBSE TM39.

4.0 EPC

The existing building's EPC rating is E for the floors to be refurbished. The proposal is to significantly improve this rating.

5.0 BREEAM

The aspiration is for the building to achieve a Very good rating or higher. A dedicated BREEAM consultant is carrying out the BREEAM assessment on behalf of the client with full input from the design team.