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THE MULBERRY HOUSE SCHOOL

SUSTANAIBILITY REPORT

The new roof extension will have a low environmental impact. It has been designed to exceed the carbon emissions targets of the London Plan, and pollution from noise, light and NOx will be minimised.

1.0 Energy and CO_2 Emissions

A low energy strategy has been developed using the established LEAN, CLEAN, GREEN approach.

LEAN
The building will be insulated to a very high standard and due to the method of construction (prefabricated panels) a high level of airtightness will be achieved. The heat loss normally associated with large areas of glazing will be more than offset by the high thermal performance of the glazing systems: most will be argon-filled double glazed units with secondary glazing, whilst the north-east and south-west elevations will have triple glazed units. The large translucent areas will provide good levels of daylight thereby reducing electricity consumption for indoor lighting.

CLEAN
Further reduction in energy consumption will be through the specification of energy efficient systems, which include:

- Low energy lighting
- Automatic lighting controls (occupancy and daylight sensors)
- High efficiency boiler plant with underfloor heating
- Zoned temperature controls
- Heat recovery mechanical ventilation

GREEN
Renewable electrical energy will be generated by built-in photovoltaic panels on the south-east façade.

It is estimated that through these measures the CO_2 emissions will be less than half of those required by the current Building Regulations.

2.0 Control of overheating

Due to the large areas of glazing, a detailed thermal analysis has been carried out to ensure that the building does not suffer from overheating. It has shown that a mixed mode ventilation system combined with internal solar control blinds will minimise the risk, according to the recognised CIBSE TM32 comfort criteria.

In warm weather, fresh air is drawn through acoustic intakes in the undercroft into the rooms at floor level. Extract fans draw stale air across the room and exhaust at high level though attenuated louvres on the south-east elevation. The fans will run overnight at a trickle ventilation rate to cool the structure, which will include a 10mm layer of ‘phase change’ material in the ceilings which can provide the thermal equivalent of 80mm of concrete.

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3.0 Pollution

3.1 Noise

A background noise survey has been carried out to measure 24 hour sound levels at the site. This will be used in the design of fresh air intakes to ensure a satisfactory internal acoustic environment, and also the intake and exhaust sound attenuators of the mechanical ventilation systems to ensure that they meet the requirement of 10db(A) lower than the LA90 level 1m from the nearest sensitive façade.

3.2 NOx

A new boiler has been installed in the existing building which will serve the new extension, having a low NOx emission rate of <39mg/kWh (offering the maximum credit score under BREEAM 2014).

3.3 Light

External lighting will be designed to minimise obtrusive light and night time pollution, with timers to prevent use outside appropriate hours.

Light pollution from inside the development would be avoided through careful design.

Since the building is very prominent from both Shoot Up Hill and Minster Road, the lighting will be designed so as the lamp source will not be visible from the street or neighbouring properties.