

ENERGY STATEMENT

Replacement of Windows
Encapsulation of Balconies (where selected)
External Insulated Render System
Installation of Green Roof

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INTRODUCTION

This Energy Statement seeks to justify the reasons for this proposal and to explain the design principles apply.

This statement is to accompany an application for installation of replacement windows to existing openings, encapsulation of the balconies to increase the living area (where selected) a replacement green roof and an external rendered insulation system.

The aim of this statement is to demonstrate the design process involved in identifying the existing building envelope and improving it. The proposed works are to address the sustainability of the building as a whole. Improving the thermal qualities of the habitable areas and therefore reducing the CO₂ Usage in the building. The materials used are to be of high quality in order to address maintenance and prolonged life issues.

The block will have all elements of the external envelope upgraded in order to retain heat and lower the energy consumption. The existing heating system is to be up graded. Communal heating is proposed and will connect to the existing CHP system at the Royal Free Hospital. This element of the scheme would also allow for heat use and heat loss to be managed more effectively.

As part of the works in hand with reducing energy use the issue of sustainable energy and the environment has been addressed. Upon the roofs of the blocks it is proposed to install a 'green' living roof that shall provide habitat for flora and fauna as well as reducing surface water runoff.

The Existing Building

The property was constructed approximately 1967 .The site comprises a 21 storey block of flats and accommodates 120 flats, with a concierge located at ground floor level. The first floor accommodates a resident's association/meeting area, a care takers flat and offices. Studio flats are located in the middle of the block whilst on each corner lies 2 bedroom units.

THE COMPONENT

Windows and Balcony Encapsulation

Existing U-Value Approximately 2.6W/m²

Proposed U Value 1.47 W/M²K

As shown above the thermal improvement to the windows will nearly improve the thermal quality by almost halving the heat losses, the window will be used to encapsulate the balconies where the residents select.

The existing windows are UPVC framed, whilst the windows located on the balcony area are timber framed casement windows. and shall change to a polyester powder coated white; Aluminium has been retained due to the lifespan and durability.

Aluminium is arguably the most sustainable building material in the world and is also highly recyclable. The recycling process creates high quality aluminium which loses none of the physical properties of primary aluminium and also uses just 5% of the energy it takes to create primary Aluminium. Aluminium is generally regarded as the world's most sustainable building material.

Recycled aluminium is what the European Aluminium Association (EAA) terms an "Energy Bank". This is because the aluminium recycling process uses only 5% of the energy used to create primary aluminium from bauxite ore(1). The International Aluminium Institute (IAI) estimates that 55% of world aluminium production is powered by renewable hydroelectric power(2). The recycling process creates high quality aluminium which loses none of the physical properties of primary aluminium, meaning that it can be endlessly recycled for use as new products without losing physical quality.

External render

Existing U-Value Approximately 1.37 W/m²
Proposed U Value 0.3 W/M²K

As shown above the thermal improvement to main external envelope will nearly improve the thermal quality of the roof by five times.

The existing finish to the building is painted concrete and shall be replaced by a similar solid rendered colour that shall run throughout the building invigorating and rejuvenating its appearance.

The most significant heat loss in buildings is through the external walls. This is estimated to be around 45% of the total heat loss, resulting in high heating bills. By insulating external walls it reduces heat loss and significantly cut heating bills.

Increased Comfort Levels

Homes will warm up more quickly if insulated and won't have to keep the heating on for as long to reach a comfortable temperature. Condensation will be easier to control and therefore less mould growth will occur, leading to a healthier living environment.

Easy Maintenance

The high performance render finishes used on the system offer excellent durability and protection against rain, UV rays from sunlight and cracking. Providing a low maintenance home.

Green Roof

Existing U-Value Approximately 2.6W/m²

Proposed U Value 0.18 W/m²K

As shown above the thermal improvement to the roof will nearly halve the heat losses through the roof but as well as this the green roof;

- reduces resource use, extending the lifespan of the roof due to protection from ultraviolet
- reducing drainage infrastructure because of lower surface water run-off; Reducing energy demands
- helping to cool the building and mitigating the need for air conditioning and providing a better ambient temperature for photovoltaic solar panels.
- Improving air quality through trapping dust
- Encouraging biodiversity through providing additional habitats
- Improving water management through reducing water run off, leading to less flooding and pollution of rivers.

CONCLUSIONS

These improvements in hand with the 'green roof' shall enhance and rejuvenate the existing building enabling it to continue to be used for social housing in the area whilst adhering to the current building regulations and government requirements for CO2 emissions and energy use.

Each element of the building envelop has been identified and improved to retain heat and therefore conserve energy, with the additional use of the roof to both provide additional habitat, reduce surface water run-off and even produce its own energy.

The overall project shall ensure the use of the current building for social housing both sustaining the current community and negate the need to demolish and reconstruct the estate due to current energy saving requirements. No matter how sustainable a new build would be during the useable life span it could not be compared on balance with improving the existing. The energy used and environmental impact of demolition of the existing followed by sourcing and construction of any new building would be considerable.