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Case Study
EWI Works, Torus Developments

PROJECT NUMBER

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Introduction

Introduction

The scheme consists of 43 one- and two-bedroom apartments spread across three blocks on a site in Liverpool. The challenge was to upgrade the units to have Energy Performance Certificates with a minimum of C rating, with the potential to reach a B rating. The units were originally constructed in the 1960s using a concrete blockwork cavity construction, featuring solid floors and a traditional pitched roof structure. The exposed concrete block external finish was aesthetically unappealing, and the property upgrade provided us with an opportunity to not only improve the energy efficiency of the building and reduce its carbon footprint but also enhance the visual appeal of the blocks.

02

Retrofit Assessment

Retrofit Assessment

Retrofit assessments were carried out on all units to ascertain the existing dwelling type, construction type, window/door types, heating/hot water facilities, air tightness, bathroom/shower accommodation, and any retrofit measures already included. This was done to provide us with an accurate assessment of each dwelling and determine the measures that would best improve the dwellings.

03

Fabric-First Approach

Fabric-First Approach

Utilising the assessment reports and considering a fabric-first approach, we aimed to improve the thermal qualities of the structure, reduce air leakage, and enhance the thermal efficiency of the windows and doors, as well as minimise solar gain/losses. To achieve these objectives, we introduced External Wall Insulation with a render finish. As previously mentioned, this also provided an opportunity to improve the external appearance of the buildings and introduce variations in the colours of the render, adding additional interest to the elevations.

The windows were replaced with new units to provide a high level of “U” value, incorporating glazing that would help reduce solar heat gain in the summer and heat loss in the winter. This improvement aimed to create a more comfortable living space indoors. Additionally, the windows and doors were relocated within the External Wall Insulation (EWI) line to minimise thermal bridging at these positions. Specialised airtight tapes were applied to the perimeter to reduce air leakage. The window styles were adjusted to ensure that the opening windows offered suitable ventilation, supplemented by trickle ventilators for background ventilation.

When introducing new external wall insulation and reducing air leakage, it is crucial to consider ventilation in the dwellings. With this in mind, a ventilation strategy was developed, and new fans were installed in the bathroom and kitchen areas, equipped with humidistats. All existing internal doors were removed, and the bottom of the doors was planed back to achieve a 10mm undercut between the bottom of the door and the floor finishes. These measures were implemented to ensure proper air movement throughout the dwelling.

04

Considerations

Considerations

Although a full MVHR (Mechanical Ventilation with Heat Recovery) system would be preferable for the dwellings, it was considered that due to disruption and the layouts of a number of the units, this may not be feasible in terms of arrangement and cost. The boilers in the dwellings have been replaced with new condensing boilers, which are reasonably energy efficient and do not need replacing at this time. The top floor units will include an upgrade to the roof insulation, with a 400mm thickness of mineral wool insulation added at ceiling level, as well as sealing the ceilings to further reduce air leakage.

One of the knock-on effects of the new external wall insulation is that the eaves and verge lines of the roof will need to be extended to accommodate the additional external wall thickness. Due to the age of the existing roof covering and the necessity of extending the eaves line, the entire roof will be retiled with new tiles. This will allow for the extended eaves and ensure that the buildings have a uniform appearance and a better aesthetic upon completion.

As part of the roof recovering works, photovoltaic panels will be introduced to reduce energy consumption from the grid and lower fuel bills for the tenants.

05

Conclusion

Conclusion

The aforementioned measures were deemed suitable to bring the development into an EPC bracket of B. Additional measures were identified during the coordination process and communicated to the client as part of the medium-term improvement plan. This plan outlines potential measures available to assist in achieving the decarbonization goals set for 2050.

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Thank you

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