

Setting the energy efficiency standard for social housing

A flagship, low carbon development from social housing provider One Manchester features Glidevale Protect construction membranes throughout, helping this innovative new build social housing project to meet stringent airtightness and energy efficiency targets.



Client:
Kingspan Timber Solutions

End client:
One Manchester

Architects:
GWP Architecture
Eco-Res Limited

Building contractor:
John Southworth Builders Ltd

Products:
Protect Thermo Extreme
Protect TF200 Extreme
Protect BarriAir

Social housing provider One Manchester highlighted this flagship development, located on Blackrock Street in Beswick, Manchester as a scheme in construction that featured the first true net zero carbon social homes in the UK.

Glidevale Protect's wall construction membranes are used in every property across the scheme, ensuring a high level of airtightness and contributing significantly to the homes' energy efficiency and achievement of Passivhaus standards.

We're pleased to have played our part in helping One Manchester achieve its bold aim of creating low carbon living for the local community of Beswick with our products contributing to high thermal efficiency and airtightness.

This is our third development in which we've used the Protect BarriAir as a product to meet the stringent airtightness that's required as part of the Passivhaus regulations. We've got a lot of confidence in the product.

It's pliable to manipulate around floor joists meeting up with the ceiling and floor junction. It's been a choice of ours to use this air membrane and it's something we'd select on future developments.

Steven Brown,
director at John Southworth Builders Limited

The challenge

Blackrock Street presented a unique challenge to all involved: to create a futureproofed low carbon social housing scheme, with selected properties required to hit the net zero carbon mark and thus help in the reduction of running costs for the tenants.

Two of the three bedroom properties were designed to achieve zero carbon status, with the rest required to be built to strict Passivhaus standards.

Passivhaus principles state that buildings must provide a high level of occupant comfort, whilst using minimal energy for heating and cooling, taking a whole building approach with clear carbon reduction targets and a focus on high quality construction.

By adopting a Passivhaus design and then adding on elements to improve on this further meant that Blackrock Street would be a UK first in the social housing sector and a pioneering zero carbon construction that would remain a leading light in terms of energy efficiency for years to come.

One Manchester challenged its suppliers and contractors to reduce carbon creation during the build process by prioritising the use of sustainable materials and building practices, which is where the closed timber frame wall panelised system, designed and manufactured offsite by Kingspan Timber Solutions, came into play. This system realised the known benefits of timber with the material providing a low embodied energy rating and being fully sustainable. Construction membranes from Glidevale Protect were integral within the timber frame panel design, ensuring good thermal performance was achieved on the external building envelope with strict airtightness delivered internally as well as overall condensation control.



By using a fabric first approach, we combined Glidevale Protect's high performance, reflective membrane for external walls with an internal airtightness and vapour control layer.

This helped to improve thermal efficiency and ensure low U-values, contributing to a low ecological footprint on each home and putting One Manchester at the forefront of sustainability.

Victoria Young,
project manager at One Manchester



The solution

One Manchester took a collaborative partnership approach with its contractors and suppliers, tackling the question of how to create a low carbon social housing scheme by splitting carbon reduction measures into two areas: embodied carbon, and operational carbon.

Our products helped to reduce operational carbon by retaining heat within the homes, notably by the use of an external reflective wall membrane within an unventilated cavity and an internal air and vapour control layer to prevent heat loss. We worked closely with members of the project team, including Kingspan Timber Solutions and the main contractor, John Southworth Builders Limited, who constructed the properties onsite.

To reduce heat transfer and improve energy retention, our low emissivity Protect Thermo Extreme reflective breather membrane was specified and installed on all external walls of the timber frame system as well as providing water penetration resistance and controlling

the risk of condensation. On spandrel panels, our TF200 Extreme non-reflective breather membrane was used, to equally protect against water ingress during construction and to manage moisture flow in the timber frame panel. Protect BarriAir, our internal airtightness membrane, was installed on the warm side of the insulation to deliver against strict airtightness targets and provide vapour control properties.

By using a sealed air and vapour control layer on the internal walls, we ensured airtightness results met the required Passivhaus threshold of 0.6 ACH @ 50Pa, again helping to reduce operational carbon, ensuring that energy efficiency was at the forefront of this project.

At Glidevale Protect, we understand that using a fabric first approach is a fundamental part of achieving a high build standard and the use of strong, quality membranes offering high thermal resistance and airtightness can be one of the most effective ways to contribute positively to energy efficiency and the reduction in fuel consumption.

Product overview

Our products used within the fabric of the building envelope positively contributed to this new build social housing development. Alongside other technologies such as PV solar panels, this helped One Manchester to achieve zero carbon status for two of its homes, with the remaining dwellings achieving Passivhaus standard. The low carbon performance across the Blackrock Street scheme was enhanced due to the high quality membranes ensuring airtightness and heat retention in all homes. Reducing operational carbon has allowed the properties to be futureproofed to the benefit of the occupants, supporting the local community by helping to regulate running costs for tenants.



Protect Thermo Extreme

- A waterproof, low emissivity, highly reflective insulating breather membrane.
- Enhances the thermal performance of walls constructed in a variety of material types, including timber frame, Structural Insulated Panels (SIPs), Cross Laminated Timber (CLT) and steel frame construction. Achieves Class W1 water resistance to BS EN 1928.
- Aligned with STA Advice Note 18, with an aged thermal resistance of 0.77m²K/W, incorporating printing and using typical 600mm stud centres.
- Meets the permeability requirements recommended by TRADA and NHBC for condensation control.
- Independently third party certified by BM TRADA.

Protect TF200 Extreme

- A high performance, waterproof, breather membrane.
- Suitable for walls constructed in various materials, including timber, and ideal for offsite construction.
- Achieves Class W1 water resistance to BS EN 1928.
- Exceeds permeability requirements recommended by TRADA and NHBC to minimise risk of condensation.
- Independently third party certified by BM TRADA.

Protect BarriAir

- Suitable for timber frame, pre-cast concrete and traditional brick and block construction.
- A high performance, multi-purpose and coated non-woven membrane with integral tape, which forms an air leakage barrier with vapour control properties.
- Improves the thermal performance of all insulants by reducing convection flows.
- Helps to avoid interstitial condensation risk within insulation in accordance with BS 5250.
- Provides an airtight system when installed with sealed laps.
- Tried and trusted for Passivhaus and low carbon projects.
- Separate Protect sealing tapes also available.

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