



Rylands Manchester

Environmental Standards
Statement Summary

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A	Client Issue	23.10.24	B. Duckworth	E. Prior



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1 EXECUTIVE SUMMARY

This note has been prepared to support the submission of a Section 73 and Section 19 amendment application to the Rylands scheme.

An Environmental Standards Statement was prepared by Max Fordham LLP to support the original application, and a Net Zero Carbon and Circular Economy Strategy Report was prepared by Max Fordham LLP to discharge Conditions 20 and 21 of the Planning Permission.

With consideration of the proposed amendments to the Rylands scheme, the proposals will achieve the overall targets and objectives outlined in the ESS and Net Zero and Circular Economy Strategy Report previously submitted and approved by Manchester City Centre as the Local Planning Authority.

The UK government has set a legally binding target for the entire country to be net zero carbon by 2050. As carbon emissions from the built environment account for around 40% of the UK total, prioritising low carbon design on all new development will be key in achieving this target.

The emerging Greater Manchester Spatial Framework and Manchester City Council Zero Carbon Framework both surpass this nationwide target, aiming for the entire city and region to be net zero carbon by 2038. This follows the declaration of a Climate Emergency that was made by the City Council in July 2019.

In response to these targets, the redevelopment of the Rylands Building will aim to achieve net zero carbon status. To accomplish this, a Net Zero Carbon design approach that follows the UK Green Building Council framework has been adopted from the early stages of the project. With this approach, every kilogram of CO₂ associated with the building will be tracked and minimised by applying the following hierarchy:

1. Reduce the embodied carbon associated with the material fabric of the building.
2. Incorporate passive measures.
3. Design energy efficient mechanical and electrical systems.
4. Use an electric-only heating system.
5. Incorporate on or off-site renewable technologies.
6. Offset any remaining non-renewable energy consumption to achieve accredited net zero carbon status.

This approach to achieving net zero carbon also follows the hierarchy set out in Manchester City Council's Core Strategy document.

The following project specific targets for both embodied carbon and operational energy have been calculated, which are based upon UKGBC and RIBA standards and are area-weighted for the various usage types present in the proposals:

- Embodied carbon: 600kgCO₂e/m² or less

A high-level summary of the measures to achieve this target is as presented below.

1.1 EMBODIED CARBON

To minimise the embodied carbon associated with the redevelopment of the Rylands Building, the following principal measures have been incorporated into the design:

- Steel framing in the new extension to be standardised to allow dismantling, enabling future adaptation of space and reuse at end of life;
- All in-situ concrete to target cement replacement of 40% GGBS content;
- Weight of the superstructure to be kept to a minimum;
- Proposed replacement Crittall steel framed windows to contain 100% steel from a recycled source and to be fully recyclable at end of life;
- MEP services to be designed in a flexible way to minimise equipment redundancy throughout replacement/removal by future tenants during fit-out;
- Repurposed raised access flooring to be used, subject to supply chain availability.

1.2 CIRCULAR ECONOMY

The following circular economy principles will also be applied as the design develops, to help minimise waste and contribute to reducing embodied carbon:

- Maximise the residual value of the existing structure by cataloguing and analysing the existing materials and setting performance targets for diversion of landfill waste and reuse on site;
- Maximise the lifetime value of new build and fit-out via optimising the structural design, minimising the waste during construction and making use of recycled or reclaimed materials.

1.3 OPERATIONAL CARBON

To minimise operational energy use and get as close to the zero carbon target as possible before offsetting, methodologies for the renovation of the existing building and construction of the new extension respectively to reduce the operation carbon of the building. The building design provides a high level of thermal comfort for occupants whilst using very little energy for heating and cooling. Several measures to minimise operational carbon by reducing both energy demand and consumption have been incorporated into the proposals to refurbish the existing building. These include:

- Renovating the existing walls, floor and roof of the Rylands Building, with internal insulation reducing heat loss through these solid thermal elements
- Replacing the majority of existing windows, with new double glazing reducing heat loss through the windows
- Achieving high-levels of air-tightness in both the existing building and new rooftop extension;
- Treating thermal bridges in the existing building and designing the new extension to minimise the heat lost via thermal bridging; A mixed mode ventilation strategy, which significantly reduces the energy consumed by ventilation and cooling systems.
- Incorporating a central atrium into the existing building, which results in improved daylighting levels and less energy consumed by electric lighting.
- Mechanical ventilation with heat recovery and highly efficient VRF air source heat pumps, which both significantly lower the energy required to heat and cool the existing building.

Building on these passive measures and energy efficient systems to further lower operational carbon emissions, renewable and low carbon technologies have also been incorporated into the design:

- A fully electric heating strategy, which ensures that carbon emissions will continue to decrease in future as the national grid decarbonises.
- VRF Air source heat pumps, which are themselves classed as a zero-emission, renewable technology as they generate heat from grid electricity without combusting fuel on-site.
- A rooftop photovoltaic array that will generate electricity to be either used on-site or exported to the grid.

A similar set of passive measures have been incorporated into the design of the rooftop extension, in order to minimise its overall energy demand. These include:

- Efficient form factor, with a low surface area to volume ratio;
- Glazing set back from the main façade to reduce solar gain.
- Low g-value glazing to further reduce solar gain.
- High levels of fabric performance, with U-values and airtightness to be minimised as far as possible with the constraints of the project.

As with the existing building, the new extension will make use of mixed mode ventilation, mechanical ventilation with heat recovery (MVHR) and highly efficient VRF reversible air source heat pumps.

As a result of these design measures, initial energy modelling suggests that the rooftop extension will achieve a 22% reduction in carbon emissions over the Part L 2010 notional baseline, thereby meeting the target set by Policy EN6 of Manchester City Council's Core Strategy.

The modelling also suggests that the extension will achieve a 12% reduction over the Part L 2013 notional baseline. Aside from the net zero carbon aspirations of the scheme, the proposals for redeveloping the Rylands Building must comply with Part L2B of the Building Regulations, where feasible within the constraints associated with working on a listed building.