

## HEXAGON TOWER – ENERGY STATEMENT

### Introduction

In support of the planning application for the installation of new double glazing and cladding for the Hexagon Tower, Manchester, we have prepared an accompanying Energy Statement to detail the benefits associated with this proposed project in relation to the long-term energy and environmental performance of the building.

The energy improvements that would result from this project have been simulated using Dynamic Thermal Modelling software, which detail both the energy performance of the building as well as the saving on carbon emissions associated with this project. The proposed improvements to the Hexagon Tower are complementary to Manchester City Council's own commitment to a low carbon future as detailed within their Manchester Core Strategy Publication.

The proposed project demonstrates the building owners ongoing commitment to minimising energy consumption, reducing embodied carbon and developing a strategy to Net Zero Carbon over the future life of the building. This has previously been demonstrated by various recent projects aimed directly at reducing energy consumption and minimising Carbon Emissions.

### Background

The Hexagon Tower is a 13 Storey Science and Technology Centre located in Blackley, North Manchester. The Hexagon Tower was originally built as an ICI R&D and production centre in the early 1970s and has remained at the forefront of scientific research ever since. The building has still many of its original features and services but has been undergoing various modernisation programmes in recent years with particular focus on energy efficiency improvements.

The current owners have invested significantly in recent years on improvement measures to the building and are currently developing future strategies relating Net Zero Carbon Targets and compliance with future MEES regulations.

### Recent Improvement Measures

As detailed earlier the client has already implemented a number of significant projects aimed at improving the environmental impact of the building as well as ensuring a modern and comfortable working environment for all building users.

Recent projects have included the following works:

- Replacement of all lighting to modern LED fitting with associated occupancy and daylighting controls
- Replacement of the main heating source with a new and efficient Steam Boiler
- Replacement of the domestic Hot Water System with new High-efficiency boilers and controls
- Replacement of the East & West Machine Halls glazing with new double glazing with significantly improved U Value
- Installation of new Roof Insulation to the East & West Machine Halls

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The above works improved the energy performance of the building from a poor efficiency 'G' EPC Rating to a much improved 'E' Rating and in line with current MEES regulations.

### Planned Works

The proposed works, which require planning approval, are the replacement of all the windows within the main tower and a full re-cladding of the entire building with a new modular cladding system. The primary purpose of these works is related to the significant defects that exist to the fabric of the building and the health & safety concerns that are associated to these defects. The secondary benefit to both these installations is the significant Energy and Environmental improvements that will be realised once these works are completed.

The improved glazing will significantly reduce the thermal heat loss from the building, resulting in a reduction in the heat load to the building as well as improved environmental controls of the internal conditions. The new U Value for the glazing will be 1.1 W/m<sup>2</sup>/K, which is a significant improvement to the existing single glazed panel U Value of 5.598 W/m<sup>2</sup>/K.

The environmental benefit of the cladding system will be to improve the Air Permeability of the building. The existing fabric is in a poor condition with a high air leakage rate. The new cladding will ensure a reduction of air leakage, which is a key factor within a lab environment, where environmental conditions need to be closely controlled. The new cladding system is expected to improve the air permeability to 10m<sup>3</sup>/hr.m<sup>-2</sup> from the existing rate of 25m<sup>3</sup>/hr.m<sup>-2</sup>.

As can be seen from the table below, simulating the new glazing and cladding onto the Thermal Model shows a great improvement in terms of EPC Rating and subsequent Carbon reduction. These two projects alone demonstrate a potential saving on Carbon Emissions of almost 24% per annum.

|   |                                      | Whole Building EPC | Asset Rating | Building Emission Rate (kgCO <sub>2</sub> /m <sup>2</sup> per year) | % Reduction in Carbon Emissions |
|---|--------------------------------------|--------------------|--------------|---------------------------------------------------------------------|---------------------------------|
| 1 | Existing Building                    | E                  | 109          | 64.07                                                               |                                 |
| 2 | With New Double Glazing and Cladding | D                  | 83           | 48.76                                                               | 23.89%                          |

### Future Investment

As detailed previously the building owners are committed to ongoing investment in the building and are developing a strategy towards Net Zero Carbon and compliance with future MEES Regulations. These future investments will include a review of renewable technologies which can be applied to building alongside a full replacement of all HVAC systems and move away from fossil fuel reliance.

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