

# **University of Huddersfield Ramsden Building Refurbishment**

## **Energy Statement**

**UOL-BHE-RAM-XX-SH-M-0600**

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# 1 Introduction

## 1.1 Scope of the Document

This Energy Statement has been prepared by Buro Happold in support of the application for the University of Huddersfield Ramsden Building refurbishment.

## 1.2 Project Overview

The Ramsden Building is a 6,355m<sup>2</sup> Grade 2 listed building, being the original building of what is now the University of Huddersfield, which was constructed in 1883.

With the creation of the new Daphne Steel building, the Ramsden Building will be largely vacated of its occupants as they move to the National Health Campus. This creates an opportunity to relocate new academic users into this space who are both looking to expand.

To help facilitate this change of builder user, it is proposed the Ramsden Building will undergo a major refurbishment, to upgrade the buildings physical accommodation and services.

## 1.3 National Legislation

In 2019, the UK government amended the Climate Change Act 2008 to change the 2050 target for reducing carbon emissions from a 1990 baseline from 80% to 100%. This has effectively set a legally binding target for the UK to be entirely Net Zero Carbon by 2050.

Carbon emissions from the built environment account for around 40% of total emissions in the UK. Prioritising low carbon design on all building developments will therefore be key if this nationwide zero carbon target is to be met.

## 1.4 National Planning Policy

The National Planning Policy Framework 2019 (NPPF) is a material consideration in planning decisions. It states that the planning system should play an active role in guiding development towards sustainable solutions. The NPPF sets out three key roles that sustainable development should fulfil: economic, social and environmental.

The environmental role involves contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.

## 1.5 University of Huddersfield Carbon Emissions Reduction Commitment

The University of Huddersfield's commitment to carbon emissions reduction is set out in their Carbon neutral strategy: A Ten-Point Plan for the Planet. Adopted by the University Council in November 2020, the plan reflects the University's commitment to achieving carbon neutrality across all areas of the University. It aims to address the breadth of sustainable development whilst establishing new net zero targets for Huddersfield. As part of this plan, the University of Huddersfield will achieve net zero carbon emissions for scope 1 and scope 2 by 2030, and for scope 3 by 2045.

These commitments build on the University's long-standing dedication to sustainability and environmental improvement; great work has already been carried out ensuring that the University met and exceeded its carbon reduction targets for scope 1 and 2 in 2020.

The refurbishment of the Ramsden Building implements the principles set out within the University of Huddersfield's Carbon neutral strategy: A Ten-Point Plan for the Planet.

## 2 Energy Strategy

### 2.1 Approach

An energy strategy has been developed for the Ramsden Building based upon a strategic approach to sustainable energy conservation adopting the following 'lean, mean and green' principles:

**LEAN** – Improve the buildings fabric to minimise the energy demand of the building.

**MEAN** - Optimise the performance of the building services using best practice energy efficient design solutions.

**GREEN** - Supply energy from appropriate on or off-site Low and Zero Carbon technologies

### 2.2 Summary of energy interventions

In response to the Lean, Mean, Green approach, the following interventions have been adopted:

**LEAN** - building fabric

- Use natural ventilation where possible, making use of the existing opening windows.
- Improve thermal insulation, in particular introducing secondary glazing and enhancing roof thermal insulation.

**MEAN** - energy efficient design solutions

- Effective lighting controls coupled with efficient LED lighting.
- Local room control of heating and cooling units
- Low flow sanitary ware to reduce hot water demands
- Extensive installation of meters to help understand and control energy use
- Variable speed fans with good turn down characteristics, to ensure efficient operation at part loads.

**GREEN** - on-site low and zero carbon technologies

- The use of heat pumps in form of VRF systems will be used to deliver an all-electric low carbon heating strategy.

### 2.3 Decarbonising the building

To place the Ramsden Building on a pathway to net zero carbon, the building will move away from the use of fossil fuels. The primary fossil fuel usage is associated with heating the building,, which is from natural gas fired boilers located within the adjacent Joseph Priestley building.

The proposed net zero carbon strategy is to transition the building from natural gas to electric heating. This will be achieved using heat pumps to provide heat (and cooling) to the building. The heat pumps will be positioned within a new external compound located within the buildings central lightwell (see image below).



### Location of external heat pump compound

The new heat pump compound will be sized sufficiently to accommodate heat pump plant to meet the Ramsden Buildings heating needs.

## 2.4 Carbon emission reductions

Transitioning from natural gas heating to heat pumps will enable the building to capitalise on the National Grids decarbonisation.

Based on the buildings most recent energy performance data (as per the Display Energy Certificate for the period November 2022- October 2023), the Ramsden Building consumed 996,165 kWh/year associated with heating from natural gas. Based on 996,165 kWh/year, the operational carbon emission savings would be:

- **Up 83% CO2 reduction** over current emissions by 2030, so saving up to 147 tCO<sub>2</sub>/year\*
- **Up to 89% CO2 reduction** over current emissions by 2050, so saving 160 tCO<sub>2</sub>/year\*

\* Carbon reduction based on the UK Government's BEIS published values for the National Grid decarbonisation and an assumed heat pump seasonal COP of 3.

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