
51-53 Richmond Street
Environmental Standards Statement

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Introduction

The issue of sustainability will be with us for some considerable time and will certainly increase in profile. Increasing emphasis is being put on good design to reduce the environmental impact new build residential developments have. This document shall demonstrate how the proposed development of 51-53 Richmond Street in Manchester will reduce its environmental impact through energy efficient design and use of renewable technology. The building is an existing Grade II listed 4 storeys building which will be converted into 4no. apartments with the erection of a new single dwelling townhouse adjacent to the existing building.

The proposed development is required to not only fulfil the compliance conditions set out by Part L1 of the Building regulations, but also fulfil the planning requirement to reduce CO₂ emissions by 15% against Part L1 2010 using energy saving measures and implementation of renewable technology whilst providing 20% of energy demand from renewable technology. It is proposed to achieve this target through energy efficiency measures supplemented by renewable technology installed to the new townhouse.

Energy and CO₂ Emissions

Developing energy efficient, low carbon buildings is a key objective of national policy and recent changes to the Building Regulations support the reduction of energy demand through efficient building design.

The development will be designed with a fabric first approach, utilising lifetime passive design measures, before applying low and zero carbon technologies to those consumed energies. With the latter it recognises the errors in the gas energy strategy previously pursued by the UK government and the substantial advances now made in reducing the electrical supply carbon footprint.

To design the development to the current notional building specification used to create the Target Emissions Rate (TER) would lead to compliance with Part L of the Building Regulations but not achieve a further reduction in CO₂ emissions beyond the Target in line with Policies EN4 and EN6 of the MCC Core Strategy.

It is clear that the development must be designed to reduce the CO₂ emissions rate far below the rate achieved within the notional buildings.

Before immediately amending the design to incorporate a raft of renewable technology to reduce the development's CO₂ emissions it is important to ensure the design has optimised the development's energy performance by considering the following energy hierarchy:

1. **Be lean** – use less energy through energy efficient design.
2. **Be clean** – supply energy efficiently through use of decentralised energy.
3. **Be green** – use on-site renewable energy technologies.

Be Lean – Energy Efficiency

Building Fabric

The insulation values of the building must also be addressed to ensure the optimum envelope construction and reduce the heating requirement of the building. Part L building regulations require certain minimum values of fabric thermal performance (U-values) be met for all components of the building's external thermal envelope. Improvement on these values will reduce heat loss from the building and therefore reduce the heating requirement. The reduction of the building's heat loss coefficient (measured in Watts per m² per Kelvin) reduces the amount of heating or cooling needed to reach the required internal building temperature. It is proposed that the building is designed by the architect, with U-values for external walls, floors, roof areas, windows and doors in excess of the current Building Regulations standards.

U-values	Existing	Limiting	Proposed
Roof	2.3	0.16	0.16
New Roof	-	0.16	0.1
Walls	2.1	0.3	0.3
New Walls	-	0.26	0.18
Party Walls	0	0.2	0
Floor	0.7	0.25	0.25
New Floor	-	0.18	0.15
Windows	4.1	1.6	1.2

Lighting

Lighting has a major and direct impact on carbon emissions and is one area where they can be reduced effectively through considered design. Therefore, there is more incentive to examine lighting design and specifically with this building, emphasis shall be given to:

- **Prevention of Overlighting** - Areas with high levels of natural daylight will be zoned separately and a control strategy implemented to allow more consistent lighting levels across rooms.
- **Lighting Efficacy** - Installed lighting efficacy will have an efficacy in excess of 90 lm/W, 20% greater than the current Building Regulations minimum standards.
- **Control** - All store rooms, bin stores, common stairs, utility rooms etc. shall employ occupancy detection to switch lighting. Lighting to residential corridors shall be controlled by occupancy detection, with lighting levels being reduced by half when not occupied.

Ventilation

Fresh air ventilation and extract systems will be required to individual areas of each apartment. Local apartment ventilation is provided by a mechanical ventilation heat recovery (MVHR) system which has supply and exhaust fans, cross flow heat exchanger and filters. Extracted stale air is replaced with fresh

external air into each room as required ensuring a continual air change rate. The fresh air is also tempered as it is drawn through the heat exchanger by the transfer of heat from the warm exhaust air. The recuperation process reduces heat losses and improves energy efficiencies.

Unregulated Energy

Whilst planning policies and building regulations address energy efficiency and the need to reduce CO₂ emissions from regulated energy usage, an often-overlooked aspect of energy efficiency is reducing energy consumption associated with unregulated energy usage, namely that from cooking and appliances as well as other small power equipment.

Careful selection of high-quality energy efficient appliances within the apartments together with the implementation of smart control systems where appropriate will reduce energy usage associated with appliances and cooking.

Be Clean – Decentralised Energy

The gradual decarbonisation of the electricity network will reduce the viability of CHP as an effective technology to reduce carbon in the future. There is no district heat network within the immediate vicinity at this time.

Be Green – Renewable Energy Technology

Within the framework of the energy hierarchy, major developments should reduce regulated CO₂ emissions through the use of energy efficiency measures, decentralised technology, and on-site renewable energy generation.

The design of new developments should consider the use of renewable energy technologies such as: biomass heating; renewable energy from waste; photovoltaic; solar water heating and heat pumps. Planning Policy encourages the use of a full range of renewable energy technologies, which should be incorporated wherever site conditions make them feasible and where they contribute to the highest overall and most cost-effective CO₂ emissions savings for a development proposal.

The listed status of this development and its city centre location severely restricts the feasibility of implementing renewable technologies to the development. These include factors such as lack of external and internal space for installing the additional plant required and impact on other aspects of the building design. Heat pumps will be utilised within the new townhouse development to provide space heating and domestic hot water from a renewable technology.

Regardless of any renewable technology installed, the development will have no fossil fuel consumption with no connection to gas or oil supplies. An electric only solution will allow the development to go zero carbon with the utilisation of 100% renewable electrical supply.

The implementation of heat pump technology on the townhouse will maximise the influence of renewable technology on the development and the utilisation of a renewable electrical supply will further enhance the environmental performance of the building.

Adapting to Climate Change

One of the main challenges facing the World, UK and any new residential development is the need to mitigate and adapt to a changing climate.

Adapting to a changing climate will impact on the design, construction, location, cost, and operation of all developments. This is why NPPF's core planning principles is to encourage developments to consider climate change adaptation.

The following sections outlines the key climate change adaptation measures considered appropriate for this development based on the latest national guidance under the following headings:

Overheating

The issue of overheating and the effect it has on the cooling requirements within buildings has been highlighted for several years. The current trend for increasing summer temperatures and the projected further increases due to climate change puts even further emphasis on minimising the risks of overheating, especially in the residential sector.

This development will be designed to negate the need for comfort cooling by providing control over unwanted solar gains through good design. Solar treatment of glazing to reduce the g-value to southern elevations will reduce the influence of solar gains.

An overheating assessment will be conducted during detailed design to assess the risk of overheating within the townhouse only as the apartments are exempt under current Building Regulations. Should comfort cooling be required to some areas where the risk of overheating is unacceptable this shall only be installed as a last resort once all other design solutions have been considered first.

Water Efficiency

Conservation of water is a major focus in sustainable design with potable water supplies edging ever closer to being insufficient to cope with the current national demand.

The development will adopt a range of efficiency measures to reduce the building's water consumption. Most water usage in this building will be within the bathrooms and as such water efficient sanitaryware will be utilised to these areas in particular. This will include the provision of aerators to taps and showers together with dual flush toilets.



Water meters will be installed to individual apartments and townhouse to allow monitoring of water consumption by the occupants.

The development will be designed to exceed the Building Regulations standard water efficiency rate of 125 litres/person/day.

Waste and Recycling

The proposed development will ensure the minimisation of waste and maximisation of recycling of any waste generated during demolition, construction, and operation of the new dwellings.

Construction and Demolition Waste Management

Prior to the commencement of works on site, a Pre-Demolition Audit and Construction Environmental Management Plan (CEMP) will be developed by the principal contractor to ensure the use of measures to minimise waste during the demolition and construction phases of the development.

Where feasible, material from demolition will be re-used on site in the first instance or diverted from landfill when re-use is not appropriate.

The reduction, re-use and recycling of construction waste is to be prioritised through measures such as avoidance of over-ordering, supervision of deliveries and use of secure materials storage facilities.

In addition, the development will be registered with the Considerate Constructors Scheme and achieve certification against the Code of Considerate Practice.

Operational Waste Management

In accordance with the principles of the waste hierarchy, the development will make provision for the storage of non-recyclable waste and recyclable waste including dedicated storage for waste in the new homes to encourage resident's behaviour to recycle waste materials.

The development proposals include ease of access to the refuse store for all occupants.

Full consideration will be given to the Council's waste management infrastructure and services to ensure that the occupiers have the necessary infrastructure to participate in any kerbside recycling services.

Biodiversity

This city centre location would not typically be a site for increased biodiversity. However, where feasible, the proposed development will incorporate measures to support and enhance the environment through consideration of the existing site, including measures to mitigate the impact of the development and enhance site biodiversity.