



MECHANICAL, ELECTRICAL AND PUBLIC HEALTH  
SERVICES INSTALLATIONS

ENERGY STATEMENT FOR  
ALBERT'S SHED, NORDEN

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Mechanical, Electrical and Public Health  
Services Installations  
Energy Statement for  
Albert's Shed, Norden

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CONTENTS

1. INTRODUCTION ..... 4

2. REDUCED ENERGY DEMAND..... 5

3. ENERGY EFFICIENT SERVICES ..... 7

## 1. INTRODUCTION

The proposed works at Albert's Shed involves the refurbishment and construction of an extension to the old Nutter Restaurant on Edenfield Rd, Rochdale OL12 7TT.

Viridian Consulting Engineers Ltd. are a team of highly qualified engineers including CIBSE Low Carbon Consultants and experts in offering energy efficiency advice and sustainable solutions for the built environment. Our mission is to reduce energy use and associated carbon footprints and ultimately reducing energy bills for the end user.

Viridian's engineers have vast experience in designing user friendly and energy efficient installations to ensure comfort conditions. We use advanced dynamic software packages to calculate energy usage, daylight levels, etc., in order to achieve the optimum design for each installation in terms of user comfort and cost in use.

The Energy Saving Trust, Building Research Establishment and Passivhaus organisations are amongst many that recommend for developers to adopt a 'holistic' fabric first approach that encompasses all aspects of a buildings thermal elements in order to reduce CO2 emissions to exceed the levels legislation demand. This together with highly efficient services installations will help minimise the carbon impact of a building. This is also acknowledged in the Rochdale Local Developments Framework.

The above organisations recommend specific approaches and techniques for achieving reduced CO2 emissions from buildings using the following approach;

- Reducing U-values of the building's thermal elements.
- Reducing the effects of thermal bridging.
- Effective airtightness and ventilation strategies.
- Consideration of services installations efficiency improvements

## 2. REDUCED ENERGY DEMAND

### 2.1. ENHANCED INSULATION TO THE BUILDING FABRIC

Limiting heat losses across the extension building envelope will future proof the energy efficiency of the restaurant over its whole life. To achieve this, the base fabric thermal U-value requirements as detailed within Approved Document L2 of The Building Regulations will be significantly improved upon. Given the historic nature of the existing building, the thermal performance of the existing facades will be improved upon where possible by the use of internal insulation.

#### Approved Document L2 U-Value comparison

| Building Element | AD L2 limiting U-Value (W/m <sup>2</sup> .K) | Proposed U-Value (W/m <sup>2</sup> .K) |
|------------------|----------------------------------------------|----------------------------------------|
| Roof             | 0.16                                         | 0.14                                   |
| Wall             | 0.26                                         | 0.18                                   |
| Floor            | 0.18                                         | 0.14                                   |
| Glazing          | 1.6                                          | 1.4                                    |

The targeted values as noted above will be confirmed during the detailed design stage of the building.

### 2.2. ENGINEERED FAÇADE DESIGN

The glazed proportion of the newly built façades and the glazing location has been designed to maximise the use of natural daylight to offset demand for artificial lighting. At the same time as being designed to maximise passive solar gains in winter, the façade will be designed to minimise thermal losses and summer gains, through the use of high-performance glazing, optimising the glazed to opaque proportion of the façade and enhanced insulation levels above the minimum set down by Building Regulations.

### 2.3. REDUCED AIR PERMEABILITY

A significant percentage of heat loss and associated energy use is due to air infiltration associated with poor air tightness. By improving on the air tightness of the building it is possible to reduce infiltration rates and thus reduce heat losses, energy use and associated CO<sub>2</sub> emissions.

The extensions will be constructed to improve building air tightness criteria beyond the level required to comply with the Building Regulations. the table below shows the comparison of the target air permeability for the building against the allowable maximum limit set within Approved Document L2 of the Building Regulations.

### Air Permeability Standard

| Building Regulation Document | Maximum allowable air permeability (m <sup>3</sup> /m <sup>2</sup> /hr at 50 Pascals) | Targeted air permeability (m <sup>3</sup> /m <sup>2</sup> /hr at 50 Pascals) |
|------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Approved Document L2 2021    | 8                                                                                     | 5                                                                            |

### **3. ENERGY EFFICIENT SERVICES**

#### **3.1. HEATING, COOLING AND VENTILATION**

All parts of the building will be fitted with highly efficient heating, cooling and ventilation systems in order to reduce the carbon and CO<sub>2</sub> emissions as much as possible. The most efficient products on the market will be considered for this project at the design stage. It is currently proposed that highly efficient air source heat pumps shall be used to provide space heating and cooling via fan coil units to the dining areas and function rooms. Where mechanical ventilation is required to dining areas, highly efficient mechanical ventilation with heat recovery systems will be used to recover heat from the extracted air.

#### **3.2. LIGHTING**

All areas of the restaurant will incorporate energy efficient low energy lighting throughout (LEDs).

#### **3.3. WATER SERVICES**

To conserve water by promoting water efficiency, the proposed development will aim to develop a water strategy that reduces water demand through its design and specification. Consideration has been given to the efficient use of water in the construction phase and the team will require the contractor to monitor water consumption during the construction phase. The design team will ensure that the building limits its water consumption by specifying water efficient sanitary fittings in the kitchen, bar and toilet areas to conserve water at its point of use where feasible.

#### **3.4. LOW AND ZERO CARBON TECHNOLOGIES**

During the design stage of this project, a low and zero carbon feasibility study will be developed to further assess the use of low and zero carbon technologies within the building, reviewing systems such as photovoltaic panel installations to generate onsite electricity or solar thermal panels to assist the provision of hot water supplies.