

SUSTAINABILITY AND CARBON REDUCTION STATEMENT

Proposed residential development, land off Ashwell Road, Manor Farm, Bygrave

Introduction

This statement has been prepared by Redshed Design Architects on behalf of the applicant in connection to the proposed residential development, comprising a detached dwelling house on land at Ashwell Road, Bygrave.

Design strategy

The proposed scheme comprises the construction of a detached dwelling house on former farmyard land which is accessed directly from the highway. The principal aims and objectives that have been considered include the following:

- effective use of the site and its attributes
- resourceful construction techniques
- effective orientation of plot with regards to thermal gain and heat loss
- characteristics of fabric and materials
- methods of servicing the dwelling (heating, hot water, cooling, water efficiency)

Effective use of the site

The proposed scheme has been designed to maximise the site's resources and attributes. The plot has been located and set at a regular ground level that will ensure there is limited excavation resulting from a site strip normally associated with reducing ground levels, thus reducing the need for carting away and disposing off site. The remaining material will be assessed and utilised on site. The site will retain its existing access and will therefore limit disruption and further excavation and disposal of materials.

The site has a regular and practical shape which has assisted in the design, orientation and ecology by way of substantial gardens being available to the plot.

Resourceful construction techniques

Sustainable and responsible building is very much at the heart of many statutory obligations associated with the Building Regulations, many of which are based on targets concerning the energy required to construct, maintain and service buildings. The shape, orientation and construction techniques have been informed and designed to meet and to exceed the current Building Regulations where possible. The exact method of construction will be based on SAPs, water efficiency calculations, overheating calculations, elemental fabric U values, air tightness and ventilation. The detailed construction design should be based on utilising resourceful methods such as passive and built in features to minimize the reliance of mechanical and electrical installations and services.

Effective orientation

The site's physical characteristics both in terms of topography and orientation have been considered and exploited by way of designing the dwelling that has been located and orientated to be able to take advantage of the solar energy potential as well as ensuring heat gain and overheating is limited. The position and size of glazing has been considered to assist in reaching compliance and efficiency, thus reducing the overall energy demand and consumption.

Characteristics of materials and fabric

The dwelling has been designed in a manner that provides the opportunity for sustainable construction options to be considered. The simple nature of the design is able to be constructed from a super insulated cavity structure, which together with the latest insulation products can achieve an enhanced air tightness and thermal efficiency, significantly lowering the overall energy demand. The performance of the external materials that make up the fabric is crucial and there are many practical options available to enhance the thermal performance and U values of the main elements of the building.

Methods of servicing

Much of sustainability is concerned with the energy required to service a building and ways in which this can be reduced or reused. The first approach should be to reduce heat loss and prevent energy waste, followed by embracing passive ventilation techniques. This can then be enhanced by utilising efficient and smart systems as well as employing renewable energy systems. The dwelling has been designed to enable it to be serviced by a range of current methods either individually or by a combination of systems. The new property will be served by an Air source heat pump.

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