

Gladman Developments Ltd.

**Land off Hempsted Lane,
Gloucester**

Energy Statement

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1 INTRODUCTION

1.1 Introduction

- 1.1.1 This Energy Statement relates to the proposed development at Hempsted Lane, Gloucester. This report is prepared in support of a planning application for up to 245 dwellings.
- 1.1.2 The development is located in an area under the control of Gloucester City Council. This report addresses policies relevant to energy strategy as set out in national and local policy.
- 1.1.3 This report also provides detail on the proposed approach to meet specific targets relating to those policies, Building Regulations and energy use on site.

2 PLANNING POLICY

2.1 Background

2.1.1 The renewable energy strategy for the proposed development at Gloucester has been developed in line with the following relevant planning policy.

2.2 National Policy

2.2.1 The revised National Planning Policy Framework, was updated on 19 February 2019, and has a section regarding sustainability in relation to energy and water consumption:

- Section 14: **Meeting the challenge of climate change, flooding and coastal change** places emphasis on, and sets out guidelines for, local planning authorities for local mitigation and adaptation measures for current and future climate change and for the support of the delivery of renewable and low carbon energy and associated infrastructure where viable.

2.2.2 The latest update on Government policy is the **Government Productivity Plan** issued on 10th July 2015. Chapter 9 "Planning freedoms and more houses to buy" states:

- The Government will *"repeat its successful target from the previous Parliament to reduce net regulation on housebuilders. The government does not intend to proceed with the zero carbon Allowable Solutions carbon offsetting scheme, or the proposed 2016 increase in on-site energy efficiency standards, but will keep energy efficiency standards under review, recognising that existing measures to increase energy efficiency of new buildings should be allowed time to become established"*.

2.3 Local Policy

2.3.1 The proposed Hempsted Lane site located in Gloucester is under the control of Gloucester City Council.

2.3.2 The following policies of the Joint Core Strategy for Gloucester, Cheltenham and Tewkesbury 2011-2031 (Adopted December 2017) are the most relevant to sustainable and renewable energy for Gloucester City.

2.3.3 **Policy SD3 – Sustainable Design and Construction:** within this policy Gloucester City Council stipulates the following; development proposals will demonstrate how they contribute to the aims of sustainability by increasing energy efficiency; and all development will be expected to be adaptable to climate change in respect of the design, layout, siting, orientation and function of both buildings and associated external spaces. Proposals must demonstrate that development is designed to use water efficiently.

- 2.3.4 **Policy SD3** also states that; major planning applications must be submitted with an Energy Statement that clearly indicates the methods used to calculate predicted annual energy demand and associated annual Carbon Dioxide (CO₂) emissions.
- 2.3.5 **Policy INF5 - Renewable Energy/Low Carbon Energy Development:** this policy states as follows; proposals for the generation of energy from renewable resources, or low carbon energy development (with the exception of wind turbines), will be supported, provided the wider environmental, social or economic benefits of the installation would not be outweighed by a significant adverse impact on the local environment.
- 2.3.6 **The Gloucester City Plan 2011 – 2031** states as follows; new developments should be designed so as to promote the generation of energy from renewable sources; and the City Council strongly supports proposals that incorporate sustainable design and construction measures, including renewable energy generation within new development and within development sites.
- 2.3.7 **Policy G2:** Charging infrastructure for electric vehicles; this policy states that an electric vehicle charging point/socket will be provided at every new residential property which has a garage or dedicated residential car parking space within its curtilage.
- 2.3.8 **Policy G7:** Development proposals must demonstrate that the estimated consumption of wholesome water per dwellings should not exceed 110 litres of water per person per day.

2.4 **Building Regulations**

- 2.4.1 Building Regulation Part L 2013 Edition, Conservation of Fuel and Power, came into force on the 6th April 2014 in England with the next step forward to 'zero carbon' in new buildings. New dwellings need to improve by a further 6% reduction in CO₂ emissions over the 2010 Target Emission Rate (TER). In addition, dwellings will have to meet a second mandatory target under Fabric Energy Efficiency Standard (FEES). FEES will give a value in terms of mass of CO₂ emitted per square metre of floor area per year. FEES have been included as a mechanism to ensure "fabric first" efficiencies are built into the main envelope of a dwelling.

2.5 **Conclusions**

- 2.5.1 Following consideration of the National and Local policies that relate to the proposed scheme, the targets for the development at Gloucester are;
- reducing carbon emissions to meet Building Regulations Part L 2013 Edition (with 2016 amendments);
 - In terms of resource efficiency, the development should incorporate measures to limit water and energy use. Water use should not exceed 110 litres of water per person per day; and

- Housing should be designed to enable the installation of a domestic electric vehicle charging point per new residential property which has a garage or dedicated residential car parking space within its curtilage.
- The total reduction in CO₂ emissions that will be possible for the proposed development at Hempsted Lane cannot be calculated until detailed design stage.

The layout and design of sites should;

- maximise the use of passive solar design to address heating and cooling; and
- Where technically feasible, enable access to or provision of decentralised renewable energy networks, or safeguard future opportunities to do so without major disruption.

3 ENERGY STRATEGY

3.1 Proposals

3.1.1 Essentially the proposed scheme will follow the latest guidance to reduce CO₂ emissions by providing a “fabric first” approach. The following techniques will be considered: -

- Increase insulation;
- Reduce the effects of thermal bridging;
- Effective air tightness; and
- Mechanical controlled ventilation with the consideration to heat recovery input ventilation.

3.1.2 As per the Energy Savings Trust Guide “Fabric First”, October 2010, these methods alone can achieve the target of 25% reduction in CO₂ emissions as required for Regulations Part L 2010.

3.1.3 To achieve the additional 6% reduction in CO₂ emissions to meet the 2013 Part L Regulations further improvements in fabric first insulation performances, window and door U values and increased air tightness can achieve this requirement, however there may also be a consideration for on-site renewable or low carbon technology as an alternative approach.

3.2 Fabric First Techniques

3.2.1 To achieve a reduction in CO₂ emissions the following techniques will be used, however, the total reduction in CO₂ emissions that will be possible cannot be calculated until detailed design stage.

3.3 Walls

3.3.1 Enhanced U Values to be achieved by increasing the size of the cavity walls and increasing the insulation thickness, or alternatively through the use of timber framed construction with the use of high levels of insulation with the timber studwork.

3.4 Roof

3.4.1 Enhanced U Values to be achieved through increasing the thickness of the insulation.

3.5 Floors

3.5.1 Installation of high performance insulated ground floors will provide enhanced U values.

3.6 Windows & Doors

3.6.1 Utilisation of high performance glazing will provide improved U values.

3.7 Thermal Bridging

3.7.1 By employing enhanced construction details heat losses can be reduced.

3.8 **Air Tightness**

- 3.8.1 By following Passive house principles air leakage rates can be significantly improved.

3.9 **Ventilation**

- 3.9.1 With excellent air tightness principles used appropriate ventilation will need to be installed in line with Building Regulations to provide fresh tempered air.

3.10 **Energy Demand & CO₂ Reduction**

- 3.10.1 The most cost-effective solution is always specific to the development in question, i.e. the energy profile of what is being built and its location. At the outline design stage there is not enough design information available (dimensions, layout, orientation, fabric type etc) to precisely predict the baseline energy demand for the dwellings and therefore the CO₂ emissions, or what would be required to reduce the overall predicted carbon dioxide emissions. It is therefore proposed that this element is determined at detailed design stage.
- 3.10.2 The final strategy for the site may well be based on a combination of fabric first techniques and the installation of renewable energy technologies and will be required to be amended slightly to suit individual building design and site layout. This would involve the inclusion or exclusion of energy efficient measures, or an increased or decreased capacity of renewable energy technologies, as applicable.
- 3.10.3 There is a broad range of renewable energy generation technologies available to developers including photo voltaic, solar thermal, wind and ground and air source heat pumps, together with potential site wide solutions. It is proposed that this will be determined at detailed design stage when the final design and construction specification details are known so the most appropriate technology can be specified.

4 CONCLUSIONS

- 4.1.1 The proposed development is for up to 245 dwellings on land off Hempsted Lane, Gloucester. This report has addressed National and Local policies relevant to the energy strategy for the proposed development.
- 4.1.2 The proposed strategy is based on an improvement in standard energy efficiency to meet Part L of the Building Regulations 2013. Full details of how the scheme will fully achieve any Part L Building Regulation targets can only be confirmed at detailed design stage but will encompass a 'Fabric First' approach and will include the following: -
- Increase insulation;
 - Reduce the effects of thermal bridging;
 - Effective air tightness;
 - Improved controlled ventilation; and
 - Energy efficient lighting.
- 4.1.3 Additional renewable energy generation technology may need to be installed within the development to meet the Building Regulations targets, but this can only be developed in more detail as further design and layout information becomes available.
- 4.1.4 Housing should be designed to enable the installation of domestic electric vehicle charging points which facilitate slow charging of vehicles as a minimum; the charge point specification can only be confirmed at detailed design stage.
- 4.1.5 The development should incorporate measures to limit water use, not to exceed 110 litres of water per person per day. It is anticipated that this aim can be accommodated within the water use strategy for the site, but this can only be developed further and confirmed at detailed design stage.
- 4.1.6 It is anticipated that the layout and design of the development should maximise the use of passive solar design to address heating and cooling; and where technically feasible, enable access to or provision of decentralised energy networks; but this can only be developed further and confirmed at detailed design stage.