

**DEMOLITION OF EXISTING DWELLING AND ERECTION  
OF REPLACEMENT SELF-BUILD DWELLING,  
ALTERATIONS TO EXISTING GARAGE AND ANCILLARY  
WORKS**

**BEECHWOOD, CADBURY CAMP LANE, CLAPTON-IN-  
GORDANO, BS20 7SA**

**ENERGY AND SUSTINABILITY STATEMENT**

**April 2024**

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PLANNING



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## REPORT CONTROL

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## 1.0 INTRODUCTION

- 1.1 This Energy and Sustainability Statement is written in support of an application for a replacement dwelling along with ancillary works at Birchwood, Cadbury Camp Lane, Clapton-in-Gordano, BS20 7SA (the site). The site lies within the administrative boundary of North Somerset Council (NSC).
- 1.2 This statement sets out how energy and sustainability have been taken into account in developing the proposals and sets out the proposal's approach and design principles that are to be adopted in the development. The proposal has been designed with sustainability in mind, it therefore encourages the use of a sustainably located site and low-carbon materials and construction techniques, allied with renewable energy technology to address climate change.
- 1.3 The applicant acknowledges the need to ensure that the environmental impacts of the development are minimised, a key requirement of the National Planning Policy Framework and the Local Development Plan.

## 2.0 PLANNING POLICY CONTEXT

- 2.2 Section 38(6) of the Planning and Compulsory Purchase Act 2004 requires that planning applications be determined in accordance with the development plan unless other material considerations indicate otherwise.
- 2.3 Policies CS1 and CS2 of the adopted North Somerset Core Strategy identify the measures and initiatives expected to be undertaken for proposed residential developments and both of these policies are given weight in determining the application.
- 2.4 Policy CS1 seeks to reduce carbon emissions and tackle climate change, including reducing energy demand through good design; incorporating site-wide renewable energy solutions; maximise the use of sustainable transport solutions; provide multifunctional green infrastructure; protect and enhance biodiversity; emphasise the reduction, re-use and recycling of waste; protect the loss of greenfield sites; provide opportunities for local food production; and demonstrate that the development is resilient to flooding.
- 2.5 Policy CS2 relates to sustainable design and construction and states that residential development should demonstrate a commitment to sustainable design and construction, increase energy efficiency through design, and prioritise the use of renewable energy sources.

### National Planning Policy Framework

- 2.6 The NPPF sets out the Government's planning policies for England. Relevant paragraphs to climate change are:
- Paragraph 7 states that "The purpose of the planning system is to contribute to the achievement of sustainable development".
  - Paragraph 152 sets out that "The planning system should support the transition to a low carbon future in a changing climate...It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources....and support renewable and low carbon energy and associated infrastructure.
  - Paragraph 154 states that "New development should be planned for in ways that: a) avoid increased vulnerability to the range of impacts arising from climate change... b) can help to reduce greenhouse gas emissions, such as through its location, orientation

and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.

- Paragraph 157 states that “In determining planning applications, local planning authorities should expect new development to .... take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.
- Relevant to promoting sustainable transport paragraph 104 highlights that “Transport issues should be considered from the earliest stages of plan-making and development proposals, so that: ... opportunities to promote walking, cycling and public transport use are identified and pursued”

2.7 The 10 Point Plan, the Net Zero Strategy, the Heat and Building Strategy and the Sixth Carbon Budget, have set out very clear directions for a shift in transport modes to more active, greener and sustainable transport.

### 3.0 ENERGY, SUSTAINABILITY AND EV STRATEGY

- 3.1 This section describes how the proposal has addressed sustainable design and sustainable construction measures and sets out the design principles that seek to reduce energy demand and carbon emissions, as well as mitigate against the effects of climate change.
- 3.2 The combination of approaches aligns with both national and local objectives in tackling climate change. The solutions go beyond that which is required for building regulations and present a rounded and sustainable approach to development.

#### Energy efficiency and micro-generation.

- 3.3 This section now identifies the proposal's approach and design principles and likely measures to make the proposed dwelling more efficient to reduce energy demand and carbon emissions.
- 3.4 This Energy and Sustainability Strategy follows the implementation of a three-step method to new build dwellings described in the following energy hierarchy:

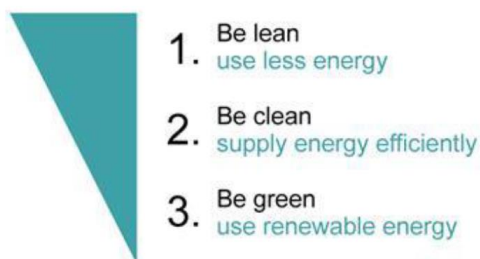


Figure 1. Energy Hierarchy. Energy efficiency and adaptation, Camden Planning Guidance 2021.

#### Step 1: Be lean.

- 3.5 This step addresses the reduction in energy demand, through the adoption of passive and active design measures that will reduce the energy demand.
- 3.6 The following passive design measures will be prioritised over active measures to reduce energy:
- Making the most of sunlight and daylight
  - Preventing overheating
  - Natural cooling
  - Thermal performance

- Enhanced U-values- the new buildings will incorporate high levels of insulation and high-performance glazing that exceed Part L 2021 targets to reduce the demand for space heating.
- Air tightness improvement

3.7 Where active measures are unavoidable the following will be considered:

- Efficient heating
- Efficient ventilation and cooling
- Other energy-efficient technology

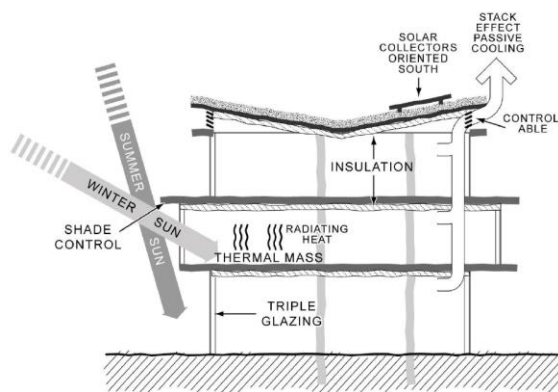


Figure 2. Natural system principles (Energy efficiency and adaptation, Camden Planning Guidance 2021).

3.8 The proposed site plan orientates the development in a way that allows the main living spaces to benefit from the heat and light of the sun which can reduce the requirement to use fuels to perform the same function. This reduces costs, energy use and associated carbon emissions.

3.9 In terms of air tightness, u-values etc. this is a matter for detailed design which is usually done post-determination. Notwithstanding this, the proposed dwellings will be built with a high level of air tightness in order to reduce the heating requirements of the properties. This will be balanced with the need to have sufficient ventilation and will be a notable improvement to the existing dwelling.

3.10 Additional savings will be made through the fixtures and fittings used within the development. LED lighting will be fully utilised to minimise lifetime energy use and associated emissions.

### Step 2: Be Clean

3.11 After implementing Step 1, the remaining residual energy demand is supplied as efficiently as possible (e.g. by connecting to a district energy network or developing a site-wide network).



- 3.12 District heating has been assessed and dismissed on the basis of economic availability due to the size of the development and the costs associated with the infrastructure and maintenance of a central plant.
- 3.13 Notwithstanding this the site has a ground source heat pump already installed. This will be connected to the new dwelling, and it has been confirmed there is sufficient capacity for the increase in floor space proposed.
- 3.14 Solar panels are also proposed as part of the development to reduce the dependency on natural non-renewables.

**Step 3: Be Green**

- 3.15 There are a variety of renewable energy technologies that can be installed to supplement the energy needs of new developments. This last step of the energy hierarchy looks at the feasibility of on-site renewable energy generation.
- 3.16 Based on feasibility and viability considerations, an analysis of the appropriate renewable energy sources for the site has been produced for the proposal, see Table 1 below.
- 3.17 Due to the location, size, type of development and technologies already in place, the most appropriate renewable technologies for the site are PV panels and making use of the GSHP on site. PV is preferred as it will generate electrical energy. As such both technologies will be implemented to serve the proposed new dwelling.

Renewable technology	Specification	Maintenance	Appropriate
Solar thermal	South facing at 30-40° is ideal, but as the panels do not rely on direct sunlight they can still be efficient at other angles. Any size development.	Low	✗
Solar PV panels	On a roof or a wall that faces within 90 degrees of south and isn't overshadowed by trees or buildings. Flat roof or pitched roof not greater than 45°. Any size development.	Low	✓
Ground Source Heat Pumps (GSHP)	Requires significant space and very high capital costs. Vertical systems use boreholes which require a ground survey and a drilling license from the Environment Agency. Medium to large developments.	Med	✓

Air Source Heat Pumps (ASHP)	External wall or other location on-site for equipment. Visual, noise and vibration impact considerations. Any size development.	Med	✗
Wind turbines	Require a certain level of wind to make them feasible. Noise, vibration and flicker. Large developments.	High	✗
Biomass	Space needed for plant, fuel storage and deliveries. Burning of wood pellets releases high NOx emissions. Medium to large developments.	High	✗

**Table 1. Feasibility of renewable energy technology.**

3.18 Therefore, it is proposed that the dwelling would be served by the existing ground source heat pump along with the provision of PV panels to produce a significant amount of the ongoing energy usage through onsite renewable energy.

3.19 Other measures that will be implemented during the development of the detail design proposals and the construction process are:

- Minimising materials
- Using materials with low embodied carbon content
- Utilising recycled products when possible
- Reducing energy and water during construction
- Reducing waste and recycling
- Enabling low energy and water demand once the building is in use

3.20 Reducing embodied carbon impacts can result in other additional benefits including: less waste to landfill from efficient construction methods, or improved air quality benefits from reduced transportation and lower costs of development, operation and maintenance.

### **Electric Vehicle Charging Strategy**

3.21 With the ban of petrol and diesel vehicles being brought forward by the government from 2040 to 2035 EV charging infrastructure must development swiftly to encourage the uptake of EV vehicles.

3.22 In line with Policies CS1 and CS2 the proposed dwelling would be provided with a charging point of at least 16 amps adjacent to a parking space and within the curtilage of the dwelling.

This will be in accordance with Infrastructure for charging electric vehicles: Approved Document.

- 3.23 The strategy above shows that the scheme has addressed sustainable design. The exact specifications will be determined at detailed design stage however the above details should ensure that the development exceeds building regulations for energy efficiency.

## **4.0 CONCLUSION**

- 4.1 This Energy and Sustainability Strategy for the proposed development has been developed to show how the proposed development complies with the relevant policies of North Somerset Council.
- 4.2 The proposed scheme has been designed to address sustainability and mitigate against the effects of climate change. The proposal incorporates the use of sustainable construction methods and materials, as well as the use of renewable energy provision addressing and mitigating the effects of climate change on the development.
- 4.3 As such the development positively responds to and accords with policies CS1 And CS2 of the North Somerset Core Strategy, going beyond building regulation requirements in terms of energy efficiency and renewables and should be considered acceptable in this regard.



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