Proposed Development of 32 Extra Care Units

Land to the rear of Bollingbroke House Care Home

Brierley, Barnsley

SUSTAINABILITY APPRAISAL AND

ENERGY EFFICIENCY STATEMENT

(for information/context only)

1. Introduction

This sustainability appraisal and Energy Efficiency Statement has been produced to support the planning application for the proposed development of a 4 storey building (containing 32 extra care units) within the curtilage of the Bollingbroke House care home, Common road, Brierley. This statement has been produced to indicate the steps taken by the applicant to promote sustainability and energy efficiency though this proposal. This statement outlines the relevant areas within the proposal from a sustainability context, and considers measures to be put in place to minimise any potential detrimental impact upon the environment and bring about positive social and economic benefits.

This report should be read in conjunction with the Design and Access Statement and BREEAM Pre-Assessment report provided with this application.

2. Site Context

Bollingbroke House Care Home occupies a large plot of land on the outskirts of the village of Brierley near Barnsley. The site extends to 0.54 hectare (1.32 acres) being bounded by Common Road to the north and countryside to the east and south with a large residential property to the west. As illustrated in the Council's UDP proposal map, the site is located within the designated greenbelt, and along with premises located to the north of Common road, land of Bollingbroke House falls within the Brierley Conservation Area, which encompasses the rear of the Bollingbroke House and it neighbouring properties to the south of Common Road. It is understood that the Brierley Conservation Area has been designated for its varied character and local interest, without a dominant building form, or show a consistency of character.

Bollingbroke House currently provides 28 bedrooms (including 5 shared rooms) over two floors. As one of the larger houses within the village, Bollingbroke House was built soon after World War II. The building was originally utilised as a residence for the owner of nearby brickworks. In terms of character and appearance, the original Bollingbroke House was pleasantly proportioned with brick elevations under a hipped slate roof, with many original features are still present, including a portico entrance under a gable roof, timber sash windows with arch top, and arched doorways, and brick chimney stacks. Over the years, the building has been altered and extended in several occasions in order to meet the operational requirements of the care home, which have to some extend compromised the character of the original building. Bollingbroke House in its current condition is considered to have a neutral impact on the character of the Brierley conservation area.

In terms of topography, the land of Bollingbroke House slopes sharply from northwest to southeast, with the existing care home building sitting 2 metres below the level of Common Road, and a fall of a further 12 metres down to the rear boundary. Currently, there are significant numbers of trees along with other vegetation occupying the site and providing a natural screening to the existing building from the views of Common Road and neighbouring land. These trees are generally of good quality, providing significant visual amenity both as a group and as individual specimens. The existing trees form an important part of the local character and contribute positively towards the conservation area. Given the sloping nature and the site and the presence of the existing trees and vegetations,

Bollingbroke House does not appear to impose significant visual impact on the openness of the greenbelt.

Access to the site is gained from Common Road, with a single unsegregated vehicle/pedestrian access point, located at the northwest corner of the site boundary. At present there is a car park located to the front of the existing building. This car park is unmarked and informally laid out, and have been used by staff and visitors of the existing care home over the years. There is no dedicated turning facility within the existing parking area. All vehicles currently have to utilise unused areas of the car park to manoeuvre.

The immediate context to Bollingbroke House care home is predominately residential, with a mixture of suburban houses generally set within mature grounds with extensive tree coverage. The building immediately adjacent to Bollingbroke House, known as Lindley House, is a stone built detached building with the appearance of a mock castle. The wider area adjacent to Bollingbroke House, particularly along Common Road, is renowned for its historic character, architectural quality of buildings, and spacious and leafy character.

So far as flood risk is concerned, the site is situated outside the higher flood risk zones (flood risk zone 2 and 3) according to the Environment Agency's Flood Risk Map. Given this flood zone 1 status, there is no need for a site specific flood risk assessment in this instance.

3. Planning policies and guidance on sustainability

Development Plan Document

Policy CSP2 – Sustainable Construction

This policy requires development proposals to demonstrate how they minimise resource and energy consumption, compared to the minimum target under current Building Regulations legislation, and how they are located and designed to withstand the longer term impact of Climate Change. This policy also requires all non-residential developments to achieve at least BREEAM standard of 'very good' or equivalent.

Policy CSP3 – Sustainable Drainage System

This policy expects all developments to use Sustainable Drainage Systems (SUDs) and only in exceptional circumstances where it can be demonstrated that all types of SUDs are impractical, will other drainage management systems be permitted. It also requires planning application to include an assessment to show that SuDs will work and be maintained. This policy also requires developers to contribute to the maintenance of SuDs.

Policy CSP5 – Including Renewable Energy in Development

Policy CSP5 requires all development either new build or conversion) of 10 or more dwellings or 1000 sq.m of non residential floor space will be expected to incorporate decentralised, renewable or low carbon energy sources and other appropriate design measures sufficient to reduce the development's carbon dioxide emissions by at least 15% for applications submitted up to 2015, rising to 20% for applications submitted thereafter subject to such measures being practicable and not unacceptably prejudicing the viability of the development. Where it is not appropriate to

incorporate such provisions within the development, an off site scheme, or contribution to such may be acceptable.

National Planning Policy Framework (NPPF)

National Planning Policy Framework (NPPF) was published by DCLG in March 2012. This document is set to replace the previous national guidance on various planning subjects. The NPPF sets out 12 core land-use planning principles which underpin both plan-making and decision making. At the heart of these principles is a presumption in favour of sustainable development.

Paragraph 96 of this document clearly states that local planning authorities should expect new development to comply with adopted Local Plan on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

4. The applicant's commitment

The applicant has a clear commitment to provide high quality developments which are consistent with the principle of sustainable development, by placing considerable importance on promoting development whilst balancing this against social and environmental considerations.

This statement aims to identify the various sustainable methods use as part of the overall design and layout in response to relevant policies contained within the Barnsley Core Strategy document; and to demonstrate how the proposal conforms to the national and local aspirations from a sustainability perspective. This statement is supported by a BREEAM pre-assessment, which estimated a rating of 'very good' of the proposed building.

At design stage, a detailed review of current policies relating to sustainability, together with a review of best practice methods and technologies was undertaken as part of the design process. This was used to gain an understanding of the site and the potential to ensure that the principles of sustainable development were firmly embedded in the construction and operation of the final design. Key objectives for the site are summarised as follows:

- To encourage the use of renewable resources and the provision of renewable energy systems where feasible;
- To reduce the need to travel by car;
- To minimise waste production and encourage the recycling of waste products;
- To improve the quality of the environment;
- To respect and enhance character of the local area and protect any distinctive features;
- To conserve any features of historic or cultural interest;
- To assist in the creation of sustainable communities through improvements to the public realm;

- To ensure that the development has access to a wide range of shops and services;
- To incorporate measures which reduce crime and the fear of crime; and
- To stimulate the local economy and create new work and training opportunities

The following section considers how the proposed development will deliver its sustainability objectives and make a lasting and positive contribution towards sustainable development. The basic framework for analysis corresponds with the three key sustainability issues set out in the NPPF and all other strands of planning and environmental legislation, guidance and best practice.

5. Principle of Sustainable Design and Energy Efficiency

- Renewable Energy Technologies

The council's Core Strategy Policy CSP5 requires new development to achieve at least 20% of the demand for energy within the development will be met on site from renewable energy sources. Clearly at this early design stage, many broad assumption would have to be made, the result should not be considered an accurate representation of the final sizing, payback period or the potential savings.

In this section, the suitability and viability of the following renewable energy technology options are considered and discussed.

Wind Generators

Wind power is potentially the UK's most cost-effective renewable resource. The UK has an abundance of good-quality wind resource and although planning is still a major hurdle, large-scale wind power is the UK's preferred renewable option. The economics of wind are driven by two factors: wind speed and rotor diameter, with economies of scale acting strongly in favour of turbines of with a capacity of greater than 1MW. Micro-wind is defined as units of less than 4m diameter, having an output of up to 3.5kW.

Another performance factor particularly relevant to micro wind power is quality of wind flow. Poor wind flow can have a detrimental effect on output levels, efficiency and unit longevity. Poor wind quality is often experienced in urban locations, where neighbouring buildings disrupt turbine operation. The height of the turbine installation relative to neighbouring buildings will help to determine efficiency – ideally they should be 9m above other obstructions within 100m.

Given the uncertainties involved and the greater efficiency of large generators, large turbines are a better option, although few people will have the site or finances for a turbine this size. A 6kW turbine will generate about 10,000 kWh per annum, saving 4 tonnes of CO2.

This is an urban site, with an industrial unit to the south. The average wind speed on this site is approx 2.2mph (0.98m/s). This technology is therefore considered unsuitable for the proposed development.

Photovoltaics

Photovoltaic systems convert energy from the sun into electricity through semi conductor cells mounted in collector panels. The panels are connected to an inverter to turn the DC output into AC for use in the building to which they are attached and to be fed back into the grid when not required. Normally one would seek to provide about 1kWp as a minimum to scale costs to the inclusion of the inverter needed to convert the DC power to AC power. To achieve 1kWp an array of about 8m2 is needed.

Given the prominent location of the site and the topographical feature of the site, the use of photovoltaics cell would have certain adverse impact on character and appearance of the existing buildings and Brierley conservation area. , the photovoltaics cell is considered unsuitable for the scheme.

Solar Water heating

Solar water heating systems use the energy from the sun to heat water stored in a hot water cylinder inside the building. Clearly the way in which hot water is used within the dwelling has a large bearing on the efficiency of the solar hot water system.

The south facing roof orientations provide a suitable location for this technology. The placement of the panels once selected will require consideration by the planning authority from an aesthetic perspective but with careful selection of manufacturer & panel the visual impact from street level can be minimised.

Within a flat block such as this there are issues on the pipe runs. Solar water systems provided for the lower floor flats will need pipe runs going through other dwellings. This increases expense and reduces the efficiency of the system. Typically each habitable room would require about 3m² of panel. Therefore a 32 bed extra care units would require at least 180 m² of panel.

In relation to the proposed development, the roof areas facing south are too limited to accommodate the adequate solar water heating equipments. The option of solar water heating system is considered unsuitable for this proposal.

Biomass Boilers

Biomass boilers predominantly burn wood chips or wood pellets to provide heat to the building via a low temperature hot water heating system. The biomass boiler would replace a gas boiler in a gas fired heating system. Burning biomass is currently considered to have zero net carbon emissions as the CO2 emitted is balanced by that absorbed from the atmosphere by the growing trees used to supply the woodchips/pellets. A biomass boiler carries a maintenance burden to refuel it and empty the ash- regular maintenance of this type would not normally be taken on by the end user. Given the complication in the operation and maintenance, Biomass boiler is not considered suitable for the proposed care home development.

Ground Source Heat Pumps

Ground Source Heat Pumps (GSHP) utilise the inherent energy within the ground/earth to provide heating, they can also be configured to provide cooling.

However, to transfer this heat energy into the building requires a heat pump which is driven by electricity.

The heat pump provides CO2 emission reductions by substituting the efficient use of electricity in a heat pump for gas used in boiler plant used for heating the building (electricity would be used in this case). The electrical input required for energy transfer is approximately one quarter to one third of the energy transferred.

Ground source heat pump system of the required outputs for this site would be impractical due to insufficient space for either boreholes or loop arrangements.

Air Source Heat Pump

The technology within an Air Source Heat Pump (ASHP) unit is similar to that described above, with the low grade energy extracted from the ambient air. Utilising the refrigeration cycle, this is raised to a higher grade temperature. This system can also be used to provide cooling.

Location of the external units is a primary issue, requiring good airflow, such as a roof mounted deck, or a compound remote from the building. As the noise may be intrusive, acoustic measures may be required, as the equipment utilises fans and compressors. Air sources heat pumps have been used a number of times on the care home development projects across the country, as its being scalable with potential for a sizeable energy output in comparison to other on-site renewable technologies. Furthermore, it works efficiently on providing a constant and reliable source of heady energy, with competitive running cost. Therefore, air source heat pump is considered to be a potential option for the on-site renewable energy generation.