PROPOSED NEW BUILD ASSISTED LIVING RESIDENTIAL ACCOMMODATION (14UNITS), AMENITY SPACE AND PARKING

Haddon Road, Athersley

REV: - **Date: 12.11.24**

ENERGY STATEMENT

1.0 Overview Of The Existing SIte

The site is a brownfield site designated as 'Urban Fabric' in the Barnsley local plan and it sits within the borough of Athersley South on the outskirts of Barnsley which is approximately 2.5miles northeast of Barnsley town centre. The site consists of land, behind the convenience store (known as RSD stores) on Haddon Road, which has been left derelict and unused for over 20years. The site has three entrances one from Cromford Avenue and the two from Blackheath Road. The site itself is fully covered with a hardstanding surface consisting of both concrete and tarmac.

The site has two boundaries to other properties, to the south the site is bounded by the convenience store and its service area, and to the north by the grassed local amenity space.

2.0 Renewables

During the course of preparing the proposals for the project, the following potential sources of renewable energy where assessed:

2.1 Wind turbine

Wind turbines use the power of the wind to generate electricity. They usually have a life in excess of 20 years before requiring a major overhaul. Some larger turbines require an annual inspection survey where the turbine will need to be lowered to the ground. They can be installed on buildings or on masts. It must be noted that surrounding features such as tall trees and buildings and even the building that the wind turbine is mounted on, can disrupt wind flow to such an extent that the amount of electricity generated is significantly reduced. Wind turbines have a cut-off wind speed of around 3 m/s (this varies depending on the model), below which it will not generate any electricity.

Due to the potential noise, shadow flicker and environmental impacts of wind turbines on the development itself and the surrounding area it was determined that they would not be suitable for the residential location.

2.2 Ground Source Heat Pump

Ground source heat pumps (GSHPs) use pipes that are buried below ground to extract heat. This heat can then be used to heat radiators, underfloor or warm air heating systems and hot water in the development. GSHPs circulate a mixture of water and antifreeze around a loop of pipe, (called a ground loop). Longer loops can draw more heat from the ground, but need more space to be buried in. If space is limited, a vertical borehole can be drilled instead.

Due to the limited external space available for a sufficiently sized loop and the high up-front installation costs, it was determined that they would not be suitable for the development proposals (in particular the proximity of adjacent buildings).

2.3 Air Source Heat Pump

Air source heat pumps (ASHPs) absorb heat from the outside air. This heat can then be used to heat radiators, underfloor heating systems, or warm air convectors and hot water in the development. ASHPs extract heat from the outside air in the same way that a fridge extracts heat from its inside, and can get heat from the air even with temperatures as low as-15°C.

Due to the high up-front installation costs and the performance characteristics of an ASHP (they perform better with underfloor heating systems or warm air heating, rather than radiator-based systems), due to the varying construction methods of the buildings it was determined that they would not be suitable for the development proposals.

2.4 Solar Thermal

Solar water heaters generate hot water directly from sunlight, and work even when it is cloudy. The "collector" heats water or another fluid pumped gently through a panel on the roof. The fluid then circulates through a secondary coil inside a hot water tank. This works to heat water in exactly the same way as the coil from a regular boiler. The end result is a reduction in demand for hot water from the existing heating system.

Although a solar thermal system would be appropriate for the development due to the availability of a large area of unshaded South facing roof, it was determined that the high up-front installation costs and limited space in each of the proposed apartments for the large water storage area required that they would not be suitable for the development proposals.

2.5 Solar Photovoltaics

A solar photovoltaic (PV) cell consists of two or more thin layers of semi-conducting material, most commonly silicon. When silicon is exposed to light, electrical charges are generated, which are conducted away by metal contacts in the form of direct current (DC). The electrical output from a single cell is small, so multiple cells are connected together and encapsulated to form a photovoltaic module, often referred to as a "PV panel". These are often mounted to a roof and electricity can be used in the building and/or exported to the national grid.

The installation of solar PV was determined to be the most suitable renewable energy source to be implemented on the proposals, due to the low maintenance costs, long lifespan and availability of a large area of unshaded South-West facing roof. Due to the negative financial

impacts to the viability of the project, it was determined that the PV panels could not be implemented due to the up-front installation costs exacerbating the projected project deficit.

2.6 Other Measures

As the high upfront costs have ruled out renewable and low carbon technologies, a fabric first approach will be implemented which will attempt to exceed where possible minimum Part L requirements, including:

- The external walls are to be constructed from either a traditional masonry construction or a load bearing timber framing with masonry with a cavity between. If traditional masonry is chosen we will increase the cavity size as required to attain ghte required U'value. If the timber frame option is chosen the gap in the timber framing is to be insulated along with the cavity between the external brickwork and the timber framing, which will allow us to provide a high U'value for the walls.
- The roofs will be insulated with multiple layers of high thermally performing insulation
- Floors are to be ground bearing with a thick insulation base layer
- Low energy LED light fittings where appropriate to all apartments.
- Heating and cooling where required will utilise where possible low energy systems
- All windows are to be installed to exceed the minimum thermal efficiency values set out within the Building Regulations Parts L1B & L2B

3.0 Summary

As outlined above the construction methods for the buildings will provide the basis for the solution as to how the energy performance for the project will be achieved. Increase thermal performance will be utilised and if required offset where appropriate with renewable to achieve Part L requirements.

Each building will need to be individually assessed to achieve Part L compliance and individual strategies will be provided for each through the SAP assessments process. To achieve this, a SAP assessor will be engaged early in the detailed design phase to assist with reviewing products and proposals to achieve the required ratings for Part L compliance.

During the SAP assessment more energy efficient materials (insulation etc), fixtures (LED lights etc) and fittings (energy efficient cylinders etc) will be considered and implemented where they don't impact on the viability of the project. Where appropriate and required by the SAP assessment the project will increase thermal performance over and above the required minimum U'values stated in the building regulations.

It is the target of the project to achieve a minimum EPC rating of grade C, which is the government's required minimum standard for new build properties.