**Sustainable Construction, Energy, Water and Carbon Reduction Statement**

**Site: Land adjacent No 12 Yeomans Drive Aston SG2 7EJ.**

The proposal for a new dwelling converted from an existing an existing building has been designed to reduce the energy demand of a new dwelling and carbon emissions created by the new development in accordance with national planning policy as set out in section 14 of the NPPF and policies CC2, CC3 and DES4 of the adopted District Plan.

This statement should be read in conjunction with the “Sustainability Checklist” submitted with the application and it sets out the sustainable construction, energy and water consumption measures that will reduce energy demand; promote energy efficiency and lower carbon emissions:

**1.0 Construction**: The proposal has been designed in accordance with the Energy Hierarchy as set out in the District Plan: via passive design and the internal layout of the rooms (given that the orientation of the existing structure is predetermined), fabric performance and energy efficiency. The proposed construction includes measures to reduce carbon emissions through thermal performance, high levels of insulation, good levels of air tightness and installation of high-performance windows and doors. The existing simple external form references the previous use of the building it minimises surface area and thereby heat loss. The addition of a green roof car-port further protects the northern elevation. The external walls, roof, floor, windows, and doors (triple glazed) of the dwelling are to be super insulated, airtight and wind-tight. The external brickwork provides thermal mass and assist in maintaining a stable internal temperature, delaying heat gain in the building fabric on warm days and releasing it slowly as external temperatures fall. The highly insulated low heat loss of the building reduces the needs for internal space heating.

Materials of construction and building contractors will be locally sourced wherever possible reducing the need for long delivery or work trips and thereby reduce CO2 emissions and air pollution in transportation. High performance treble-glazed, and sustainably upvc windows and doors (using recycled plastics with a 25-30 year lifespan and require no maintenance) are proposed which result in increased thermal energy in-use whilst being constructed from recycled materials.

**2.0 Energy & Carbon Reduction Location/Layout:** The site is in a sustainable location for residential development within the centre of the village and easy access to local facilities (church school village hall and two public houses) on foot and by cycle. A public bus service is also available to Stevenage and other villages where there is a good range of day-to-day facilities and amenities. There is a local Primary school within walking distance. A school bus serves local senior schools. The layout of the proposed dwelling is limited by the existing form, but the design maximises passive solar gain as much as possible given the context of the site and the pattern of the surrounding development. The design avoids north facing windows (with the exception of a small bathroom window which is shielded by the car-port. The propose dwelling will benefit from good natural ventilation, daylighting, and sunshine to the principal habitable living room. Fenestration is predominantly west facing., with protected southern windows and roof-lights avoiding overheating from substantial areas of south facing glazing.

The overhanging eaves design allows for shading and cooling. Heating, details/specification of the proposed heating uses air to water heat-pump and solar panels as renewable energy sources providing domestic heating and hot water. The site is well located for exiting utilities and services and mains electricity though a Renewable Energy Source Company. In addition, the south facing roof slopes offer a good opportunity to include the installation of photovoltaic panels in order to provide renewable electricity on site.

All proposed white goods will be A+++ rated and lighting installation will be specified to Energy Star qualified CFL and LED to reduce energy-in use. Temperature and energy consumption monitors will also be fitted.

**3.0 Waste/recycling** Kerbside waste and recycling facilities are available through the Local Authority household refuse scheme, as with the adjacent houses and there is ample space for a bin storage on site. Composting facilities will also be used. Space within the site to provide recycling is noted on the drawings.

**4.0 Energy demand Reduction,** SAP calculations will be provided at the Building Regulations stage. **This ScEW Statement** sets out the general approach to meeting policy requirements as set out in the SPD.

**5.0 Climate Change Adaptation Design:** The dwelling has reduced energy demand as a first principal throughout the design process and the construction of the house will include ‘future-proofing’ measures such as the flexible use of the space and the inclusion of areas for home office /study to meet demand for home working. Broadband facilities will be included within the dwelling to enable teleworking, home-working and video conferencing. This home/ life /working facility will assist greatly in the reduction in vehicle movements and contributes to better air quality management.

**5.0 Daylighting & Ventilation** There is generous glazing to the principal living spaces of the dwelling and good opportunities for cross ventilation. The provision of good natural daylight reduces the need for electric lighting. Good natural ventilation is provided across the dwelling and there is no need for mechanical ventilation (except the minimum required by Building regulations). All fenestrations will be thermally efficient and air-tight to greatly reduce the need for heating in the winter and cooling in the summer.

**6.0** **Water Efficiency**: The minimum use of mains water is demonstrated by the water calculation (**attached to this application)**. The proposal includes a “green roof”, rainwater harvesting and sustainable drainage. Fittings will include low flow taps, water efficient shower heads, efficient dual-flush WC . The dwelling has a better water consumption target (80.38) than that in Policy WAT4 of 110 litres per head per day. It will also comply with Building Regulations Part G2

**7.0** **Pollution Air Quality pollution** **in the construction of the development,** will be mitigated through the use of locally sourced materials wherever possible, the site is in a sustainable located within the village, and also allows for cycling and walking as genuine transport options for residents.

Where car use is required, Stevenage town centre offers the widest variety of services and products within 3 miles. The proposal includes an electric vehicle charging point. There are opportunities for additional “green” landscape to assist with better air quality and mitigation with hedges, boundary and shrub planting.

All these factors will ensure that future occupiers are able to minimise the use of energy and reduce air pollution.

**Light Pollution** The applicant is keen to ensure that the development does not have any adverse impact on lighting in this rural location and there are no proposals for significant elements of external lighting. Where access or security lighting is required, it will be via timer to reduce both energy use and light pollution. Any minor security lights are far outweighed by the excessive general light pollution within 150m of the site from “Stevenage golf driving range” and should be noted.

**6.0 Biodiversity** A biodiversity checklist and Ecological Assessment accompanies this application. The ecological evaluation confirms that this is a depleted habitat of minimal wildlife value and with limited biodiversity.

**7.0 Sustainable Transport:** The site is well located for access to day-to-day facilities both in the village and neighbouring Stevenage on foot and by cycle noting the area of Magpie Crescent which is accessible via footpath. In addition, the wider range of facilities in Stevenage town centre (2-3miles) and its wide variety of shops and services as well as other towns beyond, can all be accessed by public transport. An electric vehicle charging point is also proposed to limit emissions made from any necessary car trips.

The site has space for secure bicycle storage within the carport and could be secured by planning condition.

**8.0 Waste management** Waste prevention measures will be incorporated into the construction of the dwelling including separating of materials for recycling and recycled aggregates and locally source materials with a longer lifespan. Waste recycling provided by GBN Services GBN have exceptionally High recycling rates across their recycling centres and combined with their RDF (refuse derived fuel) solution deliver 100% diversion from landfill

Further refuse details can also be secured by condition if considered necessary and reasonable within the CIL tests.

**Conclusion:** Overall, the energy strategy for the site will be consistent with the NPPF and policies CC1, CC2 and CC3 of the adopted District Plan. It also meets the aims and objectives of the Council’s Sustainability SPD.