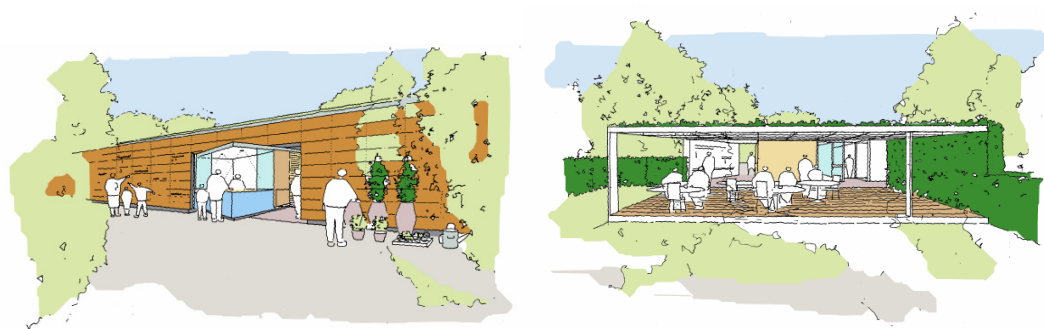


Hill Close Gardens Trust – Sustainable resource centre

The Hill Close Gardens Visitor Centre is the centre-piece of the renovation of the Victorian Gardens at the Hill Close site in Warwick, due to be completed in June 2006. It is designed to act as a portal to the Gardens, providing visitor control, retail space, amenities and a lecture/seminar/café area with kitchen. The Centre is a single storey structure, with a serviced floor area of 140m².

The building is intended to have very low environmental impact, and the Trust intends to own and occupy a building which is an exemplar of sustainability. The structure and fabric utilise sustainable materials, including a timber frame, recycled newspaper insulation and a growing roof using Sedum, which feeds rainwater into a storage tank for reuse. All opaque fabric elements having optimised U-values between 0.13 and 0.2W/m²K and a number of measures have been integrated with the fabric to achieve a very high level of airtightness. The building services have been carefully integrated with the highly efficient fabric and have very low CO₂ emissions.



Central to the process of CO₂ emission reduction is the use of a ground source heat pump. This compact unit is far smaller than a conventional space heating system for a building of this size, with an output of just 8kW from an electrical input of 1.9kW. It draws heat from an area of the Gardens adjacent to the building using horizontal ground collectors, known as a 'slinky'. The resulting heat is delivered through underfloor pipes at a temperature of 35°C. The mechanical ventilation strategy incorporates heat recovery to further minimise heat losses, combined with the airtight fabric envelope.

The main space in the building is designed to have an average daylight factor of greater than 4%, and the lighting scheme, an innovative membrane-based system, has daylight linked and occupant-sensing controls to maximise energy savings.

Domestic hot water is provided by the heat pump at a temperature of 49°C at high efficiency, with an electric flow boiler providing a further temperature boost when necessary.

The result of this integrated design is very low CO₂ emissions, which are to be brought to near-zero by the addition of a 1.5kW wind turbine mounted on a 10m pole near the building. The rotor is 2m in diameter and will provide up to 4000 kWh per year to the building, with any excess exported to the grid.

