BUILDING SUSTAINABILITY PRINCIPLES

Only an untouched natural cave is a truly sustainable structure; all structures disturb the earth and have some effect on nature. It is the aim to minimise this effect in the construction of the buildings in a practical and holistic manner by the careful use of energy in all its forms. The principles that apply to buildings would be also applied to the infrastructure as far as possible.

GENERAL

In terms of design and construction the settlement would make maximum use of local materials and modern technologies, to minimise the use of energy both in construction and in use. BREEAM (environmental assessment method for buildings) standards would apply, generally implying high levels of insulation, well controlled ventilation.

LAYOUT

To maximise solar gain, wherever practical the orientation would be east-west, with the south-facing elevations having a lot more glass than the north, as well as solar collectors on the roof. North-facing elevations would generally have smaller windows. In addition, to minimise heat loss from exposure, shelter by trees and other buildings would be a consideration. Use of daylight would be maximised in non-residential as well as residential buildings.

HEATING

Maximum benefit would be obtained from passive solar gain, using suitable glazing, as well as solar collectors where practicable. Higher density areas would be suitable for district heating. Combined heat and power generation would also be considered. In lower density areas individual multi-fuel stoves would be appropriate.

MATERIALS

The use of renewable timber would be maximised and the use of fossil fuel-based plastics and chemicals minimised where practicable, including paints. Stone, turf, earth, recycled and other local materials would be encouraged. Lime would be used instead of cement where practicable.

CONSTRUCTION

The amount of ground that would be disturbed would be minimised and likewise the amount removed from site. Where possible excess soil or spoil would be used in the landscaping, as banks or screens. For foundations, the amount of concrete would be minimised and where feasible low-energy concrete would be used. Walls and roofs would be highly insulated, breathable and well sealed. Roofs would generally be of timber construction, using a variety of surface finishes. Ventilation, vents and flues are co-ordinated into special ridge fittings. Where practicable, the construction would suit self-build and local contractors, not just to benefit the local economy, but also to ease future adaptions and maintenance.

FITTINGS & EQUIPMENT

Where possible, supplied fittings would be low-energy or intelligent, minimise CO^2 emissions and the use of water. Rainwater collection would be carried out where possible.