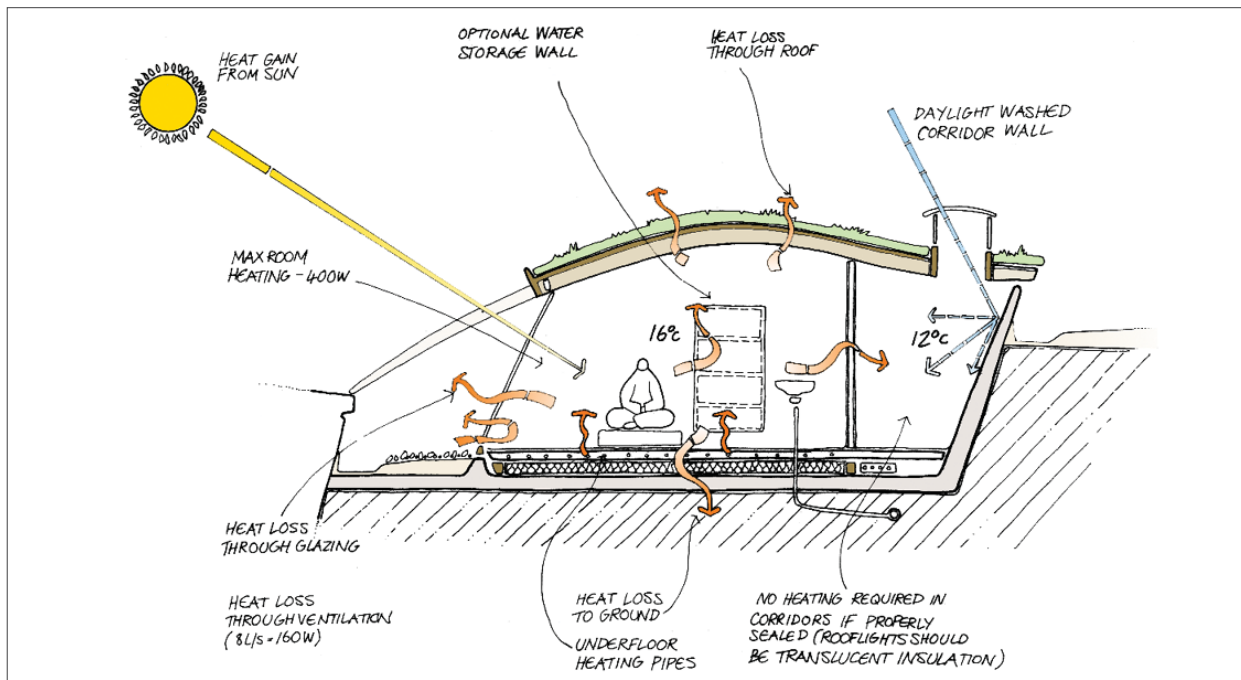


BATTLE McCARTHY ©

Consulting Engineers & Landscape Architects



PROJECT:

Tibetan Retreat, Holy Island, Scotland

CLIENT:

Classified

ARCHITECTS:

Andrew Wright Associates

BM SERVICES:

Sustainable Masterplanning, Landscape Architecture & Multi-disciplinary Engineering

VALUE:

£10million

DESIGN BRIEF

To develop an integrated strategy for a self-sustaining development to house a Buddhist community. The building was designed to be totally self sufficient in terms of energy water, waste processing and food production.

DESIGN INITIATIVES/ACTIONS UNDERTAKEN

The critical elements of the engineering strategy were:

- Southern orientation with no overshadowing to maximise passive solar gain.
- Earth sheltering to reduce heat loss by taking advantage of the stability of ground temperatures compared to air temperatures.
- Heavyweight construction to reduce temperature fluctuation by making use of thermal mass.
- High levels of insulation to reduce heat loss and energy use.
- Trombe walls to store the sun's heat during the day and radiate to the rooms at night.
- Thermal shutters to reduce heat loss at night.
- Maximise day-lighting to reduce lighting energy use.

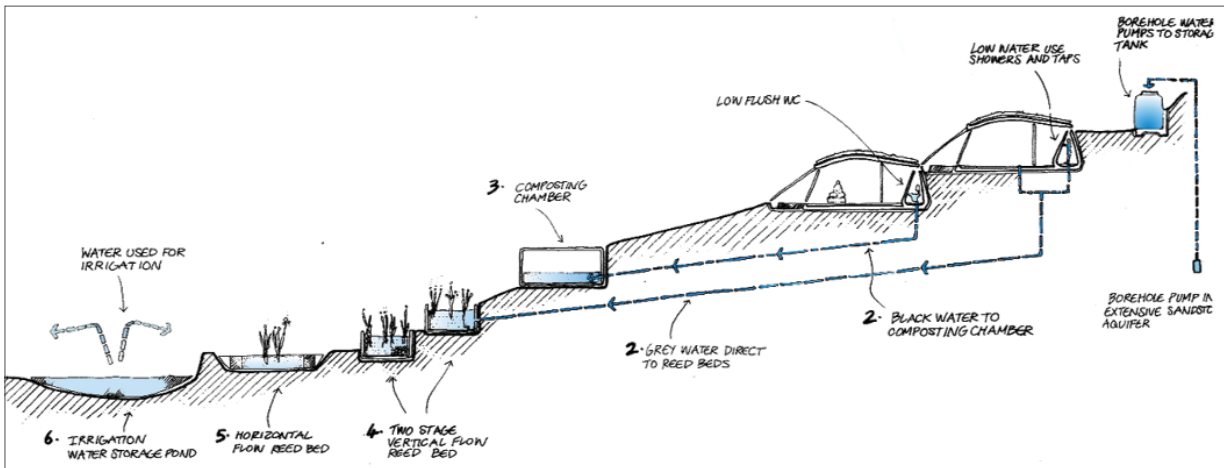
The strategy was developed through specialist analysis carried out with integrated environmental solutions. Dynamic thermal analysis was used to examine how the energy and environmental performance of a group of 3 rooms changes with each of the above measures.

As a result of the analysis, the Holy Island retreats were designed to be very low energy buildings, with an expected energy use of 68kWh/m². This is a 68 per cent saving over a conventional building and shows a running cost saving of at least £35,000 per year.

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AWARDS

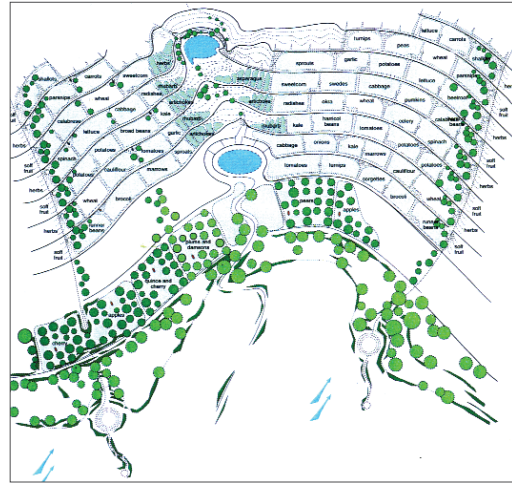
Royal Academy Bovis/Architectural Journal (grand prize) 1994



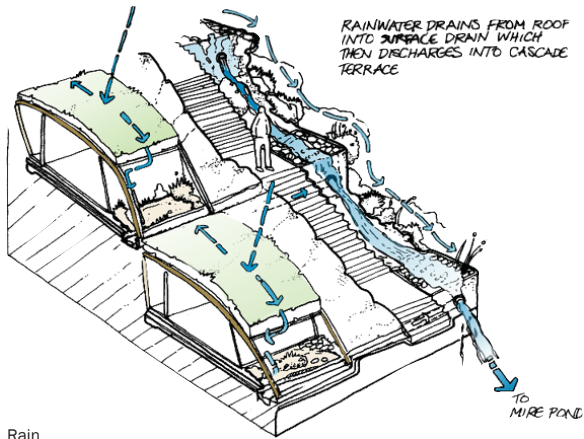
Water Cycle

The energy design of the building was only one aspect of the integrated strategy which also included:

- Landscape and Ecology
- Energy
- Water
- Waste



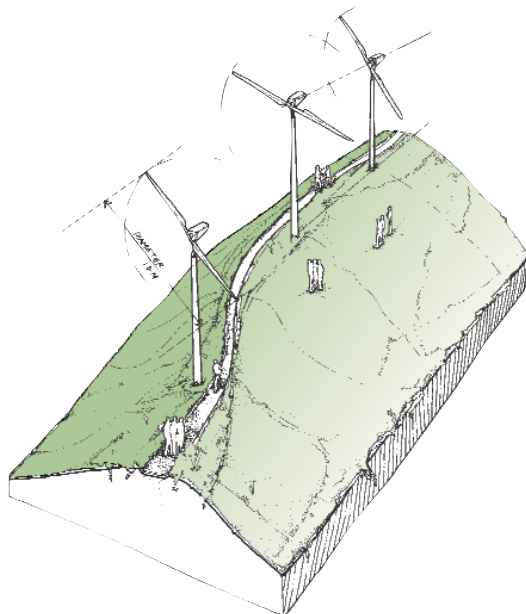
Crops Planning



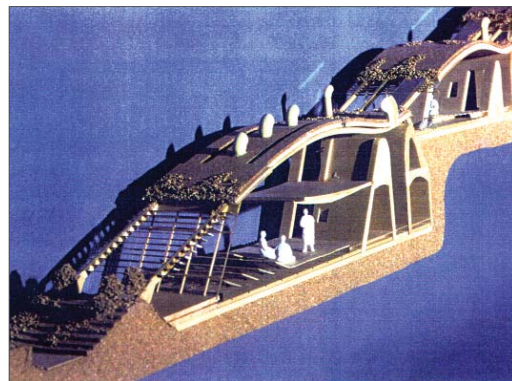
Rain



Aerial View of Holy Island



Wind



Section of Holy Island