

**Heat Conservation and Efficient Heat Distribution**  
Insulation Values – U-Value W/m<sup>2</sup>K, External Walls - 0.25, Roof - 0.20, Ground Floor - 0.20, Double Glazing - 1.9, Translucent Fibreglass Sandwich Panel - 1.41  
Heavy Mass Structure, retention of heat within insulated fabric  
Low temperature underfloor heating, distributed through structural floors  
Passive solar gains – through south facing glazing and ramp structure  
Elevated solar absorption of renewables – away from potential shading and at efficient angles  
Efficient low energy lighting utilised where possible  
Combined heat and power unit fuelled from short rotation willow coppice crop grown on site

**Renewable Energy - Predicted Annual Generation**  
Biomass Combined Heat and Power Unit – 478GJ Heat, 191 GJ Electricity  
Solar Water Collectors – 176 GJ Heat  
Wind Turbine – 93 GJ Electricity  
Photovoltaic Array – 46 GJ Electricity  
Predicted energy generation from renewables will be 71% of total predicted energy consumption

**On Site Waste Processing**  
1600 m<sup>2</sup> Reed Bed processing effluent discharge from the building

**Material Selection**  
Where possible, PVC is not used. Alternative materials were used for electrical conduits and cabling, plumbing and roof membrane  
Durable and potentially recyclable materials were used, copper, steel and concrete. Where possible renewables were used, timber stud partitions, external timber cladding, timber structures and floors  
All timbers used were FSC certified  
Use of organic and mineral paints  
Sustainable landscape management – avoidance of residual herbicides, fertiliser and pesticides

**Environmental Improvements and Town Connections**  
Construction of new pedestrian and cycle path from existing housing estate to Town centre  
Increasing bio-diversity through sustainable park management  
Creation of diversity of habitats through new planting, retention of existing trees and new lake construction



WDR & RT TAGGART

