HTA Innovation and Sustainability Unit

- Focussed on sustainable placemaking to meet Code for Sustinable Homes (4* - 6*)
- Working with materials and product suppliers to prepare for future markets
- Understand the policy and legislative framework for the housing industry
- An established name in the forefront of housing design for 30 years.

Rory Bergin B Arch
M. Sc. Intelligent Buildings

15 years experience in UK Housing design and construction.

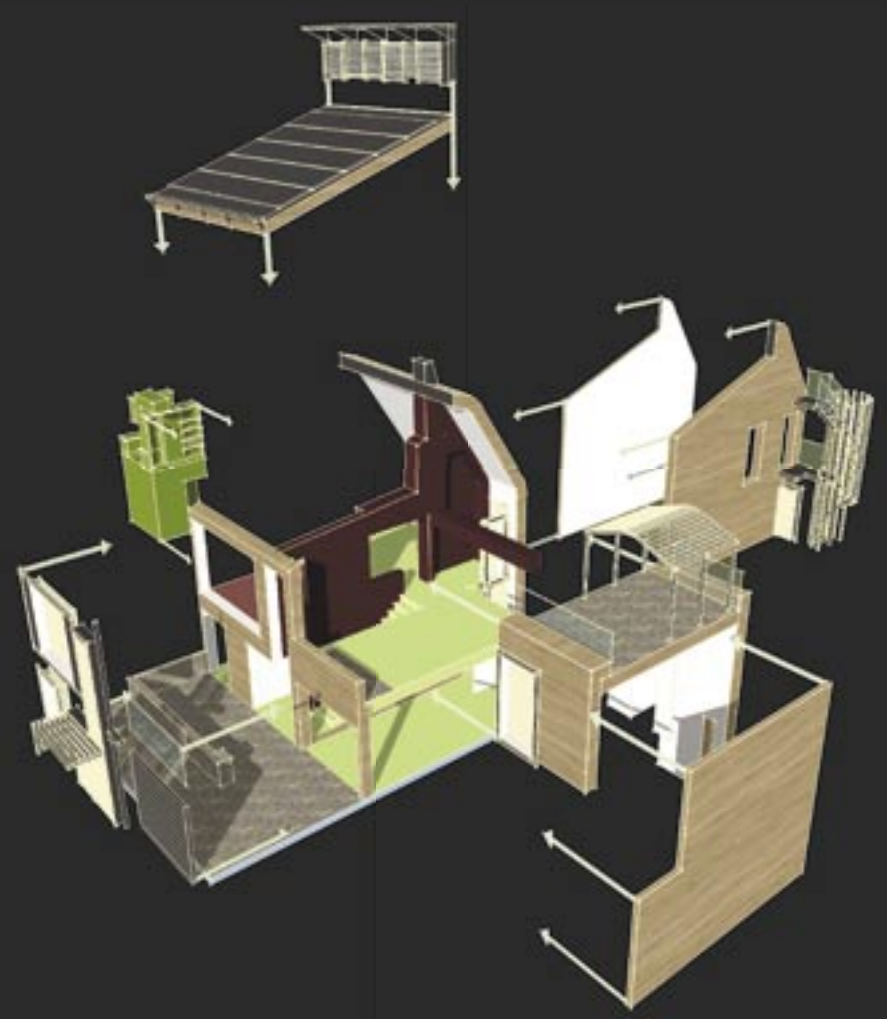
Home of the Future

HTA

Introduction

- Low Carbon Design
- Levels 5/6 for Code for Sustainable Homes
- Generates energy for lighting, heating, pumps on-site (5*)
- Can integrate with Combined Heat and Power (CHP) system for zero carbon energy (6*)

- Living Accommodation upstairs
- Complies with Housing Corporation SDS and Lifetime Homes standards
- Simple construction doesn't require highly skilled industry
- Recyclable materials
- Oriented South, with clerestorey to get winter light

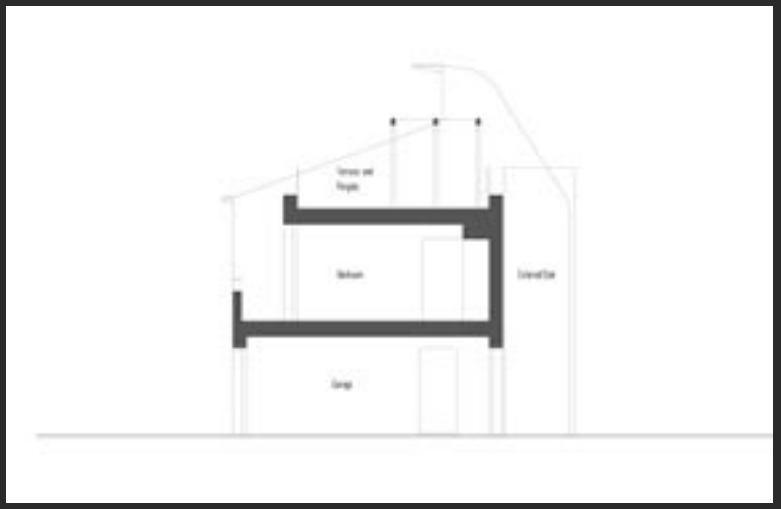


Plans

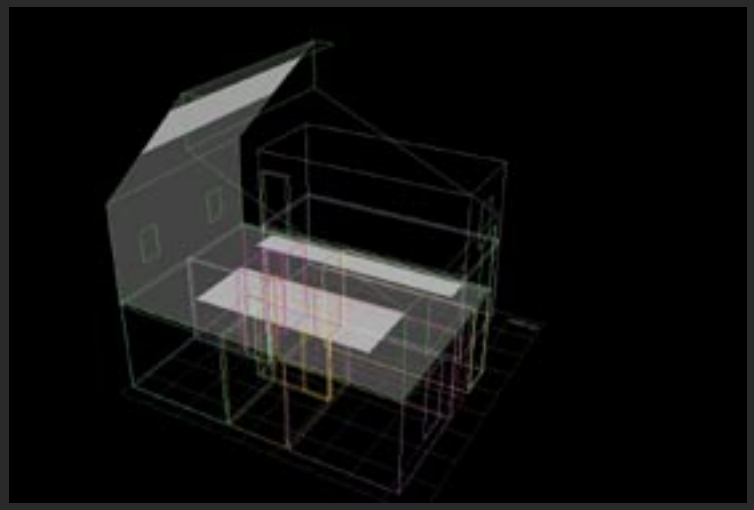
- Open living\dining
- master suite upstairs over garage
- Kitchen and main bathroom stacked for easy installation of services

Section

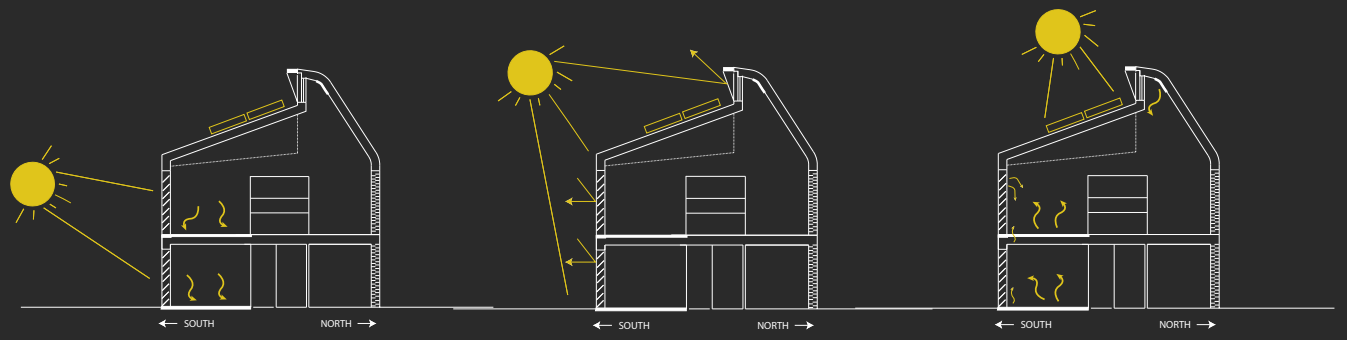
- Clerestorey light illuminates centre of the plan
- Shading stops summer sun overheating living spaces
- Master bedroom has south facing terrace



Light and Orientation



- Passive energy to high standard, 300mm insulation in walls, 450 in roof.
- Oriented South to gain solar energy, roof can rotate to deal with other orientations
- Clerestorey window lets in winter light and lets out summer hot air
- Dense floor and phase-change wall materials act as thermal mass heat stores



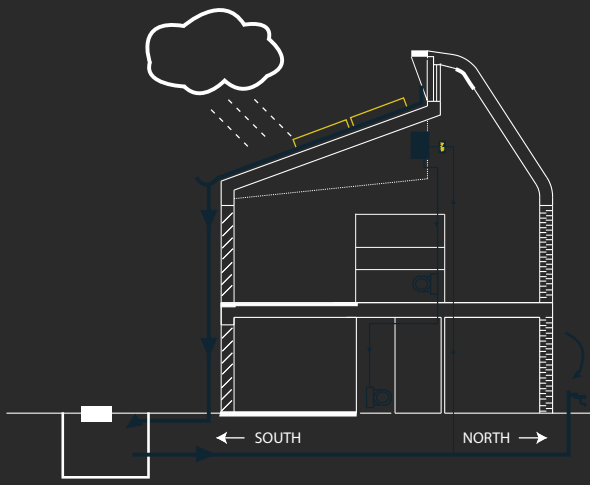
Low sun warms floor,air and walls

Medium sun warms water, lights rooms

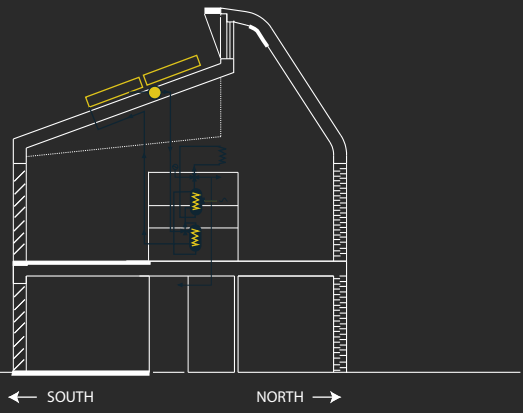
High sun warms water, not allowed into interior

Sustainability

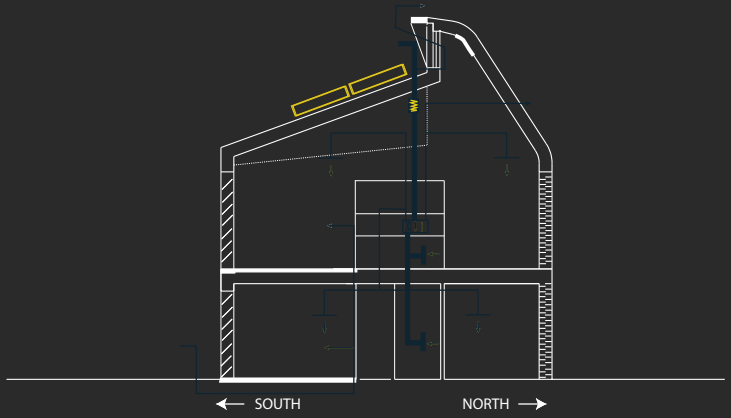
- Rainwater usage reduced to 80l/p/d
  low flush wc, aerated taps, rainwater recycling
- Solar heating used to boost hot water system
- Electric immersion backup
- Biomass boiler when required



Rainwater collection and storage



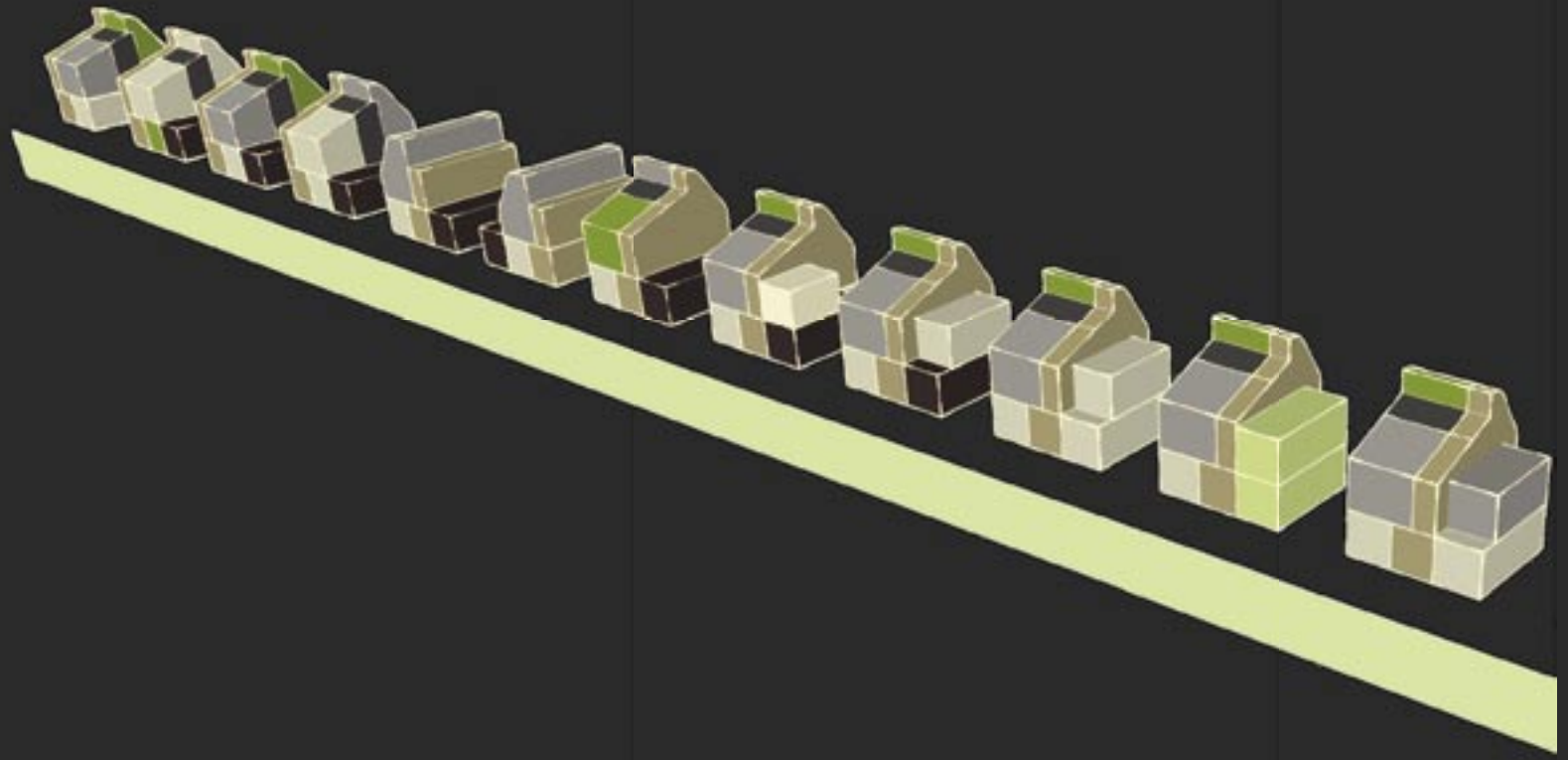
Solar Hot Water system



Fresh air drawn in underground to preheat in winter and precool in summer

Adaptability

- Housetype can be adapted over time
- Start with no garage
- Add garage
- Add room over garage
- convert garage to live/ work or granny flat



High Density

- House can be built as a terrace for high density living

Home of the Future

- House can be built as a terrace for high density living
- Materials that are sustainable, recyclable, affordable, attractive, enjoyable, appealing
- Sustainable features which are invisible/ transparent to the occupier.

Materials

- Walls and Roof:
  TRADIS wooden panels filled with recycled paper
- Internal partitions:
  Strawboard panels
- Windows:
  Wood, triple glazed
- Biomass boiler or CHP plant
- BASF Smartboard phase-change material for thermal mass
- Tiled floor
- Inert materials, no ofgassing, breatheable fabric
- Materials can be recycled or reused

Products and Systems

- Rainwater harvesting and water metering
- 'Thermal mass'
- Triple glazing with integral blinds
- Whole house ventilation with heat recovery
- Biomass boiler
- Connection to Combind Heat and Power system with metering
- Renewable power from PV with metering
- Integrated controls
- Airtight construction