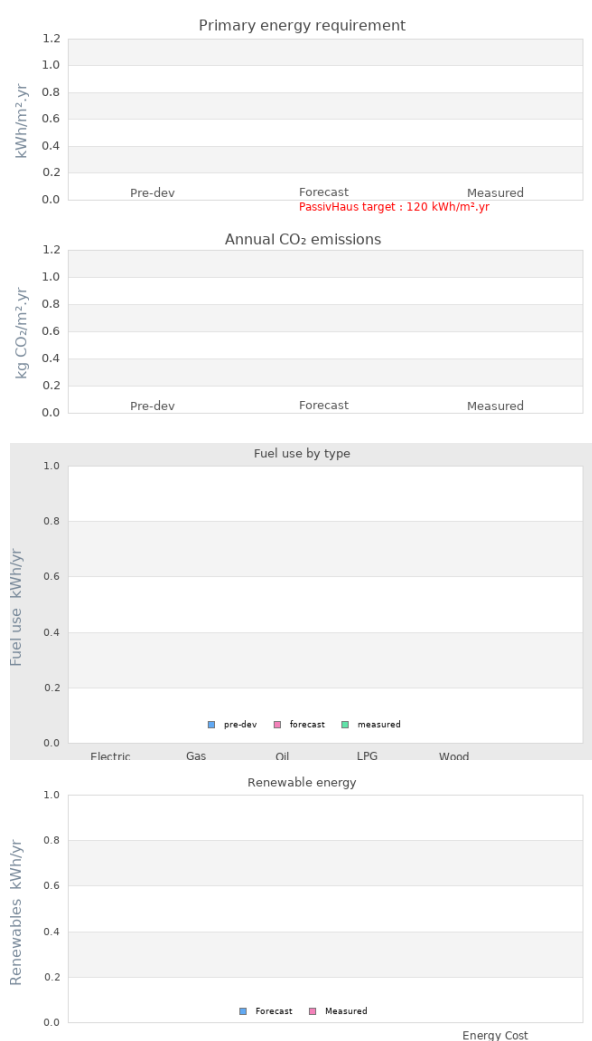


Project name Plummerswood

Project summary Plummerswood sits in a regenerating biodiverse woodland setting overlooking the Tweed Valley in the Scottish Borders. The project embodies Howard Liddells eco-minimalist philosophy and Gaia's lifecycle approach to innovation involving research, design, evaluation & feedback, dissemination, training and capacity building. Plummerswood is designed on ecological principles to create a contemporary, healthy, comfortable, energy efficient home. The issues include resource effectiveness, toxicity cycles, indoor climate control, sustainable forestry, modern manufacturing enhancing biodiversity and sequestration. The house is the first passive standard house to be constructed in the UK using Brettstapel - a glueless, dowelled, mass timber system. This construction technique has been pioneered by Gaia to demonstrate the potential for innovative use of the UK's extensive forest resource.



Project Description

Projected build start date

Projected date of occupation 01 Nov 2011

Project stage Occupied

Project location Innerleithen, Borders, Scotland

Energy target PassivHaus

Build type New build

Building sector	Private Residential
Property type	Detached
Existing external wall construction	Other
Existing external wall additional information	Brettstapel - glueless, dowelled, mass timber system
Existing party wall construction	
Floor area	297 m ²
Floor area calculation method	PHPP
Building certification	Passivhaus certified

Project team

Organisation	Gaia Architects
Project lead	Gaia Architects
Client	Mr & Mrs I Nimmo
Architect	Gaia Architects
Mechanical & electrical consultant(s)	Mott MacDonald, Harley Haddow
Energy consultant(s)	
Structural engineer	
Quantity surveyor	
Other consultant	
Contractor	Rodger (Builders) Ltd

Design strategies

Planned occupancy	Occupied by two persons since November 2011.
Space heating strategy	Mechanical Ventilation Heat Recovery (MVHR) unit to provide space heating.
Water heating strategy	Passive solar water heating.
Fuel strategy	Mains gas and electricity.
Renewable energy generation strategy	Solar thermal hot water panels.
Passive solar strategy	
Space cooling strategy	MVHR unit. External blinds to limit direct solar gains.
Daylighting strategy	

Ventilation
strategy

Airtightness strategy Airtightness membrane.

Strategy for
minimising
thermal
bridges

Modelling
strategy

Insulation
strategy

Other
relevant
retrofit
strategies

Other
information
(constraints
or
opportunities
influencing
project
design or
outcomes)

Energy use

Fuel use by type (kWh/yr)

Fuel	previous	forecast	measured
Electric			
Gas			
Oil			
LPG			
Wood			

Primary energy requirement & CO2 emissions

	previous	forecast	measured
Annual CO2 emissions (kg CO2/m ² .yr)	-	-	-
Primary energy requirement (kWh/m ² .yr)	-	-	-

Renewable energy (kWh/yr)

Renewables technology	forecast	measured
-		
-		

Renewables technology	forecast	measured
Energy consumed by generation		

Airtightness (m³/m².hr @ 50 Pascals)

	Date of test	Test result
Pre-development airtightness	-	-
Final airtightness	-	0.6

Annual space heat demand (kWh/m².yr)

	Pre-development	forecast	measured
Space heat demand	-	-	14

Whole house energy calculation method

Other energy calculation method

Predicted annual heating load

-

Other energy target(s)

Building services

Occupancy

Space heating

Hot water

Ventilation

Controls

Cooking

Lighting

Appliances

Renewables

Strategy for minimising thermal bridges

Building construction

Storeys 2

Volume

Thermal fabric area

Roof description

Roof U-value 0.08W/m² K

Walls description

Walls U-value 0.12W/m² K

Party walls description

Party walls U-value

Floor description	
Floor U-value	0.15W/m ² K
Glazed doors description	
Glazed doors U-value	
Opaque doors description	
Opaque doors U-value	0.80W/m ² K installed
Windows description	
Windows U-value	0.86W/m ² K installed
Windows energy transmittance (G-value)	
Windows light transmittance	
Rooflights description	
Rooflights light transmittance	
Rooflights U-value	

Project images







