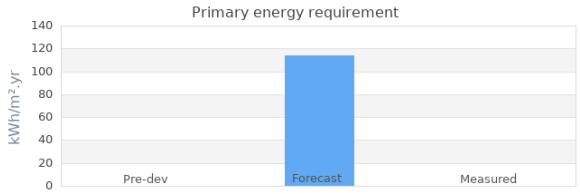
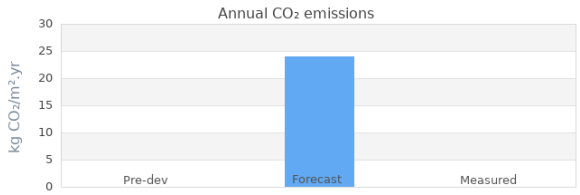
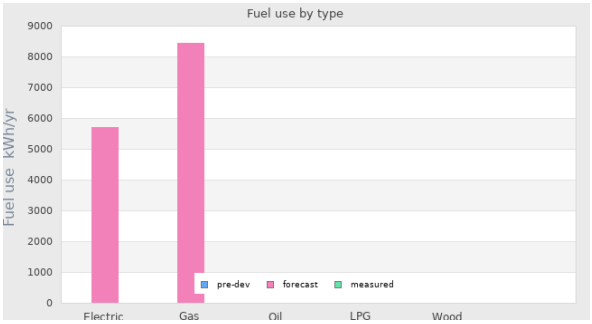
https://www.lowenergybuildings.org.uk/

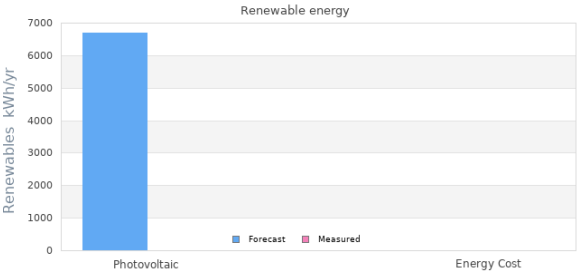
Project name Centre for Disability Studies: The Peter Broughton Wing

Project summary Simmonds.Mills Architects were commissioned by Disability Essex, a charity based in Essex, UK. The Centre for Disability Studies has been designed as two closely linked buildings; a North Wing, Jean Strutt House and a South Wing, The Peter Broughton Wing. The brief for the The Peter Broughton Wing called for a sustainable building that would provide lettable open plan multipurpose space for the charity to rent out to similar organisations.









Project Description

Projected build start date	01 Mar 2009
Projected date of occupation	07 Mar 2010
Project stage	Occupied
Project location	Rochford, Essex, England
Energy target	
Build type	New build
Building sector	Public
Property type	Detached
Existing external wall construction	Other
Existing external wall additional information	Single skin blockwork with external insulation

Existing party wall construction	
Floor area	211 m²
Floor area calculation method	PHPP
Building certification	Passivhaus certified

Project team

Organisation	Disability Essex
Project lead	Richard Boyd and Stuart Kirk
Client	Disability Essex
Architect	Simmonds.Mills
Mechanical & electrical consultant(s)	Alan Clarke
Energy consultant(s)	David Olivier
Structural engineer	Bob Johnson
Quantity surveyor	Bowen Associates
Other consultant	Maxine Narborough & Solar Century
Contractor	DCH Construction

Design strategies

Planned occupancy	
Space heating strategy	1.Extensive passive solar gain.2.Ventilation heat recovery.3.Ground brine loop and heat exchanger, forpre-heating of supply air to MVHR.4. radiators fed from small domestic (natural gas) boiler in plant room of linked building to the north..
Water heating strategy	1. taps fed from (natural gas) boiler and DHW cylinder in plant room of linked building to the north.2. Solar thermal (evacuated tubes)3. insulated hot and cold water pipework - circulating system.
Fuel strategy	1. Natural gas (minimised use of)2. mains electricity
Renewable energy generation strategy	1. Photovoltaic panels on freestanding walkway canopy. Not factored in to passivhaus certification. Forecast figure for electricity generated split between the two linked buildings.
Passive solar strategy	Lots of it!
Space cooling strategy	1. Passive ventilation via openable windows2. Summer bypass facility on MVHR.3. Ground brine loop and heat exchanger,for pre-cooling of supply air to MVHR.4. careful design for solar control andshading.

Daylighting strategy	Extensive daylighting - using extensivesouth facing high level glazing.
Ventilation strategy	1. MVHR.2. Natural ventilation for night time coolingand as required
Airtightness strategy	Air - vapour membranes to ceilings &windows to plastered blockwork to concreteraft. Careful detailing and workmanshiparound service penetrations.
Strategy for minimising thermal bridges	Thermal bridge free detailing, referencingAECB CarbonLite guidance.
Modelling strategy	PHPP.Daylight modelling.SBEM.
Insulation strategy	external wall insulation approaches to walls(areas of Timber clad Larsen trusses andareas of rendered EPS EWI). Load bearingunderfloor insulation (below structural raft).Full fill blown insulation to I beamsuperstructure. Excellent thermal integritythrough careful design and workmanship.
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		5697	
Gas		8449	
Oil			
LPG			
Wood			

Primary energy requirement & CO2 emissions

	previous	forecast	measured
Annual CO2 emissions (kg CO2/m².yr)	-	24	-
Primary energy requirement (kWh/m².yr)	-	114	-

Renewable energy (kWh/yr)

Renewables technology	forecast	measured
Photovoltaic	6705	
-		
Energy consumed by generation		

Airtightness ($m^3/m^2.hr$ @ 50 Pascals)

	Date of test	Test result
Pre-development airtightness	-	-
Final airtightness	-	0.33

Annual space heat demand (kWh/m^2.yr)

	Pre-development	forecast	measured
Space heat demand	-	14	-

Whole house energy calculation method	PHPP
Other energy calculation method	Note forecast space heat demand and gas use based on RFF room temperature of 21C.
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	
Volume	
Thermal fabric area	
Roof description	
Roof U-value	
Walls description	
Walls U-value	
Party walls description	
Party walls U-value	
Floor description	
Floor U-value	

Glazed doors description
Glazed doors U-value
Opaque doors description
Opaque doors U-value
Windows description
Windows U-value
Windows energy transmittance (G-value)
Windows light transmittance
Rooflights description
Rooflights light transmittance
Rooflights U-value

Project images


Simmonds Mills