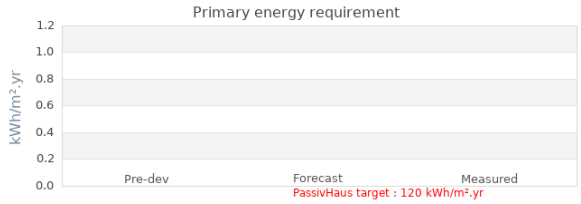
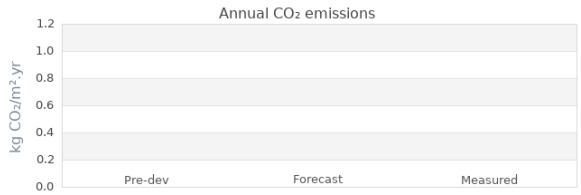
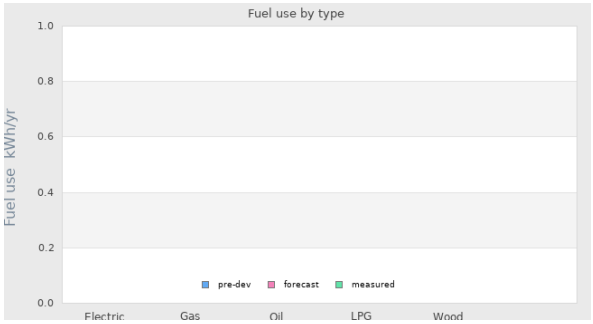
https://www.lowenergybuildings.org.uk/

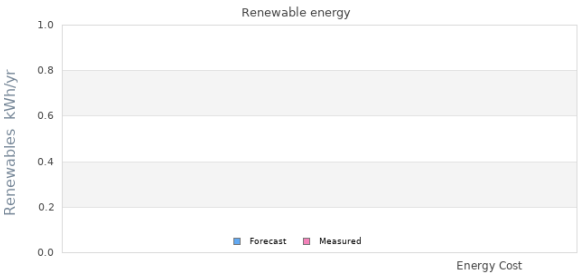
Project name Lynn Crescent Passive House, Orkney

Project summary The project transformed a disused former boiler house and biomass store into new residential home for Orkney Housing Association. The existing single storey building was utilitarian in appearance, set within a residential area. The boiler house comprised masonry walls and concrete tiled pitched roof, while the biomass store's walls were of thick reinforced concrete. The design philosophy aimed to:1. Preserve as much of the existing fabric as possible.2. Transform the building to have a domestic appearance.3. Achieve a low energy solution to minimise the residents fuel bills.4. Achieve Passivhaus Certification.The Lynn Crescent Passive House is the most northerly Certified Passivhaus in the United Kingdom, and the smallest inhabited Passivhaus in the Northern Hemisphere.









Project Description

Projected build start date	
Projected date of occupation	
Project stage	Occupied
Project location	Kirkwall, , Scotland
Energy target	PassivHaus
Build type	Mixed

Building sector	Public Residential
Property type	Detached
Existing external wall construction	Other
Existing external wall additional information	
Existing party wall construction	
Floor area	40 m²
Floor area calculation method	
Building certification	Passivhaus certified

Project team

Organisation	Orkney Housing Association
Project lead	
Client	
Architect	Robert Potter & Partners in association with Architeco
Mechanical & electrical consultant(s)	
Energy consultant(s)	
Structural engineer	
Quantity surveyor	
Other consultant	
Contractor	Orkney Builders Ltd

Design strategies

Planned occupancy
Space heating strategy
Water heating strategy
Fuel strategy
Renewable energy generation strategy
Passive solar strategy
Space cooling strategy
Daylighting strategy
Ventilation strategy
Airtightness strategy
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/m².yr)	-	-	-
Primary energy requirement (kWh/m².yr)	-	-	-

Renewable energy (kWh/yr)

Renewables technology	forecast	measured
-		
-		
Energy consumed by generation		

Airtightness (m³/m².hr @ 50 Pascals)

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

Annual space heat demand (kWh/m².yr)

	Pre-development	forecast	measured
Space heat demand	-	-	-

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
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