



UK Research
and Innovation

Active Building/Home of 2030 Project

Joanna Clarke

Architect and Head of Design

9th January 2020



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Agenda



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9.00 Introductions, consent forms and pre-briefing Questionnaire

9.15 Presentation

9.45 Tour of Active Buildings

10.30 Wrap up and questions

11.00 Close

My background



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Architect in Practice



1999 - 2013

SPECIFIC IKC



2013 - 2018

2017 – started D.SBE

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2019 - present

Introduction to Active Buildings



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“An Active Building supports the energy network by intelligently integrating renewable energy technologies for heat, power and transport”



Buildings and Climate



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- 36%** The percentage of global energy devoted to buildings and construction. 22% is residential buildings usage, 8% is non-residential usage, and 6% is the construction industry.
- 82%** The global energy consumption in buildings supplied by fossil fuels in 2015.
- 25%** The amount of energy in the UK supplied by renewable sources, representing a steady increase since 1998.
- 70%** The percentage of energy use in UK buildings devoted to heating. 19% is devoted to cooling, 7% is devoted to hot water, and 4% is devoted to lighting.
- 33%** The share of global energy-related greenhouse gas emissions emitted by buildings. This makes them the single biggest global emitter by sector.

Political Context



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Energy Performance of Buildings Directive (EPBD)

- reduce GHG emissions by 20% below 1990 levels

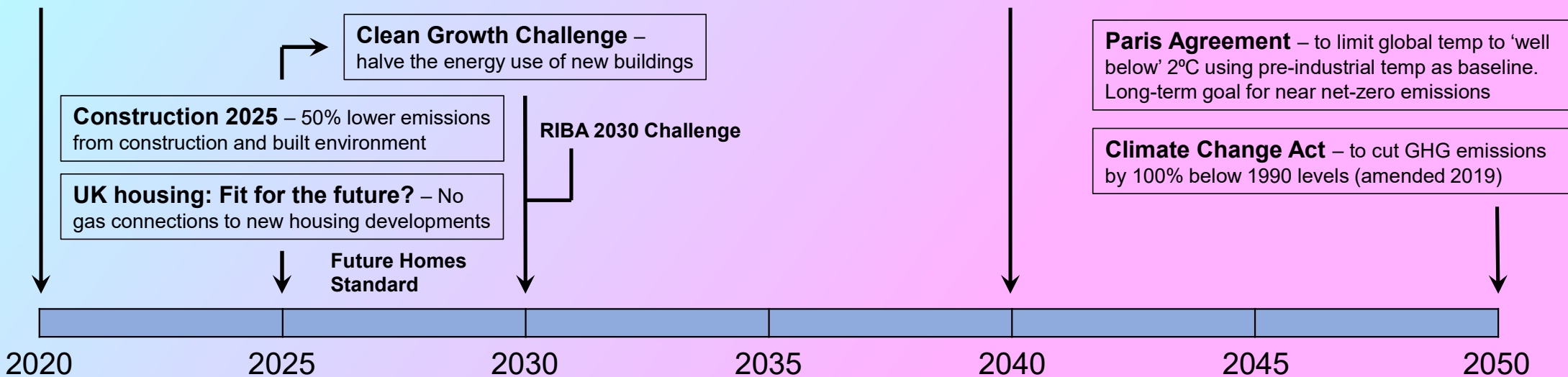
EU 20-20-20 – 20% less GHG emissions, 20% of EU energy from renewables, 20% better energy efficiency

UK Renewable Energy Strategy – 30% of electricity, 12% of heat and 10% of transport energy to come from renewable sources (to meet EU 20-20-20 targets)

Climate Change Strategy for Wales – 3%/yr target less GHG emissions - 40% reduction below 1990 levels

Also, in 2015, WG launched the **Well-being of Future Generations (Wales) Act** – seven well-being goals: A prosperous Wales; A resilient Wales; A healthier Wales; A more equal Wales; A Wales of cohesive communities; A Wales of vibrant culture and thriving Welsh language; A globally responsive Wales

Road to Zero Strategy – at least 50%, and up to 70% of new car sales and up to 40% of new van sales to be ultra low emission by 2030. No new petrol and diesel cars and vans by 2040



The 6 Active Building Principles



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Active Building Case Studies



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Jan – Sept 2014



The Active Pod

Jan – Sept 2016



The Active Classroom

Oct 2017 – June 2018



The Active Office

Dec 2015 – Nov 2019



Active Homes Neath

The Active Classroom

specific®



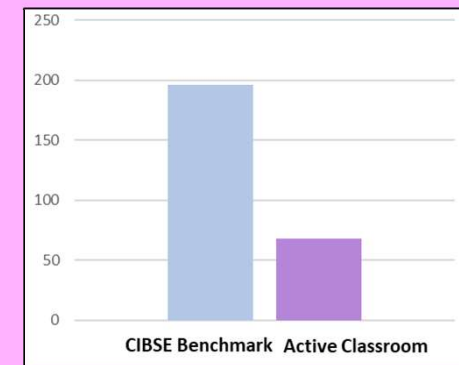
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Key Facts

- Constructed in 2016
- Solar PV, solar thermal, battery storage, novel resistive heating system, new form of construction
- Generated 5.5MWh excess electricity 2017–2018
(enough to travel 26,000 miles in a Nissan Leaf)



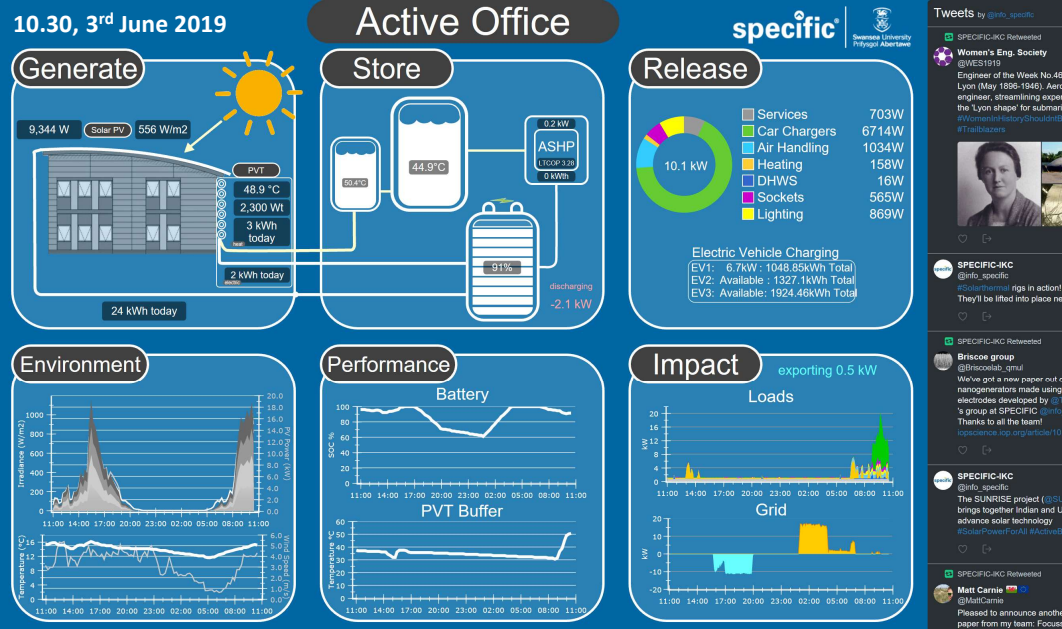
The Active Office

specific®



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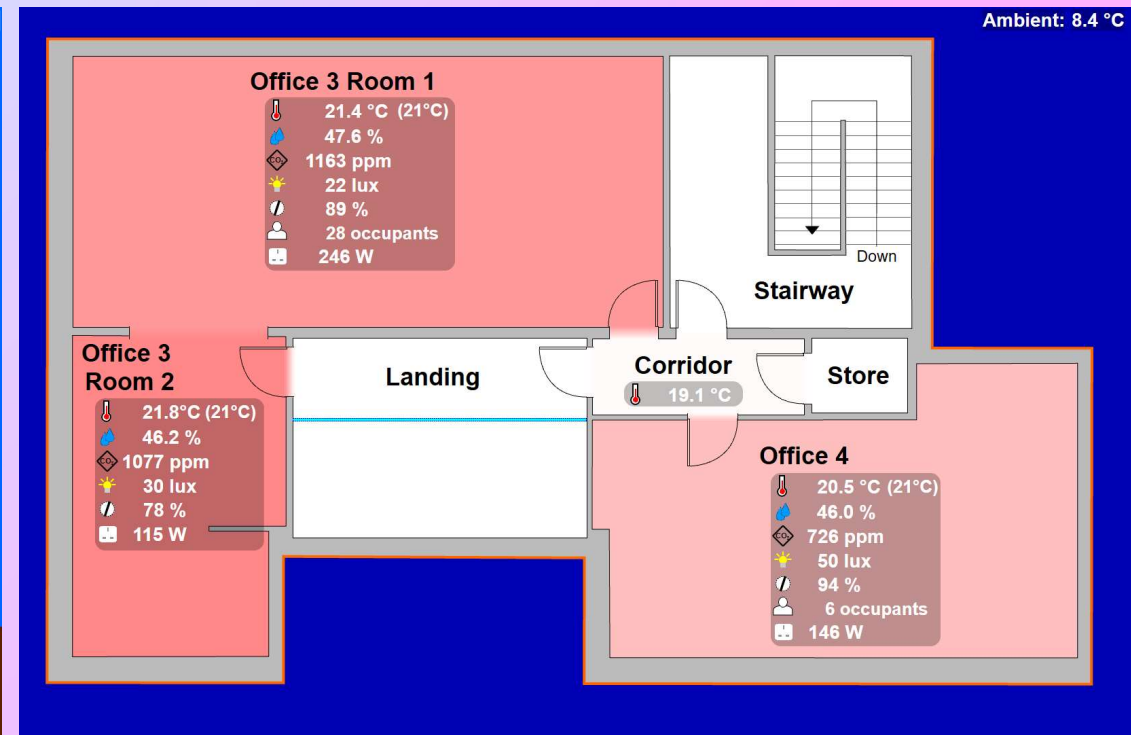
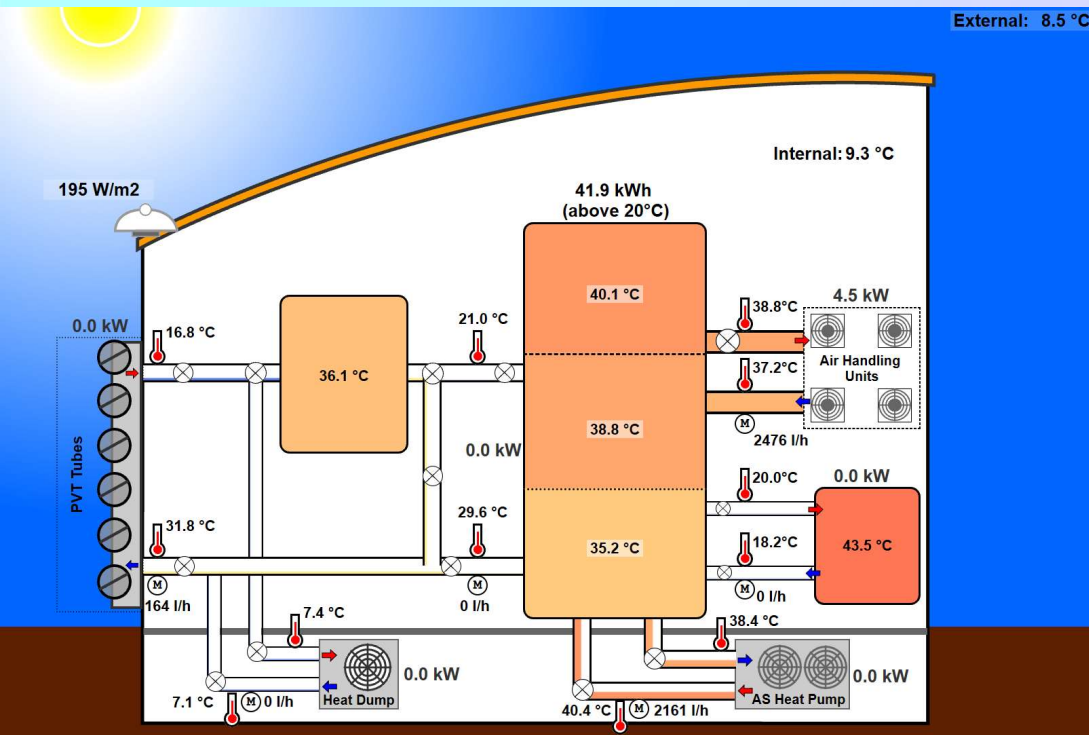
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11.00, 7th November 2019

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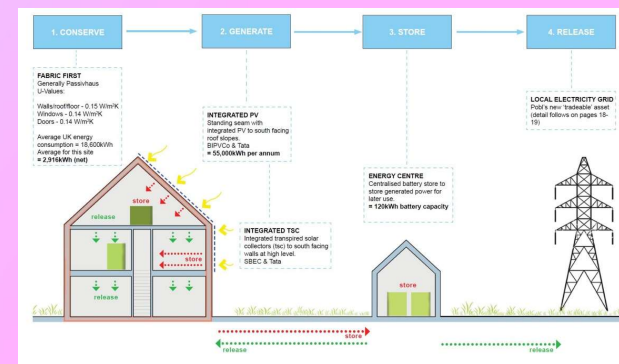
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Key Facts

- Constructed 2018 - 2019
- Solar PV, solar thermal, battery storage, EV charging
- 16 dwellings for social housing tenants
- Developed and delivered by a Social Housing Association – main aim to reduce fuel poverty
- BEIS Building for 2050 monitoring for 1 year occupation

pol
people making a difference



Your Project



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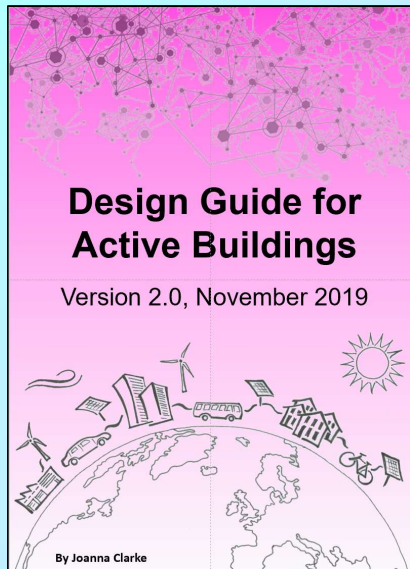
Three Aims:

1. To complete your Technology Module
2. To test my developing Active Building Design Guide
3. To enter the National Home of 2030 Competition

Active Building Design Guide



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Supporting
information for AB
projects

AB Student Guide

AB Worked
Examples

AB Course for
Installers

AB Teaching
Modules

AB Home of 2030
project

<https://www.homeof2030.com/the-challenge/>

Future Work:

Materials for ABs

AB Design Guide
for retrofit

AB Design Guide:
Residential
Commercial
Education
Industrial

Interactive web-
based guide

AB Design Guide
for different
countries

AB Standard

Home of 2030 Competition



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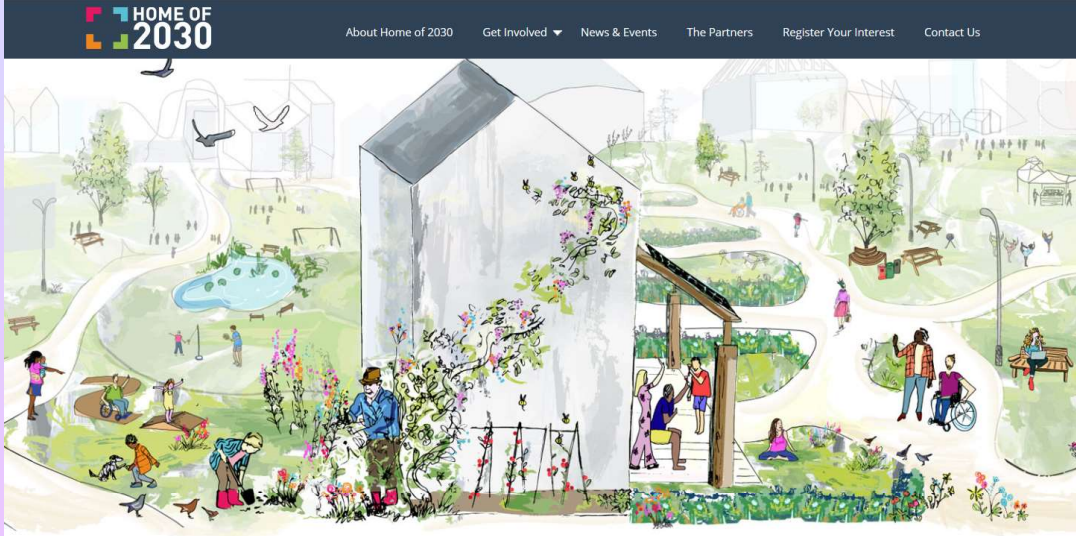
Project Brief

Design a house based on the **Active Building** principles and to meet the **Home of 2030** competition criteria.

The deadline for competition entries is **28th February**, so this will be an 8-week project, starting today.

Shortlisted entries will proceed to regional heats in late March 2020 and a national final in April/May 2020.

The winners and runners up will receive a cash donation towards school or college design equipment.



YOUNG PERSONS' DESIGN CHALLENGE

Home of 2030 has launched a national design challenge to create the home of the future.

We are asking young people to let their imaginations run free by designing an innovative and inspirational green home that meets the changing needs of future generations, including promoting wellbeing, quality of life and healthy ageing – the Home of 2030.



Home of 2030 Competition



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You need to submit:

- A summary of your proposals
- The research that has led you to your design, and any design changes that you made along the way explaining why you made those changes
- Design concept boards, sketches and drawings, (hand or CAD, plans, elevations, 3-D visuals, possibly a video 'walk through')
- Materials specification – the materials you have chosen to use and why
- Model(s) in any chosen format that best illustrates and explains your Home of 2030
- A logo and name for your Home of 2030



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joanna@activebuildingcentre.com



@ActiveBuildingC
@joanna_r_clarke

www.activebuildingcentre.com

www.designingactivebuildings.blog



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