Zero Carbon Yorkshire

Trans-Pennine Passivhaus Design: Design Challenges & Lessons Learned

Monday, 15th of October 2018

Guiding you through becoming a certified Passivhaus Designer or Consultant giving you the confidence to tackle UK Passivhaus projects

Passivhaus Trust
The UK Passive House Organisation

Passivhaus Trust Awards 2015
FINALIST
Large Projects Category

Erneley Close

Location: Longsight, Manchester

Completion Status: Completed May 2015

Occupancy: Occupied December 2014

Architect: 2E Architects

Consultant: Structural Engineer: Marston and Grundy, Mechanical Engineer: Alan Clarke, Passivhaus Consultant: Eric Parks

Contractor: Casey Group Ltd, Developer: R-Gen

Client: One Manchester Housing

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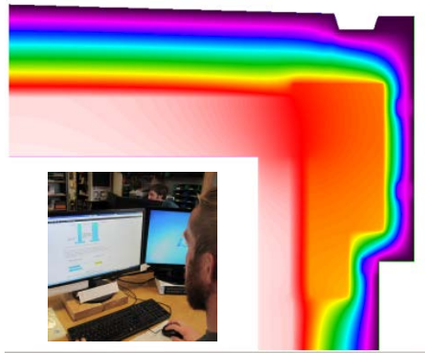

Architects Registration Board

Passivhaus Trust
The UK Passive House Organisation

AECB
building knowledge

BUCKROSE ECOLOGICAL ARCHITECTS

- Overview of our experience in designing to & towards Passivhaus across the region
- Emerging design-based challenges
- The increasing flexibility of Passivhaus

BUCKROSE ECOLOGICAL ARCHITECTS

Design variety

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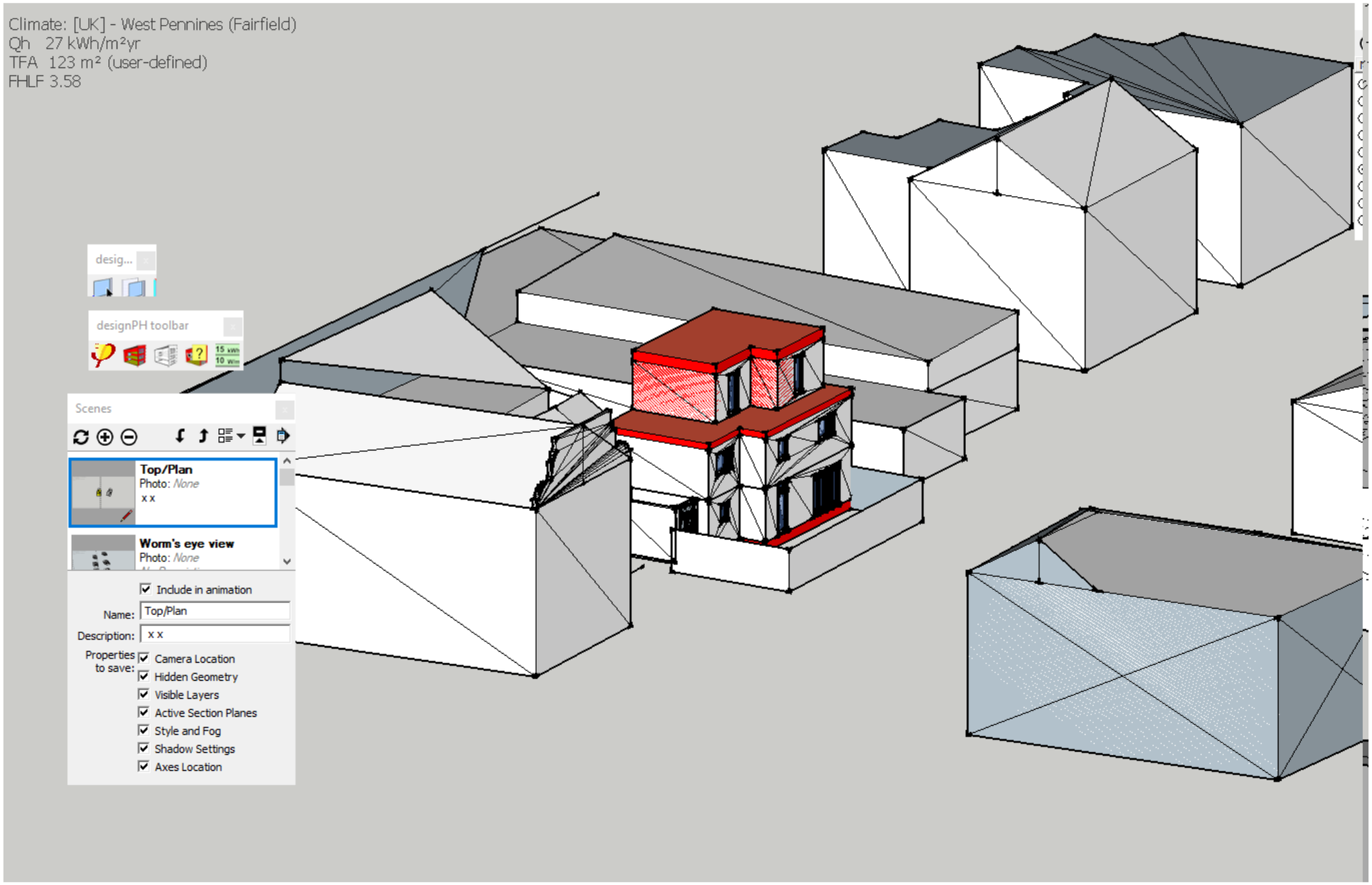
Process



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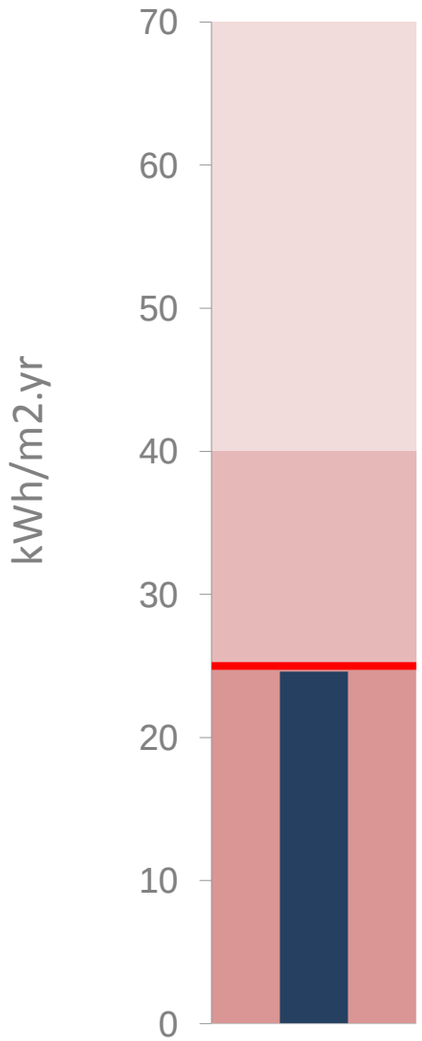
Space Heat Demand



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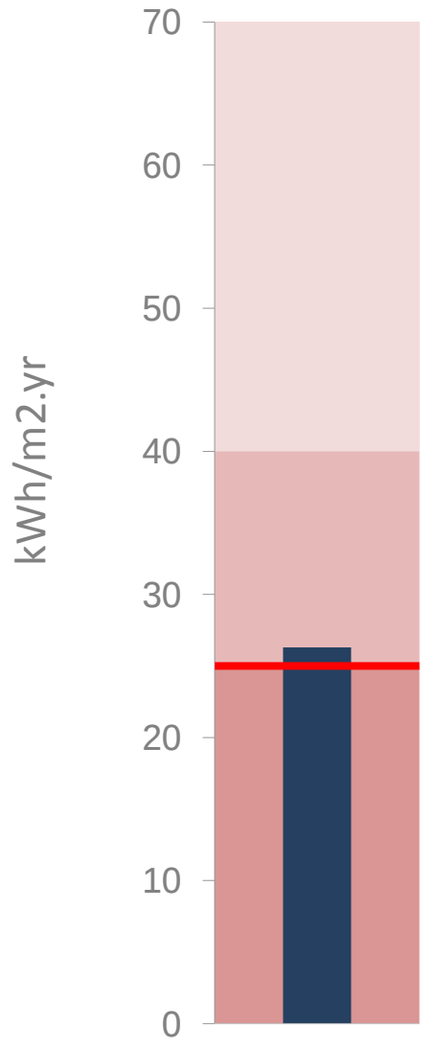

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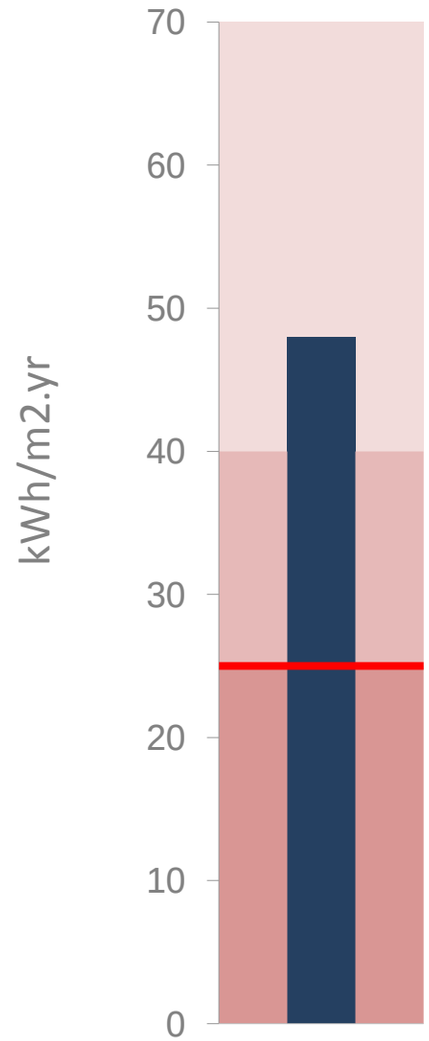

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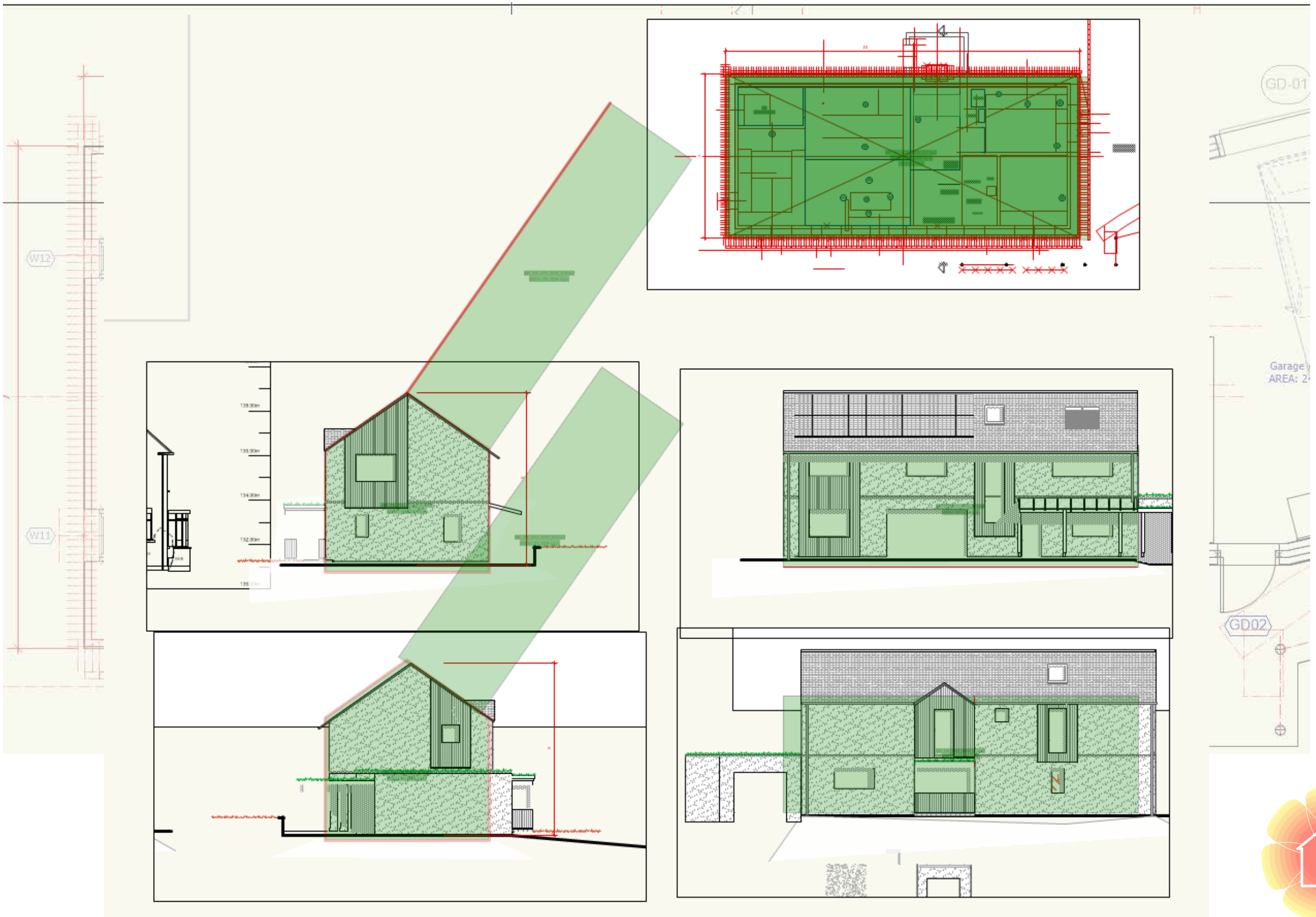
Process



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Challenges

- Climate / Location
- Client-led
  - Budget
  - Brief
- Planning
  - Planning &, or Conservation Area restrictions.
- Buildability & Materials
  - Available skills
  - Generic, industry- & lobby-led “standards” vs. genuine, viable low-carbon solutions
- Services

BUCKROSE ECOLOGICAL ARCHITECTS

Specific building characteristics with reference to the treated floor area

	Treated floor area m²	140.0
Space heating	Heating demand kWh/(m²a)	15
	Heating load W/m²	9

Specific building characteristics with reference to the treated floor area

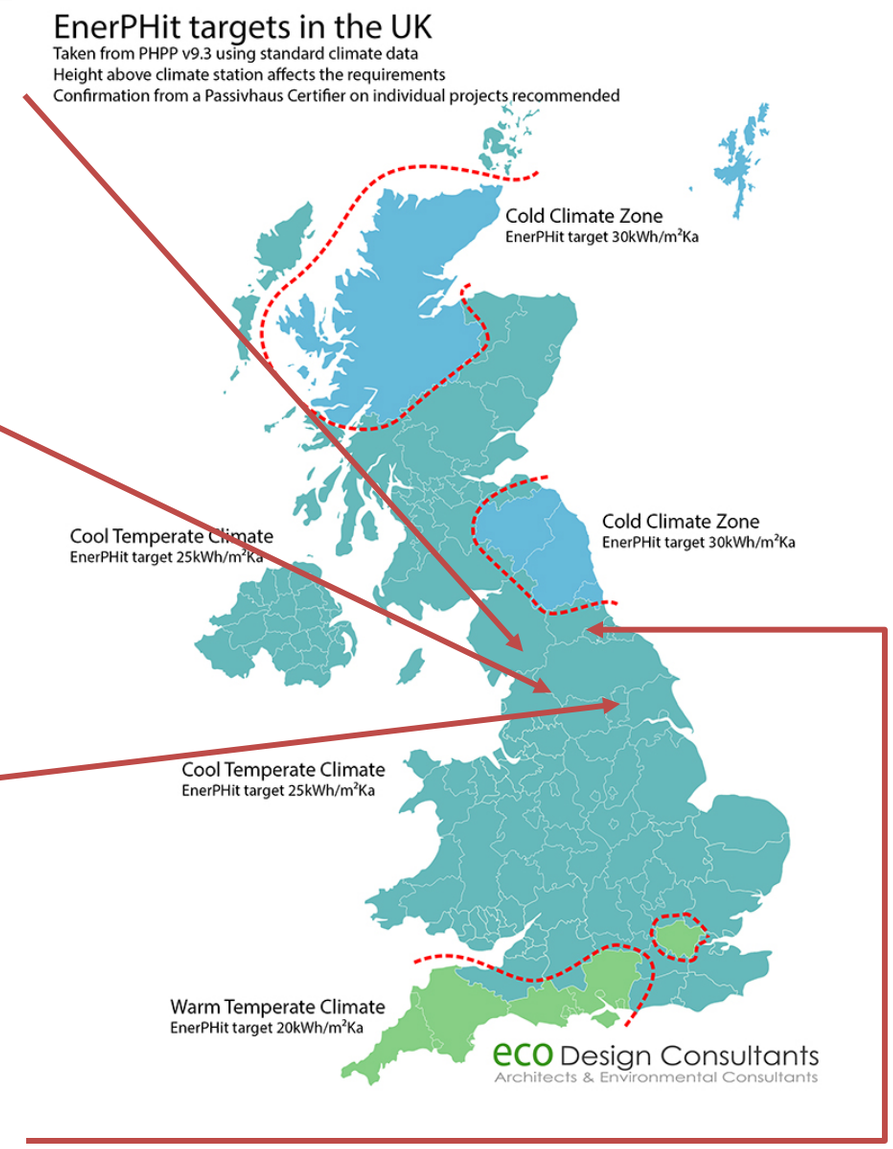
	Treated floor area m²	140.0
Space heating	Heating demand kWh/(m²a)	13
	Heating load W/m²	8

Specific building characteristics with reference to the treated floor area

	Treated floor area m²	140.0
Space heating	Heating demand kWh/(m²a)	14
	Heating load W/m²	8

Specific building characteristics with reference to the treated floor area

	Treated floor area m²	140.0
Space heating	Heating demand kWh/(m²a)	16
	Heating load W/m²	9



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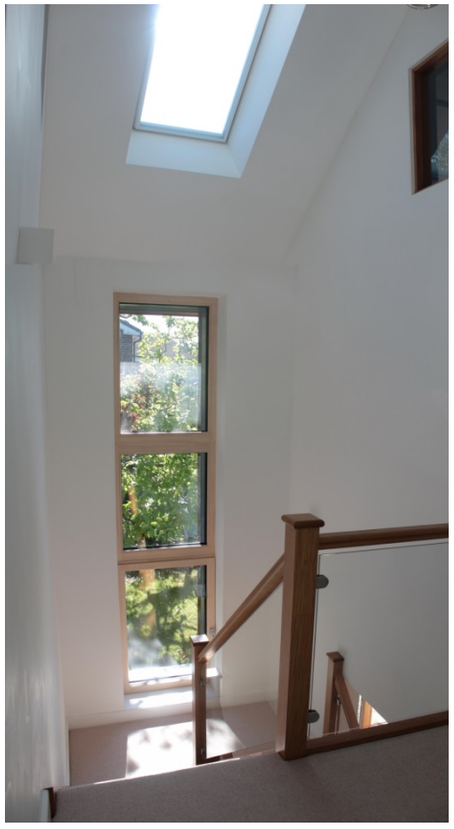
- North of Leeds
- Form Factor = 2.9
- Avg. U-value of 0.165 W/m2K
- Heavily influenced by Planning & context
- Experienced contractor, ach: 0.13 ach@60 Pa(!)
- Able to use non PH-certified windows
- Certified to Peak Heat Load

BUCKROSE ECOLOGICAL ARCHITECTS

- Roundhay, Leeds
- Form Factor = 3.0
- Avg. U-value of 0.156 W/m2K
- Planning very straightforward
- Two types of window
- Certifying to Space Heat Demand



BUCKROSE ECOLOGICAL ARCHITECTS

- Rural N. Yorks.
- Form Factor = 2.9
- Planning – so far, so good
- Client driven desire for specific form
- Development of previous window detail
- Certification (?) PHI Low Energy Building or AECB Standard?

BUCKROSE ECOLOGICAL ARCHITECTS

- Stockport, Manchester
- Form Factor of 3.58(!)
- Conservation Area & Site restrictions
- Client brief for Carer provision
- Likely to certify as Passivhaus Low Energy Building

BUCKROSE ECOLOGICAL ARCHITECTS

- Lessons
  - “Don’t let certification override common sense.”
    - R. Bunn
  - If comfort & fabric are not compromised why not consider PHI LEB or AECB?
    - Consider how this works with NZEB?
  - Climate influence – even at similar latitude
  - Planning is Passivhaus neutral – so far
    - Not an inherent advantage or problem by default – tho’ is an issue if it would be anyway
  - Practical limits on fabric U-values require special focus on windows.
    - An ongoing technical and architectural challenge / opportunity.
  - The “small Passivhaus” problem (< 100m2)
  - “Traditional” glazing proportions = consider heat load certification or LEB.
  - Smaller widows = tends to lower risk of overheating (provided daylighting is not compromised!)
  - Heating & Hot water: everything on market tends to be oversized; lack of modular sizing systems; fuel source & off-gas properties?
  - Learn to walk before you run…

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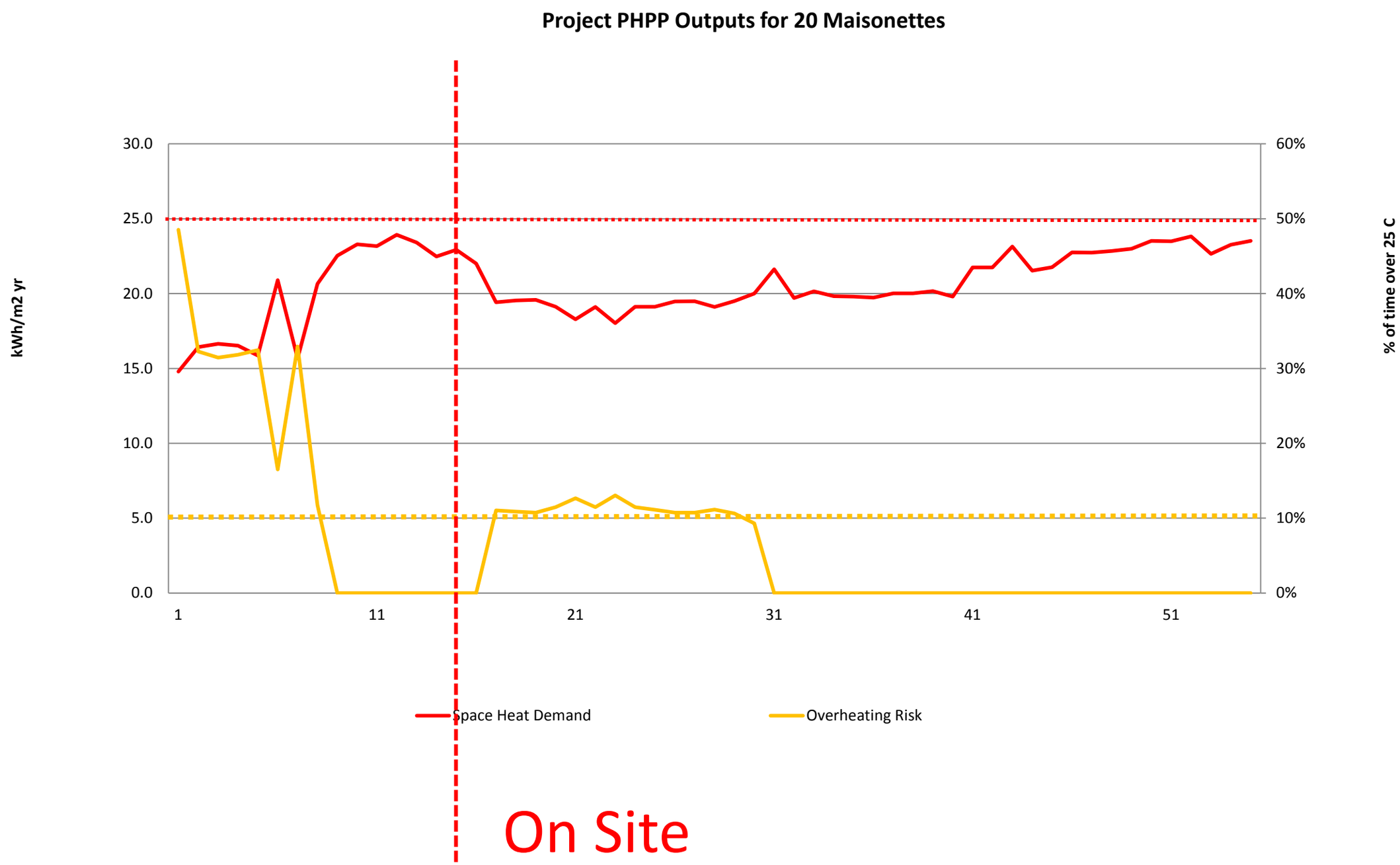

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Passivhaus Trust

The UK Passive House Organisation

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iPHA Affiliate

UK Passivhaus Open Days 2018

Date: 9-11 November 2018 **Time:** 3 consecutive days

Location: Nationwide **Cost:** Free to attend, booking essential

The International Passive House Days offers the public the opportunity to experience Passivhaus buildings. Passivhaus stands as the solid basis for a sustainable energy future, combining superior user comfort and healthy indoor environments with minimal energy use. Offering long-term savings, Passivhaus is the affordable solution for all those looking to build. Visit a scheme near you by clicking on the projects below for further booking details.

2018 Participants

Scotland

North-East England | North-West England

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