



COP 26 HOUSE

BEYOND ZEROHOURS

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# Developed by



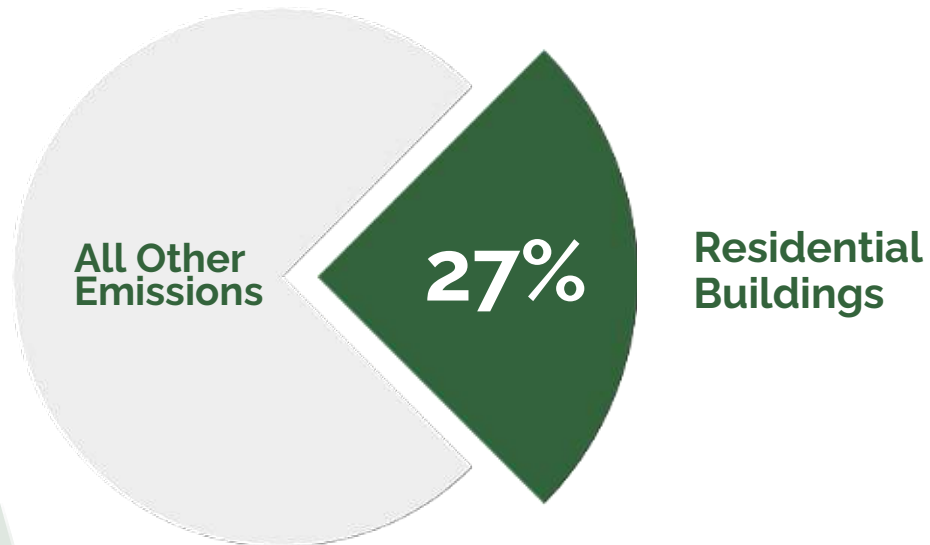
Roddy Clarke



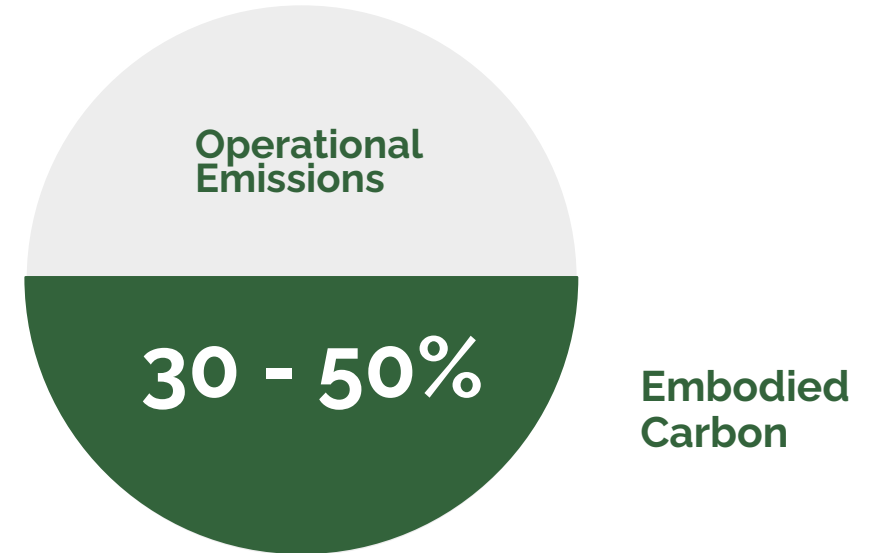
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# Why?

The carbon impact of residential buildings in the UK is **enormous**



## UK Carbon Emissions



<https://www.ukgbc.org/climate-change/>

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# Why?

- The average 100m<sup>2</sup> house emits 120 tonnes of CO<sub>2</sub>\*
- And to meet demand, 300,000 new homes need to be built each year



**That's 90 million additional tonnes of carbon per year**  
(total UK carbon impact = 470 million Tonnes/year)

\* Whole life embodied carbon, source RIBA 2030 Challenge

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The COP26 House is an adaptation of Roderick James Architects' signature design:

# THE BARN HOUSE



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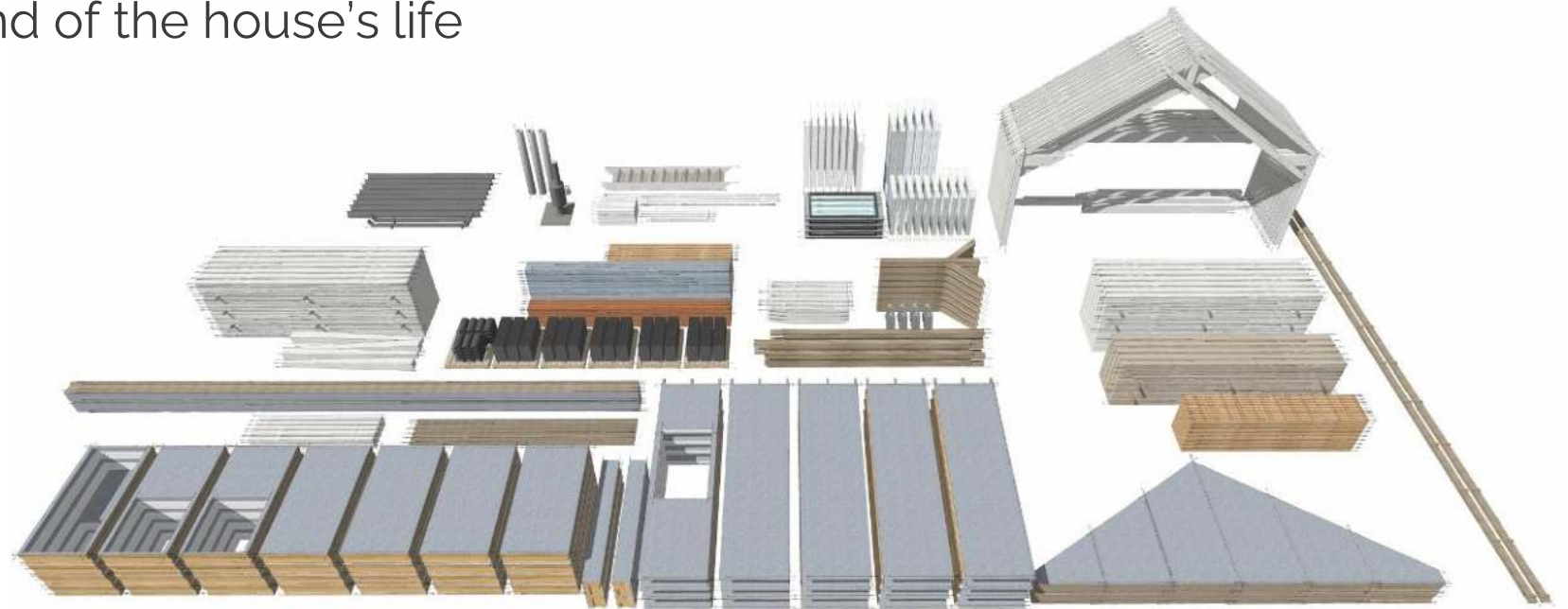
# Adapting the Barn House, using zero carbon and circular principles



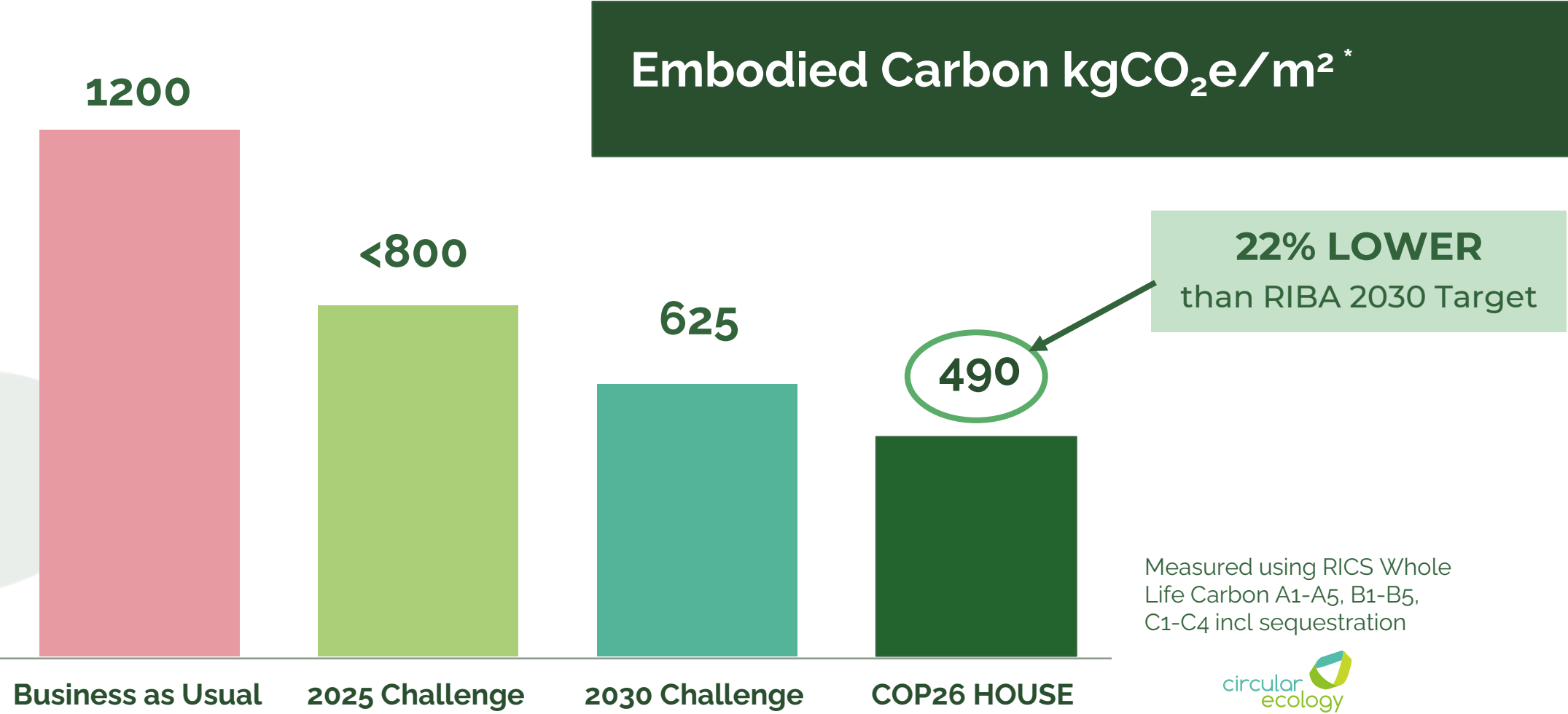
We examined every element in the design in terms of its carbon and overall environmental impact – from sourcing raw materials to end of the house's life

The main **Carbon Hotspots** :

1. Concrete foundations
2. Masonry structure and cladding
3. Metal roofing
4. PV Panels



# RIBA 2030 Challenge targets

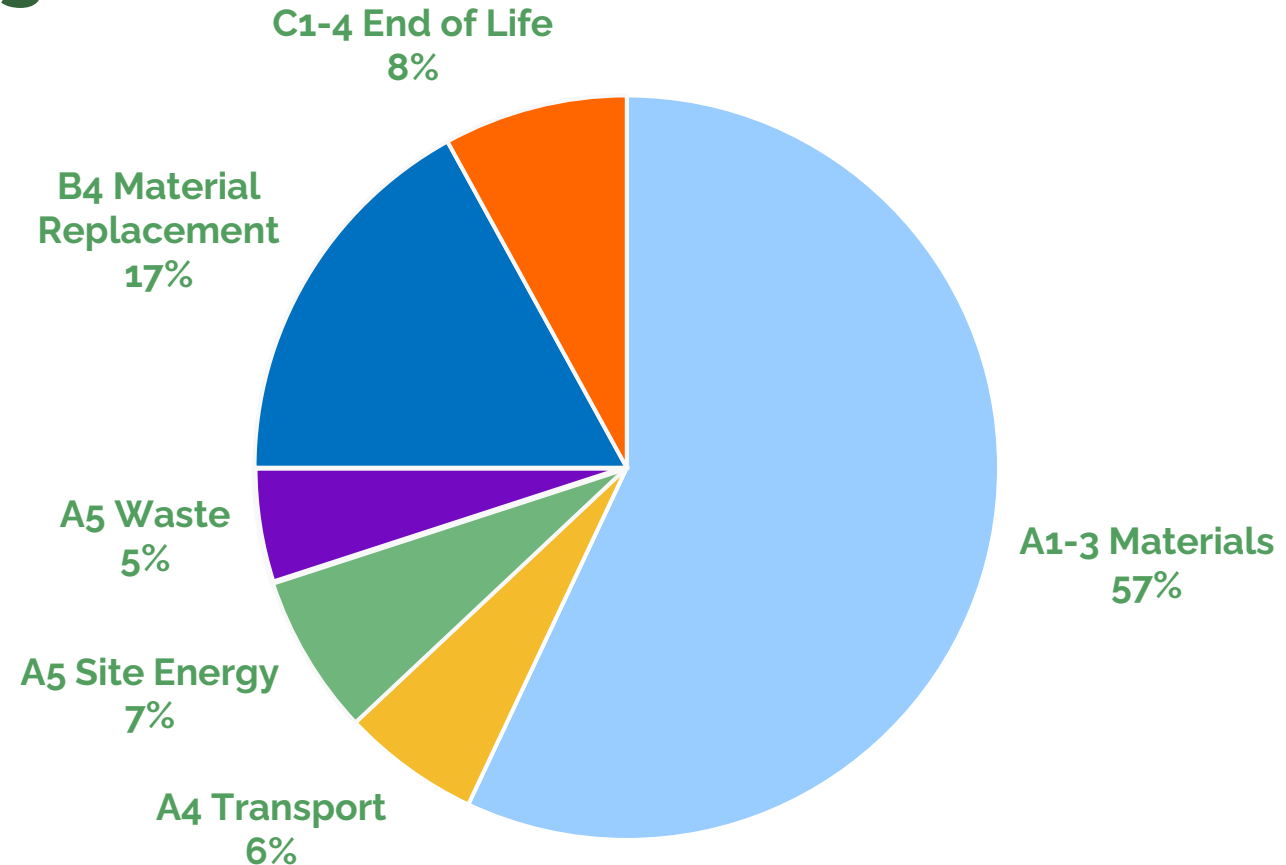


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# Materials account for the majority of embodied carbon in the building

## Embodied Carbon by Lifecycle stage

Measured using RICS Whole Life Carbon A1-A5, B1-B5, C1-C4 incl sequestration





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But the COP26 House **stores far more carbon** than its upfront embodied carbon (A1-5 or 'cradle-to-site')

Embodied Carbon during use and assumed end of life (B4, C1-4)

**Embodied Carbon during construction  
A1-A5**

**CARBON STORED (sequestered)  
in house**



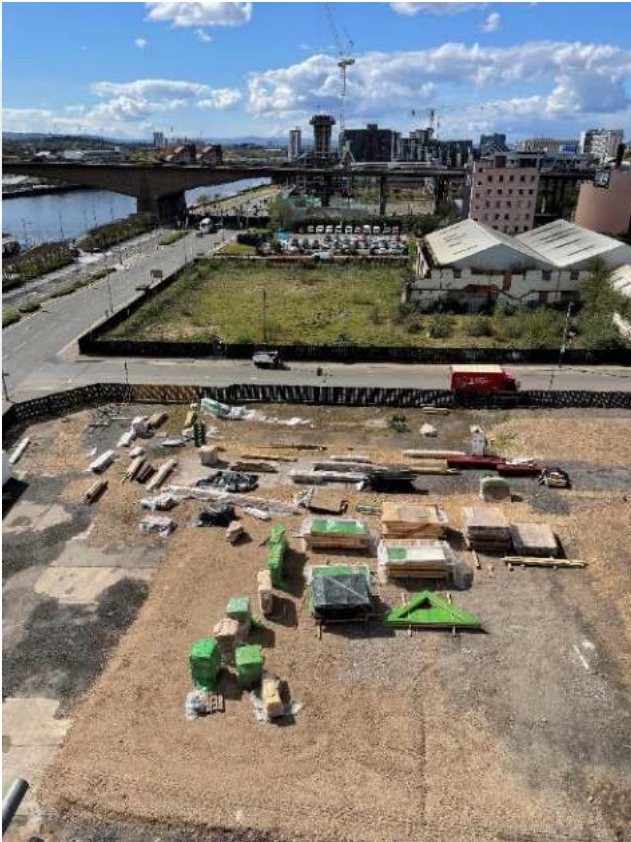


How we have done it:

**By maximising the use of timber-based products**

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# Designed to be deconstructed at the end of its life



All component parts can be effectively reused, repaired and recycled.

The house has now been completely dismantled and is ready for transport to be rebuilt on a new site.

It will be used as an education facility, meeting space and community facility.

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# Building the COP26 House

All materials and labour provided free of charge by members of Beyond Zero Homes

- Off-site construction: 2 weeks
  - On-site construction: 8 weeks
  - Approximate Cost ~ £140k
  - Deconstruction: 4 weeks
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## Other designs using the same build system.

We have full Planning and Building Regs approval for 4 further house designs, based on the original development at Boat of Garten.



**The Fair & Square House**  
2 bed @ 80sqm



**The Croft House**  
2.5 bed @ 110sqm



**The Forester House**  
3 & 4-bed semi-detached  
@ 130 / 145 sqm

These houses were designed for rural settings and have a rustic appearance, but the external cladding and details can be adapted for more urban sites.

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We've demonstrated that  
affordable zero carbon  
building is possible

**Our industry must change fast**

**We are ready when you are !**

Contact us at

[www.homegrownhomes.uk](http://www.homegrownhomes.uk)

[www.roderickjamesarchitects.co.uk](http://www.roderickjamesarchitects.co.uk)



Roderick James  
Architects LLP

[www.beyondzerohomes.co.uk/virtual-tour-of-cop26house/](http://www.beyondzerohomes.co.uk/virtual-tour-of-cop26house/)

