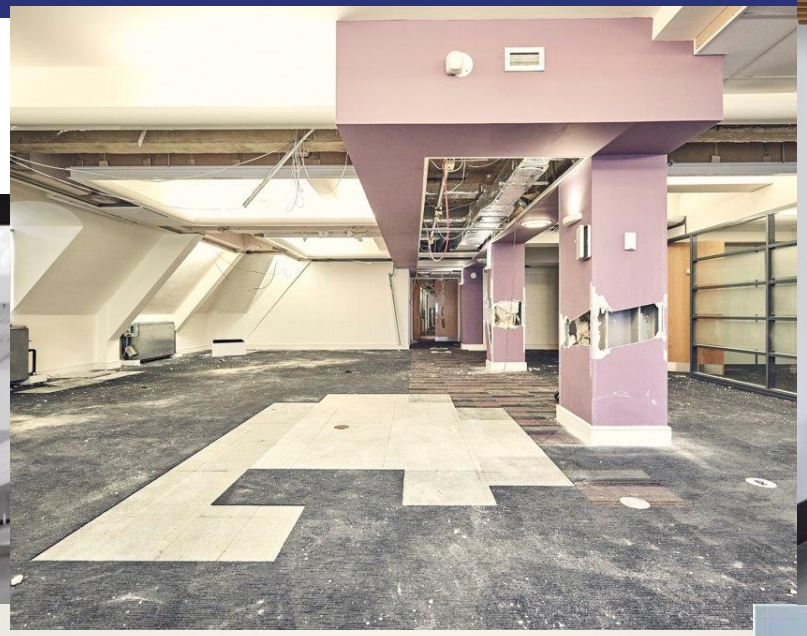
UNIVERSITY OF CAMBRIDGE | CISL Cambridge Institute for Sustainability Leadership

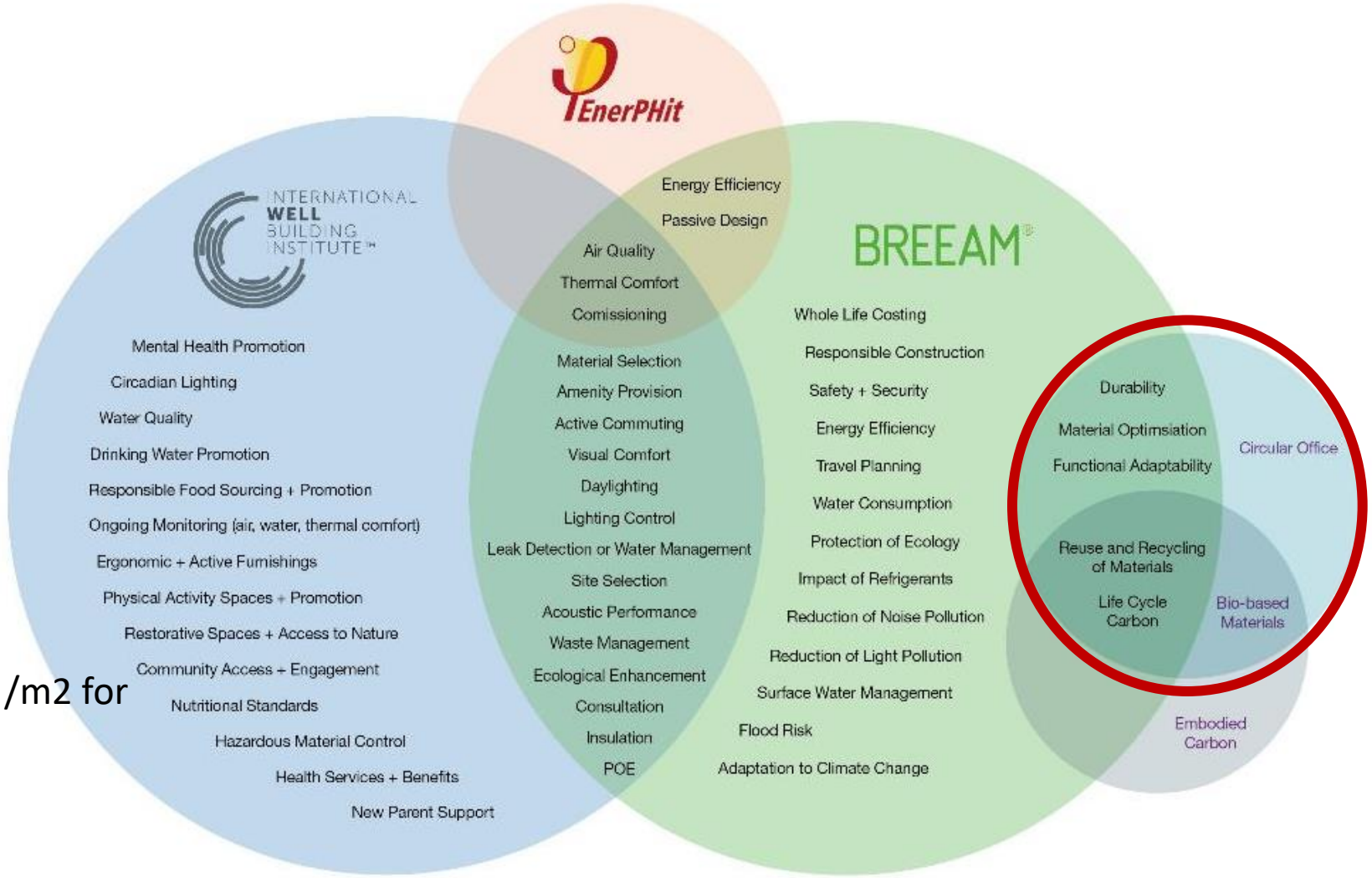
Circular Practices and The Entopia Building

1939 - 2022



The brief

Set standards from the start…



Targets in the final brief:

- BREEAM Outstanding.
- EnerPHit Classic.
- WELL Gold.
- Low embodied carbon (target < 300kg C02 /m2 for 100-year life).
- Targeting 70% of bio-based materials, with responsible sourcing and traceability.
- Use of recycled and reclaimed materials, emphasising Circular Economy principles as much as possible.

Entopia in numbers

£12.69m
Total project cost

48%
Bio-based materials incorporated by volume

21,000kg
of CO_2e saved through reclaimed materials such as the PV rooftop canopy, lighting and furniture, fixtures and equipment

£1m
enhancement of external building envelope

£0.5m
spent on triple-glazed windows to improve insulation and airtightness, control solar heat gain and maximise daylight

350
recycled LED lights

£4,250
Project cost per sqm (£395 per sq ft)

84%
carbon saved per m2 of GIA compared to a standard office fit out. (6,340kgCO2e/m2 GIA over 100 years)

2,986m²
renovated space for CISL staff

1
Reception desk recycled from Netflix

409kg CO_2e/m^2
Whole life embodied carbon of refurbished building, including in-use and end of life carbon, over 100-year building life (Stage 5 construction stage assessment)

62,332kg CO_2e
avoided in construction materials

Diverted from landfill	Donated to the community	
21,648kg	£100,225	furniture
19,380kg	£52,182	construction materials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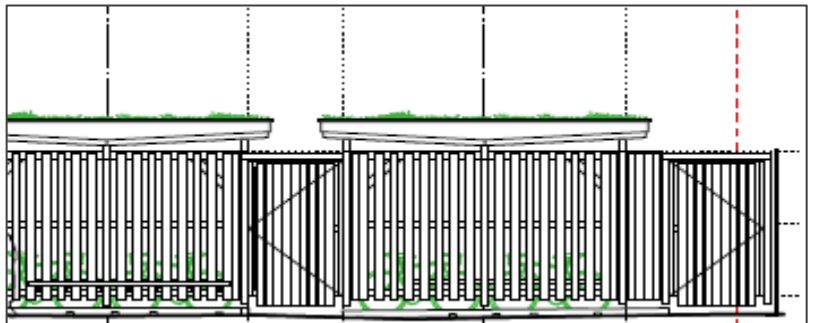

Lessons learnt

- Is it really needed?
- Embed in contractor brief
- No practical standards or certification scheme currently exists
- Design stage crucial in reducing embodied carbon.
- Fully engaged project team critical
- Supply chain ID materials for reuse
- Engagement wider circular economy network
- 1st reclaim materials from the original building
- 2nd reuse materials/furniture from other buildings
- Data quality varies and is needed to assess decisions.
- Storage of recovered materials a challenge and market gap.

Project charter:

1. Achieving the highest design quality
2. Recognise the potential of the project to be a global sustainable retrofit exemplar
3. Collaborative design process that both embodies CISL's values and exhibits their work
4. Work ethically, honestly and fairly, valuing the contributions of all
5. Be open to challenging the design and having the design challenged with freedom to innovate
6. Celebrate success and the input of the whole team
7. Lead by example, strive for consistency of behaviour in upholding the project values

Recommendations

- Embed in project brief – post-design too late
- Culture change – training and engagement of work force
- Create a circular construction market-place within Greater Cambridge

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Find out more:

www.cisl.cam.ac.uk/about/entopia-building

www.cisl.cam.ac.uk/innovation/living-lab

www.cisl.cam.ac.uk/resources/building-change

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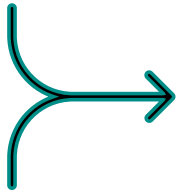
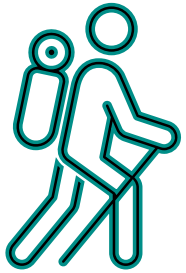
Lessons learnt

Be ambitious

Challenge norms



Stay committed



Continue learning

Influence others to change

Nobody is perfect