



COLLABORATION FOR CHANGE

Case Study: Burwood Brickworks

Embodied CO2e reduction
(tCO2e)

19,358

CATEGORY

PRODUCT	SYSTEM	PROJECT	CONCEPT
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SUPPLY CHAIN

MANUFACTURING	PROCESSING	TRANSPORTATION	ASSET OWNER/INVESTOR
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REGION

WA	NT	SA	QLD
NSW	ACT	VIC	TAS

Profile

Organisation: Frasers Property Australia

Website:

<https://www.frasersproperty.com.au/>

About: Since 1924, creating stronger, smarter, happier communities.



Section 1: Opportunity

This project is attempting to be the world's first Living Building retail centre. The Living Building Challenge® is broadly recognised as the world's most rigorous standard for green buildings. Burwood Brickwork strives for net positive carbon. It achieves net positive energy in operation and the remaining greenhouse gas impact is from the construction itself and use of materials. Embodied carbon reduction opportunities were available throughout design, construction, operation, and end-of-life.

Section 2: Solution

We used lower-strength concrete and timber, reviewing Environmental Product Declarations, incorporating a significant number of salvaged materials, using high-recycled content materials, exposing the structure, and minimising waste. In total, more than half the construction material budget was for materials manufactured and/or assembled in Victoria. Given the retail typology, we focused on the flexibility and future disassembly of the base building, and guided tenants to undertake their fitout designs regarding material selection, and installation approaches that allow easier maintenance as well as deconstruction.



Section 3: Lessons

The net positive energy principle in operation tells the story of why embodied carbon needs to be addressed to complete the picture.

The biggest challenge is that FSC certified timber is severely limited in Australia, which can make carbon-sequestering construction products more difficult to source.

In the process of finding and installing more than ninety salvaged material products used across the building, ranging from hardwood to hardware, walls, and floors to landscaping, we learned that it was necessary to find and develop a materials 'palette' FIRST, and then design to that palette (rather than what most projects do, which is the opposite).

Section 4 : Impact measurement

A peer reviewed Life Cycle Assessment was completed at practical completion in accordance with EN15978. Key points are as follows:

- The upfront embodied carbon emissions are only 400 kgCO₂/m², and the whole life embodied carbon emissions (modules A1-A5, B1-B5, C1-C4) are 721 kgCO₂/m².
- The embodied carbon emissions are approximately one-half of those emitted by a comparison building. The remaining emissions were offset.
- The project achieves the maximum 6 points available for credit 19A Life Cycle Assessment in Green Star, as well as the 2 innovation points available, exceeding Green Star benchmark.

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