





Image Source: Unsplash Alex Scutari

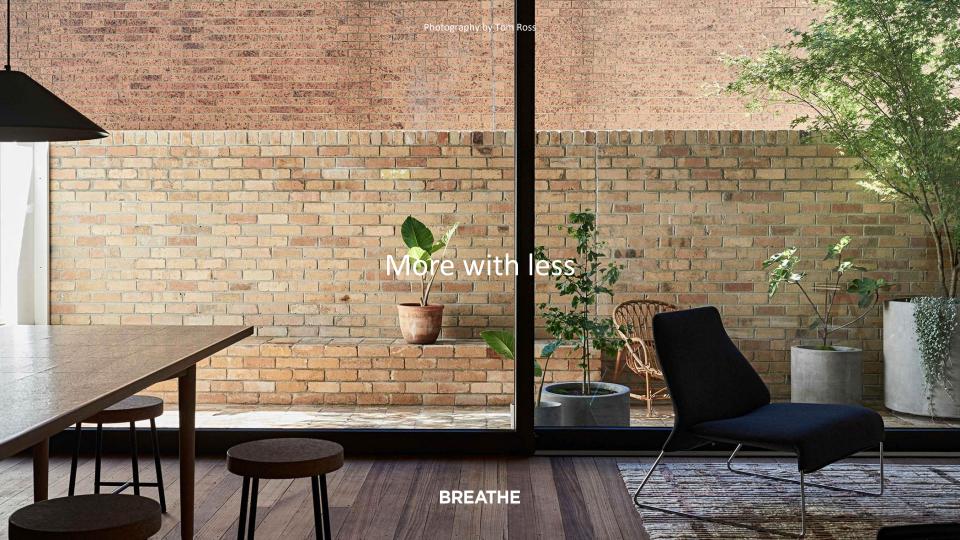
The earth can't sustain infinite growth in material consumption.

BREATHE

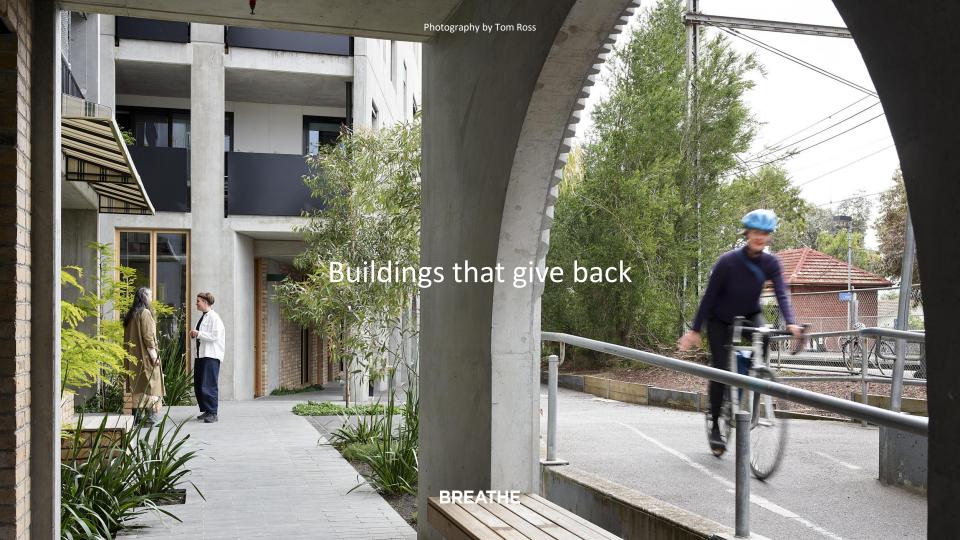


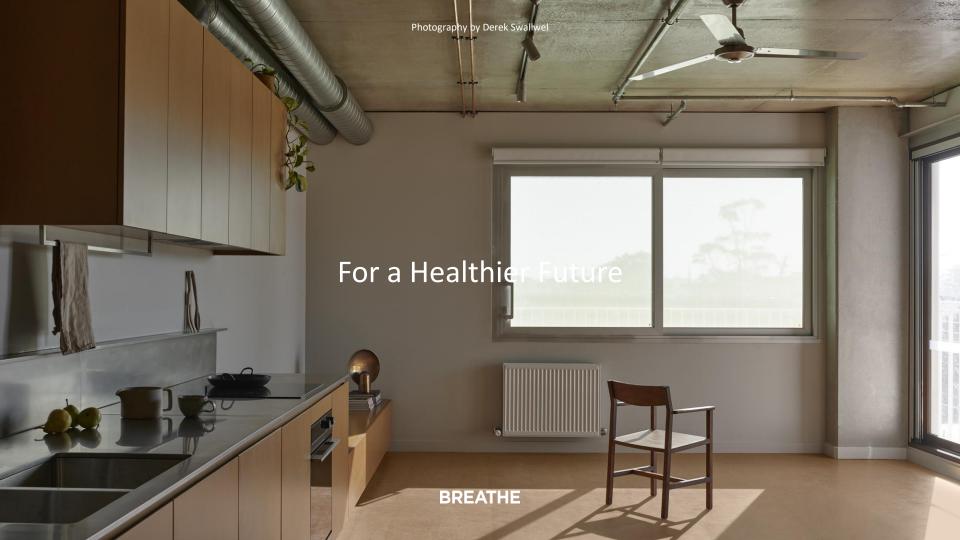


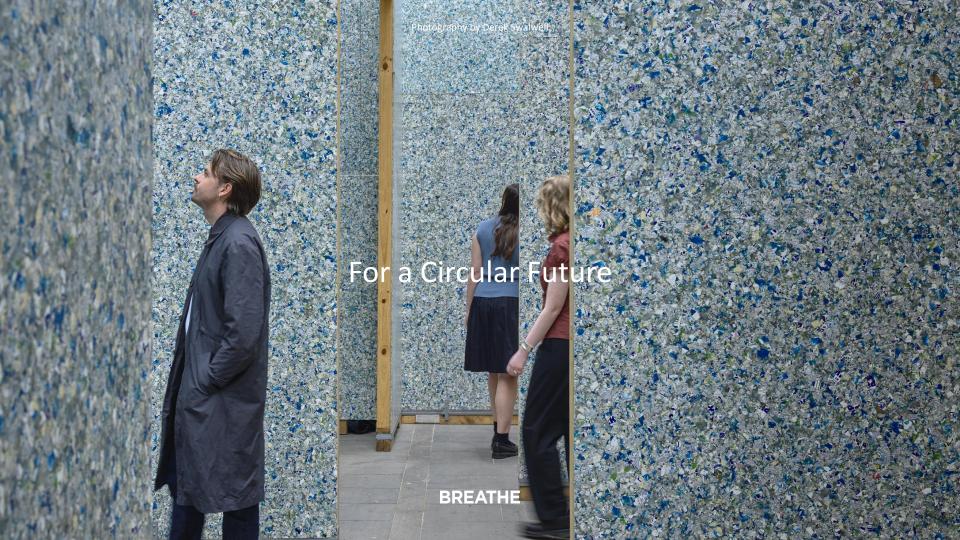


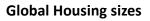












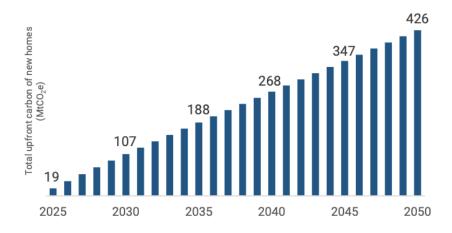
Country	Detached dwelling size (m²)
Australia	235
Canada	228
Netherlands	184
New Zealand	181
United States	261
United Kingdom	228

Australia
Largest housing
Low occupancy
High carbon

Netherlands & New Zealand

Canada & United Kingdom Australia

**United States** 



If nothing changes, the construction of new single-family dwellings could use up anywhere between 7 to 11% of Australia's carbon budget.







The annual greenhouse gas emissions per square metre of housing in Australia is calculated as such: initial embodied greenhouse gas emissions + annualised recurrent embodied greenhouse gas emissions (for replacing materials over 50 years) + annualised heating and cooling greenhouse gas emissions (over 50 years) for the average size of a new dwelling: 186m² (noting that Australia's predominant dwelling type, the detached house, is 232m² on average).

Initial embodied greenhouse gas emissions are sourced from Schmidt et al, 2020. Recurrent embodied greenhouse gas emissions are based on figures from Dixit, 2017. Heating and cooling greenhouse gas emissions are based on data from NatHERS. All greenhouse gas emissions are reduced by relevant factors over a 50 year period, to reflect the decarbonisation of the energy mix and improving technology.

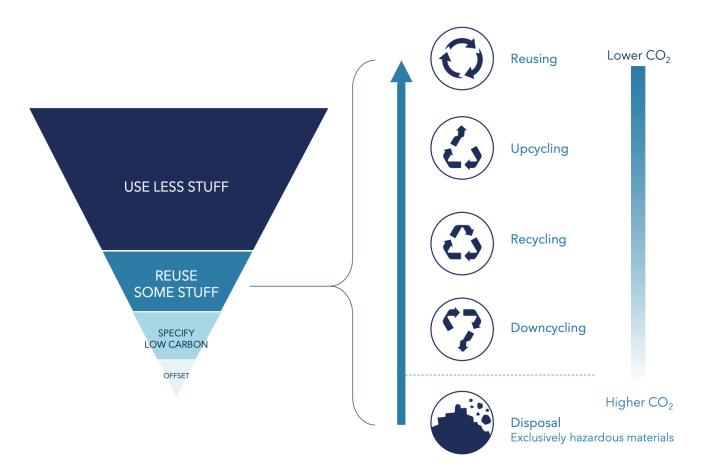




## Housing emissions limit per m<sup>2</sup>

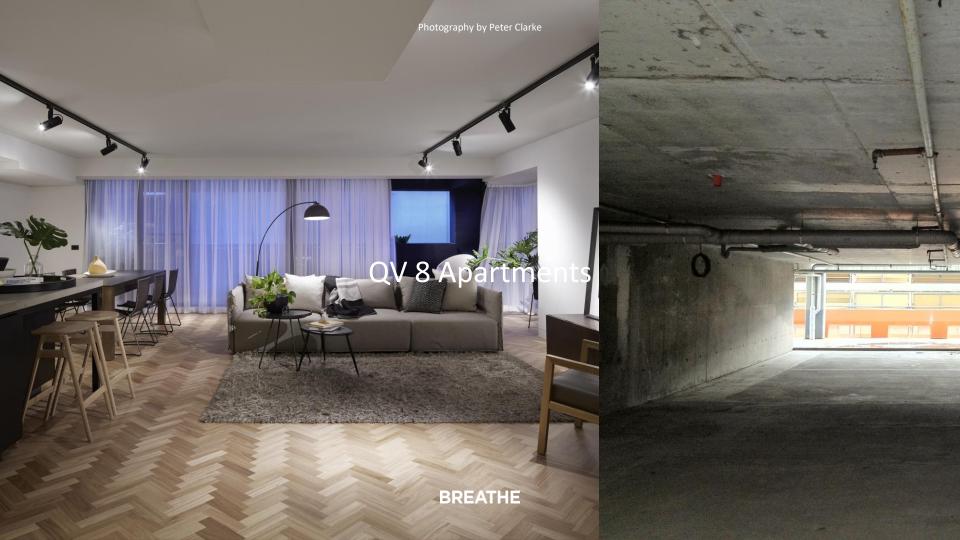
In order to operate within planetary boundaries, the estimated greenhouse gas emissions intensity of 461.8 kgCO $_2$ e/(m²-a) needs to be reduced by 98.57%, resulting in a limit of 6.63 kgCO $_2$ e/(m²-a) for new housing.

98.57% Reduction

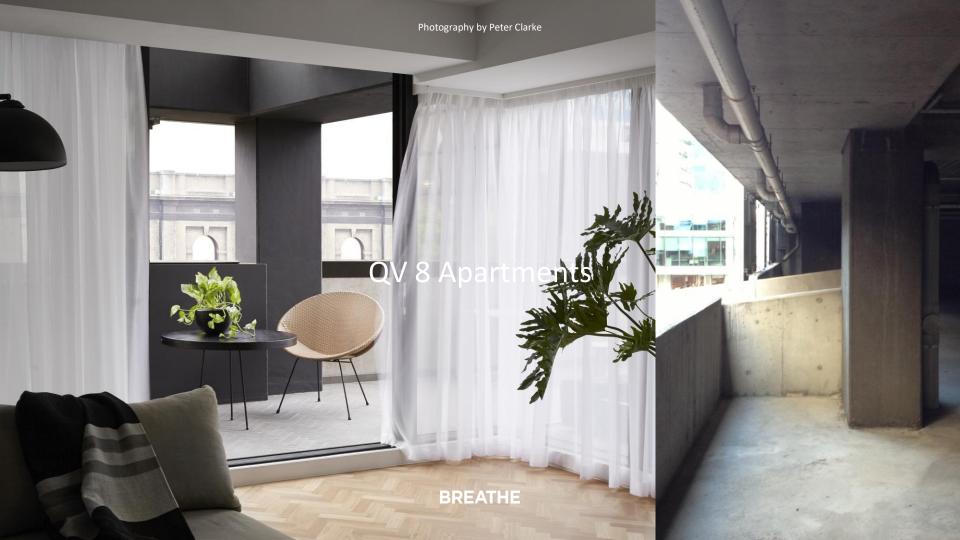




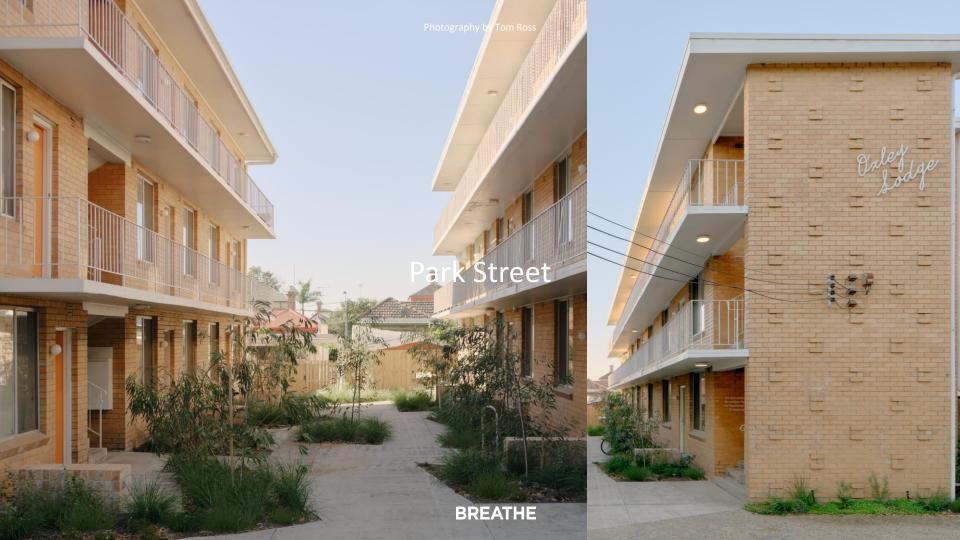
## **BREATHE**



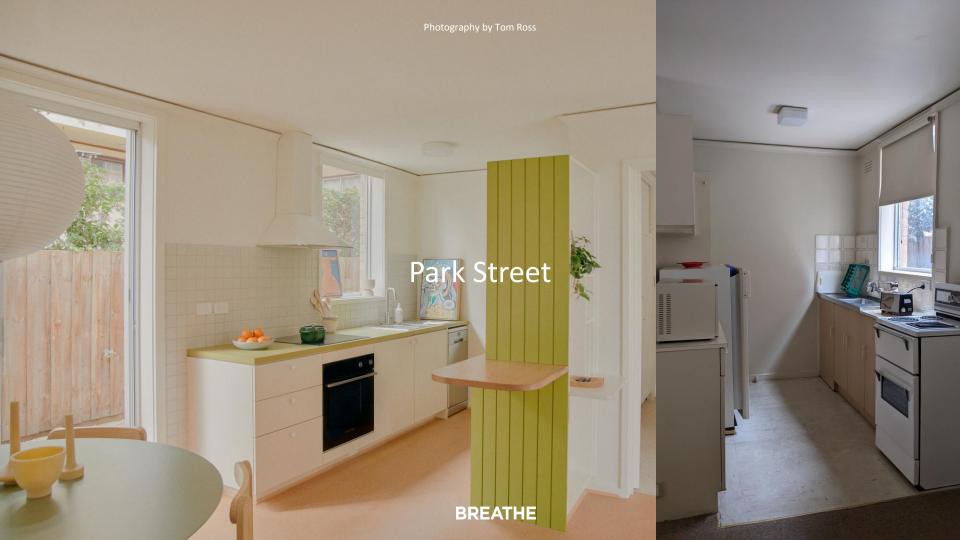














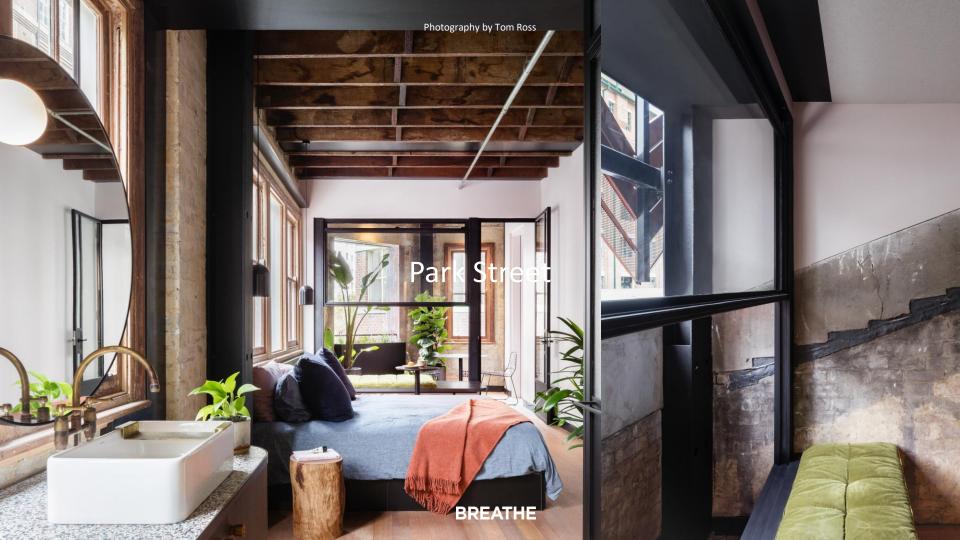


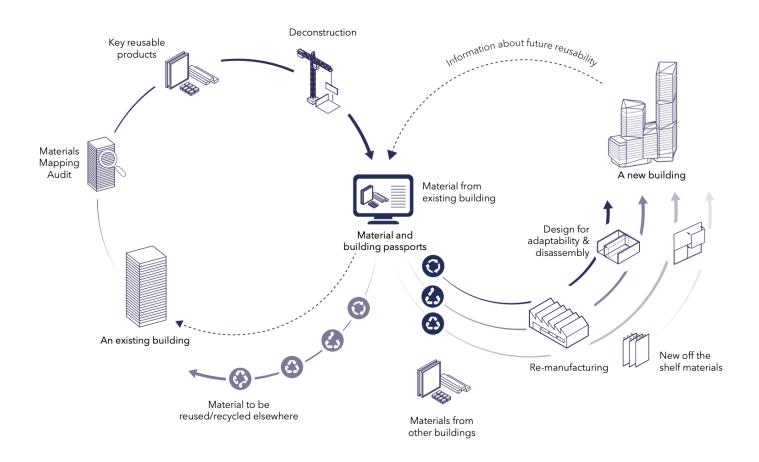












## Construction Materials Pyramid | CINARK Royal Danish Academy



