

SUSTAINABLE CONSTRUCTION REPORT

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GYPCO





B-Alternative

Be the change. Be alternative.

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All calculations in this report are based off peer reviewed research. A lot of variability arises when calculating greenhouse gas and carbon offsetting statistics, therefore figures are our best estimates.

B-Alternative wishes to acknowledge the traditional custodians of the lands on which our team members work and live, predominantly lands belonging to the Wadawurrung, Woiworung and Boonwurrung people of the Kulin nation.

We wish to pay our respects now and always to Elders past, present and future, and acknowledge that sovereignty was never ceded.

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ABOUT US



B-Alternative is a grassroots, environmental solutions group shaking things up at festivals, markets, schools and any event where the focus is shifting to a more sustainable, planet-positive future! We are based in Australia and are part of a global community of conservationists, environmentalists and change-makers.

We provide practical, eco-friendly solutions to everyday living by sourcing and supplying truly compostable products and packaging, raising awareness through facilitated environmentally focused conversation for schools and social events, and providing sustainable festival/event waste reduction services.

Our core pillars are **education**, **waste reduction**, and **Earth-friendly products**.

" NEVER BEFORE HAVE WE HAD SUCH AN AWARENESS OF WHAT WE ARE DOING TO THE PLANET, AND NEVER BEFORE HAVE WE HAD THE POWER TO DO SOMETHING ABOUT THAT "

- SIR DAVID ATTENBOROUGH





BACKGROUND

The current rate of depletion of natural resources is unprecedented. Forests and agricultural land are disappearing at a rate which will eliminate them entirely in a few generations. Major deteriorations in the planetary environment are threatened by greenhouse gas (GHG) emissions. Reserves of many non-renewable resources are estimated to be depleted within 'decades' at current extraction rates.

Understanding the impacts of the construction industry allows us to then recognise how we can move forward in a more sustainable fashion, substantially reducing environmental impacts. One would argue that an essential requirement for sustainable development is that the world's stock of 'capital', both natural and man-made, should not diminish over time. Put simply, we need to focus on resources that are **renewable** in order to achieve longevity in a construction industry with a significantly lower environmental impact.

Below are some essential factors to achieve a sustainable development strategy:

- Control the rate of forest/agricultural land conversion that supports development of human settlement and urbanization
- Increased widespread use of sustainable forest management
- Increased use of construction, mineral and agricultural waste in building materials
- Enhancements in total life cycle energy efficiency of buildings
- Substituting non-renewable energy sources for renewable ones
- Increased control over pollution, both atmospheric and water
- Focus on building for longer lifespans and eventually reusing/recycling

Implementing these strategies will drastically reduce environmental impacts and become a significant method of increasing the longevity of our natural environment.

BY BUILDING WITH GYPCO, EPOCH REVEALS THEIR COMMITMENT TO A BETTER
ENVIRONMENT, BOTH FOR THE CONSTRUCTION INDUSTRY AND FOR THE NATURAL WORLD

MATERIALS

Table 1. Upcycled and recycled materials used and their accompanying embodied carbon values. The total embodied carbon of the materials used is also calculated.

Material	Weight (Kg)	Embodied Carbon KgCo2e-/Kg Material	Total Embodied Carbon of Job Materials KgCo2e-/Kg Material
Upcycled			
Cement	102	0.16	16.32
Clay bricks	28	0.306	8.568
Fyrchek gypsum plasterboard	303.75	0.39	118.4625
Hardwood Flooring	15	2.5	37.5
Laminated veneer lumber	49	0.39	19.11
Pine	328.32	0.263	86.34816
16mm Plasterboard	382.6	0.21	80.346
Steel	67.84	0.39	26.4576
Recycled			
Mixed metals	2824	2.5	7060
10mm Plasterboard	2387.2	0.39	931.008
16mm Plasterboard	1734	0.39	676.26
Raw Plaster	25	0.39	9.75
Mixed timbers	1241.6	0.263	326.5408
Total	9488.31		9396.67106

RESULTS

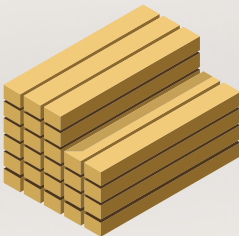
A total of **9488.31kg** of construction materials were **upcycled** and **recycled** upon completion of the EPOCH build. All materials used had a total embodied carbon of 9396.67kg carbon dioxide equivalent (CO2e-). Considering these materials were upcycled, the processes that create the embodied carbon in those materials become negligible. Additionally, by recycling materials, the emissions from materials breaking down in landfill are avoided. We can therefore be confident in stating that in this project, approximately **9396.67kg of CO2e- was saved** from being released into the atmosphere, which would have occurred in typical cases, i.e. when clients and building companies aren't eco-conscious and choose to use virgin materials, and discard unusable materials to landfill. Additionally, the majority of materials by weight were recycled, meaning if they had have been landfilled as in the majority of renovations, this would have released GHGs into the atmosphere as the materials degraded over time.

Over 340L of eco-paint (no chemicals) was used, and 29L of this was upcycled upon completion. All carpet and rubber used was from the company Interface, and is certified **carbon neutral**.

On-site recycling

The GYPCO team managed to **recycle 4146.2kg plaster, 1241.6kg of mixed timbers and 2824kg of mixed metals**, which otherwise would have been landfilled. This would have produced GHG emissions in the form of transportation. Additionally, if the timber were to breakdown in landfill, methane would have been released over time, a greenhouse gas roughly 25x more potent that carbon dioxide. Mixed metals do not release GHG's when degrading in landfill, however their transportation does. Furthermore, the materials have been given a second life to be used again, which has a lower carbon footprint than manufacturing the products from virgin materials.

9488.31kg
upcycled and recycled



What does this all mean?

By making the simple decision to choose upcycled materials and recycle unusable materials you have saved GHGs from entering the atmosphere, and further contribute to climate change which is already occurring at an unrepresented rate. To draw a comparison, you have chosen to **not drive around Australia 3 and half times, or fly a boeing 747 plane for 37 hours.**

This calculation is conservative, and fair to say the positive impact has been even greater!



SUSTAINABLE INITIATIVES

Tree Planting

To help offset the small carbon footprint the GYPCO staff created, **115 trees** were planted in the Daintree. These trees will draw down ~10,005kg CO₂e- over 100 years. This is the same as drawing down the emissions created from driving a medium sized vehicle **40,024km**. We predict this tree planting will more than comfortably offset the carbon footprint of the behaviours of the GYPCO staff over the course of the project.

Planter Box

The GYPCO team constructed a planter box from entirely upcycled materials. 22kg of steel, 14kg timber, 13kg cement sheeting, 1L black paint and 2kg of corflute were used. This has saved minimum 100 kg CO₂e in emissions from using virgin materials, equivalent to driving 400km.

CONCLUSION

By upcycling and recycling materials, in combination with sustainable on-site behaviours and tree planting, we can be confident in saying this GYPCO carpentry group project offset its carbon footprint. From first glance, it appears the project was net carbon negative due to the additional tree planting – actually drawing down more carbon than what is being released into the atmosphere. We cannot confirm this with certainty, as calculations are based on best estimates from the current data available. A rigorous detailed analysis of all processes and procedures involved would need to be undertaken in order to confirm carbon negative status, however our best estimate reveals that the job's carbon footprint has been offset by the trees planted. All clients should follow the inspiring lead of those at EPOCH and construction groups should strive to achieve carbon negative builds, so we can reverse current detrimental planetary impacts. Congratulations EPOCH!

Licensed Builder

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CONGRATULATIONS EPOCH ON RECOGNISING THE ECONOMIC AND
ENVIRONMENTAL POWER AND BENEFITS OF ETHICAL BUILD CHOICES



B alternative