

# SUSTAINABLE CONSTRUCTION REPORT

---

6 MAIYA COURT, CHELTENHAM

B-ALTERNATIVE.COM  

E: AWESOME@B-ALTERNATIVE.COM

**GYPCO**





# **B-Alternative**

**Be the change. Be alternative.**

Copyright © B-Alternative, 2021.

All rights reserved. No part of this publication may be reproduced, stored or transmitted in any form or by any means without the prior written permission of the author/copyright owner. Images from B-Alternative and Canva.

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.

# CONTENTS

ABOUT US

OVERVIEW + AIM

MATERIALS

RESULTS

ON-SITE BEHAVIOUR

SUSTAINABLE INITIATIVES

CONCLUSION



# 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, MAIYA COURT 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.

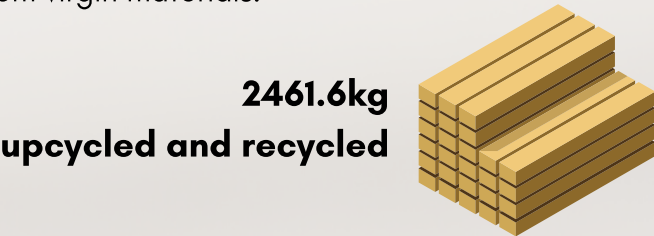
Material	Weight (Kg)	Embodied Carbon KgCo2e-/Kg Material	Total Embodied Carbon of Job Materials KgCo2e-/Kg Material
Aluminium	68	13.1	890.8
Clay bricks	1600	0.21	336
Cement Sheet	242	0.912	220.704
Glass (double glazed)	104	1.63	169.52
Insulation (EarthWool)	93	1.86	172.98
Kiln dried sawn hardwood	70.4	0.306	21.5424
Kiln dried sawn softwood	160	0.263	42.08
Laminated veneer lumber	115.2	0.39	44.928
Stainless Steel (cleats)	9	3.03	27.27
Total	2461.6		1925.8244

# RESULTS

A total of 2461.6kg of construction materials were upcycled upon completion of 6 Maiya Court, Cheltenham. In addition, roughly 80L of non-toxic, chemical free (EcoColour and Tint) paint was used. All materials used had a total embodied carbon of 1925.82kg carbon dioxide equivalent (CO2e-). Considering these materials were upcycled and recycled, the processes that create the embodied carbon in those materials become negligible. We can therefore be confident in stating that in this project, **1925.82kg 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. In addition, half the 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.

### On-site recycling

The GYPCO team managed to **recycle 700kg brick, 1100kg concrete and 345.6kg of timber**, 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. ~1296kg CO2e- would have been released into the atmosphere, which is the equivalent of driving a light vehicle 7120km or flying a Boeing 747 for five hours. Brick and concrete do not release GHG's when degrading in landfill, however their transportation does. Furthermore, they have been given a second life to be used again, which has a lower carbon footprint than manufacturing the products from virgin materials.





## What does this all mean?

By making the simple decision to choose upcycled and recycled 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 to Darwin and back, and then jump on a return flight to New Zealand.

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



# ON SITE BEHAVIOUR

## Meat Free Mondays

Every Monday the GYPCO team participated in 'meat free Monday,' eating vegetarian or vegan meals on site. It has now been widely studied and documented that meat-heavy diets result in a carbon footprint that is roughly *twice* as much as that of a vegetarian or vegan diet (slightly more than double for vegan diet). In 2019, the average Australian consumed ~250g of meat per day, which is about 4.25kg of CO<sub>2</sub>e or **driving 23km** in a light vehicle (17km in an average sized vehicle). This number may be higher or lower depending on what type of meat is consumed (highest for red meat, lowest for fish and poultry). By avoiding meat on Mondays, the GYPCO team (on average three members over 11 weeks) avoided a combined carbon footprint of **140.25kg CO<sub>2</sub>e-**. This is the same as driving a light vehicle **770km**.

## TOTAL COMBINED CARBON FOOTPRINT SAVINGS



**8323km**



**7.5 Hours**

## Eliminating single use plastic

All GYPCO workers on site avoided all single use plastics. According to the WWF, on average Australians use 130kg of plastic per person each year - that's **356g per day**. To visualise this, that's the same as about **20 single use coffee cups** (by weight). By avoiding single use plastics, the GYPCO team (on average three members over 11 weeks) avoided a combined single use plastic usage of **11.75kg**.

# 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 ~7666.67kg CO<sub>2</sub>e- over 100 years. This is the same as drawing down the emissions created from driving a medium sized vehicle **30,697 km**. This tree planting will more than comfortably offset the carbon footprint of the behaviours of the GYPCO staff over the course of the project, ultimately making the project **carbon neutral** in terms of staff behaviours.

CONGRATULATIONS 6 MAIYA COURT ON RECOGNISING THE ECONOMIC AND ENVIRONMENTAL POWER AND BENEFITS OF ETHICAL BUILD CHOICES



# 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 6 Maiya Court, Cheltenham, and construction groups should strive to achieve carbon negative builds, so we can reverse current detrimental planetary impacts. Congratulations 6 Maiya Court!







B alternative