k20 ARCHITECTURE

Decarbonizing Our Built Environment

Wood Solutions Seminar

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I would like to acknowledge Australia’s Traditional Owners of Country and recognise the importance of their continuing connection to their ecology and community. We pay our respect to them and their cultures; and to Elder’s past, present and emerging.


Eternity Life
by

ETERNITY LIFE

2017 Silver Winner for Melbourne Design Awards, Proposed Design Category
- 2022 Bronze Winner for World Architecture News Awards, Best Overall Sustainable Architecture Project
- 2023 Winner Kyoto Global Design Awards, Envrionemnt Gategory
- 2023 Winner Australian Timber Design Awards, Multi-Residential Category

HINDMARSH SHIRE COUNCIL CORPORATE FACILITY

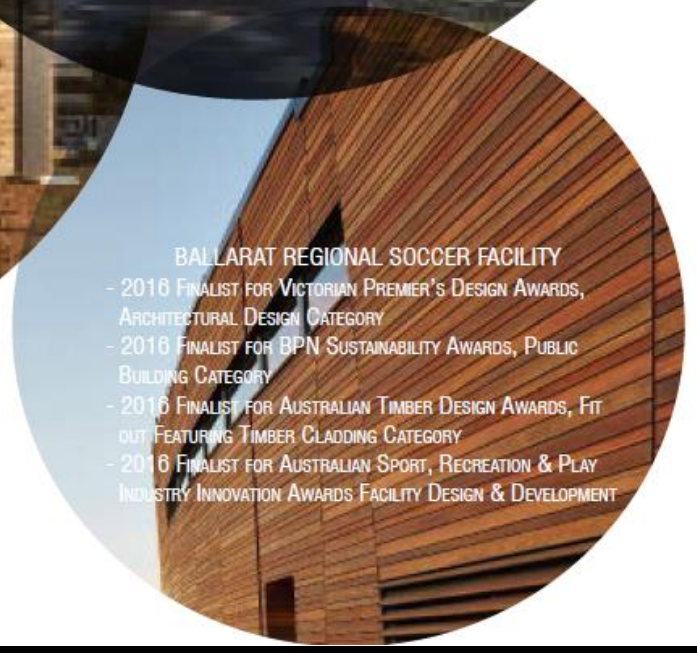
- 2014 Winner of Australian Timber Design Awards, People's Choice Award
- 2014 Finalist for Australian Timber Design Awards, Public or Commercial Building Category
- 2014 Finalist for Australian Timber Design Awards, Engineered Timber Products Category

PORT MELBOURNE FOOTBALL CLUB

- 2017 Silver Winner for Melbourne Design Awards, Public & Institutional Category
- 2016 Finalist for Victorian Premier's Design Awards, Architectural Design Category
- 2016 Finalist for BPN Sustainability Awards, Public Category
- 2015 Winner of Australian Timber Design Awards, Sustainability Category
- 2015 Winner for Australian Timber Design Awards, Sustainability Category

MCKENZIE STREET AGED SERVICES CENTRE

- 2017 Finalist for Australian Timber Design Awards , Timber Cladding Category
- 2017 Finalist for Australian Timber Design Awards, Sustainability Category
- 2017 Finalist for Australian Timber Design Awards, Innovative Structural Design Category
- 2017 Finalist for 2017 Sustainability Awards, Public Category



BALLARAT REGIONAL SOCCER FACILITY

- 2016 Finalist for Victorian Premier's Design Awards, Architectural Design Category
- 2016 Finalist for BPN Sustainability Awards, Public Building Category
- 2016 Finalist for Australian Timber Design Awards, Fit out Featuring Timber Cladding Category
- 2016 Finalist for Australian Sport, Recreation & Play Industry Innovation Awards Facility Design & Development

2023 Timber Design Awards

Beyond Zero

“Our Vision for Beyond Zero is an evolution”

Eternity Life is one of our key projects which continues the suite of projects the practice has completed and where k20 Architecture is approaching and aims to move Beyond Zero

Some of our Previous Projects

Betty Day Community Centre

Completed 2010

We delivered City of Port Philip's first Sustainable designed and built community center being its first building using the STEPS scorecard program.

Hindmarsh Shire Corporate Centre

Completed 2014

For Hindmarsh Shire’s new corporate center, we chose to reuse its original 1960’s facility and fit a new building around it.

The building program needed to accommodate double its operational team and through sustainable design we were able to halve the Shire’s energy .

This building had a substantial contribution towards timber structure being awarded Australian Timber Design Awards, Peoples Choice Award in 2014.

Port Melbourne Football Club

Completed 2015

We designed this facility for the City of Port Philip using only timber throughout.

Port Melbourne Football Club has been recognised as a multiple award winner:

Australian Timber Design Awards, Sustainability Category 2016

Melbourne Design Awards, Architecture – Public & Institutional 2017

Good Design Awards, Commercial & Residential 2019

Knox Family and Children Centre, Bayswater

Completed 2020

We delivered for the City of Knox a childcare and community center that was jointly awarded the Victorian Chapter-AIA sustainability award for 2020.

A building that is off grid and has a 100+ year life cycle amongst other key sustainability features.

Eternity Life - the next chapter in Sustainable Living

An overview
Eternity Life (EL)

- 52% reduction in up front carbon emissions
- World Green Building Council Vision – 40% reduction in embodied carbon 2030
  https://www.worldgbc.org/embodied-carbon
- EL is 10 Years ahead of its time
- Celebrates the ecology of the land
- Landscape design is *Land for Wild Life* approved DELP
- 7.3 Star NatHERS rating
- Simple laminated Timber - SLT™
- Clad in sustainably sourced timber

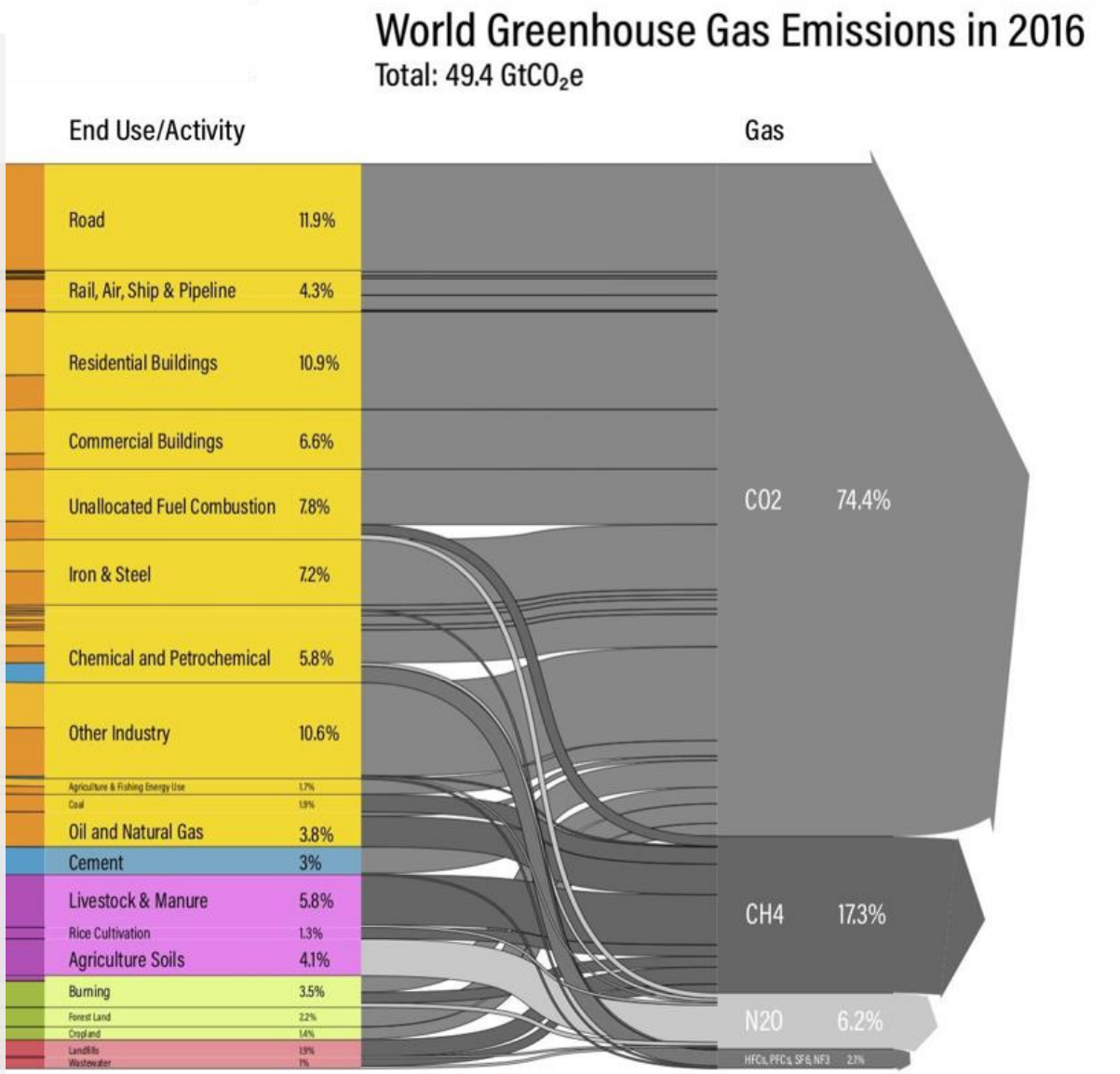
Construction's Role in Decarbonising

17.5% of direct emissions

Over 25% of total emissions when include embodied impacts associated with concrete, steel, forestry, waste, transport, chemicals, other industry, wastewater etc attributed to buildings

Global Emissions need to reduce by over 90% to achieve Paris Agreement goals

Paradigm shift required in building and infrastructure design



Source: Greenhouse gas emissions on Climate Watch. Available at: https://www.climatewatchdata.org

WORLD RESOURCES INSTITUTE

Independent Assessment of Eternity Life

An As Built assessment was independently completed by Richard Haynes

This Life Cycle Assessment study was conducted in accordance with the EN 15978 standard which has assessed the direct and indirect potential environmental impacts associated with the construction works at 110 Roberts Street, West Footscray

(Sustainability of construction works. Assessment of environmental performance of buildings. Calculation method)

https://www.techstreet.com/standards/bs-en-15978-2011

The work has been critically peer reviewed by Henrique Mendonca in accordance with ISO 14044.

Report ID 20263

Life Cycle Assessment (LCA)

Life Cycle Assessment is a process to **evaluate the environmental burdens** associated with a product, process or activity:

- By identifying and **quantifying energy** and **materials** used and **waste** released to the environment;
- To **assess** the **impact** of those energy and materials used and released to the environment; and
- To identify and evaluate opportunities to affect environmental **improvements**.

From: Guidelines for Life-Cycle Assessment: A Code of Practice, SETAC, Brussels

As Built LCA includes

All the upstream and downstream processes needed to provide the primary function of the structure from construction, maintenance, operation, and finally demolition and disposal associated with the multiple family residences.

The inventory includes the extraction of raw materials or energy and the release of substances back to the environment or to the point where inventory items exit the system boundary either during or at the end of the project life cycle.

Eternity Life - 52% Saving in Embodied Carbon

52% reduction in "Up Front" emissions (to put in context, the world green building council's vision is to achieve a 40% reduction in embodied carbon by 2030 so eternity is 10 years ahead of it's time)

71% saving in life cycle carbon impacts of superstructure from 1st floor walls up (including elevated floors, roof, glazing)

Major contributing factors

- Timber floor cassettes
- Timbers walls – Simple laminated Timber (SLT™)
- Reduced apartment yield
- Insulation
- Ventilated external cladding

Timber Floor Cassette System

Timber Wall Panel System – Simple Laminated Timber
Patent Pending

Timber Wall Panel System

Single Laminated Timber "SLT" panel system incorporates 90mm thick solid timber panels.

The strength of each panel is to hold ten story building.

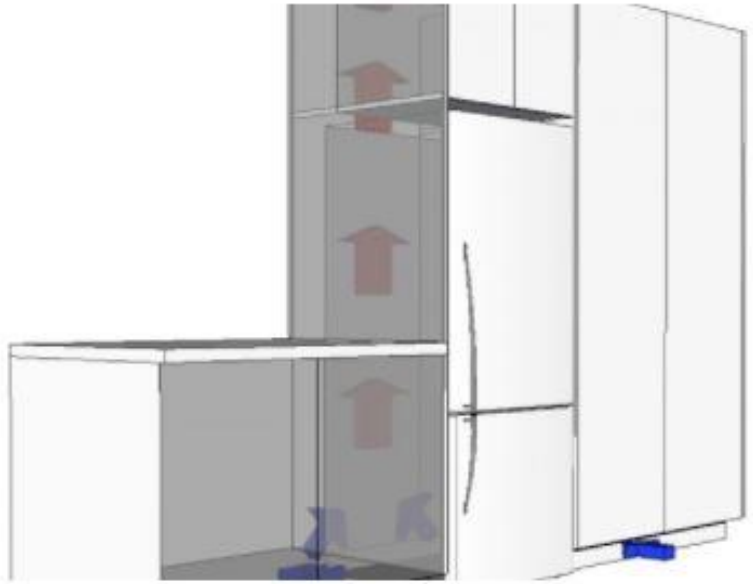
Reduced Land Impact

Reduced the impact of the development on the land by only using 47% of land.

Compared to other buildings in Australia which typically use 55%

One of Many Initiatives

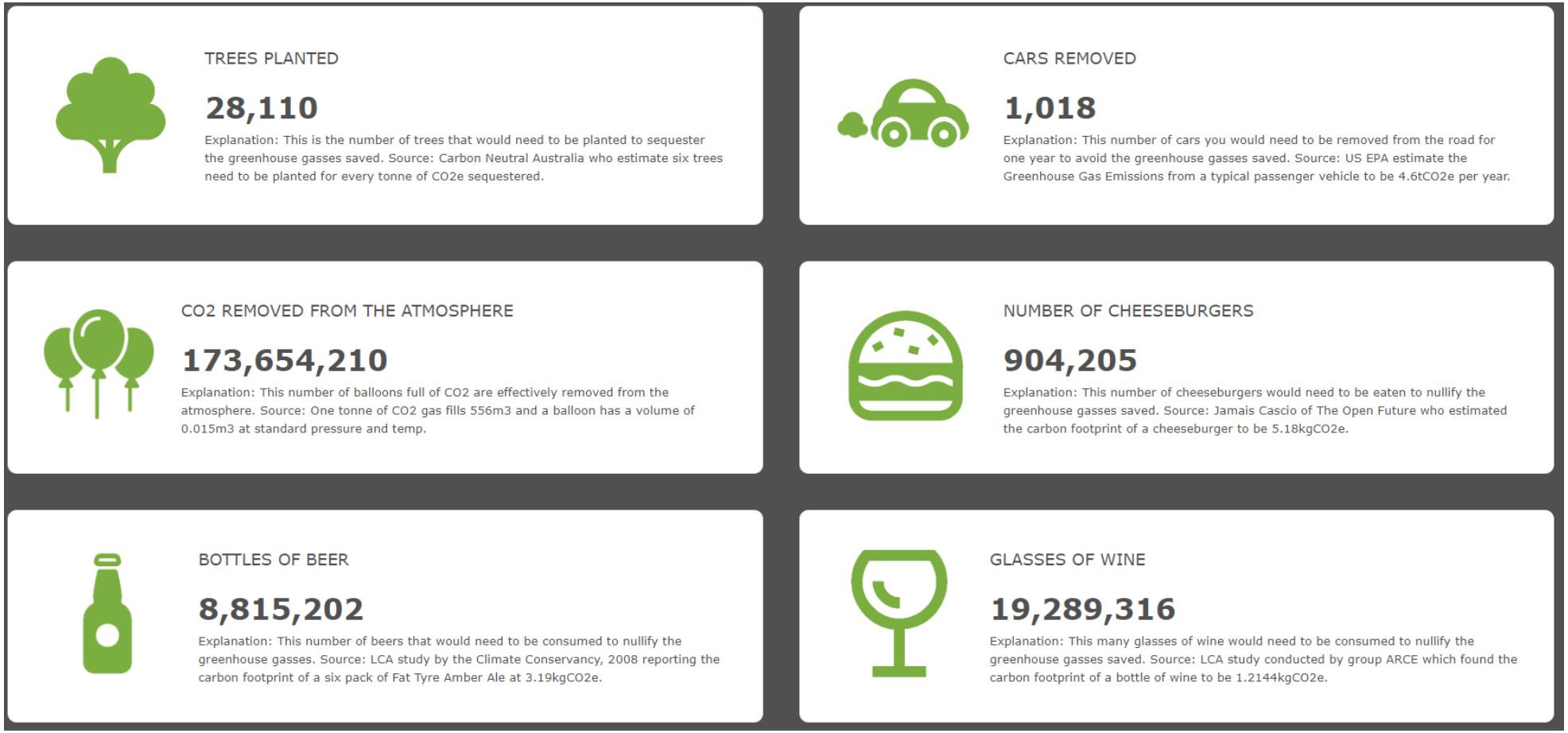
Cabinetry space around the refrigerator limited to a maximum width of 750mm and this will have an estimated 10.3% energy saving for that apartment.



NatHERS Rating – 7.3 star

- Individual smart metering
- Solar shading
- Cross-flow ventilation
- Natural and low toxicity materials
- Minimalised building envelope, allowing for more green space and flora within a highly urbanised environment
- Access to natural light for internal spaces, reduced reliance on artificial lighting and cooling
- Sustainably sourced timber
- Double glazing and thermally isolated frames
- Ceiling Fans
- Increased Insulation
- Reduced thermal demand (and consequent heating and cooling energy)
- Highly efficient appliances including highly efficient air-conditioned including r32 gas
- LED Lighting throughout

Life Cycle Carbon Savings (4,685tCO2e) of Eternity Life



Thank you for attending

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