



COLLABORATION FOR CHANGE

Case Study: New Student Precinct

Embodied CO₂e reduction
(tCO₂e)

223.3

CATEGORY

PRODUCT	SYSTEM	PROJECT	CONCEPT
---------	--------	---------	---------

SUPPLY CHAIN

MANUFACTURING	PROCESSING	TRANSPORTATION	CONSTRUCTION
---------------	------------	----------------	--------------

REGION

WA	NT	SA	QLD
NSW	ACT	VIC	TAS

Profile

Organisation: Aurecon (in partnership with Edge Environment)

Website:

<https://www.aurecongroup.com/>

About: Aurecon is an engineering, design, and advisory company, voted by AFR as Australasia's most innovative company.



Section 1: Opportunity

With a diverse range of materials and finishes being sourced to deliver these buildings, the project team sought to understand how design choices, materiality and operational considerations influenced the embodied carbon emissions. This was achieved through conducting life cycle assessment at various stages of the project and devising a roadmap to lower carbon material selections.

Section 2: Solution

Through conducting a lifecycle assessment (LCA), several key initiatives were identified as having a significant impact on embodied carbon, including:

- Dematerialisation where materials were not needed, for example eliminating internal finishes where possible and reduction in concrete slab thickness
- Selection of lower embodied carbon options for high impact materials such as high recycled content steel and the substitution of Portland cement with fly ash and slag
- Reduction in operational energy through high performance façade design and on-site energy generation



Section 3: Lessons

The process of conducting the LCA tested the project team's in-depth understanding of material quantities. Reporting on these revealed that for many aspects of the project, little is understood at the design phase about the material resources that will be consumed by the project.

The use of LCA early in the design phase provided a robust way to include embodied carbon and holistic sustainability in the design decisions that shaped the project.

Section 4 : Impact measurement

The LCA methodology used required building two comparative LCAs – representing the 'business as usual' scenario versus the proposed project. The LCA software eTool provides an analysis across several environmental impact areas, on a whole-of-building, whole-of-life (cradle-to-grave) basis. The LCA was used to identify and test initiatives for reducing embodied carbon during the schematic design initially, and once again after detailed design, to provide continual examination of the project's embodied carbon impacts.

The reduction in carbon is the equivalent of 48 cars off the road for a year or the equivalent to the energy of 26 homes for a year.

Disclaimer

The Materials Embodied Carbon Leaders Alliance (MECLA) has dedicated the work to the public domain by waiving all of his or her rights to the work worldwide under copyright law, including all related and neighboring rights, to the extent allowed by law. You can copy and distribute even for commercial purposes, without asking permission. In no way are the patent or trademark rights of any person affected by this nor are the rights that other persons may have in the work or in how the work is used, such as publicity or privacy rights. Unless expressly stated otherwise, MECLA makes no warranties about the work, and disclaims liability for all uses of the work, to the fullest extent permitted by applicable law. When using or citing the work, you should not imply endorsement by the author or the affirmer. The views expressed in this publication may not reflect the combined opinion of MECLA or any of its affiliated organisations. Whilst care has been taken to present the most accurate information, none of the authors, contributors, administrators, or anyone else connected with MECLA, in any way whatsoever, can be held responsible for any errors, omissions, or use of the information contained in or linked from this publication. All information is provided 'as is', with no guarantee of completeness, accuracy, timeliness or the results obtained from the use of this information. Information is intended for general informational purposes and users should obtain specific independent advice from professionals.