



COLLABORATION FOR CHANGE

Case Study: 25 King Street

Embodied CO2e reduction
(tCO2e)

8607

CATEGORY

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

SUPPLY CHAIN

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

REGION

WA	NT	SA	QLD
NSW	ACT	VIC	TAS

Profile

Organisation: Aurecon. Lendlease

Website:

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

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



Section 1: Opportunity

Among the steel & concrete buildings in Brisbane's landscape, Aurecon's client, Lendlease, offered an opportunity to be part of the renewal of Brisbane Showgrounds. Located 1.6 km from the Brisbane CBD, the precinct is one of the largest urban renewal initiatives in Australia comprising 340000m2 of new mixeduse buildings. Aurecon sought to create a world class working environment for its 700staff. Timber gave Aurecon the chance to differentiate itself by creating an environment that puts people at the heart of its design-It is the tallest commercial building in Australia.

Section 2: Solution

The solution is a combination of Cross-Laminated Timber (CLT) and glulam (glue laminated timber). The glulam is used for the structural beams and columns, and the CLT for the floors, lift shafts and escape stairs utilising precise offsite prefabrication and safer onsite construction methods. Comprises 3097 individual timber elements. There are 33 timber columns on each floor and 52 beams. There is circa 5,970m3 of timber, equivalent of 3,402 Spruce Pine Trees. The timber is sustainably sourced, PEFC certified and has a verified Environmental Product Declaration (EPD).



Section 3: Lessons

There are several core elements that feed into the embodied carbon of CLT and glulam buildings, items to consider are:

- Timber sourced from certified sustainably-managed forests such as FSC
- Transport and storage on site are critical to reduce burden shifting from the change in superstructure from standard construction techniques
- Construction techniques vary between traditional building materials and timber, and are still open to opportunities for reduction, and offer 20% faster construction time
- End-of-life processing is crucial to the sequestering of carbon long term

Section 4 : Impact measurement

The impact was 85% reduction in CO₂e for the product stage of the building, or the equivalent of 1,872 passenger vehicles driven in one year.

Calculated using a Life Cycle Assessment comparative study completed in line with ISO14040:2006, ISO14044: 2006 and EN15978:2011 for the purpose of Green Star. The scope of the study included all modules and the embodied carbon reduction referenced in this case study references Modules A1-A3. The Life Cycle Inventory was established from the building cost plan and site construction bill of materials, drawings, specifications, EPDs using GaBi.

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.