



Case Studies



CITY OF MELBOURNE

Market Upgrade

Embodied carbon reduction
total tCO₂e removed*:

22 tCO₂e

Category:

Product

System

Project

Concept

Supply Chain:

Manufacturing

Transportation

Processing

Construction

Region:



City of Melbourne is on an accelerated pathway to zero emissions by 2040 for the whole municipality.



Opportunity:

The City of Melbourne has been reducing its organisational carbon for over 10 years but has only recently begun to investigate its embodied carbon. With an infrastructure budget of \$254m in 2023/24, the City is responsible for a lot of public works, much of which is in roads, footpaths and drainage infrastructure. It was decided that an existing public realm project would serve as a test-bed for measuring embodied carbon and introducing some low embodied carbon materials to our project delivery teams.

Solution:

The detailed design of the Therry Street redevelopment at the Queen Victoria Market was already complete by the time it was decided to measure embodied carbon. The City engaged Mott MacDonald to undertake an assessment to determine a carbon baseline and the feasibility and impact of a variety of low carbon interventions. The assessment used design drawings, bills of quantity and the City's own standard drawings. Emissions factors were derived from a number of database sources in the following hierarchical order - EPD Australasia, AusLCI, IS Sustainability Materials Calculator and eTool.

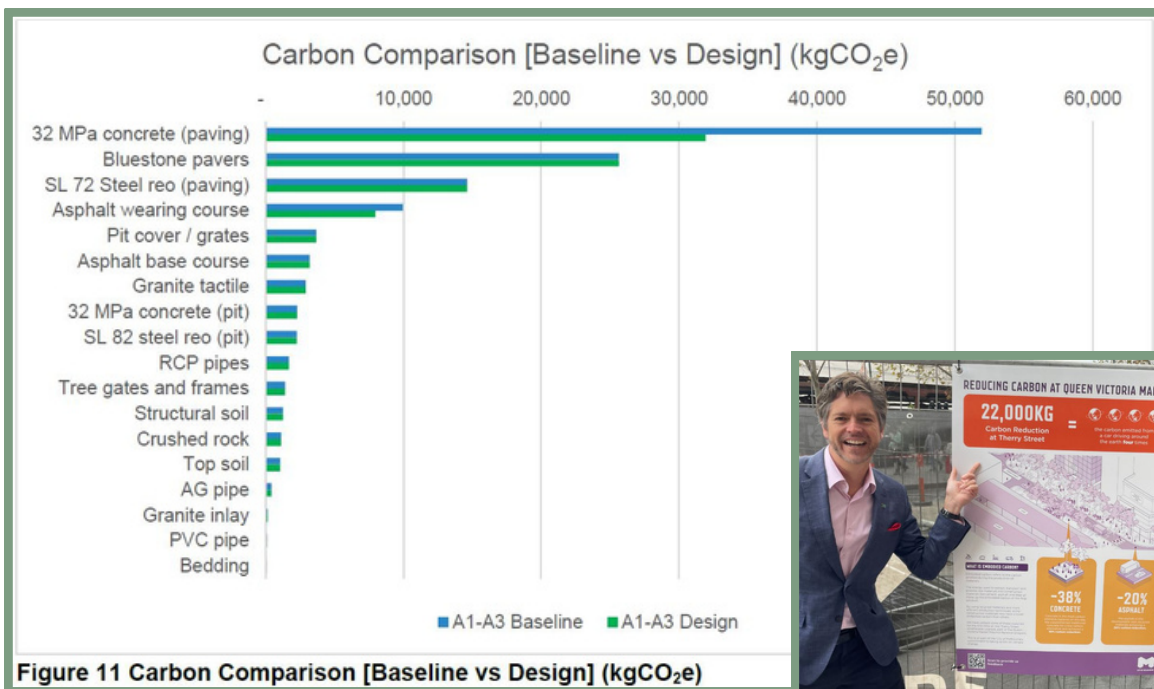


Figure 11 Carbon Comparison [Baseline vs Design] (kgCO₂e)



Lessons:

A valuable insight gained is the importance of early consultation with material suppliers, especially in cases involving lower carbon materials. By engaging suppliers sooner, project scheduling and staging can be significantly improved.

During the project, we encountered several instances where the City incurred additional costs, such as fixed-rate premium fees, to persuade asphalt and concrete suppliers to operate their plants for night works. This situation added to the project's budget and disrupted the workflow. Early engagement could solve many of these challenges.

Impact:

Using low embodied concrete with 45% SCM and a warm mix asphalt with 20% recycled material, an embodied carbon reduction of 18% was achieved. Glass fibre reinforcement was considered as an alternative for steel rebar but was rejected by the City's engineering department due to its unknown performance. The alternative concrete and asphalt increased the overall cost of the project by only 0.21%, dispelling the myth that any cost premium for these products are a meaningful barrier.

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*The tCO₂e estimate for the project is provided through the case study submission and not verified by MECLA. To interrogate the carbon reduction figures please contact the organisation making the claim.