HOW CONCRETE CAN HELP COOL OUR CITIES

For some time now, the world's cities have been getting hotter.

In fact, according to the United Nations, our cities are heating up at twice the global average rate due to rapid urbanisation and the Urban Heat Island effect.[1]

The term Urban Heat Island (UHI) refers to an urban or metropolitan area that is significantly warmer than its surrounding areas. The UHI effect is caused by human activity, including the removal or reduction of natural vegetation and landscapes to make way for more development. High Density buildings that absorb and radiate heat from the sun are also a major contributors to higher Urban Temperatures.[1]

Australian cities are vulnerable. The western suburbs of Greater Sydney, for example, already experiences temperatures of up to 10°C higher than coastal suburbs on days of extreme heat.[2]

If temperatures continue to rise over this century, the impacts for people living in these areas will become more severe. That's because extreme heat can kill.[3]

But it's not just a public health issue. As urban temperatures rise, so too does energy demand for cooling – contributing further to our carbon emissions.

It's also a threat to the natural ecology in and around our cities. Hotter surfaces can raise the temperature of stormwater run-off, threatening aquatic life in adjoining waterways.

Because of its high reflectivity, concrete can be used in urban designs to help mitigate the Urban Heat Island effect.

Designing buildings and infrastructure to cope with the impacts of climate change and urban heat can help communities stay safe and comfortable in a changing climate, and Concrete can play an important role here.

Concrete as a light-coloured material absorbs less heat, and the use of reflective materials like Concrete for roofs, roads and pavements can help support cooler city temperatures.[4] For example, concrete roads reflect up to twice the heat that is absorbed by typical black road surfaces.[5]

It's also been found that the reflectivity benefits of concrete can be improved even further through mix design choices.[6], [7]

Contributing to cooler, more sustainable cities is yet another way Concrete is Futureproofing Australia.

References:

[1] Beating the Heat: A Sustainable Cooling Handbook for Cities (2021) United Nations Environment Program
[2] Urban Heat (2022) NSW Government, Department of Planning and Environment
[3] World's Largest Study of Global Climate Related Mortality Links 5 Million Deaths a Year to Abnormal Temperatures (2021) Monash University
[4] Mitigating Climate Change with Reflective Pavements (2020) MIT Concrete Sustainability Hub
[5] Concrete Roads: Benefits of High Solar Reflectance (2017) Cement Concrete & Aggregates Australia
[6] Examples of Cooler Reflective Streets for Urban Heat-Island Mitigation: Portland Cement and Chip Seals (2003) Pomerantz M, Akbari H, Chang S.-C, Levinson Ro, and Pon B.
[7] "Solar Reflectance Values of Concrete (2008) Concrete International, Marceau, M and VanGeem, M.

To learn more on Concrete's reflectivity explore here

SUSTAINABLE FOR LIFE

www.futureproofwithconcrete.com.au

Concrete. FUTUREPROOF your build™

