Painting the town white is green

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By: Michael Green

Alicia Campbell and her eco friendly house at Turramurra in 2007. Photo: Marco Del Grande.

Beat urban heat with light surfaces and green spaces.

After a hot, still day parts of the city can be up to seven degrees hotter than the surrounding countryside. Dr Andrew Coutts, of Monash University's Centre for Water Sensitive Cities, says a phenomenon known as the "urban heat island" effect means that built-up zones are often warmer than rural areas, particularly after dark.

"Urban areas store heat during the day and slowly release it during the night," he says. "Meanwhile, rural areas can cool rapidly because soil and vegetation don't store as much warmth."

The urban heat island effect is present all year round, but it becomes a problem during the hotter months.

White is the new green

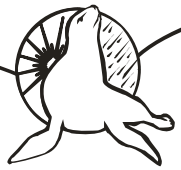
"Without low temperatures during the night, we don't get to recover from daily heat stress, especially when we have daytime temperatures in the high 30s and 40s," Mr Coutts says.

Victoria's chief health officer found that the heatwave preceding the Black Saturday fires might have contributed to 374 people's deaths, more than double the number who perished in the fires. "Heat stress is a big concern for vulnerable people, such as the elderly, the really young, and those with pre-existing medical conditions," he says.

Mr Coutts says the heat island effect has three main causes. First, impervious surfaces, such as asphalt and concrete, trap and store heat from the sun. "In urban areas we have these complex geometries, like street canyons, where heat gets absorbed by the walls, roads and roofs," he says.

Second, human activities, such as driving cars and using airconditioners, generate waste heat. And finally, because cities have less vegetation, they receive less natural cooling from shade and evapotranspiration through foliage.

The effect creates a vicious cycle, in which prolonged heat makes people switch on their airconditioners, which leads to more waste heat. Likewise, higher temperatures predicted under climate change will mean extra airconditioning,



thereby increasing both the urban heat island effect and greenhouse gas emissions.

So how can we sink the heat island?

To keep your property cooler, plant trees in your garden and harvest stormwater for irrigation with tanks and rain gardens. Minimise hard surfaces such as solid concrete; opt for gravel paths or porous paving instead.

Also, lighter colours increase the "albedo", or reflecting power of a surface, so when you restore or replace your roofing, follow the example of whitewashed Mediterranean cities. "If you paint your roof white, it increases the solar energy reflected away from the surface," Mr Coutts says.

It's also possible to buy dark-coloured paints that cut the heat absorbed by your roof. Ceramic-based, heat-reflective coatings are available from a number of businesses, including Astec Paints and Colorbond Steel. "They reflect solar radiation in the near-infrared spectrum," he explains. "This means you can keep your traditional roof colours, and reduce your energy needs and the urban heat island as well."

Mr Coutts and his colleagues are studying the cooling effect of street trees, as well as the relative benefits of green roofs and high albedo surfaces. He says the tactics we need for the city-at-large mirror the task at home: we must make our buildings and roads more reflective, plant more vegetation and harvest stormwater. We also need better public transport to reduce waste heat from cars.

"It's mainly about smart urban design," Coutts says. "We can have quite high density living without the impact of urban heat islands."