RESPONDING TO THE URBAN HEAT ISLAND: OPTIMISING THE IMPLEMENTATION OF GREEN INFRASTRUCTURE

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Warming associated with urban development will be exacerbated in future years by temperature increases due to climate change. The strategic implementation of urban green infrastructure (UGI) e.g. street trees, parks, green roofs and facades can help achieve temperature reductions in urban areas by providing shade and evapotranspirative cooling whilst reducing heat storage. It can also deliver diverse additional benefits such as pollution reduction and biodiversity habitat. Although the greatest thermal benefits of UGI are achieved in climates with hot, dry summers, there is comparatively little information available for land managers to determine an appropriate strategy for UGI implementation under these climatic conditions. We present a 5-step framework for prioritisation and selection of UGI for cooling. This is:

- Identify priority urban neighbourhoods based on people exposure, vulnerability and activity
- Characterise UGI and grey infrastructure
- Maximise the cooling benefit from existing UGI using water sensitive urban design and other strategies to maintain vegetation health.
- Develop a hierarchy of streets for new UGI integration
- Select new UGI based on site characteristics and cooling potential

The framework was developed following a review of the scientific literature examining the relationships between urban geometry, UGI and temperature mitigation which we used to develop guidelines for UGI implementation that maximises urban surface temperature cooling. We focus particularly on quantifying the cooling benefits of four types of UGI: green open spaces (primarily public parks), shade trees; green roofs; and vertical greening systems (green walls and facades) and demonstrate how the framework can be applied in the City of Port Phillip.
For further information and downloadable reports from our Victorian Centre for Climate Change Adaptation Research project seehttp://www.vcccar.org.au/responding-to-urban-heat-island-optimising-implementation-green-infrastructure