Keeping it Cool - Vegetation and Heat Adaptation Strategy

COUNCIL NAME
Queanbeyan-Palerang
Regional Council

WEB ADDRESS
qprc.nsw.gov.au

SIZE
5320km^2

POPULATION
62,239

Overview of the project

Climate change poses a significant risk to the Queanbeyan-Palerang local government area. Maximum temperatures are projected to rise significantly in the coming decades with the number of hot days (over 35 degrees), increasing 60 to 90 per cent by 2070.

Queanbeyan-Palerang Regional Council's (QPRC) Keeping it Cool - Vegetation and Heat Adaptation Strategy studied heat distribution across the landscape, assessed climate change impacts on vegetation and investigated and implemented strategies to increase heat resilience within our major urban centres.

How the project was carried out

The five project milestones were:
- Surface heat mapping the Queanbeyan-Palerang Regional Council local government area, including identifying urban heat islands
- Assessing the climate vulnerability of current urban trees
- Identifying future climate-ready trees that are currently not established in the region.
- Experimental pilot planting of identified future climate-ready trees
- Development of a QPRC Urban Forest Cooling Strategy.

The project was initiated during the development of Council's Climate Change Action Plan as the community identified a clear need to mitigate and adapt to heat. A project steering group, consisting of five Council staff and three community members, was established to guide actions and provide relevant expertise. A consultant was engaged to develop surface heat maps of the local government area, including identifying urban heat islands using Landsat 8 satellite imagery. In areas identified as 'severe urban heat islands', staff assessed the existing urban treescape for its vulnerability to climate change. These assessments were completed using AdaptNSW climate data and the Australian National University "Urban Forest Tree Species Research for the ACT" methodology.

Suitable future climate-ready trees from Australia and around the world were identified using AdaptNSW climate data and the "Esperon et al. Assessing the vulnerability of Australia's urban forests to climate extreme" study. A number of these tree species were then planted at the Bungendore Sports Hub as experimental pilot plantings. Lastly, a consultant was engaged to develop a "QPRC Urban Forest Cooling Strategy" for the four major urban centres of Queanbeyan, Bungendore, Googong, and Braidwood. This included three online community consultation workshops and a public exhibition period.

QPRC

Outcomes now and in the future

- A greater understanding of how heat is distributed across the landscape, particularly during hot days and heatwave events. Over 70 per cent of urban land within the QPRC local government area is now classified as an urban heat island with 45 per cent classified as severe.
- Tree canopy cover mapping of the four major urban centres of Queanbeyan, Bungendore, Braidwood, and Googong to provide a benchmark of current urban forest cover and a resource for staff and the community.
- 129 current urban tree species assessed on their climate change vulnerability. This includes:
    - 49 listed as *'likely to perform well'* under climate change,
    - 58 listed as *'likely to perform OK'* under climate change, and
    - 22 listed as *'unlikely to perform well'* under climate change.
- 153 future climate-ready tree species identified as highly suitable for propagation within the region, including 13 tree species pilot planted at the Bungendore Sports Hub.
- Development of an Urban Forest Cooling Strategy to support Council in continuing to provide housing and infrastructure for the growing population while ensuring urban centres are healthy, cool, and attractive environments for residents and wildlife.
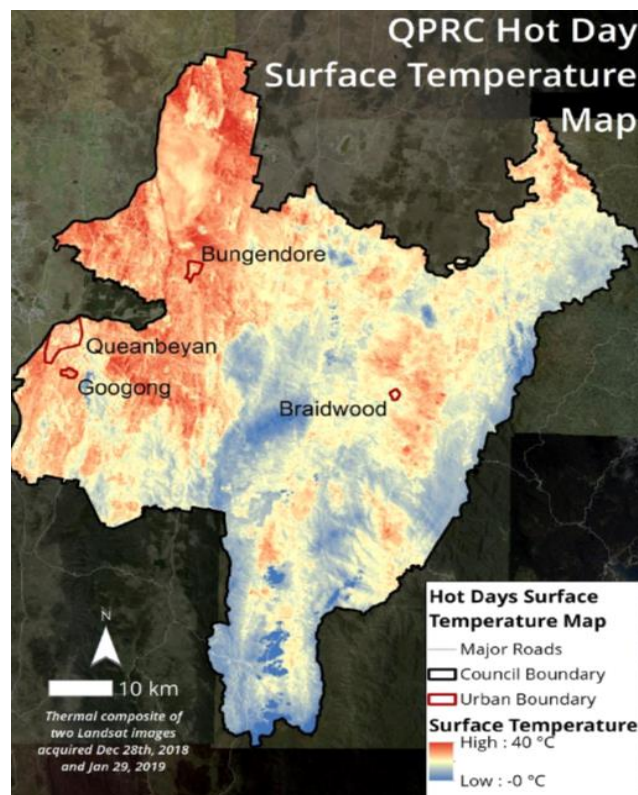
QPRC Hot Day Surface Temperature Map

Benefits and lessons learned

The Keeping it Cool - Vegetation and Heat Adaption Strategy ensures that both the community and Council are better placed to manage, reduce, and adapt to increasing temperatures due to climate change, especially within built-up urban areas. Importantly, the project lays down the foundation for future action and study within this field. Other benefits and lessons learned include:

- Greater understanding of the average surface temperature of different land-use types, including bitumen, irrigated grass, trees, and residential and industrial areas.
- Advantages of high-resolution imagery for urban heat island identification and to identify priority areas for heat mitigation
- Awareness of the significant heat build-up in pasture and rural lands on hot days, particularly during extended droughts. Further analysis and work is required to ensure appropriate heat mitigation and adaptation action is taken within the rural settings
- A pathway forward to ensure cooler, greener, resilient, and more diverse urban environments that are actively managed.

More information

For a copy of the Surface Heat Mapping report and monitoring updates on the pilot plantings visit QPRC Urban Forest Cooling Strategy

To view the project video visit IRCC video case study page.

Contact

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