CASE STUDY: SUMMARY, OUTCOMES AND NEXT STEPS FOR GREATER SHEPPARTON CITY COUNCIL

Urban Forest Strategy - Case Study overview

- Climate change expected to increase temperatures and heatwave events in our municipality
  - Greater Shepparton MEMPC currently developing Extreme Heatwave complementary plan (Municipal Emergency Management Plan)
    - What can residents do?
    - What can Council do?
  - Impacts of Urban Heat Island (UHI)
- What adaptation options may be available to Council to decrease the Urban Heat Island?
  - Urban Forest Strategy – adopted in 2017
    - 40% canopy cover target by 2037; implementation is underway
- What are the health and economic benefits of increasing the urban forest for our residents under projected climate change impacts?

Urban Forest Strategy - Case Study Process

- Case Study analysed data and information from multiple sources, including both GSCC and Marsden Jacobs
  - GIS data – tree canopy cover
  - Tree species lists
  - Tree management policy
  - Tree technical manual
  - Budget costs – planting and maintenance
  - Extreme heatwave complementary plan
  - Staff expertise (urban forest team)
  - Health and business case cost data – *Marsden Jacobs*
- Considered two options compared to Baseline
  - Option 1: current target (40% canopy cover)
  - Option 2: reduced target (30% canopy cover) – theoretical only
  - Baseline comparison: current canopy cover ~18%
  - Other options: reflective paving, shade structures, water bodies

Urban Forest Strategy - Case Study outcomes

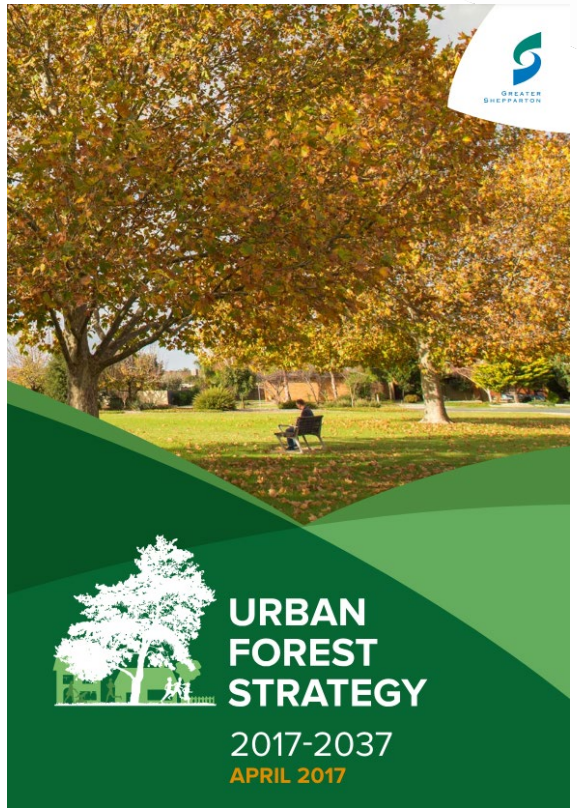
- Continued implementation of the UFS will provide substantial net benefits for the community under both Option 1 (40%) & 2 (30%)
  - Avoided premature mortality; increased mental wellbeing; avoided healthcare costs; avoided impacts of air pollution
- Benefit Cost Ratio larger for Option 2 than Option 1
  - Greater benefits and greater costs for Option 1, but additional benefits of increasing canopy from 30-40% proportionally less than additional costs of the increase
- Considerations:
  - Optimising number, mix and location of new tree plantings (e.g. parks vs streets)
  - Hard surfaces vs natural surfaces (e.g. impact on tree health)
  - Public education on urban heat and benefits of increasing canopy cover

Table ES.1. Cost benefit analysis results of increasing tree canopy cover to 40% (Option 1) and 30% (Option 2) under the moderate climate change scenario

Costs and benefits	Option 1 (Increasing tree canopy cover to 40%)	Option 2 (Increasing tree canopy cover to 30%)
Costs		
Capital costs	$3,639,800	$1,955,000
Operating costs	$32,160,900	$19,251,300
Total Costs (present Value)	***$35,800,700***	***$21,206,400***
Benefits		
Avoided health impacts of air pollution	$2,613,200	$1,407,800
Value of lives saved	$58,461,300	$36,043,800
Avoided healthcare costs	$4,720,500	$2,776,800
Increased mental wellbeing	$15,087,200	$15,087,200
Total Benefits/Avoided Costs (Present Value)	***$80,882,300***	***$55,315,700***
Net Present Value (NPV)	**$45,081,600**	**$34,109,300**
Benefit Cost Ratio (BCR)	**2.26**	**2.61**

Case study benefits

- Confirmation that continued implementation of the UFS will benefit the health of our community
- Collaboration between different teams
  - Emergency Management, Parks Sport & Recreation, GIS, Sustainability & Environment
  - Climate change presents complex challenges, which will require many teams working together to design, implement and manage climate-adapted public spaces
- Better understanding of urban tree management
  - Current tree management challenges
    - Heat and location issues
  - Community perception of trees
    - How do we help our community understand the benefit of urban trees?
- Framework to consider difficult decisions with regard to management of public assets under a changing climate
  - What are the trade-offs?
    - Health; initial and ongoing costs; ease of management; community acceptance



Next steps for GSCC

- Sharing of Case Study with relevant staff
- RPE mapping onto internal GIS system
  - Accessible for all staff
- Internal staff training on climate mitigation and adaptation (July 2024)
  - RPE viewer and reports will form the platform for adaptation component
    - Locally relevant maps and vulnerabilities assist in discussions
    - Initially targeting key teams responsible for managing Council assets with vulnerable assets
  - Linking emissions reduction and adaptation responses
- Creation of materials to embed climate-related considerations for staff on intranet