

Actions to improve green cover in West Torrens

July 2019



Action to Improve Green Cover

Contents

1. Introduction.....	3
2. Importance of green cover.....	4
3. Risks to green cover	6
4. What is being done to improve green cover?	7
5. Conclusion	12

1. Introduction

This report highlights some of the work being undertaken by Council to improve green cover across West Torrens. It builds upon an earlier study in September 2018 'Analysis of Green Cover' which analysed the types of green cover and compared the amount of hard surfaces (such as roads, buildings, carparks and driveways) to trees, shrubs and lawn. The information from that study also provides useful baseline data that can be used to measure changes in green cover and hard surfaces over time.

Council acknowledges the important role urban vegetation plays in providing a mix of important social, economic and environmental benefits for the community. However, the amount of tree canopy cover across the City of West Torrens is at risk due to population growth, housing infill development, impacts of climate change and changes to South Australian tree protection controls over time.

What is green cover?

Green cover refers to the network of growing landscapes in the natural and the built environment. Examples of green cover and the spaces they are often established are shown below:

Streets - street trees, water sensitive urban design, vegetated verges and medians



Public open spaces - parks, reserves, sporting grounds, playgrounds, and vegetated plazas



Vegetated corridors - pedestrian and cycle pathways, rail and tram, and watercourses



Buildings - private gardens, balconies, roof gardens, green walls and indoor plants



2. Importance of green cover

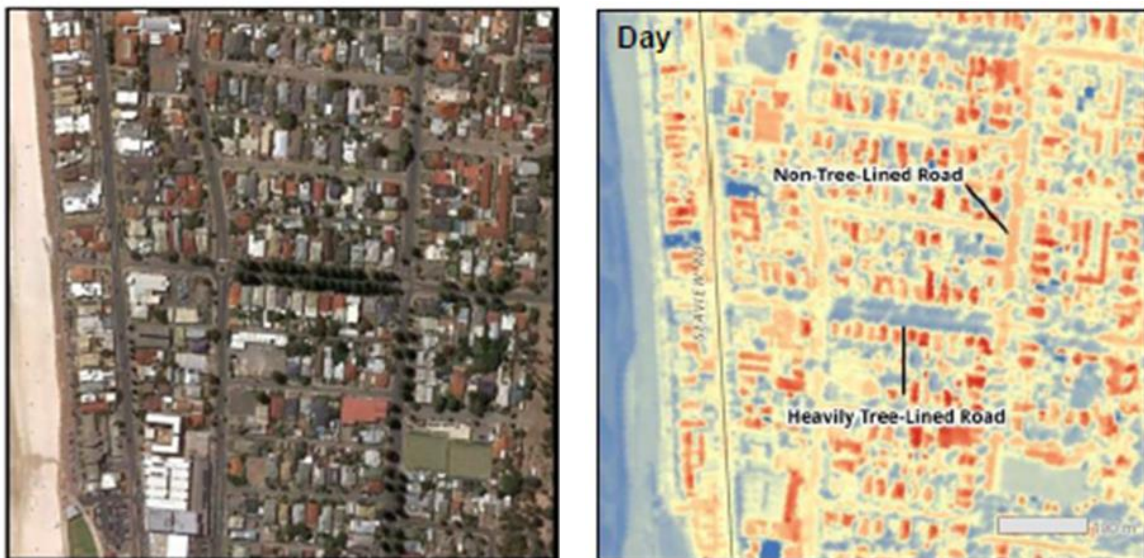
Urban green cover is an essential element to improving the liveability of the City of West Torrens and in driving sustainability. It strengthens the resilience of urban areas to respond to the challenges of population growth, urban densification, health, climate change, biodiversity loss as well as water and energy. Green cover delivers multiple benefits in the urban space it occupies and 'value adds' by linking and connecting people, places and ecosystems.

The benefits of green cover are proven and wide-ranging, providing a mix of environmental, public health, social, spiritual, and economical values. These benefits are maximised if green cover is integrated with the built environment and the people who live amongst it.

Good quality and well planned, accessible green cover can provide many health and wellbeing benefits, strengthen neighbourhood identity, provide opportunities for physical activity, stimulate economic activity, enhance real estate values, support biodiversity, improve stormwater management, and provide shading and cooling and more.

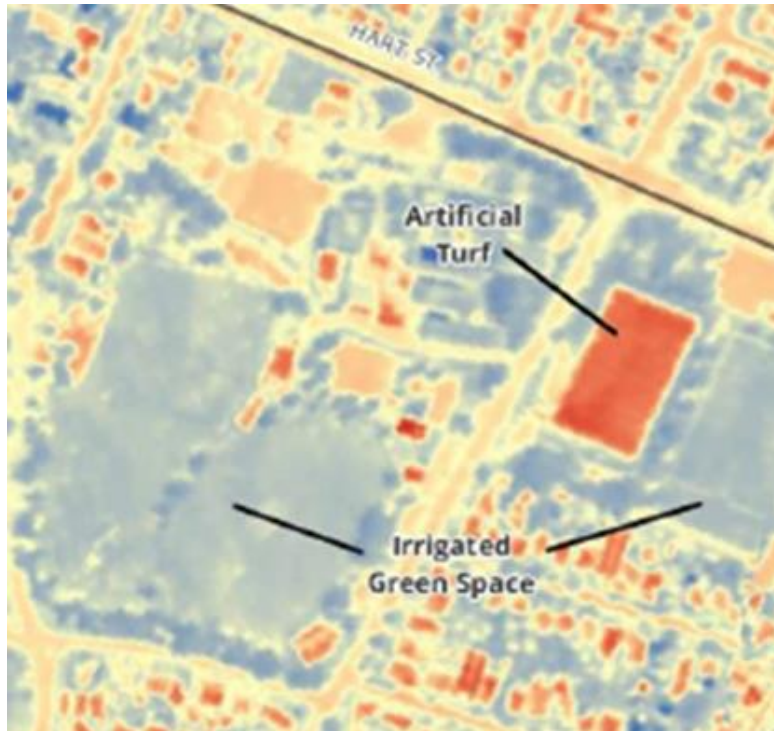
The planning and provision of green spaces within urban areas can also have significant benefits by increasing nearby property and land values, and therefore investment in green cover can lead to higher returns for the property sector. Greener areas are seen to have a better image and attract more people, bringing with them retail and leisure spending while stimulating job opportunities.

The location and type of green cover can provide shade as well as have a cooling effect which is important in ameliorating our urban heat. Council's recent urban heat mapping demonstrates the benefit of tree-lined streets in cooling urban heat, amongst other benefits. The images below show that large, exposed tracts of bitumen are one of the warmest urban surfaces absorbing heat. In contrast, streets shaded by trees can be 8°C cooler, presenting a powerful mitigation approach.



The cooling effect of trees

Urban heat can also be influenced by the choice of materials and land management practices. Temperatures over artificial turf can be much hotter than natural lawn, up to 8.1°C warmer (and has no biodiversity value), as shown below. Conversely, irrigated natural turf can be 14°C cooler than artificial turf. Green cover can play an important role in assisting multiple elements of stormwater management (reducing runoff and improving quality), as well as supporting ecosystem health.



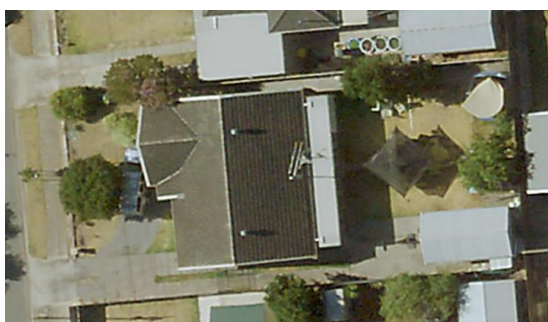
Effect of artificial turf and water on urban heat

3. Risks to green cover

Higher density housing is changing the form and function of our neighbourhoods, and as the effects of climate change are felt, these factors can pose a risk to the quality, extent and types of green cover.

Green cover across the Council area is at risk of being replaced with houses and other buildings and hard surfaces. This is due to numerous factors, such as population growth, the State Government's target to increase infill development, changes in house trends - homes on smaller blocks with little space for greenery, and an increase in number and size of driveways, resulting in the removal of street trees. All of these factors contribute to the loss of private green space and removal of Council street trees.

There is a trend for dwellings to cover most of the allotment area, resulting in loss of the previous green cover and little, if any, remaining space for replanting and stormwater drainage, as shown in the following example:



Feb 2018



Feb 2019

Independent of the nature or density of new urban development, the trend over recent years consistently shows hard surface coverage averaging 80-90% of the allotment.

The loss of greening on private land is a significant side effect of new housing developments. This also changes the role and function of streets as more driveways are created and there is greater demand for car parking, leaving fewer opportunities for planting trees. There is added pressure on streets to provide multiple uses and streets cannot provide the same scale of green cover that would have previously been provided in private gardens.

The effects of climate change may also have a detrimental impact on the health of green cover, particularly as higher temperatures and less frequent rainfall is expected in the region. Therefore tree species need to be suited to the local environment and a changing climate, and ideally have access to stormwater to maintain soil moisture.

Just over half of the West Torrens area comprises hard surfaces (such as roads and buildings) and the remainder is in the form of green cover (i.e. trees, shrubs and grass/bare earth). The amount of each type of cover differs across the council area as well as in privately owned land compared to council owned land. There is the need to increase quality plantings to build up community resilience to climate change, to cool urban heat, and to maintain healthy and connected communities ('Analysis of Green Cover', Sept 2018 - available on Council's website).

4. What is being done to improve green cover?

Quality green public open spaces may be one of the most tangible public health interventions available to mitigate many urban-living issues and to create more liveable neighbourhoods. The benefits of trees often far outweigh concerns about tree root systems, watering requirements, and the dropping of leaves and fruits. Although these issues need to be managed and good design for planting is important, trees should to be viewed as an integral part of our urban landscape and a community asset, rather than an 'add-on' consideration or even a liability.

Strategic planning and policy

The City of West Torrens' climate adaptation project 'AdaptWest' continues to produce useful information to help guide decision making. For example, the Urban Heat Mapping project identifies urban hot spots which enable us to prioritise plantings for shading and cooling. AdaptWest has also formed partnerships with research bodies and is looking forward to the learning outcomes of research being undertaken, such as the SA Water turf irrigation and cooling trials, Macquarie University planting guide, and more.

Through the State's planning reform process, the Administration continues to provide feedback to the Planning Commission on its proposed planning policies, including highlighting the risk of urban infill policies on green cover, and the importance of providing green cover and permeable land within private allotments, and providing greater protection for trees from development.

Collaboration

Breakout Creek Stage 3 project - the City of West Torrens is partnering with City of Charles Sturt, Green Adelaide and the Commonwealth to deliver the final stage of redeveloping Breakout Creek (River Torrens) to the sea. This project will transform the artificial channel that was dug out in the 1930s into a biodiverse wetland environment and will open up opportunities for the community to enjoy this space.

Cities with Nature program - Our parks and gardens are highly valued by the community for a range of sport, recreation and leisure pursuits as well as to maintain ecosystem health. The benefits gained from connecting people to nature is becoming well understood and therefore improving access to high quality green open spaces is highly desirable. City of West Torrens recently became a Pioneer member of the international Cities with Nature program. This program provides opportunities for showcasing initiatives aimed at bring nature into cities and to learn from the experience of others and to collaborate with others on research and pilot programs.

Street Trees in challenging spaces - City of West Torrens was successful in a grant application to Green Adelaide to develop planting and civil designs aimed at growing healthy trees in narrow and confined environments. Challenging spaces present difficulties in planting and growing healthy tree growth, and this hampers council's efforts in expanding tree canopy cover. Council is working with other metro councils to define these challenging spaces and to develop designs to enable more trees to be planted and to improve overall canopy cover.

Citizen Science project - Early in 2020 citizen scientists visited public and private open spaces to explore perceptions of quality green spaces across metropolitan Adelaide, including West Torrens. The project helps to understand what makes quality green spaces for the community.

This was a pilot project lead by the University of Adelaide, funded by SA Health and Wellbeing, in collaboration with a range of metropolitan Adelaide councils. The results of this study will be used to further inform and improve the quality of our green open spaces.

On-ground actions

Council is seeking on-ground actions to improve green cover, as well as encourage and support the community to add more greening in their own places. This is described below.

Tree Strategy - Council's Tree Strategy aims to preserve our urban forest, expand the tree canopy, improve the health and growing conditions and engage with the community. It contains information on tree species, planting and maintenance, and actions to develop a sustainable urban forest.

Improving greening along council's shared path network - More trees and landscaping have been planted along the Westside Bikeway to better define the path, provide refuge for fauna, and shade for people.

Street tree audit - A tree audit was undertaken on all street trees and in parks. The audit provides information on each tree, such as its species, height and canopy cover, growing conditions, as well as identifying gaps in the streetscape where additional trees and other green cover could potentially be planted.

Plantings in streets and parks - Despite urban infill affecting tree numbers along streets and in private properties, each year council plants replacement trees as well as additional trees to continue to grow our urban forest.

Recent upgrades to parks, playgrounds and reserves have helped improve open space value and greening opportunities. Annual community planting days include native tube stock plantings, such as on Arbor Day along River Torrens Linear Park.



Streetscape design

Improving green cover is not just about adding more trees. We need to ensure they have enough space to grow and also have access to water so they grow well.

Trees establish more quickly and have more vigorous growth if they are planted in a suitably sized space with nutrient enriched soil, are given space to expand in the street verge, and are mulched to allow rainwater to infiltrate the roots. They develop a larger canopy within a shorter time, and this allows us to enjoy the benefits that the tree provides, such as shading, cooling, and amenity.

Methods are being trialled across the suburbs to improve the growing conditions of streetscape vegetation and standard designs are being developed for capital road projects. By well-considered design, not only is this providing direct green cover benefit, but is also benefiting the road and footpath assets by reducing future conflicts (such as roots lifting up paving), which traditionally often resulted in tree removal and high maintenance costs. This will improve the environmental sustainability of streetscapes and the financial sustainability of assets.

Examples of new standard designs and treatments:

- Designing tree planting areas to provide more permeable space around the tree to enable water to infiltrate to the roots
- Providing more space in the street verge to enable the tree to grow without it damaging footpath paving and road material
- Providing suitable loam base and mulching to provide better growing conditions, improved soil moisture, and weed suppression



- Street Trees in challenging spaces - City of West Torrens is developing planting and civil designs aimed at growing healthy trees in narrow and confined environments. Council is working with other metro councils to define these challenging spaces and to develop designs to enable more trees to be planted and to improve overall canopy cover.

Through design, streetscapes are integrating more green cover:

- Verge landscaping - enhances biodiversity and visual amenity whilst cooling through evapotranspiration
- Road modifications during street renewals -
 - Narrowing roads and expanding verges to allow space for trees to grow
 - Permeable paving to minimise road runoff and maximise infiltration and soil moisture
 - Road narrowing reduces the amount of expensive road material, allows better growing conditions for trees, reduces maintenance time and cost, requires less bitumen material = reduced carbon footprint and \$\$\$ savings, reduces urban heat
- Additional trees being planted as part of street renewal projects



Water in the landscape: water sensitive urban design (WSUD)

'Active' irrigation is the watering of plants using the mains water supply, while 'passive' irrigation uses alternative sources of water for watering plants, such as stormwater. It is not practical or environmentally sustainable to use mains water to irrigate a large proportion of our street verges (this occurs only in high profile/ high amenity areas). WSUD provides a more 'passive' form of irrigation which then enables the watering of more street verges in an environmentally sustainable manner.

Maximising access to stormwater is an essential element in creating a healthy growing environment for vegetation. A sustainable water source increases permeability and soil moisture to encourage deep root growth and stable trees, as well as creating a cooling effect above ground. Council's urban heat study found that temperatures over open green spaces are cooler compared to their surrounds, and when these areas are watered they can have a cooling effect of 4.0°C.

In addition to trees growing more vibrantly when they have access to water, the roots grow deeper and so there is less conflict with paving, and less maintenance. Also, there are improvements to the local amenity, street pride and real estate values.

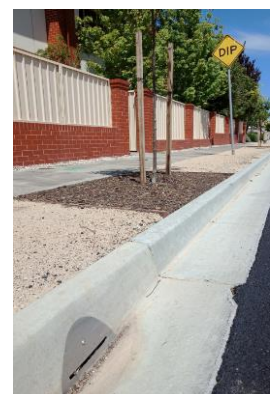


The following methods are being used in many streets to maximise access to water:

- Raingardens - a constructed garden designed to capture stormwater, filter out pollution, provide water for landscapes, and then return the filtered water back the street stormwater system. Urban heat mapping suggests raingardens may be up to a 6°C cooler than the surrounding kerb environment.
- Permeable paving - stormwater seeps through the spaces between the pavers into the soil to improve stormwater management and to provide water to plants.



- Brick paving along footpaths increases infiltration and improves soil moisture.
- Tree inlets and water wells direct stormwater to the tree roots.



In addition to the actions described in this report, other initiatives being explored include:

- Modifying streets and footpaths to accommodate more green cover such as tree sand raingardens
- Replacing dolomite on verges with grass
- Shading playground equipment from hot weather
- Seeking opportunities to revegetate council-owned land
- Developing community incentives aimed at retaining and planting trees on private land

5. Conclusion

The reduction of green cover on private properties is placing greater emphasis on streets and council owned public spaces to meet the social and recreational needs of the growing community, as well as to facilitate a range of environmental functions to occur.

The City of West Torrens acknowledges the important role of trees and other types of greening such as lawn in supporting a healthy community, and it is committed to continue seeking opportunities to improve green cover across West Torrens.