Analysis of green cover in West Torrens
How green are we?




September 2018

City of
West Torrens
Between the City and the Sea

Contents

1. Introduction

The social, economic and environmental benefits of urban vegetation have been well researched and documented globally. One of the significant benefits of urban greening, particularly tree canopy cover in the community is the reduction in urban heat. 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.

The State Government's 30 Year Plan for Greater Adelaide aims to contain the urban footprint and protect resources. To help facilitate this it has set a target of 85% of all new housing in metropolitan Adelaide to be built in established urban areas by the year 2045.

When combined with the increase in site coverage footprint of homes on smaller allotments and a trend away from large backyards, an increasing number of trees have been cleared on private property to build more densely packed houses. Additionally, dwellings with greater site coverage minimise the potential to plant replacement trees due to lack of remaining space. Infill development has also resulted in more driveways, which has resulted in the removal of street trees.

There have been changes over time to the original 'Significant' tree protection controls which were introduced in 2000 to protect healthy trees from removal and damage across metropolitan Adelaide. A combination of factors led to changes to this legislation in 2011, possibly resulting in the relaxation of the tree protection controls, such as:

- Significant trees would now be defined as having a trunk circumference of 3 metres instead of 2 metres (from 1 metre above ground). This is likely to result in fewer trees being afforded the protection under this classification.
- 'Regulated' trees were introduced and defined as having a trunk circumference of 2 metres. Such trees require approval to remove or prune unless when 'development that is reasonable and expected would not otherwise be possible'. The broad nature of the terminology used gives planning authorities discretion to authorise the removal or damage to a Regulated tree.
- Tree protection controls do not apply to trees situated within 10 metres of an existing dwelling or in-ground swimming pool (other than Willow Myrtles and Eucalypt species), or within 20 metres if the tree is in a bushfire protection area.
- Tree protection controls do not apply to a list of exotic species, including many species which have been traditionally grown across metropolitan Adelaide since European settlement - these can now be removed or pruned without approval.

The 30 Year Plan for Greater Adelaide acknowledges the multiple benefits of urban greening and includes a target of a 20% increase in tree canopy cover across metropolitan Adelaide by year 2045. The trends in reduced private open space and loss of tree canopies across metropolitan Adelaide are also acknowledged in the State Government's draft State Planning Policies which have been developed to inform future land use planning through the new *Planning, Development and Infrastructure Act 2016.* These draft Policies also acknowledge the need to support urban form that is liveable and environmentally sustainable.

The City of West Torrens is responsible for providing and maintaining public spaces, known as the public realm, for the benefit of the community. Council therefore has greater opportunity to increase greening in streets, parks and other areas owned or cared for by Council.

Purpose

The purpose of the study is to examine land across the entire City of West Torrens to gain a better understanding of how much is represented by green cover, such as trees, shrubs and grass, compared to hard surfaces, such as roads, buildings, carparks and driveways. The information provides baseline data that can be used to measure changes in green cover and hard surfaces over time.

The study also analyses how much green cover is found on privately owned land (known as the private realm) versus land owned by the City of West Torrens (known as the public realm). In addition, historical imagery was examined for sample suburbs to gain an insight into changes in the amount of green cover versus hard surfaces in the recent past, which may help to understand the impact of changes of land uses and urban development policies.

The scope of this study and terminology used is described in more detail in Chapter 3.

The information from this study can be used to assist in decision-making, particularly regarding future opportunities to increase greening across the City.

Key objectives of this project include:

- Assess the current (2017/18) land cover across the entire City to determine how much land is represented by tree canopy and other greening elements, compared to hard surfaces;
- Assess land cover types by suburb;
- Assess changes in land cover over time, i.e. between 2008 and 2018 for selected suburbs; and
- Analyse key findings and identify opportunities to protect and increase green cover.

2. Importance of Green cover

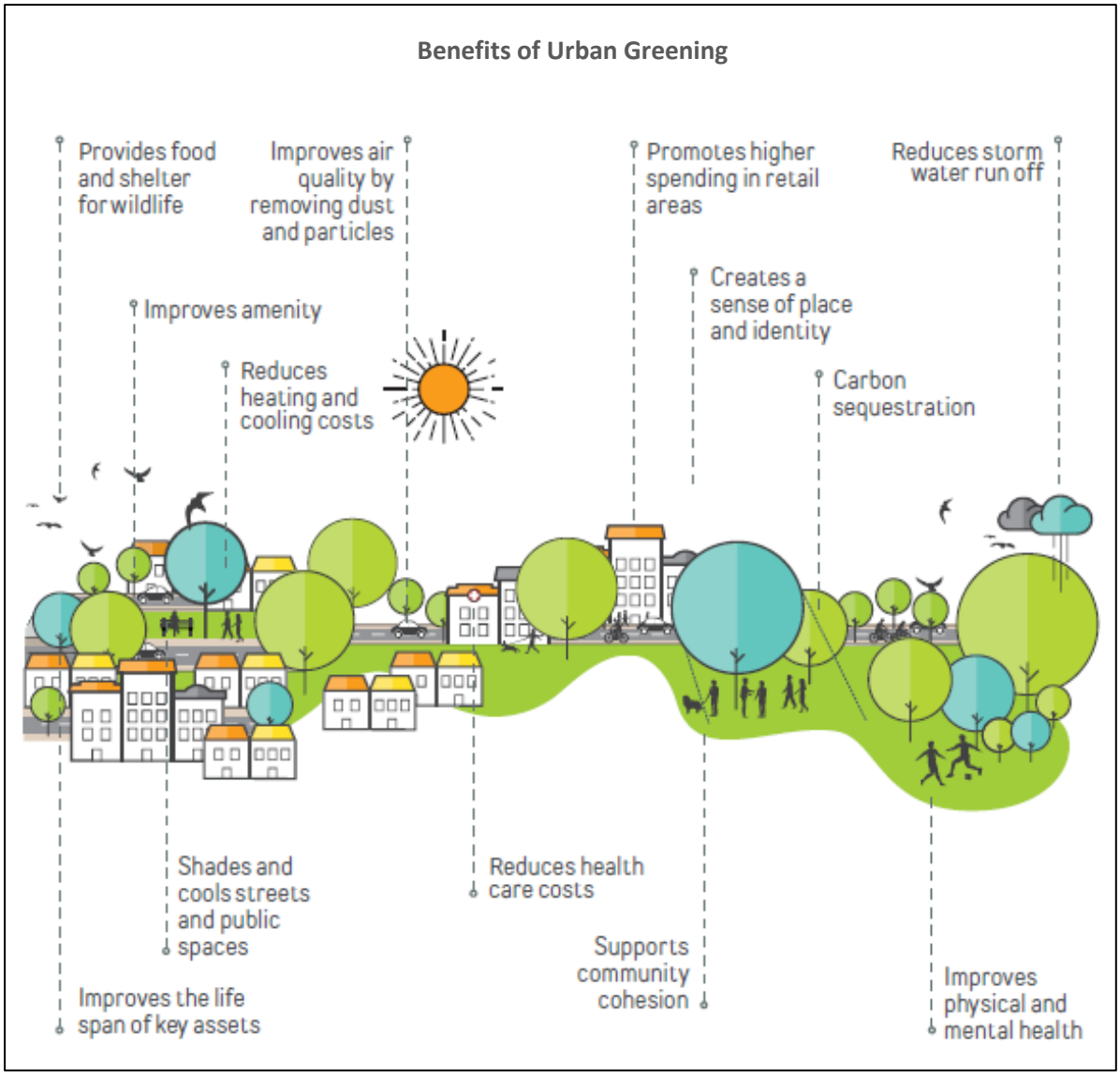
Green cover such as trees and other urban vegetation in our cities plays an important role in the health of our community and natural environment. The loss of greening, particularly tree loss, can have detrimental impacts on the long-term physical and mental health of the community, economic prosperity, and resilience to climate change.

The aesthetic and biodiversity values of trees in our parks and streets is well understood however there are many other benefits that may not be as well-known or appreciated, such as the following examples:

- Trees and other forms of urban greening help provide clean air, clean water and increase our resilience to climate change impacts.
- People tend to walk and jog more on shaded streets, which leads to interaction with neighbours, improves the sense of community and connectedness, and helps maintain physical health.
- Urban vegetation, when provided as parks and walkways and incorporated into building design, provides calming and inspiring environments and encourages learning, and alertness. This can relieve stress and support general wellness. Even brief experiences of nature in cities can improve mental function and reduce mental illness.
- Trees provide shade and cooling. Recent urban heat mapping across the City indicates that urban vegetation can lower temperatures by 2.8°C compared with the average temperatures, and irrigated open space can cool land surfaces by 4.0°C. Temperatures within vegetated swales/pits along roads (known as raingardens) may have up to a 6°C cooling effect.
- Tree lined streets and parks maintain and increase property values compared to areas without trees.
- Trees enhance economic stability by attracting businesses and people linger and shop longer when trees are present. In fact, shoppers indicate that they will travel a greater distance to visit an area having high quality trees, and spend more time there once they arrive.

Trees should be viewed as an integral part of our urban landscape and a community asset, rather than an 'add-on' consideration or even a liability. Unlike other assets, the value of trees appreciates over time as it grows larger and as its tree canopy expands. The benefits of trees often far outweigh concerns about tree root systems, watering requirements, and the dropping of leaves and fruits.

The benefits of greening throughout urban areas are wide-ranging, from human health benefits, to environmental and economic benefits, as presented in the following diagram.



(Source: City of Perth's Urban Forest Plan 2016-2036)

3. Scope and Methodology

What was assessed?

For the purpose of this study, land across the City of West Torrens is covered by the following categories:

- Trees
- Shrubs
- Grass/bare earth

} types of green cover

- Hard surfaces (such as buildings, roads, carparks, and driveways)

Details of these land cover categories are provided below:

LAND COVER CATEGORIES	DESCRIPTION
Tree Canopy - Private realm	Trees on privately owned land such as private residences and yards, carparks, schools, golf courses (the 'rough')
Tree Canopy - Public realm	Trees on Council owned land such as parks, reserves, Council ovals (perimeter), along streets and road reserves
Tree Canopy - Airport	Trees on Airport land and associated land
Shrub - Private realm	Shrubs on privately owned land such as private residences and yards, carparks, schools, golf courses (the 'rough')
Shrub - Public realm	Shrubs on Council owned land such as parks, reserves, Council ovals (perimeter), along streets and road reserves
Shrub - Airport	Shrubs on Airport land and associated land
Grass/bare earth - Private realm	Grass/bare earth on privately owned land, such as private residences and yards, and in schools
Grass/bare earth - Public realm	Grass/bare earth in park, reserve, road reserve, and areas not used for sporting purposes
Grass/bare earth - Sports	Grass/bare earth on land used for sporting purposes, including school ovals, Council ovals, and golf courses (greens and fairways)
Grass/bare earth - Airport	Grass/bare earth on Airport land and associated land
Hard surface - Private realm	Hard surfaces on privately owned land - private residences, buildings, driveways, carparks, sheds, swimming pools
Hard surface - Public realm	Hard surfaces on Council owned land - street/roads, footpaths, buildings
Hard surface - Airport	Hard surfaces on Airport land and associated land - runways, buildings
***Hard surface** - Other	Land that is not planted upon, such as the ocean/water

**This classification was added to the "Individual suburb assessment" and the "Historical assessment"*

An assessment of land cover was undertaken to determine the percentage of greening and hard surfaces across the City. This was done in three parts:

1. Entire City - The land cover was assessed to determine the percentage of green cover and hard surfaces (refer to map on the following page). A comparison of land on private properties and the public realm was also undertaken;
2. Individual suburbs - The land cover was assessed by suburb to provide further detail about land cover at the suburb scale; and

3. Historical - An historical assessment of land cover was undertaken for the year 2008 and 2018 for selected suburbs (Torrensville and Kurralta Park) to gain an insight to the trends in greening during recent urban infill development.

City of West Torrens - land cover assessment area:

Study area

Suburb boundaries

How was land cover assessed?

The software tool "iTree Canopy" was used to identify the types of land cover across the City of West Torrens (i.e. trees, shrubs, grass/bare earth and hard surfaces) and the approximate percentage of cover for each type. iTree Canopy software is a free, online tool that provides a rapid method for assessing land cover across a defined area. It uses a scientifically validated method of assessing land cover by using Google Earth imagery as a base layer and then randomly generating sample points across the surface of a defined study area, so that the user can then classify the land cover type for each sample point, such as a tree, shrub, grass or hard surface.

A summary of the technical aspects of the iTree Canopy assessment methodology is provided below:

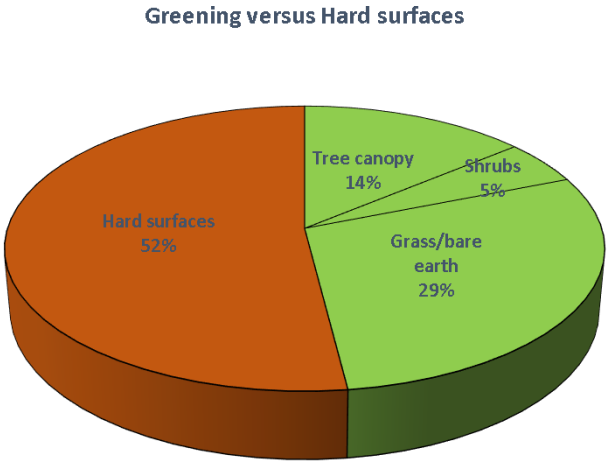
Assessment	Imagery used (year)	No. of points used in iTree
Entire City	2017/18	700
Individual suburbs	2017/18	385 per suburb
Historical for selected suburbs	2008 and 2018	385 per suburb

Further details and background on iTree canopy methodology can be found at:
https://canopy.itreetools.org

4. Green cover - City wide

Current land cover for the City

The assessment for the City as a whole (as of 2017/18) provides a comparison of green cover (i.e. trees, shrubs and grass/bare earth) versus hard surfaces (such as roads and buildings). Approximately 48% of the land across the City of West Torrens comprises a range of green cover types and approximately 52% comprises hard surfaces (including airport land), as shown below:



To help build a more in-depth understanding of where green cover and hard surfaces are found across the City, the assessment provides a breakdown of these land cover types in the public realm and the private realm. In addition, it identifies the percentage of these land cover types found on Airport land. This is described below and shown in a graph on the following page.

The breakdown of the total percentage of tree cover across the City of West Torrens:

- 9% in the private realm (such as private residences and yards)
- 5% in the public realms (such as along streets and in council parks)
- 0% on Airport land

The breakdown of the total percentage of shrub cover across the City of West Torrens:

- 2% in the private realm (such as private residences and yards)
- 1% in the public realm (such as in council parks)
- 2% on Airport land

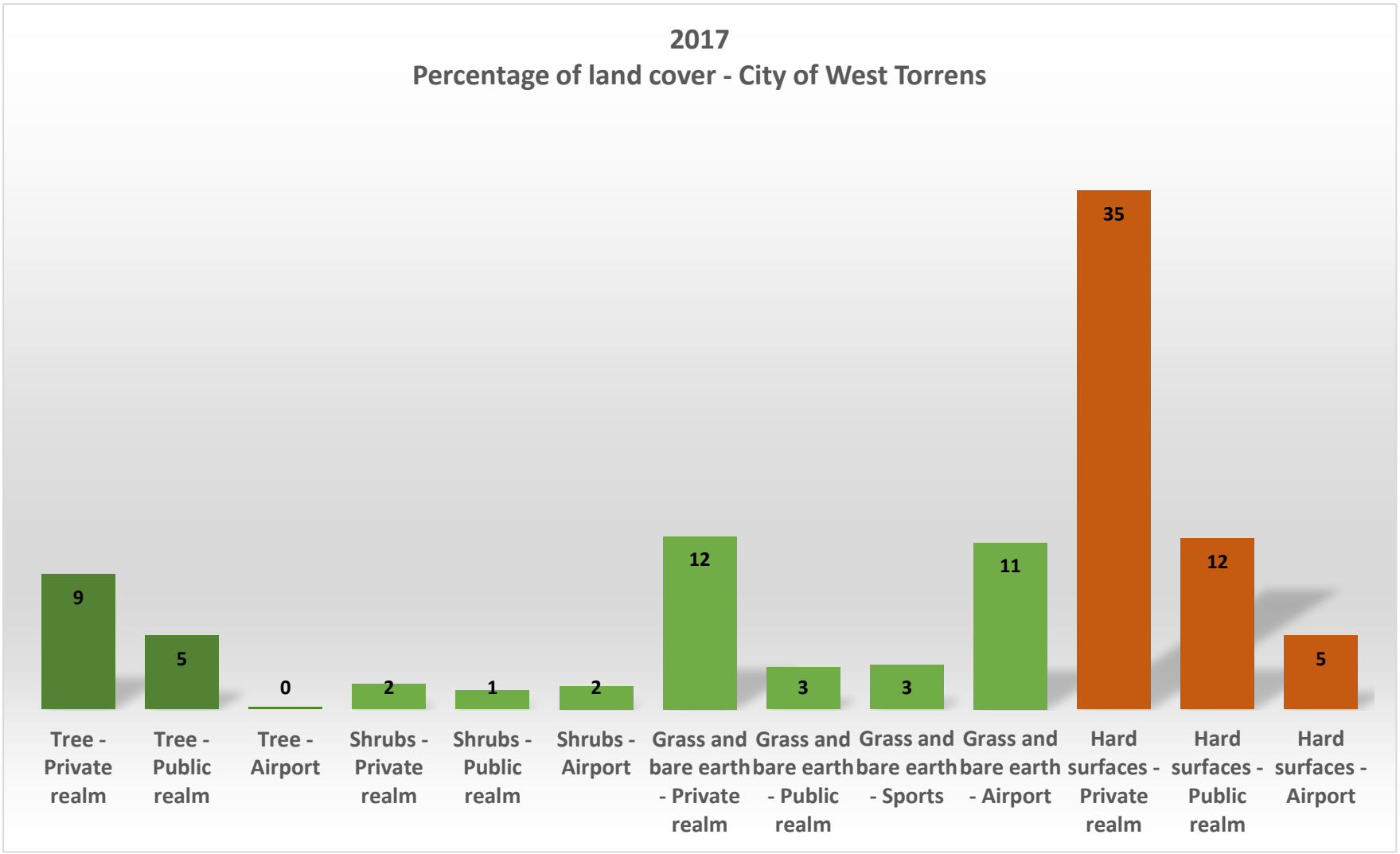
The breakdown of the total percentage of grass/bare earth across the City of West Torrens:

- 12% in the private realm (such as private residences and yards, school playing grounds, and golf courses)
- 3% in the public realm (such as in council parks and road reserves)
- 3% on sports grounds, such as school and council ovals, and golf courses
- 11% on Airport land

The breakdown of the total percentage of hard surfaces across the City of West Torrens:

- 35% in the private realm (mainly private residences, buildings, carparks, and driveways)
- 12% in the public realm (mainly roads and footpaths)
- 5% on Airport land

Detailed analysis of green cover and hard surfaces across the private realm and public realm -



5. Green cover - each suburb

A more detailed assessment of land cover was undertaken by assessing green cover and extent of hard surfaces in each suburb within the City of West Torrens.

The percentage of current land cover in 2018 varies between suburbs, as demonstrated in the table below, and shown in the figures that follow.

SUBURB	**Percent cover (%)**			
	Tree canopy	Shrubs	Grass/bare ground	Hard surfaces
Ashford	23	1	13	63
Brooklyn Park	19	2	18	61
Camden Park	15	2	17	66
Cowandilla	15	3	21	61
Fulham	23	2	18	57
Glandore	20	2	16	62
Glenelg North	14	2	17	67
Hilton	18	1	8	73
Keswick	13	1	11	75
Keswick Terminal	19	1	12	68
Kurralta Park	19	1	16	64
Lockleys	25	2	29	44
Marleston	15	2	14	69
Mile End	17	2	17	64
Mile End South	7	2	4	87
Netley	15	2	14	69
North Plympton	15	1	18	66
Novar Gardens	18	3	37	42
Plympton	16	3	20	61
Richmond	16	2	13	69
Thebarton	13	1	10	76
Torrensville	18	2	14	66
Underdale	15	1	18	66
West Beach	9	2	42	47
West Richmond	15	2	20	63
Airport land	3	1	61	35

Each suburb has its own features and characteristics which can influence the amount of greening and hard surfaces, such as parks, golf courses, land use zonings, railway and road infrastructure, etc.

Green cover (trees, shrubs and grass)

Areas which have the higher percentages of overall green cover (i.e. trees, shrubs and grass/bare earth), in the City of West Torrens are found on Airport land and the suburbs of Novar Gardens, Lockleys and West Beach. This is due to some suburbs having a lot of grassed areas for sporting grounds and golf courses as well as lower housing densities and hence larger backyards. A substantial amount of the Airport land is covered by grass and hence it has a high percentage of green cover compared to other suburbs.

The overall green cover within the City of West Torrens comprises of the following types of greening:

Tree canopy

- Lockleys has the highest tree canopy cover due to presence of trees along the Torrens River Linear Park, golf course and in privately owned yards.
- West Beach has a low tree canopy cover which is due to a lot of its land being grassed areas for golf course and sporting fields.
- Mile End South has a low tree canopy cover due to presence of large warehouse style buildings that cover a large proportion of each allotment.
- Airport land has a low tree canopy cover which is a deliberate action to avoid attracting birds to the airport, and thereby reducing the risk of bird strike of aircrafts.

Shrubs

- Shrub cover was low across all suburbs compared to other land cover types, and there is not much variation in shrub cover across the suburbs.

Grass/ bare earth

- The Airport land has the highest percentage of grass/bare earth land cover which is due to the substantial amount of grassed areas surrounding the air strips.
- This was followed by West Beach and Novar Gardens which is due to a mix of lower density housing with grassy privately owned yards, parks, sporting grounds and golf courses in these suburbs.
- Suburbs with less grass cover tend to have higher density development within them and large areas covered by hard surfaces.

Hard surfaces

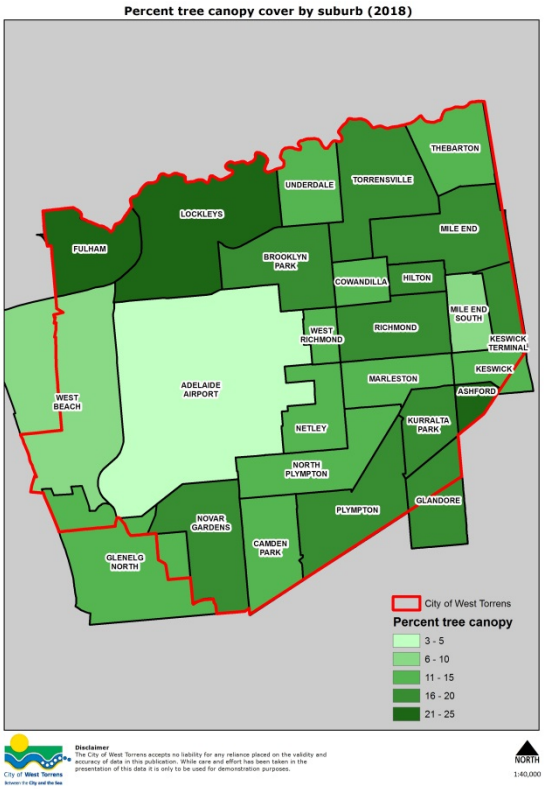
The suburbs in West Torrens that have the highest percentage of hard surfaces are Mile End South, Thebarton, Keswick, and Hilton, compared to other suburbs in the City of West Torrens. This may be due to these suburbs having significant road and rail infrastructure, as well as buildings and a mix of residential housing densities which all contribute to the higher percentage of hard surfaces compared to other suburbs.

The suburbs of Novar Gardens and Lockleys have a lower percentage of hard surfaces compared to the other suburbs in the City of West Torrens which may be due to the presence of larger backyards, golf courses and the River Torrens Linear Path within these suburbs. The suburb of West Beach has a low percentage of hard surfaces, mainly due to the large amount of land dedicated to golf courses and sporting fields. Airport land also has a low percentage of hard surfaces due to the large amount of its land dedicated as grass surrounding the air strips.

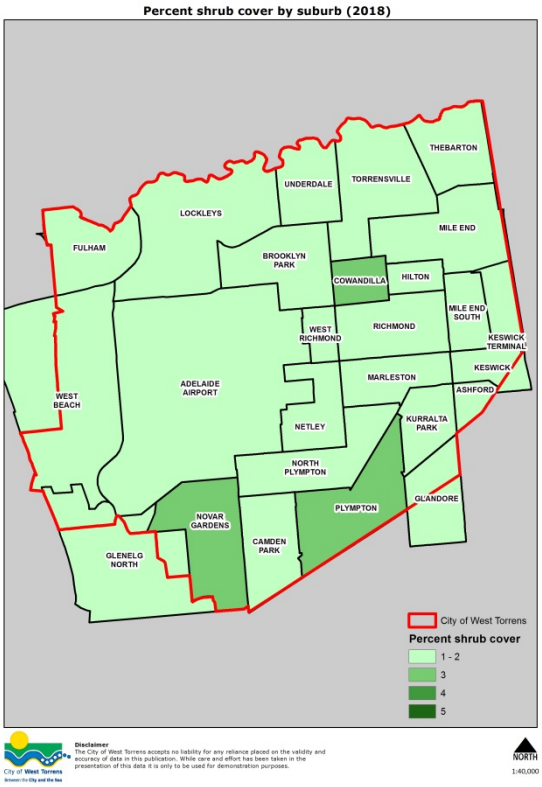
The variation in land cover across the suburbs of the City of West Torrens is shown in the following figures.

These figures are shown in greater detail on the pages that follow.

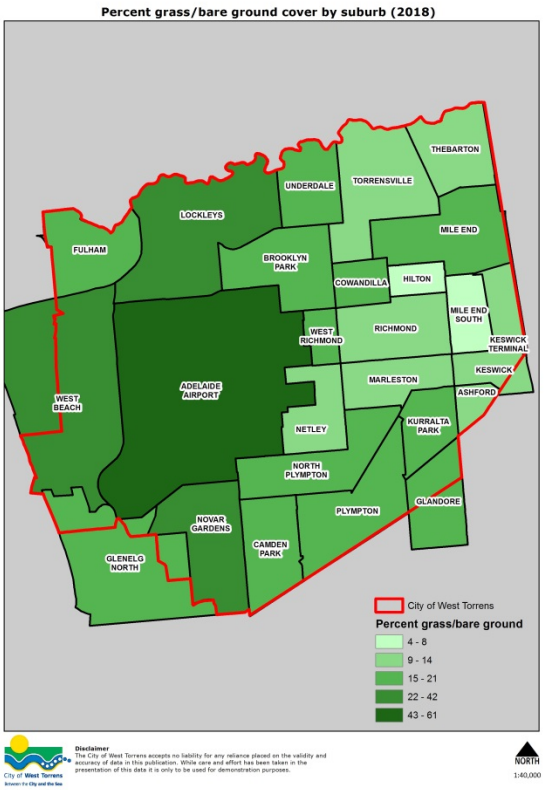
Percent tree canopy cover -



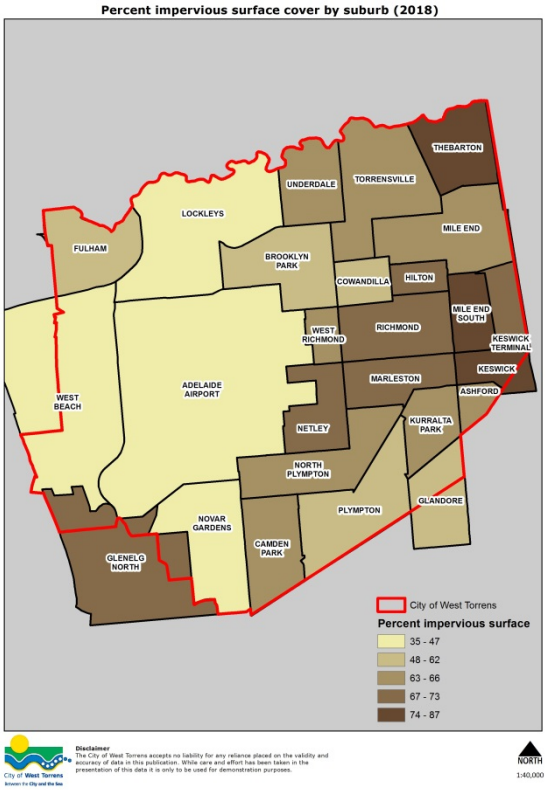
Percent shrub cover -



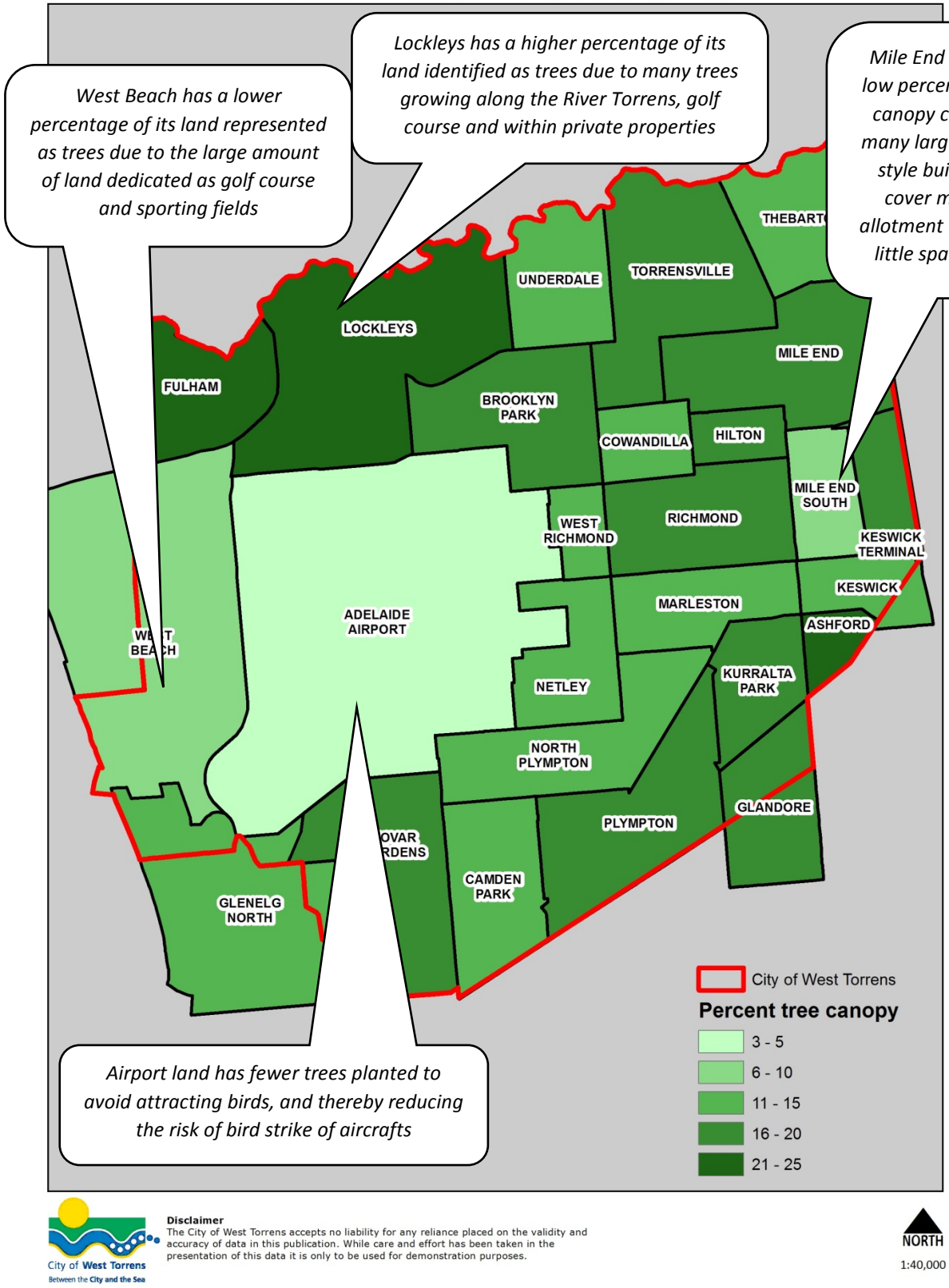
Percent grass/bare earth cover -



Percent hard surfaces/impervious cover -



Percent tree canopy cover by suburb (2018)



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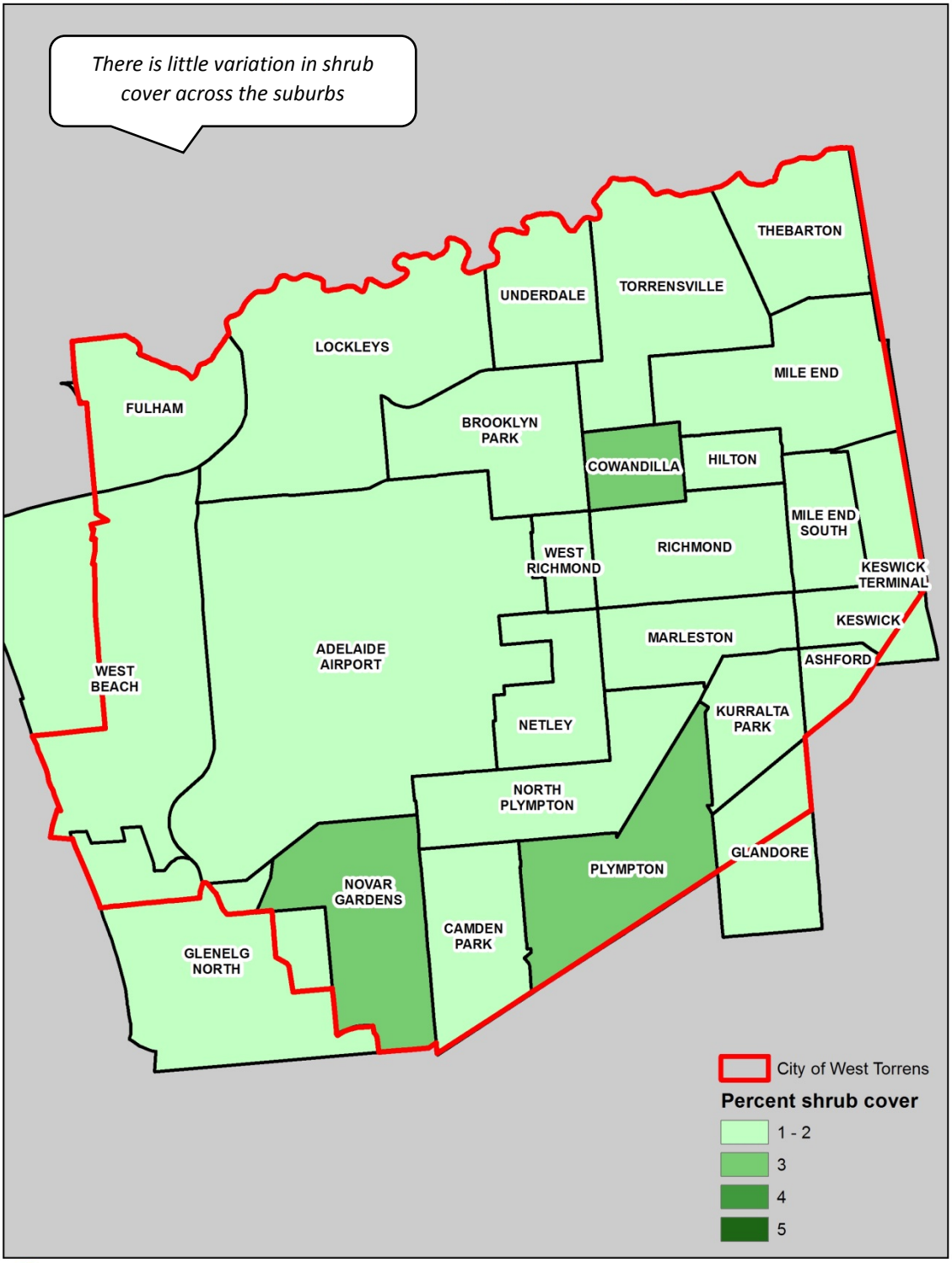
NORTH
1:40,000

Percent shrub cover by suburb (2018)



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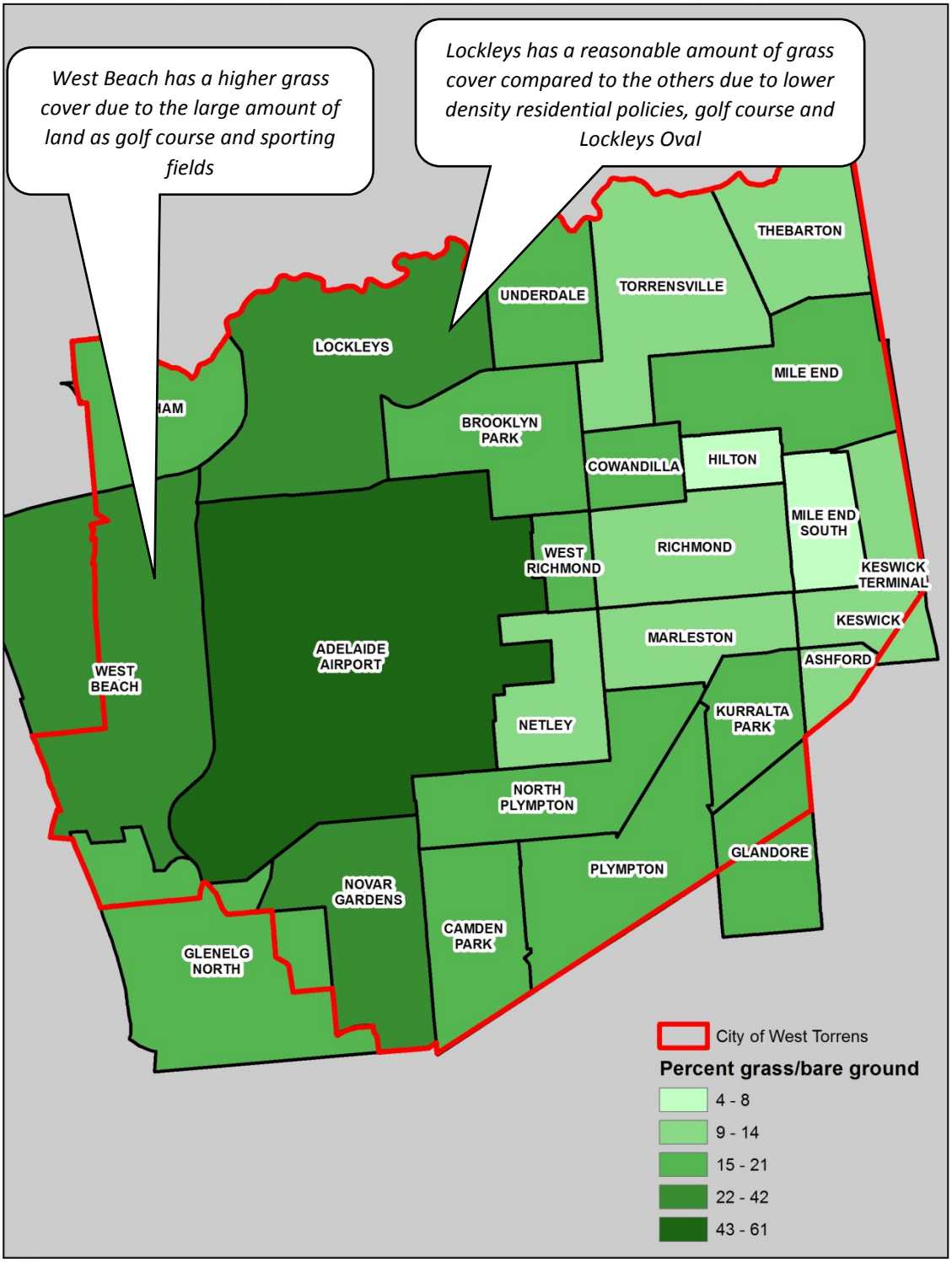
Percent grass/bare ground cover by suburb (2018)



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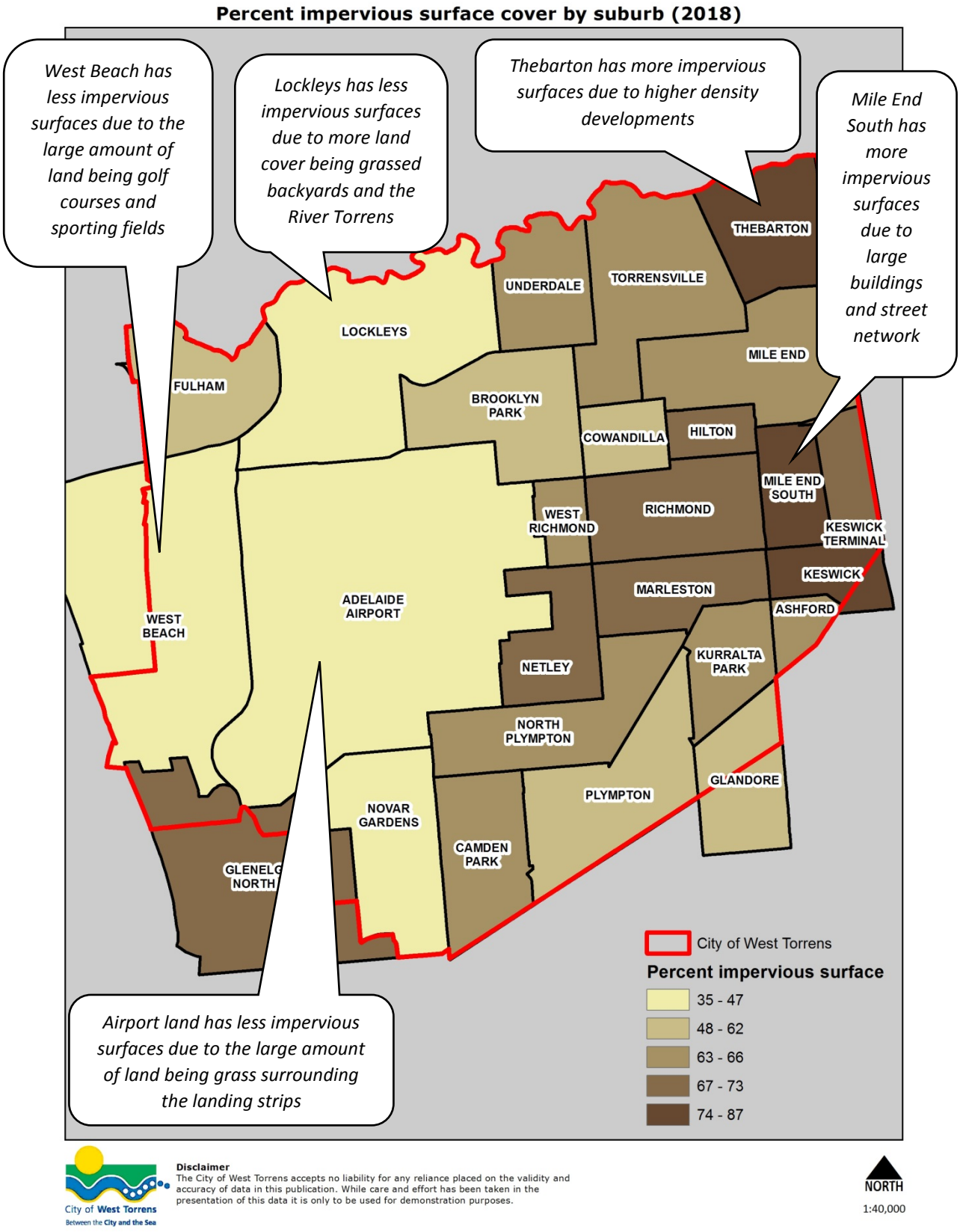
Percent impervious surface cover by suburb (2018)
West Beach has less impervious surfaces due to the large amount of land being golf courses and sporting fields
Lockleys has less impervious surfaces due to more land cover being grassed backyards and the River Torrens
Thebarton has more impervious surfaces due to higher density developments
Mile End South has more impervious surfaces due to large buildings and street network
Airport land has less impervious surfaces due to the large amount of land being grass surrounding the landing strips
THEBARTON
UNDERDALE
TORRENSVILLE
LOCKLEYS
MILE END
FULHAM
BROOKLYN PARK
COWANDILLA
HILTON
MILE END SOUTH
WEST RICHMOND
RICHMOND
KESWICK TERMINAL
KESWICK
MARLESTON
ASHFORD
ADELAIDE AIRPORT
WEST BEACH
NETLEY
KURRALTA PARK
NORTH PLYMPTON
GLANDORE
PLYMPTON
NOVAR GARDENS
CAMDEN PARK
GLENELG NORTH
City of West Torrens
Percent impervious surface
35 - 47
48 - 62
63 - 66
67 - 73
74 - 87
City of West Torrens
Between the City and the Sea
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NORTH
1:40,000

6. Greening cover - Historical assessments

A historical assessment was undertaken for two sample suburbs - Kurralta Park and Torrensville, to compare land cover in the years 2008 and 2018. These suburbs were selected as they have undergone changes in land use and policy planning over time and therefore may provide insights into how these changes impact on trees and other forms of land cover.

The 2008 and 2018 assessments were undertaken using i-Tree Canopy's "change survey" function which enables the user to compare the land cover classifications at each location for each time period.

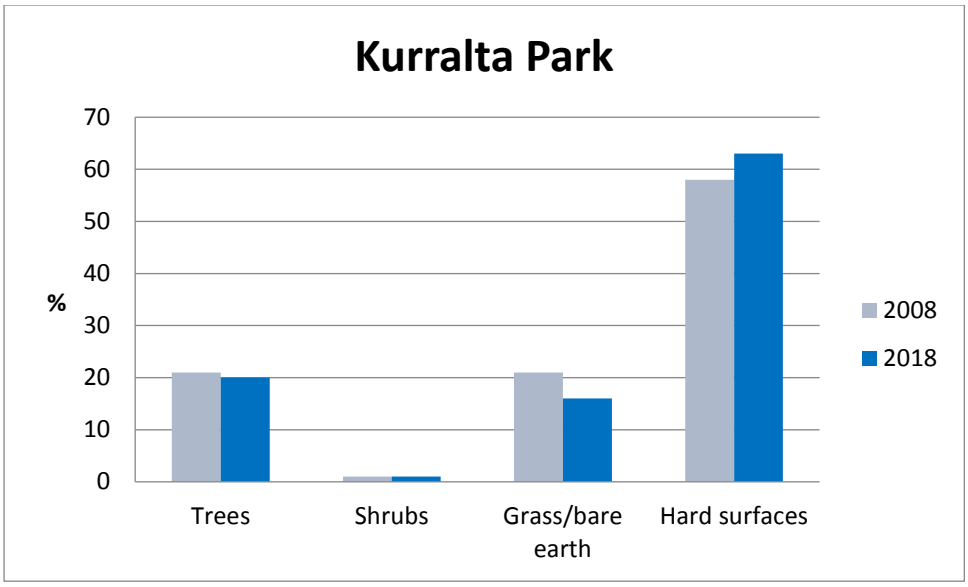
Kurralta Park

The following graphs indicate that the most significant changes that occurred in Kurralta Park from 2008 to 2018 was the loss of grass/bare earth and the increase in hard surfaces, such as buildings. These changes may be the outcome of increased urban infill developments.

Table showing land cover changes over time in Kurralta Park:

Land cover	Year: 2008	Year: 2018	Change
Trees	21%	20%	decrease by 1%
Shrubs	1%	1%	no change
Grass/bare earth	21%	16%	decrease by 5%
Hard surfaces	58%	63%	increase by 5%

Graph showing land cover changes over time in Kurralta Park:

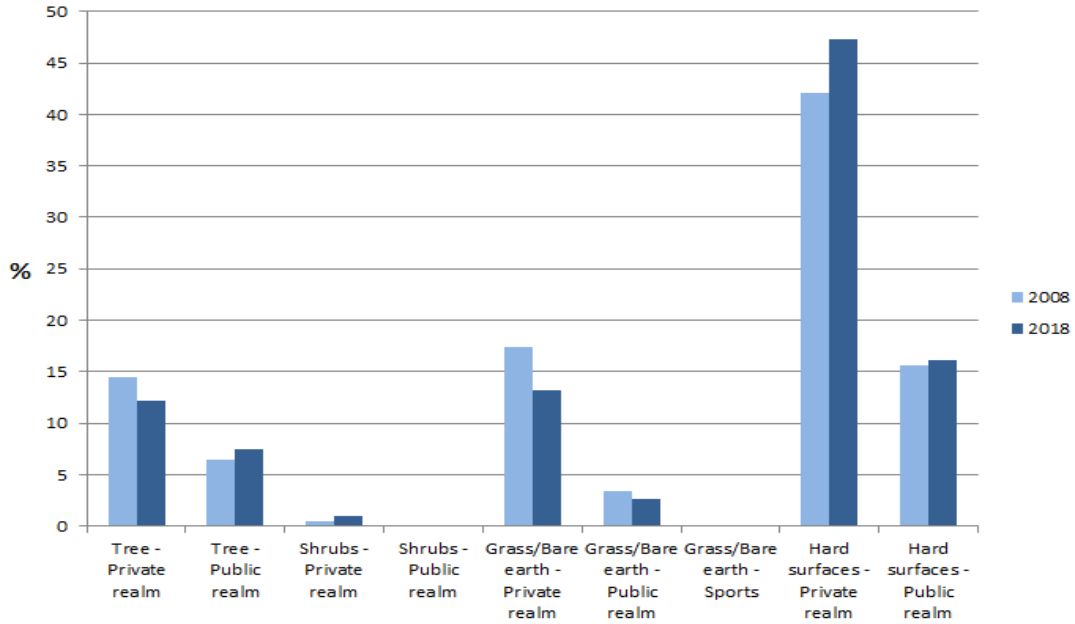


A more detailed analysis can provide an insight into where the changes are occurring, i.e. on private properties or on Council owned land (public realm).

The following table provides a more detailed breakdown of percent change in land cover from 2008 to 2018 in Kurralta Park:

Kurralta Park	**2008 - 2018 % change**	**Outcome**
Tree canopy		
Tree - Private realm	-2.3	Decrease in tree canopy
Tree - Public realm	1.04	Increase in tree canopy
Tree - Airport	0	No change
Shrubs		
Shrubs - Private realm	0.52	Increase in shrubs
Shrubs - Public realm	0	No change
Shrubs - Airport	0	No change
Grass/Bare earth		
Grass/Bare earth - Private realm	-4.2	Decrease in grass
Grass/Bare earth - Public realm	-0.78	Decrease in grass
Grass/Bare earth - Sports	0	No change
Grass/Bare earth - Airport	0	No change
Hard surfaces		
Hard surfaces - Private realm	5.2	Increase in hard surfaces
Hard surfaces - Public realm	0.5	Increase in hard surfaces
Hard surfaces - Airport	0	No change
Hard surfaces - Other	0	No change

Changes in extent of green cover and hard surfaces over time in the private realm and public realm - Kurralta Park:



The most significant change since 2008 in Kurralta Park is an increase in hard surfaces in the private realm. This seems to correlate closely with the loss of grassed areas over the same time period. The amount of grass/bare earth areas has reduced on both private and public land, which may be due to urban infill development replacing this land cover over time. Not only do dwellings occupy most of the allotment area with not much space for greening, there is often a loss of street trees due to more driveways being established. The percentage of trees has reduced in private properties since 2008, but there has been an increase in trees on Council land (however these changes are unlikely to be statistically significant).

During this time period the "Urban Corridor Zone" was introduced in Kurralta Park which allows for a mix of medium density and high density residential development, together with community and employment land uses, such as shops, restaurants and offices. This may have resulted in loss of trees in this area and the increase of hard surfaces. Also, changes to tree protection controls over time may have afforded less protection to trees and thus facilitated more tree removals.

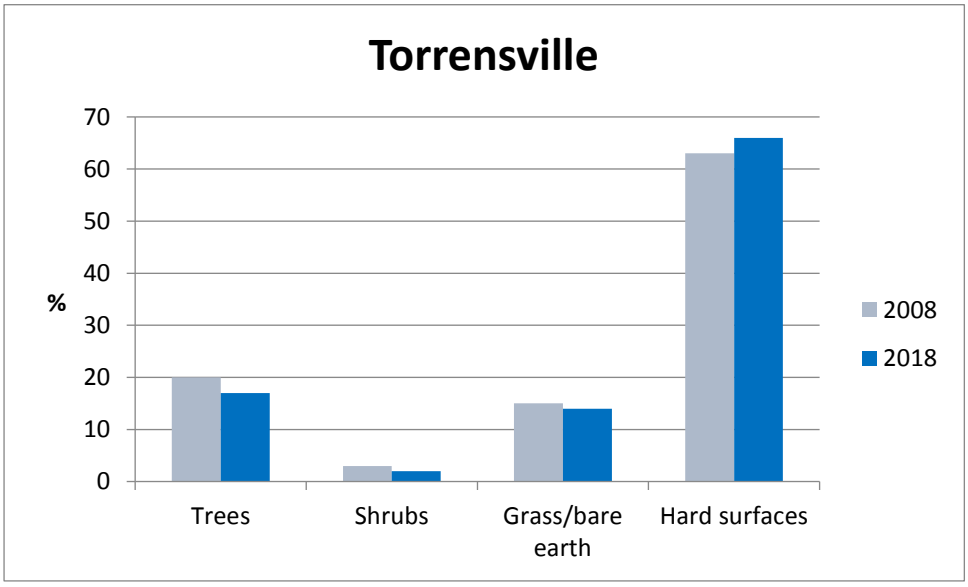
Torrensville

In Torrensville, there was limited change in land cover percentages since 2008. There was a slight loss of trees, shrubs and grass/bare earth and a slight increase in hard surfaces. These trends are in line with increased urban infill development.

Table showing land cover changes over time in Torrensville:

Land cover	Year: 2008	Year: 2018	Change
Trees	20%	17%	decrease by 3%
Shrubs	3%	2%	decrease by 1%
Grass/bare earth	15%	14%	decrease by 1%
Hard surfaces	63%	66%	increase by 3%

Graph showing land cover changes over time in Torrensville:



A more detailed analysis of changes in land cover over time on private land versus public land in Torrensville is provided in the following table.

Changes in land cover over time on private land versus public land in Torrensville:

Torrensville	2008 - 2018 % change	Outcome
Tree canopy		
Tree - Private realm	-2.33	Decrease in tree canopy
Tree - Public realm	-0.52	Decrease in tree canopy
Tree - Airport	0	No change
Shrubs		
Shrubs - Private realm	0	No change
Shrubs - Public realm	-0.26	Decrease in shrubs
Shrubs - Airport	0	No change
Grass/Bare earth		
Grass/Bare earth - Private realm	-0.8	Decrease in grass
Grass/Bare earth - Public realm	0.26	Increase in grass
Grass/Bare earth - Sports	0	No change
Grass/Bare earth - Airport	0	No change
Hard surfaces		
Hard surfaces - Private realm	3.1	Increase in hard surfaces
Hard surfaces - Public realm	0.5	Increase in hard surfaces
Hard surfaces - Airport	0	No change
Hard surfaces - Other	0	No change

Torrensville experienced some changes in land cover since 2008, but not to the same extent as experienced in Kurralta Park. The most significant change in Torrensville since 2008 was an increase in hard surfaces within the private realm. Tree canopy percentage appears to have reduced in both private properties and Council land since 2008, with a greater reduction experienced on private properties. These changes however may not be statistically significant. The loss of tree canopy and increase in hard surfaces in the private realm may be the result of infill development over this time period. There was no substantial change in the percentage of grass/bare earth areas in both the private and public realm.

During this time period, urban land use policy that encourages increased residential densities has been introduced, as well as a relaxation in tree protection requirements. These changes may have been major factors in hard surfaces replacing grassed areas and trees.

7. Opportunities for Greening

Changes in land cover

This study has shown changes in greening and hard surfaces in the suburbs of Kurralta Park and Torrensville. If these suburbs are representative of City-wide trends, then ongoing losses of greening, such as in backyards and along streets is likely to occur.

As urban infill development progresses there may be higher demand on Council's streetscapes and parks to meet the community's needs for open space and greening.

The tree canopy assessment undertaken in this study shows the current tree canopy for the City of West Torrens is approximately 14%. In order to achieve the State Government's 20% increase in canopy cover target, an additional 2.8% of canopy is required.

Given the trend in tree loss and urban development, it may be a challenge for Council to achieve the State Government tree canopy aspirations unless a focused effort to increase tree plantings and tree protection is established. It will also be a challenge for Council to build community resilience to climate change, to cool urban heat, and to maintain healthy and connected communities.

Consequences of losing green cover

Trees, shrubs and grass help cool urban areas by providing shade and creating a cool micro-climate. The loss of these greening elements and the cooling benefits they provide can result in the build-up of urban heat which can make communities more vulnerable to the effects of hot weather.

Other consequences of losing trees, shrubs, and grassed areas are wide-ranging, such as:

- Loss of shading and cooling which may result in the use of more air conditioning and power usage which can be very expensive and releases more carbon and heat to the atmosphere.
- Loss of shading reducing walkability, cycling which leads to reduced activity with poor public health outcomes.
- Higher air temperatures which can increase the mortality rate for vulnerable people and affect the community's overall liveability, particularly during heatwaves.
- A detrimental effect on air quality and the local amenity due to dust and other air pollutants no longer being removed.
- Soil erosion, particularly along waterways, leading to detrimental impacts on aquatic life.
- Loss of wildlife habitat, thereby affecting local biodiversity.
- A reduced 'sense of place', and hence negatively impacting on the local identity of neighbourhoods
- Fewer opportunities for people to connect with each other and to nature, resulting in reduced quality of life and wellbeing.
- Lower property values and economic activity. This may result in households having reduced access to finance.
- Reduced shopping visitation and thereby reducing local economic activity.

Future opportunities

The loss of greening has implications for long-term health, economic prosperity, and resilience of the City and its community. Mitigating the loss of greening will require greening actions on both public and privately owned land.

The breakdown of land cover classifications used in this study is useful in identifying opportunities for additional planting, particularly for tree planting, as described below.

Council owned land (public realm)

The City of West Torrens is responsible for the care of public spaces, known as the public realm, for the benefit of the community. Council therefore has greater opportunity to increase greening in streets, parks and other areas owned or cared for by Council.

Areas classified as "grass/bare earth" in the public realm include parks, reserves, road reserves, and areas not used for active sporting purposes. These areas provide the best opportunity for more trees to be planted because Council has a more direct influence on these areas and they are not necessarily performing a function that would preclude trees.

Opportunities to increase plantings on council owned land are mostly in parks and streets, such as:

- Planting more trees where there are gaps in the streetscape
- Modifying (narrowing) streets to include more plantings in the verge
- Use Council's urban heat maps to prioritise plantings in Council's parks and playgrounds
- Identify parcels of land that may be suitable for tree plantings (such as drainage lands, cul de sacs adjacent Keswick Creek)
- Add more greening along cycling and walking routes
- Add greening to places of economic activity, which in turn can help increase community connectivity
- Install green walls and other green infrastructure
- Identify opportunities to expand Council's open space system, such as through property acquisition

Opportunities such as these should be explored more fully, such as through the preparation of a detailed greening action plan. In addition, the assessment of land cover could be repeated in the future to determine if the amount of greening has increased as a result of these actions.

Privately owned land (private realm)

Areas classified as "grass/bare earth" in the private realm may provide planting opportunities, such as in private properties/yards, school grounds, unsealed car parks, and in the 'rough' of golf courses.

Areas such as hard surfaces, sports grounds, trees and shrubs, golf courses (except the 'rough'), and airport land are not considered as potential areas for plantings due to a rage of factors such as the permanent and impervious nature of hard surfaces, the land may already be dedicated to active sport purposes, there is existing greening in place, and the close proximity to the airport.

Council has a limited role in influencing green cover on privately owned land so it may need to advocate through the State Government planning mechanisms, such as the Planning and Design Code, for greater protection of existing trees, as well as increasing the amount of land dedicated for trees and other greening on private land. Council-led programs to raise community awareness about the benefits of greening may help reduce the loss of greening. In addition, Council could consider offering incentives to the community to retain and maintain trees on private properties.

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