GREENER PLACES STRATEGY

A greening vision framework for the Central Coast 2021-2031

Central Coast Council

Executive summary

The Central Coast Greener Places Strategy (the Strategy) is the first urban greening strategy for the Central Coast Council since its formal declaration in 2016. The Strategy is informed by the former Council's greening strategies and the Urban Heat Island and canopy mapping technical studies that inform the greening vision for the region. The vision for greening to maximise the liveability of Central Coast is reflected within the One Central Coast -Community Strategic Plan 2018-2028 which identifies a strong desire in our community to maintain the unique environmental attributes of the Central Coast. The Central Coast Regional Plan also aims to increase the amenity of existing urban areas and to protect the region's scenic amenity (NSW Department of Planning and Environment 2016).

Whilst the Central Coast region is characterised by green ridges and surrounded by national parks, the loss of canopy cover and green corridor in urban centres and neighbourhoods need to be better managed. The region is also experiencing rapid urbanisation, demand for housing and expansion of communities. In response to the loss of canopy cover and green corridors, the Strategy provides a framework for enhancing and managing the existing urban forest and other green spaces and promotes urban greening opportunities on both public and private land through the protection and expansion of urban forests and other forms of greening where large trees and shrubs are not suitable over the next 10 years.

The Central Coast contains many unique urban ecosystems and places like Pearl Beach or Budgewoi foreshore are great examples. These places include parks that are dappled with tree cover that provide shade to residents while picnicking or swimming and reinforce the value and beauty of vegetation. Such urban forests play a vital role in the health, social wellbeing and economic sustainability of a region. Trees in our parks, streets or in our backyards provide services to us every day, improving our environment and quality of life. This Strategy acknowledges that trees often require removal, however without replacement planting nearby, a loss of the urban forest canopy cover will occur. As such, the strategy provides a strategic direction on tree, shrub and other cultivated plant management across the Central Coast, ensuring adequate removal and replacement of urban vegetation, in particular making sure that the right plant is planted in the right place. The Strategy provides a framework to implement the greening vision need to ensure an appropriate level of urban vegetation cover, in particular shade trees occur across a range of land uses.

The Strategy also acknowledges the ability of urban greening to mitigate certain urban health effects and maintain liveability in urban centres. At times this may be through encouraging alternative greening approaches such as green walls and rooftop gardens in urban centres. Maintaining functional urban ecosystems is a shared responsibility across all land tenure. Hence, more rigorous requirements on new development will be implemented in order to effectively improve landscaping and associated green infrastructure. It is important that we all work together to protect and enhance urban greenspaces. To do this, it is also proposed that community engagement programs will be developed. Importantly once implemented, the Strategy will ensure that tree canopy cover and green space is maintained in a way that improves the liveability of the Central Coast region.

Acknowledgement of Country

WE ACKNOWLEDGE THE TRADITIONAL OWNERS OF THE LAND ON WHICH WE LIVE AND PAY OUR RESPECTS TO ELDERS PAST AND PRESENT

CENTRAL COAST COUNCIL

Contents

Introduction

Greener Places are about maximising the level of vegetation cover, in the form of trees, shrubs and other plants such as native sedges across all land tenures with the aim of improving liveability on the Central Coast for people and wildlife. Greener Places is a shared responsibility among all of us, This Strategy provides a greening vision framework to achieving these outcomes for the next decade.

Central Coast Council was formed in 2016, forming one of the largest regions in NSW with a total area of 168,000 ha. Both the former Wyong Shire Council and Gosford City Council had strong position on urban greening and maintaining the green character of the region. The need for a harmonized approach for greening the region to enhance local liveability resulted in the development of the Central Coast Greener Places Strategy (the Strategy).

Approximately 74 per cent of the region contains native vegetation wooded which comprise of National Parks, State Forest, Aboriginal lands and Council owned and managed natural areas, including the Coastal Open Space System (COSS). Despite this high level of tree canopy cover, developed coastal areas, such as on the Woy Woy peninsula and south of The Entrance contain less than 10% tree canopy cover.

The Central Coast is currently home to 325,000 people, which is expected to increase to 415,000 by 2036, placing an urgent need to meet the demand housing and employment. This will result in increased housing density, such as the construction of medium density housing in existing suburbs, along with the development of greenfield housing sites. The projected level of urban intensification and expansion requires careful planning for the development, maintenance and expansion of green infrastructure across the region

In this Strategy, greener places can occur across a variety of land uses and development types including privately owned public space such as within shopping centres, streetscapes and nature strips, parks, private backyards, and set backs on apartment blocks. These can be enhanced through planting and establishment of blue/green infrastructure such as raingardens. This strategy does not cover bushland or other natural areas or the adequacy of current open space across the Central Coast, which are covered in other current and future Strategies.

This Strategy builds on from the Greening Wyong Strategy 2016 which aimed at:

- guiding proactive management of public trees, such as those located in streets and parks,

- identifying priority planting areas and identifying detailed precinct-based objectives for street tree planting,

- developing relevant procedures and technical guidelines for tree planting along roads and identifying hazardous trees, and

- establishing the right tree in the right place.

This Strategy aligns to the NSW Government's Greener Places Policy. The Strategy provides a holistic framework for urban greening in the region and expands beyond public land to incorporate all land tenure. The specific objectives of the Strategy are to:

- Identify areas affected by Urban Heat Islands, opportunities for greening and to prioritise areas for future greening activities.

- Undertake an audit for opportunities for public tree planting in priority suburbs and all areas of open space to facilitate tree planting operational planning.

- Strengthen tree removal and replacement processes to avoid the net loss of tree canopy cover.

- Establish processes for the replacement of removed private trees wherever practicable.

- Develop operational plans for public tree planting across the key priority suburbs.

- Develop education programs to promote community involvement in greening initiatives.

- Where the planting of trees is not possible, encourage the use of smaller shrubs and groundcovers as they make significant contribution towards mitigating heat island effects and enhancing urban biodiversity

- Implement other provisions for urban greening such as community gardens, green walls and green roofs.

- Promote improved liveability through using plants in urban design. This in turn assists in mitigating Urban Heat Island Effects.

Context

What are Greener Places and how do they improve liveability?

Greener Places are spaces that do or can allow for increased amount of greening. Greening can include trees, shrubs and groundcovers in parks, along streets and in private or community gardens. Where these aren't a possibility, rooftop gardens and green walls could be developed.

Greener places can occur across any tenure or property type such as open spaces in the public domain or privately-owned gardens. These form part of the urban ecosystem or urban forest. Greener Places can be incorporated into urban design and improve the functionality of hard landscaping projects, such as shared paths and outdoor seating. This is through providing shade as well as softening the appearance of the hard landscaping, as such users of well designed public domain that feature quality landscaping may be more relaxed and receive greater enjoyment from the experience.

What is an urban ecosystem?

In recent years, it has been increasingly recognised that cities and urban areas provide habitat for plants and animals. Humans are also part of this system, commonly referred to as urban ecosystems (Alberti et al. 2008).

As shown in Figure 1, the elements of the urban ecosystems are diverse, consisting of plants, animals and humans.

An urban ecosystem can occur at a variety of scales, from that of an entire region, such as the Central Coast, to an individual suburb. At a local scale, urban ecosystems may occur as an individual shrub or tree, a group of shrubs or trees or a whole park of trees, shrubs and garden beds. Blue green infrastructure such as constructed wetlands, rain gardens and vegetated infiltrations trenches also contribute towards enhancing the urban ecosystem. The urban ecosystem also provides ecosystem services to humans such as sequestration of carbon and other pollutants, provision of shade and increased amenity which are summarised below.

What is the difference between Urban Forestry and the Urban Forest?

Urban Forestry is the establishment, care, maintenance, and renewal of trees and tree populations in an urban context, collectively considered the urban forest (Miller et al. 2015). While this Strategy aims to increasing urban greening with a variety of planting methods, the Strategy will be primarily delivered through an increased rate of planting of trees and large shrubs.

The main focus of urban forestry is ensuring suitable species are chosen and appropriately maintained in order to maximise their longevity and benefits to users of adjacent areas (Miller et al. 2015). The urban forest may consist of trees that are remnants of native vegetation which formerly occurred or native and exotic trees planted in a landscaping context. Due to the diverse range of trees and large shrubs within an

urban forest, it may contain exceptional diversity, representing several hundred species, across a range of size classes and heights (Figueroa et al. 2018). Trees that form part of the urban forest will often require removal due to disease and decay (Brack 2016). However, it's important they are replaced. Nevertheless, the urban forest is not a self-sustaining entity and as such, trees which are removed or die need to be replaced with careful consideration to the future maintenance requirements (Miller et al. 2015). Importantly in increasingly urbanising areas, planning for the urban forest of the future also needs to secure space for future planting which may be on either public or private lands.
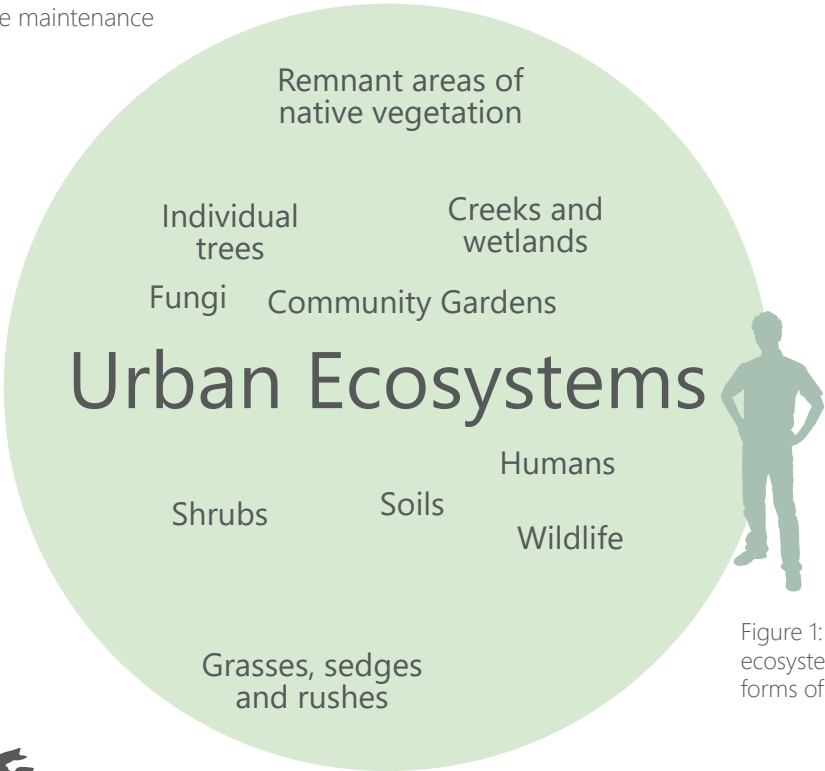
Remnant areas of native vegetation

Individual trees

Creeks and wetlands

Fungi   Community Gardens

Urban Ecosystems

Humans

Shrubs   Soils

Wildlife

Grasses, sedges and rushes

Figure 1: The elements of urban ecosystems are diverse, including all forms of life, including humans.

Community Green Space Trees

Street Trees

Urban Trees

Figure 2: How the urban forest interacts with individual trees and what elements form part of the Urban Forest and how those interact together. Adapted from Roy et al. (2012).

Urban Forest

Benefits of greening

While some negative effects may occur from vegetation in urban areas, primarily after storms, the benefits of urban vegetation far outweigh the negatives. Some of the benefits provided include:

Cooling effects

Urban trees provide shade to buildings, roads, along with private and public open space. This assists in reducing the impact of the Urban Heat Island Effect, explained on page 24, especially during heatwaves (Amati et al. 2013, Elmes et al. 2017). Throughout the warmer months, having tree canopy shading the walls or rooves of buildings has been shown to reduce the cost of cooling. For example, a study along a 19 km section of the Pacific Highway in Northern Sydney estimated energy savings from shade trees at over $57,000 per year (Amati et al. 2003).

Carbon sequestration

The urban forest completes carbon sequestration through storage of carbon in tree stems, branches and the soil (Nowak et al. 2013). Research on urban forests in the United States have calculated whole tree carbon storage measures of around 7.7 kg of carbon per square metre of tree cover, with an annual sequestration rate of around 0.3 kg of carbon per square metre (Nowak et al. 2013). A study along a 11 km section of Parramatta Road, Sydney estimated that urban trees stored 22,600 tonnes of carbon and sequestered a further 573 tonnes of carbon per year (Amati et al. 2003). Thus, the urban forest provides for a high level of carbon storage and is useful in combating climate change.

Absorption and storage of atmospheric pollutants

Vegetation also absorb and store atmospheric pollutants in leaves and the stem and branches, such as Volatile Organic Compounds (VOCs) and benzene originating from car exhausts (Nowak et al. 2002). A study on the Greater London Metropolitan area found that the urban canopy removed between 0.7-1.4% of very small particulate matter, referred to as PM10 emissions, which can trigger health issues such as Asthma (Tallis et al. 2011). A study of urban trees in a congested area of Naples, Italy found elevated levels of heavy metals in the leaves of sampled Oak trees, suggesting that the urban forest potentially stores heavy metals (Alfani et al. 1996). In an experiment conducted by researchers from the University of Technology Sydney on the effectiveness of a green wall at removing volatile organic compounds (VOCs) such as benzene and formaldehyde found that such a wall could effectively remove over half of the VOCs (Torpy et al. 2018). As such the maintenance of vegetation within areas of high air pollution may reduce the concentration of air pollutants in urban areas.

Crime prevention through environmental design aided by appropriate plantings

Areas with a high level of vegetation cover have been shown to have lower crime rates than areas with lower levels of vegetation cover (Troy et al. 2012). In a study of a highly urban area of Chicago in the United States, Kuo and Sullivan (2001) found that apartment buildings surrounded by trees had a lower reporting rate of crime than those that occurred in less vegetated areas. These findings are strongly linked to the principle of Crime Prevention through Environmental Design (CPTED) which argues that criminals make rational choices about crime targets, relating to the risk of being detected and the likely gain (Crowe 2000). Areas that have improved physical appearance are thought to be less likely to attract criminal elements as there is a strong perception that crime is correlated to areas that are less cared for (Crowe 2000).

Improved scenic amenity, health and wellbeing, enhancement of real estate values and consumer spending leading to improved urban amenity

Urban green spaces and vegetation can improve scenic amenity through softening vistas, which otherwise may be dominated by the built form (Orland et al. 1992). This in turn can improve real estate prices, with leafy suburbs generally selling for more than less leafy suburbs (Orland et al. 1992). A study of retail shoppers in the United States showed that having large trees adjacent to the shopping district consumers were more willing to pay for parking, visit the shopping district more often and for a longer period of time compared to areas that were devoid of trees (Wolf 2005). A study in the state of Georgia in the United States found that properties that contained mature trees sold for around 3.5-4.5% more than properties that were devoid of trees (Anderson and Cordell 1988). A study in Finland found that dwellings that had a leafy outlook were on average 4.9% more expensive than similar dwellings that did not have a leafy outlook (Tyrväinen and Miettinen 2000). In a study in Southern England, it was found that increased time spent in leafy areas decreased depression and increased social cohesion (Cox et al. 2017).

Provision of habitat for urban wildlife, including informal wildlife corridors

Urban green spaces provide habitat for a range of urban wildlife. Gardens in suburbia having been shown to provide habitat for a range of small native birds (Parsons et al. 2006) and some native mammals (Carthew et al. 2014). Urban greening provides habitat resources for wildlife such as flowering blossom, fruits and denning opportunities within tree hollows. These areas may also function as an informal wildlife corridor, providing stepping stones among patches of remnant native vegetation allowing wildlife to disperse or migrate across the region. These areas are important habitat for a range of threatened species such as the Yellow-bellied Glider and Powerful Owl. However outside of these areas, urban trees may provide habitat for other threatened species, such as the Eastern Osprey which may roost or nest in very tall Norfolk Island pines in the Blackwall area or the Grey-headed Flying Fox, Swift Parrot and Little Lorikeet which may occasionally forage on flowering Eucalypts such as Swamp Mahoganies in parks. For protected wildlife, a wide range of birds may also utilise the urban forest for foraging, such as the Brown Cuckoo Dove, Laughing Kookaburra and Rainbow Lorikeet. Urban forests may act as a stepping stone between patches of bushland, allowing wildlife to disperse or migrate across the region.

Likewise, blue-green infrastructure such as constructed wetlands and raingardens also provide habitat for local species. A study of the use of constructed wetlands by waterbirds in Melbourne found that they provided habitat for 35 species of waterbird and 91 types of phytoplankton (Murray et al. 2013). While smaller structures such as raingardens and vegetated infiltration trenches may not provide this scale of benefits to the urban ecosystem, they still provide habitat for pollinators and reduce impacts of stormwater runoff on nearby wetlands, creeks and estuaries (Asleson et al. 2009).

Blue/green infrastructure

Over the past decade there has been a greater recognition of the contribution that structures such as constructed wetlands, raingardens and vegetated infiltration trenches towards enhancing the urban ecosystem. A study of the use of constructed wetlands by waterbirds in Melbourne found that they provided habitat for 35 species of waterbird and 91 types of phytoplankton (Murray et al. 2013).

While smaller structures such as raingardens and vegetated infiltration trenches may not provide this scale of benefits to the urban ecosystem, they still provide habitat for pollinators and reduce impacts of stormwater runoff on nearby wetlands, creeks and estuaries (Asleson et al. 2009).

Case study: what was the value of street trees along the Pacific Highway in Sydney?

A study completed by Amati et al. (2013) along a 19km stretch of the Pacific Highway estimated 40% tree cover immediately adjacent to the road, covered by around 40,000 trees. This removed:

- 11 tonnes of pollutants per year
- Stored 71,700 tonnes of carbon across their life
- Sequestered 1220 tonnes of carbon across a year
- Produced 2110 tonnes of oxygen across a single year

This study shows the value of street trees at reducing pollution and increases the efficiency of cooling systems.

Case study: older trees have greater habitat value than younger trees in the urban forest

In the Australian environment, tree hollows are very important for wildlife, with a wide range of species such as parrots, gliders and owls all requiring hollows for breeding or denning (Gibbons and Lindenmayer 2002). However tree hollows take over 100 years to form and are found in very large trees rather than smaller trees (Gibbons and Lindenmayer 2002). Furthermore large trees generally produce more nectar than smaller trees, thus increase their value to nectar feeding wildlife such as parrots and Flying Foxes (Law and Chidel 2008). Due to these factors, old trees, in particular those that contain hollows have paramount importance in the urban forest and should be maintained and removal should only occur as a last resort. However it must also be remembered that young trees eventually become the next generation of old trees and smaller trees must also be valued and appropriately managed to ensure they are also only removed as a last resort.