Submission to the SA Parliamentary Inquiry into Metropolitan Adelaide's Urban Forest 2023

Executive Summary

The Western Adelaide Coastal Residents' Association (WACRA) welcomes the Parliamentary Inquiry into Metropolitan Adelaide's Urban Forest that we expect will address major structural issues facing Adelaide's urban forest and recommend a more unified, resourced strategy to increase tree density and longevity in our Adelaide metropolitan area on Kaurna Country.

Many problems with establishing an Adelaide urban forest stem from the reformed Planning and Design Code. Tree canopy has gone backwards since it came into being. We need to tighten the current Planning and Design Code's lax tree removal provision and consider much stronger mandates, such as Brisbane's requirement for 15 per cent of each property to have Deep Soil planting. Support is needed for well-planned strategic infill sites as opposed to general infill demolition. Our State's regulatory framework needs to be tightened with more stringent standards, consequences and specific targets to maintain and grow green assets.

We recommend adopting Seattle's score-based code requirements that increase the amount and quality of landscaping in individual developments, with a menu of credits for developers. The government need to work with planners, developers and other stakeholders to reform regulations so they can make input and feel ownership of the new provisions.

No new forest will grow without a huge injection of funds. We must partner with the Federal Government to build a green fund which councils can use to grow trees in their areas. Opportunities need to be provided for council and state government staff to work in interstate departments and councils overseeing major urban forest initiatives to aid in transfer of knowledge.

A database of individual trees is needed, as well detailed ongoing studies of canopy cover for planning and evaluation of targets. Investment to this level of detail is being done in Melbourne and Lisbon. This Inquiry also needs to examine wider strategies, such as how water infrastructure and green roofs could work hand in hand with trees to cool our city.

We can start by implementing the ten-year plan advocated by the LGA's *The Urban Tree Canopy - Local Government Leading the Greening of Adelaide* (December 2019). Link Adelaide with other 'sponge cities' to promote our extensive aquifers and other green infrastructure as it develops. Another strategy to tap community enthusiasm is to establish a Friends of the Urban Forest Network and a program such as My Tree Project in schools.

It will be impossible to improve the resilience and longevity of trees if they continue to be removed at the current rate. Their future also depends on a healthy understory and reliable access to water.

The clock is ticking: the best time to start this effort is now.

TERMS OF REFERENCE

The Western Adelaide Coastal Residents' Association (WACRA) welcomes the opportunity to make a submission to the SA Parliament's ERDC (Environment, Resources and Development Committee.

This Committee has been tasked to:

- investigate best practice and innovative measures to support selection and maintenance of site-appropriate tree species in the Adelaide metropolitan area with a focus on trees for urban infill developments, and
- examine legislative and regulatory options to improve the resilience and longevity of trees comprising the urban forest.

METROPOLITAN ADELAIDE URBAN FOREST ISSUES

Since 2018, metropolitan Adelaide has been formally acknowledged as *Kaurna Meyunna Yerta,* the Country of the Kaurna people.

At the time of their dispossession by our early colonists, the Kaurna people were expert in managing country with fire-stick farming, trees spaced out to create grasslands attracting edible marsupials and providing open land to grow yam daisies (*ngampas*) as a dietary staple. The people, waterways, birds and animals were in a dynamic balance.

There is no need to recite the destruction of this way of life wrought by the colonial project. Kaurna people over many generations have had to endure innumerable wounds to their families, their land, their culture. And yet, they still survive.

Kaurna have been pioneers in waking up their language, providing a model to indigenous groups across the nation of how to bring back a living language.

Metropolitan Adelaide truly is and was always their land and it is ironic to assume that because our governments have successively divided up the spoils of our takeover with titles and local councils, it is acceptable to make decisions without Kaurna input.

We would do well to engage with our local First Nations survivors to learn from their relationship of treasuring trees. They know how to value the incredible eco-system wealth of each tree and to care for it during its life cycle.

Change has to happen in how decisions are made on Kaurna Country. Spending time with respected elders and listening to their views would be a good start to incorporating a First Nations Voice in this critical decision-making.

This Inquiry is a good opportunity to make a significant step forward so that recommendations about an Adelaide Urban Forest are done by establishing an urban forest Kaurna consultation strategy for joint participation with the Kaurna community of the Adelaide Plains and SA Parliament.

Urgent Problem Not Getting Better

Climate change is coming whether we are ready or not. If we don't find ways to bring green into Adelaide, the climate crisis will make its presence known, with serious negative consequences for all of us.

The latest report from the United Nations Intergovernmental Panel on Climate Change (IPCC) makes it clear that trees in cities combat climate change both directly by storing carbon and by cooling urban areas, thus reducing energy demands. They also offer city dwellers what the IPCC report calls 'multiple co-benefits' of improved air quality, reduced heat stress, fewer urban heat islands caused by streets and buildings absorbing and retaining heat, and improving mental and physical health.

Underlying the current fad for removal of trees is a not-so-subtle campaign by the media to promote a negative image for trees. Whenever there is a storm, people are treated to graphic footage of cars, roofs smashed or someone pinned in their car by a fallen tree. Bushfires are seen as a terror waiting to happen. Fear of limbs dropping is instilled in young and old alike. People are encouraged to dislike seeds or leaves dropped into their swimming pools and to treat tree droppings on footpaths as hazards.

We need a government-led 'Good Trees' campaign to move us back to valuing trees more than fearing them. Our current low threshold for removing regulated and significant trees ignores their actual environmental and cultural worth. The City of Melbourne's valuing tool puts a much higher estimate on trees than our minimal amounts in the Planning and Design Code.

Trees are also under threat in metropolitan Adelaide from development pressures and the current Planning Code, both for new single houses that cover an entire block and from multiple units on the same land.

Our Western Adelaide Coast Residents' Association (WACRA) hopes this Inquiry can recommend to the SA Parliament measures that increase the density of trees and their longevity in our Adelaide metropolitan area on Kaurna Country.

The Urban Forest - Where is the 'Fair Go'?

Australia has an enviable record in many areas of trying to give people a fair go, no matter where they live. Financially successful states like NSW and WA provide cross- subsidies to other states such as SA through the GST redistribution, a process called 'fiscal equalisation.'

Medicare levies redistribute funds through progressive taxation so people who earn more, pay more to support those who earn less. Education departments fund public schools across the State with Federal help so that we avoid the trap of US cities where each local area must fund its own schools, disadvantaging poorer neighbourhoods and condemning their youth to poorer outcomes.

These entrenched structures, based on values inherent in the Australian community, work well to keep Australia a more prosperous society. What does this have to do with urban forests? The equalisation strategy has never before been applied to the concept of trees.

Metropolitan Adelaide's tree canopy coverage in 2014 by regions graphically demonstrates that the leafy eastern suburbs have a historic advantage over the relatively treeless western and northern Adelaide suburbs.

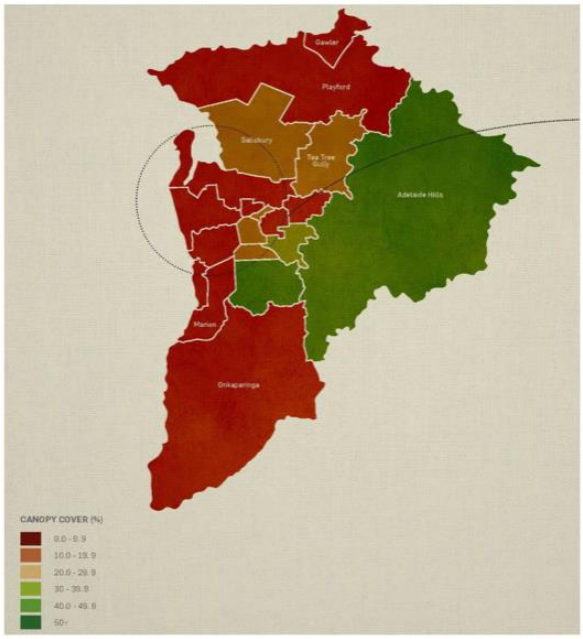


Figure 2 South Australia Tree Canopy Coverage (202020 Vision 2014)

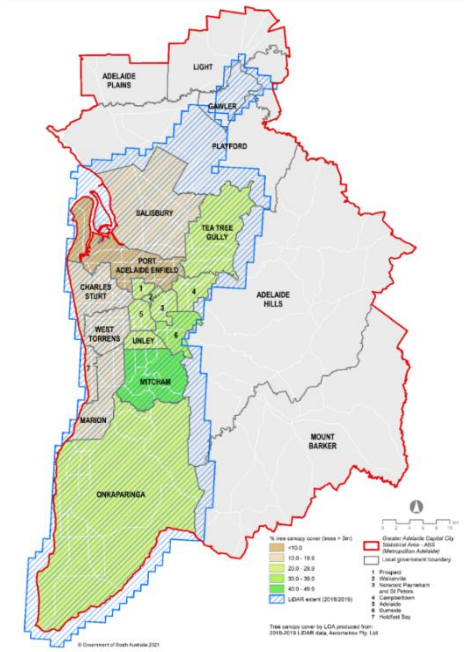
ee Canopy – Local Government Leading the Greening of Adelaide

The clear benefit of trees is that they contribute to elevated property values, something enjoyed by owners who live in tree-lined suburbs.

The same patterns of geographical advantage and disadvantage apply in Melbourne, where a 2018 aerial mapping study revealed that western suburbs averaged a less than 6 per cent tree canopy, while eastern suburbs average around 26 per cent.

Lack of green space can raise average temperatures in those suburbs of up to 13 degrees C. The electricity and cooling costs imposes on people in low-tree suburbs, often renting, with no ability to install solar panels, is a huge disadvantage in this time of rising living costs. They often simply go without and risk their health. Where there is lack of green and canopy cover, we have poorer health from heat island effects, poorer mental health of living in non-green environments, excess deaths of young people, older people and those with pre-existing health conditions. These are all social costs that are borne in other budgets, usually health.

There are many treeless or low-tree streets, especially in Adelaide's west and north. We need vastly improved street tree planting to match, say the coverage in the City of Norwood Payneham and St Peters, where street trees account for 37 per cent of their overall 24 per cent canopy cover.



Shielding the roads with appropriately chosen trees in a concerted effort on verges would make a big improvement and allow easy access for watering trucks to maintain them in their initial years of growth until fully established.

In 2019, the *Urban Tree Canopy Report* examining local government greening of Adelaide, made damning revelations of Adelaide being one of the poorest performing Australian cities for tree canopy and planting. The Adelaide's 30-Year Plan 'Target 5' calls for a green liveable city.

It targets council areas with less than 30 per cent tree canopy cover currently, to increase cover by 20 per cent by 2045. For council areas with more than 30 per

cent tree canopy cover currently, the Plan says this cover should be maintained to ensure no net loss by 2045.

2019 LIDAR data of urban tree canopy in the LGA study shows that many councils are struggling to match even these low objectives. Only three out of 19 metropolitan councils have targets that meet state government targets. There seems to be a major mismatch of ambition and expectation between State objectives and council targets and planting.

How is that we allow councils to set planning and tree-planting targets far below what the State Government expects? Where are the consequences for this mismatch? Where is the state government budget support to lift council performance? Are these targets even adequate for future climate challenges?

The scale of the challenge requires an almost war-footing in response. Victoria has recognised the link between urban canopy and liveability outcomes. The state government is working with local governments in Melbourne's west to provide 500,000 trees for more shade, green spaces, biodiversity and working with the ecosystem to drive down pollution.

One million additional trees have been planted in Melbourne's west after the federal government provided one million dollars to fund a 'green army 'of young people to help plant trees. This project has received recognition from the United Nations and been a beacon of how to transform a disadvantaged area with an urban forest.

WACRA calls on the review to seriously look at redistributing resources for green spaces, urban canopy and water retention to lower socioeconomic suburbs that have a clear lack of amenity. This process of restoration to a life with green, equivalent to what the Labor Government in Victoria is now showing is possible, echoes the transformation of low socio-economic areas in London with planting campaigns.

Fiscal equalisation could transform into 'canopy equalisation' as reforms take root, literally. A commitment of this order needs a whole-of-government approach with a targeted plan to treasure and retain existing trees, protect regulated and significant trees already in place. This can be done by reducing the ability to apply for removal and an extensive program of planting trees which will improve the quality of suburbs that the current urban infill strategy has denuded. In spite of the words of the plan, it appears the current 30-Year Plan for Adelaide promoting urban infill by small developers is working against such progress.

Development Impacts on our Urban Forest

The current review of the Planning and Design Code presents a concurrent opportunity for the two Inquiries to strengthen safeguards for existing trees and to encourage more planting. We need to build a more unified approach with a comprehensive urban forest strategy.

WACRA supports the submission to the Planning and Design Code review panel by the Urban Development Institute of Australia SA division (UDIA). The Institute proposes that strategic infill in significant residential developments on large parcels such as Brompton, Bowden, Lightsview and AAMI Stadium be preferred over demolition of old housing stock and all the issues of a reduced tree canopy that follow.

Current policies create a significant reliance on knocking down houses and rebuilding two or more on one title. Ad hoc general infill adversely changes the character of existing suburbs

and streets. Strategic infill uses master-planning to optimise the urban tree canopy with medium to higher density projects in appropriate areas, including open space and suitable infrastructure upgrades.

Between 2010-2019, general infill accounted for 37 per cent of all net dwelling increase in Greater Adelaide, while strategic infill only contributed 19 per cent. In terms of numbers that equates to 49,600 new general infill dwellings being constructed compared to 22,600 strategic infill dwellings.

Another problem is inadequate information for people who are planning developments about maintaining and enhancing green, such as optimum planting on the west side and types of trees that flourish in various parts of greater Adelaide. Clear information at the beginning of a redevelopment process would help make it easier for those developing properties to comply with existing or even more stringent regulations and less likely to flaunt loopholes.

Lack of Consequences for Tree Removal

Currently, there are few consequences for people deciding to remove trees, whether that be individual landholders, council nominees or businesses. Monitoring of commitments to plant and maintain trees for developers is non-existent and fines trivial. Developers and home owners will push against tighter regulations, but in the interests of the whole community, much more regulation and compliance need to occur to turn around the trends that support removing grown trees.

The current code allows generous interpretations for tree removal, offset provisions somewhere else instead of replanting where trees are removed and provisions to plant trees which are not necessarily followed up. We lag far behind interstate and overseas authorities that insist on much more stringent standards to retain, maintain and grow green assets as part of development approval processes. WACRA supports tightening our regulatory framework with this objective.

We recommend an approach such as that adopted by the European Commission in 2022, which proposed a draft regulation requiring the bloc's 27 member states to ensure that at least 10 per cent of the surface area of all cities, towns and suburbs be planted with trees by 2050, and to commit to no loss of green space.

WACRA encourages the retention of current tree canopy on government land and for these precious parcels of land not to be turned into development stock. Unirrigated passive reserves are also a potential site to create mass plantings.

We propose that there should be transparent new criteria on building approvals with maximum areas for percentages of subdivisions for each street section, each group of streets and each suburb. Some of those percentages might have maximums of 10, 20 or even 25 per cent. But, to avoid community dislocation and loss of urban canopy, no urban infill in any of these categories should go beyond 33 per cent.

The reformed planning code has gone backwards in terms of protecting our green heritage. Let's re-set the Planning and Design Code and dream bigger. It is imperative in our world of a warming climate to meet this challenge sooner than later, as trees will not grow quickly just because we want them to. They grow at their own pace and that means that the time to start is always now.

MODELS FROM CITIES GROWING THEIR URBAN FORESTS

It is always helpful to learn from the success and failures of other cities to determine best practice. WACRA has done a review of initiatives in other cities growing their urban forests, starting with Australia, to see what Adelaide might learn. These models spell out innovative ideas and show the magnitude of financial and human resources needed to build urban forests in a metropolitan context.

AUSTRALIAN MODELS

Brisbane, Queensland - *MANDATES AND INCENTIVES FOR GREEN IN BUILDING CODES*

The Brisbane City Council, which covers metropolitan Brisbane, has introduced the Brisbane Green Buildings Incentive Policy to create a world-class, design-led city. The Council will provide a financial payment equivalent to 50 per cent of infrastructure charges to buildings that meet criteria for sustainability. A specification that 15 per cent of each site is to be dedicated to Deep Planting of trees in soil must be met.

Brisbane targets suburbs with low-tree cover for plantings to increase shade and cooling. They currently maintain 575,00 street trees made up of over 200 species. Each year the city plants 9,250 on average along footpaths and bikeways. In 2012, they completed a program of planting 2 million trees with a framework of greening arterial roads, then key suburban streets as 'shadeways', made up of large street trees and better footpaths.

Interestingly, the Brisbane Council has a Memorandum of Understanding with their local energy retailer, Energex, which over ten years has helped to reduce canopy loss of street trees through re-engineering wires, new pruning profiles and improved communication. They also have a long-term free plant program, giving away over 600,00 plants to schools, community groups and residents in the past ten years.

Melbourne, Victoria - *BUDGETS TO SUPPORT SPEEDY INTERVENTIONS*

Councils in and around Melbourne are leaders in urban forest thinking. Our planners and strategists could learn a lot by visiting, interning, and doing professional exchanges in Victorian state and local governments which are ahead of SA in implementing their reforms. They have pioneered urban forest techniques, including mapping each of Greater Melbourne's 70,000 trees. This effort has helped planners see that many of their large developed trees are at the end of their life-cycle and more diversity will be needed for greater resilience.

The Victorian government has contributed $315 million to create 6,500 hectares of new and upgraded parks and trails across Victoria to protect and expand their urban tree canopy. Melbourne insists that planning provisions increase tree numbers, not justify their removal.

Many suburban councils in closely developed areas around Melbourne have found that, since they are already developed, there is no land to create parks and open space. Instead, many councils are looking at requiring creepers on west-facing walls and green roofs where there is not space for trees. But all are also participating in an Urban Forest Precinct Plan with a detailed planting schedule for each street over the next ten years to increase their canopy to 40 per cent. Without planting, canopy decreases from 23 to 21 per cent.

Research on intensive planting of trees on council median strips and on verges, combined with holes drilled into the adjacent concrete kerbs to collect run-off and stop micro-plastics entering the stormwater stream has proved that canopies can expand at double the speed. The trick is to re-classify trees as 'basic infrastructure' and provide State seeding money to speed up incentives for councils to lift their ambitions and performance.

Given the constraints, many councils are using innovative ways to create spaces for trees and plant trees that will do well in those locations as well as significantly increasing planting budgets. The Brinbank City Council, which covers Sunshine West, plans to boost its tree canopy from 6 per cent to 30 per cent by investing $2million a year in tree planting, equivalent of 26,000 new trees going into the ground each year.

Sydney, NSW - *TARGETS THAT INVOLVE PLANTING AND WATER INFRASTRUCTURE*

The NSW Premier has set the target of planting 5 million trees in Greater Sydney by 2030. Sydney already has over 1 million trees registered with their Everyone Plant One campaign. The NSW Government has committed to achieve 40 per cent urban tree canopy cover for Greater Sydney by 2036. In contrast, Adelaide is aiming for 30 per cent by 2045.

To help deliver a sustainable future for metropolitan Sydney, the State Department of Planning, Industry and Environment collaborated with Resilient Sydney and councils to co-design a program to empower councils to create cooler and shadier neighbourhoods. The program provides updated data, financial support and policy guidance to councils to support strategic approaches to urban forest management.

In 2022, the grant program awarded $1.37 million to 28 councils across Greater Sydney to deliver 32 projects. This funding helped councils strategically plan for and manage urban forests in their local government area including:

- developing or updating urban forest strategies and street tree master plans
- developing and enhancing tree asset databases
- analysing tree canopy data to identify priority planting areas
- engaging the community through workshops and educational campaigns to promote the benefits of trees and canopy cover.

WACRA commends the *Street Tree Planting Design Manual* devised by the NSW Department of Planning, Industry and Environment. This manual is based on extensive trials, evidence and science and lays out optimal planting and watering design techniques and strategies that are applicable to any Australian city.

Apart from trees, evidence shows that water is the crucial element to use in responding to urban heat. Research of Western Sydney undertaken jointly by the University of New South Wales and Sydney Water examined the urban heat island effect in 101 Asian and Australian cities.

This research demonstrates that while greenery does have a cooling effect, the most effective ways to ameliorate urban heat come from a combination of water-based technologies, including fountains, and use of cool material technologies such as cool roofs and pavements.

Greater investment in water supply services and infrastructure could help cities become more resilient to global warming and heatwaves. Strategies include installing or repairing fountains for drinking and for cooling spaces by using water spray fountains and wetting streets. Fountains can decrease surrounding air temperatures by 3C and their cooling effect can be felt up to 35 metres away.

Canberra, ACT - *PROOF OF CONCEPT – OVER TIME, TREES WORK*

A tour of the national capital, Canberra, shows what can be done over decades with intentional tree plantings to create urban forests. Their green spaces are full. Streets are lined with beautiful, fully-developed trees, creating calm, shade and cooler climates for everyone. Bird life abounds. Strictly prohibiting development on green belts means that the city's trees provide the lungs for the city to breathe.

The city and surrounding suburbs exhibit the results of strong planning codes and compliance. The inner suburb streets are lined with 3-4 storey residential complexes, the sort of planning that provides urban density with well-planned apartments, not two boxy townhouses squeezed onto one suburban block with no room for trees that we are seeing as a result of our current Planning Act and Code.

INTERNATIONAL MODELS

Lisbon, Portugal - *DATA TO TARGET INVESTMENT*

Lisbon, with half the population of Adelaide, has calculated that each new tree costs a city administration as much as €2,000 over five years to buy, plant, water, maintain, prune, and treat for disease. With tens of thousands of trees, it's a huge investment, for environmental, social, economic, aesthetic, and health benefits. These benefits are self-evident but often simply ignored, because cities are looking simply at managing costs.

Using *iTrees,* a US software program, the Lisbon council fed in data from over 41,000 trees, finding that trees cost about $1.9m annually. However, the services they provided were worth $8.4m. They calculate that for every $1.00 a city invests in its trees, residents get about $4.50 in benefits. The value of each tree comes as energy savings, carbon reduction, removal of air pollution, and reduced stormwater runoff. Trees were also found to add significantly to property values, something that could be used as an incentive to retain and plant more trees.

Medellin, Colombia - *GREEN CORRIDORS TO COOL CITY*

The city of Medellin in Colombia, with a population of 2.6 million people, has put a $16.3 million dollar budget in place to create a network of 30 green corridors. Three years into the program, the city has reduced the urban heat island effect by two degrees Celsius. As these densely vegetated tree avenues mature, they are expected to eventually cool their city by 4-5 degrees.

London, England - *PLANTING BASED ON DISADVANTAGE*

Following devastating heatwaves, London Mayor Sadiq Khan pledged £3.1m to tree planting in 2022. Since 2016, the Council has funded planting of 420,000 trees in London, including two major woodlands and 85 hectares of new green belts. Mayor Khan has also supported

£20 million in green infrastructure projects, also creating 500 hectares of green space. 250 community green space projects were supported.

The mayor's climate emergency funding package targets areas where Londoners are most vulnerable to climate change. A Climate Vulnerability Map has been developed that shows areas with Black, Asian and minority ethnic populations of more than 50 per cent. These are the areas where people face the highest climate risk due to heat and limited access to green space. Mayor Khan emphasises that massive planting of trees and green spaces in the areas of greatest climate vulnerability will play a critical role in fighting back against climate change and will have a long-lasting impact for the city to thrive.

Vienna, Austria - *COOLING ROOFS AND STREETS*

In addition to concentrating solely on tree planting, Vienna has instituted a major program to combat the urban heat island effect with a mixture of strategies. In 2018, Vienna, with a population of 1.9 million, planted 4,500 trees each year and provided subsidies for residents to install street-facing green walls.

Water is provided in public parks in the form of misters, water features, extensive public swimming pools and drinking fountains to help people as heat intensifies. In addition, Vienna has also developed a series of cool streets, as has Los Angeles, with traffic-calmed spaces and light-coloured road surfaces reflecting heat instead of absorbing it.

This approach has been trialled by the Charles Sturt Council in Adelaide's west where cool street treatments have been laid down in vulnerable suburbs.

Singapore - *RETROFITTING CANALS TO BECOME LINEAR PARKS*

Singapore is retrofitting linear parks on existing concrete drains as a way of adding trees. In 2012, the Bishan-Ang Mo Kio Park was created from a concrete drainage canal. It is now a 3.2km winding stream, creating a 62-hectare park with gently sloping banks and plantings in a densely developed residential area. The original drain was similar to our concrete drain that empties into the Patawalonga along the Airport's southern boundary.

The Park's stormwater drains into the landscape with planted banks that have increased the biodiversity by 30 per cent. This natural soak prevents flooding with a well-designed creek, similar to the design happening at the moment on Breakout Creek on the Torrens.

In looking for spaces for new urban forests in Adelaide, we could make a new linear park to replace that concrete drain, with a new park designed by interdisciplinary specialists to integrate the latest knowledge.

Rotterdam, Netherlands - *WATER AS KEY TO GROW GREEN*

In a classic Netherlands adaptation, authorities have decided to concentrate on water to cool their city. Large development sites in the city of Rotterdam, with its population of 655,000, have been converted into floodable squares, working with water rather than against it. Sunken plazas such as Watersquare Benthemplein, is a park with trees and grasses that becomes a major stormwater basin when it rains.

Rotterdam's residential architecture has 18.5sq kms of flat roofs. City planners have harnessed this potential for water retention, generating sustainable energy with solar panels,

creating green roofs and terraces, all combined. The city boasts many rooftop farms with advanced stormwater storage, vegetable beds, beehives, chickens and leisure areas.

Rotterdam has also developed a Multifunctional Rooftops Tool to help people make investment decisions about their roof design and capability. The city pays owners who intercept large amounts of stormwater. This initiative is paying dividends as in 2021, Rotterdam developed 46 hectares of green roofs.

Adelaide roofs on single-use homes are mainly sloping, but as we create more apartment multi-storey living, making good environmental use of the rooftops using tools such as developed in Rotterdam could be a significant way to add to our urban forest.

New York, New York - *RAIN GARDENS IN VERGES AND PERMEABLE SURFACES*

Green Infrastructure NYC uses an array of practices that mimic natural systems including green roofs, made up of a vegetative layer which sits on top of a drainage layer. Depending on the depth of soils, a wide variety of plants, shrubs and trees can grow or just a thinner layer with minimal vegetation of grasses and succulents.

Lacking large open space to create new parks, New York City has recently spent over $1.4 billion on rain gardens that drain water from streets and new infiltration basins that divert and store stormwater. These smaller, distributed solutions act to kerb flooding on local streets, while providing green amenity in neighbourhoods which previously lacked trees.

Blue roofs, or roof without green matter, are also used to collect water during flooding rains to retain water on top of a flat roof with a series of weirs which gradually release the water, taking pressure off the normal stormwater systems. This water can be piped gradually into local tree plantings rather than straight into drains and sewers, acting as huge rainwater tanks, cooling the building and preserving a precious resource.

Permeable paving, both as pavers or poured concrete is being rolled out in New York instead of using impermeable concrete or asphalt on paths as a cost-effective way to reduce temperatures in the city. It also acts to reduce puddles and pollution going into waterways while improving street drainage.

Basel, Switzerland - *MANDATING GREEN ROOFS*

In densely built-up areas where new parks and tree planting may be difficult, vegetated roofs are a feasible greening option. These roofs not only mitigate the urban heat island effect but also act as insulators. Basel, Switzerland, population 170,600, has mandated green roofs since the late 1990s. As Adelaide continues to grow its urban density, use of flat roofs should be mandated for green uses as in many international cities, which have increased the coverage of green roofs through the use of a combination of financial incentives and building regulations.

In 2002, an amendment to the City of Basel's Building and Construction Law was passed mandating that all new and renovated flat roofs must be greened using stipulating design guidelines. By 2006, there were 1,711 extensive green roofs with shallow soil that mostly grow succulents and grasses and 218 intensive green roofs (roofs with deeper soil to accommodate larger plants and trees). Approximately 23 per cent of Basel's flat roof area was green within four years of this regulation.

Since then, around 100 green roofs, covering a surface of 80,000 m^2, have been installed each year. 40 per cent of roof surface in Basel now covered by green roofs, highlighting the benefit of putting in regulations and laws in place early.

Basel's green roof regulations have not met with any significant resistance because all stakeholders were involved in the process from the beginning, and because of the success of the incentive programmes. For developers, installing green roofs is now considered to be a routine practice, and developers do not object to their installation. Costs have come down as simple, effective configurations have gained acceptance, with a minimum one layer of insulation membrane and 15cm deep soil.

Tokyo, Japan - *LONG, LONG-TERM PLANNING*

Reverence for nature is a well-known part of Japanese culture. By some accounts, greater Tokyo, with a population of 37 million, has a 52 per cent tree coverage, including nearby forests and plantations. Tokyo also mandated green roofs in 2000 and now has 250 hectares which are acting to cool the city, bringing green where there was none. Smart cities are mandating green roofs.

It is fascinating to note that Jeiji Jingu shrine in Tokyo, first completed in 1920, has a long-term goal to create an 'eternal forest' with a **150-year planting program** of long-lived and faster-growing trees. Starting with nothing, the shrine now has 100,000 trees with 50 of its 150-year program left to complete. This shrine attracts ten million visitors each year.

A forest like this in Adelaide, one with a daring long-term program, would turn our Parklands into a place of contemplation and major tourist destination for centuries to come.

Paris, France - *MASSIVE PLANTING AND REMOVING CARS FROM STREETS*

Political courage has boosted Paris into the forefront of European initiatives, with Mayor Anne Hidalgo making a suite of major environmental reforms. She has promised to plant more than 170,000 trees in Paris by 2026 with 50 per cent covered by planted areas by 2030. Building codes have been modified to make it easier to plant trees in neighbourhoods, putting nature back into Parisians' lives.

On major arteries, Paris is busy replanting trees that were uprooted in their tens of thousands during the 20th century as the city transformed grand boulevards, previously lined on both sides by double rows of trees, into four-lane avenues with roadside parking.

Since its re-election in 2020, the council has planted 38,500 new trees in the capital and aims to plant a further 21,000 this year. The city is also planning three urban forests, mainly in the east of the city, including one on 3.5 hectares of former railway sidings in the 20th arrondissement.

Paris is in the forefront of minimising the car's dominance as it re-establishes trees in its city. Mayor Hidalgo has overseen the creation of 900 kilometres of bike lanes. Many major roads have been shut to traffic entirely as pedestrian friendly, treelined boulevards and parks are returned to the people. A challenge to Adelaide is Mayor Hidalgo's plan to ban all diesel cars from the city by 2024 and all petrol cars by 2030. The pace of the Paris reforms makes our 2045 targets look too little, too late. Our 30-Year Targets need an update, given the current accelerating climate crisis.

Seoul, Korea - *TALLER BUILDINGS AND GREEN WIND PATHS*

As in other major cities, the Seoul Mayor, Oh Se-Hoon took the lead, instituting a Green Urban Space Recreation Strategy in 2022. His vision is that all Seoul's ten million citizens will be able to stroll around their downtown and see trees and forests everywhere. Although only 3.7 per cent of the total area of Seoul has a green canopy, if the extensive palace gardens are counted, this rises to 8.5 per cent. The mayor's answer is to grow the city higher, from its current 90 metre limit to 150 metres, with the stipulation that at least one park is created for each new building block to be connected with green pedestrian passages.

Making use of the surrounding mountains, Seoul is also beginning to plant a series of 'wind path' forests to move clean air into their CBD and drive temperatures down by seven degrees Celsius. Pine and maple native trees are being planted along rivers and roads, supplemented by oaks and wild cherry trees to purify the air by absorbing particulate matter.

Montreal, Canada - *INFORMATION ON EACH TREE PLANTED*

Montreal, with a population of 1.7 million, is creating major urban forests wherever it can. Between 2012 and 2019, the city spent $6.8 million to plant 135,000 trees. In 2019, it planted 22,000 trees with a budget of $17 million to boost their canopy from 20 to 25 per cent.

Each tree planted on the verge in front of homes will have a tag that shows the type of tree it is and the monetary value associated with each tree's carbon dioxide, water absorption and energy reduction over a 40-year period, a breakdown of environmental and economic benefits based on several factors, including energy consumption and the increase in property value.

Montreal's Climate Action Plan is a set of steps aimed at, among other targets, citywide carbon neutrality by 2050. One such step is a plan to plant 500,000 trees by 2030. They are also planning two extensive green corridors to link the city's largest parks starting in 2023. Building the green corridor will cost roughly $50 million by the time it opens in 2027, with $40 million coming from the City of Montreal.

Montreal has a slightly larger population than greater Adelaide with our 1.3 million, but the scale of the ambition and budgets provides an estimate of the effort will be needed to transform our canopy into an urban forest of which we can be proud.

Seattle, Washington - *CODES FOR GREEN DEVELOPMENT*

As well as city-wide plans, the city of Seattle has established a Green Factor score-based code requirement that increases the amount and improves the quality of landscaping in individual developments. Seattle insists that well-design landscaping in each new property will improve the look and feel of a neighbourhood, reduce stormwater runoff, cool their city during heatwaves, provide habitat for birds and insects, and decrease crime.

Each new development application must reach a minimum score established by the zone it is in. Developers can choose from a menu of landscape credits with credits for green roofs, rain gardens, vegetated walls, trees and shrubs. Bonus credits are given for planting along footpaths, using native plants or creating a food garden. These measures are all doable in Adelaide via a revised Planning Act and Code.

FOUNDATION FOR A NEW ADELAIDE STRATEGY

There have been a number of excellent reports prepared in Adelaide in recent years outlining the scope of the challenges and opportunities to meet the climate emergency with urban forests. In particular, the LGA's *The Urban Tree Canopy - Local Government Leading the Greening of Adelaide* (December 2019) is an excellent summary of the issues, the current state of all local governments in the metropolitan area and the challenges. It proposed a ten-year plan to improve the Urban Canopy.

This report alone would provide an excellent foundation on which to build this Inquiry's recommendations. Many strategies are very clear and will probably have a significant level of community support.

We lag quite markedly behind other cities because responsibility for planning and planting of trees has been dispersed and our targets set too far out. We need leadership that sets targets for the city as a whole in the short and medium term to 2030 and funding for implementation of increased targets.

The Aquifer Advantage

Adelaide has pioneered channeling stormwater to recharge aquifers around the city, which act as natural underground sponges for precipitation and assist with flood control. These are invaluable resources for the long-term health of our trees and should be part of a centralised database of aquifers. Planners need to account for what is being contributed and extracted from them as a dynamic system. Gone are the days when engineers treated stormwater as a nuisance for the inevitable 1 in a 100-year flood.

Adelaide metropolitan councils are experimenting with all kinds of ideas, including cool streets, rain gardens on verges and permeable paving**.** Individual councils are teaming up with each other to build resilience for the inevitable heating of climate change. Adelaide may be able to join cities around the world, from Berlin to Auckland and many in China, that are creating infrastructure to become 'sponge cities.' We have a good start but the initiatives are fragmented.

Goals for amount of stormwater collected and monitored need to be set to increase the amount captured in aquifers and other groundwater projects. Dramatic changes from climate change will mean extreme swings between wet and dry years. Recharged aquifers are an insurance policy for the city to supplement and augment what can be held in dams.

As a city, we are just starting to see the benefits of turning the treated sewage into irrigation water for our urban forests and nearby agriculture instead of sending it out into the gulf where it depleted seagrass meadows for decades. We can innovate more with water.

Friends of the Urban Forest Network

Many successful cultural and environmental organisations in Adelaide make use of people who volunteer time, expertise and enthusiasm in 'Friends' groups. WACRA proposes the establishment of Friends of the Urban Forest Network as a key component of the proposed Urban Forest, supported by state and local governments to provide practical local assistance and community education.

Currently there are many, many practical groups dedicated to weeding, planting, growing and seeding, pooling together their time and energy to add green to Adelaide. A city-wide Friends group could act as a common link between these often-ad hoc groups and build a database of local initiatives.

There is considerable expertise in many of the environmental professionals associated with these groups which could be multiplied and tapped to provide community education to greater numbers of volunteers.

People count as much as regulations, programs and plans. Adelaide's urban forest will be greatly enhanced in its outcomes if we as citizens are proud of it and work in whatever ways we can to help it grow for our community's future.

My Tree Project

In the past two years, WACRA pioneered a *My Tree Project* with the City of Charles Sturt, supported by SA Water's Community Partnership Program. *My Tree Project* demonstrated how local school students, their families and staff could learn more about trees, growing them from seed, planting out the resulting tube stock and caring for them on their school property. At the celebratory conclusion of this project in July 2022, over 200 students and their family members joined together at their art show where students put their learning about trees into artworks and committed to further tree planting in their communities.

WACRA recommends that projects modelled on the *My Tree Project,* recently awarded the 2023 South Australia's Community Event of the Year, be taken into schools. It would need funding for resource people to sustain the initiative with enthusiasm and knowledge. *My Tree* has shown a successful way of engaging students outside in nature, using their hands and working together to understand how trees make a better environment for the future.

Neighbour Power

We are not currently valuing, let alone treasuring trees for all the ecosystem services they offer us. Mature regulated and significant trees have these classifications because they matter, not just so you need an application to remove them. Let's be more like our neighbours in Japan and like our Kaurna community and revere our trees.

WACRA commends the transparency of the PlanSA website that allows interested community members to monitor applications as they appear each week via notifications of new developments. It is possible to see applications for removal of regulated and significant trees via this democratic mechanism.

We need to tighten the criteria currently in place that lets councils give fairly easy approval to remove these important lungs of our cities. The code makes minor reference to the ecosystem benefits of trees, but they are not valued in the criteria as highly as potential property damage.

WACRA suggests that the website, as an urban forest initiative, contact neighbours in a 60m radius and mandate signs on trees to notify residents nearby of the application just as happens for proposed demolition sites. This would give neighbours and the other concerned citizens the ability to support or question these applications and to learn the results of the application.

The government's digital planning platform could increase accountability about our larger trees slated to be removed and for building approvals, check that people have planted what they apply to plant after building.

Evaluating and Supporting Landscaping Compliance

Planning departments in councils lack planning compliance staff to monitor whether people have voluntarily complied with the terms of their planning application once approved. The Act is silent about landscape compliance evaluation whereas building compliance officers do a good job administering the Code in signing off on known built elements as a final certification.

Without some 'stick', many builders of urban infill and new houses simply ignore these living elements in their approved plan, further diminishing Adelaide's potential canopy. No one is checking or signing off on soft landscaping and deep planting of trees, often at the end of expensive building with little funds left to fulfill this part of the application. WACRA suggests that any revamping of the Code bring in criteria that call for a final-sign off on landscaping elements some time after the building sign-off, say one year.

That allows time for people to settle into their new homes and to landscape it with the elements they promised in their approved application. There may need to be penalties to some for not adding this green to their properties, which will have appreciated in worth from the approved building project.

Given that funding may also be an issue for some, consideration of establishing a fund for larger or established trees or a green voucher system could act as an incentive to plant more mature trees that have a head-start with growth.

PlanSA has considered the initial planning and approval elements of its system, but lags with any measures for evaluating and supporting landscaping compliance. This needs to improve.

Tree Selection and Coordination

Adelaide has a number of very experienced horticulturalists in the private sector, local government, Landscape SA, Green Adelaide and non-government organisations such as Trees for Life. Detailed information about the best species to plant suburb by suburb is available to the public and could be further refined for planting schedules of site-appropriate trees for all suburban streets by a number of professionals and interested people.

The expertise is here. Harnessing it for the urban forest is part of the strategy that needs to be developed.

In recognition of our loss of green canopy, in 2022, Green Adelaide held a Greening Adelaide Leaders Event with more than 60 executives, followed by a practitioner-focused Greening Summit with representatives from 42 diverse organisations to share experiences of greening projects across Adelaide.

This shows both the depth of commitment but also the range of bodies that need to be harnessed. New legislative and regulatory options from the SA Parliament would point everyone in the same coordinated direction and concentrate efforts in a way that currently is scattered and often contradictory.

The Urban Forest Inquiry Outcome

This State Parliamentary Inquiry is welcomed by WACRA as we believe a unified effort is needed by local and state government to meet the current crisis of our canopy falling, not growing. Part of the issue is the fragmentation of planning and execution at the local government level. Targets, data, good planning and co-ordination between councils and State Government, substantial budget and commitment will go a long way to starting us on a better path.

Planting trees is often seen as the mainstay of cooling our urban environment, but hopefully this Inquiry will find that cooling will involve a mix of approaches. Coming later to this task as compared to many comparable cities, we can learn from their successes and failures and use their initiatives as models.

Investment in proven technologies for increasing green, using water infrastructure for cooling and roof gardens, and mandating lighter materials for roofs and roads will make a big difference. Building on the pride Adelaide residents have in our city and its many gifts, the results of this Inquiry will encourage each of us to contribute to the effort it will take to green our city for our future.

RECOMMENDATIONS FROM WESTERN AREA COASTAL RESIDENTS 'ASSOCIATION

- Establish a Kaurna Urban Forest consultation strategy
- Implement a 'Good Trees' campaign to educate the community about their value and overcome the prevailing trend to de-value them
- Establish a whole-of-government approach to retain existing trees, protect regulated and significant trees and provide a significant budget boost for planting trees.
- Work with the current Planning and Building Code Review to establish a consistent government policy with higher expectations around tree removals and planting
- Tighten the current Planning and Design Code's provisions around trees and consider much stronger mandates
- Support well-planned strategic infill sites over general infill demolition which does not add to the urban forest
- Examine Seattle's score-based code requirement that increases the amount and quality of landscaping in individual developments using a menu of credits
- Partner with the Federal Government to build an Adelaide Green Fund which councils can use to plant and water trees in their areas
- Provide opportunities for council and state government staff to learn from interstate with departments and councils overseeing major urban forest initiatives, to aid in transfer of knowledge and collaborations
- Establish data on individual trees as well as canopy cover to provide a baseline for planning and evaluation of targets
- Expand the Inquiry to examine how water infrastructure and green roofs could work hand in hand with trees to cool our city
- Work with planning and development communities and other stakeholders through Green Adelaide to reform legislation and regulations so they can input and feel ownership in new provisions
- Implement the ten-year plan advocated by the LGA's *The Urban Tree Canopy - Local Government Leading the Greening of Adelaide* (December 2019)
- Set goals for increased allocation and storage of stormwater in urban aquifers in a coordinated, monitored network
- Support the establishment of a *Friends of the Urban Forest Network* and a program such as the *My Tree Project* in schools

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