

# PERTH'S URBAN FOREST

A WA2.0 PROJECT



THE  
GREENS



[GRNS.MP/URBANFORESTS](https://grns.mp/urbanforests)

## **Koora-Koora Nyiting**

**Kooram booliny koora boor-boor kibbera  
ganga milgaar yoongar-ak Australia,  
Nyoongar yoongar bardip wallakyonga.**

**Nidja bardip-al Nyoongar waangkiny be  
Moondangnark-Karadjinanginy. Nginda  
koombar Motogon-noyt yunga gaign noyt-ak  
yennar-gaign naga abbiny doora-kwab.m.,m,**

**Winnarak ninja-ninja noyt bardo-ak myaart  
borak mikang, baalap nganalo gaign  
djinang-moorditjal yennar-gaign.**

**Nyitiny-al nginda nidja bardip koorl. Boodja wer  
kep kwadja-be ngaka. Winnirak ngaka kep bardo  
yambo boodjar baal karbang koombar baling.**

**Bandang noyt ngawaliny ninja-ninja balang  
warniny koombar bomign winnirak baalap  
kwadjart-yen. Nginda yennar-gaign abbiny  
doora-kwab yoongar abbiny djinang-moorditjal  
yennar-gaign. Kwobbrup wer ally-barlangup.**

**Yennar bangak yarnmen-ak ngandabat noyt-  
ak Noongar boodja be bora nidja bardip.**

**Wer yoongar dinang baalap bomign winnirak  
djinang-moorditjal yennar-gaign.**

**Yeyi ngala kendjil kaditj baal milgebar bidi-ak  
Nyoongar yoongar kwadja-be koombar baaminy-  
baaminy karbang bidi-ak gaign milgar yoongar.**

**Milgebar bidi-ak boodja banga nginnaga  
warr malajin. Milgebar boodja bardo.**

**Nyoongar bridiya kaditj nagak boodja  
wakyn widiny yoongar wakyn. Milgebar  
noyt-balang yalga yallalla.**

**Yanga yallalla be malaj yoongar-ak mandjar.**

**Green Corridors model kiar noondak-marer-  
yoongie boola-boola yoongar djinang  
yarnmen yardie boodja be-ak waagin.  
Ngala barnak yoongar be gorak yeyi.**

Introduction by Noongar elder Noel Nannup  
and his daughter Alison Nannup.

Long before the tall ships carried new people to Australia, the local Noongar people over millennia shared a story. Moondangnark- Karadjinanginy, about a time when a great Creation Spirit gave a Spirit to everything that would become real. As all these Spirits moved out of the darkness into the light, they realised that they would need a carer of everything.

Nyiting, the Nyoongar name for the time when this story begins, means freezing cold. During Nyiting the land and the water was all frozen. As some of the frozen water moved across the land it created great trails. All the spirits followed these trails performing heroic deeds as they went.

When everything became real, the people became the Carer of everything. There would be places they called sacred, and places they would call significant. And so the people fulfilled their special role, as the Carers of everything in this part of the world for thousands of years. Every conceivable aspect of how to live spiritually in the South West of Western Australia is deeply embedded in this story.

Today we all know that the Ancient ways of the Nyoongar People have been greatly impacted as the result of the ways of a new culture.

The Ancient rhythm of the land has been broken, as we continue to expand with new roads, houses, and factories. Bulldozers and other machinery move our Ancient landscapes beyond any resemblance they once held. But despite all of these changes the Ancient spiritual trails are still there, under all the tar and cement, even through all the infrastructure.

Nyoongar Elders know that if the land is not healthy then neither are its people. Thankfully it's no longer just Nyoongar people shouldering the burden of the loss. There is an ever increasing number of people and cultures that realise we cannot just stand by and watch the destruction.

A project like this proposed Urban Forest Plan can help many more people realise just how important nature is for our health and wellbeing, and while we may not be able to follow the exact alignments of the Ancient trails and corridors we can at least provide people with information about the past as we structure green pathways to the future. And you never know, some people may even be privileged to connect to the Ancient Spirit of this land.

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This project was born of a combination of sorrow and determination. Sorrow that across our city, community groups and volunteers are stretched to the limit defending local urban bushland treasures that shrink year by year. Sometimes they succeed, sometimes the police and bulldozers move in to erase yet another place forever. And determination that it can be different: that we can build on decades of research and advocacy, and millennia of deep cultural memory and practice, to protect what remains and restore some of what has been lost.

This is a cultural project. The Whadjuk Nyoongar families who named, cultivated and understood this place have done so for more than two hundred times longer than the timespan the city has fleetingly occupied. The custodians of these stories are ready to tell a new chapter if we will sit and listen.

This is an ecological project. We acknowledge the many years of painstaking work that has gone into some of the material presented here; we draw on thousands of hours of patient fieldwork and data analysis that have only begun to describe the complexity of this unique place.

And this is a political project. Those places protected in parks and reserves are only there because of tenacious campaigning. The Bush Forever plan and those that preceded it did not get onto the planning books through the generosity of Premiers or Ministers; they had to be fought for.

These are places worth fighting for. Today we recommit to protect, restore and regrow the urban forest and bring our city home at last.

Scott Ludlam

## A Plan to Green Our City and Reconnect Our Urban Forest

The Greens have a vision for Perth to become a city within a protected network of urban bushlands, wetlands and parks that everyone can access and enjoy. Greening our city will keep it cooler, provide health and economic benefits, create a more liveable city, and honour our place as one of the world's biodiversity hotspots and home to the oldest continuous culture on this planet.

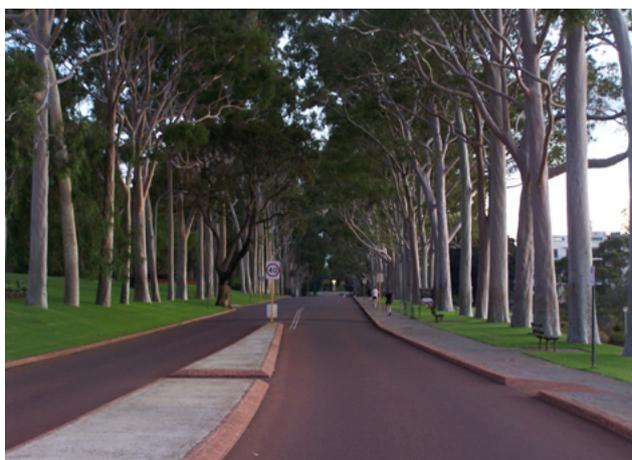


Image: Lemon Scented Gums along Fraser Avenue in Kings Park, Perth.

In the years since colonial occupation of the Swan coastal plain and its hinterlands, more than three quarters of the area's bushland and wetlands have been destroyed. In recent years, as Perth's population has expanded, our city has experienced rapid and uncoordinated growth that has resulted in the dramatic loss of much of our remaining precious natural habitats.

It is estimated that by 2050 Perth's population will reach 3.5 million<sup>i</sup>. Over 50% of the world's population are now city dwellers. As we face the challenges of the 21st century – population growth, climate change and biodiversity loss, we must find ways to invite nature back into our cities.

This plan lays out a clear strategy and proposes dedicated funding to transform our city and provide the missing link in our infrastructure and planning systems: a network of protected bushland, greenways, parklands and green street-scapes that everyone can access and enjoy. Our goal is that every Perth resident will live within a 5 minute walk of a Greenway (a corridor of native bushland) and a 10 minute bike ride to protected parkland of regional significance.

## Perth – A City in a Biodiversity Hotspot, Hitting its Ecological Limits

Perth is a unique city situated in the South-West of WA and a globally recognised biodiversity hotspot. Originally covered by chains of wetlands, banksia woodlands and coastal heath, Perth is home to rich biodiversity found nowhere else in the world, including tuart and banksia forests and more than 1,700 different species of flowering plants.<sup>ii</sup>

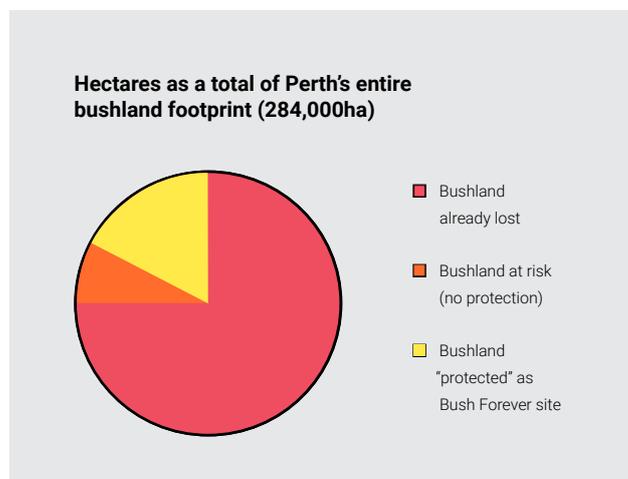
The custodianship ethic employed over at least 40,000 years of Noongar occupation and cultivation was largely ignored by colonial arrivals from 1829, who began a systematic process of land clearing and wetland draining in order to implant European-style agriculture and urban development.

Nonetheless, early conservation efforts in our city led to the creation and reservation of the iconic Kings Park, Whiteman Park, Bold Park and other significant areas. Very few cities in the world have such large areas of natural bushland so close to the heart of the city and so accessible to the public.

These are major conservation success stories in our city, enjoyed by generations. All three parks are characterised by their walking and cycling trails and high public usage. People love the opportunity to access natural places. It is good for our physical, mental and social health. This was recognised in the original plans for Perth's Bush Forever program, which included the goal to have every resident in Perth near a Kings Park of their own.

Instead, our city doubled in size since the 1970s and now stretches 120km from Mandurah to Yanchep and beyond. Rapid uncoordinated growth has resulted in the devastating loss of significant natural habitats including closed-canopy forests, bushland, woodlands, wetlands, grasslands and coastal zones.

**Originally covered by about 284,000 hectares of native vegetation, it is estimated 75% of Perth's original bushland and 80% of our original wetlands have been lost.**



i. [http://www.planning.wa.gov.au/dop\\_pub\\_pdf/Perth\\_Peel3.5million.pdf](http://www.planning.wa.gov.au/dop_pub_pdf/Perth_Peel3.5million.pdf)

ii. <http://www.dpaw.wa.gov.au/images/documents/about/science/pubs/l/landscape24n3p23.pdf>

In 2014 it was reported that more than 458ha (equivalent to 300 WACA stadiums) of bushland was cleared for development in Perth in an 18 month period alone, with a number of high profile sites across metropolitan Perth being a part of this loss<sup>iii</sup>. A number of these cleared sites were supposed to be protected under the Bush Forever program. As we write, a further 366ha is still at risk of being cleared for housing developments at the fringes of our city. (Appendix A lists urban bushland currently under threat from development.)

The remaining natural areas in the city are home to many of WA's iconic and endangered species, including the Carnaby's Black Cockatoo and the Quenda, or southern brown bandicoot. Over 600 species in WA are now listed as threatened with extinction. The 2009 WA Auditor General's report *Rich and Rare: Conservation of Threatened Species* found one of the biggest threats is land clearing. Instead of

these findings leading to greater protection, the level of clearing in the Swan Coastal Plain accelerated.

The level of clearing in WA and lack of information about cumulative impacts or appropriate places to develop is so significant it has been the subject of a Strategic Assessment of the Perth and Peel region. Disappointingly this *Green Growth Plan*, released in December 2015, fails to deliver critical environmental protection or smart planning for a sustainable city. Apart from some minor improvements to business as usual, this Assessment is a huge missed opportunity for Perth, locking in ill-considered land clearing for another 30 years.

Redcliffe bushland and Tamala Park bushland are two significant sites that we have lost to development in the past two years.

### Redcliffe/ Tonkin Highway Bushland

112ha cleared to make way for the Gateway WA project. The proposal involved clearing prime jarrah-banksia woodland and wetland habitat as well as the creation of major faunal barriers and hazards.

This bushland provided critical habitat for the Southern Brown Bandicoot and endangered species including Carnaby's Black Cockatoo (endangered); Forest Red Tailed Black Cockatoo (vulnerable); and Wavy Leaf Smokebush (vulnerable).



BEFORE



AFTER

### Tamala Park Mindarie

72.5ha coastal heath between Burns Beach and Mindarie has now been lost to urban sprawl. Federal approval was amended in October 2013, with references to the protection of habitat for the threatened Graceful Sun Moth deleted.

The portion of the Catalina Residential development west of Marmion Avenue was originally included in Bush Forever Site 322. This area could have been part of an east-west linkage from the coast through to Neerabup National Park, and was envisaged as such in the original Bush Forever policy.



BEFORE



AFTER

Redcliffe bushland and Tamala Park bushland are two significant sites that we have lost to development in the past two years.

iii. <http://www.perthnow.com.au/news/western-australia/hectares-of-perth-bushland-cleared-in-just-18-months-greens-senator-scott-ludlam-reveals/story-fnhocxo3-1227124371892>

## Perth – A City in a Biodiversity Hotspot, Hitting its Ecological Limits

**The impact of this uncontrolled clearing is starting to show.** Not only are we losing the aesthetic and recreational benefits of living near green space but our city is getting hotter. There can be as much as 6°C difference across Perth's suburbs, depending on their canopy cover. Green suburbs such as Subiaco and Wembley Downs were found to be 4-6 degrees cooler than treeless suburbs such as Piara Waters, Clarkson or Butler on any given day<sup>iv</sup>. This is due to the Urban Heat Island effect, where a lack of trees and predominance of hard, dark surfaces heats up the city streets and buildings. This takes a toll on the health of people, uses more energy to keep buildings cooler, and shortens the lifespan of infrastructure such as asphalt. This heating effect is being compounded by climate change which, according to the EPA, will double the amount of heat-related deaths in Perth by 2050.<sup>v</sup>

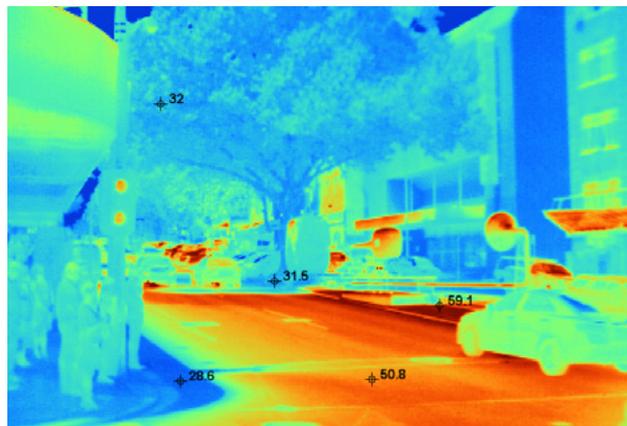


Image: Heat mapping of a Melbourne street shows the temperature variation between asphalt, buildings and tree canopy. Source: City of Melbourne.

**State government environmental and planning decisions continue to put our urban forests and cultural heritage in danger.**

- More than 15 years after Bush Forever was introduced it still lacks statutory protection – roads, quarries, residential and commercial developments are still given the green light even if 'Bush Forever' sites are destroyed or degraded.
- The Barnett government reduced Perth's residential infill target from 60% to 47%, meaning more than half of our future development will occur in greenfields sites. This is despite the government's primary planning document *Directions 2031* promising to protect valuable bushland against rezoning.
- The Barnett government continues to propose more urban freeways (such as the highly controversial Roe 8 Extension) as a solution to congestion. A significant amount of our metropolitan area is already covered by roads, and our city lacks a comprehensive public transport system that provides fast, frequent and convenient services to most of our suburbs. Government projects are one of the biggest drivers of loss of bushland.
- The government has failed to put a legal framework into WA's environmental and planning legislation that recognises the significance of ecological linkages (or 'wildlife corridor areas' as defined in Bush Forever) or a plan for their implementation. This failure is putting significant bushland at risk.
- Under the *Environmental Protection and Biodiversity Conservation (EPBC) Act* the then Labor federal government allowed the massive clearing of the largest remaining intact Banksia woodland in the Perth metropolitan area at the Jandakot Airport and Alkimos development sites. Both included nationally listed critically endangered species and ecological communities.
- In 2015, after years of failing to update the *Wildlife Conservation Act 1950*, the state government finally put forward the Biodiversity Conservation Bill. Unfortunately this Bill continues the legacy of the archaic act. It fails on many fronts, including the failure to provide adequate protection for biodiversity and endangered species, weak recovery plans and no clear government funding of these provisions.
- In 2014 the Barnett Government proposed the Aboriginal Heritage Act Amendment Bill which would make it even easier to destroy and damage places of significance to Aboriginal people throughout the State. As of May 2016, the bill has not yet passed through parliament.
- Over 60 years it's hard to believe 16 different planning and mapping projects for greenways in Perth have been developed by government. Beginning with the original 1955 *Plan for the Metropolitan Region* to the release of the *Green Growth Plan* in late 2015, these numerous documents show a history of good intentions for protecting green space in our city, but failure to deliver. It's time to prioritise the comprehensive and protected networks of green space for Perth we've been promised.

iv. <http://www.watoday.com.au/wa-news/research-reveals-perths-hottest-real-estate-in-terms-of-tree-cover-20150915-gjn834.html#ixzz3xkc84FVY>  
v. <http://www.watoday.com.au/wa-news/research-reveals-perths-hottest-real-estate-in-terms-of-tree-cover-20150915-gjn834.html#ixzz3xkc84FVY>

## Federal Settings and Responsibility

The federal government has also played a part in Perth's massive loss of urban bushland and biodiversity.

In recent years we have seen major setbacks, with the first Abbott-Turnbull Budget abolishing every program aimed at improving the liveability and sustainability of our urban realm, including abolishing the Major Cities Unit (within the Department of Infrastructure) and the National Urban Policy program – a national policy framework to implement more liveable, sustainable and productive communities, including an emphasis on climate resilience and protecting the natural environment.

In addition to having a vacuum of urban planning settings to protect and restore native vegetation, the federal environmental protections for our native vegetation and natural estate are also failing us. Since the commonwealth *Environmental Protection and Biodiversity* (EPBC) Act 1999 came into force – ostensibly to protect species and ecological communities of national significance, just nine proposals out

of hundreds have been rejected, involving thousands of hectares of clearing urban bushland. The extremely contentious federal approval of clearing at three significant sites in Perth (the Beelihar Wetlands, the Jandakot airport site, and at Point Peron) demonstrates that the federal government provides zero protection for precious remnant bushland.

Yet its role to provide a framework for large, landscape scale protection and regeneration of bushland, grassland, and forests, in areas where 80% of us live, is a significant opportunity.

The 2016 budget announced a reallocation of federal Landcare funding to the 'million trees' program, with a vague mention of an allocation for urban forests. We eagerly look forward to the detail – but the track record of successive governments makes the task even more urgent.



Image: Battery Park, New York.

# The Benefits of Green Spaces

Urban forests and green spaces in our city offer valuable environmental, economic and health benefits and should be viewed as the missing part of our infrastructure *and* healthcare systems.

## Health, Wellbeing & Liveability

Green spaces improve our city's livability, providing places to socialise, exercise and somewhere for our kids to play. People who live in greener suburbs are more likely to have active lifestyles including walking and cycling. Studies also show that a connection to nature can benefit mental health, including reductions in fatigue, tension, depression and anger. Nature is an important place to escape the stress of our daily lives. In addition, quality public spaces, especially green ones, help foster strong, safe communities. Tree lined suburbs even experience less crime than their tree-less neighbours.<sup>vi</sup>

Heatwaves kill more Australians than bushfires and cyclones, and according to the Environmental Protection Authority (EPA) heat related deaths are estimated to double in Perth by 2050<sup>vii</sup>. Those likely to be worst affected by urban heat islands and heat-wave related deaths are society's most vulnerable, including the elderly and young children. Expanding our urban forest is vital to addressing the serious health impacts of heatwaves in the future and looking after those most in need.

## Environment, Biodiversity & Climate Change

Urban forests maintain environmental quality and act as lungs for the city, significantly reducing air pollution. Urban forests also cool the temperature of cities and remove carbon from the atmosphere, essential in the fight against global warming. It is estimated that street

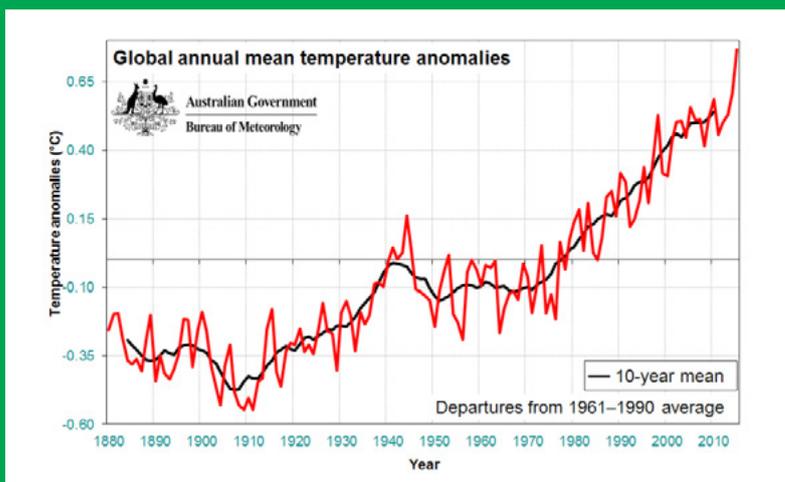
trees can cool urban communities by 4-6 degrees Celsius. They can also sequester between 11-31 tonnes of carbon per hectare. Urban wildlife also relies on green spaces in cities and urban areas for their food and habitat<sup>viii</sup>.

## Green Infrastructure & Economic Benefits

Urban forests and green spaces provide essential services to humanity in the same way traditional infrastructure such as roads, railways and powerlines service our cities and towns. Green infrastructure improves water catchment and filtration; increases the resilience of cities to natural disasters including floods, storms and droughts<sup>ix</sup>; provides carbon sequestration essential for mitigating climate change; and reduces the Urban Heat Island effect.

Greenways (connected corridors of urban bushland) are multi-purpose parks which can incorporate a footpath or cycle lane and become a form of transport corridor through urban areas. They can alleviate pressure on existing roads and transport systems and promote health and amenity by encouraging walking, cycling, and outdoor activities. Because they also provide dedicated cycle paths, greenways are safer for cyclists who do not have to compete for space on crowded roads. Imagine being able to walk or ride for kilometres across the city as part of a protected boulevard of urban forest.

All of these services have significant economic benefits. For example, data collected from the Brisbane Urban Forest initiative estimated 676,000 street trees are providing an annual \$1.65 million in benefits for air pollutant removal, carbon sequestration and rainfall interception<sup>x</sup>. There is also evidence to show that property values increase by AU\$16,889 for houses surrounding natural bushland or on tree-lined streets.<sup>xi</sup>



2015 was the hottest year on record<sup>xii</sup>. Addressing the Urban Heat Island effect by greening our city is vital as Perth faces hotter temperatures and the resulting impacts it has to human health, strain on energy resources, and compromised economic productivity.

Image: Global annual mean temperature anomalies 1880-2015. Source: Bureau of Meteorology.

vi. <http://environment.yale.edu/envy/stories/trees-shed-bad-wrap-as-accessories-to-crime>

vii. <http://architectureau.com/articles/epa-calls-for-a-compact-perth/>

viii. Wuisang, C. E. V. (2008). *A Study of Greenways: Issues, Roles and Management Implications for Wildlife in Suburban Adelaide*. Unpublished (Urban Habitat Management), The University of Adelaide

ix. For example, in New York city direct and indirect losses from Super-storm Sandy amounted to around \$19bn in damages.

x. Department of Infrastructure and Transport Major Cities Unit. 2013. *State of Australian Cities 2103*. Commonwealth Australia

xi. Pandit, et al. "The Effect of Street Trees on Property Value in perth, Western Australia." *Landscape and Urban Planning*, 2013: 134

xii. <https://www.climatecouncil.org.au/uploads/d8ed2731739da328fe6149ca1e17f9a9.pdf>

# What Does Green Space in Our City Look Like?



Urban Bushland



Greenways (Corridors)



Wetlands



Urban Farming & Community Gardens



Rooftops & Green Walls



Parks & Public Open Spaces



Streets & Footpaths



Backyards & Private Property

## Four of the Best Greenways and Urban Forests From Around the World

There are many great examples of Greenways and Urban Forest strategies around the world where green spaces have been successfully integrated at a local, city, regional and state-wide scale. These projects are evidence of the increasingly important role green spaces are playing in our city planning and infrastructure and offer inspiration for restoring our urban forest at home.

### Singapore's Coast to Coast Greenway

The greenway movement in Singapore began in the late 1980s as a proposal for an island-wide network of green corridors. Singapore capitalised on the under-utilised land along canals and beside major roadways for a pilot greenway project and, over the past 20 years, increased its green cover from 36 to 47 per cent of the total land area. The Singaporean Government has been constructing a network of over 300 kilometres of "green connectors" across Singapore that will make it possible to walk or bicycle around Singapore by travelling solely through the parks. The scheme has had strong public support and Singapore is now seen as a model for greenway planning for other rapidly growing cities in Asia<sup>xiii</sup>.



Image: Singapore's Supertrees – tree-like vertical gardens measuring between 25-50m tall.



Image: Free public yoga class held in the Supertree Gardens by the Bay.  
Source: <http://www.gardensbythebay.com.sg/en.html>

### New York's Highline Park

New York's iconic High Line is a 1.6 km linear park built on a section of the former elevated New York Central Railroad spur, running along the lower west side of Manhattan. It has been redesigned and planted as an aerial greenway. The High Line is an inspiring demonstration of the results of strong community advocacy and local government action. In 1999, the non-profit *Friends of the High Line* was formed by residents of the neighbourhood the High Line ran through, who advocated for the Line's preservation and reuse as public open space, an elevated park or greenway, similar to the Promenade Plantée in Paris. Broadened community support of public redevelopment of the High Line for pedestrian use grew, and in 2004, the New York City government committed \$50 million to establish the proposed park<sup>xiv</sup>.



Images: New York's Highline Park



xiii. <http://www.sciencedirect.com/science/article/pii/S0169204604001331>

xiv. <http://sfpavementtoparks.sfplanning.org/>

## Melbourne's Urban Forest Strategy

The City of Melbourne recognises the impact climate change, population growth and urban heating will have on the built fabric, services and people of the city. In response it has developed an inspiring Urban Forest strategy that looks to increase Melbourne city's canopy cover to 40% coverage by 2040, green the city's vast rooftop spaces and dramatically increase biodiversity through planning the "urban forest of the future"<sup>4</sup>.

**"Now is the time to design and plant the forest of the future in a way that respects Melbourne's unique character, responds to climate change and urban expansion, and underpins the health, liveability and wellbeing of the city and its inhabitants."**

– City of Melbourne Urban Forest Strategy



Image: Green roof at The University of Melbourne, Burnley Campus.  
Source: Peter Bennetts.



Image: Visualisation of what Melbourne could look like in the future with a comprehensive Urban Forest Plan. Source: Anton Malishev.

## Green Rooftops in Toronto

In May 2009, Toronto became the first city in North America to mandate green roofs on all new developments including commercial, institutional and many residential. The city's initiative is a wonderful success story, with 260 green roofs and 196,000 square metres of green roof area created since 2010.



Image: Edible rooftop garden in Toronto.  
Source: coolearth.ca



Image: Green roof on Toronto's Mountain Equipment Co-op store.

# The Perth Urban Forest Plan

**“Just as we must carefully plan for and invest in our capital infrastructure – our roads, bridges and waterlines, we must invest in our environmental or green infrastructure – our forests, wetlands, streams and rivers.. Just as we must carefully plan for and invest in our human infrastructure – education, health services, and so on – we must also invest in our green infrastructure.”**

– Maryland Governor Paris Glendenning, 1999

The Greens believe our cities can protect the natural environments which nurture us through healthy air, clean water and places to reflect and enjoy the natural world. Green spaces in cities act as lungs for the cities, promote our physical and mental health, and help to mitigate the impacts of climate change.

**The Greens’ Perth Urban Forest Plan will provide a framework for protecting, connecting and regenerating green space in our city at the metropolitan, local street and individual household level, with the aim to double Perth’s canopy cover by 2040 and have everyone live within a 5 minute walk of a greenway.**

This vision for a greener Perth has been designed alongside our *Transforming Perth*, #DesignPerth and Perth Bike Vision; *The Greens Perth Bike Plan* collaborations. When seen as part of this complete vision our plan for Perth’s Urban Forest really comes alive. A whole-of-city design that prioritises medium to high density living along public transport corridors saves urban bushland, frees up space for more park land and green spaces closer to where we live and provides green corridors through which we can cycle, walk or recreate, bringing nature back into the city and our daily lives.

## Principles of Our Plan

Our plan has been developed using three principles:

1. Culture – connecting to culture through the landscape
2. Scientific mapping – drawing on the latest biodiversity and climate data
3. Urgency – addressing the most significant and urgent threats to our natural estate and seeking innovative solutions

“For Nyungar, any one place may be called a number of different names by different people at different times of the year. For example, some Nyungar refer to Kings Park as Karra katta or the hill of the spiders, Yongariny or place for catching kangaroo, Geenunginy Bo or the place for looking a long way and Karlkarniny or by fire place sitting. All of these places are equally correct - it depends on the context in which they are being used, and by whom. By accepting European cartographic conventions unproblematically, we run the risk of misrepresenting or making too simple our understanding of Nyungar sites and land use.

European cartographic conventions and systems of boundary-making are not directly or easily transferable into Nyungar systems of naming and land use. European maps are usually set out in such a way as to imply that places have fixed names over time, that one place has only one ‘true’ name and that people share a consensus of meaning about one place. Those with even a basic understanding of Nyungar systems of reading and speaking about boodjar (country) would immediately recognise that introduced cartographic conventions, in and of themselves, are inadequate analytical tools for talking about Nyungar names and land use.

## 1. Culture

**Connecting to culture through the landscape**

**“The establishment of Cultural Trails offers cultural restoration, individual and community healing and the creation of a new Australian Culture that recognizes, respects and applies the best elements of Aboriginal and Non-Aboriginal Culture in Australia.”**

– Dr. Noel Nannup, Noongar elder

This Urban Forest Plan will establish and integrate a layer of Cultural Trails – connected corridors of protected urban bushland that knit together sites and songlines of significant cultural value to Noongar people. This draws on the work of Cultural Corridors Inc., a not-for-profit organization established by Noongar elder Dr. Noel Nannup, which has identified and mapped significant sites to create a network of Cultural Trails. Some of these sites can be used for educational and cultural activities as well as being sites where cultural-tourism and eco-tourism can thrive. A number of recommendations and strategies are laid out in our plan as a roadmap to developing the Cultural Trails layer of the Urban Forest Plan.

Western cartographic conventions reflect the importance of making boundaries to function as markers to exclude others and demonstrate individual ownership and control. For Nyungar, talking about one place as if it exists in isolation is akin to talking about people as if they exist in isolation from their community. The same place may have many names according to who is using it, for what purpose and at what time of the year. Women and men may have different uses for the same place, or several events may have occurred in a place, resulting in it having several names. Also, if the name is descriptive, for example, dark or black water, the same name might occur in several places - wherever dark water is found. Thus, boodjar is a more dynamic entity for Nyungar than for wedjela. This accounts for some of the difficulty in interpreting wedjela accounts of the region.”

Professor Len Collard, Sandra Harben and Dr Rosemary van den Berg

NIDJA BEELIAR BOODJAR NOONOOKURT NYININY: A NYUNGAR INTERPRETIVE HISTORY OF THE USE OF BOODJAR (COUNTRY) IN THE VICINITY OF MURDOCH UNIVERSITY.



MAP 1: Cultural Trails layer of the Urban Forest Plan.

# The Perth Urban Forest Plan

## What Could a Cultural Trail Look Like?

### COOLBELLUP AND WALLIABUP – A CASE STUDY OF THE BEELIAR WETLANDS



Image: Nyoongar elder Noel Nannup sharing dreamtime stories on the banks of the Derbarl Yerrigan (Swan River) in Maylands. Source: Sally Lake.



Image: Beelihar Wetlands.

Coolbellup and Walliabup are the Aboriginal names for the North and South lakes of the Beelihar Wetlands. This area is a significant cultural site for the Noongar community. A known area for artefacts and ceremonial purpose, Coolbellup is associated with the mythology of the female Waugal. Other water landmarks in this area such as springs and waterholes are considered to be the residing place of spirit children. These were responsible for births, thus new clan members were associated with these special places, giving them an identity within the landscape.

The Beelihar Wetlands are already recognised for their natural beauty and used by thousands of Western Australians as a place of recreation every year. This significant natural and cultural site also sits at the beginning of the proposed *Cockburn Community Wildlife Corridor* that, if protected and reconnected, could be a magnificent uninterrupted corridor of natural bushland stretching all the way to the Fremantle Coast. Worryingly this site is currently under threat, with the state government planning to build Roe 8, a freeway extension, right through the middle of the wetlands<sup>xvi</sup>.

Imagine if, instead of a freeway destroying this significant natural and cultural site, the wetlands are protected and rejuvenated as part of a network of cultural and green corridors through the Perth and Peel region. On weekends hundreds of locals and tourists can continue to come to the site for recreation and, through establishing Cultural Trails, opportunities for engagement with Noongar Culture can be offered. Interpretative signage and artworks can educate visitors to the significance of this site for Aboriginal people and local Aboriginal 'tour guides' can pass on stories or host cultural walks. Noongar Six Season Walks could be introduced at locations such as this: held annually to mark the beginning of the six Noongar seasons and allow visitors to follow in the footsteps of the ancestors and experientially understand and celebrate Noongar Culture.

## 2. Scientific Mapping

### Drawing on the latest biodiversity and climate data to plan and map our urban forest network

The numerous urban bushland planning and mapping projects, undertaken by consecutive governments over the years, have produced excellent research and mapping that are ready to inform an Urban Forest strategy today. The Bush Forever scheme, the work of the Perth Biodiversity Project and the Natural Resource Management (NRM) program are particularly significant.

The comprehensive mapping work by the Perth NRM forms the basis of our Urban Forest network plan for Perth. This was a long-term project that identified the potential for ecological linkages across the entire metropolitan area and was based on the most comprehensive available data, including a multi-criteria analysis of remnant vegetation and wetlands across 32 local government areas. (Map 2: Perth Region NRM biodiversity and green corridor mapping, on page 14)

Engaging in a multi-stakeholder approach with government representatives, industry experts and local communities the NRM map identifies how the most valuable areas of natural habitat could be linked, using local natural areas of urban bushland as 'stepping stones' between. The map gives priority to areas that are large, intact and biologically rich, have high levels of protection, and which provide the greatest opportunities to form continuous corridors of native vegetation. The linkages also incorporate the widest variation in plant communities and fauna habitat, from the granite outcrops at the top of the Darling Scarp to the coastal heathlands on the edge of the Swan Coastal Plain.

Perth also has the Bush Forever scheme, considered the single most important piece of public policy that protects urban bushland on the Swan Coastal Plain. Introduced by the state government in 2000, this program identified 51,200 hectares of regionally significant bushland, designated in numbered Bush Forever sites, with the aim of protecting areas of regionally significant bushland and a minimum of 10% of each of the 26 vegetation types found around Perth. It is unforgivable that the Bush Forever scheme still does not have statutory protection. Our plan ensures these sites are protected.

Our early mapping work also drew strongly on the Perth Biodiversity Project's Regional Ecological Linkages mapping released in 2012 which identified and prioritised corridors with the greatest opportunity for connectivity and greatest biodiversity preservation. Unfortunately this outstanding project ceased to exist following withdrawal of its funding.

These excellent planning and mapping projects offer the tools, knowledge and first steps towards creating a connected urban forest in our city and form the foundations from which our Urban Forest Plan has been developed. All of the hard work has been done, countless experts and communities have had input, it's time to get started.

## 3. Urgency

### Addressing the most significant and urgent threats to our natural estate and seeking innovative solutions

Our plan tries to address the most significant threats to our remaining natural estate and hurdles to introducing a protected urban forest network, including:

- Accelerated and uncontrolled clearing of native vegetation to make way for low density urban sprawl;
- An outdated and uncoordinated metropolitan planning scheme that locks in unsustainable loss of bushland;
- Lack of legal protection for biodiversity in state legislation;
- Lack of funding and adequate management of existing reserves;
- Economic values of green infrastructure not properly accounted for in city planning or property developer costs;
- Lack of awareness of the importance of our remaining bushland and trees, including by local developers and private landowners; and
- Environmental impacts and threats including climate change, water shortages and fires.

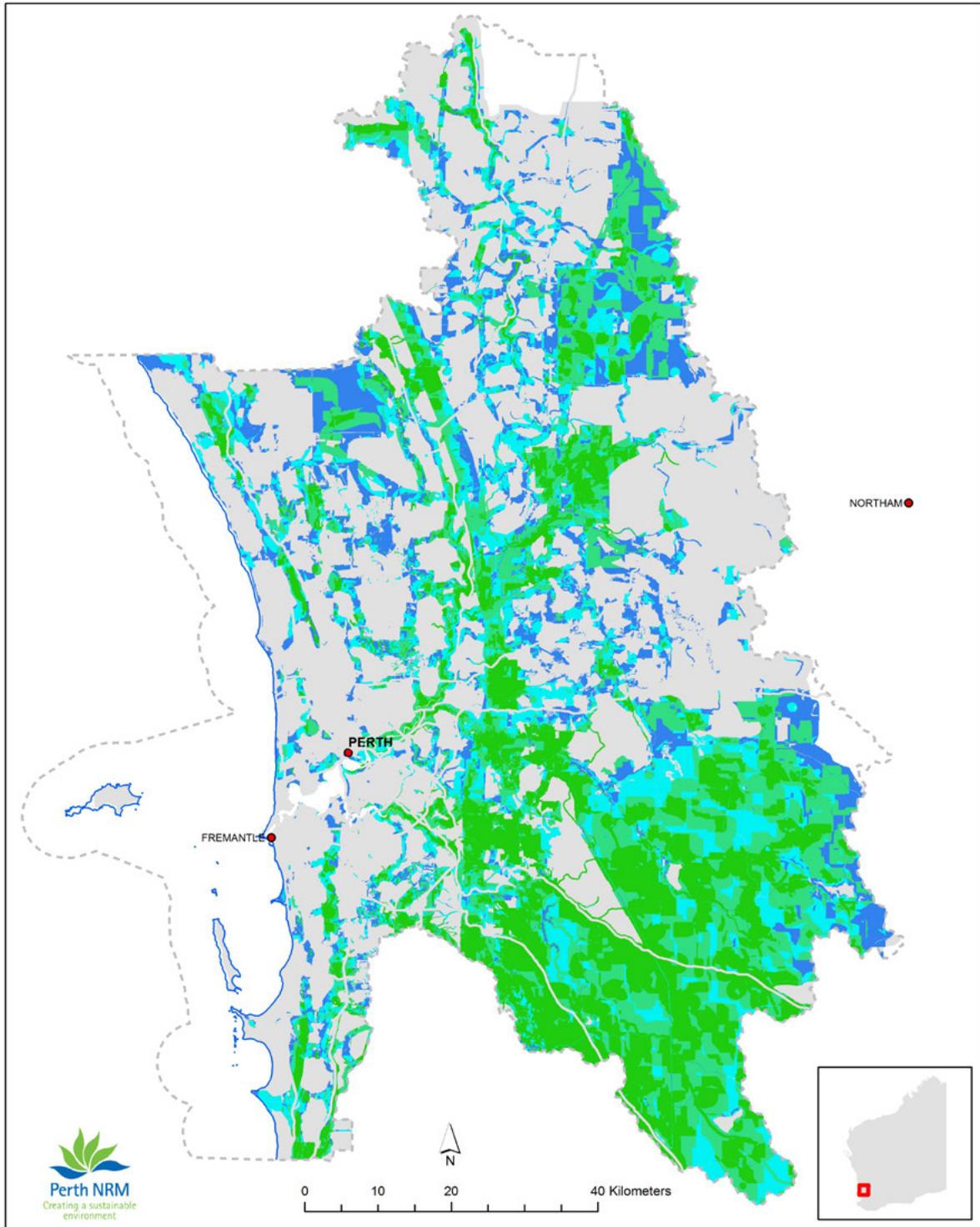
Our plan addresses these challenges through legislation, funding, capacity and knowledge solutions whilst also looking to world class examples of innovative green infrastructure initiatives.



Image: Royston Ridge.

Component B4C  
Biodiversity Values  
in Landscape Linkages

Perth Region NRM  
Planning for Climate Change



**Legend**

- Major Town/City
- - - PRNRM\_boundary\_2014
- Highway
- Not in Linkage
- Low Value
- Moderate Value
- High Value
- Very High Value

**Disclaimer**  
Whilst all care has been taken to ensure that the contents of this publication are factually correct, no responsibility is accepted for the accuracy or completeness of its contents. No liability is accepted for any loss or damage that may be occasioned directly or indirectly through the use of, and or the reliance on the contents of this publication.

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# The 5 Parts of Our Perth Urban Forest Plan

## 1. Building Knowledge and Capacity

### TARGET:

**Establish a world class Urban Forest Taskforce that helps to plan, measure and maintain Perth's Urban Forest.**

### ACTIONS:

- The taskforce and research program will involve Aboriginal elders, botanists, ecologists and policy makers to establish strategies for bushland preservation, revegetation and ongoing natural resource management. This program will also work across the Departments of Transport, Planning, Environment and Indigenous Affairs to ensure interdepartmental collaboration. (\$2m p/a)
- The taskforce will support the development of state and local council Urban Forest Plans. (\$200,000 p/a)
- The taskforce will use the i-tree tool<sup>xvii</sup> or equivalent to measure and document the monetary, health and services value of our urban forest and green infrastructure. New York successfully used the i-tree tool to evaluate that for every dollar spent on trees the city receives a return of \$5.60. (\$200,000 p/a)
- An interactive website, mapping tool will be developed. (\$100,000 p/a)

## 2. Protect What Remains

### TARGET:

**Protect 90% remaining urban bushland, significant trees and cultural sites.**

### ACTIONS:

- Give statutory protection to Bush Forever sites that was promised by the government in 2000 as well as increasing funding for adequate management of these sites (\$800,000 p/a)
- Immediately reject the Barnett Government's proposed Aboriginal Heritage Act Amendment Bill 2014 and seek to abolish the Aboriginal Heritage Act 1972 in favour of contemporary legislation which would aim too:
  - provide higher levels of protection to Aboriginal heritage listed sites<sup>xviii</sup>;
  - expand the definition of heritage listed and heritage protected to include sites that are directly related to aspects of song cycles and dreaming lines, consistent with how Aboriginal people value places;
- Introduce an Acquisition Fund to purchase natural areas of high conservation value in urban areas. The Metropolitan Region Improvement Tax (1959) could also be used to generate additional revenue for this. (\$20m p/a)
- End offsets as a legitimate replacement for lost remnant bushland.

For example, bushland with hundred year old trees cannot be adequately replaced by the equivalent area of new saplings nor can the value of complex bushland ecosystems be adequately replaced by same-species tree plantations.

- Strengthen 'Parks & Recreation' zoning so that they can't be renegeed on when development is proposed to proceed. Currently, that zoning offers no protection.
- Work with developers on the importance of biodiversity and urban forest protection and develop an Industry Code that ensures they will not develop on Bush Forever sites.
- Set up a 'Significant Tree Register' to ensure protection of large and diverse species of trees at the street level. In conjunction to this the Perth Planning and Development Act 2005 will be amended so that planning approval will be required to significantly prune, or cut down a tree placed on the register. The ACT has successfully protected significant street trees with a similar strategy.
- Introduce a federal moratorium on clearing of urban bushland until the Strategic Assessment is completed and implemented. (\$200,000)
- Add an Urban National Park category to our National Reserve System, affording it maximum protection and status possible in Australian law.

## 3. Rebuild the Links

### TARGET:

**Rebuild 200ha/yr of green corridors and ecological linkages between existing natural habitats and parks to a total of 2600 hectares of new corridors by 2029.**

### ACTIONS:

- Use the Natural Resource Management mapping as the template to undertake this city-scale green retrofitting strategy of rebuilding 200ha/yr of green corridors. This metropolitan-scale planting schedule will be driven by the Urban Forest taskforce committee with strong collaboration with local governments. (\$1.5m p/a)
- Provide legal protection and formal recognition of ecological linkages in our planning system including creating a new Greenways Zone in the MRS that has permanent, statutory protection and funding the recommendations made by the Auditor General in his 2009 Report *Rich and Rare: Conservation of Threatened Species*.
- Plan, fund and deliver high quality walking and bike trails that are integrated into this Greenway network, connecting and providing easy access to our most precious parks, bushland and waterways across the metropolitan area. (This is already funded in Bike Vision: The Greens Perth Bike Plan)
- Introduce a special funding component for coastal and river zones to protect and restore sand dunes and coastal shrub lands. (\$600,000 p/a)

xvii. i-tree is an online data-mapping tool that quantifies forest structure and the environmental services that trees provide that has been adopted by cities and local councils across the globe including London, Chicago and the City of Melbourne.

xviii. It is estimated that DAA has reduced the number of heritage registrations from around 85% of nominated sites to only 6% in the last three years. Additionally at least 27 site have been delisted in the past year and so no longer qualify for any protection. Source: <http://www.theaustralian.com.au/national-affairs/indigenous/sacred-sites-may-keep-protection/story-fn9hm1pm-1227288512465>

## The 5 Parts of Our Perth Urban Forest Plan

### Case Study: City to Sea Greenway

The 'City to Sea Greenway' is a recreational bicycle and pedestrian shared path that passes a series of reserves and parkland from the CBD to City Beach. Almost the entire journey can be completed off-road on shared paths. It starts at Perth Railway station and passes through the heart of Subiaco and runs along a number of reserves including Henderson Park and Bold Park. It also passes Shenton Park bushland on Underwood Avenue, a 33 hectare area of native bushland and jarrah forest. Yet half of this area is under direct threat of clearing for a controversial residential development by the University of Western Australia<sup>xix</sup>. WWF and other groups say the area is a critical 'stepping stone' of bushland linking Kings Park and Bold Park.

There is great potential to turn the City to Sea Greenway into a permanently protected series of reserves, linked by new plantings and fully separated pedestrian and cycle paths.



Image: Red Tail cockatoos. Source: Margaret Owen

## 4. Green Our Streets and Public Spaces

### TARGET:

**Double Perth's tree canopy by 2040.**

### ACTIONS:

- Conduct ongoing maintenance – including tree audits every three years to measure canopy cover and tree health (1m p/a)
- Invest in new street plantings to link the greenways together and increase biodiversity in every suburb. (\$700,000 p/a)
- Along with new plantings, mandating biodiversity (not more than 40% for a family, 30% for a genus, and 10% for a species) and ongoing maintenance of the health of city trees is an important part of ensuring this increase in canopy cover is achieved.
- Educate and empower private landowners to plant and care for suitable trees and native plants on their property. The private realm consists of approximately 70% of the Perth metropolitan area and can therefore contribute significantly to the urban forest.
- Introduce a green roof and walls scheme. Using the *Growing Green Guide for Melbourne* as a guide, our aim is for one in ten existing and new buildings to have a green roof, wall or façade installed by 2029. A similar policy has been introduced in France where, if passed into law, all new commercial buildings will be required to have a green roof or rooftop solar panels installed. (\$1.2m p/a)
- Introduce a city-wide strategy to replace hard surfaces like bitumen and concrete with porous surfaces such as porous asphalt, turf, garden beds and rain gardens to reduce heat retention, reduce runoff, encourage soil moisture retention and ultimately improve the health of our urban forest. This has been done in Germany with great success.<sup>xx</sup>

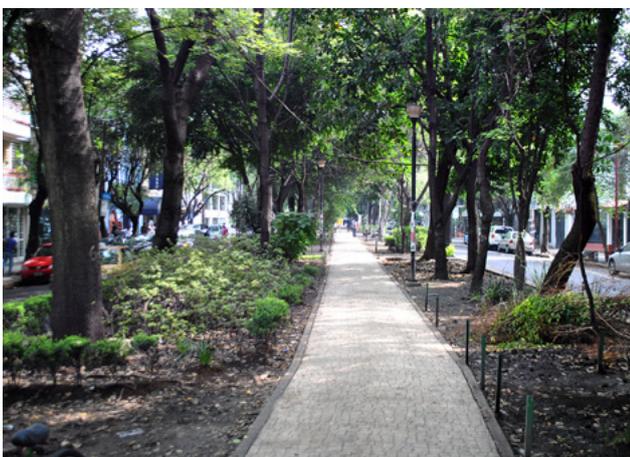


Image: Green street, Mexico City

## 5. Community and Culture Will Be at the Heart of the Perth Urban Forest Plan

### TARGET:

**Provide multiple opportunities for the community and citizens to meaningfully engage with the development of Perth's Urban Forest, particularly at the household and street scale.**

### TARGET:

**Honour and celebrate Nyoongar Culture at all stages of developing the Urban Forest Plan.**

### ACTIONS:

- Include, as part of the Urban Forest taskforce and research program, a citizen volunteer arm and secondary education program to help with on-the-ground tree audits every 2 years, to ensure the health of the urban forest is maintained (as well as assisting in measuring canopy cover, diversity and distribution). This strategy has been successfully implemented in New York City.
- Introduce a Community Grants scheme to enable Local Council to work with communities when making decisions about the Urban Forest and Green Infrastructure in their area. This includes funding for deliberative democracy workshops and neighbourhood scale projects such as walking paths, amphitheatres and Aboriginal interpretive centres. (\$1.5m p/a)
- Introduce a household funding package to subsidize biodiversity plantings in front verges and backyards to link in to the local greenway (made available to local Landcare groups, local councils and native nurseries). (\$5m p/a)
- Engage local Aboriginal elders in the Urban Forest research program – responsible for the planning and mapping of the Urban Forest Plan. (\$800,000 p/a)
- Engage local Aboriginal elders and businesses to develop the Cultural Trails identified in the Urban Forest Plan and to deliver cultural, educational and eco-tourism programs along these Trails including:
  - Interpretive signage and artworks installed at key sites explaining the significance of the sites to Noongar culture (such as those installed on the Whatdjuk Trail Network in the western Suburbs of Perth)<sup>xxi</sup>;
  - Aboriginal 'tour guides' located strategically throughout the city to provide cultural and ecological interpretation and personalized experiences;
  - A program of public performances of traditional songs, dances and storytelling;
  - Opportunities for the Aboriginal community to engage in private ceremonies at culturally significant times of the year.
- (\$800,000 p/a)

xx. [http://www.switchurbanwater.eu/outputs/pdfs/CEMS\\_PAP\\_Urban\\_stormwater\\_management\\_demo\\_projects\\_Emscher.pdf](http://www.switchurbanwater.eu/outputs/pdfs/CEMS_PAP_Urban_stormwater_management_demo_projects_Emscher.pdf)

xxi. <http://whadjukwalkingtrails.org.au/>

# How the Urban Forest Plan Will Be Funded

The Greens propose to allocate \$7.6million in State funding per year to fund the Perth Urban Forest Plan, and \$29 million in Commonwealth funding as part of our Green Cities Federal policy.

PERTH URBAN FOREST PLAN		STATE	FEDERAL
1. Building Knowledge and Capacity	TARGET: Establish a world class Urban Forest research program that helps to plan, measure and maintain Perth's Urban Forest.		
	<ul style="list-style-type: none"> <li>Establish Urban Forest Taskforce</li> <li>Support development of state and local council Urban Forest plans</li> <li>Map, measure and document monetary value of our urban forest and green infrastructure</li> <li>Create interactive website mapping tool</li> </ul>	\$2m p/a	\$200,000 p/a \$200,000 p/a  \$100,000 p/a
2. Protect What Remains	TARGET: Protect 90% remaining urban bushland, significant trees and cultural sites.		
	<ul style="list-style-type: none"> <li>Give statutory protection and adequate management funding to Bush Forever sites</li> <li>Reject the proposed Aboriginal Heritage Act Amendment Bill 2014 and update the Aboriginal Heritage Act 1972</li> <li>New Acquisition Fund</li> <li>End offsets</li> <li>Strengthen 'Parks &amp; Recreation' zoning</li> <li>Work with developers to establish Industry Code</li> <li>Set up 'Significant Tree Register'</li> <li>Introduce moratorium on clearing and complete Strategic Assessment</li> <li>Add Urban National Park category to National Reserve System</li> </ul>	\$800,000 p/a	  \$20m p/a  \$200,000 p/a
3. Rebuild the Links	TARGET: Rebuild 200ha/yr of green corridors and ecological linkages between existing natural habitats and parks to a total of 2600 ha of new corridors by 2029.		
	<ul style="list-style-type: none"> <li>Regrow 200ha/yr of green corridors between areas of existing natural habitats and parks, stitching these locations together in our city</li> <li>Give legal protection and greater recognition of ecological linkages in our planning system.</li> <li>Plan, fund and deliver high quality walking and bicycling trails that are integrated into this Greenway network</li> <li>Introduce a special funding component for coastal and river zones to protect and restore sand dunes and coastal shrub lands</li> </ul>	\$1.5m p/a  (Budgeted for in the Greens Bike Vision) \$600,000 p/a	

PERTH URBAN FOREST PLAN		STATE	FEDERAL
4. Green Our Streets and Public Spaces	TARGET: Double Perth's tree canopy by 2040.		
	• Ongoing maintenance including tree audits every 3 years		\$1m p/a
	• New street plantings with the aim to double Perth's tree canopy by 2040	\$700,000 p/a	
	• Increase the diversity and improve ongoing maintenance of our urban forest		
5. Community and Culture Will Be at the Heart of the Perth Urban Forest Plan	• Educate private landowners	\$1.2m p/a	
	• Introduce a green roof and walls scheme		
	• Implement a city-wide strategy to replace hard surfaces (bitumen & concrete) with porous surfaces		
	TARGET: Provide concrete opportunities for the community and citizens to engage and contribute.		
	TARGET: Honour and celebrate Nyoongar Culture at all stages of developing the Urban Forest Plan.		
	• Include a citizen volunteer arm of the Urban Forest research program		\$1.5m p/a
• Introduce a Community Grants scheme-supporting local government to engage and empower citizens in the Urban Forest planning and implementation		\$5m p/a	
• Introduce a household funding package to subsidize biodiversity plantings in backyards and verges		\$800,000 p/a	
• Engage an Aboriginal Stewardship Committee as part of the Urban Forest Research Program			
• Employ at least 10 urban rangers and tour/ culture guides by 2029	\$800,000 p/a		
<b>TOTAL</b>		<b>\$7.6m p/a</b>	<b>\$29m p/a</b>

“There was always a swamp at the end of the street. It was a great wild netherland that drew everything down to it eventually: water, birds, frogs, snakes – and of course kids. As we slunk off toward it, unable to resist its gravitational allure, we left the polite tinkle of sprinklers in our wake and the rowdy sounds of nature took over. We hunted the swamp and its environs barefoot. We hid in hollow logs, tried to knock parrots from trees with our gings, and in our aimless trekking we met tiger snakes, goannas, bees and strafing magpies... The swamp never ceased to enthrall; it was an enigmatic place fraught with danger... Now that wilderness is gone. The wetland endures but Lake Gwelup is a tidy suburban park with cycleways and gazebos...

Without us ever paying much attention, the bush shrank by increments. More tuarts and marris were felled, more birds and animals displaced, more earth was scraped bare as the suburb grew and the roads around us were bituminized...

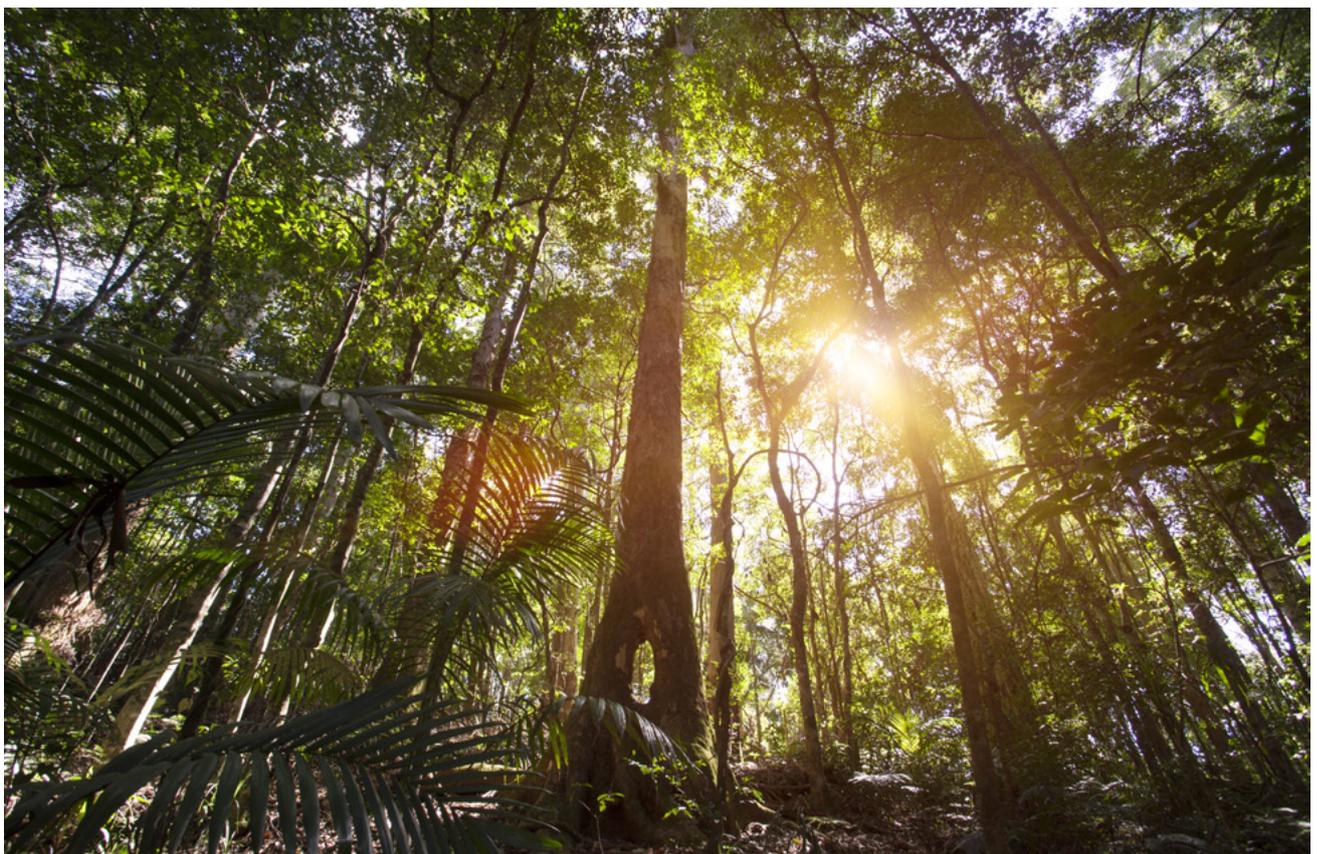
People paved their driveways. The last big gully, a maze of tracks and bowers was bulldozed. The trees were burnt for ash and raked flat to make way for the football oval. Year after year secret places disappeared. At the

time this process felt normal and necessary, like growing up. After all, the bush was a scruffy nothing and we were civilizing it...

The population of Perth is growing at a hectic rate, and to accommodate the expectations of newcomers and young people wanting places of their own, the city spreads and sprawls. The bushland of the Swan coastal plain continues to be bulldozed for property developments and the urban footprint is now colossal. There’s an unbroken swathe of red roof tiles from Mandurah in the south to Two Rocks, a hundred and thirty kilometres to the north. Most planners, transport gurus and environmental scientists agree that the sprawl is unsustainable. Every fresh subdivision comes at the cost of bushland...

The habitat loss from the construction of roads and freeways alone is astounding. As a result of such frenetic land-clearing the prospects of several native species of mammals, reptiles and birds look dim.”

– Extract from *Island Home* by Tim Winton published by Hamish Hamilton, Melbourne, 2015. Reproduced with the permission of Penguin Australia Pty Ltd.



# Appendix A:

## Under Immediate Threat: 2016

### Over 350ha of bushland is currently under immediate threat from development.

The following list of threatened bushland was compiled in collaboration with local bushland groups and in consultation with key stakeholders such as the Urban Bushland Council. Of the sites listed below six are Bush Forever sites and the rest are adjacent to Bush Forever sites.

#### 1. Beeliar Wetlands, Bibra Lake (112ha)

One of Perth's largest intact wetlands and bushland chains, a Bush Forever site and Regional Park, directly threatened by the proposed Perth Freight Link which includes the Roe 8 Highway Stage 8 extension through the Beeliar Wetlands.

#### 2. Point Peron and Mangles Bay, Rockingham (69ha)

One of the last remaining natural peninsulas along Perth's coast, this site is a Class A reserve and Bush Forever site and has a large intact seagrass habitat. It is directly threatened by a proposed canal housing and marina development. This was approved federally in October 2014 but there is a strong and active local campaign to stop this development from taking place.

#### 3. Underwood Avenue Bushland, Shenton Park (32ha)

This bushland is home to magnificent Jarrah, Tuart and Banksia woodland, and provides critical feeding and breeding habitat for endangered Carnaby's Cockatoos and Forest Red-tailed Black Cockatoos. It is directly threatened by a housing development proposed by UWA. This development has not yet been approved at a Federal level.

#### 4. Point Grey Peninsula Peel Inlet (271ha)

This approved project will involve dredging across the Harvey Estuary and the loss of 271ha of bushland to make way for a 3000-dwelling residential marina development including a school, commercial areas and an access road. The Peel Inlet-Harvey Estuary forms part of the Peel-Yalgorup System, an internationally significant wetland system protected under the Ramsar Convention. Surveys conducted during the approval process found 12 threatened species listed under the EPBC Act and a further 36 migratory species<sup>xxii</sup>. The proposal should have been subject to controls under the Peel-Harvey Environmental Protection Policy (EPP) and Statement of Planning Policy (SPP) No 2 -Peel-Harvey catchment.

#### 5. Munday Swamp, Perth Airport (297ha)

Munday Swamp is a highly significant wetland both for its environmental values and for its Indigenous cultural heritage, including being listed on the Register of the National Estate. It is threatened by the development of the third runway at Perth Airport. There is currently no active proposal to develop the third runway however it was flagged in the most recent airport Masterplan, and it is anticipated this would have a significant effect on Munday Swamp.

#### 6. Stratton Bushland, Stratton (16.5ha)

This site contains huge veteran Jarrah specimens which provide critical nesting habitat for many species of fauna including endangered black cockatoos. It contains regionally and nationally significant bushland (Guildford vegetation complex) and two critically endangered plant communities. It is threatened by a housing development proposed by the Department of Housing. As of May 18<sup>th</sup> 2015 this development is still awaiting a decision on approval by the Federal Environment Minister.

#### 7. Yanchep Bushland (84ha)

84ha of bushland approved for residential development in June 2014. This site contains significant areas of foraging habitat for Carnaby's including 34.7ha of Banksia woodland and 14.4ha of Dryandra (*Banksia sessilis*) heath, which was classified as in good to very good condition. This bushland backs onto the Yanchep National Park, and was an important buffer between the park and the existing residential areas to the west. The bushland on this site could form part of an ecological corridor from the National Park to the ocean.

#### 8. Keralup Bushland, Rockingham/ Singleton (48ha)

A Bush Forever site and important conservation area supporting the wetlands chain running the entire length of the Keralup area and beyond. It is threatened by a housing development proposed by the Department of Housing.

#### 9. Wandi Bushland, Wandi (22.56ha)

This bushland forms part of the ecological link to Bush Forever site 347 and contains a significant population of the critically endangered King Spider Orchid (*Caladenia huegelli*). This site is threatened by a housing development proposed by Satterley Property Group. This development is still awaiting Federal environmental approval.

#### 10. Jandakot Regional Park, Jandakot Airport (51ha)

Jandakot Regional Park encompasses the entire Jandakot Airport area and is a Bush Forever site (site 388) featuring significant stands of the Bassendean-Central and South vegetation complex which is woefully underrepresented on the Swan Coastal Plain. This is threatened by further development of Jandakot Airport including aviation support services and commercial development. This development was approved but there should have been due consideration given to the amount of bushland already cleared as part of earlier developments associated with Jandakot Airport.

#### 11. Kiara Bushland Morley (11.2ha)

In 2014, the Federal Department of Environment approved a Department of Housing project on this 11.2ha site of significant bushland. The local community actively opposed the development of the site since 1995, wanting to see it maintained as a managed bushland park. The site is also significant to the local Aboriginal people, registered as site 3488 by the Department of Indigenous Affairs. The site contains a conservation category wetland with high quality mixed Paperbark (*Melaleuca preissiana*) and Marri woodland. It is also habitat for Carnaby's Black Cockatoo and Forest Red-tailed Black Cockatoo.

#### 12. Burns Beach Bushland, Ocean Reef (0.43ha)

This is part of Bush Forever site 325 which extends from Hilary's Marina to Burns Beach covering the coastal foreshore reserve. It is threatened by a commercial, housing and retail on-shore marina development proposed by the City of Joondalup. The Federal Department of Environment determined this development was not a controlled action under the EPBC Act, despite its impacts on the surrounding coastal reserve and Bush Forever site 325.

#### 13. Webster Rd Bushland, Forrestfield (1.9ha)

This small bushland site is home to the vulnerable Wavy-Leaved Smokebush and an EPBC listed Threatened Ecological Community (Floristic Community type 20a-*Banksia attenuata* woodland over species rich dense shrublands). It is being threatened by an industrial subdivision which would see its links to adjacent Bush Forever site 319 cut.

**“ Green Corridors model kiar  
noondak-marer-yoongie boola-  
boola yoongar djinang yarnmen  
yardie boodja be-ak waagin. Ngala  
barnak yoongar be gorak yeyi. ”**

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