

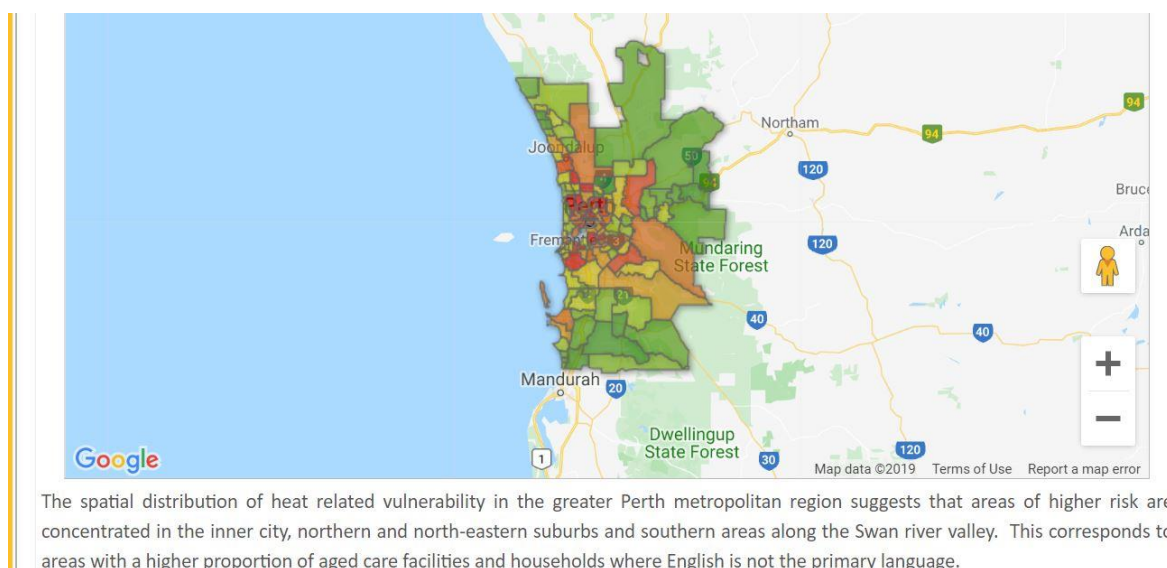
# Submission to Climate change in Western Australia

## Issues paper September 2019

*Green Space Alliance Western Australia November 2019*



- We are happy that climate change is being recognised by government. In order to achieve the net zero atmospheric carbon emissions target by 2050, we need to engage with, and promote, regenerative farming and landscape management systems.
- Western Australia's plant biodiversity needs to be listed as a primary asset of the state. This is not just a tourism asset; the 13,000 native plants of WA offer many options for revegetation and landscape renewal.
- Climate change is having a negative impact on livability due to the 'Urban Heat Island Effect' occurring where we live, work and recreate.



- We urge the WA State Government to partake in the signing of, or adopt as policy, the '4 per 1000 initiative' launched on 1st December 2015 at the COP21 in Paris. This initiative aims to build soil carbon by 0.4% each year across the planet. Opportunities for WA include waste reduction, carbon capture and sequestration through regenerative farming and landscape management. This needs to have a regional focus through 'healthy soil, healthy food and healthy communities'.

- We need to bring a new level of green infrastructure to towns, suburbs, cities and regional WA to improve livability. Some excellent examples can be seen right on our doorstep, where in Singapore, the 3:1 green-plot ratio has come into being (this means 3m<sup>2</sup> of green infrastructure for each metre of the development footprint). For CBD properties, this means external and internal vertical gardens, green facades, roof gardens as well as platform gardens.
- Some members of the GSA urge the government to take a serious look at nuclear power as an option for base load energy generation. While this prospect has many political risks, new tech nuclear is smaller, vastly safer and more efficient than the systems that failed at Fukushima and Chernobyl.
- We need to look at power sharing and microgrids as a decentralised model for making more efficient use of power.
- We need to investigate biomass power production, integrating composting facilities.
- We need to develop geothermal power generation.
- Promote recycling industries including e-Waste, sand recovery and concrete recycling.
- Regional initiatives - develop a fertiliser replacement strategy as part of a state soil policy, aimed at restoring and building soil carbon reserves in our agricultural and horticultural soils. This also needs to be expressed at the suburban home level due to the downstream effects of nutrient pollution in our waterways.
- Develop new measures and standards of food nutrient density and freshness. This is not only to support our food growing industries, but also improves the quality of food consumed in this state.
- Positively support the composting industry to take greater quantities of organic waste for conversion to soil building products to assist in the building of green infrastructure. Raise the value of high-quality composted products by writing these products into government contracting specifications.
- Develop effective glass removal technology for municipal derived waste material to eliminate this major contaminant from the compost stream.
- Take the lead in developing plastic-free food presentation and storage technology.
- There is concern about the waste-to-energy technology that is in train in Kwinana. The concern centres on dioxin emissions which are documented in European plants. As this process still ultimately involves burning, is the environmental accounting honest? This industry involves massive subsidies to make it viable, so is this an appropriate use of state funds?
- Safe healthy communities - housing design needs to promote solar passive design, insulation, rainwater storage that is plumbed into services within the house such as

toilets and clothes washing, breezeways and eaves. We also need to promote the use of deciduous trees and vines to act as reverse air-conditioning elements around the home. In addition, to avoid the use of black roofs and artificial, plastic grass as both of these contribute markedly to the UHI effect.

- Producing more water from the sea using **green energy** will reduce groundwater use. This must be considered as a resolute factor. More water means we can increase public open spaces, gardens, trees and turf, resulting in a greener and more liveable landscape and environment for humans and fauna alike. Constant and sustained negative messaging by government that water use on gardens and lawns is wasteful has had a profound negative impact on private green spaces. Perth like most cities is a coastal city, there should be plenty of water available using smart engineering solutions to desalinate water. If government can't achieve this, then allow private enterprise to assist especially with innovation. Water is cheap in WA; we believe that the WA community will pay for water for liveability if sold the right message.
- Investigate air water harvesting for remote communities connected to solar collectors and storage batteries.
- We need to make the general public aware of suburban tree preservation as most of our urban tree canopies are in decline. An excellent example is the City of Stirling Tree Trails project which recently won a national greening award through the Australian Institute of Horticulture.
- Design WA must have a living green heart. We need to find innovative ways to have green plants incorporated into housing designs for single residences as well as multi-unit developments.
- Investigate the use of hydroponic recirculating systems for green walls and green roofs to reduce water demand by as much as 90%. These need to be researched particularly for west-facing walls in WA, subject to afternoon sun through summer.
- Estimates in this research suggest that Local Government will be spending ten percent of their budget on mitigating urban heat as we get to the end of the century so the cost burden on society will be enormous. West Australia is highly vulnerable to the human costs of urban heat and The Green Space Alliance WA is uniquely qualified to assist Government with our horticultural expertise. Together we need to draw up plans to make WA a world showcase for urban heat mitigation for not only community but our native flora and fauna.
- The problems associated with artificial, plastic grass has not been highlighted in this paper with its UHI issues. The water used to create plastic grass is not considered, the use of water to cool plastic grass is not considered, and the long-term detrimental cost to the environment and possibly to community via health issues are not addressed. The fact that there is not a state code or stance regarding this heat island creating surface, (that is often falsely endorsed as water saving), or that there is no consistency in Local Government Authorities' policy regarding this concerning product within the water

plan is concerning. Single use plastics are being banned across the world, yet plastic carpet is lauded as waterwise and is inherent in our urban landscapes due to years of denigration by government regarding natural, living turf.

- Protect biodiversity by constructing strategically-placed engineered wetlands to act as linking corridors for wildlife, and as refuge for migratory wading birds, as has been achieved at the C-Wise composting facility in Nambeelup.
- Deliberate expansion of the conservation estate to target 'Kaat' vs 'Beeliar' landforms, as these are particularly vulnerable. I reference Professor Steven Hopper's work in identifying these areas of WA with the assistance of the Noongar people.

This submission was prepared on behalf of the Green Space Alliance WA by Neville Passmore

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Incorporated below is the Green Space Alliance WA response to the WA Waterwise Plan, the feedback for this we feel integrates with Climate Change.

## Submission to Waterwise policy paper Department of Water and Environmental Regulation

*Green Space Alliance WA Response*  
*November 2019*

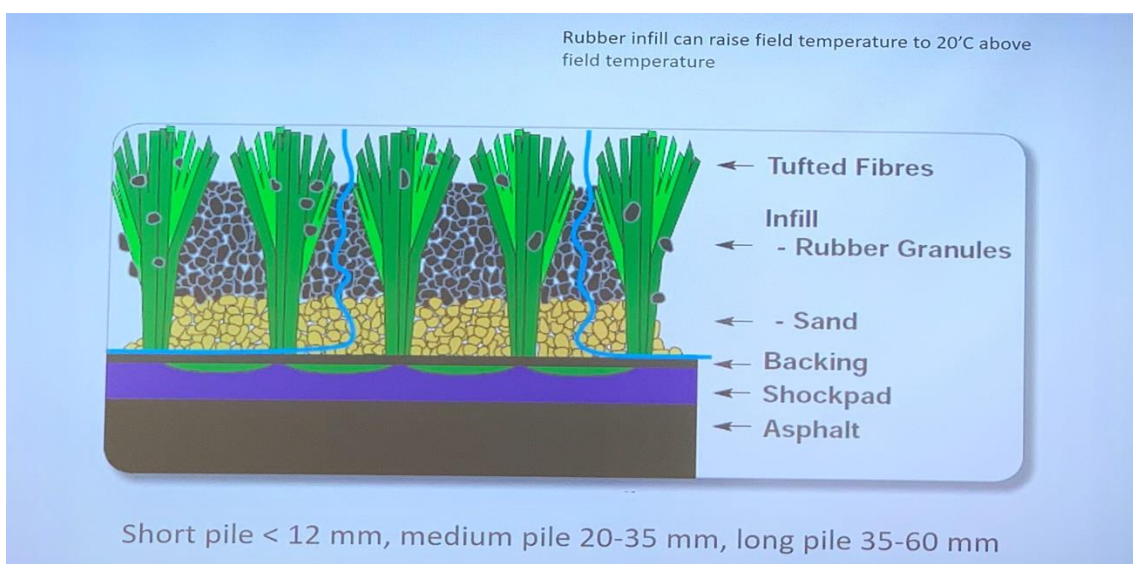
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- Aquifer recharge at a community level is not mentioned in this part of the planning.
- The water-usage per person has dropped from 185kl per year in 2000 to 126kl in 2019. The goal to reduce this to 116kl within the next ten years is ambitious given the great success that has been achieved already, have all the low hanging fruit been picked?

- The highlighted water efficiency examples (such as Josh's house and White Gum Valley), involved sophisticated measurement technology. Can we look to see a rollout of smart metering to assist homeowners and businesses to improve their saving performance?
- Grey water reuse examples (such as Josh's House) again involved sophisticated measurement technology. Why is that greywater reuse, as a solution to water crisis situations is not considered or referenced in this plan? The whole of environmental and communal cost benefits of greywater reuse must surely outweigh the in trepidation concerning the additional economic cost of grey water systems in new homes and retrofits.
- Greywater systems are regularly used in the eastern states in drought affected areas to save trees and to sustain natural green spaces (lawns and gardens). Effluent wastewater is used effectively in WA regional areas to sustain public open spaces and active recreational areas, yet we are averse to this in the metropolitan area. The state government should be supporting and mandating here in WA, that these systems be installed at every opportunity to support private and public green spaces. Every multistory building in Perth and surrounds should be reusing grey water regardless of the cost, with the possibility of a rebate scheme to support conversion to reusing grey water in surrounding gardens, on street trees and parklands. The Department for Sport and Recreation Public Parkland Guide sensibly states; *"Treated wastewater - Treated wastewater is discharged from a wastewater treatment facility after it has passed through treatment processes to reduce its nutrient and bio-chemical load. Further treatment may be required to ensure it is fit for intended use in a given location. In regional Western Australia, irrigating public open space with treated wastewater is common practice and has provided a cost-effective irrigation and wastewater disposal option for many years, while maintaining outdoor lifestyle and amenity. In new urban developments recycled water can be a safe and climate-independent option for irrigation of parkland. The volume of wastewater currently available for recycling will increase with population growth. Subject to availability, the Water Corporation will provide treated wastewater for community benefit free-of-charge at the treatment plant boundary. Users (developer or LG) will be responsible for any additional treatment, piping and transport costs. With relevant environmental and health approvals, this water could be used to irrigate parkland, playing fields and recreation areas. The viability of a wastewater reuse system will depend on several factors including:*
  - *volume and delivery rate required;*
  - *required level of treatment for intended uses;*
  - *management of health and environmental risks;*
  - *site limitations, including proximity to public drinking water source areas or to conservation category wetlands;*
  - *infrastructure requirements;*
  - *cost of implementation and ongoing management of the supply system; and*
  - *governance issues surrounding long-term ownership, operation and management.**Costs associated with use of recycled water systems can vary greatly. **Efficiently designed recycled water schemes with relatively low distribution and/or treatment requirements have proven to be cost effective.** However, costs can increase*

*substantially if significant distribution or treatment costs are required, or if the system infrastructure requires retrofitting. To minimise costs associated with distribution and storage, the co-location of irrigated areas with wastewater treatment plants should be considered at the district structure planning stage.”*

- We need to change regulations to allow new, web-connected controller technology to automatically apply water as required - activated by soil moisture sensors and online weather information.
- The exclusive conversation focuses on native plants, **not all of which are waterwise**. This ignores other useful plants including deciduous trees, vines and turf grasses, as well as succulent plants and other exotic waterwise plant material as identified in the Water Corporations Waterwise plant selector.
- The Green Space Alliance supports the use of indigenous WA plants, but we have concerns as to the exclusive nature of the conversation at present which reduces important options.
- The problems associated with artificial, plastic grass has not been highlighted in this paper with its UHI issues. The water used to create plastic grass is not considered, the use of water to cool plastic grass is not considered, and the long-term detrimental cost to the environment and possibly to community via health issues are not addressed. The fact that there is not a state code or stance regarding this heat island creating surface, (that is often falsely endorsed as water saving), or that there is no consistency in Local Government Authorities’ policy regarding this concerning product within the water plan is remiss. Single use plastics are being banned across the world, yet plastic carpet is lauded as waterwise and is inherent in our urban landscapes due to years of denigration by government authorities regarding natural, living turf.



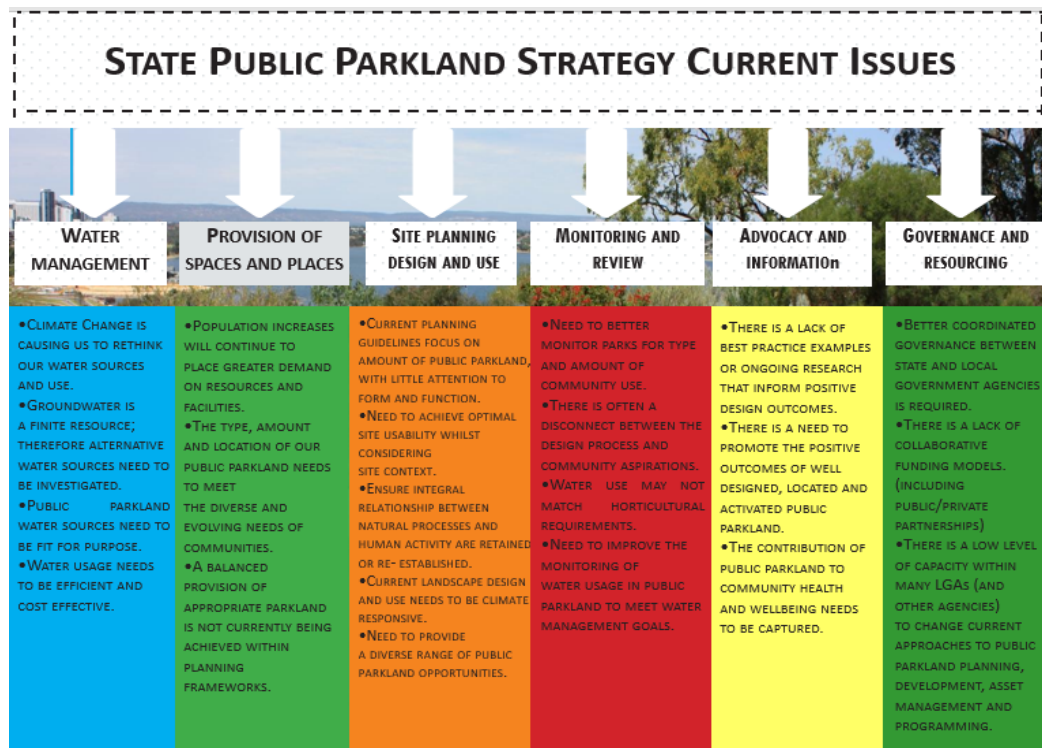
- The most effective means of ameliorating the Urban Heat Island effect, according to the CRC for Water Sensitive Cities local research, is with irrigated turf and gardens.

These need to be employed strategically in high risk locations, however, must be supported with an adequate water supply.

- Developments occurring and supported by LGA's and State Government without water availability need to be reassessed. The building of high-density communities, without water availability for private and public natural spaces is not sustainable or sensible. As temperatures continue to rise, the heat mitigation of natural turf and trees, cannot be achieved in suburbs where doors open on to street paths and backyards are small and inaccessible and plastic carpet is the only thing that creates a "false green" visual.
- The Water Wise Perth Action Plan does not offer any measurement, plan or metrics for maintaining current levels or increasing the green infrastructure of Perth Peel in order to make Perth more livable. While the action plan acknowledges the need, it does not give any direction or leadership about how this will be achieved.
- The previously called Department of Sport and Recreation document "Public Parkland Planning and Design Guide" notes that "It is envisaged that use of this guide will assist to:
  - ensure that parkland can adequately meet the functional needs of the community;
  - promote greater industry knowledge and understanding through multi-disciplinary approaches to collaborative decision making;
  - encourage and support integrated planning and policy development at all levels; and
  - focus planning and design on end-user experience."

With a planning objective; "To ensure **optimal allocation of land and water resources to provide a well-distributed and connected suite of parklands** that can be adapted to meet changes in social and environmental conditions." The document states that; "Parkland must meet the varied demands of many different users and can only do this if sufficient land is allocated at regional, district and local levels of planning. Climate change is causing us to rethink our water sources and use, limiting the available water for parkland irrigation. Better coordination between state and local government agencies is required to secure fit for-purpose water sources and deliver functional parkland for new and established communities. Population increases will continue to place greater demand on open space resources and parkland facilities. In general, it is better to provide well-located and connected neighbourhood and district parklands rather than many small isolated local parks. Small local parks have value as rest points, through ways, community meeting places and play points and can also make a substantial contribution to neighbourhood amenity. Small local parks are best provided as part of a neighbourhood network of connected green streetscapes and/or linear parklands, with proximal access (within walking distance) for all residents."





- “Emerging Constraints for Public Open Space in Perth Metropolitan Suburbs” notes that living Public open spaces and active recreational areas are in shortfall. This is significant and is certain to reduce more if alternative water sources are not considered for community benefit.

*“The study was able to estimate the notional existing shortfall in active open space in the outer metropolitan areas of Perth by applying the above guidelines. This shortfall is estimated to be 96.7 ha, which equates to approximately 44 senior AFL ovals or 135 senior soccer pitches. If the provision of the support facilities is taken into account, the current total existing shortfall of open space required for active sport is around 290 ha.”.*

<https://www.dlgsc.wa.gov.au/departments/publications/emerging-constraints-for-public-open-space-in-perth-metropolitan-suburbs>

<https://www.ccyp.wa.gov.au/media/1165/the-state-of-was-children-young-people-environment-101-access-to-green-spaces-parks-and-community-facilities.pdf>

- Consideration of MANY substantive research findings and working together with other government departments to implement successful and effective innovations and processes with a dedication to benefit for community and not a “what will it cost?” mentality, whilst protecting existing, precious water resources, must be prioritized. For example, the many 202020 Vision project works including “Where are all the trees”, heat mitigation studies and water and green spaces for livability studies must assessed when developing water plans for growing populations.

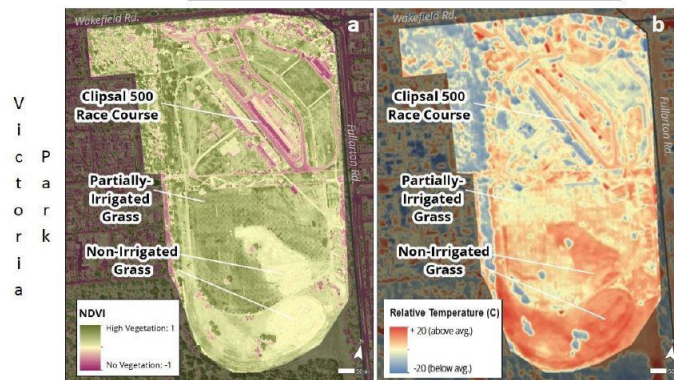
<https://www.greenerspacesbetterplaces.com.au/>

[https://202020vision.com.au/media/7145/where are all the trees.pdf](https://202020vision.com.au/media/7145/where%20are%20all%20the%20trees.pdf)



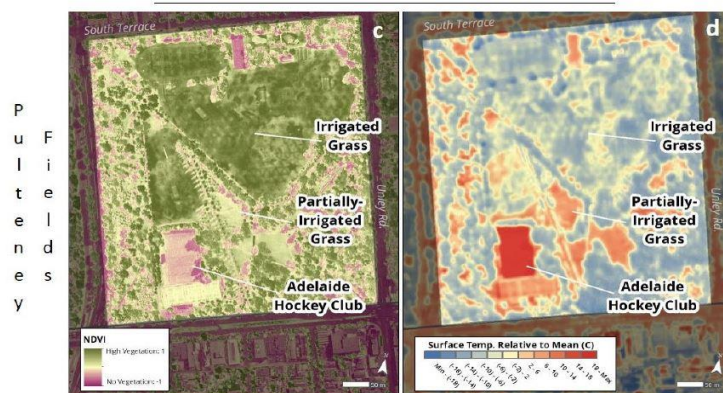
Hort Innovation - Conveying the benefits of living turf - mitigation of the urban heat island effect (TU18000) *Managing urban heat islands and promoting urban cooling is becoming increasingly important for communities and government across Australia. Research in recent years has started to explore how different land surface types contribute to either create cooler, or warmer cities. An area of growing interest is the role that living turf plays in urban heat mitigation*

### Irrigated grass versus non-irrigated grass (Adelaide Parklands)



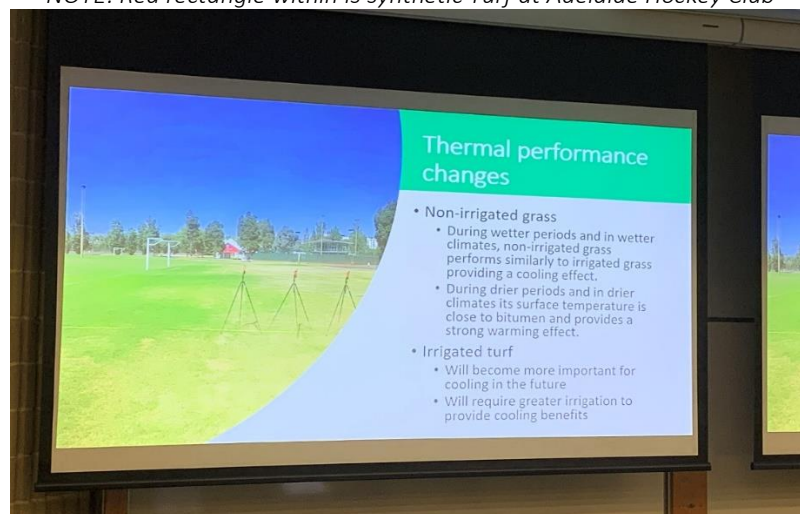
Source: Eastern and Northern Adelaide Heat Mapping Study (Seed et al. 2018)

### Irrigated grass versus non-irrigated grass (Adelaide Parklands)



Source: Eastern and Northern Adelaide Heat Mapping Study (Seed et al. 2018)

NOTE: Red rectangle within is synthetic Turf at Adelaide Hockey Club



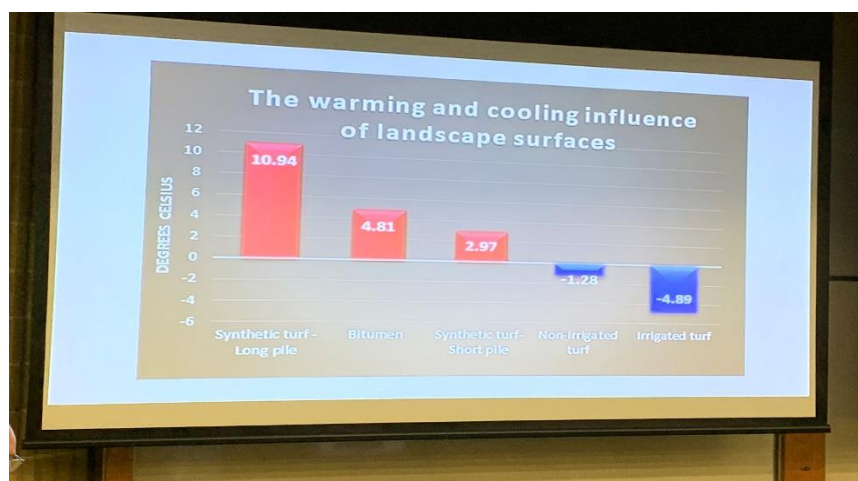
- Producing more water from the sea using **green energy** will reduce groundwater use. This must be considered as a resolute factor. More water means we can increase public open spaces, gardens, trees and turf, resulting in a greener and more liveable landscape and environment for humans and fauna alike. Constant and sustained negative messaging by government that water use on gardens and lawns is wasteful has had a profound negative impact on private green spaces. Perth like most cities is a coastal city, there should be plenty of water available using smart engineering solutions to desalinate water. If government can't achieve this, then allow private enterprise to assist, especially with innovation. Water is cheap in WA; we believe that the WA community will pay for water for liveability if sold the right message.
- We need to incorporate Living Greenery metrics into Building Green Star rating systems, which are currently all about energy saving.
- The Waterwise Perth Steering Committee and the Waterwise Transition Network needs the expertise that is the Green Space Alliance, involved with the co-design team.
- There is a need to incorporate quality soil carbon into all landscape planning using schools and government buildings to lead by example. Currently the standard is not sufficiently high enough.
- Limited Water supply will always be an issue, we must ensure that the benefits of green space and all alternative water options are considered when water policy decisions and plans are made.
- Urban livability and greening issues must be considered a priority under the Metronet station precinct/urban infill. This requires the incorporation of greening metrics into plans for the whole Metronet project.
- Recent bushfire incidents on the east coast of Australia must be taken very seriously and considered. Irrigated, living green spaces have been proven to be Bushfire mitigation areas. With the browning of our suburbs and outer regions, it is not dramatic to think, that in the right circumstance, with hotter temperatures, rising incidence of synthetic turf surfaces, dead and dying domestic gardens and parks, that Perth could burn
- The State Government treasury needs to fund properly and appropriately new water sources, incentives and innovations. The model "Pinching from Peter to pay Paul" simply will not work in this instance. Developing a Water Plan without funding allocation can be viewed as lacking integrity and maturity by the state population. Water is after all the most precious resource, without it we have nothing, not even life.
- The Green Space Alliance believes that urban heat is the looming health crisis of the 21<sup>st</sup> Century and new research from Horticulture Innovation Australia released in Perth on the 28<sup>th</sup> of November needs urgent attention across government in Western Australia. Perth is predicted to have an increase in average temperatures of 3.9 degrees

by 2090. Fifty-degree days will not be uncommon in summer. Increasing tree canopy is accepted as a solution but this new research highlights the value of irrigated turf as being even more effective.

City	Temperature Change (2090, RCP 8.5)	Precipitation Change (2090, RCP 8.5)
Adelaide	2.9 °C	-9 %
Brisbane	3.7 °C	-16 %
Melbourne	3.0 °C	-9 %
Perth	3.5 °C	-18 %
Sydney	3.7 °C	-3 %

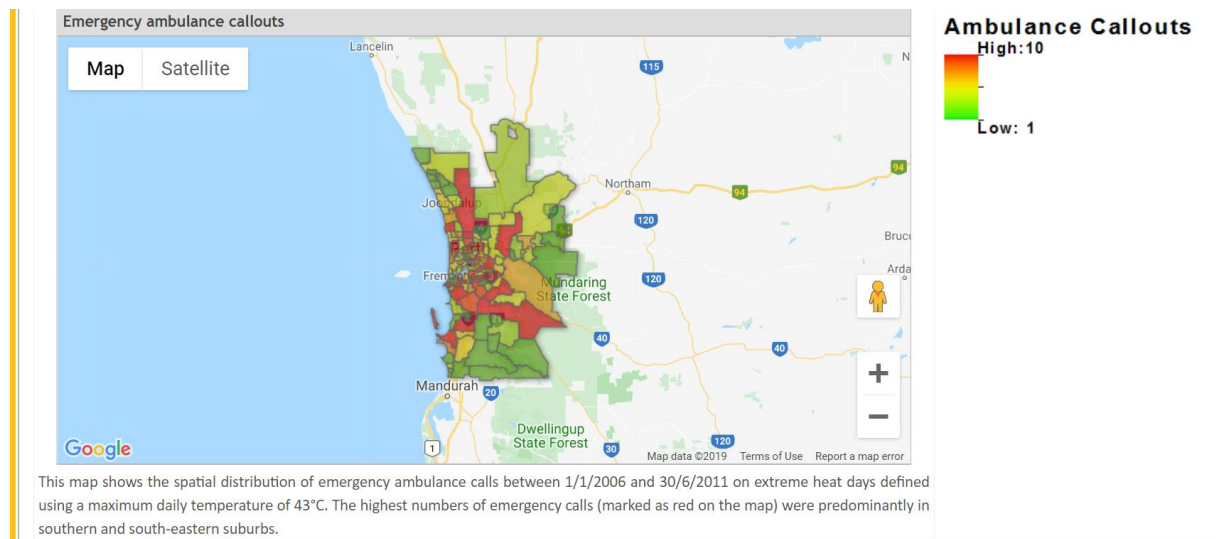
### Changing capital cities

- The shocking finding is the degree to which plastic fake grass increases temperatures particularly in enclosed courtyards. The attached photos of slides from the research paper show a significant difference in temperatures between short pile and long pile plastic fake grass. There is real danger represented in these figures particularly for senior and junior West Australians.



- Two scenarios to consider. Lawn bowls is a pastime most associated with seniors, greens have in the main been converted to plastic fake grass. If this grass is not shaded or irrigated, the risk to senior citizens is unacceptably high. The other situation is the popular housing option for young families "courtyard homes". These dwelling mostly fill the footprint of the block, leaving a few square metres of open area surrounded by heat absorbing walls. Imagine a strip of fake plastic grass being the only play area for toddlers. Just last week a young Queensland mother was charged with murder because she left her two young children alone in a car in the heat. Our concern is that this

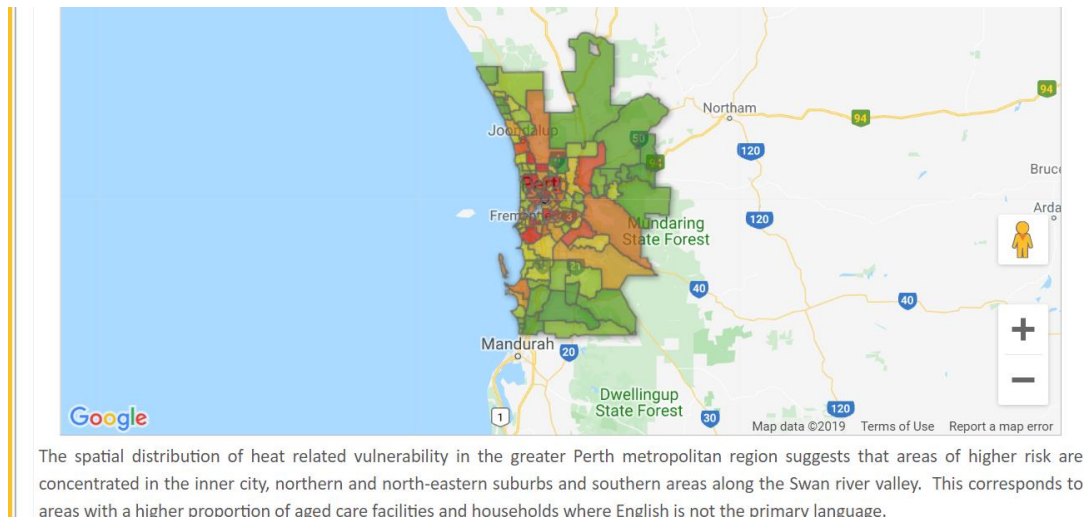
approach to “affordable” housing could see children and pets, suffering serious injury even death in these superheated courtyards.



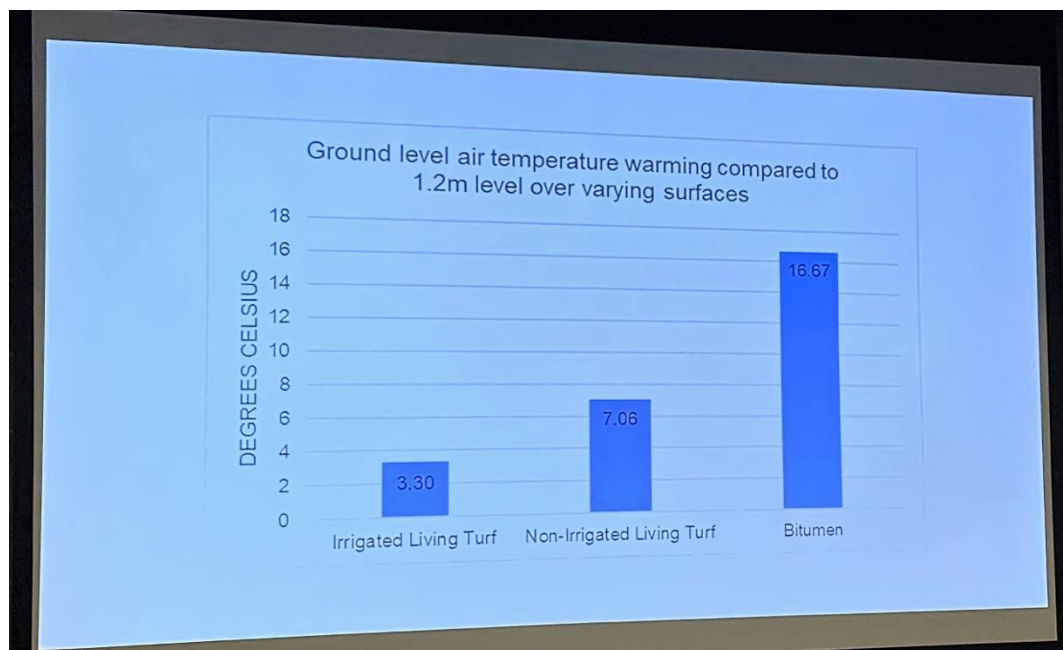
*“As climate change progresses, we can expect an increase in the frequency, intensity and duration of extreme heat events. Extreme heat events or heatwaves pose a risk to the health of individuals and a surge in the demand for emergency services. To address this problem more information is needed to identify which groups are most vulnerable to heat related stress, and where they are located within our cities. To accomplish this, a composite index of vulnerability was developed for each capital city; this included socio-demographic, health and environmental information. Concurrently information was collected about heat related health outcomes during extreme heat events. Statistical analyses identified the risk factors that best predicted the spatial variation in emergency health outcomes during extreme heat events. These risk factors varied between cities but overall age (older people), people with a disability who require assistance, people who speak a language other than English at home and people living in urban heat islands were found to have a higher risk. The heat related vulnerability index was then mapped for each capital city. This approach can inform the way the emergency management sector can respond to climate change in large urban areas in terms of prevention, preparedness, response, and recovery. It will also provide government agencies, non-government organisations and communities with the necessary information to target the areas in most need of help in developing resilience to known environmental stressors such as heat events. For example, it would help to identify parts of cities that should be prioritised for landscape treatment to reduce heat, for example by the use of water sensitive urban design and irrigated green infrastructure.”* Extract from “A spatial vulnerability analysis of urban populations during extreme heat events in Australian capital cities”.

[https://www.nccarf.edu.au/sites/default/files/attached\\_files\\_publications/Loughnan\\_2013\\_Spatial\\_vulnerability\\_analysis.pdf](https://www.nccarf.edu.au/sites/default/files/attached_files_publications/Loughnan_2013_Spatial_vulnerability_analysis.pdf)





- Planning must now be seen through a prism which looks at whether a development is leading to cooler urban areas or hotter outcomes. While the Urban Heat Island Effect is mentioned in planning documents, we are still planning developments that are pushing temperatures up. This must change.



- Estimates in this research suggest that Local Government will be spending ten percent of their budget on mitigating urban heat as we get to the end of the century so the cost burden on society will be enormous. West Australia is highly vulnerable to the human costs of urban heat and The Green Space Alliance WA is uniquely qualified to assist Government with our horticultural expertise. Together we need to draw up plans to make WA a world showcase for urban heat mitigation.

	Normal Weather – Cooling Energy (kWh/m2)	Shifted Weather – Cooling Energy (kWh/m2)	% Increase in Cooling Energy
<b>Sydney</b>	18	30	51%
<b>Adelaide</b>	13	20	48%
<b>Melbourne</b>	6	10	72%

Annual cooling-only energy increase resulting from urban heat islands

	Normal Weather – Cooling Utility Cost (\$/m2)	Shifted Weather – Cooling Utility Cost (\$/m2)
<b>Sydney</b>	\$5.0	\$7.6
<b>Adelaide</b>	\$5.1	\$7.5
<b>Melbourne</b>	\$1.9	\$3.3

Annual cooling-only energy cost increase resulting from urban heat islands

This submission on behalf of the Green Space Alliance WA was prepared by Neville Passmore and Eva Ricci.

The GSA WA Fully endorses the sentiment below;

*“Well designed and properly maintained playing fields, passive recreational areas, urban forests, home gardens, even green walls and roof gardens are needed, not only to combat the retained heat of our cities and suburbs, but to make this place we call home - liveable. Our parks and urban green spaces are more than just a place for your children to play or to walk your dog, they have become the outdoor gym, the weekend local to catch up with mates, the movie theatre, the concert venue and so much more. They are the lungs of our city and keep us connected with nature. These important attributes must be protected now and for generations beyond that of my grandchildren.”* Neville Passmore Horticulturist – Australian Institute of Horticulture, Nursery and Garden Industry Association WA, Horticultural Media Association and Green Space Alliance WA





GREEN SPACE ALLIANCE WA

## VISION

To live in a community that values green spaces at its core, which deliver benefits to everyone through improved health, wellbeing and liveability by using innovative water and urban planning solutions.

**2020**  
VISION  
FOR A MORE GREEN SPACES IN OUR URBAN AREAS BY 2020

The Green Space Alliance WA is a voluntary group work group engaging stakeholders including government departments, local government and the community to help create a more liveable Western Australia.

### MEMBER ORGANISATIONS

Australian Institute of Horticulture WA  
Australian Institute of Landscape Architects WA  
City of Belmont  
Horticulture Media Association Australia WA  
Landscape Industries Association WA  
Parks & Leisure WA  
Perth NRM  
Sports Turf Association WA  
Tree Guild WA  
Turf Growers Association WA

### OBSERVER ORGANISATIONS

Dept of Water and Environmental Regulation  
Dept of Local Government, Sports and Cultural Industries  
Food Futures WA  
Nursery & Garden Industry Association WA  
Urban Development Institute of Australia WA  
Water Corporation

## URBANISATION ISSUES

New suburban areas don't have **ADEQUATE SPORTING RESERVES**

No green plot ratios for high-rise mean these **BECOME HOTTER**

Tree cover is **DECLINING** across the metropolitan area despite innovative LGAs developing Urban forest initiatives.

**REDUCTION IN HAPPINESS AND WELLBEING** in our communities.

**WATER SUPPLY** for public open space including sporting fields is being reduced water allocations.

Water supply options will **COST MORE** into the future.

**A DRYING CLIMATE** in SW-WA reduces water resources.

**PREMATURE AND UNNECESSARY DEATHS** in community from urban heat island effects.

Increasing incidence of **MENTAL HEALTH ISSUES**

**DE-CENTRALISED WATER TREATMENT**

offers a supply to some now suburban green sporting spaces.

Government in WA is moving to embed **MAJOR URBAN PLANNING INITIATIVES**

**IMPROVE HOSPITAL RECOVERY RATES** by making hospitals green.

Government to develop Green Spaces **STRATEGY PLAN**.

## GREEN SPACE SOLUTIONS

Western Australia has nearly

**13,000 SPECIES OF PLANTS**  
There is a WA native plant species for every niche in the landscape.

Perth is renowned for **CLEAN AIR AND WATER** and **RIVERSIDE BEAUTY**

Green infrastructure has a role in **REDUCING HUMAN MORTALITY** from the heat island effect.

Suburbs can be **5° cooler**.

Turf, urban forests, sports grounds, remnant bushland, home gardens, leafy shaded streets all absorb heat and don't radiate it back.

Concrete, bitumen, artificial lawn and bricks absorb heat and radiate it back, increasing ambient temperatures.

Green spaces and nature can have **MEASURABLE, POSITIVE EFFECTS** on human health, happiness and wellbeing.

Green spaces can **HELP OUR TOURISM INDUSTRY**.

By giving us an inviting, clean, cool, green and pleasant city, a place for visitors to explore safely.

Green spaces can **KEEP KIDS OUT OF JAIL**.

Recreational/sporting grounds and sports clubs builds communities, builds self-esteem and reduces juvenile crime.

Make WA more **ATTRACTIVE TO THE WORLD**.

Green spaces, playing fields, liveability and unpolluted air make WA a great place to bring up a family.

Green infrastructure can **REDUCE PEAK DEMAND OF OUR POWER SUPPLY**.

Turf, urban forests and all forms of living greenery can help reduce the retained heat of the built environment.

Source: Australian Bureau of Statistics, 2015