



# WATER WISE PERth

THE SOUTH WEST OF WESTERN AUSTRALIA IS ONE OF THE PLACES ON  
THE PLANET MOST IMPACTED BY CLIMATE CHANGE

A GROWING CITY RESPONDING TO CLIMATE CHANGE  
TWO YEAR ACTION PLAN

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# VISION

Perth is a leading waterwise city



# Message from the Minister for Water



The Waterwise Perth Action Plan is part of the McGowan Government's coordinated response to the impacts of climate change and sets the direction for transitioning Perth to a leading waterwise city by 2030.

Climate change has made Perth's winters drier.

The south west of WA has had a 15 per cent decline in average annual rainfall since the mid-1970s due to climate change. We used to get on average 420 billion litres of water running into Perth dams each year, but now can expect just 25 billion litres. And it's not just our dams feeling the pinch. Our groundwater levels have also significantly reduced with a 1.8 meter drop in aquifer storage since 1998.

Over the next thirty years, the population of the Perth-Peel region is anticipated to top 3.5 million meaning demand for water for households, industry and recreation will increase.

To ensure Perth can remain a beautiful, green and liveable city, we must act now to be more waterwise. Now is the time to change.

This plan outlines the actions we will take in the first two years of this journey, and establishes a solid foundation for the successive plans needed to achieve our 2030 targets.

To deliver the plan we will work with local government, industry, traditional owners and broader community.

Labor was the first responder to climate change in WA. Former Premier Geoff Gallop recognised the importance of water and appointed himself Water Minister in 2005. Premier Gallop commissioned the first Perth desalination plant, trialled the injection of highly treated wastewater into aquifers, and protected key water resources like the south west Yarragadee aquifer.

It is again a Labor Government that is delivering the next important steps for building climate resilience to ensure Perth has healthy waterways and wetlands, attractive urban spaces and water security beyond 2030.

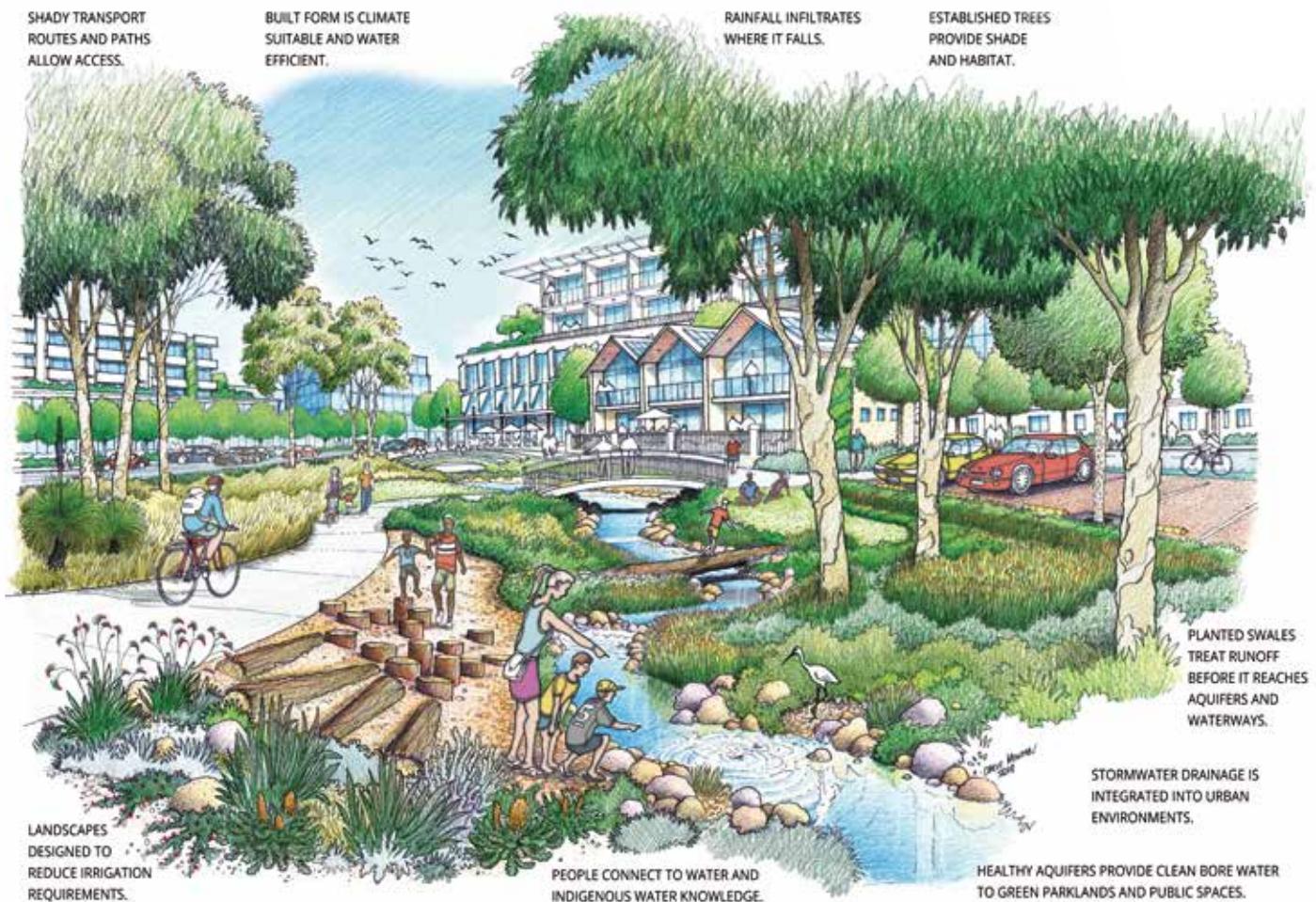
I would like to thank the more than 200 stakeholders who gave their time and knowledge to inform this important and first-of-its-kind action plan.

## **HON DAVE KELLY BA MLA**

Minister for Water; Fisheries; Forestry; Innovation and ICT; Science

# A waterwise Perth

A waterwise Perth is cool, liveable, green and sustainable, a place where people want to live, work and spend their time. It is a city where communities care about and value water, while making best use of its various sources (groundwater, surface water, stormwater, seawater and wastewater). The city serves as a catchment and provides healthy natural environments, supporting a range of social, ecological and economic benefits.



Source: Department of Water and Environmental Regulation

**U**p until the 1970s, Perth's drinking water supplies came almost exclusively from rainfall runoff into our dams with groundwater supplying our water for public open space. Before 1975, the average streamflow to Perth's drinking water dams was 420GL. As of September 2019, streamflow was just 37GL.

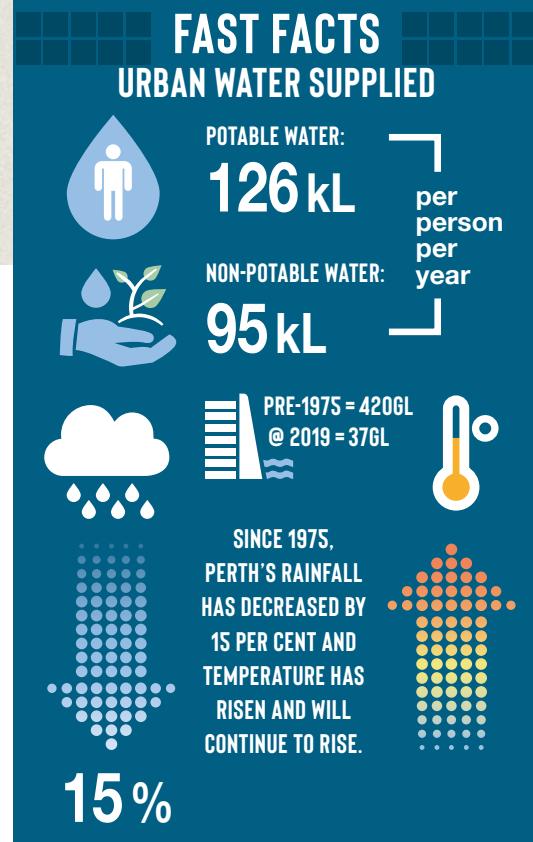
Declining rainfall due to climate change has meant our dams now provide around 10 per cent of Perth's drinking water with 40 per cent coming from groundwater, 48 per cent from desalinated water and two per cent from groundwater replenishment.

This change in the way we source and use water has come about through a series of waterwise policies and programs and our journey to becoming a waterwise city is well progressed. Water saving programs have been highly successful in improving water efficiency and conservation, reducing annual per person water supplied since 2001 from 185kL to 126kL in 2018-2019.

The purpose of this two-year action plan is to take the next step; to move beyond 'saving water' to better managing the urban water cycle to ensure healthy waterways and wetlands, attractive urban spaces and water security beyond 2030. This is particularly important in the context of a growing population and climate change.

Actions in this plan include a focus on water in the urban landscape in the Perth and Peel region to support jobs, growth and development, improve our urban spaces and protect wetlands and waterways. The actions will be commenced within the next two years and contribute to achieving our 2030 waterwise targets.

**Waterwise Perth is part of  
Government's response to climate  
change and its ongoing impact on  
our urban water cycle**



To transition Perth to a leading waterwise city by 2030, we need to:

- Use water sustainably in our homes and gardens;
- Create liveable, green and resilient communities;
- Find more sustainable ways to maintain our public open space;
- Develop Perth in harmony with its water resources.

This action plan has been developed with input from more than 200 stakeholders including researchers, policy makers, planners, developers, and local government authorities. All agree that a collective approach is needed to transition Perth to a leading waterwise city by 2030.

#### Total water used from sources in Perth and Peel (average 2014-18)



# Why do we need a waterwise Perth?

The south west of Western Australia is one of the places on the planet most impacted by climate change. There is no doubt that climate change has already made Perth a drier and hotter city. Further declines in average rainfall and increased temperatures are predicted over the coming decades. At the same time, the population of Perth and Peel is anticipated to reach 3.5 million by 2050 – almost 70 per cent more people than we have now. With less rainfall and increased temperatures, how we use water, where we source it from and how we plan our urban spaces become important to ensure Perth remains a liveable, green and resilient city.

## Climate change – less rain and a hotter city

Since 1975, Perth's rainfall has dropped by about 15 per cent, with climate models predicting a further six per cent reduction over the state's south west by 2030. At the same time, declining rainfall has reduced streamflow to Perth's drinking water dams from an average of 420GL/year before 1975 to just 37GL for the year to September 2019.

With less water available from our surface water resources, groundwater has become increasingly important as a source of water for Perth and now makes up 70 per cent of all water used in the region, including for drinking, for industry and for irrigation of our parks and other recreational spaces.

But the decline in rainfall is also affecting our groundwater with reduced recharge to our aquifers (underground water reserves) resulting in a 1.8m drop in storage levels from 1998 to 2016. This means less groundwater is available for use and lower water tables are impacting the health of our urban landscapes, including

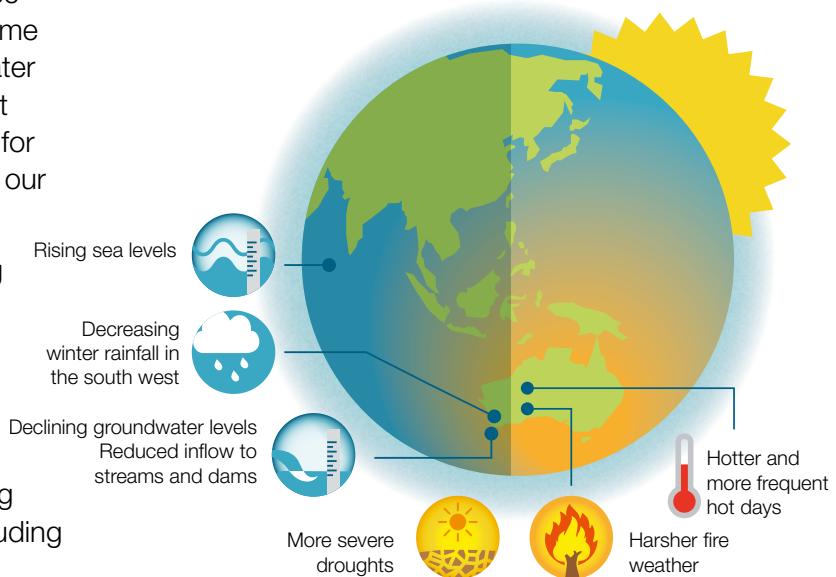
trees, groundwater dependent caves, wetlands, lakes and bushland.

We now need to rebalance how much groundwater we use with less rainfall recharging our aquifers under climate change.

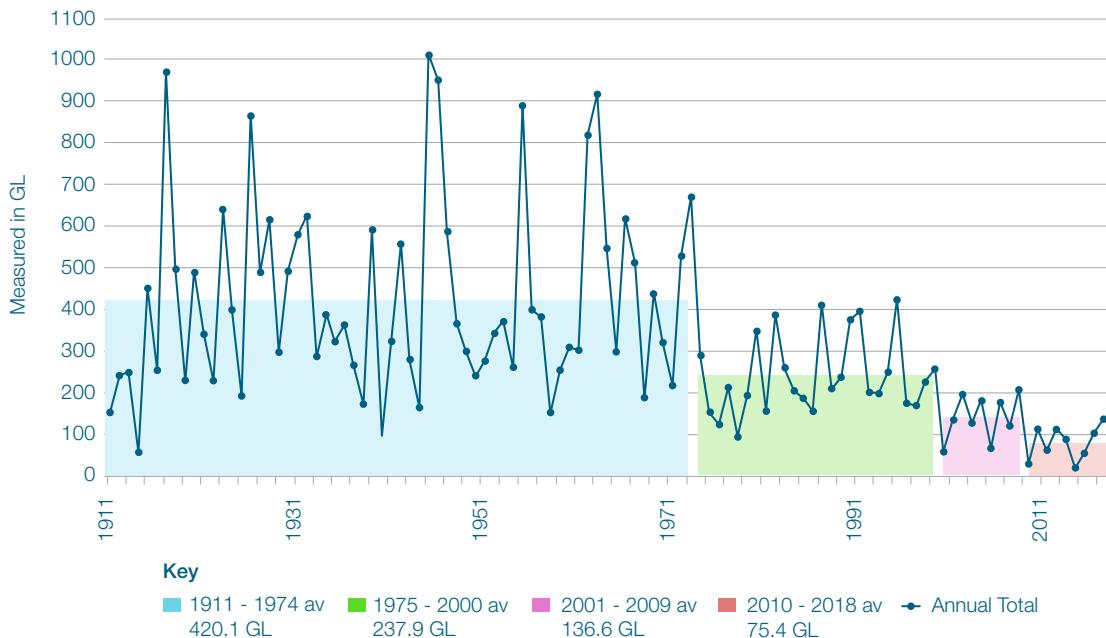
In Perth, the average annual number of days above 35°C is predicted to increase from 28 (1971-2000 average) to 36 by 2030. Summer heatwaves pose risks to human health and have particularly harmful impacts on vulnerable groups, including the elderly and small children.

More hot days will also make what is known as 'the urban heat island effect' worse. Concrete and brick buildings and paved surfaces can cause built-up areas to be three to seven degrees warmer at night and up to three degrees warmer during the day (UMW 2014).

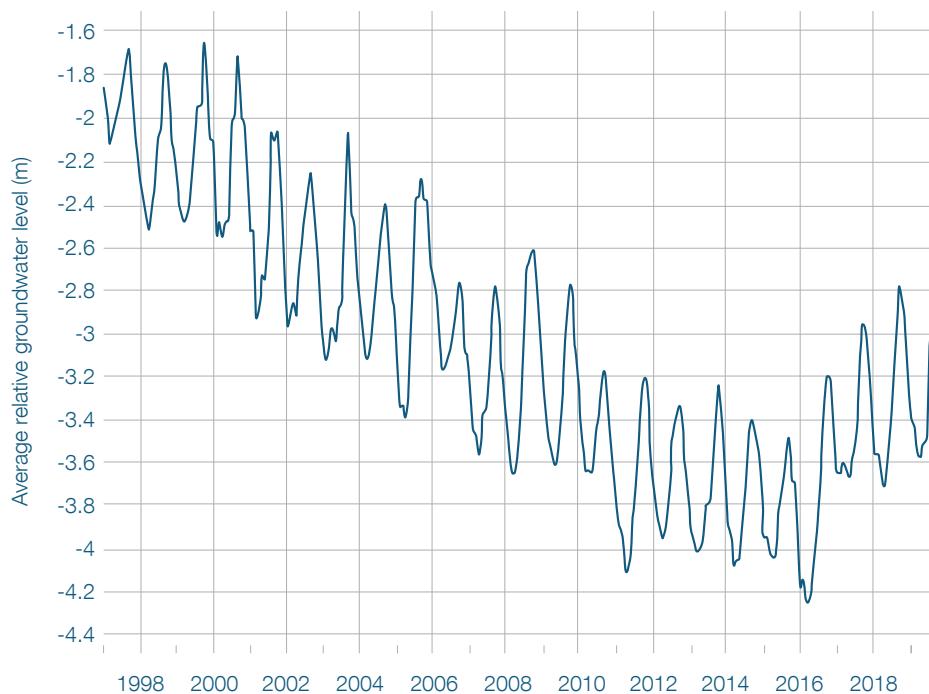
This effect is intensified in suburbs with minimal tree canopy. Heat vulnerability maps (CRCWSC 2018) show a large number of at-risk suburbs in Perth. To balance this, tree canopy, wetlands and waterways can create a cooling effect and will become increasingly important in our urban landscapes.



## Long term streamflow record for Perth dams (Fig 1)



## Average groundwater levels of the Gnangara Mound (superficial aquifer) (Fig 2)



Over the last few years the rate of storage change appears to have improved (100 GL increase). This is due to: higher annual rainfall since 2015 which has led to increased recharge; rainfall falling in patterns that have been conducive to higher recharge; land use changes such as pine management and urbanisation that have promoted higher recharge in some areas; decreases in public water supply abstraction and relatively stable private abstraction as a result of actions in the 2009 Gnangara plan.



## Water challenges for a liveable city

In the past two decades the state government has brought on new drinking water supplies, put water efficiency measures in place and developed ‘best practice’ urban water management principles in the design of suburbs and infill developments (which use vacant land parcels within previously built areas). These best practices now need to be the normal way of developing our city.

The availability of groundwater used by local governments, golf courses, schools and sporting clubs to irrigate green open space is becoming limited. Improvements in water use efficiency and in some cases, alternative sources are required if the same level of amenity is to be maintained in the future.

Households are responsible for 53 per cent of all water use in the Perth and Peel region, using both scheme water supplied to our homes by the Water Corporation and self-supplied through domestic garden bores. Perth households have made significant achievements in reducing water use and will continue to play a major part in the overall effort to ensure every drop of water counts.

### How being waterwise can help

An important aspect of a waterwise Perth is the health of our waterways, wetlands and environment. Waterwise urban form and drainage designs help to filter nutrients and pollutants. Broader State Government initiatives to protect our iconic and local waterways address agriculture, rural drainage and other catchment management issues.

**The Perth and Peel Region is recognised internationally as a place of beauty, with world-class beaches, river settings and green parks at its heart. The same wetlands and waterways we love and appreciate have long been valued by the Noongar people, the traditional custodians of the land. These water bodies have a unique history and meaning that continues today.**

Above: Living Space Cockburn Central  
Photo: Department of Communities

### Water used by sectors in Perth and Peel (average 2014-18)



But it is essential that waterwise urban development and infill approaches driven by this action plan contribute to and complement these wider efforts.

Waterwise design can help improve Perth and Peel water quality and create cooler urban environments. Clever use of water for street trees, parks and green public spaces will help lessen the urban heat island effect and help communities adapt to rising temperatures caused by climate change.

New targets for urban infill encourages better use of existing land. Drainage infrastructure, for example, is spread throughout our urban areas but is generally fenced-off,



Above: The Department of Communities: The Amble Estate, Girrawheen in collaboration with Yolk Property Group and Ventura Home Group.

unappealing land. Designing or retrofitting these areas to be accessible green spaces and living streams can improve local amenity and provide more sites for trees and green corridors for environmental health, recreation and exercise.

In some areas, we will need to find alternative water sources to create and maintain green spaces. More than eighty per cent of land identified for urban development by 2030 is in areas with no available groundwater of suitable quality. In some new areas, high water tables and clayey soils mean the land is inundated in winter but dry in summer. The actions in this plan support new building approaches, adaptations and innovations to meet these conditions.

This action plan seeks to strike the balance between using water to achieve the cool, shady and liveable communities that we expect, with conserving water in the context of an increasing population and a drier, hotter climate. It is a plan that will see Perth transition towards being a leading waterwise city.

**More than eighty per cent of land identified for urban development by 2030 is in areas with no available groundwater of suitable quality.**



To transition Perth to a leading waterwise city, over the next two years we will take action to

**Assist Perth households to save water through practical water saving solutions**

**Increase water savings in new homes**

**Encourage the community to value water by improving water knowledge**

**Create more urban greenspaces**

**Create climate resilient public open space, sporting grounds and recreational venues**

**Encourage new developments, including those in infill areas, to be more waterwise**

**Update government policies to normalise best waterwise practice**

**Undertake detailed water planning in priority areas**

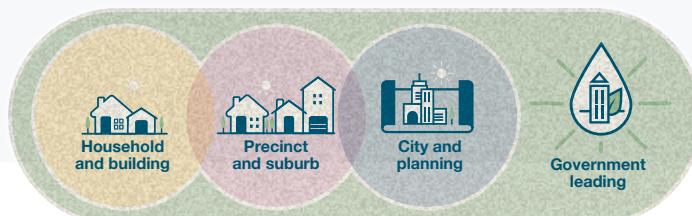
**Improve information to assist waterwise planning and implementation**

**Increase Indigenous engagement and participation in water resource management**

**Improve water efficiency in government owned buildings**

**Show leadership and demonstrate innovation in government led development**

This Waterwise Perth Action Plan sets out actions that will achieve change at different scales from household, through to precinct, suburb and city scale. It also includes actions Government will take as a driver and leader for change.



# Delivering the Waterwise Perth Action Plan

This two-year action plan is the beginning of a 10-year journey. Transitioning to a leading waterwise city means changing the way we manage water in our urban landscape between now and 2030. This change can only be delivered by the joint efforts of State and local government, traditional owners, the community and urban development industry.

## Partnership in delivery

Implementation of the action plan will be overseen by the cross-Government Waterwise Perth Steering Committee, chaired by the Director General of the Department of Water and Environmental Regulation, and supported by Directors General and Chief Executives of respective agencies. Ongoing consultation, design and testing of new actions will be carried out in collaboration with the already established and involved Water Sensitive Transition Network, a group of leaders from across State and local government, industry, research and community organisations working together to support Perth's transition to a waterwise city.

We will also continue our relationships with the Cooperative Research Centre for Water Sensitive Cities and other innovators to help deliver necessary changes in urban water management. We have committed to support the continuation and evolution of this CRC to cover the period to 2030.

## Co-design of policy and actions

We recognise that many people from community, industry and local government organisations are already leading the way in waterwise practice. These groups experience water challenges, and work within the current policy and planning framework every day.

These people must be involved in policy development to ensure that we achieve improved waterwise outcomes, but avoid creating unnecessary red tape or impacts on housing affordability. Therefore a 'co-design' approach will be taken to policy and action development and these parties will be invited to participate in the design, development and testing of new approaches.

Noongar people are the original stewards of this landscape and its water, and must be involved in the next stage of that stewardship. We will seek to increase Noongar engagement and participation in water resource management in creating a waterwise Perth.

## Monitoring success and adapting our action

This plan will be coordinated by the Department of Water and Environmental Regulation, and overseen by the Waterwise Perth Steering Committee of Directors General and Chief Executives.

As successive action plans will be needed to achieve the targets by 2030, an annual report card on progress will be developed and every two years this will include a review of the action plan.

Successful implementation of this action plan will be measured by:

- the delivery of the actions
- progress towards the 2030 targets
- progress on increasing Perth's rating on the internationally recognised Water Sensitive Cities Benchmarking Index.<sup>1</sup>

<sup>1</sup>Benchmarked according to the Water Sensitive Cities Index developed by the Cooperative Research Centre for Water Sensitive Cities



# Households and buildings

Households represent 53 per cent of all water consumption in the Perth and Peel region. Residential areas cover a large part of the city and collectively represent a significant opportunity to influence overall demand for water, and to reshape water use in our developed environment.

The actions in this plan will deliver a waterwise Perth at a household scale to achieve our target of reducing average annual scheme water supplied to 110kL per person. Actions will:

- Increase community understanding so that we all value water and use it wisely
- Support water users to act sustainably through:
  - raising building standards
  - disclosing household water use performance
  - reducing domestic groundwater use
  - improving water efficiencies at Department of Communities properties.

To identify the most effective opportunities to manage household demand, information is needed to establish baseline residential water use data. This data will be collected through the Water Corporation's H<sub>2</sub>OME study and used to design targeted demand management programs, including incentives.

As an investment in future generations, the Waterwise Schools program will deepen understanding of themes such as the water cycle, sustainability, and water in Aboriginal culture. This knowledge will help future generations to understand and value water in their community and environment.

## CASE STUDY

Dr Josh Byrne, environmental scientist and ABC *Gardening Australia* presenter, designed and built his own 10 star (NatHERS 2019) energy-efficient family home as a 'living laboratory' project in the Fremantle suburb of Hilton.

Josh's House (JBA 2013), which uses regular building materials and construction methods, is one of the best examples of a waterwise house in an urban environment. It is comfortable year-round without the need for air-conditioning and produces more energy than it uses. Key waterwise features include:

- Showerheads, taps and toilets are water efficient.
- Rainwater is harvested from the roof and is used to supply the house.
- Greywater (from the showers, bath, sinks and washing machine) is used to irrigate part of the garden.
- A shared bore provides additional water via a highly efficient irrigation system to support beautiful, productive and shady gardens.
- Permeable, rather than sealed surface treatments, allow rainwater to infiltrate into the soil and groundwater.



Photo: Josh Byrne & Associates

# Households and buildings

Action	Lead agency
<b>We will assist Perth households to save water through practical water saving solutions</b>	
<b>1</b> Use the results of the Water Corporation's H <sub>2</sub> OME study to design programs and incentives to assist households to reduce scheme water use	WC
<b>2</b> Reduce water consumption in Department of Communities public housing properties through water audits and education to reduce water consumption, lower living costs and increase water knowledge	DoC
<b>3</b> Develop a voluntary residential point of sale Water Rating Scheme so new home-buyers and renters can identify opportunities for water savings	DWER
<b>4</b> Use the results of garden bore studies to design programs to reduce domestic groundwater use	DWER
<b>We will increase water savings in new homes</b>	
<b>5</b> Increase building industry compliance with the Water Efficiency Labelling and Standards Scheme	DWER
<b>6</b> Explore raising water efficiency standards through the National Construction Code for waterwise built form	DWER
<b>We will encourage the community to value water by improving water knowledge</b>	
<b>7</b> Initiate a long term education and engagement program.	DWER
<b>8</b> Expand the Waterwise Schools Program to double the number of students participating to 50 000 by 2030	WC
<b>9</b> Broaden the content of the Waterwise Schools Program to deepen understanding of the total water cycle and Aboriginal cultural connection to water	WC
<b>10</b> Initiate a behaviour change program to encourage a 10% reduction in domestic groundwater use by 2030	DWER

## Targets (to be achieved by 2030)

- Reduce average annual scheme water supplied to 110kL per person
- Increase community engagement and knowledge about water by 15% (from 6.2 in 2018 to 7.1 out of 10 water knowledge questions answered correctly by 2030) (as measured by the Waterwise Cities Community Tracker).



Photos: DevelopmentWA



## CASE STUDY

# White Gum Valley

### DevelopmentWA

WGV is an infill housing development project by DevelopmentWA . The two-hectare site near Fremantle focuses on the use of sustainable design features on a precinct scale. It showcases industry leading approaches to water management and scheme water optimisation, incorporating water sensitive urban design in stormwater management and waterwise landscaping to reduce irrigation. Residents in the single lot homes taking advantage of a sustainability incentive package can save up to \$1 200 a year on their utility bills. The development has the following waterwise features:

- Rainwater is harvested from roofs into tanks plumbed into toilets and laundry, reducing scheme water use through storage and use of water from an alternative source.
- Water for private and public gardens is sourced from a community bore.
- Dual meters are used to monitor demand and detect leaks in both scheme water and bore water.
- Potable water use across the precinct is 60 per cent of the average for Perth.
- Open space is irrigated with less water than the average for Perth due to hydro-zoning and guidance to residences on being waterwise.
- Waterwise trees, shrubs and plant species optimise the value of any rain that does fall.
- Canopies of trees provide shade in the hottest months.
- An existing fenced drainage sump was converted into an attractive biodiverse open landscape with local native species and is now public open space with full pedestrian access.

DevelopmentWA 's WGV initiative won the UDIA 2017 Sustainable Urban Development Award and is Western Australia's first One Planet Community.



Photos: DevelopmentWA



## Precinct and suburb

Attractive green spaces in our suburbs make them better places to live, and in a hotter drier future, will become even more critical for the wellbeing of the community. Green spaces that include trees, wetlands and waterways will help reduce the urban heat island effect, making our suburbs cooler, more liveable environments.

In Perth, green spaces are irrigated almost exclusively using groundwater, a resource that has been significantly affected by reduced rainfall due to climate change. To reduce our groundwater use, actions in this plan will assist local government and other green space managers to improve water use efficiency and also identify opportunities to use alternative water sources such as stormwater or recycled water.

The State Government will also work with local governments to maintain and improve valued community water infrastructure. For example, through the Drainage for Liveability program, unsightly stormwater drains will be transformed into ‘living streams’, increasing community access to green open



Photo: DWER

spaces and improving water quality, biodiversity and drainage.

In new developments, the design of our houses, precincts and suburbs will all impact on demand for water. Through smart design decisions, we can balance water use with maintaining green spaces. With predicted demand for 420 000 new dwellings in greenfield areas on the urban fringe by 2031, the benefits of good water and land use planning will be substantial. Setting clear expectations for the private sector for liveability and amenity outcomes, as well as providing incentives for innovation, is essential.

The following actions will also support developers, local government and utilities by establishing benchmarks and incentives for industry to design waterwise approaches.

**The previous Waterwise Verge Program was a success. \$108,500 in funding was provided to ten local governments to help establish 436 waterwise verges and provided 19 205 native plants to residents.**



Revegetation of the drain at Russell Street Park

Photo: Water Corporation

# Precinct and suburb

Action	Lead agency
<b>We will create more urban green spaces</b>	
<b>11</b> Transform eight drains or basins and surrounding land into living streams and parkland in partnership with local governments	WC
<b>12</b> Increase green space in urban environments through the Waterwise Greening Scheme	WC
<b>We will create climate resilient public open space, sporting grounds and recreational venues</b>	
<b>13</b> Invest in infrastructure to support local government and the not for profit sector to improve the water efficiency of aquatic facilities, sports grounds and other community infrastructure	DLGSC
<b>14</b> Review groundwater allocation plans for Gnangara, Cockburn, Perth South and Jandakot and Serpentine to manage groundwater levels for wetlands, urban trees and for irrigation of green spaces	DWER
<b>15</b> Implement an urban forest tree canopy program to plant trees in high urban heat risk areas	WC
<b>16</b> Increase participation in the Waterwise Golf Program to reach another 22 golf courses	DWER
<b>17</b> Extend and enhance the Waterwise Councils program to recognise 100% of councils as Gold by 2030	DWER
<b>18</b> Work with local governments to overcome barriers to implementing alternative water source schemes	DWER
<b>19</b> Determine feasibility of alternative water supplies for public open space in areas without groundwater available including the north east corridor	DWER/ WC
<b>20</b> Assist all Perth and Peel aquatic centres to be recognised as Waterwise by 2030	WC
<b>21</b> Assist schools, universities and other institutions to reduce groundwater use through a new Waterwise Grounds Program	DWER
<b>We will encourage new developments, including those in infill areas, to be more waterwise</b>	
<b>22</b> Government to set clear criteria for classifying 'good-practice' waterwise urban development	DWER
<b>23</b> Explore mechanisms to encourage good-practice and innovative waterwise urban development	DWER

## Targets (to be achieved by 2030)

- 100% of Perth and Peel Councils achieve Waterwise Gold status
- 50 or more land and water assets are retrofitted to improve local community access to green spaces
- 100% of irrigated open space has been audited and is adopting waterwise management practices
- 10% less groundwater is used across the region
- Recycled and alternative water supplies will make up 45% of the projected gap between future water demand and supply



## Russell Street Ninja Park

Working collaboratively, the City of Bayswater, Water Corporation, DBCA and DWER have converted a previously disused and unsightly area of land adjacent to a stormwater basin and drain into a place that benefits the community.

This project is the first part of a broader catchment management strategy that is ongoing to improve community amenity, accessibility and the environment.

A wall previously covered in graffiti has been painted by students from John Forrest Senior High School as part of the Water Corporation public art program, Splash of Colour. The mural of native birdlife and waterways reflects the surrounds and helps enhance the space.

The adjacent drainage channel has been converted into an urban stream, which improves the aesthetic of the channel and provides increased drainage capacity and improved water quality outcomes.

A ninja warrior style obstacle course has been installed as part of the public recreation space.





# Mabel Talbot Park

## City of Subiaco

Primary school children and community members helped replace one-third of the turf at Mabel Talbot Park in Jolimont with native plants and mulched areas under trees.

Planting 7 000 native plants of 80 different species increased biodiversity, reduced irrigation (indirectly reducing carbon emissions), and decreased runoff of fertiliser into the adjacent lake.

The City of Subiaco engaged the local community on the project at the popular playground from the outset. Community members, the city's environmental volunteers, Jolimont Primary School children and city administration staff participated in seven volunteer events for the planting. New paths were created to provide access throughout the landscape.

Mabel Talbot Park has a lake that attracts waterbirds, including five migratory species, and long-neck turtles. As well as providing an attractive landscape feature, it also functions as a stormwater compensating basin.

Through projects such as this redeveloped park, the City of Subiaco has taken account of the total water cycle and achieved industry best practice. The City has been recognised as a Platinum Waterwise Council. The local community is engaged and involved in water issues and the city has a strong focus on biodiversity and greening infrastructure.

# Waterwise development

## Department of Communities

The Department of Communities is using waterwise initiatives to improve the social and economic wellbeing of individuals and communities.

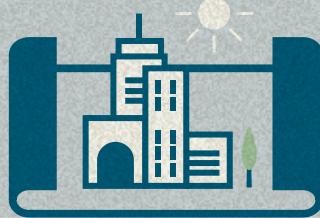
Through the use of waterwise fixtures, fittings and education programs, public housing tenants will benefit from lower living costs and reduce overall water use.

Where possible, affordable housing sold through the Department each year will aim to set new waterwise standards for industry by including waterwise native gardens, stormwater harvesting and reduced irrigation water use.

Small-scale infill and apartment developments linked to METRONET transport will incorporate sustainable measures for water use and environmental features.

Large-scale masterplanned developments such as Brabham and Bentley will demonstrate waterwise innovations in water recycling and stormwater harvesting.





## City and urban

The Noongar people are the traditional custodians of the region's land and we recognise that their knowledge can complement current and future land-use and water planning and natural resource management in Perth and Peel. We will work with Noongar people to understand how they would like to be engaged in delivering waterwise outcomes for Perth and Peel.

Strong linkages between land and water planning will support decision-making for waterwise design. The actions in this plan will simplify water, land use planning and environmental policies, plans and guidance, making them easier to use and create the outcomes needed to help adapt to climate change in Perth and Peel. Waterwise principles will be embedded in the development of the Design WA framework and reviews of the *Better Urban Water Management* guideline and the water resources state planning policies.

The development of district-scale water management plans for areas with recognised water constraints will enhance the link between agencies and other parties involved in land and water planning. These plans will incorporate water allocation, supply planning, drainage and licensing. They will consider issues such as high groundwater tables or lack of groundwater, and identify opportunities for non-potable schemes at the appropriate scale to ensure that new areas are green and liveable.

In parallel with this Waterwise Perth Action Plan the State Government and Water Corporation continue to plan and implement major water supply infrastructure to ensure Perth's scheme supply is secure. Investigations into major water recycling projects and future desalination are well progressed to replace declining surface and groundwater supplies with climate independent sources.



Above right: Wellard, Peet Limited

Right: Road runoff directed into tree pits to protect the local river environment, Elizabeth Quay  
Photo: DWER

# City and urban

Action	Lead agency
<b>We will increase Indigenous engagement and participation in water resource management</b>	
24 Work with Noongar people to scope how they would like to be engaged in delivering waterwise outcomes for Perth and Peel	DWER
25 Engage Noongar people to collect Noongar environmental and cultural knowledge for case study localities in Perth, to inform development of a process for Noongar participation in water management planning and design	DWER
<b>We will update government policies to normalise best waterwise practice</b>	
26 Initiate a review to consolidate, streamline and improve the suite of water policies, guidance and technical advice to drive waterwise outcomes	DWER
27 Consolidate, streamline and improve water-related state planning policy, guidelines and associated processes to strengthen waterwise outcomes at all levels of land use planning	DPLH
28 Commence the alignment of water planning, health, recreation and other policies to ensure consistency and reduce red tape	DWER
<b>We will undertake detailed water planning in priority areas</b>	
29 Deliver integrated water management planning at district, catchment or corridor scale to support land planning and development in priority areas	DWER
<b>We will improve information to assist waterwise planning and implementation</b>	
30 Explore collaboration with industry, local governments and the CRC for Water Sensitive Cities and other research organisations to extend science and modelling to support water planning and policy	DWER
31 Develop a proposal for a data sharing platform to house government and developer water data and spatial information for modelling to increase efficiency	DWER
<b>Targets (to be achieved by 2030)</b> <ul style="list-style-type: none"> <li>Best practice waterwise policies are integrated into all State urban water policies, guidelines and technical advice notes</li> </ul>	



## CASE STUDY Wellard

### Department of Communities

The Village at Wellard is a 320 hectare commercial and residential development designed around the train station. Its streets are lined with trees for shade. The natural bushland, wetlands, parks and rain gardens ensure the area's water balance is maintained and water is used efficiently.

Conservation areas are an important part of the public open spaces and serve as a focal point for residents to learn about water and its importance for the environment, birds and animals.

To maintain the flow of groundwater within the area and prevent flooding, two natural wetlands have been retained and rehabilitated and are now home to a variety of plants and species such as possums, bandicoots and rainbow bee-eaters.

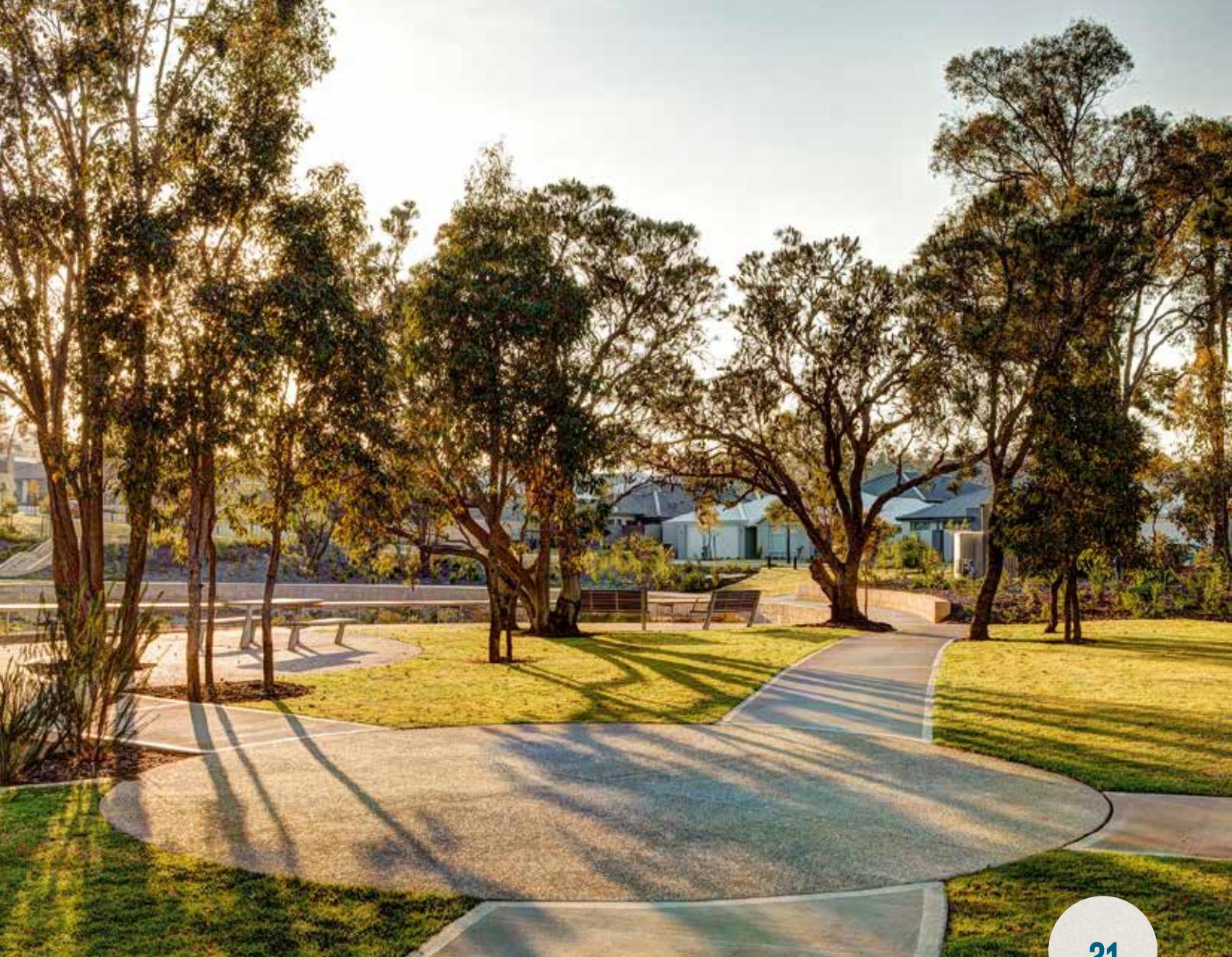
More than 1 000 significant bushland trees, mostly jarrah and tuart, have been retained around the estate.

Waterwise streetscape verge plantings with rain gardens manage and treat the stormwater runoff and enable water to be retained in the environment.

The Village at Wellard is a partnership between the Department of Communities and Peet Limited to create a thriving, liveable and waterwise community.



**28 hectares of  
landscaped parks,  
17 hectares of native  
bushland and 10  
hectares of wetlands**





## Government leading by example

Through DevelopmentWA and the Department of Communities, the State Government is the developer of about 14 per cent of urban development (infill and greenfield). We are committed to demonstrating the benefits of waterwise approaches and will do this by making all government-led developments waterwise – pushing boundaries, innovating and showing what can be achieved. For example:

- Appliances and fixtures in State housing will be upgraded over time by way of the current maintenance program to meet the National Construction Code new homes standard.
- Prototype demonstrations within housing developments will be showcased in partnership with the Cooperative Research Centre for Water Sensitive Cities.
- We will invest in pioneering waterwise developments and initiatives.

Through selected projects, we will test improvements to the water policy and the land use planning framework, encourage waterwise urban design and built form outcomes, and demonstrate to the community what waterwise, liveable and affordable development can look like in the home and beyond.



Photos: LeighHambly.com

# Government leading by example

Action		Lead agency
<b>We will improve water efficiency in Government owned buildings</b>		
<b>32</b>	Upgrade to waterwise products and fixtures in Department of Communities public housing properties when maintenance occurs	DoC
<b>33</b>	Require capital works undertaken by the Department of Finance to comply with the targets within the NABERS Base Building Ratings and Building Council of Australia Green Star building design requirements, as per the Sustainable Non-residential Government Buildings Policy and Guidelines.	DoF
<b>34</b>	Require tenancy fit-outs undertaken by the Department of Finance to comply with NABERS Tenancy Ratings and Building Council of Australia Green Star fit-out design requirements targets within the Government Office Accommodation Policy and Guidelines, which set minimum standards for energy and water efficiency, including appliances	DoF
<b>We will show leadership and demonstrate innovation in Government led development</b>		
<b>35</b>	Showcase innovative waterwise outcomes in key government developments to evaluate, share and inspire adoption in the private sector	DoC and DevelopmentWA
<b>36</b>	Embed waterwise outcomes into the design of METRONET precincts	METRONET Office
<b>37</b>	Include good-practice waterwise outcomes as standard into the design of government led urban development in Perth and Peel	DoC and DevelopmentWA
<b>38</b>	Trial residential point of sale Water Rating Scheme in Department of Communities Affordable Housing Sales Program properties (as per Action 3)	DoC/ DWER

## Targets (to be achieved by 2030)

- 100% of government-led urban development in Perth and Peel to be waterwise



Above: METRONET waterwise concept design Photo: METRONET

## Waterwise METRONET

METRONET's vision of a well-connected Perth with more transport, housing and employment choice will be achieved through the construction of approximately 72 kilometres of new passenger rail; up to 18 new stations; and influencing 5 000 hectares of land around the stations to become great places to live, work and spend time.

With METRONET's success lying in the bringing together of all levels of government and the private sector, the program is well placed to support a Waterwise Perth.

METRONET's sustainability strategy aligns with the key concepts and vision for *Perth and Peel @3.5 million* and the *Waterwise Perth Action Plan*. It Outlines METRONET's sustainability commitment and presents key targets and actions for the METRONET program, including investigating and mitigating potential impacts to native flora and fauna, groundwater, rivers and wetlands; and the community.

The planning for transport infrastructure and station precincts will consider materials, energy, waste and total water cycle management in an integrated way, to deliver sustainable outcomes for the long-term benefit of communities. Considering total water cycle management in the station precinct design will:

- reduce stormwater runoff
- reduce pollution impacts on nearby waterways
- integrate stormwater management features such as flood storage areas and vegetated swales (shallow channels that convey and filter water) in public open space
- increase urban biodiversity
- connect people, water and nature.

METRONET and DWER are working together to explore options and opportunities for waterwise design for the proposed infrastructure and station precincts.



## CASE STUDY

# Kings Square rain gardens



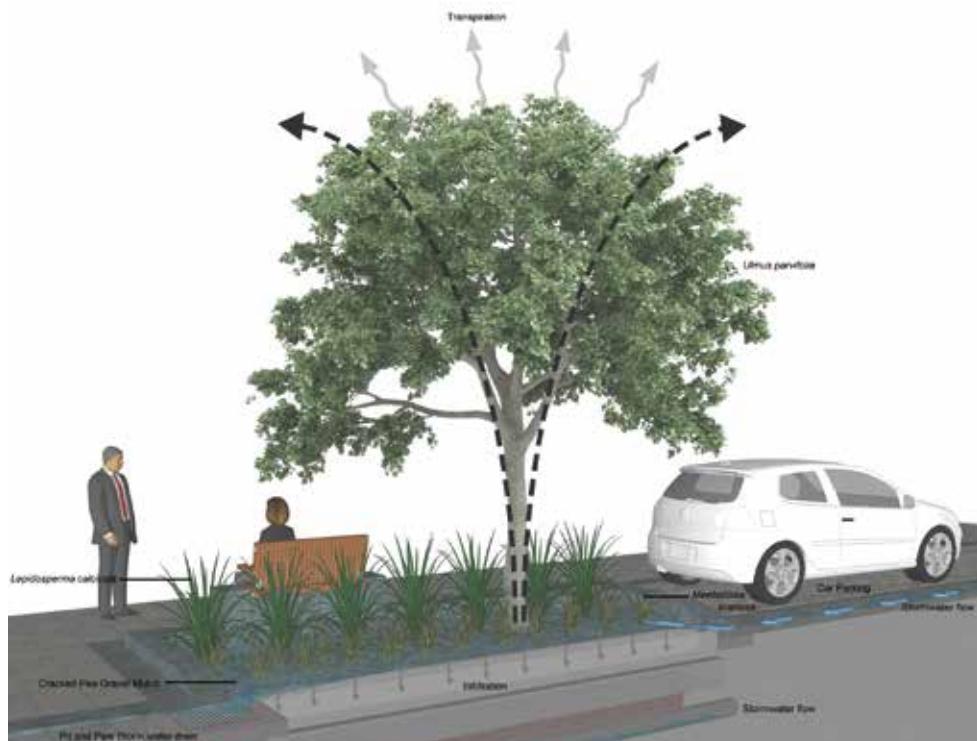
### Metropolitan Redevelopment Authority

Rain gardens are vegetated channels or basins overlaying a porous, sand-based filter medium and planted with grasses and perennial species that promote water infiltration and treatment. The rain gardens in the Kings Square development (CRC for Water Sensitive Cities 2018b) in Perth's CBD take the concept of stormwater landscaping to a new level.

Rather than transport water, the attractive series of rain gardens are designed to collect and hold runoff, allowing pollutants to settle and filter out. This protects the sensitive groundwater systems that flow into the nearby Swan River.

The network of ten rain gardens integrated into the city streets and open spaces improves the amenity and demonstrates that a waterwise approach provides multiple benefits to the community. The design includes:

- Plant species include those from local wetlands.
- Specific trees were selected for their small leaf size and reduced likelihood of blocked drains.
- Sealed surfaces direct stormwater into the gardens around trees and plant beds to promote passive irrigation.
- The rain gardens capture 95 per cent of first flush rains, with overflow captured in traditional 'pit and pipe' stormwater gully drains.



Graphic: Urbaqua  
and AECOM



## CASE STUDY

### Lambertia Creek

The Lambertia Creek Living Stream in Ferndale transformed a drain into a healthy ecosystem that can be enjoyed by the whole community.

The revegetated banks of the stormwater drain achieve environmental benefit, look attractive and are expected to enhance biodiversity. Using the natural filtration of vegetated water channels, the living stream reduces pollutants reaching the nearby Canning River.

Lambertia is a collaborative project between the City of Canning, the Water Corporation and the South East Regional Centre for Urban Landcare (SERCUL). The aims include:

- establishing healthy ecosystems
- creating diverse habitats
- improving water quality
- controlling floods and erosion
- encouraging environmental stewardship and community pride.

In 2018, more than 100 volunteers helped to plant 25 000 seedlings around Lambertia Creek, which is part of the Drainage for Liveability program. This joint approach from DWER and the Water Corporation enhances the value of stormwater drains and basins to create a more liveable, greener city.

**The Drainage for Liveability  
program has turned this  
stormwater drain into a  
living stream.**

Photos: City of Canning

# Acronyms

ABC	Australian Broadcasting Corporation	Australia's national broadcaster, owned by the Australian Government
CRC	Cooperative Research Centre	Key body for Australian scientific research with programs administered by Commonwealth Department of Industry and Science
CRCWSC	Cooperative Research Centre for Water Sensitive Cities	Australian research centre involving many disciplines, world-renowned subject matter experts, and industry thought leaders working to revolutionise urban water management in Australia and overseas, influencing the way cities and towns are designed, built and managed
DBCA	Department of Biodiversity, Conservation and Attractions	Western Australian Government agency
DLGSC	Department of Local Government, Sport and Cultural Industries	Western Australian Government agency
DoC	Department of Communities	Western Australian Government agency
DoF	Department of Finance	Western Australian Government agency
DPLH	Department of Planning, Lands and Heritage	Western Australian Government agency
DWER	Department of Water and Environmental Regulation	Western Australian Government agency
METRONET	Cross-Government agency team bringing together transport and land use planning	METRONET is the State Government's long term plan to connect our suburbs with world class public transport, reduce road congestion and meet Perth's future planning needs.
NatHERS	Nationwide House Energy Rating Scheme	Star-rating system (out of 10) that rates the energy efficiency of a home (based on its design), administered by the Commonwealth Department of Environment and Energy on behalf of the Australian states and territories
NCC	National Construction Code	Standard providing the minimum requirements for safety, health, amenity and sustainability in the design and construction of new building work in existing building throughout Australia
SERCUL	South East Regional Centre for Urban Landcare	Subregional organisation, comprising a committee made up of community members, local and State Government agencies; and staff that work under regional programs and the Landcare Centre (Yule Brook Homestead)
UDIA	Urban Development Institute of Australia	Not-for-profit industry body dedicated to the representation of Australia's development industry with representation in most states, securing the economic success and future of the development industry in Australia
WC	Water Corporation	Principal supplier of water, wastewater and drainage services in WA, owned by the Western Australian Government
WELS	Water Efficiency Labelling and Standards, to meet the requirements of the WELS Act	Star-rating system which rates a range of regulated water-using appliances, fixtures and fittings, administered by Commonwealth Department of Agriculture and Water resources in partnership with industry and state and territory governments
WSTN	Water Sensitive Transition Network	A network of leaders established in 2016 from across Government, industry, research and community organisations working together to support Perth's transition to a waterwise city.

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