



QUESTIONS AND ANSWERS

Rebalancing Perth and Mandurah's Groundwater Systems

As a result of climate change, Western Australians are having to adapt to a drier and warmer climate, particularly in response to the significant decline in rainfall over the past four decades in the south-west of our State.

Transitioning our economy to net zero emissions will help reduce the impact of climate change, but it is critical we continue to invest in sustainable, climate-resilient water sources and make changes to the way we use our precious water resources.

The [Western Australian Climate Policy](#) sets out the McGowan Government's plan for a climate-resilient community and a prosperous low-carbon future. The policy underscores the government's commitment to adapting to climate change and working with all sectors of the economy to achieve net zero greenhouse gas emissions by 2050.

Why do we need to rebalance groundwater in the Perth and Mandurah region?

Climate change is having a significant impact on the water resources of south-west Western Australia. Since the mid-1970s, [annual average rainfall](#) has declined by around 15 per cent and resulted in an average 80 per cent reduction in streamflow runoff into our drinking water dams.

Perth's declining rainfall due to climate change and increasing groundwater use has shifted our groundwater systems out of balance. Since 1980, Perth's groundwater levels across the Gnangara Mound have fallen by up to 10 metres in some areas, representing a 1000GL loss of aquifer storage – the equivalent of 1000 Optus Stadiums full of water.

The lowered watertable is evident through the visible drying of wetlands such as Loch McNess and the loss of the unique Yanchep cave ecosystems. Lowered water levels have also led to increased acidity in lakes Mariginiup, Gnangara, Joondalup and Goollelal.

Over half of the 30 sites used to gauge the health of Gnangara's groundwater-dependent ecosystems are breaching minimum water levels.

Elsewhere along the Swan River and the coast, lower groundwater recharge has caused saline water to move inland, making bores more saline. Action is needed to protect our groundwater systems and save our local wetlands.



Water sourced from Perth's groundwater aquifers make up 70 per cent of all water used across the Perth and Mandurah region. This water is used to supply Perth's [Integrated Water Supply Scheme](#) for household use, for industry and horticulture, for irrigating almost all our recreational green spaces, and domestic garden bores for watering our lawns and gardens.

Groundwater is vital in supporting the health of our natural environment including the wetlands of Yellagonga and Beeliar Regional Parks; the Nowergup, Gnangara, Jandabup, Mariginiup and Forestdale lakes, threatened banksia woodlands and the unique Yanchep cave systems. Groundwater also supports our urban wetlands, bushland and street trees, making our neighbourhoods more liveable and helping to reduce urban temperatures.

Over the past 200 years, most of the native bushland and more than 80 per cent of the original wetlands on the Swan Coastal Plain have been lost through clearing and draining. What remains is now threatened by climate change and declining groundwater levels, making it critically important for us to act now to rebalance the amount of water we take from our aquifers with what is recharged by rainfall.



Proposed changes to garden bore roster for Perth and Mandurah in 2022 questions and answers

What is the proposed change to the garden bore sprinkler roster for Perth and Mandurah?

Currently domestic garden bores are able to be used to water gardens three days a week in spring, summer and autumn.

As a necessary measure to protect our groundwater resources, it is proposed to reduce the domestic garden bore roster to two days per week, aligning with the two-day-a-week scheme water roster in Perth and Mandurah.

The [winter sprinkler switch off](#) will remain in place from 1 June to 31 August each year, and the ban on daytime watering between 9am and 6pm will remain unchanged.

Why are changes to the garden bore sprinkler roster being proposed and what are the benefits?

Declining rainfall due to the impacts of climate change and increasing groundwater use is drying the Gnangara groundwater system and affecting Perth wetlands. We need to act now to protect our wetlands and other precious environments.

Across the Perth and Mandurah area, it is estimated that domestic garden bore users collectively abstract around 90GL per year, the equivalent of 90 Optus Stadiums full of water, or 22 per cent of all water abstracted from our groundwater systems.

[Garden bores are not licensed](#) and there is no limit to the volume of water able to be taken. While use has been managed through sprinkler restrictions including a three-day-a-week roster and winter sprinkler ban, domestic garden bores use significantly more water on their gardens in comparison to scheme water users – about three to four times more.

By reducing the garden bore sprinkler roster to two days per week in Perth and Mandurah, around 30GL of groundwater, the equivalent of 30 Optus Stadiums full of water, can be saved every year. These savings would mean more groundwater is retained in the system and see a rise or stabilisation of the watertable, particularly in urban areas.

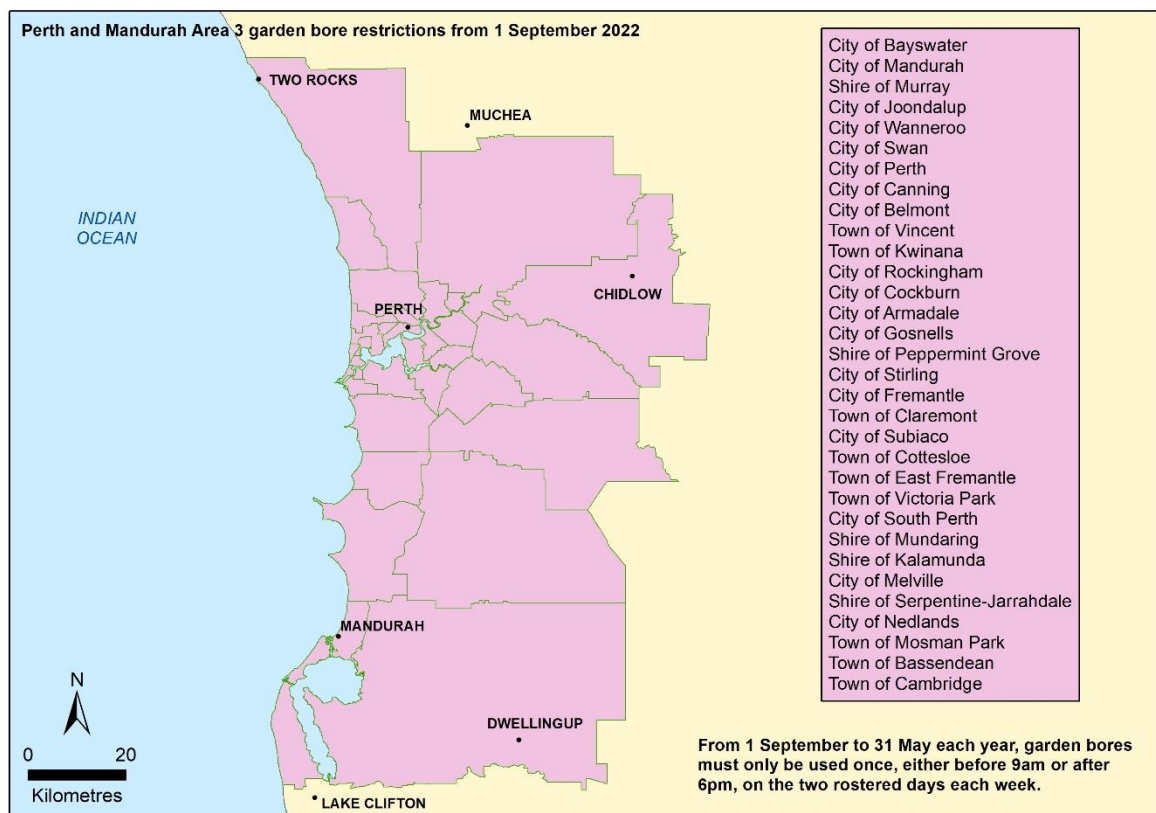
Improved water levels would have significant benefits to urban street trees and urban bushland which contribute to the liveability of our suburbs and reduce urban heat island effect. Street trees are heavily reliant on the watertable being maintained at levels accessible to root systems to prevent tree deaths.



Urban wetlands would also benefit through stabilisation of the watertable with environmental benefits expected in wetlands such as Perry Lakes, Herdsman Lake (Ngurgenboro), Lake Gwelup, Carine Swamp, Star Swamp, North Lake, Bibra Lake and Lake Forrestdale.

What area will the new garden bore sprinkler roster apply to?

Garden bore sprinkler rosters are regulated under the *Water Agencies (Water Use) By-laws 2010*. Regulation changes are proposed for 'Area 3' which includes the Perth and Mandurah area as per the map below.



When would the new garden bore sprinkler roster come into effect?

The new roster would commence 1 September 2022. This would provide domestic garden bore users almost a year to adapt their gardens and watering practices to the new roster.

What else is the State Government doing to rebalance our groundwater resources?

Over the past two decades, state governments have contended with the impacts of climate change on our water resources. With less rainfall filling Perth's dams since the mid-1970s, groundwater has helped make up the gap



in Perth's drinking water supply. This has provided the time needed to develop climate-independent water sources and now, over 45 per cent of water supplied to the [Integrated Water Supply Scheme](#) comes from desalinated seawater. The groundwater replenishment scheme, which recycles treated wastewater for later use, also contributes to our drinking water supply.

But we need to do more. The McGowan Government's 2021-22 State Budget included funding for a new seawater desalination plant, which is expected to be operational by the end of the decade – providing long-term security for Perth's drinking water supplies. In addition, the [Waterwise Perth Action Plan](#), released in October 2019, includes a range of measures to transition Perth to being a waterwise city by 2030, including working with groundwater users to increase water use efficiency.

The State Government has also released the draft Gnangara groundwater allocation plan for public comment. The plan proposes changes to groundwater allocations for Water Corporation and some commercial and local government water licence holders, that will better align the amount of groundwater abstracted with rainfall recharge under climate change. These adjustments would not come into effect until 2028, allowing water users time to transition their operations through increased water use efficiency or securing additional water through water trading. These measures are needed to protect our groundwater-dependent ecosystems and will have particular benefit to wetlands in Yanchep and Neerabup National Parks including Loch McNess, Lake Yonderup and Lake Neerabup; wetlands and Banksia woodland in the Yeal Nature Reserve, Melaleuca Park and Whiteman Park; and urban wetlands such as Perry Lakes.

To have your say on the draft Gnangara groundwater allocation plan, please visit: gnangara.dwer.wa.gov.au

Will two days watering be enough to maintain a domestic garden and is there any assistance available to help adapt to the new roster?

Households who water gardens using scheme water have already been watering to a two- day-a-week sprinkler roster for over 20 years and are able to successfully maintain good quality healthy gardens.

With climate change now having a significant impact on our water resources, we all need to be more waterwise. A range of waterwise tips can be found by visiting the waterwise pages on the Water Corporation's website:

www.watercorporation.com.au/Waterwise

For more information on garden bores, the importance of groundwater and how to be waterwise with your garden and bore, visit the Be Groundwater Wise website: begroundwaterwise.wa.gov.au



Will the proposed changes affect community bores?

There will be no changes to how community garden bores can be used. The use of community bores are regulated under the *Rights in Water and Irrigation Act 1914* and require a water licence. The water licence includes conditions to manage how much water is able to be taken, and when.

How can I have my say on proposed changes to the sprinkler rosters?

We are interested in your views on changes to garden bore sprinkler rosters and invite you to have your say by visiting consult.dwer.wa.gov.au.

The submission period is open for three months until 5pm **28 February 2022**. The State Government will consider all submissions made before any final decision is made on the sprinkler roster alignment.



Gnangara groundwater allocation Plan: draft for public comment questions and answers

What is the Gnangara groundwater system?

- The Gnangara groundwater system lies under Perth between the coast and the hills, extending from the Swan River to Gingin Brook in the north.
- The system contains layers of sand, sediment and clay that form three main aquifers – the shallow Superficial aquifer (known as the Gnangara Mound) and the deep Leederville and Yarragadee aquifers.
- It is Perth's lowest cost and largest source of natural, good quality water and provides almost half of all the water used in the metropolitan area each year.
- It is used to grow fruit and vegetables, water gardens, parks, ovals and public spaces, and is treated to supply Perth's drinking water.
- It helps sustain wetlands and bushland and flora and fauna associated with these ecosystems.
- Find out more at gnangara.dwer.wa.gov.au

Why is a new plan for the Gnangara groundwater system needed?

- This 10 year plan replaces the *Gnangara groundwater areas allocation plan* (DoW 2009a).
- Climate change has seen Perth's long-term average annual rainfall decline by around 15 per cent since 1975.
- Less rainfall means less water recharging our groundwater aquifers.
- We are now taking out more groundwater than can be recharged by rainfall – tipping the system out of balance.
- The more the system is out of balance, the bigger the impact on Perth's wetlands, bushland, parks and wildlife.

What are the benefits of the draft plan?

- The draft plan gives the community clarity and certainty about how we will rebalance the Gnangara groundwater system and address the impact climate change is having on our precious groundwater and the ecosystems that depend on it.
- Taking the actions in the draft plan will allow us to continue using the Gnangara groundwater system as a high quality and low-cost water



resource for Perth well into the future, and avoid impacts that may require us to replace it with more expensive alternative sources.

- Transitioning to a more waterwise economy will support jobs and the economy tied to uses of Gnamptara groundwater resources.
- We will avoid losing good-quality, fresh water resources through saltwater intrusion and acidification.
- Important wetlands and native bushland will be protected and more resilient to climate change by taking the actions in the plan.

What does the draft plan include?

- The draft plan outlines the volume and timing of proposed reductions to groundwater use.
- The draft plan sets groundwater level objectives to protect important groundwater-dependent ecosystems, such as wetlands and bushlands.
- The draft plan includes strategies to meet these groundwater level objectives, including through reductions to groundwater abstraction.
- The draft plan describes how the Department of Water and Environmental Regulation will monitor how effectively the plan is meeting its objectives.

How was the draft plan developed?

- The draft plan was developed using robust scientific research and modelling and following extensive consultation with stakeholders.
- The draft plan takes into account social, economic and environmental considerations raised by stakeholders.
- The Department has held over 100 meetings, workshops and presentations to date to prepare this draft plan.
- Extensive modelling and analysis shows that a 54 GL per year reduction is needed to measurably improve groundwater levels in critical areas and protect important environmental and water resource values.
- The final plan will be informed by this community consultation process.

What modelling was done for the plan and how good is it?

- The Department generated, modelled and assessed a range of reduced abstraction options to test how groundwater levels would respond and how risks would reduce to water supply and groundwater-dependent ecosystems. This modelling included climate change



projections, beneficial changes in recharge from reducing the area of pine plantations, and increasing the area of land developed for housing and other urban purposes.

- Groundwater modelling was completed using the Perth Regional Aquifer Modelling System (PRAMS) version 3.5. PRAMS is a sophisticated numerical groundwater flow model that simulates the responses of Perth aquifers to changes in climate, land use and abstraction.
- The model has been updated and improved since it was developed in the early 2000s, with PRAMS 3.5 including updated geological, abstraction, climate and land use information. This is documented in *Construction and calibration of the Perth Regional Aquifer Model PRAMS 3.5.2* (CyMod Systems Pty Ltd 2014).
- The model meets the calibration targets and performance criteria in the Australian groundwater flow modelling guidelines (Barnett et al. 2012) and has been independently reviewed (HydroAlgorithmics 2014). The review found the model fit to estimate the impact of abstraction on water levels and pressure heads in all aquifers, provide quantitative estimates of the water resources of the Perth region, evaluate how future land-use management would affect groundwater levels of the Perth region, and evaluate the impacts of climate change.

How do modelling and management decisions factor in climate change?

- Modelling for this plan is based on a climate projection to 2030 that is consistent with the trend in declining rainfall we've experienced in Perth over the past two decades. This projects that the average annual rainfall at 2030 will be 663 mm (Perth Airport rainfall station).
- When the 2009 Gnangara plan was released, allocation limits were based on an average annual rainfall of 729 mm (Perth Airport rainfall station 1975–2008). Since then, the average has declined to 699 mm (1990–2020) and Perth has had three of the driest years on record – 483 mm in 2010, 578 mm in 2015 and 525 mm in 2019.
- The climate projection used in the modelling for this plan falls within the range of climate change projections for Australia released in 2015 by the Australian Government, Australian Bureau of Meteorology and Commonwealth Scientific and Industrial Research Organisation. Under these projections, there is a high confidence that the future climate for south-west Western Australia will be warmer and drier.
- The climate change in Australia projections used global climate models as part of the Coupled Model Intercomparison Project Phase 5



(CMIP5), which were also used as inputs to the Intergovernmental Panel on Climate Change (IPCC) fifth assessment report (AR5) released in 2013. A new CMIP6 ensemble of models is being used to assess climate change processes as part of the sixth IPCC assessment report (AR6). The first instalment of AR6 was released on 9 August 2021 and will be completed in 2022.

- Under both CMIP5 and CMIP6 models there is a high confidence that the future climate for south-west Western Australia will be warmer and drier. CMIP6 rainfall projections are similar to CMIP5 but have a narrower range of rainfall change for Southern Australia (Grose et al. 2020).

What reductions does the plan propose?

- A 10 per cent reduction to most licensed water users from 2028. This gives water users the opportunity to prepare and implement water efficiency measures.
- Groundwater abstracted by the Water Corporation for Perth's Integrated Water Supply Scheme will be reduced by 27 per cent in 2028.
- A reduction in domestic bore water use through amending the garden bore sprinkler roster down from three days a week to two days a week during September to May for the Perth and Mandurah area. This aligns with the current roster for scheme users and is a permanent water efficiency measure to be introduced from 1 September 2022.
- Government will work with schools and hospitals to improve water use efficiency, with the aim of reducing their groundwater use by 10 per cent.

When is it proposed for these changes to be introduced?

- Proposed actions in the draft plan will only be confirmed after public feedback and submissions on the draft are considered and a final plan is produced.
- It is proposed that the garden bore sprinkler roster change for the Perth/Mandurah area will occur 1 September 2022 subject to a public consultation process.
- The proposed reduction to Water Corporation's licence entitlements would occur on 1 July 2028.
- Reductions to water licence entitlements will occur from 1 July 2028.



- When we receive a water licence application from a self-supply groundwater user in the Gnamptara plan area (most will be at licence renewal) we will:
 1. assess metering and water use information
 2. recoup unused water and adjust the entitlement where appropriate
 3. (a) before 1 July 2028 add a condition that will reduce the adjusted entitlement volume by 10 per cent at the start of the first water year after 1 July 2028 or
(b) from 1 July 2028 reduce the adjusted entitlement by 10 per cent when the licence is reissued.
- The Department will publish progress reports every two years including updates on water licensing and plan actions.
- The Department will formally review whether this plan's outcomes and objectives are being met in 2030 and determine whether the plan needs replacing or whether it should remain in place.

How will Government help industry and other water users adjust to these reductions?

- Government is investing \$750,000 to targeted programs in North Wanneroo to support the horticulture industry. This includes a \$600,000 water efficiency infrastructure and technology grants program (grants of up to \$30,000 per grower), and \$150,000 to the City of Wanneroo for local planning to support North Wanneroo agriculture.
- Government anticipates that individuals and organisations will make a range of business and water use adjustments to reduce water demand and improve irrigation efficiency or explore other sources, including in some cases scheme supply. Government will provide advice to all water use sectors on water use efficiency.
- Government will advise land developers in Perth's new growth areas, particularly the North East urban growth corridor, on opportunities to access tradeable water entitlements, water sensitive urban design and, where needed, options for additional water supplies.
- Government has launched a new waterwise irrigation training program for Gold status Waterwise Councils in partnership with Water Corporation and Irrigation Australia Limited Western Australia.
- The Department and the Water Corporation will help schools, businesses, local government and the community adjust through targeted Waterwise programs.



- The Department and the Water Corporation will also assist the community to improve water literacy and reduce water use through public education campaigns.
- The State Government is continuing to advocate for Western Australia's agriculture industry and look for opportunities to access Commonwealth Government's funding for on-farm irrigation water efficiency projects.
- The State Government released the *Swan Valley action plan: Protecting the Swan Valley's unique character* in 2019. As part of our response to the action plan, we have realigned groundwater subarea boundaries in the Swan groundwater area to match the Swan Valley statutory planning area and included trading rules to support a priority agriculture zone.
- We have also funded a new hydrogeological investigation across the North East corridor/Swan Valley area that will further our local understanding of salinity issues as well as assist in future consideration of alternative or supplementary water supply options like managed aquifer recharge.
- The Government is providing assistance to householders to make their gardens more waterwise, including incentives to invest in smart irrigation technology and spring sprinkler system check-ups.

What does the draft plan mean for the environment?

- Reducing groundwater abstraction as set out in the draft plan will help save our wetlands, bushlands and cave ecosystems.
- Water level declines caused by abstraction will be stabilised or reversed at many important environmental locations.
- Important wetlands and native bushland will avoid loss of ecological values as a result of declining water levels.
- In some sensitive locations, groundwater levels will be stabilised or will improve, helping to avoid further damage to water quality and environmental health, while at other locations, the rate of decline in groundwater levels will be slowed, allowing ecosystems more time to adapt to less groundwater.
- Reducing groundwater abstraction will help protect freshwater ecosystems from becoming acidic, slow declines in frog populations, and have positive outcomes for endangered Banksia woodlands that are vital habitat for 20 nationally threatened species including Carnaby's cockatoo.



- Maintaining water levels in wetlands will help beautify local areas, providing opportunities for recreation and education, and benefiting the health and wellness of the community. Reducing garden bore use as set out in the plan will reduce the risks of declines in water levels and increased acidity in groundwater in urban areas and provide environmental benefits to wetlands including Perry Lakes, Herdsman Lake (Ngurgenboro) and Carine Swamp.

What does the draft plan mean for public water supply?

For public water supply, the draft plan means:

- a reduction in groundwater take for the Integrated Water Supply Scheme of 30 gigalitres a year in 2028 (a reduction of around 27 per cent).
 - groundwater take from Water Corporation borefields will be shifted away from more sensitive areas and areas where deep and shallow aquifers are connected to each other, in order to reduce impacts on groundwater-dependent ecosystems at the surface.
 - some groundwater is reserved for future public water supply in the North West urban growth corridor
- Regardless of the entitlement reductions in the Gnamptara groundwater system, a new water source is required to meet Perth's future water demand. As part of the 2021-22 State Budget, the McGowan Government has set aside \$1.4 billion for Perth's third desalination plant.
- The scale of the reduction to public water supply abstraction is what it is needed to achieve ecosystem health, resource quality and sustainability objectives. Public water supply abstraction affects almost the whole Gnamptara groundwater system and the reduction will benefit the health of nearly all of the groundwater-dependent ecosystems supported by the system.
- The State Government has already made significant investments in alternative water sources to reduce the volume of water used from the Gnamptara system for public water supply. The Water Corporation has the capacity to supply up to 150 gigalitres a year of drinking water from desalination plants and 28 gigalitres from water recycling once Stage 2 of the Groundwater Replenishment Scheme is complete.



What does the draft plan mean for agriculture?

- Licence holders with agricultural water uses on their licence will need to reduce their groundwater abstraction by 10 per cent (the same percentage as other self-supply licence holders). Reductions to water licence entitlements will occur from 1 July 2028.
- Growers now have certainty to 2028 that their operations won't be affected by changes to their water entitlements, and they also have time to plan for the long-term (post 2028) reductions. This provides water licensees with up to 10 years to adjust to the new allocations.
- Certainty of changes to water availability means business and landowners have greater financial security and can make confident investment decisions with a water asset that is protected into the future from climate change and over-use.

North Wanneroo

- As a response to the North Wanneroo Agriculture and Water Taskforce report, the McGowan Government committed to limit any reduction to groundwater allocations to just 10 per cent. The draft Gngangara groundwater allocation plan meets this commitment.
- The draft plan supports more sustainable use of groundwater for horticulture in North Wanneroo so the area can continue to provide fresh produce and employment opportunities close to Perth.
- The Government also committed the Department of Primary Industries and Regional Development (DPIRD) to implement a water use efficiency program in North Wanneroo. In 2019, DPIRD set up two demonstration sites showing water efficient techniques and best practice irrigation, and commissioned Irrigation Australia to assess the irrigation efficiency of 22 on-farm systems. The results showed that there are opportunities for growers to become more water efficient by modernising their irrigation systems.
- To support growers to do this, in 2021 the McGowan Government established a \$600,000 water efficiency infrastructure and technology grants program. The program will support growers to improve the design of water systems, implement soil and crop sensor technology and soil amendments to increase soil moisture holding capacity.
- The DPIRD is also continuing to investigate future land and water supply options. The water supply option being examined is based on the use of treated wastewater to provide a fit-for-purpose water supply for irrigated agriculture. If feasible this would be developed to support



and potentially grow the North Wanneroo agricultural precinct by providing an additional source of water to supplement groundwater availability. In addition to the water efficiency program the McGowan Government has committed another \$150,000 to support the City of Wanneroo's local planning processes to maintain and protect agriculture in North Wanneroo.

East Wanneroo agriculture

- Agricultural licences in the East Wanneroo urban expansion area will be exempt from reductions because water use in this zone will significantly reduce as a result of land use change from irrigated agriculture to urban.
- All licences outside the urban expansion area will be reduced by 10 per cent.

Swan Valley

- The 10 per cent reduction to agricultural users in the Swan Valley area, from all aquifers, will stabilise fresh groundwater flows to the river and reduce the risk of saline river water entering the groundwater. In doing so, the actions in this plan will help secure a more sustainable groundwater supply for the Swan Valley.
- Growers in the valley are well-placed to adapt to climate change and modest reductions to water use during the next decade. The valley's character and location support opportunities to grow agri-tourism, diversify products, adapt grape varieties, and capitalise on high visitation and the Swan Valley brand.
- The plan includes a number of actions from the *Swan Valley action plan: Protecting the Swan Valley's unique character* including realignment of groundwater subarea boundaries in the Swan groundwater area to the Swan Valley statutory planning area. This will ensure that water supporting the valley's unique agricultural character stays within a new Swan Valley subarea.
- We are also proposing new trading rules to align with the new Swan Valley planning scheme and that ensure areas with quality soil, good access to water and suitable block size are kept as priority agricultural (consistent with the priority agriculture zone in the scheme). A new trading policy could allow licensees to trade into and within this area/zone, but not out of it.
- To support future groundwater management in the Swan Valley we have also funded a new hydrological investigation across the North



East corridor to further our local understanding of salinity issues and support future consideration of alternative/ supplementary water supplies like managed aquifer recharge.

Gingin

- The plan signals potential reductions for groundwater abstraction in the Gingin groundwater area surrounding Gingin Brook; however, we will not reduce licensed abstraction until we have confirmed the approach in a new Gingin water allocation plan. Groundwater abstraction to the north of Gingin Brook impacts streamflows in a similar manner as abstraction to the south and a consistent approach to groundwater use will be needed on both sides of the brook.
- The Department is further assessing groundwater availability in Gingin in the context of other significant factors that influence the health of Gingin Brook and other groundwater-dependent streams which are outside of the Gnamptara plan area. Groundwater abstraction north of Gingin Brook, abstraction of groundwater from other regional aquifers like the Leederville–Parmelia aquifer, and the use of groundwater from shallow aquifers and surface water resources upstream, all have an impact on the values of Gingin Brook.
- A comprehensive and fair approach to managing the values of Gingin brook and Moore River Estuary will be established in a new Gingin water allocation plan, planned for 2025. The new plan will combine and replace both the *Gingin groundwater allocation plan* (DoW 2015b) and *Gingin surface water allocation plan* (DoW 2011a), as well as the Gingin subareas of the Gnamptara groundwater plan.
- The Department is progressing the East Midlands state groundwater investigation program which will help us better understand the interaction between groundwater abstraction and flow in Gingin Brook and other groundwater-dependent streams on the Dandaragan Plateau, east of Brand Highway.

What does the draft plan mean for urban areas, parks and green spaces?

- No reductions are proposed to groundwater used by schools for irrigating school grounds, although we encourage less groundwater use and more efficient irrigation if they can do this without losing recreational spaces or amenity.
- Most of the groundwater used to irrigate public open spaces is licensed to local governments. Of the 16 urban councils and two rural shires covering the plan area, 17 are licensed to abstract a total of about



25 GL, mainly to irrigate parks, road and river reserves, and sporting grounds such as ovals and public golf courses. A 10 per cent reduction to abstraction is proposed for these licences from 2028.

- Although the approach to adaptation will vary across urban local governments, all are starting to adjust to climate change and a future with less available groundwater. Of the 16 urban councils in the Gngangara plan area, all but one are part of the Waterwise Councils Program.
- State Government launched a new waterwise irrigation training program in 2021 to encourage local governments to achieve and retain Gold endorsement under the Program. The irrigation training program will equip local government staff with the skills and knowledge to ensure best practice in efficient water use, through improved irrigation design, installation and maintenance.
- The cost of the program will be fully subsidised for participating local government parks and irrigation staff and will initially run each year for the next three years. To be eligible for access to the training, a local government must be endorsed or working towards achieving Gold status in the Waterwise Council Program.
- In addition to the nine golf courses managed by local governments, there are twelve private golf clubs or golf resorts across the Gngangara plan area. Private golf clubs are collectively licensed to take around 5.3 GL/year, mainly to irrigate the greens and surrounding gardens, and to artificially maintain lake levels. The total reduction will be about 0.5 GL/year.
- Use of best practice design and irrigation efficiency varies between golf courses. We encourage golf courses to join the Waterwise Golf Program, a joint initiative of the Golf Course Superintendents Association of Western Australia and the Department. The program supports golf courses to improve water efficiency and resilience to climate change by focusing on training, design, efficient irrigation, water budgeting, soil management and alternative water supplies to maintain high-amenity golf courses that use less water.
- To keep the benefits of irrigating with groundwater, we need to better design Perth's gardens, grounds and parks, use the right plants in the right place, use soil amendments for our sandy soils, apply waterwise irrigation scheduling and update irrigation technology.
- The Department of Water and Environmental Regulation and Water Corporation will be helping groundwater users to make changes



through Waterwise programs – Waterwise Schools, Waterwise Councils and Waterwise Golf – and the second Waterwise Perth Action Plan.

- A proposal to align domestic garden bore sprinkler roster with the two-day-a-week scheme water roster across the Perth and Mandurah area would reduce groundwater take in urban areas, improving or stabilising the watertable to support street trees, urban wetlands and bushland. The proposal is open for public consultation until 5pm 28 February 2022. Visit consult.dwer.wa.gov.au to have your say.
- Reductions are also not required for hospitals and licences accessing the Yarragadee aquifer (which are mostly used for geothermal heating).

What does the draft plan mean for urban growth areas?

- The Perth and Peel@3.5 million planning frameworks identify urban expansion in the North West urban growth corridor (north along the coast from Quinns to Two Rocks), North East urban growth corridor (north of Midland to Bullsbrook) and East Wanneroo urban expansion area.
- Under actions of the Waterwise Perth Action Plan we have identified that in most cases, with the implementation of waterwise practices, existing groundwater supplies (including trades and transfers) will be adequate to meet green space irrigation demand.
- In some cases, alternative water sources may be needed, but only after the options above have been fully explored. Where local groundwater cannot meet demand in full, we will continue to work with local government and state planning agencies to find other ways to secure water for public open space purposes, depending on the local situation.
- Developers looking for water to develop new public open space areas will be:
 - encouraged to implement water sensitive design, and better water management and water efficiency;
 - supported to seek water through purchasing water transfers as land use changes or to negotiate with local governments to redistribute existing water entitlements;
 - supported, where additional water is necessary, to investigate alternative supply solutions, consider use of scheme water or develop alternative water sources, including in the North East urban growth corridor;



- exempt from reductions in the North West urban growth corridor (Quinns, Eglinton and Yanchep subareas) as water has already been set aside and limits adjusted down to account for climate change through the *North West corridor supply strategy* (DoW 2014);
 - exempted from reductions in the East Wanneroo area identified as urban expansion in the State Government's *North-West sub-regional planning framework* (DPLH 2018), because groundwater levels are expected to rise with urbanisation (increased recharge and less groundwater use than the existing agriculture); and
 - encouraged to use this plan as a trigger to recognise our water challenge and focus on finding solutions through both planning for shared spaces, and look at alternative supply options.
- There are other options. For example, the City of Kalamunda are diverting water from a local drain in winter, storing it underground, and then pumping it out in summer to irrigate recreation areas. New urban developments such as Rosehill Waters, have used careful design to create better amenity and save water. There is scope to do more of this, which is why the Department of Water and Environmental Regulation is working with other interested agencies to deliver more waterwise actions for Perth.

Will there be any water licensees exempt from reductions?

- Schools and hospitals will be exempt from mandatory reductions, and the Waterwise schools program will focus on water use efficiency for school grounds.
- Exemptions will also apply for dust suppression; self-supply from the Yarragadee aquifer (mainly used for geothermal heating); future public open space irrigation in the North West urban corridor (which has already been adjusted for climate change) and the urban expansion area of East Wanneroo (where water levels will rise as a result of planned land use changes); and water from small, fractured rock aquifers.