



Government of **Western Australia**  
Department of **Water and Environmental Regulation**

# Murray groundwater area

allocation statement

December 2022



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The Department of Water and Environmental Regulation acknowledges the Bindjareb Noongar people as the Traditional Owners and custodians of the lands and waters covered by the Murray groundwater area and we pay our respects to their Elders past, present and emerging.



## Kep Katitjin – Gabi Kaadadjan Waterwise Perth Action Plan 2

[The Kep Katitjin – Gabi Kaadadjan Waterwise Perth Action Plan 2](#) sets the direction for our transition to a waterwise region. Our ambition is for the Boorloo (Perth) and Bindjareb (Peel) to be climate resilient, liveable and sustainable places where people want to live, work and spend their time. This allocation statement supports meeting a target in the action plan of using 10 per cent less groundwater across the region to manage groundwater levels for wetlands, urban trees and irrigation of green spaces.



## The Murray groundwater area

The Murray groundwater area is located approximately 50 km south of Perth and covers 1,050 km<sup>2</sup>. The Department of Water and Environmental Regulation's 2012 *Murray groundwater allocation plan* guides water licensing and set allocation limits in all aquifers of the Murray groundwater area (Figure 1). This statement sets new groundwater allocation limits.

Groundwater use supports local irrigated agriculture and horticulture; public open space and recreation in Mandurah, Ravenswood, Pinjarra and Waroona; and garden bores across urban areas and where scheme water is not connected.

Groundwater provides baseflow for the Murray and Serpentine rivers, and supports wetlands and high-value vegetation communities including Banksia woodlands. These places are culturally and socially significant areas.

## Review of allocation limits

This allocation statement describes our review of allocation limits in the Murray groundwater area. It uses new information gathered since the 2012 allocation plan was published, including technical studies completed as part of the [Peel Integrated Water Initiative](#). These studies recommended the 2012 allocation limits be reduced because of climate change and reduced recharge to the aquifers in the area. We have brought together all the new technical information and relevant groundwater level monitoring data and updated recharge estimates to inform the revised allocation limits.

We used the environmental and water management outcomes of the 2012 allocation plan to guide this allocation limit review:

- a. maximise the volume of fit-for-purpose groundwater to support water use development
- b. protect in situ values and groundwater-dependent ecosystems
- c. integrate land and water planning in the Murray groundwater area.

Consistent with these outcomes, the revised allocation limits will enable existing water use to continue over the next 10 years and reduce future risks to groundwater-dependent ecosystems from abstraction impacts.

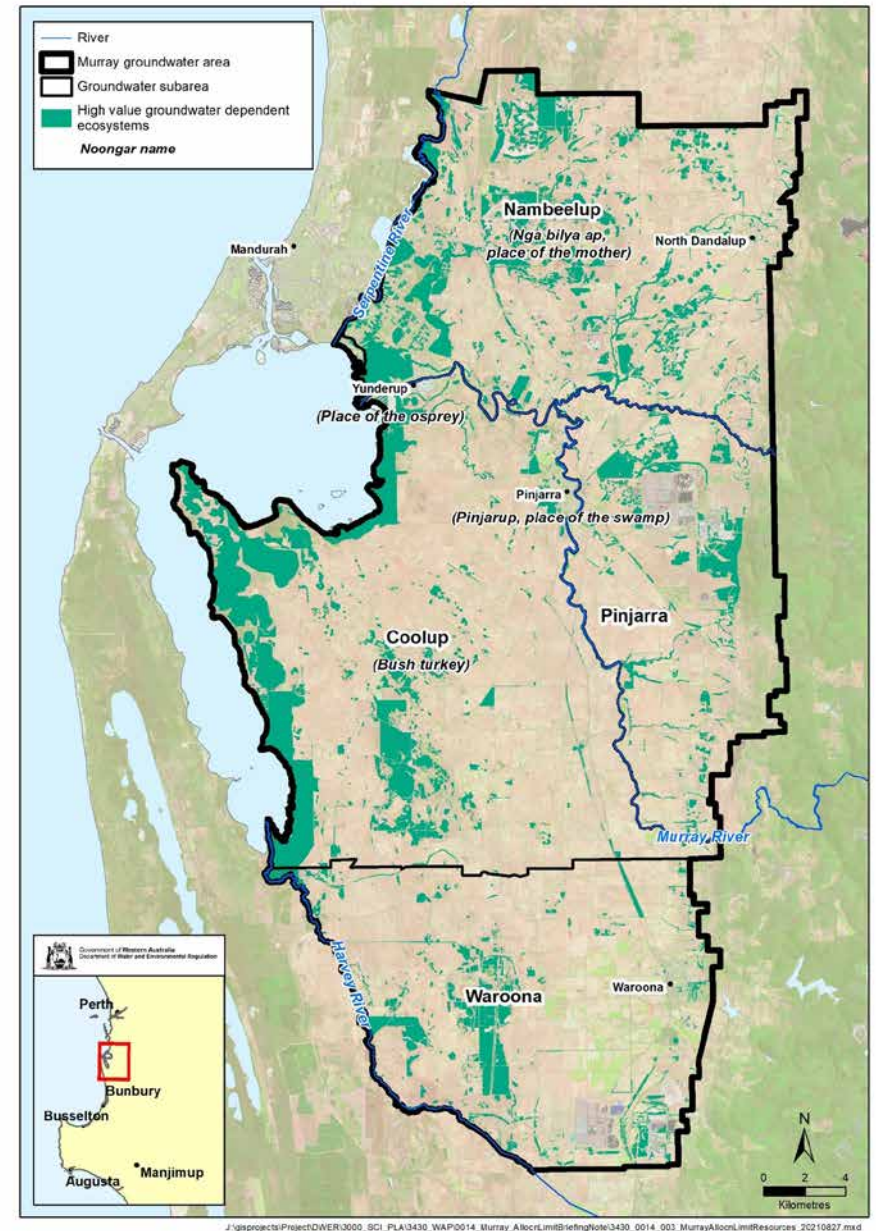


Figure 1: Murray groundwater area, subareas and groundwater-dependent ecosystems

The review focused on all Superficial aquifer resources in the Murray groundwater area as well as the deeper Leederville and Cattamarra Coal Measures resources in the Nambeelup subarea (Figure 1). We will review the Leederville and Cattamarra resources of the Coolup, Pinjarra and Waroona subareas after the Murray-Peel Groundwater Investigation is completed in late 2024.

Reviewing allocation limits in the Murray groundwater area is a step towards achieving the target of 10 per cent less groundwater use across the Perth-Peel region by 2030 – as set in the [Kep Katitjin – Gabi Kaadajan Waterwise Perth Action Plan 2](#) (Government of Western Australia 2022).

## Acknowledging cultural values of water

*“From the creation time, to the present time, to the future, the Bindjareb Noongar people’s water story is a very amazing and important story. The interconnectedness of spirit, land and people brings together our cosmology, our sense of place, our homeland”*

– George Walley

Bindjareb Noongar people have been the custodians of the land and waterways of the Murray groundwater area for more than 50,000 years. Bindjareb Noongar people have a life commitment and cultural responsibility to respect and preserve water and the water cycle (gabi).

The Bindjareb Noongar people value all water. Water represents life and their spiritual connection to the landscape.

For Bindjareb Noongar people, all waterways, wetlands, swamps, rivers, the estuary and the ocean are special places and sites of significance because of their spiritual beliefs, connection and continued use.

The Bindjareb Noongar people believe the Woggaal, the rainbow serpent, created the waterways (gabi), the estuary (Djibla), rivers (bilyas), swamps (manang wari) and all places with water.

Bindjareb Noongar people are immersed in traditional beliefs and managing the land (boodja) and waterways (gabi). In this way, Bindjareb Noongar people are looked after spiritually and with food and resources. Bindjareb Noongar people’s continued hunting and gathering of bush tucker, and taking of aquatic foods such as marron, preserves Bindjareb culture. It keeps spirit strong, improves health and wellbeing, and benefits families economically.

### Bindjareb creation story by Uncle Joe Walley (deceased)

The Peel-Harvey estuary (Djilba), and all the rivers (bilyas) and lakes (yalgoraps) that are connected to it, were formed in the Dreamtime, when there was a drought on the land (boodja) and the freshwater sources were drying up.

The Noongar creator being, the Woggaal, is associated with the creation of freshwater places in the Dreamtime. The Djilba was created by the female Woggaal, known as Maadjit, when she went inland from the sea to give birth to her children.

Other parts of the Djilba’s surrounding rivers, streams, lakes, waterholes, wetlands and springs were formed by Maadjit’s children or koolaangka as they left the estuary and travelled throughout the country, leaving their own marks and trails.

Finally, the remainder of the waterways were formed by Maadjit as she searched for what became of her children.

## Key outcomes of the allocation limit review

This allocation limit review showed that taking groundwater up to the limits set in the 2012 *Murray groundwater allocation plan* is no longer sustainable as the climate continues to become drier and hotter.

We have reduced the allocation limits. This will enable supply to existing groundwater users to continue over the next 10 years and reduce the risks to groundwater-dependent ecosystems and cultural values. The new allocation limits will not affect current licensees; however, they will limit future groundwater availability.

The revised limits mean the Superficial aquifer in the Pinjarra subarea and groundwater resources in the Nambeelup subarea are fully allocated.

Groundwater remains locally available in the Superficial aquifer in the Coolup and Waroona subareas (see Table 1 on P11). Accessing groundwater in some areas of the Peel region is difficult, due to water quality (salinity) and clay geology, which limits large volumes of abstraction.

## Considerations in reviewing the allocation limits

As part of the allocation limit review we considered:

- new information that has improved our understanding of Murray groundwater resources
- past and projected reductions in rainfall (booroong) due to climate change
- groundwater level trends
- the impacts of declining groundwater levels on groundwater-dependent ecosystems and on the environmental, cultural and social values they support
- updated groundwater recharge estimates
- future demand.

## Improved understanding of Murray groundwater resources

The investigations completed as part of the Peel Integrated Water Initiative (PIWI) have improved our understanding of the Nambeelup subarea's hydrogeology, groundwater-dependent ecosystems and long-term water supply and demand.

Under the PIWI, high-quality seismic imaging was used to map the subarea's key hydrogeological boundaries and a significant fault system measuring 500 m wide and reaching depths of at least 100 m below ground level.

The north-south oriented fault system broadly corresponds with the previously identified Serpentine Fault; however, it shows vertical displacement across the Leederville Formations and older sediments (Barron et al. 2020). This is important for understanding groundwater throughflow, recharge and the impacts of abstraction.

The [Peel Integrated Water Initiative](#) (PIWI) (Transform Peel 2021), an element of the [Transform Peel](#) project, covered the Nambeelup subarea in the Murray groundwater area, as well as several subareas to the north in the Serpentine groundwater area.

The PIWI's aim was to deliver detailed knowledge of water resources to enable more informed decision-making by government, and to guide industry and the community on sustainable and innovative water supply opportunities in the study area.

Environmental tracer and hydro-geochemistry analysis undertaken as part of PIWI (Barron et al. 2020) revealed new information on the aquifer system, including the following:

- There is a high degree of connectivity between all aquifers to the east of the Serpentine Fault. The groundwater flows are predominantly vertical, connecting the Superficial and deeper aquifers, and allowing recharge into the deeper aquifers. This connectivity means abstraction from the deeper aquifers has the potential to affect water levels in the Superficial aquifer.
- There is more confinement between the Superficial and the deeper aquifers to the west of the Serpentine Fault, and groundwater flows are predominantly horizontal. There is little recharge through to the deeper aquifers in this area.
- A significant part of the recharge to the Superficial aquifer flows into the extensive drainage system across the area (which enables agriculture and other land uses) rather than the deeper aquifers.

The Murray–Peel Groundwater Investigation, part of the department’s State Groundwater Investigation Program, will support future allocation limit reviews of the deeper Leederville and Cattamarra resources in the Coolup, Pinjarra and Waroona subareas.

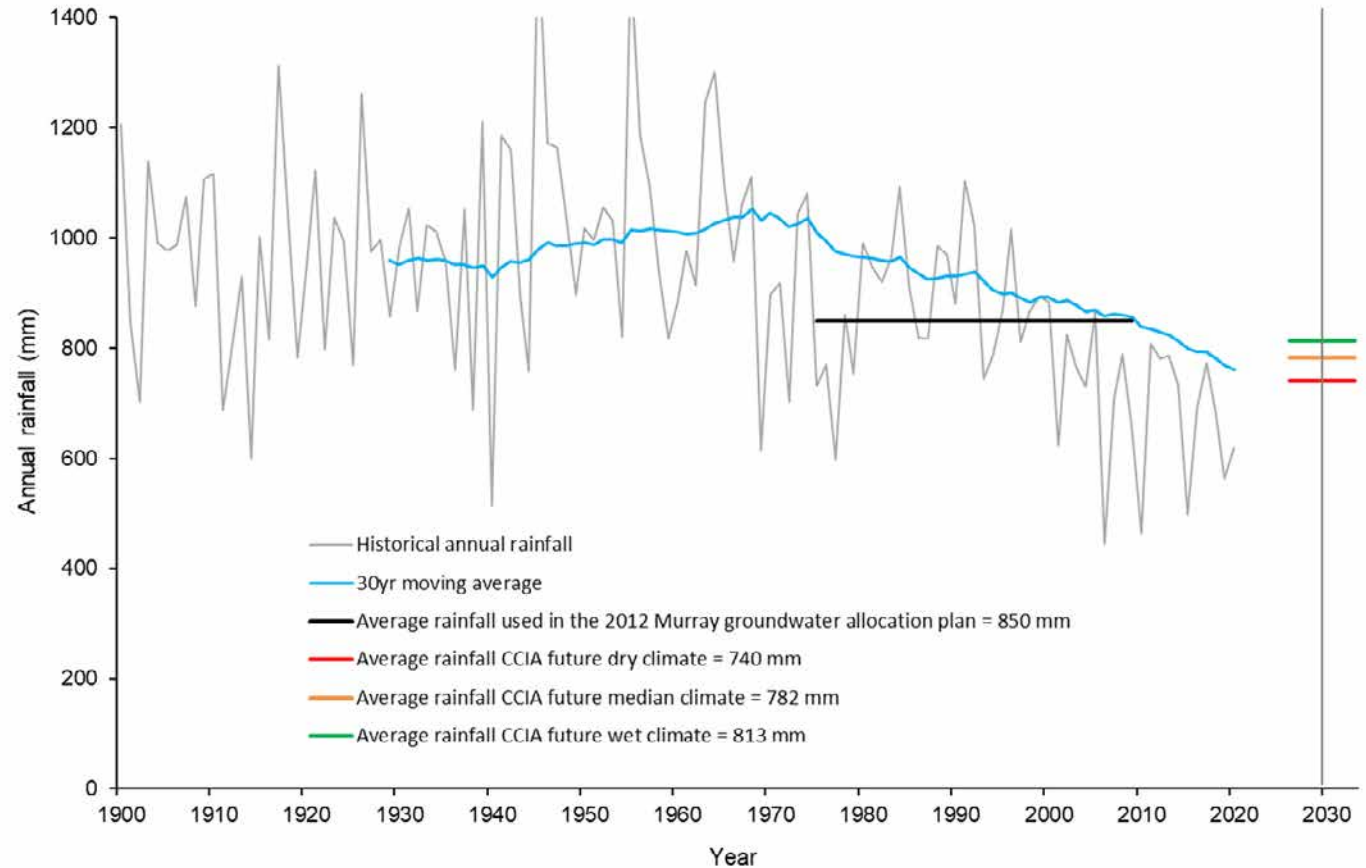


Figure 2: Historical and projected rainfall in the Murray groundwater area

## Reduced rainfall due to climate change

Climate change has caused a significant reduction in rainfall (booroong) in the Murray groundwater area. Average annual rainfall has declined by about 23 per cent since 1975 – from 1,036 mm/year (1945–1974) to 800 mm/year (1975–2020). As a result, rainfall recharge to the groundwater system is now much less than it was.

The limits in the 2012 allocation plan were based on an average rainfall of 850 mm/year (1975–2009).

This allocation limit review considered 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 – see [www.climatechangeinaustralia.gov.au](http://www.climatechangeinaustralia.gov.au). Under the PIWI’s future dry climate projection the average annual rainfall in the Murray groundwater area at 2030 is 740 mm/year.

## Groundwater level trends

The department conducts groundwater level monitoring across the Murray groundwater area. We reviewed and made changes to the monitoring network in 2019. The *Murray groundwater area – monitoring review* (Macaulay 2019) considered existing groundwater information to recommend a fit-for-purpose groundwater monitoring network. The review ensured adequate coverage of the Superficial aquifer and significantly improved monitoring coverage of the deeper aquifers.

The groundwater monitoring data collected shows declines in areas of the Superficial, Leederville and Cattamarra resources caused by a combination of abstraction and reduced rainfall as a result of climate change. The Serpentine Fault and clayey sediment layers contribute to the distribution of the declines.

A combination of reduced rainfall and localised abstraction has caused declines in the Superficial aquifer in some parts of the Nambeelup subarea of approximately 0.15 m/year from 2013 to 2021 (Figure 3).

In the Nambeelup subarea, to the east of the Serpentine Fault, the Superficial aquifer is highly connected with the deeper aquifers, whereas confining layers reduce aquifer connectivity on the western side. In the highly connected system east of the fault, the Superficial aquifer levels are drawn down by abstraction from the deeper Leederville and Cattamarra resources (see figures 3, 4 and 5).

The Pinjarra subarea is adjacent to the Darling Range (Kaada Moornda) and east of the fault where the Superficial and deep aquifers are highly connected. While relatively limited abstraction occurs from the Superficial, declines in this aquifer are influenced by abstraction from the underlying Cattamarra resources propagated through clayey sediments (see figures 3 and 5).

Reduced rainfall is likely to be the primary driver of declines in groundwater levels in the Superficial aquifer in the Coolup and Waroona subareas given the limited abstraction in this area.

Abstraction has caused the pressure head declines observed in the Leederville aquifer. Figure 4 shows the declines associated with the cumulative impacts of licensed abstraction, which are largest near the Pinjarra townsite. The connectivity of the Leederville and Cattamarra resources on the eastern side of the Serpentine Fault in the Nambeelup subarea, and abstraction from the Cattamarra resource, are factors likely to have contributed to declines in Leederville aquifer pressure heads in this area (see figures 4 and 5).

Localised abstraction has caused a declining trend in the pressure head of the Cattamarra resource in the Pinjarra subarea (see Figure 5). We are working with Alcoa of Australia Limited to reduce the impacts of their abstraction, which is contributing to declining trends not only in the Pinjarra but also the Nambeelup subarea on the eastern side of the Serpentine Fault. This includes implementing a staged reduction in their licensed entitlements and supporting the investigation of additional alternative sources.

To the west of the fault, declines are more likely caused by abstraction outside the Murray groundwater area in aquifers connected to the Cattamarra resource.

### BOOROONG YOOWAAL-KOORL (Rain Come Here)

This is the story about encouraging the rain to come out to Boodja (land/environment), to Mandjoogoordap Boodja or to Mundap or Waraangu, all around the Bindjareb Boodja. To see that rain coming in the mariwaribiny (storm clouds) and then to call out, as a ritual or a little ceremony to do. Saying that it is:

Booroong, booroong yoowaal-koorl

*Rain, rain come here*

Mari warabiny yoowaal-koorl

*Storm clouds come here*

Booroong, booroong daat-koorl

*Rain, rain come here*

Nidja ngany Boodja, Bindjareb Boodja

*Here, my country, Bindjareb country*

Booroong Booroong daat-koorl daat-koorl daat-koorl

*Rain, rain come here, come here, come here*

Nidja ngany Boodja Bindjareb Boodja

*Here, my country, Bindjareb country*

Yey yaanga yaanga

*Today, thank you, thank you*

Daat nyininny daat koorliny

*Down sitting, down going*

Moorditj moorditj booroonginy booroonginy

*Great, great rain.*

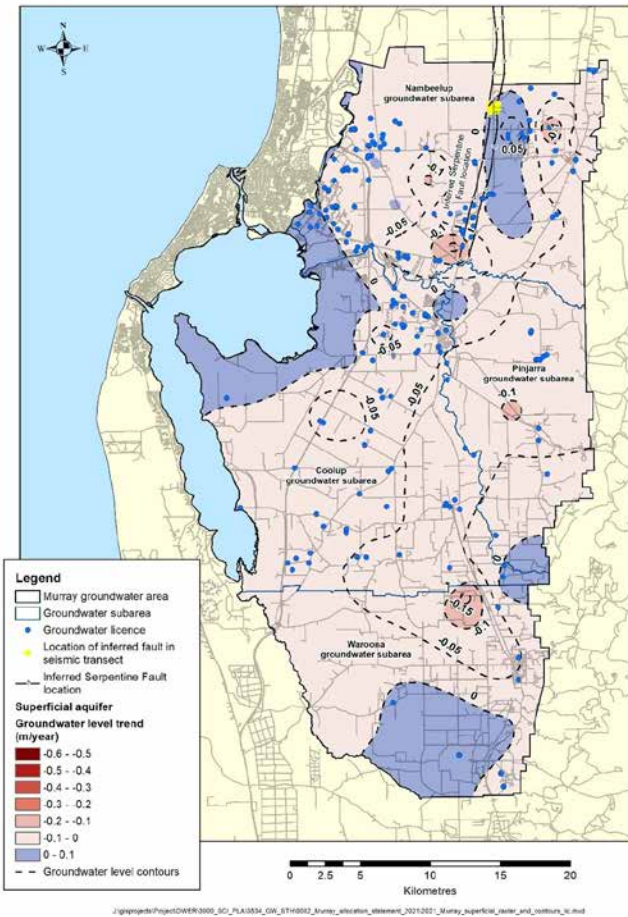


Figure 3: Superficial aquifer groundwater level trends between 2013 and 2021

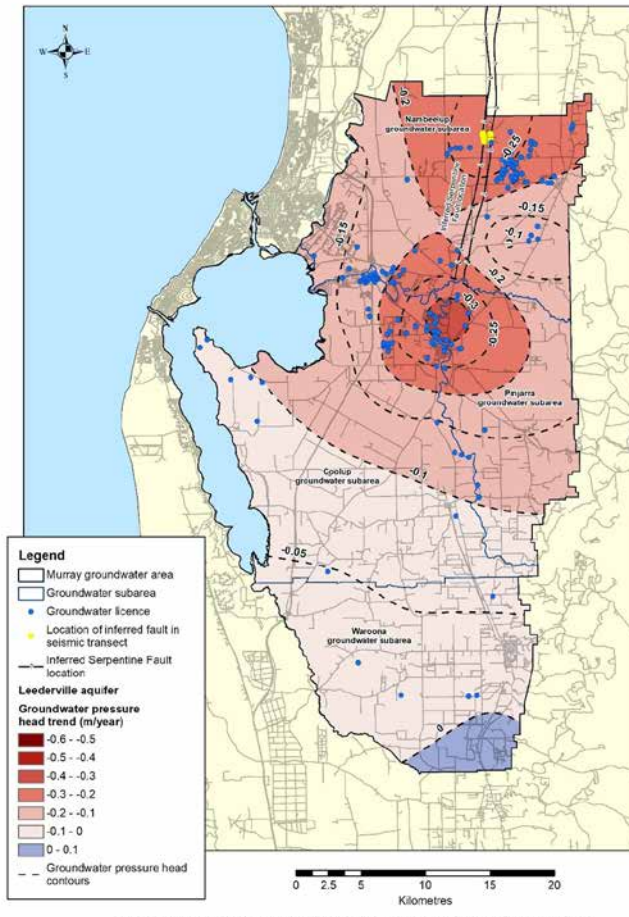


Figure 4: Leederville aquifer trends between 2013 and 2021

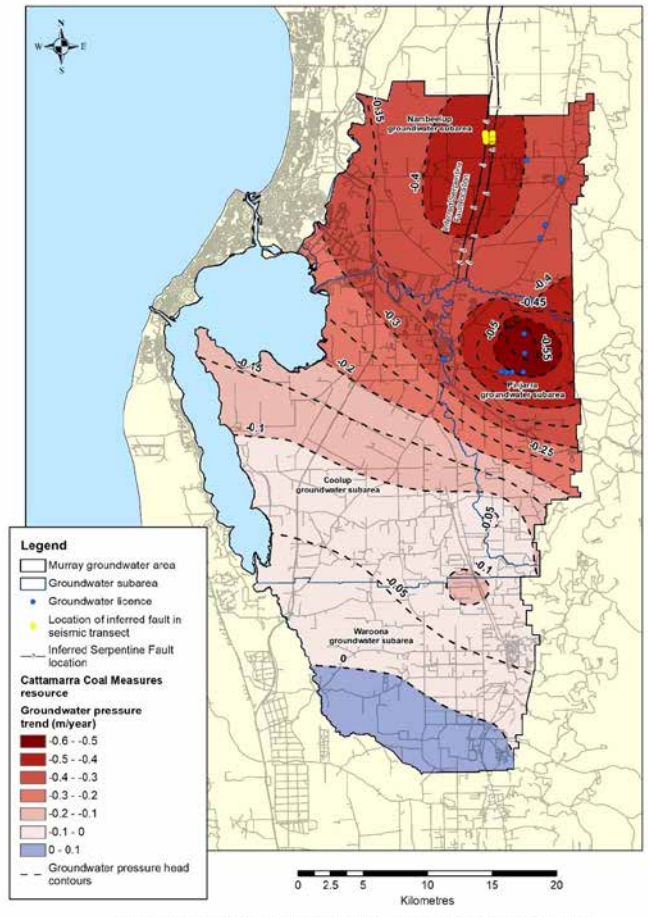


Figure 5: Cattamarra Coal Measures trends between 2013 and 2021



## Impacts of declining groundwater levels

Groundwater in the Murray groundwater area sustains valuable waterways, wetlands, and areas of bushland and Banksia woodlands that overlie shallow groundwater. These groundwater-dependent ecosystems are important to the communities in the Peel region and the continuing culture of the Bindjareb Noongar people. Many have conservation significance and are recognised and protected under state and federal legislation. These environments are at risk of impacts from further groundwater level declines.

The environmental outcome stated in the *Murray groundwater allocation plan* (DoW 2012) for *protecting in situ values and groundwater-dependent ecosystems* was a key consideration during this review of allocation limits. Continued access to groundwater is crucial to the ongoing health of groundwater-dependent ecosystems and to protecting the environmental, cultural and social values they support.

The impacts of groundwater declines from climate change and abstraction on groundwater-dependent ecosystems are a shared concern. The health of waterways impacts on the spiritual, physical, emotional, social and personal wellbeing of the Peel region's communities, and the Bindjareb Noongar people who say: *"If we look after the land and waterways, the land and waterways will look after us."*

Declining rainfall is naturally reducing groundwater levels. Limiting additional abstraction will reduce the risk that abstraction will exacerbate the declines in groundwater levels and allow groundwater-dependent ecosystems more time to adapt, making them more resilient to climate change.

The water management outcome stated in the *Murray groundwater allocation plan* (DoW 2012) for *maximising the volume of fit-for-purpose groundwater to support water use development* was another important consideration for this review. Putting the review's revised allocation limits in place will enable existing groundwater use to continue for the next 10 years.

Allowing more abstraction in subareas where groundwater levels are declining would threaten the resource's capacity to supply the required quantity and quality of groundwater into the future.



Waterway health is a shared concern. It is affected by climate, historical clearing and the need to balance continued groundwater access with environmental values

## Recharge estimates

Recharge is the volume of rainfall that infiltrates into the ground and becomes groundwater. The 2012 allocation limits were based on recharge estimates using soil types, geology and the average rainfall between 1975 and 2009 (850 mm/year) (DoW 2012a). Under the 2012 limits, 25 per cent of recharge was set aside to remain in the Superficial and Leederville resources to protect aquifer integrity, in situ values and groundwater-dependent ecosystems. The allocation limits were based on the remaining 75 per cent of recharge.

The 2021 method to estimate recharge was similar to the 2012 method but used updated information. This included using the PIWI's future dry climate projection (under which the average annual rainfall at 2030 is 740 mm/year) and increasing the proportion of recharge to remain in the ground to protect groundwater-dependent ecosystems and the values they support.

Our review found that up to 60 per cent of recharge needs to remain in the ground across the Murray groundwater area to reduce the risks to groundwater-dependent values from further groundwater level declines.

## Review decisions and water availability

As part of our risk-based approach to setting allocation limits, we assessed the new hydrogeological information, projected future rainfall, groundwater level trends and the updated recharge estimates, together with current and future demand for groundwater.

We designed the process for reviewing the allocation limits to achieve the environmental and water management outcomes of the 2012 *Murray groundwater allocation plan*. Our priorities were to enable groundwater supply for existing licensees to continue over the next 10 years and to avoid any further impacts of abstraction on groundwater-dependent ecosystems and the values they support.

Our review found it is no longer sustainable to take groundwater up to the 2012 allocation limits, given groundwater levels are declining and climate change continues to reduce rainfall and groundwater recharge. Table 1 shows the revised 2021 allocation limits for the plan area – most of which have been reduced.

To align water planning with land planning for critical infrastructure, we have set aside groundwater in the Lower Leederville aquifer in the Nambelup subarea for new public open space. This means groundwater is reserved for Ravenswood's regional scale playing fields planned in the *Perth and Peel @ 3.5 million land use planning and infrastructure frameworks* (DPLH & WAPC 2018). To achieve the water management outcome of *integrating land and water planning in the Murray groundwater area*, we must closely manage the risks to the resource. We will gradually recoup unused water entitlements for this resource to minimise future impacts and ensure its long-term viability.

In Superficial resources of the Nambelup and Pinjarra subareas, the volume of licensed entitlements is more than the recharge, after leaving water in the ground to support important environmental and associated cultural values. We will gradually recoup unused water entitlements to minimise future impacts and ensure continued and efficient use of these resources.

We have not updated the allocation limits for the Leederville and Cattamarra resources in the Coolup, Pinjarra and Waroona subareas. We will review the allocation limits for these resources when we have the results of the Murray–Peel Groundwater Investigation, which is part of the State Groundwater Investigation Program.

While groundwater may be regionally available across most subareas, it may not be accessible because of the local hydrogeology, particularly where the aquifers have insufficient yielding capacity or unsuitable water quality.

The revised limits make the Superficial aquifer in the Pinjarra subarea and all groundwater resources in the Nambelup subarea fully allocated. Groundwater currently remains available in the Superficial aquifer in the Coolup and Waroona subareas, as well as in some of the deeper resources which were not reviewed in 2021.

Table 1: 2021 allocation limit updates for the Murray groundwater area (kL/year)

Sub-area	Aquifer <sup>1</sup>	2012 allocation limit	2021 allocation limit	Recharge estimate after leaving water in the ground to meet cultural and environmental values	Allocation limit components				Is water available for licensing? (as at September 2022) <sup>3</sup>
					Licensable		Unlicensed		
					Public open space	General licensing	Public water supply <sup>2</sup>	Garden, stock and domestic bores	
Coolup	Superficial	17,000,000	9,900,000	9,900,000		7,930,000		1,970,000	Yes
	Upper Leederville.	4,500,000	Not reviewed	Not updated		4,500,000			Yes
	Lower Leederville.	1,158,400	Not reviewed	Not updated		1,158,400			No
	Cattamarra.	100,000	Not reviewed	Not updated		100,000			Constrained <sup>4</sup>
Nambeelup	Superficial	13,500,000	6,170,000	6,020,000		4,570,000		1,600,000	No
	Upper Leederville.	3,000,000	1,900,000	Not updated		1,900,000			No
	Lower Leederville.	3,000,000	3,400,000	Not updated	225,000	2,175,000	1,000,000		No
	Cattamarra.	600,000	600,000	Not updated		600,000			No
Pinjarra	Superficial	1,700,000	1,000,000	600,000		510,000		490,000	No
	Lower Leederville.	1,800,000	Not reviewed	Not updated		1,800,000			No
	Cattamarra.	2,600,000	Not reviewed	Not updated		2,600,000			No
Waroona	Superficial	8,000,000	4,300,000	4,300,000		3,020,000		1,280,000	Yes
	Upper Leederville.	2,200,000	Not reviewed	Not updated		2,200,000			Yes
	Lower Leederville.	1,500,000	Not reviewed	Not updated		1,500,000			No
	Cattamarra.	100,000	Not reviewed	Not updated		100,000			Constrained <sup>4</sup>

Note: Aquifers with (.) at the end of their name are confined.

1 Although mapped as one aquifer, the Leederville is split into upper and lower to help manage the resource.

2 The water licensed for public water supply is not currently used due to poor water quality. The department may recoup this water into the future.

3 Water availability changes daily. Contact the [Kwinana Peel Regional Office](#) to confirm groundwater availability.

4 The Cattamarra resource is constrained by depth, availability and quality.

## Meeting future demand

As part of the [Kep Katitjin - Gabi Kaadadjan Waterwise Perth Action Plan 2](#) (Government of Western Australia 2022), we are working with state and local government agencies to deliver the *Murray groundwater allocation plan's* outcome of [integrated land and water planning in the Murray groundwater area](#) to support urban development in priority areas. We assessed potential water needs for the future urban and rural-residential developments described in the *Perth and Peel @ 3.5 million land use planning and infrastructure frameworks* (DPLH & WAPC 2018) and each shire's local planning scheme (DPLH 2021a & DPLH 2021b).

Future urban areas are planned in the Nambeelup, Coolup and Waroona subareas. Demand for water is highest in the Nambeelup subarea, which is a focus area for the Transform Peel project and where urban development and agricultural expansion may occur first. It is expected that future water demand across the rest of the Murray groundwater area will increase slowly, driven by localised urban expansion and agricultural demand for water.

As of September 2022, groundwater is available for future developments in the Coolup and Waroona subareas. While enough groundwater is available for the urban areas planned in Waroona, bores in the subarea may be low yielding due to clayey soils. Proponents should be able to manage low yields by pumping into a tank before irrigating.

Meeting demand in the Pinjarra and Nambeelup subareas will need to come from water trading, transfers, greater water use efficiency and water savings, or from alternative sources (other than groundwater).

The department can provide water licensing advice and technical assistance to Aboriginal people who wish to seek groundwater for economic benefit on land they own or have legal access to.

Unused entitlements may be recouped in resources with limited groundwater availability and higher demand (DWER 2020). We will continue to assess licensee water use and, where appropriate, recoup unused water as per [Policy: Management of unused licensed water entitlements](#) (DWER 2020b). We anticipate that several temporary licences will expire, and our recouping activities will identify where groundwater is unused – both in the Superficial and Leederville aquifers. These processes are potential pathways to more groundwater becoming available in the future.

Metering requirements, which came into effect from December 2020 for licensees taking between 10,000 and 50,000 KL/year, will also encourage efficiency gains and the water trading market (DWER 2018).

Allocation limit changes do not prevent access to water for rural-residential developments although options may be restricted. Water is available through a combination of scheme, groundwater and rainwater options. Rural-residential property owners that are considering taking groundwater should contact us to understand if they require a licence and if water is available for licensing.

## Managing garden bores and stock and domestic bores

Garden bores and stock and domestic bores that are [exempt from licensing](#) are an important part of water supply in the Murray groundwater area. Across Perth and Mandurah, about one in four households has a garden bore.

During the past decade various estimates of residential water use have consistently found that on average, households with a garden bore use three to four times more water on lawns and gardens than households using scheme water. In part, this is a consequence of the extra watering day that garden bore users have under the current sprinkler restrictions.

Between 19 November 2021 and 28 February 2022, the State Government sought feedback on a proposal to align the domestic garden bore sprinkler roster with the two-days-per-week scheme water roster for the Perth and Mandurah area, which includes most of the Murray groundwater area. The department prepared a consultation summary report (DWER 2022) that summarises the submissions received on the proposal and the department's response.

The use of garden bores and stock and domestic bores is managed under the provisions of the Water Agencies (Water Use) By-Laws 2010. These by-laws have been amended and the roster change commenced on 1 September 2022. This means that all households in Perth and Mandurah now have the same two-days-a-week sprinkler roster, whether they use scheme or bore water.

Visit the [Be Groundwater Wise](#) website for advice on waterwise gardens and how to use a garden bore efficiently to reduce water use and energy consumption.

## Where to next?

The revised allocation limits for resources in the Murray groundwater area adjust groundwater availability in line with reducing rainfall due to climate change. Existing and future developments should optimise groundwater use through water sensitive planning and design, and implementing more efficient irrigation systems and practices. Where groundwater availability is not sufficient to meet future demand, we will support proponents to assess the technical, regulatory and economic feasibility of alternative water supplies.

Bindjareb Noongar people believe they have a cultural responsibility to look after water based on 50,000 years of governance and lore. Where there is an opportunity, we will partner with Bindjareb Noongar people to better understand the groundwater-related cultural values of the Murray groundwater area and manage groundwater use to safeguard these values. The Bindjareb Noongar people recommend the [Bring Together Walk Together Aboriginal Partnership Engagement Framework \(Walley & Grant 2021\)](#) as the right way to partner with them to understand their perspective on water values.

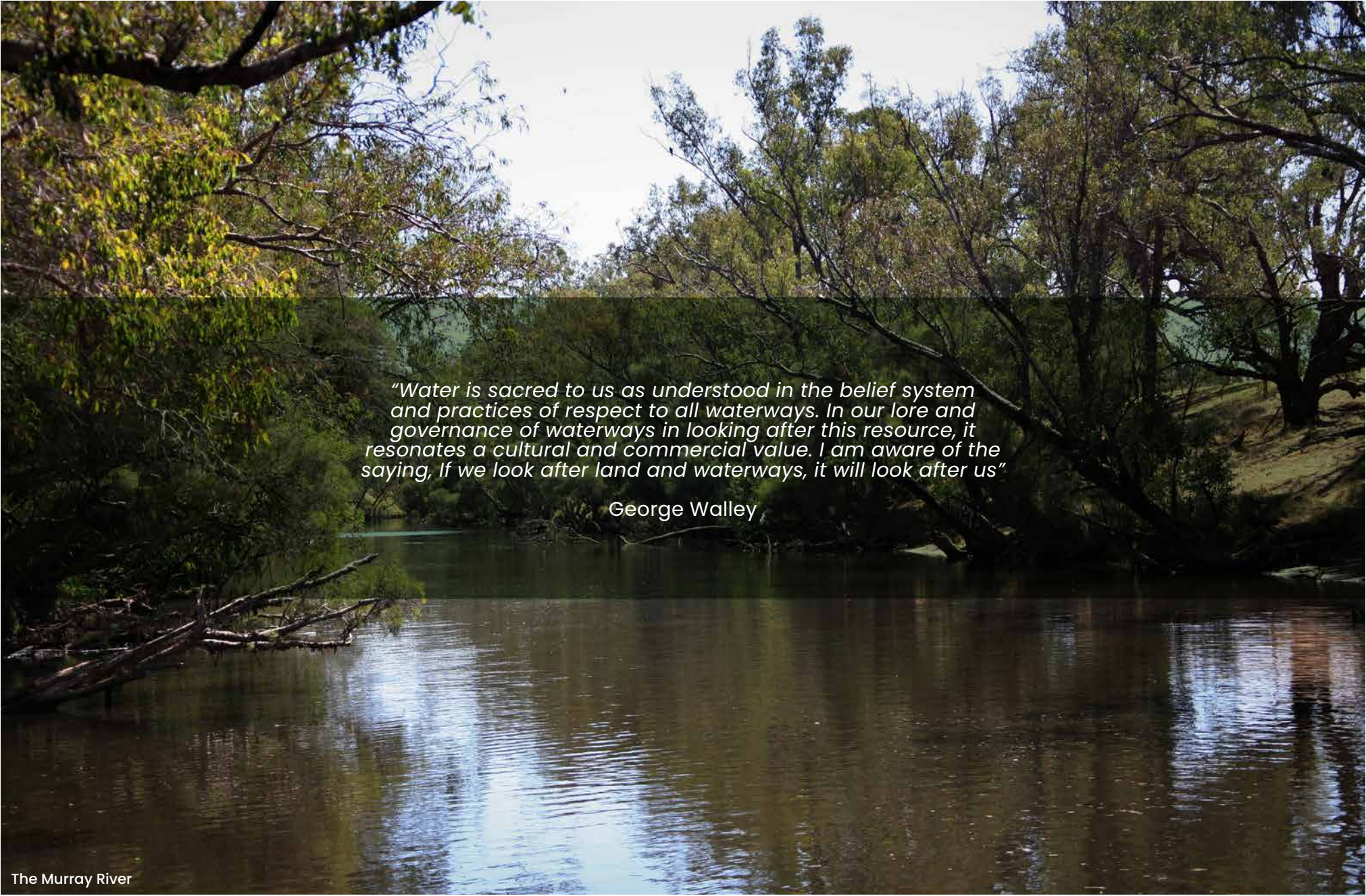
Our next steps are as follows:

1. Collaborate with State Government, local government and industry groups to enable regional development and growth through fit-for-purpose water servicing.
2. Collaborate with government and industry partners to recommend water demand assessments that include agreed regional development priorities and timing. This would inform stakeholders if a water supply strategy or other mechanisms are required to guide potential development.
3. Continue to improve our conceptual understanding of the geology of the deep aquifers in the area by completing the Murray–Peel Groundwater Investigation.

4. After the investigation is complete, review allocation limits in the Leederville and Cattamarra resources in the Coolup, Pinjarra and Waroona subareas.
5. Continue to support collaborative projects with the Bindjareb Noongar people to improve and build on how we protect and understand cultural values.
6. Carry out recouping of unused licensed entitlements in the Superficial aquifer in the Nambeelup and Pinjarra subareas. Allocation limits will be reduced as water is recouped. This will occur until the limits match expected recharge under climate change after leaving water in the ground to support cultural and environmental values. Any further recouping will make water available for reallocating.
7. Carry out recouping of unused licensed entitlements in the Lower Leederville aquifer in the Nambeelup subarea. Recouped water will only be made available for licensing once entitlements come under the General licensing component.

Monitoring water level and water quality at Gull Road Drain





*"Water is sacred to us as understood in the belief system and practices of respect to all waterways. In our lore and governance of waterways in looking after this resource, it resonates a cultural and commercial value. I am aware of the saying, If we look after land and waterways, it will look after us"*

George Walley

## References

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## Commitment Statement

Baalap, ngalak baarniny	People we walking
Ngalang gabi-waalang bidi	Our water healing journey
Yoowaal – koorl, baarn dandjoo	Come here (come on) walk together
Dandjoo baarniny	Together walking
Kalyakool kalyakool	Forever and ever



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For more information about the allocation limits,  
please email [allocation.planning@dwer.wa.gov.au](mailto:allocation.planning@dwer.wa.gov.au)