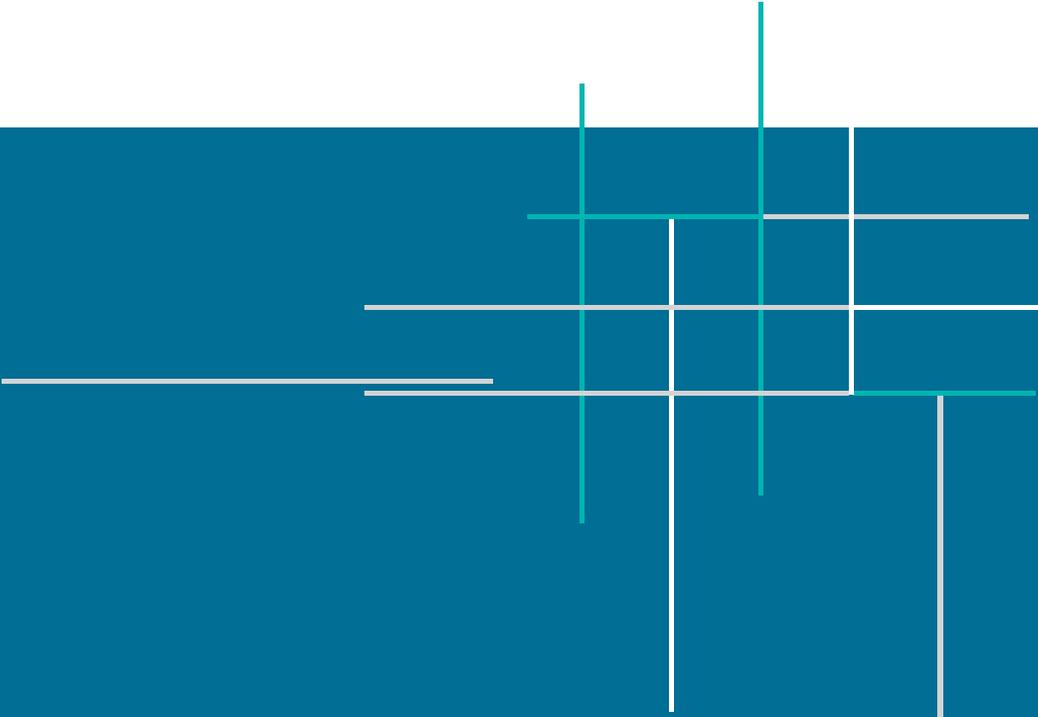




Government of **Western Australia**
Department of **Water and Environmental Regulation**



Environmental management of
groundwater from the
Jandakot Mound groundwater resources

Annual compliance assessment report
July 2024 – June 2025

February 2026

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This document was prepared by the Water Allocation Planning Branch with assistance from the Water Science Directorate and Statewide Delivery Directorate, including officers of the Kwinana Peel and Swan Avon regions.

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Summary

This report describes the Department of Water and Environmental Regulation's (the Department) compliance with environmental conditions and commitments in *Ministerial Statement no. 688 – Jandakot Mound groundwater resources [including Jandakot Groundwater Scheme Stage 2]* (Government of Western Australia 2005a) for the period 1 July 2024 to 30 June 2025, under Part IV of the *Environmental Protection Act 1986* (EP Act).

The report outlines the environmental monitoring, management, research and consultation undertaken by the Department to manage groundwater use from the Jandakot groundwater system.

Under *Ministerial Statement no. 688*, the Department must manage abstraction from the groundwater system to comply with water level criteria set at 23 groundwater-dependent wetland and terrestrial vegetation sites across the Jandakot Mound.¹

Groundwater level trends across the Jandakot Mound, and compliance with water level criteria, are influenced by rainfall, groundwater abstraction and changes in land use such as urbanisation.

The number of sites where water levels were non-compliant with absolute minimum water level criteria in 2024–25 was five – North Lake, Bibra Lake, Lake Forrestdale, Banganup Lake and Shirley Balla Swamp. The same five sites were also non-compliant in 2023–24.

While 'absolute minimum' water level criteria remain the primary indicators of compliance, some sites are also assessed against 'other' criteria. These include factors such as the timing or frequency of drying, minimum lake depth, rate of water level decline and 'preferred' water levels. During the 2024–25 reporting period, three wetland sites did not meet one or more of these 'other' criteria, two less than in 2023–24. All rare flora sites were compliant this year, whereas in 2023–24, three sites recorded water level declines greater than the allowable maximum of 0.1 metres.²

Rainfall recorded at the Bureau of Meteorology's (BoM) Jandakot Aero station (no. 9172) was 760.2 mm for the 2024–25 reporting period. This was higher than the rainfall in 2023–24, but below the long-term average of 822.1 mm (1945–2025) and slightly above the 10-year average of 745.5 mm (Table 1).

Public water supply entitlements for the Integrated Water Supply Scheme (IWSS) from the Superficial aquifer totalled 2.90 GL in 2024–25 (Table 1), 1 GL less than the previous reporting period (see Section 3.1 for more information). The Department continued to work with Water Corporation to manage public water supply abstraction in response to groundwater level trends, including reducing pumping from production bores located near non-compliant sites.

¹ The Jandakot Mound refers to the Superficial, or watertable, aquifer of the Jandakot groundwater system.

² Compliance with criteria at rare flora site JM8 could not be assessed in full due to access issues.

Private licensed entitlements across the Jandakot Mound decreased in 2024–25 compared to the previous reporting period (Table 1).

The Department is currently preparing a groundwater allocation plan for the Jandakot and Perth South groundwater areas. This will include a review of groundwater allocation limits for the Superficial, Leederville and Yarragadee aquifer resources in these areas and an evaluation of existing water level criteria in the context of future climate projections. Stakeholder consultation and engagement are underway as part of the plan’s development.

Table 1 *Rainfall, licensed entitlement totals from the Superficial aquifer and compliance summary*

| | 2023–24 | 2024–25 |
|---|--------------------------|--------------------------|
| Rainfall ¹ | 525.4 mm | 760.2 mm |
| Public water supply entitlements ² | 3.90 GL | 2.90 GL |
| Private licensed entitlements | 39.82 GL | 37.30 GL |
| Estimated stock and domestic garden bore use ³ | 16.00 GL | 16.00 GL |
| Number of sites non-compliant with absolute minimum water level criteria ⁴ | 5 out of 23 ⁵ | 5 out of 23 ⁶ |

- 1 Rainfall figures are for the July–June water year, recorded at Jandakot Aero station (no. 9172). The station began operation in October 1972 and has missing data for 1974, 1977, 1992, 1993, 2008, and 2014. Most data from 1994 onwards has not undergone full quality control. To maintain consistency with previous reporting, missing data has been patched using [SILO point data](#) from the same location.
- 2 For detail on groundwater licensed for public water supply across all aquifers of the Jandakot system, see Section 3.1 and Table 2.
- 3 Use is only from the Superficial aquifer, and is estimated using survey data, data from the Australian Bureau of Statistics and household usage records from Water Corporation. The estimated volumes for both 2023–24 and 2024–25 have been updated to consider the recent change to the domestic garden bore roster – now two days per week in line with scheme water users – that came into effect on 1 September 2022. See Section 3.3.
- 4 For full details of compliance with water level and ‘other’ criteria see Table 4 and Appendix A.
- 5 In 2023–24, compliance was assessed at 21 sites against absolute minimum criteria. Data was unavailable for wetland site Kogolup Lake (South) and terrestrial vegetation site 8284/8284B.
- 6 In 2024–25, compliance was assessed against 22 sites against absolute minimum criteria. Data was unavailable for rare flora site JM8.

1 Background

1.1 Ministerial Statement no. 688

Ministerial Statement no. 688 – Jandakot Mound groundwater resources [including Jandakot Groundwater Scheme Stage 2] (Government of Western Australia 2005a) sets out the environmental conditions and commitments associated with the allocation of groundwater from the Jandakot area for public and private use. As the proponent, the Department is responsible for implementing these conditions and reporting annually to the Environmental Protection Authority (EPA).

The Department was formed in July 2017 following the merger of the Office of the Environmental Protection Authority (OEPA), the Department of Water (DoW) and the Department of Environment Regulation (DER). To avoid any perceived conflict of interest, the Director General of the Department does not participate in assessing the Department's compliance with *Ministerial Statement no. 688*. Instead, this responsibility has been formally delegated to the Department's Executive Director, Assurance.

Some of the key conditions in *Ministerial Statement no. 688* are environmental water provisions, set as minimum water level criteria at 23 representative groundwater-dependent sites across the Jandakot Mound. These include ten wetland sites, nine terrestrial phreatophytic³ vegetation sites and four rare flora sites across the Jandakot, Perth and Cockburn groundwater areas (Figure 1).

Implementation conditions associated with the Jandakot Mound proposal were first established in 1992 in *Ministerial Statement no. 253* (Government of Western Australia 1992), with the aim of protecting the groundwater-dependent environmental values of the Jandakot Mound from significant impacts associated with groundwater abstraction for public water supply and private licensed use. In 2005, following advice from the Environmental Protection Authority (EPA), the Minister for the Environment revised these conditions and commitments. As part of this revision, water level criteria were removed from sites where environmental values had been lost due to causes other than abstraction – such as land clearing and other land use changes (see Appendix C). The 2005 update resulted in the removal of criteria from 15 sites and amendments to criteria at a further six sites.

The water level criteria at the current 23 sites have been developed to ensure that wetland surface water levels and groundwater levels in areas of phreatophytic vegetation stay within a range necessary to protect the environmental values of each site.

³ Phreatophytic vegetation uses groundwater to meet at least part of its water needs. On the Swan Coastal Plain, native vegetation that occurs within 10.5 m depth to groundwater is considered to be phreatophytic.

1.2 The Jandakot groundwater system

The Jandakot groundwater system is located south of Boorloo (Perth). It extends from Rockingham in the south to the Swan-Canning river system in the north, and from the coast to near the Darling Scarp in the east. It comprises three main aquifers:

- the shallow, unconfined Superficial (watertable) aquifer, also referred to as the Jandakot Mound
- the deeper, partially confined Leederville aquifer
- the deep, mostly confined Yarragadee aquifer.

Most of the Jandakot Mound is hydraulically separated from the deeper Leederville aquifer by the Kardinya Shale, a confining layer that extends under all the sites with water level criteria set in *Ministerial Statement no. 688*, except Lake Forrestdale. This separation means that abstraction from the Superficial aquifer has a greater impact on Jandakot Mound wetlands and phreatophytic vegetation than abstraction from the deeper aquifers.

Over the past 40 years, groundwater levels across much of the Jandakot Mound have generally declined, albeit at a slower rate than that observed across parts of the Gnamptara Mound to the north of the Swan River. However, between 2016 and 2023, groundwater levels stabilised or improved in some areas due to:

- higher annual rainfall following the extreme dry years of 2006, 2010 and 2015
- atypical summer rainfall events in 2017 and 2018
- increased recharge from clearing and urbanisation
- localised abstraction management.

In the 2023–24 reporting period, rainfall was well below average, and temperatures were above average during spring, summer and autumn. These conditions led to groundwater level declines across much of the Jandakot Mound, with record low levels recorded in some groundwater monitoring bores. In the 2024–25 reporting period, a wetter than average winter and spring in 2024 helped to stabilise and improve groundwater levels at some sites.

1.3 Allocation limits and licensing

The Department uses allocation limits, groundwater licensing rules and conditions, and monitoring of water levels, water quality and ecological values as the main mechanisms to manage groundwater resources.

An allocation limit is the annual volume of water set aside for consumptive use from a water resource. This usually includes:

- water that is available for licensing
- water we account for that is exempt from licensing, including water used by domestic garden bore owners.

Water allocated to the environment is not included as part of the allocation limit. Rather, it is the water that is left in the groundwater system to support environmental, cultural and community values.

Water level criteria set at high value wetland and bushland sites on the Jandakot groundwater system in *Ministerial Statement no. 688* ensure that the ecological water requirements of groundwater-dependent ecosystems are considered when water is allocated from the system. Non-compliance with these criteria may indicate a risk to ecological values. A breach, or impending breach, of a water level criterion at a wetland or bushland site, triggers management action. This may include shifting public water supply abstraction away from production bores close to the affected site, initiating investigations into the causes of water level decline, or implementing broader changes to groundwater management or allocation limits.

Allocation limits are determined through comprehensive assessments of the groundwater resource, including current and future demand for water, and the risks to groundwater-dependent environmental, social and cultural values of groundwater abstraction. The Department applies climate science, hydrogeological modelling and environmental assessments when reviewing and setting allocation limits. Groundwater licences are issued within these limits and are subject to licensing policies and licence conditions.

Although domestic garden bores are exempt from licensing, their use is still accounted for in allocation planning. Garden bores are managed through regulatory constraints – such as the winter sprinkler ban and two-days-per-week watering roster – and through education and water use efficiency messaging targeted at domestic garden bore owners, including through the Department's [Be Groundwater Wise](#) initiative.

2 Rainfall

Groundwater is recharged by rainfall. How much groundwater levels rise and fall each year is affected by the volume of rain that falls in the catchment, and how it falls (timing, pattern and intensity). Recharge is also affected by temperature – warmer weather increases evaporation, so less rainfall recharges the aquifer.

Rainfall at Bureau of Meteorology Jandakot Aero station (no. 9172) was 760.2 mm in 2024–25, representing a notable increase from the previous year (525.4 mm in 2023–24), which was one of the driest years on record. The 2024–25 rainfall was well below the long-term (1945–2025) average of 822.1 mm and slightly above the 10-year average of 745.5 mm (Figure 2).

The summer of 2024–25 was Western Australia's (WA) third warmest for all summers on record since 1910. For winter, spring, summer and autumn of 2024–25, the mean maximum temperatures recorded at Jandakot Aero station were between 0.8 °C and 1.8 °C above the seasonal averages, and the mean minimum temperatures were between 1.0 °C and 2.5 °C above seasonal averages.

The climate across WA is changing. To date, the rainfall decline affecting south-west WA has been greater than anywhere else in Australia, and the region is very likely to continue drying in the future (IPCC 2021, 2022). The south-west region is projected to have:

- less rainfall in winter and spring, and lower annual rainfall
- increased drought duration
- increased evaporation rates
- reduced soil moisture and runoff.

See Section 5.2 for information on how we are considering future climate as part of reviewing allocation limits and preparing a groundwater allocation plan for the Jandakot and Perth South groundwater areas.

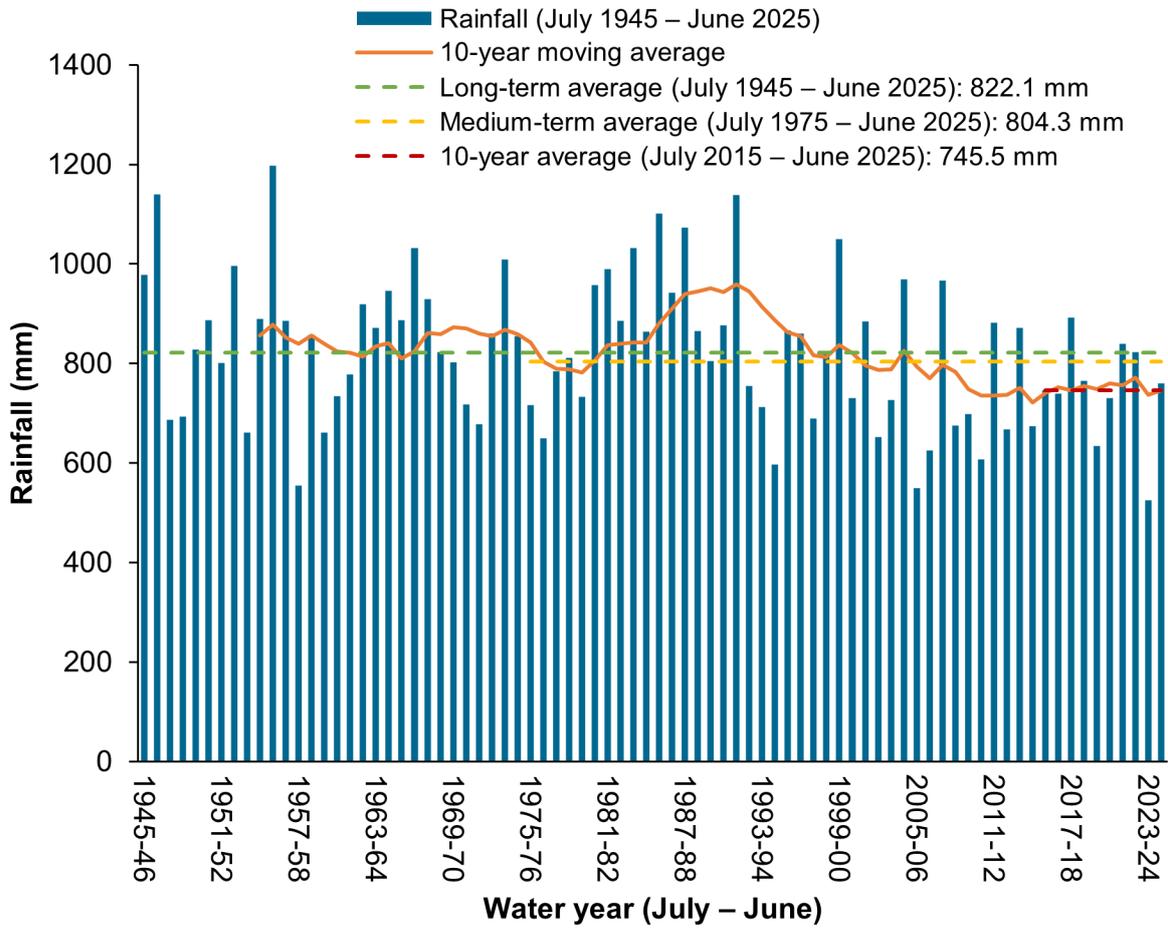


Figure 2 Annual and average water year (July–June) rainfall at Jandakot Aero station (no. 9172)

3 Groundwater use

The Jandakot groundwater system is a vital source of accessible, low-cost, good-quality water. It supports a range of uses including irrigation of public open space, water supply for agriculture, industry, and Boorloo’s public scheme water supply, and water for domestic garden bores.

This section outlines groundwater allocation limits, licensed entitlements and estimated volumes of groundwater use that are exempt from licensing, focussing on subareas where abstraction may affect sites subject to water level criteria under *Ministerial Statement no. 688*. Most of these sites are located within the Jandakot groundwater area, with the remainder situated in the Cockburn and the Perth South groundwater areas (Figure 1). While local abstraction from the Superficial aquifer has the most direct impact on water levels at these sites, groundwater flow from the Jandakot groundwater area into the Cockburn and Perth South groundwater areas means that abstraction within the Jandakot groundwater area can also affect criteria sites in Cockburn and Perth South.

Groundwater allocation limits across the Jandakot and Perth South groundwater areas are currently being reviewed as part of the State Government’s Waterwise Action Plan program, which aims to establish ‘leading waterwise communities for Boorloo (Perth) and Bindjareb (Peel) by 2030’ (Government of Western Australia 2019, 2022, 2024). Further details on the allocation limit review and the Waterwise program are provided in Section 5.2. Allocation limits for the Cockburn groundwater area were reviewed as part of the Waterwise program in 2021 (DWER 2021).

3.1 Public water supply

The Department licenses Water Corporation to take groundwater from the Gnangara and Jandakot groundwater systems to supply Boorloo’s Integrated Water Supply Scheme (IWSS). Groundwater abstracted from these systems forms a critical component of Perth’s public water supply.

In 2024–25, the total volume of water licensed for public supply from all aquifers of the Jandakot system was 16.43 GL, a slight decrease from 17.23 GL in 2023–24 (Table 2). Of this, 2.90 GL was licensed from the Superficial aquifer.

In 2023–24, the Superficial aquifer licence included an additional 1.00 GL above the baseline volume of 2.90 GL, issued as part of a trial to assess the sustainability of increased abstraction. Due to low rainfall and groundwater declines across the Jandakot Mound, the Department paused the trial for 2024–25, and it will remain paused for 2025–26.

The Department continues to work with Water Corporation to manage public water supply abstraction in response to groundwater level trends, including relocating abstraction away from sites that are non-compliant with water level criteria under *Ministerial Statement no. 688*.

Refer to Table 2 for the distribution of public water supply entitlements across all aquifers, and Table 3 for the distribution of public water supply and private self-supply entitlements across Superficial aquifer subareas.

Table 2 *Public water supply entitlements from all aquifers of the Jandakot groundwater system*

| Groundwater area | Aquifer | IWSS licence entitlement (GL) | |
|------------------|-------------------------|-------------------------------|--------------|
| | | 2023–24 | 2024–25 |
| Jandakot | Superficial | 3.90 | 2.90 |
| | Leederville | 6.45 | 6.45 |
| | Yarragadee | 6.00 | 6.00 |
| Perth South | Yarragadee ¹ | 0.88 | 1.08 |
| Total | | 17.23 | 16.43 |

¹ Volumes licensed to bore MR17 in the Perth South groundwater area.

3.2 Private licensed use

Most groundwater licensed for private use from the Jandakot system is sourced from the Superficial aquifer and primarily supports irrigation of parks and public open spaces, as well as agricultural, industrial and commercial activities.

Between the 2023–24 and 2024–25 reporting periods, private licensed entitlements from the Superficial aquifer decreased across all groundwater areas, with the most notable reduction occurring in the Perth South groundwater area. Table 3 shows private licensed entitlements in groundwater subareas where abstraction has the potential to influence sites with water level criteria set in *Ministerial Statement no. 688*.

Table 3 Licensed entitlements for public water supply and private use from the Superficial aquifer in the subareas that impact on Ministerial sites

| Groundwater area | Subarea | Ministerial criteria site present? | Public water supply entitlements ⁴ (GL) | | Private licensed entitlements ⁵ (GL) | |
|---|------------------|------------------------------------|--|-------------|---|--------------|
| | | | 2023–24 | 2024–25 | 2023–24 | 2024–25 |
| Jandakot ¹ | Airport | Yes | 1.66 | 1.18 | 1.05 | 1.02 |
| | Banjup | Yes | 0.17 | 0.12 | 0.44 | 0.44 |
| | Canning Vale | No | 0.94 | 0.74 | 0.36 | 0.41 |
| | Forrestdale | Yes | 0.18 | 0.18 | 0.84 | 0.86 |
| | Mandogalup | No | | | 1.79 | 1.69 |
| | Oakford | Yes | | | 0.11 | 0.14 |
| | South Lakes | No | | | 0.85 | 0.47 |
| | Success | Yes | 0.95 | 0.68 | 1.05 | 1.05 |
| | Wandi | No | | | 0.27 | 0.25 |
| | Wright | No | | | 1.13 | 1.11 |
| Total for Jandakot groundwater area | | | 3.90 | 2.90 | 7.91 | 7.45 |
| Perth ² | City of Armadale | Yes | - | - | 3.75 | 3.68 |
| | City of Canning | No | - | - | 3.70 | 2.81 |
| | City of Cockburn | Yes | - | - | 0.59 | 0.60 |
| | City of Gosnells | No | - | - | 4.72 | 4.06 |
| | City of Melville | No | - | - | 4.60 | 4.51 |
| Total for Perth South groundwater area | | | 0.00 | 0.00 | 17.38 | 15.65 |
| Cockburn ³ | Kogalup | Yes | - | - | 9.79 | 9.59 |
| | Thompsons | Yes | - | - | 4.75 | 4.61 |
| Total for Cockburn groundwater area | | | 0.00 | 0.00 | 14.54 | 14.20 |
| Total⁶ | | | 3.90 | 2.90 | 39.82 | 37.30 |

- Allocation limits for the Jandakot groundwater area were last updated in October 2014 and are currently under review. See Section 5.2 for more information.
- Allocation limits for subareas within Perth South groundwater area (located to the south of the Swan River) were last updated in 2007 and are currently under review. See Section 5.2 for more information.
- Allocation limits for the Cockburn groundwater area were set in the *Cockburn groundwater allocation plan* (DWER 2021).
- Public water supply information is sourced from the Department's COMPASS (water licensing and assessment) system and from annual reports submitted to the Department by Water Corporation under licence conditions. Figures reflect licensed volumes as of 30 June for each reporting year.
- Private licensed entitlement information is extracted from the Department's COMPASS (water licensing and assessment) system. The 2024–25 report was generated on 2 July 2025.
- Totals include subareas within the Jandakot, Perth South and Cockburn groundwater areas where Ministerial criteria sites are present, or where groundwater use may influence criteria sites in adjacent subareas.

Up-to-date information about water availability can be found on the [Water Register](#) or through Swan Avon or Kwinana Peel regional offices.

Figures are rounded to two decimal places. Numbers may not add up to the total due to rounding.

1 GL = 1 000 000 kL.

3.3 Use that is exempt from licensing

The Department estimates and accounts for groundwater use that is exempt from licensing. The main types of exempt use on the Jandakot Mound are garden bores in urban areas, and stock and domestic bores in rural areas without access to scheme water. Across all subareas listed in Table 3, exempt use is estimated at approximately 16 GL/year. However, only around 1.79 GL/year (11 per cent) of this is taken from subareas within the Jandakot groundwater area.

Because exempt uses are not subject to metering regulations, the Department relies on other methods, such as surveys and statistical modelling, to estimate usage. These estimates are updated as new data becomes available on bore installation rates and average water use in both urban and rural settings.

Average water use per bore was initially assessed through the domestic bore metering project, which ran from 2009 to 2012. Following the introduction of the three-day-per-week sprinkler roster and the winter sprinkler ban in 2010, average water use per bore decreased from about 800 kL/year to 430 kL/year in urban areas.

The current estimate of exempt use includes consideration of the recent change to the domestic garden bore roster – now two days per week in line with scheme water users – that came into effect on 1 September 2022.

Further information on the management of garden bores is contained in Section 5.2.

4 Compliance

The conditions and commitments in *Ministerial Statement no. 688: Jandakot Mound groundwater resources* (Government of Western Australia 2005a), which the Department must comply with under Part IV of the *Environmental Protection Act 1986*, are detailed in Appendices A and B (the ‘audit tables’).

4.1 Compliance with water level criteria

Ministerial Statement no. 688 sets water level criteria at 23 sites across the Jandakot Mound (Figure 1). There are 10 wetland sites, nine terrestrial (phreatophytic) vegetation monitoring sites, and four rare flora sites. Some criteria sites have multiple criteria and may therefore be non-compliant with more than one.

The water level criteria include:

- **Absolute minimum water levels** – the primary indicator used to assess compliance.
- **Preferred minimum water levels** – water levels may fall between the preferred and absolute minimum in up to two out of six years to replicate natural drying cycles. These are referred to as ‘other’ criteria in this report and provide insight into water level trends.
- **Additional criteria** – including maximum rate of decline, timing and frequency of drying, and minimum lake depth – these are also classified as ‘other’ criteria in this report.

During the 2024–25 reporting period, five of the 23 sites were non-compliant with absolute minimum water level criteria (Table 4). Three sites were non-compliant with ‘other’ criteria.

Compliance could not be assessed at rare flora site JM8 due to access constraints. Since 2014–15, JM8 has only been monitored briefly in 2024. We are working to re-establish access. If this is not possible, alternative approaches – such as using a nearby existing bore or installing a new bore at a suitable location – will be considered.

The management and mitigation actions we implement in response to non-compliance are described in Section 5. Details for individual sites can be found in the audit tables in Appendices A and B.

Table 4 Summary of non-compliance with water level criteria for the reporting period compared to the previous period

| Non-compliant sites ¹ | | | | | |
|--|---------------------------------------|--------------------------|---|---------------------------------------|--------------------------|
| Absolute minimum water level criteria | | | Other water level criteria | | |
| Wetlands | Terrestrial vegetation and rare flora | Total non-compliant | Wetlands | Terrestrial vegetation and rare flora | Total non-compliant |
| 2023–24 | | | | | |
| North Lake Bibra Lake Lake Forrestdale Banganup Lake Shirley Balla Swamp | None | 5 out of 23 ² | North Lake Bibra Lake Lake Forrestdale Twin Bartram Swamp Shirley Balla Swamp | JM7 JM45/JM45A JE17C | 8 out of 12 ² |
| 2024–25 | | | | | |
| North Lake Bibra Lake Lake Forrestdale Banganup Lake Shirley Balla Swamp | None | 5 out of 23 ³ | Bibra Lake Lake Forrestdale Shirley Balla Swamp | None | 3 out of 12 ³ |

- 1 If a site is non-compliant with more than one type of ‘other’ criterion in the same year (e.g. minimum lake depth and timing of drying), it is counted as a single incidence of non-compliance. See Appendix A for details.
- 2 In 2023–24, compliance was assessed at 21 sites for absolute minimum criteria and 11 sites for ‘other’ criteria. Data was unavailable for Kogolup Lake (South) and terrestrial vegetation site 8284/8284B (absolute minimum), and for JM8 (other criteria).
- 3 In 2024–25, compliance was assessed at 22 sites for absolute minimum criteria and 11 sites for ‘other’ criteria. Data for rare flora site JM8 was unavailable.

5 Environmental monitoring, management, research and consultation

5.1 Environmental monitoring

Expert environmental consultants undertake environmental monitoring for the Department in accordance with the commitments in *Ministerial Statement no. 688* (Government of Western Australia 2005a). This long-term monitoring program provides a representative assessment of the overall health of the Jandakot groundwater system and includes:

- wetland vegetation
- terrestrial vegetation
- wetland macroinvertebrates and water quality
- mound spring macroinvertebrates and water quality.

The ecological condition of groundwater-dependent ecosystems is influenced by multiple factors, of which the water regime is just one. Other contributing factors include fire, insect attack, disease, weed invasion, pollution and disturbance from land use changes. Similarly, groundwater abstraction is one of several influences on ecosystem water regimes, alongside rainfall variability, fire and land use changes such as urbanisation.

The Department uses the results of environmental monitoring, carried out each spring in the reporting period, to continually improve its understanding of the relationship between water levels and ecological condition. The results also inform groundwater management decisions, including adjustments to public water supply abstraction at priority locations – particularly where monitoring indicates ecological decline and water stress is a likely contributing factor.

In line with commitment 14.3 in *Ministerial Statement no. 688*, the Department is required to review and update the monitoring program every six years and submit it to the EPA. Reviews were completed in 2009 and 2013 to improve cost-effectiveness and efficiency. An updated environmental monitoring program was submitted to the EPA Services branch of the Department in April 2021. The program was reviewed again in 2023 and submitted to the Assurance Division of the Department alongside the *Environmental management of groundwater from the Jandakot Mound groundwater resources – Triennial compliance assessment report July 2020 – June 2023*, on 31 January 2024. Further details on previous reviews are provided in Appendix D.

The next review is scheduled for completion in 2027, to coincide with the next triennial compliance report. Additional changes to the environmental monitoring program may be considered as part of the ongoing allocation limit review for the Jandakot and Perth South groundwater areas.

Wetland vegetation

During spring 2024, wetland vegetation condition was assessed at North Lake, Forrestdale Lake, Banganup Lake, Beenyup Road Swamp, Twin Bartram Swamp, Kogolup Lake (South), The Spectacles and Thomsons Lake (Natural Area 2025).

Declines in mean canopy condition were recorded across all monitored sites between 2020 and 2024, and for all sites except Twin Bartram Swamp between the baseline year (1998 for most sites) and 2024. Between 2020 and 2024, declines in vegetation condition at North Lake, Thomsons Lake, Forrestdale Lake and Beenyup Road Swamp occurred despite stable or positive change in maximum groundwater levels over that period, which may indicate that additional stressors, such as elevated temperatures and prolonged dry conditions experienced during the 2023–24 summer and autumn, contributed to declines in vegetation health at these sites.

At Banganup Lake, an increase in tree numbers was recorded for the first time since the 2015 fire event, suggesting gradual regeneration. However, mean canopy condition declined in 2024, consistent with previous years of low groundwater levels and extreme seasonal conditions. Similar patterns were observed at Beenyup Road Swamp, Kogolup Lake South and Thomsons Lake, where long-term reductions in canopy condition were recorded. These declines are considered to be influenced by a combination of hydrological variability, climatic factors, and site-specific pressures.

In contrast, Twin Bartram Swamp, the site with the most urbanised catchment, was the only site to show a long-term increase in both groundwater levels and overall canopy condition. The residential development surrounding the wetland has likely contributed to increased recharge and higher groundwater levels, supporting the overall increase in vegetation health. However, *Banksia* species at this site (*B. menziesii* and *B. littoralis*) recorded declines in canopy condition, which may be attributed to groundwater levels exceeding their tolerable range, as these species are sensitive to prolonged inundation.

Hydroecological ranges shifted or declined for all key species in 2024, except for *Eucalyptus rudis* and *Melaleuca preissiana*, which increased in range towards both the drier and wetter ends of the transects. Most species ranges declined or shifted away from the wetter end of the transect, in most cases following declining groundwater trends. In 2024, for the first time, *Machaerina articulata* was not found on the Thomsons Lake transect, despite experiencing relatively stable groundwater levels over the last 25 years.

Trends in native species richness were generally positive, with increases in richness recorded at all transects compared to the baseline period, except for Thomsons Lake, where a minor decrease was recorded. The cover of exotic species increased from the previous survey in most transects, except for Beenyup Road Swamp.

Terrestrial vegetation

Terrestrial vegetation monitoring is undertaken triennially and was not scheduled to occur during the 2024–25 reporting period. The next round of terrestrial vegetation monitoring will occur in spring of 2025–26.

Wetland macroinvertebrates and water quality

Macroinvertebrates and water quality were monitored in spring at North Lake, Thomsons Lake, Kogolup Lake (South) and Forrestdale Lake (Lateral Environmental 2025). Shirley Balla Swamp was dry throughout the 2024–25 reporting period so could not be included in the monitoring program.

Monitoring during spring 2024 found that:

- Despite a relatively wet winter, 2024 was a below-average year for water levels due to a prolonged dry summer-autumn period. No direct link was found between surface or groundwater level and aquatic biota health, although there is some evidence that macroinvertebrate assemblages may have been affected by prolonged exposure of acid-sulfate soils during the very dry summer and autumn of 2024. In the wetter months, localised eutrophication in North Lake (and, to a lesser extent, Kogolup and Thomsons lakes), may be affecting the relative abundance of species present in these lakes.
- North Lake continues to show signs of localised increases in nitrogen and phosphorus concentrations, leading to higher levels of decomposition and anoxic conditions. The lake had higher concentrations of total phosphorus, iron and aluminium, and lower alkalinity than any of the other wetlands, and total phosphorus was also high compared to previous years' monitoring. North Lake has previously recorded temporary periods of acidification, but the pH has increased in recent years. There was a significant decrease in macroinvertebrate family richness (15 families) compared to the previous reporting period (27 families), but results were within the historical range.
- Groundwater levels at Thomsons Lake over the reporting period were similar to past years but surface water levels were generally lower than median conditions. Overall water quality was outside the bounds of previous years' monitoring programs, related to lower than usual electrical conductivity (EC) and lower concentrations of some associated ions (sodium, chloride and magnesium). Aluminium (Al^{3+}), iron (Fe) and nitrogen as nitrogen oxides were higher than the 80th percentile of historical variation. Iron and aluminium also exceeded the default stressor and toxicant guideline values for south-west Western Australia (ANZG 2018). The number of macroinvertebrate families (22) that were recorded at Thomsons Lake, was lower than the previous year (26) but still within the RAMSAR limits of acceptable change (LAC)⁴, and

⁴ Limits of acceptable change are defined as the variation that is considered acceptable in a particular measure or feature of the ecological character of the wetland without indicating change in ecological character which may lead to a reduction or loss of the values for which the site was Ramsar listed [Phillips (2006) in Maher and Davis (2009)].

macroinvertebrate abundance was similar to previous years. Lower lake salinity in 2024, likely due to the wetter winter, favoured assemblages of freshwater taxa. This differed to 2023 and 2024 when salinity was higher, favouring more salt-tolerant assemblages. Total phosphorus and turbidity were within the range of previous results and met the LACs.

- Overall, water quality at Kogalup Lake remained similar to previous years but some parameters – EC, salinity, iron and total phosphorus – tended to be higher than they have been over the last decade. However, they are within the natural variation of the lake, which typically has high nutrient levels. Macroinvertebrate family richness at Kogolup Lake was similar to previous years, but abundance was greater than usual. Rarefied richness was relatively low, suggesting dominance of a few taxa. The long, dry summer-autumn of 2024 may have exposed acid-sulfate soils and this, together with eutrophication, may have affected the number of less abundant taxa.
- Groundwater and surface water levels at Forrestdale Lake were generally low in 2024–25 compared to historical levels, but peak surface water levels were comparatively high. Water quality was variable compared with previous years, with winter rainfall leading to lower EC, salinity and concentrations of major ions. Macroinvertebrate family richness at Forrestdale Lake met the LAC and was similar to the historic median. Species abundance was higher than most previous sampling events, particularly amongst the crustacea. This could be due to the short period between rewetting and sampling in 2024, leaving insufficient time for the development of diverse fauna, or to the lack of environmental stressors (large habitat area and low concentration of toxicants).
- A total of 38 macroinvertebrate taxa were recorded across the wetlands in 2024. Macroinvertebrate assemblages were dominated by insects (which represented over half of all taxa), resident microcrustaceans (cladocerans, copepods and ostracods), aquatic snails and water mites. Species abundance and composition of assemblages was related to alkalinity, turbidity, and several parameters indicative of acid sulfate soil exposure and eutrophication.

Mound spring macroinvertebrates and water quality

One mound spring (Wandi Spring) on the southwestern edge of the Jandakot groundwater area was monitored for the first time for aquatic macroinvertebrates and water quality in 2024–25 (SLR 2025). This will serve as baseline data for comparison in future reporting years.

Wandi Spring is located in the City of Kwinana, and although surrounded by urban development, the vegetation around the spring is largely intact, with a dense cover of native flora species, including an overstorey of *Melaleuca*, marri and other *Eucalyptus* trees, and a thick understorey of native sedges, bracken fern and bullrush.

Groundwater levels in bore JM42 near Wandi Spring have shown a slight upward trend over the past 15 years. Considerable inundation (up to 0.7 m) was observed at the spring in November 2024, indicating that groundwater levels are currently adequately supporting the spring ecosystem.

Water quality of the mound spring was generally fresh with low electrical conductivity, low to moderate dissolved oxygen saturation, tannin-stained water and close to neutral pH. Nitrogen oxide levels and concentrations of nitrate were above ANZG (2018) levels.

The spring supports highly diverse assemblages of aquatic and semi-aquatic invertebrates, including several rare, regionally endemic and/or undescribed groundwater-dependent species. It recorded a significantly higher taxa richness (38) than that recorded at five mound springs on the Gnangara groundwater system sampled during the same period, where between 16 and 24 taxa were found.

5.2 Management actions

Jandakot and Perth South groundwater areas allocation planning

The Department is currently preparing a groundwater allocation plan for the Jandakot and Perth South groundwater areas under the State Government's Waterwise Action Plan program to deliver 'leading waterwise communities for Boorloo and Bindjareb by 2030'. More information on the Waterwise Action Plan program is detailed below.

The Jandakot and Perth South groundwater allocation plan will include a review of allocation limits for the Superficial, Leederville and Yarragadee aquifer resources in these groundwater areas and review of existing water level criteria set under *Ministerial Statement no. 688*. The Department is applying updated climate guidance (DWER 2024b) in its review, which is described further in Section 5.3.

Stakeholder consultation and engagement on the groundwater allocation plan is underway, and it is anticipated that the draft plan will be released for public comment in 2026.

Managing public water supply

Each year the Department works with Water Corporation to optimise the distribution of abstraction for the IWSS, including from the Jandakot borefield (Figure 1). This process considers groundwater level trends, compliance with water level criteria and the results of ecological monitoring. To support this, the Department uses a bore environmental sensitivity classification system to help limit abstraction in environmentally sensitive locations, such as from production bores close to sites that are non-compliant with water level criteria set under *Ministerial Statement no. 688*.

Managing local government and other private licensed use

The Department monitors private licensed use through on-ground compliance inspections, meter audits, water use surveys and standard checks as part of the licence renewal process. These activities ensure that groundwater use remains within licensed entitlements and that site operations are in keeping with licence conditions.

The Department also works with local governments, urban developers and high-volume licensees to:

- improve water use efficiency
- reduce groundwater demand
- assess water needs for future public open space
- explore potential alternative water supply options.

Under the *Rights in Water and Irrigation Amendment Regulations 2018*, all bores with a licensed entitlement greater than 10,000 kL/year were required to be metered by the end of 2020. This regulation significantly improved water resource management compared to previous requirements, which only mandated metering for entitlements over 500,000 kL/year. Licence holders must comply with licence conditions and submit annual metered usage to the Department.

Non-compliance – such as failure to install a meter or exceeding licensed entitlements – is addressed through a range of enforcement actions, including educational letters, warning notices, statutory directions, infringement notices, and where necessary, prosecution.

Managing groundwater use exempt from licensing

The use of domestic garden bores is managed under the provisions of the *Water Agencies (Water Use) By-Laws 2010*. Permanent water efficiency measures apply across the Jandakot Mound. They include:

- a winter sprinkler ban from 1 June to 31 August each year (unless amended by the Minister for Water due to low rainfall)
- a daytime sprinkler ban between 9am and 6pm
- watering day rosters for both scheme and domestic garden bore users.

Since 1 September 2022, garden bore users have followed a two-day-per-week watering roster – aligned with scheme water users – replacing the previous three-day schedule. The State Government is supporting garden bore users to adopt waterwise practices through initiatives such as [Be Groundwater Wise](#), which promotes efficient garden bore use and waterwise gardening.

Water Corporation supports this initiative by offering rebates for waterwise products (e.g. smart irrigation controllers), providing waterwise plant selection advice, and endorsing waterwise specialists such as garden designers, landscapers, irrigators and nurseries.

Compliance and enforcement of garden bore watering restrictions are jointly managed by the Department and Water Corporation.

Waterwise action plan program

The [Waterwise Perth action plan](#), released in October 2019, was the first of successive across-government strategies to transition Boorloo and Bindjareb to be leading waterwise communities by 2030 (Government of Western Australia 2019). The initial plan involved eight government agencies coordinating on 38 actions with the aim of creating waterwise communities and helping Boorloo to stay cool and liveable in the face of climate change. The plan focused on sustainable use of water, and urban greening.

Subsequent plans expanded the scope:

- [Kep Katitjin – Gabi Kaadadjan – Waterwise Perth action plan 2](#) (October 2022) included 11 agencies and 41 actions
- [Kep Katitjin – Gabi Kaadadjan Waterwise action plan 3](#) (October 2024) strengthened collaboration and action to address climate change, population growth and urban intensification. It promotes water conservation, biodiversity, tree canopy protection and urban greening to build climate-resilient communities.

The Department continues to work with local government, industry and the broader community to support key commitments under the program, including:

- reducing groundwater use in Boorloo and Bindjareb by 10 per cent by 2030
- achieving Waterwise Gold status for all local councils
- integrating best-practice waterwise policies into all State urban water policies and guidelines
- auditing and improving waterwise management of 100 per cent of irrigated open space.

As part of delivering the Waterwise action plan program, the Department is reviewing allocation limits across the Boorloo and Bindjareb region to ensure sustainable use as our climate changes. This has led to the release of:

- the [Cockburn groundwater allocation plan](#) (January 2021)

- the [Waangaamaap – Serpentine groundwater allocation statement](#) (March 2024).

These documents updated groundwater allocation limits over parts of the Jandakot Mound area (see Figure 1 for the location of these groundwater areas in relation to sites with water level criteria set in *Ministerial Statement no. 688*).

The review of allocation limits currently being undertaken for the Jandakot and Perth South groundwater areas will complete the allocation limit review action under the current Waterwise Action Plan program.

Be Groundwater Wise

Be Groundwater Wise is a community education initiative under the Waterwise Action Plan program. In collaboration with Water Corporation, the Department has developed the [Be Groundwater Wise](#) website that provides a central platform for the community to learn about the importance of groundwater, waterwise gardening and efficient use of garden bores.

The initiative also includes regular social media campaigns at key points in the year, such as in spring when homeowners begin to switch on their irrigation systems after winter and plant out new gardens.

5.3 Research initiatives

The Department continues to undertake research to better understand and manage water resources on the Jandakot groundwater system. Key projects currently underway or recently completed that will contribute to the understanding and management of Jandakot groundwater resources include:

- [Perth Regional Aquifer Modelling System \(PRAMS\)](#)
PRAMS has been updated to version 3.6 (Siade et al. 2024), extending the history-matching period to 2019 and incorporating industry-leading, automated parameter estimation techniques. This update significantly enhanced model parameterisation and delivered the most accurate fit to observed data to date. PRAMS version 3.6 is being used to assess the impacts of groundwater abstraction, climate and land use changes as part of the review of allocation limits in the Jandakot and Perth South groundwater areas.
- [Guide to future climate projections for water management in Western Australia](#)
Published in September 2024 (DWER 2024b), this guide provides a framework for water planners and decision-makers to use climate change projections in climate impact assessments. It forms part of a broader State Government initiative to deliver up-to-date climate science resources for WA's water sector. The guide is being applied in the current review of allocation limits in the Jandakot and Perth South groundwater areas.
- [Groundwater Telemetry](#)
Following a successful trial in 2019 under the State Groundwater Investigation Program, telemetry systems are being progressively installed in priority

monitoring sites across the State. Between 2023–24 and 2026–27 approximately 40 per cent of the Department’s monitoring bore network will be equipped with telemetry, including many of the monitoring bores relevant to the management of the Jandakot groundwater resources. This initiative will significantly enhance data availability for groundwater modelling; licence assessments; monitoring the effects of abstraction, rainfall and land use changes; and for improving the understanding of aquifer connectivity. Telemetry installation is now in progress for groundwater monitoring bores with water level criteria under *Ministerial Statement no. 688*.

5.4 Consultation

The Department engages regularly with stakeholders to support transparent and collaborative groundwater management.

- **Jandakot Community Consultative Committee (JCCC)**

In line with commitments under *Ministerial Statement no. 688*, the Department holds annual meetings with the JCCC. Chaired by Professor Philip Jennings (Murdoch University), the committee includes representatives from the cities of Cockburn and Armadale, the Department of Biodiversity, Conservation and Attractions (DBCA), Perth NRM, Friends of Forrestdale, Banjup Residents Group, South East Regional Centre for Urban Landcare, the Waterbird Conservation Group and Water Corporation. The Department provides an update to the committee on groundwater management, compliance with water level criteria, groundwater use, and the outcomes of ecological monitoring.

At the 2024 JCCC meeting, members raised concerns about record low water levels at Bibra Lake and discussed whether artificial supplementation could help to restore levels and support wetland ecology. The extreme heat and prolonged dry conditions from spring 2023 to autumn 2024 contributed to notable groundwater level declines across the Jandakot Mound, leaving Bibra Lake unusually dry. These conditions allowed foxes to traverse the exposed lakebed and predate the south-western snake-necked turtle population that would otherwise have been protected by deeper water.

In response, the Department, working with Water Corporation, DBCA and the City of Cockburn, began investigating the viability of supplementing the lake. The main supplementation option under consideration involves transferring excess water from Yangebup Lake, which receives inflows from the South Jandakot Drainage Scheme managed by Water Corporation. This supplementation option, however, requires careful consideration of potential water quality issues due to Yangebup Lake’s history of wool-scouring, fellmongering and tanning activities, noting that some contaminants cannot be easily removed through standard stormwater treatment methods.

To support the investigation into supplementing Bibra Lake with excess water from Yangebup Lake, the Department has included both lakes in the 2025–26

water quality and macroinvertebrate monitoring program conducted under *Ministerial Statement no. 688*.

- **WA Wetlands Conference**

The Department sponsors the annual WA Wetlands Conference, hosted by the Wetlands Centre Cockburn in early February. Staff from the Department operate a DWER exhibition space at the conference, engaging with community members and responding to any questions or concerns about groundwater use and wetland management. The venue's proximity to Bibra Lake ensures strong local interest in Jandakot Mound issues.

- **Planning and policy engagement**

The Department provides advice to local and State government agencies to ensure that water availability and supply options are considered as early as possible in the planning process for public open space and development proposals. The Department worked closely with the Department of Planning, Lands and Heritage (DPLH) to incorporate water-related guidance into the Western Australian Planning Commission's (WAPC) review of the State's water planning framework.

The WAPC released the *Draft State Planning Policy 2.9 Planning for Water (SPP 2.9)* (WAPC 2021a) and associated *Planning for Water Guidelines* (WAPC 2021b) for public comment in late 2021 and is currently reviewing the submissions received on those documents.

Once gazetted, these documents will replace existing policies including *State Planning Policy 2.9 Water Resources* (Government of Western Australia 2006), and *Better urban water management* (WAPC 2008). The new framework will set out how water resources should be considered at each planning stage, outlining the required actions and investigations to support planning decisions.

- **Groundwater allocation planning**

The Department is currently preparing a groundwater allocation plan for the Jandakot and Perth South groundwater areas. This process will involve considerable stakeholder and public consultation during the 2025–26 and 2026–27 reporting periods.

Appendices

Appendix A Water level monitoring results for Ministerial sites on the Jandakot Mound for 2015–25

Bold text refers to compliance with water level criteria and other criteria. **Black bold text** indicates sites compliant with water level and other criteria. **Red bold text** indicates sites non-compliant with water level criteria. **Blue bold text** indicates sites non-compliant with other criteria.

Table A1 Wetland sites

| Wetland | AWRC reference number | Water level criteria (mAHD) | | Other criteria | Water level (mAHD) | | | | | | | | | | Status and comments on compliance during the 2024–25 annual reporting period | | |
|------------|-------------------------------------|-----------------------------|-------|--|--------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--|--|------------------|
| | | Pref | Abs | | 2015–16 | 2016–17 | 2017–18 | 2018–19 | 2019–20 | 2020–21 | 2021–22 | 2022–23 | 2023–24 | 2024–25 | | | |
| North Lake | 6142521 (Staff 424) | 13.29 | 12.68 | Peak water levels should not decline at rate greater than 0.1 m/year. Monitor staff gauge. | Max | 12.79 | 12.95 | 13.03 | 13.38 | 12.98 | 12.62 | 13.22 | 13.08 | 12.78 | 12.77 | <p><u>Compliance and trends</u></p> <p>Non-compliant with absolute minimum criterion.</p> <p>The lake has been non-compliant with the absolute minimum criterion at both the staff gauge and the bore since 2006–07. The lake dried at 12.30 mAHD in January 2025, and the table has been updated to show that the lake was dry at the staff gauge each year over the past 10 years. Note that lower and higher readings recorded in 2015–16 and 2019–20 respectively were a result of human error, but do not affect compliance as the lake was still recorded as dry.</p> <p>Water levels in the North Lake bore declined about 1 m between the start of monitoring in 1997 until around 2013 and were relatively stable from 2015 to 2023. Minimum groundwater levels in 2024–25 were slightly higher than those in 2023–2024, which were the lowest recorded since monitoring commenced.</p> <p>Compliant with other criterion.</p> <p>Peak water levels declined by less than 0.1 m/year between 2023–24 and 2024–25.</p> <p><u>Ecological condition</u></p> <p>Water quality monitoring in September 2024 recorded high nutrients, with signs of localised eutrophication. There was a decrease in macroinvertebrate family richness compared to the previous reporting year, but family richness was still within the historical range.</p> <p><u>Management and mitigation</u></p> <p>A shallow groundwater investigation finalised in 2014–15 improved understanding of the lake's hydrogeology in relation to its ecological health (Bourke et al. 2013).</p> <p>In 2014–15, the Department updated the Superficial aquifer allocation limits in the Jandakot groundwater area based on a review that considered compliance, water level trends and ecological health at the lake. The lower allocation limits reduced the risk of future increases in abstraction impacting lake levels.</p> <p>In September 2022, the garden bore sprinkler roster for the Perth and Mandurah area was reduced from three to two days per week to support the watertable in urban environments for the benefit of wetlands and bushland areas.</p> | |
| | Min | | | | 12.00 dry | 12.30 dry | 12.30 dry | 12.30 dry | 12.43 dry | 12.30 dry | | 12.30 dry |
| | Max | | | | 12.49 | 12.58 | 12.65 | 12.98 | 12.64 | 12.16 | 12.94 | 12.72 | 12.28 | 12.72 | | | |
| | 61410726 (Bore – telemetered site*) | | | | Min | 11.87 | 11.66 | 11.81 | 11.80 | 11.60 | 11.59 | 11.60 | 11.78 | 11.16 | 11.35 | | |

| Wetland | AWRC reference number | Water level criteria (mAHD) | | Other criteria | Water level (mAHD) | | | | | | | | | | Status and comments on compliance during the 2024–25 annual reporting period | |
|------------|--|-----------------------------|------|---|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--|--|
| | | Pref | Abs | | | 2015–16 | 2016–17 | 2017–18 | 2018–19 | 2019–20 | 2020–21 | 2021–22 | 2022–23 | 2023–24 | | 2024–25 |
| Bibra Lake | 6142520 (Staff 425) | 13.6 – 14.2 <15.0 peak | 13.6 | Dry no more than 2 in 3 years, and preferably less than 1 in 3 years. Either Bibra or Yangebup Lake must contain 0.3 m water, preferably 0.5 m. | Max | 14.0 | 14.1 | 14.3 | 14.5 | 14.3 | 14.0 | 14.3 | 14.3 | 14.1 | 13.9 | <p><u>Compliance and trends</u></p> <p>Non-compliant with absolute minimum criterion. The lake has been non-compliant with the absolute minimum criterion since 2006–07. Minimum groundwater levels in 2024–25 were the lowest recorded since monitoring commenced.</p> <p>Non-compliant with other criterion. The lake is non-compliant with the other criterion as it has dried more than twice in three years. When water levels were at their lowest during the reporting period Bibra Lake was dry, but Yangebup Lake contained more than 0.3 m of water.</p> <p><u>Ecological condition</u></p> <p>The Bibra Lake transect was last surveyed in 2017. Long-term monitoring of this transect from 1997 to 2017 showed declines in canopy condition, changes in species composition to more terrestrial species and increases in abundance of exotic species. Due to the degraded nature of the vegetation related to its location in an urban setting, this transect has been removed from the annual wetland vegetation monitoring program.</p> <p><u>Management and mitigation</u></p> <p>In 2014–15, the Department updated the Superficial aquifer allocation limits in the Jandakot groundwater area based on a review that considered compliance, water level trends and ecological health at the lake. The revised allocation limits reduced the risk of future increases in abstraction impacting on lake levels.</p> <p>In September 2022, the garden bore sprinkler roster for the Perth and Mandurah area was reduced from three to two days per week to support the watertable in urban environments for the benefit of wetlands and bushland areas.</p> <p>To support investigating the possibility of supplementing levels at Bibra Lake by transferring excess water from Yangebup Lake (which derives from the South Jandakot Drainage Scheme managed by Water Corporation), the Department has added Bibra Lake to the water quality and macroinvertebrate monitoring program for 2025–26.</p> |
| | Min | | | | 13.5 dry 01/03 | 13.5 dry 03/04 | 13.5 dry 04/04 | 13.5 dry 05/06 | 13.5 dry 04/02 | 13.5 dry 09/02 | 13.5 dry 09/02 | 13.5 dry 02/03 | 13.5 dry 09/01 | 13.5 dry 04/02 | | |
| | Max | | | | | 13.9 | 14.0 | 14.2 | 14.1 | 13.7 | 14.0 | 14.0 | 13.8 | 13.8 | | |
| | 61410177 (Bore BM7C – telemetered site*) | | | | Min | 13.0 | 13.2 | 13.2 | 13.2 | 12.8 | 12.9 | 13.1 | 13.1 | 12.7 | 12.7 | |

| Wetland | AWRC reference number | Water level criteria (mAHD) | | Other criteria | Water level (mAHD) | | | | | | | | | | Status and comments on compliance during the 2024–25 annual reporting period | |
|----------------------|-----------------------|-----------------------------|------|---|--------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | Pref | Abs | | | 2015–16 | 2016–17 | 2017–18 | 2018–19 | 2019–20 | 2020–21 | 2021–22 | 2022–23 | 2023–24 | | 2024–25 |
| Kogolup Lake (South) | 6142522 (Staff) | 13.1 – 14.0 <14.8 peak | 13.1 | | Max | 14.6 | 14.9 | 15.1 | 15.3 | 16.1 | 14.5 | 15.3 | 15.2 | 14.7 | 14.7 | <u>Compliance</u> Compliant with absolute minimum criterion. In September 2024 the Department drilled a deeper bore (AWRC ref. 61407134) to allow the minimum groundwater level to be measured and assessed against the absolute minimum criterion in future dry years. Monitoring of water levels at this bore commenced in January 2025. The maximum groundwater level for the reporting period was based on the shallow bore (AWRC ref. 61410727) and the minimum groundwater level for the 2024–25 reporting period was based on the deeper bore (AWRC ref. 61407134). The table has been updated to reflect occurrences in the past 10 years when the shallower bore (AWRC ref. 61410727) dried. <u>Ecological condition</u> Water quality in 2024 generally remained similar to previous years. Macroinvertebrate family richness was also similar to previous years. <u>Additional information</u> Water Corporation monitors lake levels and provides the Department with the water level data for this site. |
| | Min | | | | 13.8 dry | 13.9 | 14.1 | 13.8 | 13.8 dry | 13.8 dry | 13.8 | 14.0 | 13.8 dry | 14.0 | | |
| | Max | | | | 14.6 | 14.7 | 15.0 | 15.3 | 15.2 | 14.4 | 15.3 | 15.1 | 14.6 | 14.7 | | |
| | Min | | | | 13.6 dry | 13.8 | 14.0 | 14.0 | 13.5 | 13.5 dry | 14.0 | 13.8 | 13.5 dry | 13.2 | | |
| Thomsons Lake | 6142517 (Staff 609) | 11.3 – 11.8 | 10.8 | For 30% of time, water levels meet the following criteria: <ul style="list-style-type: none"> >11.8 mAHD ('wet' year – 10%). 11.3 – 11.8 mAHD ('medium' year – 80%). 10.8 – 11.3 mAHD ('dry' year – 10%). | Max | 12.2 | 12.6 | 12.6 | 12.8 | 12.6 | 12.3 | 13.2 | 12.9 | 12.8 | 12.5 | <u>Compliance and trends</u> Compliant with absolute minimum and other criteria. The lake staff gauge dries at 11.5 mAHD so compliance is measured at the bore. Groundwater levels had generally been rising from 2010–11 to 2022–23 but declined by about 0.5 m in 2023–24 and remained stable in 2024–25. The other criteria are based on calendar year rainfall, not water year. The year 2024 was classed as a 'dry' year with 748.8 mm of rainfall received at Jandakot Aero station (no. 9172). The 2024–25 minimum groundwater level was within the water level range of 10.8 – 11.3 mAHD set for 'dry' years. Minimum water levels met the applicable criteria based on effective rainfall during nine of the past 10 years, which means the minimum compliance rate of 30% was achieved over this period. <u>Ecological condition</u> Water quality monitoring at Thomsons Lake in September 2024 recorded very high concentrations of iron and aluminium, and while EC and salinity recovered from 2023–24, total nitrogen still exceeded the LACs. Macroinvertebrate family richness at Thomsons Lake met the LAC and was within historical bounds. <u>Additional information</u> Since 2004, the Department of Biodiversity, Conservation and Attractions (DBCA) and Water Corporation have implemented an annual supplementation program at Thomsons Lake. The lake is supplemented over the winter months to ensure it contains sufficient water in late spring and early summer to support migratory and resident bird populations and allow cygnets time to mature enough to fly over the vermin-proof fence surrounding the lake. Water Corporation monitors surface water levels at this site and provides the data to the Department. |
| | Min | | | | 11.5 dry | 11.5 dry | 11.5 dry | 11.5 dry | 11.5 dry | 11.5 dry | 11.5 dry | 11.5 dry | 11.5 dry | 11.5 dry | 11.5 dry | |
| | Max | | | | 11.8 | 12.0 | 12.2 | 12.4 | 12.3 | 12.0 | 12.4 | 12.6 | 12.1 | 12.1 | | |
| | Min | | | | 11.1 | 11.3 | 11.4 | 11.5 | 11.3 | 11.3 | 11.4 | 11.7 | 11.1 | 11.3 | | |

| Wetland | AWRC reference number | Water level criteria (mAHD) | | Other criteria | Water level (mAHD) | | | | | | | | | | Status and comments on compliance during the 2024–25 annual reporting period | |
|------------------|-----------------------|-----------------------------|------|--|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|---|
| | | Pref | Abs | | | 2015–16 | 2016–17 | 2017–18 | 2018–19 | 2019–20 | 2020–21 | 2021–22 | 2022–23 | 2023–24 | | 2024–25 |
| Lake Forrestdale | 6162557 (Staff) | 21.2 – 21.6 | 21.1 | Preferred earliest drying by: <ul style="list-style-type: none"> April ('wet' year) February to March ('medium' year) January ('dry' year). Peak lake levels must be at least 0.9 m deep (22.6 mAHD). | Max | 21.8 | 22.0 | 22.0 | 22.1 | 21.9 | 21.8 | 22.3 | 22.2 | 21.9 | 22.1 | <u>Compliance and trends</u> Non-compliant with absolute minimum criterion. The lake staff gauge dries at 21.5 mAHD so compliance is measured at the bore. Compared to 2023–24, the minimum groundwater level in 2024–25 rose by about 0.3 m. Non-compliant with other criteria. Peak levels at the lake in 2024–25 were about 0.2 m higher than the previous year. The lake did not achieve a minimum depth of 0.9 m (22.6 mAHD) over the reporting period. The other criteria are based on calendar year, not water year. The year 2024 was classed as a 'dry' year with 748.8 mm of rainfall received at Jandakot Aero station (no. 9172). During 2024–25, the lake dried during the 'dry' year preferred month of January. <u>Ecological condition</u> Water quality in 2024 generally remained similar to previous years, however total nitrogen and electrical conductivity was lower than in 2023–24 and met the LACs. Macroinvertebrate family richness met the LAC and was within the bounds of historical variation. <u>Management and mitigation</u> In 2014–15, the Department updated the Superficial aquifer allocation limits in the Jandakot groundwater area based on a review that considered compliance, water level trends and ecological health at the lake. In September 2022, the garden bore sprinkler roster for the Perth and Mandurah area was reduced from three to two days per week to support the watertable in urban environments for the benefit of wetlands and bushland areas. |
| | Min | | | | dry 11/01 | dry 21/02 | dry 04/12 | dry 08/01 | dry 02/12 | dry 04/12 | dry 01/02 | dry 07/02 | dry 05/12 | dry 07/01 | | |
| | Max | | | | 23.0 | 23.1 | 23.1 | 23.1 | 23.1 | 22.8 | 23.3 | 23.2 | 23.0 | 23.1 | | |
| | Min | | | | 20.6 | 21.4 | 21.1 | 20.9 | 20.7 | 20.7 | 20.9 | 21.1 | 20.6 | 20.9 | | |
| Yangebup Lake | 6142523 (Staff 605) | 13.9 – 15.5 <16.5 peak | 13.8 | Either Bibra or Yangebup Lake must contain 0.3 m water, preferably 0.5 m. | Max | 16.4 | 16.8 | 16.4 | 16.7 | 16.6 | 16.6 | 16.9 | 16.9 | 16.4 | 16.4 | <u>Compliance</u> Compliant with absolute minimum and other criteria. When water levels were at their lowest during the reporting period, Yangebup Lake contained more than 0.3 m of water; however, Bibra Lake was dry. Monthly water level monitoring data, collected manually, was used to measure compliance, as telemetry data was unavailable for the full reporting year. <u>Additional information</u> As part of the South Jandakot Drainage Scheme, Water Corporation discharges drainage water into the lake, and pumps water out of the lake to lower water levels if the peak threshold is exceeded. Water Corporation also monitors surface water levels at this site and provides the data to the Department. <u>Management and mitigation</u> To support investigating the possibility of supplementing levels at Bibra Lake by transferring excess water from Yangebup Lake (which derives from the South Jandakot Drainage Scheme managed by Water Corporation), the Department has added Yangebup Lake to the water quality and macroinvertebrate monitoring program for 2025–26. |
| | Min | | | | 14.9 | 15.2 | 15.3 | 15.4 | 15.0 | 15.3 | 15.3 | 15.5 | 15.0 | 15.2 | | |
| | Max | | | | 15.8 | 16.0 | 15.8 | 16.1 | 16.0 | 15.7 | 16.3 | 15.9 | 15.8 | 15.6 | | |
| | Min | | | | 14.9 | 15.1 | 15.4 | 14.8 | 14.7 | 15.0 | 15.1 | 15.2 | 14.6 | 14.8 | | |

| Wetland | AWRC reference number | Water level criteria (mAHD) | | Other criteria | Water level (mAHD) | | | | | | | | | | Status and comments on compliance during the 2024–25 annual reporting period |
|---------------------|------------------------|-----------------------------|--|--|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---|---|
| | | Pref | Abs | | | 2015–16 | 2016–17 | 2017–18 | 2018–19 | 2019–20 | 2020–21 | 2021–22 | 2022–23 | 2023–24 | |
| Shirley Balla Swamp | 6142576 (Staff) | | 23.1 mAHD or 0.5 m below lake base, whichever is higher. 24.5 | No drying before end of January. Must be above preferred minimum 4 in every 6 years. Water levels should not decline at rate greater than 0.1 m/year. Monitor staff gauge. | Max | 25.3 | 25.2 | 25.2 | 25.4 | 25.1 | 25.0 | 25.3 | 25.2 | 25.0 | <p><u>Compliance and trends</u></p> <p>Non-compliant with absolute minimum criterion. The wetland is dry at the staff gauge at 25 mAHD so compliance is measured at the bore. Minimum groundwater levels in 2024–25 increased slightly compared to 2023–24.</p> <p>Non-compliant with other criterion. The wetland did not contain water in 2024–25 so did not comply with the 'other' criterion of not drying before the end of January. The peak surface water level, peak groundwater level and minimum groundwater level have not declined by more than 0.1 m since 2023–24 and therefore comply with the 'other' criterion for the maximum rate of annual decline.</p> <p><u>Ecological condition</u></p> <p>The wetland did not contain surface water in 2024–25 so could not be assessed for water quality or macroinvertebrate richness during spring 2024.</p> <p><u>Management and mitigation</u></p> <p>In 2014–15, the Department updated the Superficial aquifer allocation limits in the Jandakot groundwater area based on a review that considered compliance, water level trends and ecological health at the lake. The revised allocation limits reduced the risk of future increases in abstraction impacting on lake levels.</p> <p>In September 2022, the garden bore sprinkler roster for the Perth and Mandurah area was reduced from three to two days per week to support the watertable in urban environments for the benefit of wetlands and bushland areas.</p> <p><u>Additional information</u></p> <p>A preferred minimum has not been established so the 4-in-6-years criterion cannot be applied. Further review of criteria is required and will be undertaken as part of the groundwater allocation limit review currently in progress.</p> |
| | Min | dry 01/12 | | | dry 01/12 | dry 04/12 | dry 03/12 | dry 08/01 | dry 02/11 | dry 01/12 | dry 01/11 | dry 04/07 | dry 01/10 | | |
| | Max | 25.4 | | | 25.2 | 25.2 | 25.5 | 25.2 | 25.1 | 25.3 | 25.1 | 24.6 | 25.0 | | |
| | Min | 24.2 | | | 24.2 | 24.3 | 24.2 | 23.9 | 23.8 | 24.0 | 23.9 | 23.6 | 23.8 | | |
| Beenyup Road Swamp | 6142547 (Staff) | 24.0 | 23.6 | Must be above preferred minimum 4 in every 6 years. | Max | 24.9 | 25.1 | 25.3 | 25.5 | 25.3 | 24.9 | 25.6 | 25.4 | 25.2 | <p><u>Compliance</u></p> <p>Compliant with absolute minimum and other criteria. The lake staff gauge dries at 24.6 mAHD so compliance is measured at the bore. Water levels have been above the preferred minimum level since 2011–12 so the lake is compliant with the other criterion that this is met in at least 4 out of 6 years.</p> <p><u>Ecological condition</u></p> <p>Wetland vegetation monitoring in 2024 recorded a decrease in both short and long-term canopy condition, but also a decrease in exotic species. However, the health of <i>Melaleuca raphiophylla</i> has slightly improved from the 2020 survey.</p> |
| | Min | | | | 24.6 dry | 24.6 dry | 24.6 dry | 24.6 dry | 24.6 dry | 24.6 dry | 24.6 dry | 24.6 dry | 24.6 dry | | |
| | Max | | | | 24.9 | 25.2 | 25.3 | 25.6 | 25.4 | 25.0 | 25.6 | 25.5 | 25.2 | 25.4 | |
| | Min | | | | 24.1 | 24.5 | 24.6 | 24.4 | 24.2 | 24.3 | 24.5 | 24.5 | 24.1 | 24.2 | |
| The Spectacles | 6142528 (Staff) | No water level criteria | | Monthly water monitoring data available on Water Information Reporting website. | | | | | | | | | | The 2023 environmental monitoring program specified monthly water level monitoring at the Spectacles which was undertaken during the reporting period. <i>Ministerial Statement no. 688</i> does not include water level criteria for the Spectacles. | |
| | 61419854 (Bore SP1_1D) | | | | | | | | | | | | | | Monthly water monitoring data available on Water Information Reporting website. |

* Currently, eight sites have been telemetered, but only three sites (North Lake, Shirley Balla Swamp and Beenyup Road Swamp) had data available for the full reporting year. Therefore, the minimum and maximum of daily mean water level readings from telemetry data were used at these sites, while monthly manual water level monitoring data was used to assess compliance at other sites where full-year telemetry data was unavailable.

Table A2 Phreatophytic vegetation or rare flora sites

| Groundwater monitoring bore | AWRC reference number | Water level criteria (mAHD) | | Other criteria | Water level (mAHD) | | | | | | | | | | Status and comments on compliance during the 2024–25 annual reporting period | |
|---------------------------------------|-----------------------|-----------------------------|-------|----------------|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|--|
| | | Pref | Abs | | 2015–16 | 2016–17 | 2017–18 | 2018–19 | 2019–20 | 2020–21 | 2021–22 | 2022–23 | 2023–24 | 2024–25 | | |
| Vegetation sites | | | | | | | | | | | | | | | | |
| JM14 (telemetered site*) | 61610247 | 24.39 | 23.89 | | Max | 25.26 | 25.58 | 25.67 | 26.13 | 25.48 | 25.04 | 25.71 | 25.64 | 25.17 | 25.48 | <u>Compliance</u> Compliant with absolute minimum criterion. The minimum groundwater level was recorded in July 2024. |
| | | | | | Min | 24.35 | 24.68 | 24.75 | 24.75 | 24.47 | 24.34 | 24.51 | 24.52 | 24.17 | 24.47 | |
| JM16/ JM16A (telemetered site*) | 61610445/ 61612151 | 23.90 | 23.40 | | Max | 25.13 | 25.30 | 25.51 | 25.71 | 25.36 | 24.86 | 25.41 | No data | 25.25 | 25.32 | <u>Compliance</u> Compliant with absolute minimum criterion. <u>Additional information</u> JM16 was destroyed by roadworks in August 2022. A replacement bore JM16A (AWRC ref. 61612151) was drilled adjacent to JM16 during 2022–23 and surveyed during 2023–24. JM16A has been used to monitor groundwater levels at this site since January 2023. |
| | | | | | Min | 24.19 | 24.49 | 24.57 | 24.40 | 24.22 | 24.11 | 24.31 | 24.37 | 24.09 | 24.23 | |
| JM19 | 61610177 | 25.26 | 24.76 | | Max | 25.72 | 26.41 | 26.82 | 27.27 | 27.05 | 26.71 | 27.23 | 27.45 | 27.07 | 27.16 | <u>Compliance</u> Compliant with absolute minimum criterion. |
| | | | | | Min | 24.84 | 25.28 | 25.90 | 26.22 | 26.10 | 26.07 | 26.42 | 26.46 | 26.05 | 26.20 | |
| JM35 (telemetered site*) | 61610333 | 21.25 | 20.75 | | Max | 25.02 | 23.39 | 24.13 | 25.18 | 24.75 | 24.00 | 25.28 | 24.99 | 24.65 | 25.15 | <u>Compliance</u> Compliant with absolute minimum criterion. Monthly water level monitoring data, collected manually, was used to measure compliance, as telemetry data was unavailable for the full reporting year. The minimum groundwater level was recorded in July 2024. |
| | | | | | Min | 20.91 | 21.45 | 21.86 | 22.56 | 22.15 | 21.98 | 22.94 | 23.20 | 21.76 | 22.39 | |
| JM39 | 61410142 | 21.20 | 20.70 | | Max | 22.46 | 22.76 | 23.56 | 24.39 | 23.61 | 22.82 | 24.43 | 24.00 | 23.86 | 24.34 | <u>Compliance</u> Compliant with absolute minimum criterion. |
| | | | | | Min | 20.76 | 21.08 | 21.59 | 21.85 | 21.42 | 21.49 | 21.47 | 21.92 | 22.50 | 21.99 | |
| JM49 (telemetered site*) | 61410111 | 22.34 | 21.84 | | Max | 23.67 | 23.86 | 24.02 | 24.23 | 24.11 | 23.60 | 24.10 | 24.03 | 23.90 | 24.01 | <u>Compliance</u> Compliant with absolute minimum criterion. Monthly water level monitoring data, collected manually, was used to measure compliance, as telemetry data was unavailable for the full reporting year. |
| | | | | | Min | 22.93 | 23.08 | 23.19 | 23.20 | 22.92 | 22.86 | 23.11 | 23.11 | 22.83 | 22.94 | |
| 8284/ 8284B | 61610178/ 61611864 | 24.82 | 24.32 | | Max | 25.68 | 25.78 | 26.16 | 26.56 | 26.26 | 25.77 | 26.35 | 26.50 | 26.17 | 26.22 | <u>Compliance</u> Compliant with absolute minimum criterion. <u>Additional information</u> Bore 8284 was decommissioned due to it collapsing during maintenance work. The Department now uses 8284B (AWRC ref. 61611864), located adjacent to 8284, to measure compliance with water level criteria. Construction works around the new bore during mid-2021 to mid-2022 affected the bore headworks. The 2022–23 minimum and maximum levels have been revised in this report to reflect the new measurement point elevation following completion of construction works. The reported 2021–22 minimum and maximum levels have not been changed; however, there is a degree of uncertainty about the true elevation of the temporary measurement point used during the 2021–22 reporting period. |
| | | | | | Min | 24.99 | 25.11 | 25.38 | 25.52 | 24.34 | 25.17 | 25.15 | 25.71 | No data | 25.32 | |
| JE4C (telemetered site*) | 61610234 | 24.00 | 23.50 | | Max | 25.45 | 25.72 | 26.07 | 26.46 | 26.08 | 25.69 | 26.33 | 26.19 | 25.85 | 26.01 | <u>Compliance</u> Compliant with absolute minimum criterion. |
| | | | | | Min | 24.43 | 24.79 | 25.06 | 25.13 | 24.79 | 24.79 | 24.75 | 24.96 | 24.65 | 24.78 | |
| JE10C (telemetered site*) | 61410250 | 21.80 | 21.30 | | Max | 26.04 | 25.48 | 25.96 | 26.44 | 26.19 | 25.80 | 26.44 | 26.27 | 25.77 | 26.05 | <u>Compliance</u> Compliant with absolute minimum criterion. |
| | | | | | Min | 23.01 | 23.62 | 23.98 | 24.19 | 23.66 | 23.90 | 24.67 | 24.44 | 23.81 | 23.58 | |

| Groundwater monitoring bore | AWRC reference number | Water level criteria (mAHD) | | Other criteria | Water level (mAHD) | | | | | | | | | | Status and comments on compliance during the 2024–25 annual reporting period | |
|---------------------------------------|-----------------------|-----------------------------|-------|--|--------------------|--------------|---------|---------|---------|--------------|--------------|---------|---------|--------------|--|--|
| | | Pref | Abs | | 2015–16 | 2016–17 | 2017–18 | 2018–19 | 2019–20 | 2020–21 | 2021–22 | 2022–23 | 2023–24 | 2024–25 | | |
| Rare flora sites | | | | | | | | | | | | | | | | |
| JM7 (telemetered site*) | 61610180 | | 22.06 | Absolute summer minimum water levels should not decline at rate greater than 0.1 m/year. | Max | 24.35 | 24.41 | 24.74 | 25.17 | 24.87 | 24.25 | 24.90 | 24.94 | 24.60 | 24.79 | <u>Compliance</u> Compliant with absolute minimum criterion. <u>Additional information</u> Bushland around JM7 has been progressively cleared since 2005 and the closest remnant native bushland is now about 500 m north-east of the monitoring bore. |
| | | | | | Min | 23.56 | 23.81 | 24.00 | 24.05 | 23.63 | 23.52 | 23.92 | 23.95 | 23.51 | 23.69 | |
| JM8 | 61610248 | | 23.38 | Absolute summer minimum water levels should not decline at rate greater than 0.1 m/year. | Max | | | | | | | | | No data | No data | <u>Compliance</u> Compliance with absolute minimum criterion not assessed. Compliance with other criterion not assessed. Monitoring of water levels stopped in September 2014 due to access issues. Compliance with the criteria could not be assessed at rare flora site JM8 during the reporting period because this bore could not be accessed for monitoring. Since 2014–15 JM8 has only been monitored for a brief period in 2024 due to access constraints. We are working to re-establish access. If this is not possible, alternative options will be explored. |
| | | | | | Min | | | | | | | | | | 24.11 | |
| JM45/ JM45A (telemetered site*) | 61610179/ 61618756 | | 22.71 | Absolute summer minimum water levels should not decline at rate greater than 0.1 m/year. | Max | 24.39 | 24.59 | 24.85 | 25.16 | 24.96 | 24.46 | 25.04 | 25.35 | 24.99 | 25.06 | <u>Compliance</u> Compliant with absolute minimum criterion. <u>Additional information</u> JM45 was decommissioned in 2016–17 due to urban development in the area. The Department now uses JM45A (AWRC ref. 61618756) to measure compliance with water level criteria. |
| | | | | | Min | 23.69 | 23.82 | 24.09 | 24.09 | 23.93 | 23.84 | 24.07 | 24.35 | 24.03 | 24.18 | |
| JE17C (telemetered site*) | 61419703 | | 16.35 | Absolute summer minimum water levels should not decline at rate greater than 0.1 m/year. | Max | 18.13 | 18.18 | 18.18 | 18.24 | 18.20 | 18.12 | 18.21 | 18.25 | 18.12 | 18.19 | <u>Compliance</u> Compliant with absolute minimum criterion. |
| | | | | | Min | 17.45 | 17.76 | 17.76 | 17.69 | 17.58 | 17.61 | 17.57 | 17.61 | 17.42 | 17.37 | |

* Currently, nine sites have been telemetered, but only one site (JM7) had data available for the full reporting year. Therefore, the minimum and maximum of daily mean water level readings from telemetry data were used for JM7, while monthly manual water level monitoring data was used to assess compliance at other sites where full-year telemetry data was unavailable.

Appendix B Audit tables: Environmental conditions, procedures and commitments for the Jandakot Mound

Proponent: Department of Water and Environmental Regulation

Period: 1 July 2024 to 30 June 2025

Note: *Ministerial Statement no. 688* refers to Department of Water and Environmental Regulation (formerly Water and Rivers Commission and Department of Water) responsibilities to the EPA. In some cases, although referred to below as EPA, some responsibilities now lie with DBCA.

Table B1 Ministerial conditions and procedures

| Audit code | Subject | Action | How | Evidence | Requirement of: | On advice from: | Phase | When/Where | Status and further information for the 2024–25 annual reporting period |
|-----------------------------|--|--|--|---|-------------------------------|-----------------|---------|-------------------|---|
| 688: M 1-1 | Implementation | The proponent shall implement the proposals as documented in <i>Section 46 Review of Environmental Conditions on Management of the Gnarara and Jandakot Mounds – Stage 1 Proposal for Changes to Conditions</i> (August 2004), as modified and documented in <i>Environmental Protection Authority Bulletin 1155</i> . | Implement proposals (conditions, procedures) given in EPA Bulletin 1155 and <i>Ministerial Statement no. 688</i> . | Compliance report. | Minister for the Environment | | Overall | | Non-compliant. Under the <i>Waterwise Perth Action Plan</i> (Government of Western Australia 2019, 2022 and 2024), the Department is working towards a target of a 10 per cent reduction in groundwater use across the greater Perth area by 2030. The <i>Cockburn groundwater allocation plan</i> (DWER 2021) was released in 2021 and a review of allocation limits in the Jandakot and Perth South groundwater areas is currently underway. Refer also to the status of other conditions in this table and Table B2 for further information on groundwater management strategies the Department is undertaking. |
| 688: M 2-1 | Proponent commitments | The proponent shall implement the environmental management commitments, as revised in December 2004, and documented in schedule 1 of <i>Ministerial Statement 688</i> , to the requirements of the Minister for the Environment on advice of the EPA. | Implement environmental management commitments given in EPA Bulletin 1155 and <i>Ministerial Statement no. 688</i> . | Compliance report. | Minister for the Environment | EPA | Overall | | Non-compliant. Over the reporting period five sites (North Lake, Bibra Lake, Lake Forrestdale, Banganup Lake and Shirley Balla Swamp) were non-compliant with the absolute minimum water level criteria and three sites (Bibra Lake, Lake Forrestdale, and Shirley Balla Swamp) were non-compliant with the other criteria identified in Schedule 1 of <i>Ministerial Statement no. 688</i> . See Table 4 and Appendix A. |
| 688: M 3-1 | Proponent nomination and contact details | The proponent nominated by the Minister for the Environment under Section 38 (6) or (7) of the <i>Environmental Protection Act 1986</i> is responsible for the implementation of the proposal, until such time as the Minister for the Environment has exercised the Minister's power under Section 38 (7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposal. | Adhere to conditions, procedures and commitments given in EPA Bulletin 1155 and <i>Ministerial Statement no. 688</i> . | Letter notifying the Chief Executive Officer of any change in proponent details. | Minister for the Environment | EPA | Overall | | Compliant. The Department of Water and Environmental Regulation was established by the Government of Western Australia on 1 July 2017. It is a result of the amalgamation of the Department of Environment Regulation, Department of Water and the Office of the Environmental Protection Authority. |
| 688: M 3-2 | Proponent nomination and contact details | If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent and provide a letter with a copy of this statement endorsed by the proposed replacement proponent that the proposal will be carried out in accordance with this statement. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal shall also be provided. | Follow procedure given in 'action'. | Letter notifying the Chief Executive Officer of any change in proponent details. | Minister for the Environment | | Overall | | Not required at this stage. No change to proponent was made during the reporting period. |
| 688: M 3-3 | Proponent nomination and contact details | The nominated proponent shall notify the EPA of any change of contact name and address within 60 days of such change. | Follow procedure given in 'action'. | Letter notifying the Chief Executive Officer of the EPA of any change in proponent details. | CEO of DWER or their delegate | | Overall | 60 days of change | Not required at this stage. No change to proponent was made during the reporting period. |

| Audit code | Subject | Action | How | Evidence | Requirement of: | On advice from: | Phase | When/Where | Status and further information for the 2024–25 annual reporting period |
|---------------------|---|---|---|--------------------|-----------------|-----------------|---------|--|---|
| 688: M 4-1 | Commencement and time limit of approval | The proponent shall provide evidence to the Minister for the Environment within five years of the date of this statement that the proposals have been substantially commenced or the approvals granted in the statements of 8 March 1988 and 17 February 1999 shall lapse and be void. | Provide evidence in annual/triennial reports. | Compliance report. | | | Overall | Condition complete | Completed. The 'status of implementation of the proposals' is 'completed' because Water Corporation's Jandakot Scheme stages 1 and 2 are fully commissioned. |
| 688: M 5-1 1 | Compliance audit and performance review | The proponent shall prepare an audit program and submit compliance reports to the EPA which address: 1. the status of implementation of the proposals | Detail in annual/triennial reports. Compliance report will include: 1. the status of implementation of the proposals | Compliance report. | CEO | | Overall | Condition complete | Completed An audit program (see 688: P 14) was submitted to the EPA on 25 November 2005. The 'status of implementation of the proposals' is 'completed' as Jandakot Scheme stage 1 and 2 are fully commissioned. |
| 688: M 5-1 2 | Compliance audit and performance review | The proponent shall prepare an audit program and submit compliance reports to the EPA which address: 2. evidence of compliance with the conditions and commitments | Detail in annual/triennial reports. Compliance report will include: 2. evidence of compliance with the conditions and commitments | Compliance report. | CEO | | | Annually | Compliant. Detailed in Sections 4 and 5, and Appendix A and B of this report. |
| 688: M 5-1 3 | Compliance audit and performance review | The proponent shall prepare an audit program and submit compliance reports to the EPA which address: 3. the performance of the environmental management plans and programs. Note: Under delegation No. 54 issued on 18 June 2004 and Section 48 (1) of the <i>Environmental Protection Act 1986</i> , the EPA is empowered to monitor the compliance of the proponent with the statement and should directly receive the compliance documentation, including environmental management plans, related to the conditions, procedures and commitments contained in this statement. | Detail in annual/triennial reports. Compliance report will include: 3. the performance of the environmental management plans and programs. | Compliance report. | CEO | | | Annually | Compliant. Detailed in Sections 4 and 5 and Appendix A and B of this report. |
| 688: M 5-2 1 | Compliance audit and performance review | The proponent shall submit a performance review report by 1 December each year and more detailed reports by 1 February every three years, to the requirements of the EPA, which address: 1. compliance with the conditions | The performance review will address: 1. compliance with the conditions | Compliance report. | CEO | | Overall | By 1 December each year and more detailed reports by 1 February every three years. | Compliant. Condition met by submission of this report by 1 December 2025. |
| 688: M 5-2 2 | Compliance audit and performance review | The proponent shall submit a performance review report by 1 December each year and more detailed reports by 1 February every three years, to the requirements of the EPA, which address: 2. the achievement of environmental objectives set for the proposal | The performance review will address: 2. the achievement of environmental objectives set for the proposal | Compliance report. | CEO | | Overall | By 1 December each year and more detailed reports by 1 February every three years. | Compliant. Condition met by submission of this report to the EPA by 1 December 2025 (refer to Table B2 in Appendix B for objectives). |

| Audit code | Subject | Action | How | Evidence | Requirement of: | On advice from: | Phase | When/Where | Status and further information for the 2024–25 annual reporting period |
|-------------------------------|---|--|--|--|-----------------|-----------------|---------|---|--|
| 688: M 5-2 3 | Compliance audit and performance review | The proponent shall submit a performance review report by 1 December each year and more detailed reports by 1 February every three years, to the requirements of the EPA, which address: 3. stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed | The performance review will address: 3. stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed. Comply with commitments in <i>Ministerial Statement 688</i> : P 7, 9, 10, 11, 16, and 17. | Compliance report. | CEO | | Overall | By 1 December each year and more detailed reports by 1 February every three years. | Compliant. Condition met by submission of this report by 1 December 2025 (refer to Section 5.4). The Jandakot Community Consultative Committee (JCCC) met on 30 October 2024. Some of the main topics of discussion during this meeting were: <ul style="list-style-type: none"> The Department is undertaking a review of groundwater allocation limits in the Jandakot and Perth South groundwater areas. Opportunities to investigate improving water levels at Jandakot wetlands such as Bibra Lake and Lake Forrestdale through optimising the use of drainage water. |
| 688: M 5-2 4 | Compliance audit and performance review | The proponent shall submit a performance review report by 1 December each year and more detailed reports by 1 February every three years, to the requirements of the EPA, which address: 4. proposed environmental management over the next three years to comply with conditions and environmental objectives set for the proposal. | The performance review will address: 4. proposed environmental management over the next three years to comply with conditions and environmental objectives set for the proposal. | Compliance report. | CEO | | Overall | By 1 December each year and more detailed reports by 1 February every three years. | Compliant. Condition met by submission of this report by 1 December 2025. The environmental monitoring program was updated in 2023 and submitted to Department of Water and Environmental Regulation, Assurance Division on 31 January 2024. The Department is continuing to review and refine its environmental management of Jandakot groundwater resources using results from environmental monitoring and hydrogeological investigations and modelling. The Department is preparing a groundwater allocation plan for the Jandakot and Perth South groundwater areas, which will include environmental objectives and management actions to meet those objectives. |
| 688: M 5-3 | Compliance audit and performance review | The proponent shall make the reports required by condition 5-2 publicly available, to the requirements of the EPA. | Available on Department of Water and Environmental Regulation's website: dwer.wa.gov.au | Reports made available on the Department of Water and Environmental Regulation website: dwer.wa.gov.au | CEO | | Overall | After OEPA acknowledgement letter being received. Department of Water and Environmental Regulation's website. | Compliant. Jandakot annual and triennial compliance reports are available on the Department's website: Environmental compliance reports - Jandakot groundwater . |
| 688: M 5-4 | Compliance audit and performance review | The proponent shall report any breach or anticipated breach of the environmental criteria set out in tables 1 and 2 (attached to <i>Ministerial Statement 688</i>) or environmental objectives to the OEPA immediately it becomes evident to the proponent. | Report in regular summaries sent to the Chief Executive Officer of the EPA. | Letter to the Chief Executive Officer of the EPA reporting non-compliance with water level and other criteria as required. Compliance report. | CEO | | Overall | Immediately as it becomes evident. | Non-compliant. The Department informs the EPA of non-compliance with criteria water levels and other criteria in annual and triennial compliance reports. |

| Audit code | Subject | Action | How | Evidence | Requirement of: | On advice from: | Phase | When/Where | Status and further information for the 2024–25 annual reporting period |
|---------------|-------------------------|--|--|--|------------------------------|-----------------|---------|------------|---|
| 688: M 6-1 | Management plan | The proponent shall implement the Environmental Management Plan prepared by the Water Authority of Western Australia (1992) to the requirements of the EPA. | Comply with environmental objectives and criteria listed in WAWA EMP (1992). | Compliance report. | EPA | | Overall | | <p>Completed.</p> <p>The condition to implement the requirements set out in the Environmental Management Plan is met by following and meeting the commitments in <i>Ministerial Statement no. 688</i>.</p> <p>The Environmental Management Plan was submitted to the former Department of Environment and Conservation (DEC) (now DBCA) in 1992 and since then there have been several amendments to Ministerial conditions relating to the plan.</p> <p>The Department considers the implementation of the Environmental Management Plan an ongoing commitment. From 2005 onwards the former Department of Environment and Department of Water, now Department of Water and Environmental Regulation is demonstrating its implementation through the annual/triennial compliance reports to the EPA. Implementation is reported as:</p> <ul style="list-style-type: none"> • compliance with water level and other criteria • reporting on proponent and Ministerial conditions/commitments (audit tables) • implementation of the environmental monitoring program (required under other conditions). |
| 688: M 7-1 | Groundwater allocations | The proponent shall inform the EPA immediately of any proposed changes to allocations, abstraction limits and licence or allocation periods. | Detail limits on availability on the Department of Water and Environmental Regulation's website. Detailed in annual/triennial reports. | Reports made available on the Department of Water and Environmental Regulation's website: dwer.wa.gov.au | Minister for the Environment | | Overall | | <p>Compliant.</p> <p>Changes to allocations, abstraction limits and licensing is documented in annual and triennial compliance reports. There has been limited change (mostly reductions in abstraction) over the last five years. Compliance reports are published on the Department's website: dwer.wa.gov.au.</p> <p>Information about the availability of groundwater for licensing can also be accessed on the Department's Water Register.</p> <p>The Department's recent management focus has been an allocation limit review for the Jandakot and Perth South groundwater areas. A draft allocation plan for public comment will be released when the review is complete.</p> <p>The <i>Cockburn groundwater allocation plan</i> (DWER 2021), which covers the western part of Jandakot Mound, was published in 2021.</p> <p>The <i>Waangaamaap – Serpentine groundwater allocation statement</i> (DWER 2024a), which covers the southern extent of the Jandakot Mound, was published in 2024.</p> |
| 688: M 8-1 | Water conservation | The proponent shall actively encourage further reduction in public and private water demand in accordance with the State Water Strategy (2003) and other water conservation initiatives. | Engage in activity that supports water conservation. | Compliance reports. | Minister for the Environment | | Overall | | <p>Compliant.</p> <p>Section 5.2 outlines the management actions the Department is taking to encourage further reduction in public and private water demand. Many of these strategies fall under the 2030 targets detailed in <i>Kep-Katitjin – Gabi Kaadadjan: Waterwise Perth action plan 2</i> (Government of Western Australia 2022) and <i>Kep-Katitjin – Gabi Kaadadjan: Waterwise action plan 3</i> (Government of Western Australia 2024).</p> <p>The Department has recently updated its water efficiency policy for licensees: <i>Water conservation/efficiency plan – Achieving water use efficiency gains through water licensing</i> (DWER 2022a). This policy requires all licensees who must prepare an operating strategy as part of their groundwater licence conditions to include a water conservation/efficiency plan (WCEP) as part of that strategy. Licensees in high demand areas who are not required to prepare an operating strategy may still be required to develop a WCEP.</p> |

| Audit code | Subject | Action | How | Evidence | Requirement of: | On advice from: | Phase | When/Where | Status and further information for the 2024–25 annual reporting period |
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| 688: M Procedure 1 | | Where a condition states 'to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority', the EPA will prepare the written notice to the proponent. | The EPA to provide written notice to the proponent (Department of Water and Environmental Regulation). | | Minister for the Environment | | Overall | | Not required at this stage. |
| 688: M Procedure 2 | | The EPA may seek advice from other agencies or organisations, as required, in order to provide its advice. | The EPA to seek advice as required. | | EPA | Other agencies as required | Overall | | Not required at this stage. |
| 688: M Procedure 3 | | Where a condition lists advisory bodies, it is expected that the proponent will obtain the advice of those listed as part of its compliance reporting to the EPA. | Department of Water and Environmental Regulation liaises with advisory body as required. | Liaison with advisory body in compliance report. | EPA | Agencies listed as part of compliance reporting | Overall | | Compliant. |

Table B2 The proponent's (Department of Water and Environmental Regulation's) environmental management conditions

| Audit code | Subject | Objective | Action | How | Evidence | Requirement of: | On advice from: | When/Where | Status and further information for the 2024–25 reporting period |
|-----------------------|---|--|--|---|---|------------------------------|-----------------|------------|---|
| 688: P 1 | Groundwater-dependent ecosystems | To protect significant environmental values. | Ensure that groundwater abstraction satisfies the environmental criteria presented in Tables 1 and 2 (<i>Ministerial Statement no. 688</i>). | Meet objectives and Environmental Water Provisions criteria presented in Tables 1 and 2 (<i>Ministerial Statement no. 688</i>). | Compliance report. | Minister for the Environment | | Overall | <p>Non-compliant.</p> <p>Groundwater abstraction has not satisfied all the environmental criteria presented in Appendix A. Five sites were non-compliant with absolute minimum water level criteria over the 2024–25 reporting period: North Lake, Bibra Lake, Lake Forrestdale, Banganup Lake and Shirley Balla Swamp. North Lake, Bibra Lake, Lake Forrestdale, and Shirley Balla Swamp have been consistently non-compliant with water level criteria. Banganup Lake was non-compliant for the second year.</p> <p>The Department considered non-compliance and ecological condition at these sites in its review of allocation limits for the <i>Cockburn groundwater allocation plan</i> (DWER 2021) and is currently reviewing allocation limits in the Jandakot and Perth South groundwater areas. The Department also considers non-compliance at these sites in its annual reviews of the distribution of public supply abstraction and in its licensing decisions for private use.</p> <p>A target of 10 per cent less groundwater use across Perth and Peel by 2030 was set under the <i>Waterwise Perth Action Plan</i> (Government of Western Australia 2019) and continues under <i>Kep-Katitjin – Gabi Kaadadjan: Waterwise Perth action plan 2</i> (Government of Western Australia 2022) and <i>Kep-Katitjin – Gabi Kaadadjan: Waterwise action plan 3</i> (Government of Western Australia 2024). Achieving this target will help protect groundwater-dependent ecosystems from declining groundwater levels and improve their resilience in the face of climate change.</p> |
| 688: P 2 1 | Environmental management and monitoring | To minimise environmental and/or significant impact. | <p>If monitoring indicates that there will be significant impacts of a nature not predicted or indicates that a breach of the specified criteria has occurred or is likely to occur, then one or more of the following actions will be undertaken:</p> <ol style="list-style-type: none"> demonstrate to the satisfaction of the EPA that the breach of criteria is not a result of groundwater abstraction; or | Review of monitoring results, advice from expert hydrogeologists, groundwater modelling. | Compliance report. See Condition 688: M 5-4 | EPA | | Overall | <p>Compliant.</p> <p>The Department annually projects, based on water level trends, whether sites are likely to be non-compliant with water level criteria during the coming summer and if necessary, adjusts public water supply abstraction to limit impacts at potentially non-compliant sites. However, due to the significant influence of weather (rainfall, temperature, evapotranspiration etc.) on surface and groundwater levels on the Jandakot Mound, it is not always possible to predict which sites will become non-compliant in the forthcoming year. Public water supply licences are issued for a 12-month period (July to June), so the Department has limited ability to rapidly respond to extreme dry conditions that arise part way through a reporting period.</p> <p>There are several sites that are long-term non-compliant (North Lake, Bibra Lake, Lake Forrestdale and Shirley Balla Swamp). Climate is considered to be a significant contributing factor to the long-term non-compliant status of these wetlands. Total annual rainfall over the Jandakot Mound has been declining since the early 1990s. A warmer and drier climate is expected for the south-west of Western Australia due to climate change. While interactions between rainfall and groundwater levels are complex, the significant declines in groundwater levels across many parts of the Jandakot Mound shows that reductions in rainfall and recharge are impacting groundwater levels. Groundwater abstraction across the Jandakot Mound would also be affecting groundwater levels at the long-term non-compliant wetlands. The relative impact from abstraction would likely be greater in dry years like 2023–24 when groundwater recharge is reduced and there is less groundwater available to support both groundwater users and the environment.</p> |

| Audit code | Subject | Objective | Action | How | Evidence | Requirement of: | On advice from: | When/Where | Status and further information for the 2024–25 reporting period |
|---------------|---|--|---|---|--------------------|-----------------|-----------------|------------|--|
| 688: P 2 2 | Environmental management and monitoring | To minimise environmental and/or significant impact. | 2. satisfy the EPA that the breach of a criterion is transient and not of permanent significance; or | Review of similar occurrence in the past and consequences from environmental monitoring results. Advice from expert hydrogeologists. | Compliance report. | EPA | | Overall | <p>Non-compliant.</p> <p>Water levels at several sites (including North Lake, Bibra Lake, Lake Forestdale and Shirley Balla Swamp) are consistently non-compliant with water level and other criteria. Groundwater levels at those sites had been relatively stable leading up to 2025, except at Shirley Balla Swamp where groundwater levels have been declining since 2015.</p> <p>Whether or not non-compliance at Banganup Lake is likely to be transient is being considered as part of the scenario modelling for the Jandakot and Perth South groundwater allocation plan, currently underway.</p> <p>The Department considered non-compliance and ecological condition at non-compliant sites in its review of allocation limits for the Cockburn groundwater area and the ongoing review of allocation limits for the Jandakot and Perth South groundwater areas. The Department also considers non-compliance at these sites in distributing public supply abstraction and in licensing decisions for private use.</p> <p>A target of 10 per cent less groundwater use across Perth and Peel by 2030 was set under the <i>Waterwise Perth Action Plan</i> (Government of Western Australia 2019) and continues under <i>Kep-Katitjin – Gabi Kaadadjan: Waterwise Perth action plan 2</i> (Government of Western Australia 2022) and <i>Kep-Katitjin – Gabi Kaadadjan: Waterwise action plan 3</i> (Government of Western Australia 2024). The change to the sprinkler roster for garden bores on 1 September 2022, from three days to two days per week, is contributing to this target in the Jandakot Mound area.</p> <p>Achieving the target will help protect groundwater-dependent ecosystems from declining groundwater levels and improve their resilience in the face of climate change.</p> |
| 688: P 2 3 | Environmental management and monitoring | To minimise environmental and/or significant impact. | 3. Take the following actions: a. modify pumping from any bore where such changes can have a measurable effect (say raise water levels 1 centimetre or more), except in extenuating circumstances such as where significant economic hardship would occur, or DBCA (formerly CALM) declare that the low water levels would be beneficial b. in the case of a wetland, artificially maintain the 'action minima' water level c. implement a short-term detailed monitoring program to establish the condition of agreed species in the affected area. | Implement actions as outlined. | Compliance report. | EPA | | Overall | <p>Compliant.</p> <p>No new actions were required in the reporting period.</p> <p>As described in previous compliance reports, the Department reviews the distribution of public water supply abstraction from Water Corporation borefields on an annual basis. Wherever possible, the Department moves abstraction away from public supply bores that are most likely to affect Ministerial sites and other groundwater-dependent ecosystems at risk of impact from low water levels.</p> <p>The change to the sprinkler roster for garden bores on 1 September 2022, from three days to two days per week, is likely resulting in reduced groundwater use and associated impacts in the Jandakot Mound area.</p> <p>The Department is currently conducting a review of allocation limits within the Jandakot and Perth South groundwater areas, which is likely to result in further management actions to improve ecological outcomes for groundwater-dependent ecosystems.</p> <p>See also status for 688 P 2 2.</p> |

| Audit code | Subject | Objective | Action | How | Evidence | Requirement of: | On advice from: | When/Where | Status and further information for the 2024–25 reporting period |
|-------------|------------------------|---|---|---|--------------------|-----------------|-----------------|------------|--|
| 688: P 3 | Water allocation | To minimise environmental and/or significant impact and manage the resource sustainability. | Regularly review the bulk allocations for private abstraction, as part of the total water abstraction allocation for the Jandakot PWSA, about the sustainable yield of the superficial aquifer, including consideration of the environmental impacts of that abstraction. | Make part of Department of Water and Environmental Regulation's water allocation planning program. | Compliance report. | EPA | | Overall | Compliant. The Department has reviewed allocation limits for the <i>Cockburn groundwater allocation plan</i> (DWER 2021) and is currently reviewing allocation limits in the Jandakot and Perth South groundwater areas. A target of 10 per cent less groundwater use across Perth and Peel by 2030 was set under the <i>Waterwise Perth Action Plan</i> (Government of Western Australia 2019) and continues under <i>Kep-Katitjin – Gabi Kaadadjan: Waterwise Perth action plan 2</i> (Government of Western Australia 2022) and <i>Kep-Katitjin – Gabi Kaadadjan: Waterwise action plan 3</i> (Government of Western Australia 2024). The change to the sprinkler roster for garden bores on 1 September 2022, from three days to two days per week, is contributing to this target in the Jandakot Mound area. Achieving this reduction in use will help protect groundwater-dependent ecosystems from declining groundwater levels and improve their resilience in the face of climate change. |
| 688: P 4 | Water allocation | To minimise environmental and/or significant impact and manage the groundwater resource sustainability. | Restrict the issuing of licences for private abstraction to the limits set by the bulk allocations for both the Jandakot PWSA in its entirety and the licensing subareas. | Set sub-area groundwater allocation limits to values equal to or less than those set for the Jandakot PWSA. | Compliance report. | EPA | | | Non-compliant. The Department has reviewed allocation limits for the <i>Cockburn groundwater allocation plan</i> (DWER 2021) and is currently reviewing allocation limits in the Jandakot and Perth South groundwater areas. In the Cockburn groundwater area, the allocation limits set require the recouping of long-term unused water entitlements to reduce private licensed entitlements to within allocation limits. Improving water use efficiency, changes in land use over time, and localised recouping of long-term unused water entitlements will ensure that water use remains climate resilient. Private licensed entitlements at the end of the reporting period were within the allocation limits for the Jandakot groundwater area in its entirety but were above the allocation limits in the Airport, Canning Vale, and Wright subareas. Private licensed entitlements at the end of the reporting period were within the combined allocation limits for the Perth South subareas specified in Table 3. |
| 688: P 5 | Water allocation | Provide up-to-date mechanisms for groundwater allocation. | Investigate and implement efficient mechanisms for groundwater allocation. | Incorporate in regular Department of Water and Environmental Regulations' allocation work program. | Compliance report. | EPA | | | Compliant. The Department has reviewed allocation limits for the <i>Cockburn groundwater allocation plan</i> (DWER 2021) and is currently reviewing allocation limits in the Jandakot and Perth South groundwater areas. This work uses contemporary methods for determining sustainable limits for use in the decision-making process for the new allocation limits. The Department uses a sophisticated numerical model, the Perth Regional Aquifer Modelling System (PRAMS) to run a range of groundwater use scenarios and assesses the results against management objectives. The PRAMS model has recently been updated and incorporates future climate projections that are based on current climate science. |
| 688: P 6 | Groundwater protection | To minimise environmental and/or significant impact and manage the groundwater resource sustainability. | Assist the EPA in the development of environmental protection policies to protect groundwater. | Liaise with the EPA as required. | Compliance report. | EPA | | | Not required at this stage. No groundwater-related environmental protection policies are currently in preparation. The Department has been heavily involved in developing the draft State Planning Policy 2.9 Planning for Water (SPP2.9) and Planning for Water Guidelines. The aim of SPP2.9 and Guidelines is to streamline and simplify the current water policy framework as part of planning reform. Public comment closed on 15 November 2021, and the Department of Planning, Lands and Heritage is currently reviewing submissions and finalising the policy. |

| Audit code | Subject | Objective | Action | How | Evidence | Requirement of: | On advice from: | When/Where | Status and further information for the 2024–25 reporting period |
|--------------|------------------------|--|--|--|------------------------------------|-----------------|-----------------|------------|--|
| 688: P 7 | Groundwater protection | Integrated land and water resource planning to minimise environmental and/or significant impact. | Participate in the review of regional plans proposed by the Department of Planning, Lands and Heritage (formerly Department for Planning and Infrastructure), local government town planning schemes, and rezoning and development applications. | Liaise with local government, the Department for Planning, Lands and Heritage, and other relevant land-use planning agencies. | Compliance report. | EPA | | | <p>Compliant.</p> <p>The Department assesses land use proposals with potential water resource issues referred from local and state government agencies. In partnership with the then Department of Planning (and other agencies), the Department helped develop <i>Better urban water management</i> (BUWM) (WAPC 2008), a framework for land use planning assessments. BUWM has now been incorporated into the draft SPP2.9 Planning for Water Guidelines (see more information in the status column of 688: P 6).</p> <p>The Department also produced the <i>Jandakot drainage and water management plan</i> (DoW 2009), which aims to assist land developers and local government to better manage groundwater quantity and quality in the area.</p> <p>In 2018, the Department provided updated advice on the <i>Southern Metropolitan and Peel sub-regional structure plan – Regional water management strategy</i>, which identifies water-related constraints and opportunities associated with proposed urban and industrial areas.</p> <p>In 2020 and 2021, the Department provided advice to the Department of Planning, Lands and Heritage (DPLH) and the WA Planning Commission on the water issues and constraints associated with potential development of the Jandakot/Treeby Planning Investigation Area.</p> <p>Under Actions 19 (alternative water supplies) and 29 (deliver integrated water planning for priority areas) of the <i>Waterwise Perth Action Plan</i> (Government of Western Australia 2019), the Department worked with Water Corporation and DPLH on improving the integration of land and water planning to achieve optimal water and planning outcomes for water-constrained areas across Perth and Peel.</p> <p><i>Kep-Katitjin – Gabi Kaadadjan: Waterwise Perth action plan 2</i> (Government of Western Australia 2022) included two actions led by DPLH and the Department to improve and then implement water-related policies, guidelines and processes to strengthen waterwise outcomes at all levels of land use planning.</p> <p>The Department continues to work collaboratively with DPLH on the Jandakot Treeby District Structure Plan, ensuring the integration of land and water planning consistent with policy and guidance</p> |
| 688: P 8 | Groundwater protection | Integrated land and water resource planning to minimise environmental and/or significant impact. | Participate in the review of development submissions to the EPA. | Provide advice to the EPA as requested. | Compliance report. See 688: P 7 | EPA | | | <p>Compliant.</p> <p>See the status of 688: P 7.</p> |
| 688: P 9 | Groundwater protection | Integrated land and water resource planning to minimise environmental and/or significant impact. | Work with the Department of Planning, Lands and Heritage (formerly Department for Planning and Infrastructure), to prepare an integrated Land Use and Water Management Strategy for the Jandakot Mound. | Liaise with the Department of Planning, Lands and Heritage to prepare an integrated Land Use and Water Management Strategy for the Jandakot Mound. | Compliance report. | EPA | | | <p>Compliant.</p> <p>See the status of 688: P 7.</p> |
| 688: P 10 | Water conservation | Water conservation. | Actively pursue programs in both supply and demand management. This includes ongoing public information programs and, where appropriate, regulation for design changes and regular reviews of pricing to conserve water. Improvements in the Water Corporation's supply system will also be pursued. | Engage in activity that supports water conservation. Development of a policy on water conservation plans. | Compliance report. | EPA | | | <p>Compliant.</p> <p>Section 5.2 outlines the actions the Department is taking to manage supply and demand, and support water conservation.</p> |

| Audit code | Subject | Objective | Action | How | Evidence | Requirement of: | On advice from: | When/Where | Status and further information for the 2024–25 reporting period |
|-------------|---|---|---|--|--|-----------------|---------------------|---|---|
| 688: P 11 | Groundwater protection | Integrated land and water resource management to minimise environmental and/or significant impact. | Actively participate in integrated management of the Jandakot catchment. | Liaise with other water and land-use agencies. | Compliance report. | EPA | | | Compliant. The Department liaises with other water and land use agencies to integrate management of the Jandakot catchment, including Water Corporation, EPA and the Western Australian Planning Commission. For example, the Department prepared the <i>Jandakot drainage and water management plan</i> for the WAPC Jandakot structure plan area (see 688: P 9) with some modelling assistance from Water Corporation. See also the status of 688: P 7. |
| 688: P 12 | Environmental management and monitoring | Environmental management of groundwater abstraction is based on best available scientific knowledge. | Review and revise the management criteria and strategies, with the agreement of the EPA, as knowledge of the Jandakot environment and its interaction with groundwater improves. | Stage 1 and 2 Section 46 review supported by scientific research results. | Compliance report. | EPA | EPA | | Compliant. The Department published the <i>Cockburn groundwater allocation plan</i> (DWER 2021) and is currently reviewing allocation limits in the Jandakot and Perth South groundwater areas. As part of this allocation limit review, the Department will consider whether the absolute minimum water level and other criteria in <i>Ministerial Statement no. 688</i> should be revised. A target of 10 per cent less groundwater use across Perth and Peel by 2030 was set under the <i>Waterwise Perth Action Plan</i> (Government of Western Australia 2019) and continues under <i>Kep-Katitjin – Gabi Kaadadjan: Waterwise Perth action plan 2</i> (Government of Western Australia 2022) and <i>Kep-Katitjin – Gabi Kaadadjan: Waterwise action plan 3</i> (Government of Western Australia 2024). |
| 688: P 13 | Environmental management and monitoring | Monitor compliance with Ministerial water level criteria. Management of groundwater levels to protect environmental values of select wetlands. | Monitor water levels in groundwater monitoring bores and North, Bibra, Yangebup, Kogolup, Thomsons and Forrestdale lakes, and The Spectacles and Twin Bartram Swamp, as well as some other small wetlands. | Include in Department of Water and Environmental Regulation regional groundwater monitoring program. | Compliance report Hydrographs available on the Department of Water and Environmental Regulation's website: dwer.wa.gov.au See 688: P 14 | EPA | | | Compliant. Detailed in this report, refer to the results given in Appendix A. Wetlands were included in the Department's Jandakot environmental monitoring program referred to the EPA in December 2005. The environmental monitoring program was last updated in 2023 and submitted to Department of Water and Environmental Regulation, Assurance Division on 31 January 2024. Wetlands continue to be monitored as part of the Program (see 688: P 14). Hydrographs of Ministerial wetland, terrestrial vegetation and rare flora sites are available through the website: Water information reporting Western Australian Government |
| 688: P 14 1 | Environmental management and monitoring | Provide a means for the assessment of compliance with Ministerial environmental criteria for the Jandakot Mound. | 1. Prepare an environmental monitoring program for submission to the EPA for review and subsequent finalisation of the program to the satisfaction of the EPA. The monitoring program will include: <ul style="list-style-type: none"> • monitoring of groundwater levels in all relevant aquifer systems • relevant wetland water levels and water quality • condition of vegetation and fauna associated with groundwater-dependent ecosystems. | Prepare an environmental monitoring program. | Submit monitoring program to the EPA for approval. Compliance report. | EPA | DBCA (formerly DEC) | Within four months of a revised statement being issued following the 2004 Stage 1 Section 46 review | Compliant. The Department's monitoring program includes: <ul style="list-style-type: none"> • groundwater levels in all relevant aquifer systems • relevant wetland water levels and water quality • condition of vegetation and fauna associated with groundwater-dependent ecosystems. An environmental monitoring program was submitted to the EPA on 21 December 2005. It was detailed in Appendix 7 of the Gnamara triennial report for 2003–06 (DoW 2007). The EPA's audit of the 2006–07 compliance report agreed that the commitment could be 'cleared' upon confirmation from the then DEC. The Department reviewed the environmental monitoring program in June 2009 with the monitoring ecologists (see Appendix D). Several amendments were made. A letter was sent to the Director General of the DEC in December 2009, seeking advice and input on the amendments. The Department submitted a revised environmental monitoring program to the EPA on 9 April 2021 (DWERA-001176). The environmental monitoring program was again updated in 2023 and submitted to Department of Water and Environmental Regulation, Assurance Division on 31 January 2024. |

| Audit code | Subject | Objective | Action | How | Evidence | Requirement of: | On advice from: | When/Where | Status and further information for the 2024–25 reporting period |
|----------------|---|--|---|--|------------------------------|-----------------|---------------------|---|---|
| 688: P 14 2 | Environmental management and monitoring | To enable assessment of compliance with Ministerial environmental criteria for the Jandakot Mound. | 2. Implement the approved environmental monitoring plan | Make part of annual Departmental work program. | Compliance report. | EPA | DBCA (formerly DEC) | | <p>Potentially non-compliant.</p> <p>Water level monitoring, macroinvertebrate and water quality monitoring generally occurred in accordance with the 2023 environmental monitoring program during the reporting period, except for the following minor departures:</p> <ul style="list-style-type: none"> Groundwater levels at JM8 were not monitored monthly for the entirety of the 2024–25 reporting period. Further information is provided in Section 4.1. Annual macroinvertebrate and water quality monitoring could not occur at Shirley Balla Swamp in 2024–25 because the lake was dry throughout the reporting period. <p>The following departures from the vegetation monitoring set out in the 2023 environmental monitoring program occurred during the reporting period:</p> <ul style="list-style-type: none"> Wetland vegetation monitoring at Shirley Balla Swamp did not occur during the reporting period as set out in the program due to thick regrowth of <i>Melaleuca raphiophylla</i> and consequent accessibility issues following a fire in 2014. The transect will be monitored in 2025–26. Further information is provided in Section 5.1. Terrestrial vegetation monitoring at Jandakot Airport, Liddelow, Modong West, Modong East and Thomsons Lake transects did not occur during the reporting period and was last conducted in November 2019. It is scheduled to occur triennially and planned to next occur in Spring 2025–26. <p>A summary of the results of the environmental monitoring over the reporting period is reported in Sections 4.1 and 5.1. The Department used these results to distribute public supply abstraction to limit environmental impacts and inform licensing decisions for private use. The Department has also considered the results in its completed review of allocation limits in the Cockburn groundwater area (DWER 2021) and ongoing review of allocation limits in the Jandakot and Perth South groundwater areas.</p> |
| 688: P 14 3 | Environmental management and monitoring | Monitoring program is a reflection of the best available knowledge of groundwater/environment interaction. | 3. Review and revise the program every six years (coinciding with triennial reports), to the satisfaction of the EPA. | Incorporate review in triennial reporting in 6-year intervals. | Triennial compliance report. | EPA | DBCA (formerly DEC) | Every six years (coincides with triennial report) | <p>Compliant.</p> <p>The Department reviewed the environmental monitoring program in June 2009 with the monitoring ecologists (see Appendix D). Several amendments were made. A letter was sent to the Director General of the then DEC in December 2009, seeking advice and input on the amendments.</p> <p>The Department submitted a revised environmental management program to the EPA on 9 April 2021 (DWER-001176). The environmental monitoring program was last updated in 2023 and submitted to Department of Water and Environmental Regulation, Assurance Division on 31 January 2024.</p> |

| Audit code | Subject | Objective | Action | How | Evidence | Requirement of: | On advice from: | When/Where | Status and further information for the 2024–25 reporting period |
|----------------------|---|--|---|---|------------------------------|-----------------|-----------------|---|--|
| 688: P 15 | Environmental management and monitoring | Monitor habitat shifts in conjunction with the assessment of potential impacts on environmental values from groundwater abstraction on the Jandakot Mound. | Use aerial photographs or equivalent on a triennial basis to detect habitat shifts in North Lake, Yangebup, Kogolup, Thomsons and Forrestdale lakes. | Aerial photographs not an effective method. Instead, the Department focuses on field surveys of vegetation transects. | Triennial compliance report. | EPA | | Every three years (coincides with triennial report) | <p>Non-compliant.</p> <p>The Department has not used aerial photographs over the triennial reporting period to detect habitat shifts at North Lake, Yangebup, Kogolup, Thomsons and Forrestdale lakes. It was recognised that there may be limited value using aerial photos solely as a diagnostic tool. As a result, the commitment was modified in Bulletin 1155.</p> <p>The 2023 environmental monitoring program sets out that the Department will conduct vegetation monitoring at established transects annually at North Lake, Lake Forrestdale, Banganup Lake, Twin Bartram Swamp, Shirley Balla Swamp and Beenyup Road Swamp and triennially at Kogolup Lake South and Thomsons Lake. This monitoring identifies shifts in habitat. Monitoring occurred in the reporting period at North Lake, Lake Forrestdale, Banganup Lake, Twin Bartram Swamp, Kogolup Lake South and Thomsons Lake (see 688: P 14 2).</p> <p>The Department commissioned Dr Bea Sommer and Professor Ray Froend of Edith Cowan University to develop a model for determining ecological risk to groundwater-dependent vegetation in a drying climate (Sommer & Froend 2010). The model is based on 30 years of ecological and hydrological monitoring data. The Department uses the model to assess risks to groundwater-dependent vegetation (including likely habitat shifts) under different climate and abstraction regimes.</p> |
| 688: P 16 | Community consultation | Inform major stakeholders of Department of Water and the Water Corporation activities on the Jandakot Mound. Provide mechanism for feed-back. | Hold meetings at least annually with the Jandakot Community Consultative Committee (JCCC) established in consultation with the EPA. This committee will be informed on the groundwater scheme's operation and will provide feed-back to the proponent. | Department of Water and Environmental Regulation to organise JCCC meetings. | Compliance report. | EPA | | | <p>Compliant.</p> <p>The JCCC met on 30 October 2024 and discussed the environmental management of abstraction from the Jandakot groundwater system. See 688: M 5-2 3 for further details.</p> |
| 688: P 17 | Community information | Maintain good public image and up-to-date knowledge of community concerns of water resource issues. | Continue to monitor community response to relevant water resource issues as reported by the media and maintain the current practice of public accessibility of WRC staff. Upon request and adequate notice, staff will address community groups on issues associated with groundwater management. | Monitor media for relevant issues. Address community groups as requested. | Compliance report. | EPA | | | <p>Compliant.</p> <p>The Department subscribes to the 'Media Portal' which forwards water-related newspaper articles to Department employees, so they are kept informed of current water issues and community concerns. The Department's staff are involved in conferences, meetings and workshops that include community group representation (e.g. JCCC meetings), and regularly respond to questions and concerns coming through various communication channels from the public, including from social media.</p> <p>The Department released the <i>Cockburn groundwater allocation plan</i> as a draft for public comment in 2018 and responded to submissions received through the <i>Cockburn groundwater allocation plan: Statement of response</i> in 2021.</p> <p>See: Cockburn groundwater allocation plan (www.wa.gov.au)</p> <p>The Department will continue to consult with community and stakeholders as part of its review of allocation limits for Jandakot and Perth South groundwater areas. The Department will publish a draft groundwater allocation plan for public consultation when this review is complete.</p> |

| Audit code | Subject | Objective | Action | How | Evidence | Requirement of: | On advice from: | When/Where | Status and further information for the 2024–25 reporting period |
|------------------|---|---|---|--|--------------------|-----------------|----------------------|------------|--|
| 688: P 18 | Environmental management and monitoring | Improved environmental monitoring facility at this significant wetland. | Install monitoring wells and improved wetland water level monitoring facilities for Forrestdale Lake and evaluate monitoring data to determine groundwater/wetland water level relationship. Subject to DBCA/DWER (formerly CALM/WRC) installing permanent vegetation monitoring transect and undertaking flora and fauna studies to establish environmental values, the proponent will review available information to propose revised management criteria, if appropriate. | Addressed as part of the Department of Water and Environmental Regulation's completed project – 'Perth shallow groundwater systems investigation'. | Compliance report. | EPA | | | Compliant. The Department installed groundwater monitoring bores at Lake Forrestdale (Bourke & Paton 2010) as part of the Perth shallow groundwater systems investigation. The investigation at the lake found that it acts as a drainage basin that captures local groundwater discharge and drainage. The Department will review monitoring data to determine a groundwater/wetland water level relationship or consider an alternative approach to refining the Lake Forrestdale water level criteria as part of the Jandakot and Perth South groundwater allocation limit review. The Department has also installed telemetry monitoring sites at Lake Forrestdale and at Gibbs Road Swamp as part of works to investigate increasing flow of water from James Drain to Lake Forrestdale to support the lake's surface water levels. Analysis of telemetry data has shown that water levels in Gibbs Road Swamp are dependent on Superficial aquifer water levels and should not be affected by any proposed changes to flows in James Drain. |
| 688: P 19 | Environmental management and monitoring | Enable good water resource management including environmental protection on the Jandakot Mound. | <ol style="list-style-type: none"> 1. Prepare a Management and Monitoring Program. 2. Implement the Management and Monitoring Program. | Prepare Management and Monitoring Program and submit to EPA. | | EPA | | Completed | Completed. This commitment was required prior to commissioning the Stage 2 public water supply scheme. Stage 2 was in operation for over 10 years, and the implementation of the management and monitoring program is described in numerous annual and triennial compliance reports. In addition, following publication of <i>Ministerial Statement no. 688</i> , a revised monitoring program was developed and submitted to EPA (refer Commitment 688: P 14 3) in December 2005. A revised monitoring program was also submitted to the EPA in 2021 (DWERA-001176). The environmental monitoring program was last updated in 2023 and submitted to Department of Water and Environmental Regulation, Assurance Division on 31 January 2024. |
| 688: P 20 | Environmental management and monitoring | Improve understanding of groundwater/wetland ecology relationships | Continue to fund the research projects 10.6.3 listed in Appendix 2 of the EPA Bulletin 587 for the duration of the studies. | Include research projects in annual business planning. | | EPA | | Completed | Completed. Auditor's comments in the 2003–04 annual report state that the commitment can be 'cleared'. Research projects given in Appendix C (Table A12.2) of EPA <i>Bulletin 587</i> refer to commitments given in numbers 21, 22, and 23 below. |
| 688: P 21 | Environmental management and monitoring | Improve understanding of aquatic fauna of the select Jandakot wetlands. | Develop a fauna monitoring program which will focus on: <ol style="list-style-type: none"> 1. waterbird species diversity and breeding success 2. the number of families of aquatic invertebrate and, at infrequent intervals, species richness. | Develop a fauna monitoring program. | | EPA | DBCA (formerly CALM) | Completed | Completed. Auditor's comments in the 2003–04 annual report agreed such a program had been developed and implemented prior to commissioning the Stage 2 scheme and that the commitment can be 'cleared'. A fauna monitoring program was developed and implemented. The results are presented in numerous annual and triennial reports to date. |
| 688: P 22 | Environmental management and monitoring | Improve understanding of the environmental significance of this wetland and means of protecting values. | Undertake study of Banganup Lake, in conjunction with DBCA (formerly CALM) and The University of WA to establish management criteria and consider effectiveness of artificial maintenance of water levels. | Undertake a study of Banganup Lake as described. | | EPA | CALM | Completed | Completed. The study was completed and Auditor comments in 2003–04 annual report states that commitment can be 'cleared'. |
| 688: P 23 | Environmental management and monitoring | Improve understanding of the environmental significance of this wetland and means of protecting values. | Undertake a study of Twin Bartram Swamp to consider the feasibility and effectiveness of artificial maintenance of water levels. | Undertake a study of Twin Bartram Swamp as described. | | EPA | CALM | Completed | Completed. The study was completed and Auditor's comments in 2003–04 annual report state that the commitment can be 'cleared'. |

Appendix C History of Ministerial statements for the Jandakot Mound

In 1988, the former Water Authority of Western Australia (WAWA) referred plans for the construction of Stage 2 of the Jandakot groundwater scheme to the Environmental Protection Agency (EPA). The EPA completed a Public Environmental Review (PER) level of assessment of the proposal. In 1992, the Minister for the Environment issued a statement (EPA Bulletin 587, *Ministerial Statement no. 253 – Assessment 196*), advising that the proposal could be implemented subject to conditions and commitments imposed on the WAWA. Most of the conditions and commitments related to ensuring that groundwater and surface water levels across the Jandakot Mound are maintained at acceptable levels. A key element of *Ministerial Statement no. 253* was that it confirmed environmental water provisions to maintain environmental values on the Jandakot Mound. These were set in the form of water level criteria to be achieved in key wetlands and other groundwater-dependent ecosystems, such as areas of phreatophytic vegetation.

In 2001, because of changes in land use and lower rainfall, the EPA endorsed a two-stage approach to review the Ministerial conditions and commitments for the Gnangara and Jandakot mounds under Section 46 of the EP Act. The first stage of the Section 46 review was for the Department (then the Department of Environment) to review Ministerial conditions and commitments on Gnangara and Jandakot based on existing knowledge (DoE 2005). This review led to *Ministerial Statement no. 687* for Gnangara (Government of Western Australia 2005b) and *Ministerial Statement no. 688* for Jandakot (Government of Western Australia 2005a).

The Department further reviewed Ministerial conditions and commitments on Gnangara in 2007 (DoW 2008). The purpose of this review was to refine Ministerial criteria sites to those with significant ecological value and those where abstraction is the main factor influencing groundwater levels. This review led to the *EPA Bulletin 1324* in May 2009, which recommended changes to the Minister for the Environment. *Ministerial Statement no. 819* for Gnangara (Government of Western Australia 2009) was released later that year including the consolidated conditions and commitments.

The second stage of the Section 46 review was proposed as a more comprehensive review to improve how the Department manages public and private abstraction and to incorporate ecological information using the results of work underway at the time. This stage was later improved by more recent investigations into the shallow groundwater systems and ecological responses to climate.

For Gnangara, the second stage review culminated in the *Gnangara groundwater allocation plan*, which was finalised in June 2022 (DWER 2022b). The EPA is currently inquiring into the proposed changes to implementation conditions that were put forward in the Gnangara plan. For Jandakot and Perth South groundwater areas, the Department is currently reviewing allocation limits and will publish a draft groundwater allocation plan for public consultation when this review is complete.

Appendix D Review of the environmental monitoring program (688: P 14 1 and 688: P 14 3)

In mid-2009, the Department started a series of workshops to review the current environmental monitoring with the ecologists contracted to do the work. The workshops aimed to improve both the effectiveness and efficiency of the environmental monitoring program.

The initial review of the environmental monitoring program:

- refocused the program on the relationships between groundwater levels, ecological condition and abstraction
- improved efficiency by reducing the monitoring frequency from annually to every three years, unless annual monitoring is warranted on a management or information-needs basis
- improved the presentation and communication of monitoring data.

The second review workshop, held in late April 2010, considered two key issues:

- how monitoring results could be presented spatially so that it represents short-term and long-term trends across an entire groundwater management area
- how modelling results could be used to ensure the monitoring effort is focused on the correct areas in the long term.

There were three main outcomes and recommendations from this second workshop:

- Future monitoring programs should include sites where ecological health and compliance can be improved through managing abstraction (based on modelling).
- The Department can make a difference to important areas on the Jandakot Mound by managing abstraction – even minor benefits to groundwater levels can be significant for certain groundwater-dependent ecosystems.
- Where possible, abstraction should be reduced in areas where it would benefit wetlands that still retain some of their key environmental values.

Another review workshop was held in 2013 to further refine the frequency of the monitoring program.

The environmental monitoring program was reviewed in 2021 and submitted to the EPA on 9 April 2021 (DWERA-001176). The environmental monitoring program was again reviewed in 2023 and submitted to Department of Water and Environmental Regulation, Assurance Division on 31 January 2024. The Department is currently reviewing allocation limits and its environmental management program for the Jandakot and Perth South groundwater areas.

Shortened forms

| | |
|----------------|---|
| AHD | Australian Height Datum |
| AWRC | Australian Water Resources Council |
| BoM | Bureau of Meteorology |
| DBCA | Department of Biodiversity, Conservation and Attractions |
| DEC | Department of Environment and Conservation |
| the Department | Department of Water and Environmental Regulation |
| DoW | Department of Water |
| DPLH | Department of Planning, Lands and Heritage |
| DWER | Department of Water and Environmental Regulation |
| EPA | Environmental Protection Authority |
| EP Act | <i>Environmental Protection Act 1986</i> |
| IWSS | Integrated Water Supply Scheme |
| JCCC | Jandakot Community Consultative Committee |
| LAC | Limit of acceptable change |
| m | metres |
| No. | Number |
| OEPA | Office of the Environmental Protection Authority |
| PER | Public Environmental Review |
| PRAMS | Perth Regional Aquifer Modelling System |
| PWSA | Public Water Supply Area |
| SPP 2.9 | <i>Draft State Planning Policy 2.9 Planning for Water</i> |
| WA | Western Australia |
| WAPC | Western Australian Planning Commission |
| WCEP | Water conservation/efficiency plan |

Volumes of water

| | | |
|-----------------------------|----------------------|------------------|
| One litre | 1 litre | 1 litre (L) |
| One thousand litres | 1000 litres | 1 kilolitre (kL) |
| One million litres | 1 000 000 litres | 1 Megalitre (ML) |
| One thousand million litres | 1 000 000 000 litres | 1 Gigalitre (GL) |

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WAPC – see Western Australian Planning Commission

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