



Gnangara

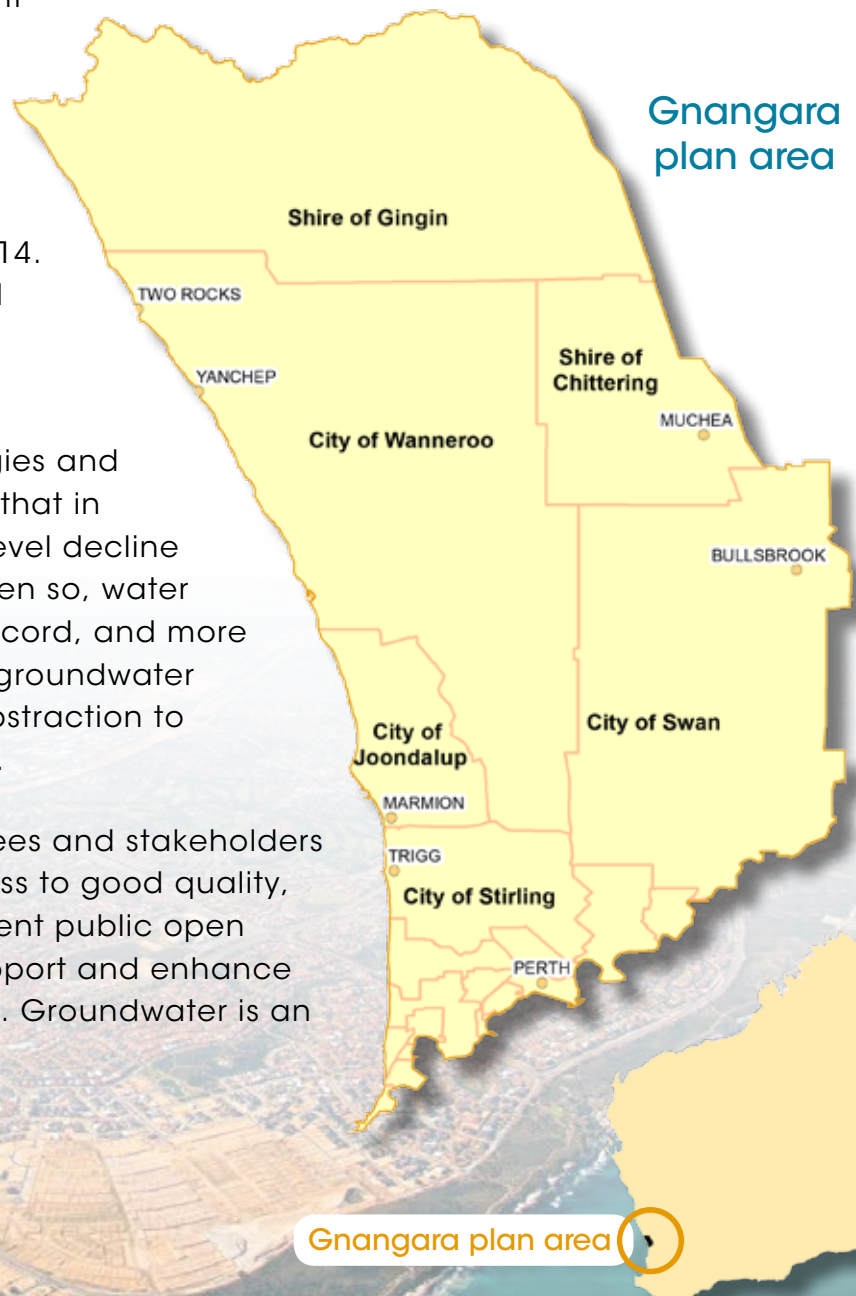
groundwater areas allocation plan

Evaluation statement 2011-2014

This is the second evaluation statement for the Department of Water's *Gnangara groundwater areas allocation plan* (Gnangara plan) published in 2009. It summarises how the department has implemented the Gnangara plan between 2011 and 2014. The first evaluation statement covered the period 2009 to 2011.

This evaluation shows we are making progress and delivering on the strategies and objectives of the Gnangara plan and that in some areas the rate of groundwater level decline has slowed and possibly stabilised. Even so, water levels overall are now the lowest on record, and more interventions are needed to increase groundwater recharge and reduce groundwater abstraction to establish a more sustainable balance.

We are continuing to work with licensees and stakeholders so that the people of Perth have access to good quality, affordable water supplies, water efficient public open spaces and healthy wetlands that support and enhance our way of life now and into the future. Groundwater is an essential part of this.



The Gnangara groundwater system

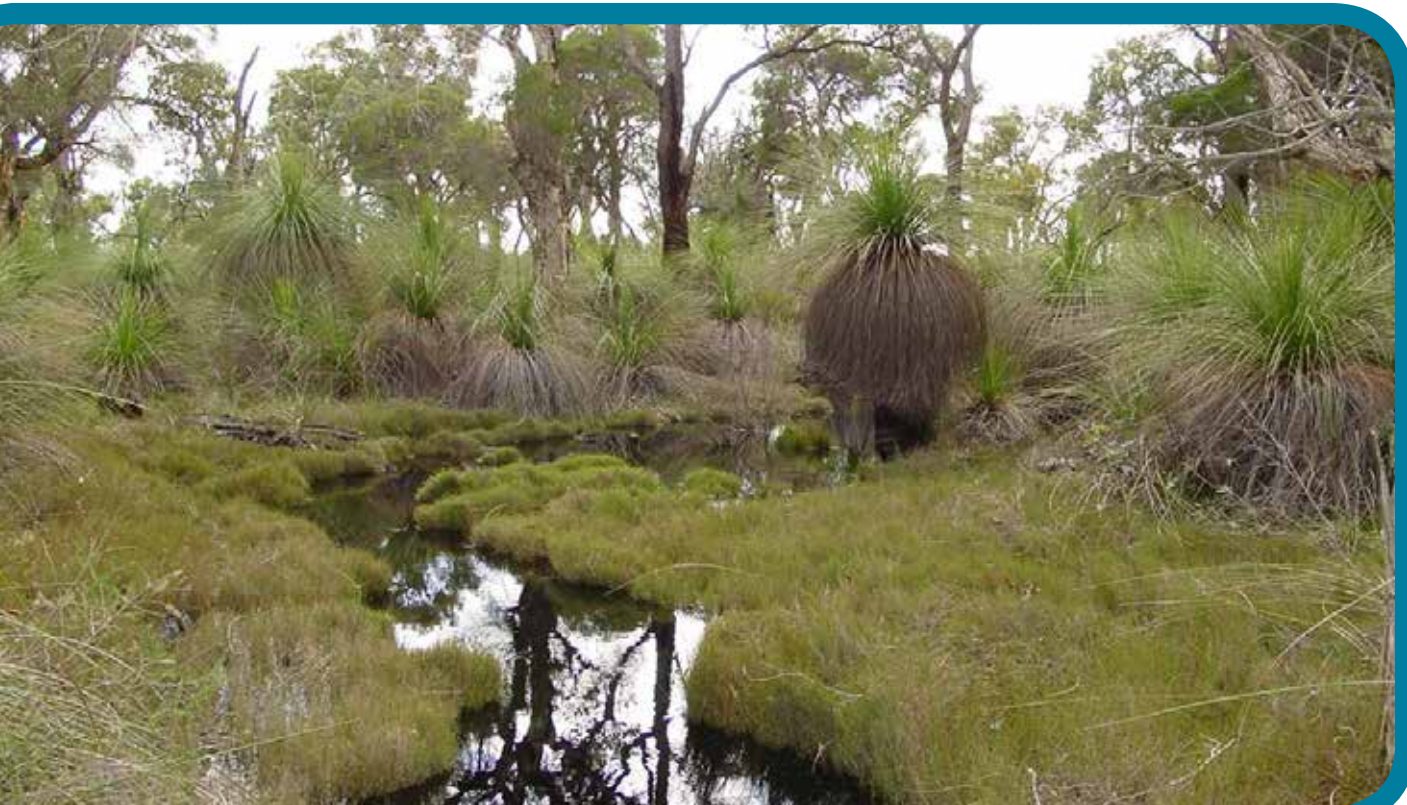
The Gnangara groundwater system is the largest source of good quality, fresh water in the Perth region. It provides almost half of Perth's drinking water as well as local water for agriculture, public open space and domestic gardens.

Ecosystems that depend on groundwater provide environmental services, as well as liveability and amenity values. This is why the Gnangara groundwater system is one of the state's most precious natural resources and its sustainable use is critical for Perth's long-term prosperity and wellbeing.

Improving how we manage groundwater

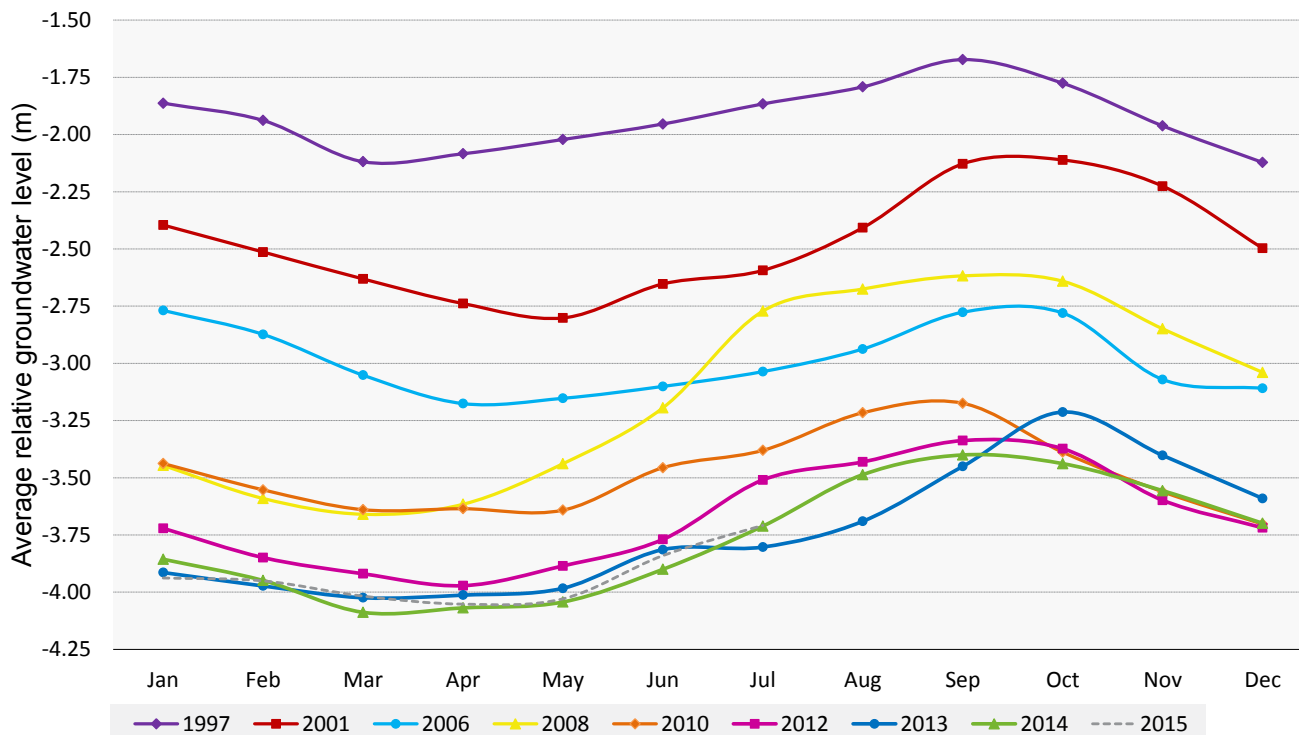
The main achievements between 2011 and 2014:

- Overall abstraction was reduced by 15 per cent between 2010-11 and 2013-14.
- The impacts of public water supply abstraction on high value wetlands were reduced by moving abstraction to lower risk areas, including the deeper confined aquifers.
- Resourcing for compliance and enforcement was increased to ensure water users are 'playing by the rules'.
- The department supported assessment of and completed approvals for the Water Corporation's groundwater replenishment trial. Groundwater replenishment is now under construction and is a critical component of Perth's water future.
- The department provided solutions for critical supply and demand issues; for example, the *North West Corridor water supply strategy*.



Objective	Department of Water actions and achievements for 2011–2014
<p>1. Reduce the total volume of water abstracted from the Gnangara system towards a level that better reflects current recharge from rainfall.</p>	<ul style="list-style-type: none"> • Reduced licence entitlements by 15 per cent since 2010–11, which is about 42 gigalitres (billion litres) per year. • Water Corporation’s annual licence entitlements for Gnangara were reduced to, and stabilised at, 110 GL/year. • Since 2011, we conducted over 1000 compliance monitoring events, issued 103 warning notices, 25 infringement notices, and prosecuted three individuals for illegal activities. • Reduced allocation limits for most shallow Superficial aquifer resources by 10 per cent in 2012 to match ongoing declines in rainfall. • Enforced the three-day-a-week sprinkler restriction and winter sprinkler ban for domestic garden bore users.
<p>2. Optimise the use of water through water use efficiency and demand management measures.</p>	<ul style="list-style-type: none"> • Worked with the City of Wanneroo, other agencies and developers to develop the <i>North West Corridor water supply strategy</i> to secure water for public water supply and public open space. • Supported the assessment and approvals process for Water Corporation’s groundwater replenishment trial. This new source will soon be operational and continue to grow and be a critical part of Perth’s future water supply. • Accredited three more Waterwise councils in the plan area. Waterwise councils include City of Joondalup, City of Perth, City of Vincent, Town of Cambridge, City of Subiaco, City of Nedlands, Town of Claremont, Town of Cottesloe, Shire of Peppermint Grove and Town of Mosman Park. • Co-founded the Waterwise Golf Course Program in 2012, with the Lake Karrinyup Country Club and Wembley Golf Course receiving gold status. • Supported development of the Department of Sport and Recreation’s <i>Public parkland planning and design guide</i>. • Facilitated water trading in fully allocated areas.
<p>3. Protect groundwater-dependent ecosystems from direct impacts associated with abstraction.</p>	<ul style="list-style-type: none"> • Targeted reductions to licence entitlements for public water supply to where they would most benefit groundwater-dependent ecosystems. • Annually reviewed and distributed public water supply abstraction to limit impacts on groundwater-dependent ecosystems. A good example is Lake Gwelup, where we reduced Superficial aquifer abstraction nearby and the water levels in the lake are recovering. • Used a study on water level declines at Loch McNess in Yanchep National Park to adjust nearby pumping by licensees, stop cave supplementation (due to adverse impacts) and better distribute public water supply abstraction. • Began investigating the influence of abstraction on Lake Nowergup and will use the results to develop strategies to improve lake levels. • Began work on the Perth Regional Confined Aquifers Capacity Project which will guide our long-term approach to abstraction and managed aquifer recharge in the area’s confined aquifers.
<p>4. Protect the quality of groundwater for public and self-supply from impacts associated with abstraction and land use.</p>	<ul style="list-style-type: none"> • Continued advice for effective integration of water and land use planning through the <i>Better Urban Water Management</i> process. • Maintained the highest level of public drinking water source protection. • Continued monitoring the seawater interface at Quinns, Eglinton and Yanchep. • Considered the risk of acid sulfate soil through licensing activities.
<p>5. Adapt management of the water resource based on the results of monitoring programs and the condition of the resource.</p>	<ul style="list-style-type: none"> • Continued to monitor groundwater levels in around 700 department-owned bores and used this to adapt our water management. • Continued to monitor ecological health (vegetation, water quality, macro-invertebrate richness) at key groundwater-dependent ecosystems and used this to inform annual distribution of public water supply abstraction. • We are working with local governments, other government agencies and the Water Corporation to address local water supply and demand issues (e.g. the North West and North East corridors).

Average groundwater levels of the Gngangara Superficial aquifer

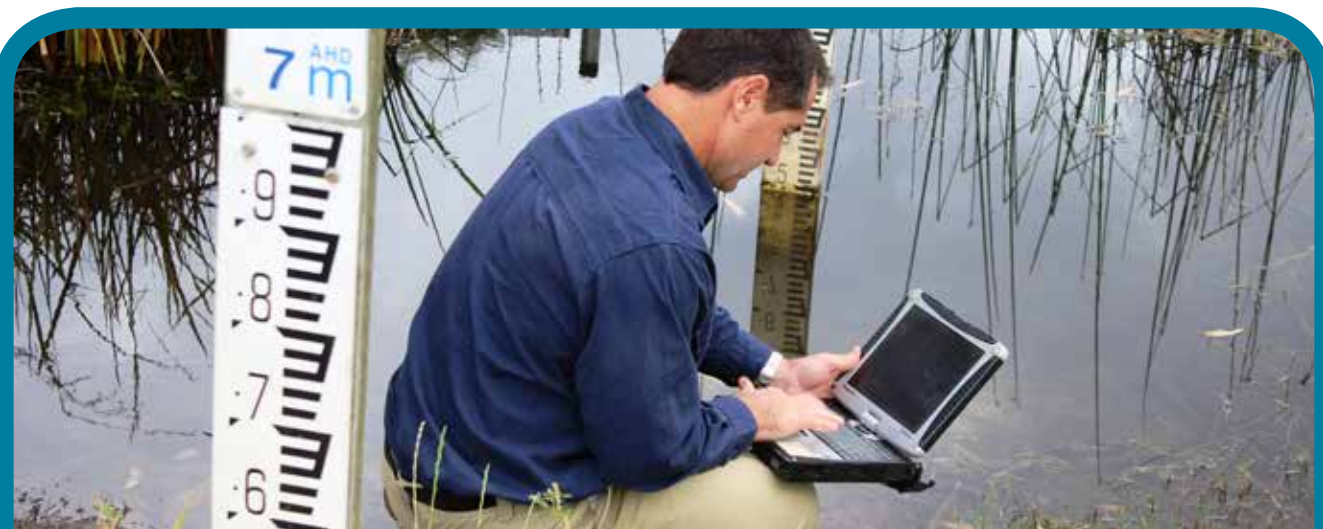


Status of water resources

Over the evaluation period groundwater levels in the shallow Superficial aquifer and, to a lesser extent, in the largely confined Leederville and Yarragadee aquifers have shown evidence of stabilisation or slowed in their decline. This is a positive response to reduced abstraction and reflects more consistent rainfall since 2010.

Despite these improvements, the long-term projections of a drying climate and reduced recharge remain an issue for managing groundwater levels and water quality issues such as acidification and salt water intrusion.

Non-compliance with water level criteria, set in Ministerial statement no. 819 to protect Gngangara environmental values, increased by one site to 17 sites in 2012-13 but returned to 16 sites in 2013-14. The improvement in 2013-14 is likely due to a combination of a relatively wetter year and the annual adjustments to decrease public water supply abstraction near sites at risk of non-compliance. More detail is provided in our published ministerial compliance reports, available online at www.water.wa.gov.au.





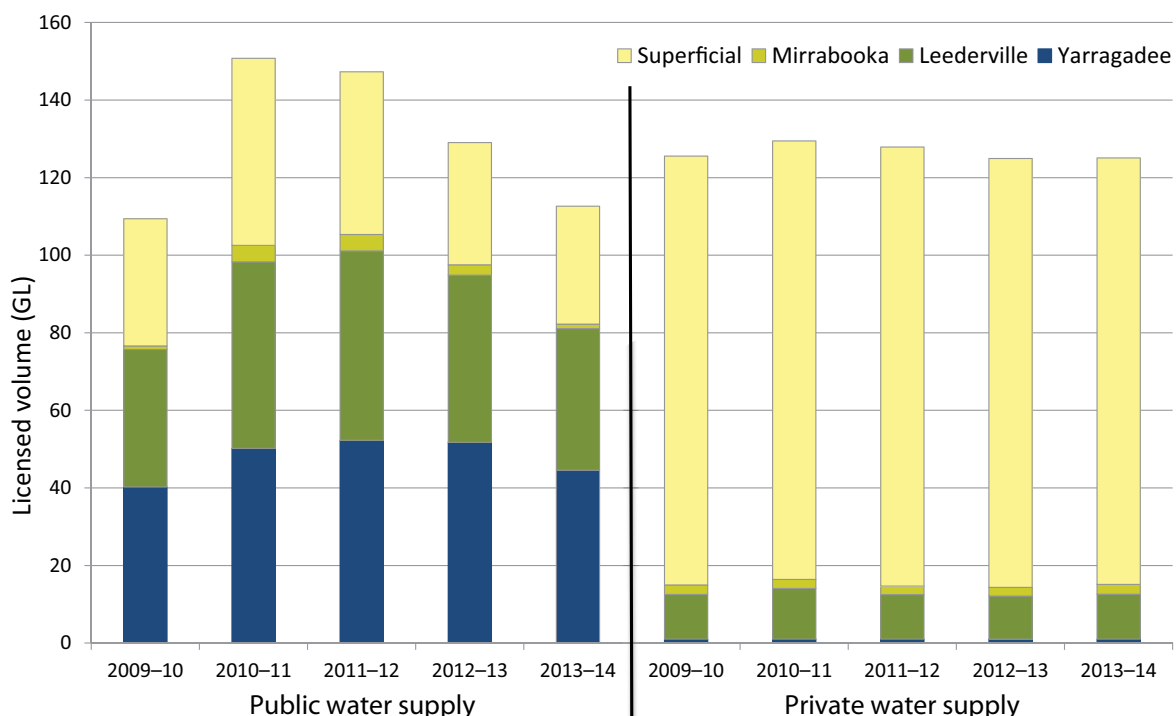
Status of groundwater use

The volume of groundwater licensed across the Gngangara groundwater system has decreased over the evaluation period by about 42 GL/year, from 280 GL/year in 2010–11 to 238 GL/year in 2013–14. This is largely from reducing licence entitlements for public water supply by about 38 GL/year (primarily from the Superficial aquifer), with some reduction in private licence entitlements (about 4 GL/year). Maintaining abstraction in the Leederville and Yarragadee aquifers has allowed us to focus on reducing abstraction in the Superficial aquifer which is critical for supporting both environmental values and water use.

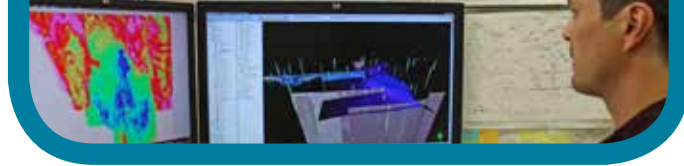
Groundwater use peaked in 2010–11 following the very dry winter of 2010. More groundwater was needed for public water supply due to very low dam levels and because additional desalination capacity was not yet operational. Since 2011–12, desalination capacity has increased significantly, enabling us to reduce the volume of groundwater abstracted for public water supply from the Superficial aquifer.

In 2012, we decreased allocation limits (the volume of water available for use) for 31 of the 50 Superficial aquifer resources by 10 per cent (an action of the first evaluation) and we continue to target our compliance efforts to over-allocated areas.

The latest water allocation and availability information can be viewed on our online water register at www.water.wa.gov.au/maps-and-data/maps/water-register.



Our response and future planning



The Gngangara plan was a strong first step in adjusting our groundwater management in the context of a drier climate. At the time, we identified that the plan would need review and further refinement to continue to adapt our management approach.

We are now preparing for the next allocation plan, with an aim to set levels of abstraction that match a drier climate to 2030. Developing the plan will involve environmental, social and economic impact assessments and continued consultation with key stakeholder groups during the planning process.

Our key stakeholders have been working with us for many years to face the challenge of adapting water use to a drier climate and growing population. The Water Corporation, horticultural industry and a number of local and state government agencies will be strong partners in the next Gngangara groundwater allocation plan.

We will begin more focused stakeholder engagement towards the second half of 2015–16 and aim to release the plan for public comment in 2017.

A number of projects to support the plan are already underway:

- An update of the Perth Regional Aquifer Modelling System (PRAMS), which includes findings from new hydrogeological studies, will be used to assess the future impacts of the drying climate, abstraction and land-use changes.
- The \$7 million Perth Regional Confined Aquifer Capacity project (2012–2016) will deliver contemporary, robust and transparent science to guide management decisions related to abstraction from the Leederville and Yarragadee aquifers.
- Together with the Forest Products Commission and Department of Parks and Wildlife and as part of the Department of the Premier and Cabinet's Strategic Assessment of the Perth and Peel Regions, we are reviewing future land use of the Gngangara, Pinjar and Yanchep pine plantations to evaluate impacts on groundwater recharge.
- The department's Water Online program is improving water information systems and services. To date we've delivered the Water Information Reporting (WIR) portal, a new website and the Water Online customer portal. Water Online will also include new licensing and resource management systems, which will increase our capacity to report on information for the next plan.

Further information

For licensing information, please contact our Swan Avon regional office. You can also view the latest water allocation and availability information through our water register via our website.

If you would like to receive updates on the next Gngangara groundwater allocation plan, please register your interest by emailing allocation.planning@water.wa.gov.au

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