



Water quality protection note no. 36

May 2026

Protecting public drinking water source areas

Introduction

The Department of Water and Environmental Regulation (the department) is responsible for managing and protecting the state's water resources in association with other state government agencies. It is also a lead agency for water conservation and for non-potable supplies. This revised water quality protection note provides:

- guidance on high level best practice management used to protect the quality of Western Australian water resources.
- an overview of the legislation, policies and processes used to protect public drinking water source areas for major population centres and rural towns in Western Australia.
- a basis for the development of a multi-agency guideline designed to balance the needs of the community, industry and Government, while sustaining reliable safe public water supplies.

Public drinking water source areas (PDWSA's) cover the catchment area of surface water sources (dams), and the recharge area of groundwater sources (including wellhead protection zones). These areas are presently constituted as water reserves, catchment areas or underground water pollution control areas under the [Metropolitan Water Supply, Sewerage and Drainage Act 1909](#), or water reserves or catchment areas under the [Country Areas Water Supply Act 1947](#). For a current list of PDWSA's, see our water quality protection note (WQPN) 75: [Gazetted public drinking water source areas](#).

PDWSAs supply drinking water for cities and towns across Western Australia. Surface and underground water resources in these areas can be vulnerable to contamination by a range of land uses and water-based activities. In this context, the department is responsible for policy development and implementation, consistent with state water resources management legislation. Drinking water source protection frameworks should ensure that the state's limited fresh water sources are safe for consumers now and into the future. The frameworks (for planning and water policy guidance documents) that underpin the drinking water source protection program in Western Australia are:

- [Australian drinking water guidelines](#) (2011) (endorsed by the Minister for Health (WA))
- Department of Water and Environmental Regulation policy - [Land use compatibility in public drinking water source areas](#) (2021)

- Department of Water and Environmental Regulation policy – Operational Policy 13: [Recreation within public drinking water source areas on crown land](#) (2019)
- Department of Water and Environmental Regulation – Strategic Policy: [Protecting public drinking water source areas in Western Australia](#) (2016)
- Western Australian Planning Commission - [State Planning Policy \(SPP\) 2.9: Water](#).
- Western Australian Planning Commission – [State Planning Policy 3.2 Aboriginal Settlements](#)

Our Approach

We work with other state agencies such as the Departments of Health (DoH), Biodiversity, Conservation and Attractions (DBCA), Planning, Lands and Heritage (DPLH) and licensed water service providers to protect water quality in drinking water source areas. This collaborative approach aims to ensure the continued availability of safe, good quality drinking water to protect public health at a reasonable cost.

The department does not recommend the use of water taken from waterways or private bores for drinking water use, where a public water source is available. This is because the catchments of these alternate sources are generally not protected from contamination or treated to meet the health-related guidelines for drinking water. However, these sources can be useful for non-potable uses such as for washing clothes, toilet flushing and garden irrigation.

If a public water source is not available, land holders should implement measures to ensure their drinking water source is safe to drink (i.e. arrange water treatment and analyses so the supply routinely meets recommended health criteria in the [Australian drinking water guidelines 2011](#)). Further information on the management of drinking water sources is provided in the department's WQPN 09: [Community drinking water sources – protection and management](#) and WQPN 41: [Private drinking water supplies](#). The Department of Health also has brochures available covering bores and rainwater tanks.

Why do we protect our drinking water supplies?

Currently, less than 10% of Perth's scheme water supplies come from surface water sources with the majority sourced from groundwater (30 – 40%), desalination (30 – 40%) and groundwater replenishment (approximately 5%) (Water Corporation IWSS 2024-2025).

Drinking water should be safe to drink and aesthetically pleasing. Aesthetically pleasing drinking water should be clear, colourless, odour free, pleasant tasting and contain no harmful chemicals or disease-causing microbes. To keep drinking water clean it is important to protect our surface and underground drinking water sources. From the mid-1990s, the Council of Australian Governments (COAG) reform has fostered the sustainable use of water resources by protecting and enhancing their quality, while maintaining economic and social development. This was pursued through the development of the [National Water Quality Management Strategy](#) (NWQMS) comprising more than 20 national guideline documents. Two of these have specific focus on drinking water:

- [Australian drinking water guidelines](#) (2011)
- [Australian guidelines for water recycling; managing health and environmental risks \(phase 2\) – augmentation of drinking water supplies](#) (2008)

The 1996 version of the *Australian drinking water guidelines* have recognised water source protection through catchment management as an effective approach to preventing contamination of drinking water sources and undertook to investigate this issue further.

In May 2001, the Western Australian government supported the NWQMS (including the drinking water guidelines) through the launch of the [State Water Quality Management Strategy](#) (SWQMS). In late 2002, the 1996 guidelines were updated and released for public comment. The current ADWG were published in 2011 and updated last in June 2025.

In 1994, a legislative assembly select committee reported on the issue of Perth's development and groundwater supplies. The select committee considered data presented from around the world and concluded that for catchment management that *'an ounce of prevention is worth a pound of cure'*. In the foreword to the select committee report, the chairman noted: *'experts around the world expressed their envy of our relatively pristine water supply and advised us to protect our groundwater supply at all costs'*.

In 2000, the state legislative council's standing committee on ecologically sustainable development published a report, *Quality of Perth's water supply*, expressing confidence in the system used to manage and operate these water supplies. The standing committee noted, however, that various activities posed a contamination risk to water supplies. It found *'as a first priority that water sources be protected through good land use planning'*. The committee also noted that *'using treatment to deal with contamination is a second-best option'* and found support for *'adopting catchment protection as the major weapon in preventing contamination of water supplies'*.

In November 2001, in support of the government committee finding, the Western Australian Planning Commission (in consultation with the then Water and Rivers Commission) released a statement of planning policy 2.7 - *Public drinking water source policy* for public comment. This policy was proclaimed in June 2003 and has since been replaced by [State Planning Policy 2.9: Water](#) (December 2025) that guides state and local government land use planning decisions in PDWSA through provisions in the metropolitan region scheme (MRS) and local government planning schemes.

Although the parliamentary committees were reporting on Perth's water supplies, their findings are considered to apply to all public drinking water sources in Western Australia. This is especially true in communities that rely on a single drinking water source such as the groundwater bore network in Kununurra rather than an integrated system drawing on multiple, interconnected sources, as is the case for the Perth metropolitan region. Contamination of a single drinking water resource caused by inappropriate land use planning or polluting land use activities can have significant health, economic and social impacts.

The State Government released *Securing Our Water Future – A State Water Strategy for Western Australia* in February (2003). In response to Section 8.6 (catchment protection and land use controls), the Government affirmed that the primacy of drinking water quality, and the need to protect the long-term sustainability of drinking water resources, should guide catchment management and land-use decision-making. This position was further supported through the release of the *State Sustainability Strategy – Hope for the Future* in September (2003).

State Planning Policy 2.9: Water

These policy directions remain relevant and are reinforced by [State Planning Policy \(SPP\) 2.9: Water](#) (2025), which emphasises the role of land-use planning in managing risks to water resources and safeguarding drinking water supplies acknowledging that long-term security will increasingly rely on climate-independent supplies.

The Western Australian Planning Commission (WAPC) [SPP 2.9 Water](#) (2025) establishes a single, modern planning framework for water by consolidating and repealing multiple outdated State planning policies and guidelines. Specifically, this replaces the following policies:

- SPP 2.1 – Peel-Harvey Coastal Plain Catchment
- SPP 2.2 – Gnangara Groundwater Protection
- SPP 2.3 – Jandakot Groundwater Protection
- SPP 2.7 – Public Drinking Water Source Policy
- SPP 2.9 – Water Resources
- SPP 2.10 – Swan-Canning River System
- Better Urban Water Management
- Government Sewerage Policy and Explanatory Guidelines

The WAPC [State Planning Policy \(SPP\) 2.9: Water](#) (2025):

- recognises early integration of water and land use planning
- recognises the protection of water quality and quantity
- adopts application of a total water approach
- recognises risk-based, place responsive planning under a changing climate.

This consolidation streamlines water-related matters into a single statutory policy made under the [Planning and Development Act 2005](#), supporting clearer, more, consistent and better integrated water considerations in planning decision making across Western Australia.

[Made Possible by Water](#) (2025) outlines the challenges facing Western Australia's water systems and the actions required to secure a safe, reliable and climate-resilient water future, including drinking water. The Minister for Water's endorsed document states that "securing Western Australia's water future requires co-ordinated, long-term planning to protect existing sources while developing new climate-resilient supplies". WAPC [SPP 2.9: Water](#) (2025) reinforces this direction by emphasising that water planning should be integrated with and increasingly precede, land-use decisions to identify constraints and ensure compatible development early in the planning process.

Who is responsible for protecting our drinking water supplies?

The community, land owners, developers, industry, agricultural producers, local governments, licensed water service providers such as the Water Corporation, AqWest, Busselton Water, and the State Government agencies share responsibility for the protection of drinking water quality and the sustainable management of drinking water availability in Western Australia. These stakeholders play an important role in the development and implementation of Drinking Water Source Protection for each drinking water source areas in Western Australia. There are more than 140 PDWSAs and more than 141 Aboriginal community drinking water sources across the State. Drinking water source protection reports have been prepared for about 140 PDWSAs and 50

Aboriginal drinking water sources. The [drinking water source protection reports](#) for PDWSAs prepared by the department are generally publicly available online.

Department of Water and Environmental Regulation's role (DWER)

The department is responsible for protecting drinking water sources and catchments in Western Australia through the preparation and administration of catchment protection legislation and by-laws, supported by legal instruments, policy and guidance such as water quality protection notes. The department arranges and oversees drinking water source protection risk assessments, prepares drinking water source protection reports (DWSPR), and provides technical input into the WA Planning Commission's land use and water management strategies (LUWMS) and other strategic government-led strategies. The department advises planning and decision-making agencies on catchment and source protection measures, assesses development proposals and recommends approval conditions and negotiates protection measures through land-use planning processes. Catchment surveillance and by-law enforcement in PDWSA is delegated to the major licensed water service providers. Further guidance is available in WQPN 11: [Assessing and managing risks in public drinking water source areas](#).

Department of Health (DoH)

The DoH has primary responsibility for protecting community and public health. Its role is to minimise human exposure to environmental health hazards that pose (or have the potential to pose) a health risk and to reduce the incidents and impact of communicable disease. To safeguard drinking water quality, the DWER works closely with DoH and individual water service providers.

The DoH also chairs an inter-agency committee, called the [Advisory Committee for the Purity of Water](#), which was established in 1925. This committee is charged with the ongoing responsibility of advising the Minister for Health and the Minister for Water, through the DOH's Executive Director Public Health, on drinking water protection issues across the full catchment to consumer framework, including source protection, treatment and monitoring and drinking water quality compliance requirements.

Western Australian Planning Commission (WAPC) and Department for Planning, Lands and Heritage (DPLH)

The DPLH plays a significant role in the protection of PDWSA. The Western Australian Planning Commission, supported by DPLH, has prepared and published a range of State Planning policies, and land use and water management strategies including strategies for Gngangara, Jandakot Middle Helena, and East Wanneroo as well as planning bulletins and [State Planning Policy 2.9: Water](#). Together, these instruments help protect PDWSAs from inappropriate land use development by integrating water resource protection into planning decision-making.

Economic Regulation Authority (ERA)

The Economic Regulation Authority (ERA) is Western Australia's independent economic regulator and plays a key role in regulating community drinking water supplies. Under the [Water Services Act 2012](#), the ERA licenses water service providers, monitors operational performance and undertakes audits to ensure compliance with licence conditions, with the aim of safeguarding the provision of safe, reliable and high quality of water services.

As part of the licensing process, service providers must enter a *Memorandum of Understanding* with the DoH, supported by an approved water quality management plan that includes drinking

water source protection arrangements. Licensees are subject to ongoing auditing and reporting requirements. The Water Corporation is the largest licensed water service provider in Western Australia alongside other licensed water providers such as Aqwest (Bunbury Water Board) and Busselton Water.

Water Corporation (WC)

The Water Corporation was formed in the mid-1990s following the corporatisation and restructuring of the former Water Authority of Western Australia as part of the COAG water industry reform initiatives. The corporation supplies water to the Perth metropolitan and to more than 200 towns and communities across Western Australia. While operated as a corporatised entity with, a board of directors (including a managing director or chief executive officer), the state government is its sole shareholder. Under legislative arrangements, the department may delegate certain catchment management functions to the Water Corporation or other water service providers. Such delegation is appropriate given the Corporation's direct role in maintaining high quality drinking water from PDWSAs and in resource catchment management functions. Delegated functions typically include catchment surveillance and the enforcement of by-laws relating to transient activities within these areas. The extent of delegated responsibility may vary between source areas.

What are the risks requiring protection of drinking water sources?

Land use planning decisions and recreational, business and private land uses and activities in PDWSA can affect the quality and quantity of drinking water sources. Where catchments remain covered with native vegetation with little human activity, the risk of contamination has been found to be low. Conversely, contamination risks increase with the intensity of human activity/development.

Potential contaminants include:

- physical contaminants (colour, foaming agents and suspended solids)
- chemical contaminants (salts, pesticides, heavy metals and petroleum residues)
- micro-biological contaminants (bacteria, intestinal parasites and viruses)
- radiological contaminants (radionuclides such as uranium, radon and radium)

Although treatment processes can remove many contaminants, treatment also increases the cost of the water supplies. The Cooperative Research Centre for Water Quality and Treatment (2006) noted that treatment barriers are not absolute. It is well recognised and embedded in contemporary drinking-water risk management that water treatment does not remove all contaminants, even when systems are operating as intended; rather, *treatment barriers reduce contaminant concentrations*. If contamination of a drinking water source does occur, the opportunity to locate and develop a replacement source is often limited, and the provision of alternatives, such as bottled drinking water is costly and is only considered a short-term solution.

Preventing contamination before it occurs alleviates the need for costly treatment or development of more costly alternative sources. There is a substantial ongoing financial cost to be borne in sampling and testing for contaminants if they become prevalent in drinking water sources. The benefits (environmental, social and economic) of avoiding contamination through best management decisions and practices are recognised in the [Australian drinking water guidelines](#) (2011).

Drinking water quality and safety cannot be taken for granted. Consultation with the community and other stakeholders is needed to establish appropriate state and local government legislative and non-legislative controls. These controls are necessary to manage a range of threats to drinking water areas. Controls are needed for:

- land use planning processes and decisions relating to high-risk developments in catchments
- recreational activities where the impact of human wastes and damage to natural protective measures associated with increased intensity land use is addressed
- chemical, animal and domestic waste and pesticides use and/or disposal

Drinking water that is not effectively treated, or that travels through an inadequately maintained distribution system, also poses a serious public health risk. Several relatively recent events such as Sydney water crisis and Walkerton (Canada) have occurred nationally and internationally that highlight the importance of protecting PDWSA and the need for a multi-barrier, risk-based management framework protection approach.

The main finding of an inquiry into the well-publicised *Sydney water crisis* (NSW 1998) was that the local catchments were seriously compromised by many potential sources of contamination and that there was insufficient regulatory control to guarantee safe drinking water. The *Sydney water catchment authority* was set up in response to this event, which transferred responsibility for land use decisions within the catchment from the planning authority to the new catchment authority.

At Walkerton (Canada) in 2000 a drinking water tragedy occurred where an *Escherichia coli* disease outbreak resulted in over 2300 cases of illness amongst 4800 residents, 70 people were hospitalised and seven deaths were attributed to the outbreak. A judicial inquiry concluded that the likely initial cause of the outbreak was from manure applied to farmland within the catchment (a common practice around the world) that resulted in bacteria contaminating the shallow underground aquifer used to supply drinking water to the town.

Other contributing factors to the Walkerton outbreak included a high rainfall event immediately prior to the contamination outbreak, an inadequate disinfectant dose rate and poor sampling and monitoring issues related to the distribution system. It is important to appreciate that the drinking water system at Walkerton operated for more than eight years without major incident up until the year 2000. The over-reliance on treatment to provide a safe drinking water supply was highlighted and pathogens were again identified as the most significant risk to drinking water quality. From this tragedy a new approach to drinking water systems management was adopted in Canada. It combined catchment protection and treatment to provide a more reliable and safe supply to consumers. That approach is consistent approaches recommended by the World Health Organisation and Australian drinking water guidelines. Further information is available in WQPN 11: [Assessing and managing risks in public drinking water areas](#).

How do we protect public drinking water source areas in Western Australia?

A multiple protection barrier risk-based management framework is used to protect drinking water quality in Western Australia from catchment to consumer. This approach conforms with the protection framework recommended in the [Australian drinking water guidelines](#) (2011).

The State Government's [Strategic policy – Protecting public drinking water source areas in WA](#) provides for the continuation of WA's existing integrated land use planning and public drinking water source area protection program. It applies to all drinking water sources that are constituted (legally proclaimed or gazetted) under legislation.

Catchment management for protection of water quality is considered the primary barrier. Historically, a world-wide reliance was placed on treating water to achieve the desired level of safety, but it is now recognised that treatment alone does not remove all public health hazards. Effective catchment protection combined with treatment is essential.

Other protective barriers that can be employed include:

- selection of an appropriate, safe, high-quality source (where alternatives exist)
- controls over land uses and high-risk human activities in catchments, underpinned by statutory measures
- protective buffer zones to bores, reservoirs and feeder streams
- catchment protection strategies involving community education, catchment surveillance, enforcement, monitoring and reporting
- pre-treatment of drinking water, such as the use of extended detention and settling in large reservoirs to foster die off from disease-causing organisms
- effective protection of water storage infrastructure (water tanks and reservoirs) from contaminant access
- appropriate water treatment and disinfection of raw water before it enters the distribution system and safeguards ensuring adequate pathogen controls throughout that system
- maintaining the distribution system including the pipe system, vermin proofing of water tanks and preventing backflow.

These barriers are promoted and implemented in a range of legislation, policy, plans and guidelines used by this department. Proclamation processes provide a legislative definition of each PDWSA and allow by-laws to be applied. Departmental policy describes the roles and responsibilities of key stakeholders.

Drinking water source protection reports (DWSPR) describe the contamination risks within PDWSAs and recommend protection strategies (within P1, P2 and P3 protection areas and protection zones) to control those risks. Guidance documents (such as our water quality protection note (WQPN) series advise on best practice to protect water quality. Our WQPN 06: [Vegetation buffers to sensitive water resources](#) recommends the use of native vegetation buffers as a protective measure between drinking water resources and land use activities. The retention and, where practical, re-establishment of these buffers is recommended in PDWSA's.

Drinking water source protection assessments, plans and reviews

Drinking water source protection reports (assessments, plans, and reviews) are a key component of the *catchment - to - consumer* protection strategy for Western Australia's drinking water sources. This approach is embedded in the State planning framework through [State Planning Policy 2.9: Water](#) (2025), which integrates drinking water source protection into land-use planning and development-based decision-making across Western Australia. [State Planning Policy 3.2 Aboriginal Settlements](#) requires Aboriginal settlements to be planned and assessed to ensure the provision of essential services, including a safe and reliable drinking water supply, primarily

through Layout Plans and associated housing and infrastructure assessments. Drinking water source protection reports help inform Aboriginal Layout Plans.

Consistent with these policies, the aim of each DWSPR is to identify existing and potential hazards to a drinking water source, and to provide risk management strategies and programs for ongoing management and protection of the source. Plans are prepared in consultation with Traditional Owners, community members, potentially affected landowners, local government authorities and state government agencies.

Stakeholders are strongly encouraged to consider the risks and potential consequences of inappropriate land use planning or human activities in PDWSA including contamination risks and the significant costs associated with remediation or development of alternative water supplies. Land use activity restrictions might be applied through land planning processes to ensure the provision of safe, good quality drinking water.

DWSPR's help determine which land-uses are suitable within PDWSAs and play a key role in informing land-use planning decisions. They support local planning schemes and strategies and are also used to inform the assessment of development proposals, including mining and resource projects assessed by Department of Mining, Petroleum and Exploration (DMPE).

To support this process, the department undertakes drinking water source protection assessments (DWSPA) and maintains authoritative spatial records for all PDWSAs. These risk-based assessments typically involve desktop analysis, site inspections and consultation with local governments providing practical information to inform planning and regulatory decision-making.

Protection areas

Priority 1 (P1) areas are generally located over land under government ownership, such as state forests. The objective in P1 areas is to avoid unnecessary water quality contamination risks. Consistent with the *Australian drinking water guidelines* preventive risk framework, changes or intensification of land use which introduce additional risks are not recommended.

Where it is not possible to assign a P1 area due to existing land uses or zoning, the department assigns priority 2 (P2) and priority 3 (P3) areas, as follows.

Priority 2 (P2) areas are located over land zoned rural, such as farm land and rural residential lots. The objective in P2 areas is to minimise water quality contamination risks. Low levels of development consistent with the rural zoning are considered appropriate, generally with conditions.

Priority 3 (P3) areas are located over land zoned urban, commercial and light industrial. The objective in P3 areas is to manage water quality contamination risks so that the drinking water source is maintained for as long as possible. Within P3 areas, drinking water sources co-exist with higher intensity land uses. Key elements in the protection of P3 areas include the need for deep sewerage and implementing best management practices.

Priority 3* (P3*) areas are defined in areas that are changed from P1 or P2 because of government-approved strategic planning and only occur for urban developments in the Metropolitan Region Scheme. P3* areas are a variation of the P3 management approach and are designed to address the increased water quality risks and cumulative impact resulting from the approved land use intensification (see Special circumstances and WQPN 38: Priority 3* (P3*))

areas). P3* areas aim to exclude some of the 'riskier' commercial and light industrial land uses which are otherwise appropriate in P3 areas. The department does not support P1 or P2 areas being rezoned to industrial.

Protection zones

Protection zones are defined in the immediate vicinity of drinking water abstraction points, as these areas are the most vulnerable to contamination. As such, protection zones are managed and protected under the [Country Areas Water Supply Act 1947](#) and [Metropolitan Water Supply, Sewerage and Drainage Act 1909](#). Protection zones can be located within any priority area.

There are two types:

Reservoir protection zones (RPZ)

RPZ (termed prohibited zones in current legislation), protect surface water sources by restricting access to areas surrounding dams. These zones typically include the dam and that part of a catchment area which lies a) upstream of a dam; and b) within 2 kilometres of the top water level of any reservoir in which water is or can be stored. RPZs do not extend beyond the boundary of the PDWSA and do not apply to private land. Public access to RPZs is not supported due to the high risk of contaminating the drinking water source. RPZs are legislated for metropolitan sources and policy-based for country sources.

Wellhead protection zones (WHPZ)

WHPZ are established around groundwater abstraction bores to protect drinking water sources from contamination. Where site-specific hydrogeological modelling has not defined an alternative protection zone, default WHPZs are typically applied. These generally extend to a radius of 500-metres in Priority 1 (P1) areas, and 300-metres in Priority 2 (P2) areas or Priority 3 (P3) areas around groundwater abstraction bores. WHPZs do not extend beyond the boundary of the PDWSA in which they are defined.

Additional information

Within protection areas and protection zones, landowners, developers, regulators and other land users play an important role in protecting drinking water sources by reducing potential contamination risks and adopting appropriate best management practices.

Existing, lawfully established but incompatible land uses in PDWSA that were established prior to the PDWSA being gazetted, or before a drinking water source protection report had been prepared and priority areas and protection zones were assigned, are allowed to continue. However, land users are encouraged to adopt environmentally responsible/best practice land use methods. Expansion of these non-conforming uses will be opposed.

The department's Policy document: [Land Use Compatibility Tables for Public Drinking Water Source Areas](#), implemented through WQPN 25: [Land use compatibility tables for public drinking water source areas](#) presents the department's policy position on the types of land uses appropriate within P1, P2 and P3 areas. A flow diagram within the note demonstrates how protection classification and protection zones within DWSPR are determined.

For more information on legislation, drinking water source protection reports, protection areas and protection zones, and best practice management documents, see the department's Drinking water matters website.

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