



Water quality protection note no. 4

January 2016

Sensitive water resources

Scope

This note defines sensitive water resources. Standard information to be read in conjunction with this note can be found in Water quality protection note (WQPN) no. 3: *Using water quality protection notes*.

Background

Clean water is essential for maintaining healthy communities, the environment and Western Australia's economy. As well as providing water supplies for drinking, industry and irrigation, our water resources sustain natural ecosystems, provide opportunities for recreation and outdoor enjoyment and make our cities better places to live. However, land uses and activities can pose a risk to water quality when contaminants wash or leach into surface water or groundwater resources.

Sensitive water resources are defined as those resources that have ecological, social and/or economic values that are 'sensitive' to a decline in their water quality. For this reason, they require appropriate protection to address contamination risks and maintain their values.

Information on suitable water quality parameters is available in the Australian Government's *National water quality management strategy* papers, available www.environment.gov.au.

Sensitive water resources in Western Australia include public drinking water source areas, private water supplies, clearing control catchments and high value water-dependent ecosystems, including most natural waterways and their estuaries, many wetlands and groundwater ecosystems. These are described below.

The Department of Water provides advice about water quality contamination risks to sensitive water resources and measures to help address those risks. However it is important for the whole community to understand the value of sensitive water resources and how to help protect them.

Water supplies

Public drinking water source areas

Public drinking water source areas (PDWSAs) are surface water catchments and groundwater areas that provide drinking water to the public throughout the state.

PDWSAs are proclaimed under the *Metropolitan Water Supply, Sewerage, and Drainage Act 1909* or the *Country Areas Water Supply Act 1947*. There are more than 120 proclaimed PDWSAs in Western Australia (as at 2016). Groundwater sources are normally referred to as underground water pollution control areas or water reserves. Surface water sources are generally referred to as catchment areas.

When we turn on our taps, we expect reliable, safe, good quality drinking water. If a drinking water source becomes contaminated, there is an increased risk to the health of consumers. It is often difficult and costly to treat or remove contaminants; and supplies may need to be shut down during remediation, or the source may need to be abandoned. So it is important to have comprehensive water quality management and appropriate land planning measures in place within PDWSAs to ensure our limited supplies of drinking water are protected.

The location of PDWSAs in Western Australia can be viewed on the Department of Water's interactive Geographic Data Atlas, or you can contact your nearest Department of Water regional office. The atlas and contact details are available on our website www.water.wa.gov.au.

The Department of Water assigns three different priority areas within PDWSAs to guide land use decisions:

- Priority 1 (P1) areas are defined and managed to ensure there is no degradation of the quality of the drinking water source with the objective of risk avoidance.
- Priority 2 (P2) areas are defined and managed to maintain or improve the quality of the drinking water source with the objective of risk minimisation.
- Priority 3 (P3) areas are defined and managed to maintain the quality of the drinking water source for as long as possible with the objective of risk management.

Protection zones are defined in the immediate vicinity of drinking water extraction points, as these areas are the most vulnerable to contamination. Protection zones can be located within P1, P2 or P3 areas. There are two types of protection zones:

- wellhead protection zones (WHPZs) defined for groundwater sources
- reservoir protection zones (RPZs) defined for surface water sources.

For further information about the PDWSA protection framework, see WQPN no. 36: *Protecting public drinking water source areas*, and for more information about land uses and activities that are considered appropriate within P1, P2 and P3 areas, see WQPN no. 25: *Land use compatibility tables for public drinking water source areas*.

Clearing control catchments

To manage salinity, restrictions on clearing vegetation exist in the Denmark, Harris, Kent, Mundaring, Warren and Wellington catchments under part IIA of the *Country Areas Water Supply Act 1947* and the *Country Areas Water Supply (Clearing Licence) Regulations 1981*. For further details please contact your nearest Department of Water regional office.

Private water supplies

Private water sources that are vulnerable to contamination may include:

- drinking water sources (such as remote communities or mining camps water supplies, and self-supply such as farms and rural lots)
- agricultural, commercial or industrial water sources requiring specific water quality characteristics to support activities such as irrigating food crops, aquaculture, cooling or mineral processing
- water sources for irrigating public open space, where water quality may affect public health.

The following notes and information sheets provide more information about private water supply sources and how to protect them:

- WQPN no. 9: *Community drinking water sources*
- WQPN no. 41: *Private drinking water supplies*
- WQPN no. 48: *Water supplies for rural lots (non-potable use)*
- WQPN no. 89: *Remote indigenous community water supplies*
- Water quality information sheet (WQIS) no. 1: *Safe use of bore water in rural areas*.

Buffers to water supplies

Buffers of native vegetation should separate compatible land uses and activities from water sources, particularly when they are used for drinking water. Vegetated buffers act as barriers to slow down and limit the movement of contaminants via surface runoff or groundwater infiltration. Please refer to WQPN no. 6: *Vegetated buffers to sensitive water resources* for more information.

High value water-dependent ecosystems

Values

Wetlands, waterways and estuaries have a range of environmental and social values. Healthy waterways convey water flows and wetlands help reduce the severity of floods. Both help keep water clean and healthy by filtering out pollutants such as sediments, nutrients and pathogens.

Wetlands, waterways and estuaries provide habitats and breeding sites for many types of plants and animals (including birds, fish, frogs, tortoises and invertebrates) and they may provide important refuges for animals during droughts. Many declared rare or threatened plants and animals depend on wetlands, waterways or estuaries, including more than half of the state's threatened ecological community types.

Some highly specialised animals and microorganisms are found in underground wetlands in caves or groundwater aquifers (generally located within karst landforms, fractured rock or soils that have open pore spaces such as sand, gravel and limestone). These rare and vulnerable species contribute to Western Australia's biodiversity, but are highly sensitive to changes in water regime and quality.

Many wetlands and waterways have a long history of social use and hold special cultural significance for Aboriginal people. They also provide scenic landscapes favoured for recreation such as camping, swimming, boating, fishing and bushwalking.

Wetlands that are highly disturbed, degraded by land use, or have been extensively modified to provide a social amenity or drainage control function in urban settings, may not be considered high-value unless they are actively managed or restored for environmental values.

Engineered drains and constructed water features often have few ecological values. However if they do have significant ecological values or they form part of, or feed into, a high value waterway, estuary or wetland, their water quality will affect that of the receiving waterbody, and water quality protection measures should be adopted.

It is important to note that many Western Australian waterways, wetlands and aquifers await detailed scientific evaluation, so their values remain unclassified and current data on their water quality may be sparse. Unless demonstrated otherwise, any natural waters that are in a relatively natural condition or only slightly disturbed by human activity are considered to be sensitive water resources.

Legislation

High value water-dependent ecosystems are protected and managed under water resources and environmental management legislation.

Through the *Water Agencies (Powers) Act 1984*, the Department of Water leads water resources management in Western Australia. Section 9 of the *Water Agencies (Powers) Act 1984* outlines the general functions of the Minister for Water, including conserving, protecting, managing and assessing water resources.

The *Rights in Water and Irrigation Act 1914* provides for the regulation, management, use and protection of water resources. The objects of the Act include providing for the sustainable use and development of water resources, protection of their ecosystems and the environment in which water resources are situated, and assisting the integration of water resources management with other natural resources management.

The *Waterways Conservation Act 1976* applies to the management of waterways in the declared waterways management areas (i.e. Albany waterways, Avon River, Wilson Inlet, Peel Inlet and Leschenault Inlet). The *Swan and Canning Rivers Management Act 2006* applies to the Swan Canning Riverpark and Development Control Area.

Under the *Environmental Protection Act 1986* and the *Environment Protection and Biodiversity Conservation Act 1999*, proposals that would have a significant impact on the environment must be referred for formal environmental impact assessment. Careful water management to avoid significant impacts will simplify the approvals pathway of a proposal, as well as protect the values of water-dependent ecosystems.

Identifying high value water-dependent ecosystems

The Environmental Protection Authority's *Environmental guidance for planning and development - Guidance statement 33* (available via www.epa.wa.gov.au) describes:

- high value wetlands in chapter B4.2.2
- high value waterways in chapter B5.2.2
- high value underground wetlands and fauna in chapter B9.2.2
- high value water-dependent ecosystems in chapter B1.2.1 and
- protected water-dependent ecosystems in Attachment A4-1.

Wild rivers are listed in chapter B5.2.2 of *Guidance statement 33*. Further information is available in *Water note 37: Wild rivers* (Department of Water 2009).

Water-dependent ecosystems recognised for their national or international importance can be located using the Protected Matters Search Tool at www.environment.gov.au. They include:

- Ramsar wetlands
- wetlands listed on the Directory of Important Wetlands in Australia
- wetlands that form habitat for migratory birds, nationally threatened species and ecological communities
- wetlands in world heritage properties and national heritage places.

While state-wide mapping is available for waterways and many wetlands, detailed mapping and values have only been identified for specific areas.

Waterways mapping is available on our interactive Geographic Data Atlas at www.water.wa.gov.au.

Detailed wetland mapping has been undertaken in some areas of south-west Western Australia. Contact the Department of Parks and Wildlife (www.dpaw.wa.gov.au) for more information.

The Swan Canning Riverpark and the Swan River Trust Development Control Area (including the Swan River and parts of the Avon, Canning, Helena and Southern rivers) are managed by the Department of Parks and Wildlife. Maps are available www.swanrivertrust.wa.gov.au.

Protecting water quality of high value water-dependent ecosystems

Various guidance documents produced by the Department of Water (including water quality protection notes) provide information about measures to minimise risks to sensitive water resources. These publications are available www.water.wa.gov.au > publications > search.

A general best practice measure is to provide an adequate vegetated buffer (separation) between the potentially contaminating land use or activity and the sensitive water resource. Buffers with vegetation are more effective for water quality protection, as they act as barriers to slow down and limit the movement of contaminants via surface runoff or groundwater infiltration.

The recommended buffer width will depend on the design and layout of the proposed land use or activity, the risk (likelihood and consequences) of water contamination, the technology and management measures used to protect the water-dependent ecosystems and the extent to which management measures are enforceable.

More information

Topic	Agency
Waterways, estuaries, groundwater, public drinking water source areas, clearing control catchments, stormwater, water quality, abstraction of groundwater and surface water	Department of Water www.water.wa.gov.au Ph: (08) 6364 7600
Wetlands, underground wetlands and fauna	Department of Parks and Wildlife www.dpaw.wa.gov.au Ph: (08) 9219 9000
Swan Canning Riverpark, Swan River Trust Development Control Area (including the Swan River and parts of the Avon, Canning, Helena and Southern rivers)	Department of Parks and Wildlife www.swanrivertrust.wa.gov.au Ph: (08) 9219 9000

References

A list of further reading applicable to WQPNs is available in WQPN no 8: *Further reading*.

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