



Water quality protection note no. 38

October 2018

Priority 3* (P3*) areas

Background

Public drinking water source areas (PDWSAs) are surface water catchments or groundwater aquifers that supply drinking water to towns and cities in Western Australia. They are constituted under the *Metropolitan Water Supply, Sewerage, and Drainage Act 1909* or the *Country Areas Water Supply Act 1947*.

The Department of Water and Environmental Regulation (DWER) assign three different priority areas within PDWSAs, generally reflecting current zoning¹ (see Table 1). Priority areas guide land use planning to protect drinking water quality and public health (see Water quality protection note (WQPN) no. 25: *Land use compatibility tables for PDWSAs*).

For information about integrated land and water planning, see *Better urban water management* (Western Australian Planning Commission (WAPC) 2008). Standard WQPN information is available in WQPN no. 3: *Using water quality protection notes* and WQPN no. 8: *Further reading*.

Scope

This note applies to P3* areas, which are applied to land that was previously priority (P1) or priority 2 (P2) and has been rezoned within the Metropolitan Region Scheme (MRS) to 'urban'. See *What is a P3* area?* section for more information.

This note provides DWER's advice on protecting drinking water quality and public health. It should not be used to justify land use intensification in PDWSAs. It does not apply to industrial areas – if industrial rezoning is proposed in a PDWSA, please consult DWER.

Strategic planning in public drinking water source areas

Strategic planning for growth in housing, transport and employment must ensure that safe, good quality drinking water continues to be available to support that growth. An appropriate balance between development and protection of water quality is required when growth is planned in PDWSAs.

¹ Other criteria considered when assigning priority areas are land ownership, current and approved land uses, the strategic value of the drinking water source and the vulnerability of the PDWSA to contamination risks (Department of Water 2016a).

Table 1: Priority areas, objectives, zonings and typical land uses

	P1	P2	P3* ¹	P3
Objective	Risk avoidance	Risk minimisation	Risk management	Risk management
How is the priority area assigned?	Via a drinking water source protection report (DWSPR) ²	Via a DWSPR ²	When P1 or P2 is changed to P3 (managed as P3*) after an MRS rezoning	Via a DWSPR ²
Applicable area	Statewide	Statewide	MRS	Statewide
Tenure	Crown	Private	Private	Private
MRS zone	Water catchments reservation	Rural-water protection zone	Urban	Urban
Land uses³	State forest	Rural	Urban, except for the most risky land uses (see <i>Recommendations</i>)	Urban

¹ P3* is not a new zone. It is a management category achieved through land use planning conditions where applicable.

² DWSPRs are prepared by DWER. In some instances, a land use and water management strategy or state planning policy may exist in place of a DWSPR.

³ Acceptable, compatible with conditions and incompatible land uses are defined in WQPN no. 25: *Land use compatibility tables for PDWSAs*.

What is a P3* area?

Following a strategic planning assessment — such as the *Perth and Peel @3.5million sub-regional planning frameworks* (Department of Planning, Lands and Heritage 2018) — that considers land and water factors, government may consider rezoning water catchments reservation (P1) or rural-water protection zones (P2) to urban, having due regard for relevant state planning and water policies and DWER's advice about risks to the drinking water source (see Table 2 for process). This situation is uncommon and should only occur when the strategic development benefit has been determined to be greater than the water quality protection benefit.

Once this rezoning is complete, DWER will then change the P1 or P2 area to a P3 area, managed as P3*. This P3* is a variation of the P3 management approach, to address the increased water quality risks and cumulative impact resulting from the approved land use intensification (see *Water quality contamination risks*). For P3* areas, DWER recommends some protection measures that are in addition to those for P3 areas. These measures (see *Recommendations*) provide more water quality and public health protection than would normally be accepted in a P3 area.

Publicly available mapping displays P3* areas with green and orange hatching (different to orange for P2 areas and green for P3 areas), and includes a notation referring the user to this WQPN for more information.

Table 2: Stages in changing a priority area from P1 or P2 to P3*

Stage		Responsibility	Detail
1	Strategic planning	WAPC Government	Urban development is proposed in a P1 or P2 area. WAPC undertake a strategic planning assessment of land and water factors, which may result in rezoning occurring.
2	MRS amendment	WAPC Minister for Planning DPLH	Application requires a district water management strategy (DWMS) to the satisfaction of DWER that addresses BUWM and recommendations in this note; generally prepared by developers. Water catchments reservation/Rural water protection zone is changed to Urban in the MRS.
3	Change from P1 or P2 to P3*	DWER	P3* area is shown in publicly available mapping, referring the user to this note. Change schedule in applicable legislation.
4	Amend local planning scheme; Local structure plan	WAPC Local government (LG)	Requires a local water management strategy (LWMS) that addresses BUWM and recommendations in this note. WAPC/LG refers to DWER for advice.
5	Subdivision	WAPC LG	Requires an urban water management plan (UWMP) that addresses BUWM and recommendations in this note, which is generally applied as a LG condition. LG should refer to this note to assist their assessment of the UWMP.

Water quality contamination risks

Drinking water quality is a public health issue. When urban development is approved in a PDWSA, the risk of water quality contamination increases, because there are more sources of contamination i.e. people, houses, roads, infrastructure. For example, an urban area (P3) poses a higher risk than a rural area (P2), and a rural area (P2) poses a higher risk than state forest (P1) (see Figure 1).

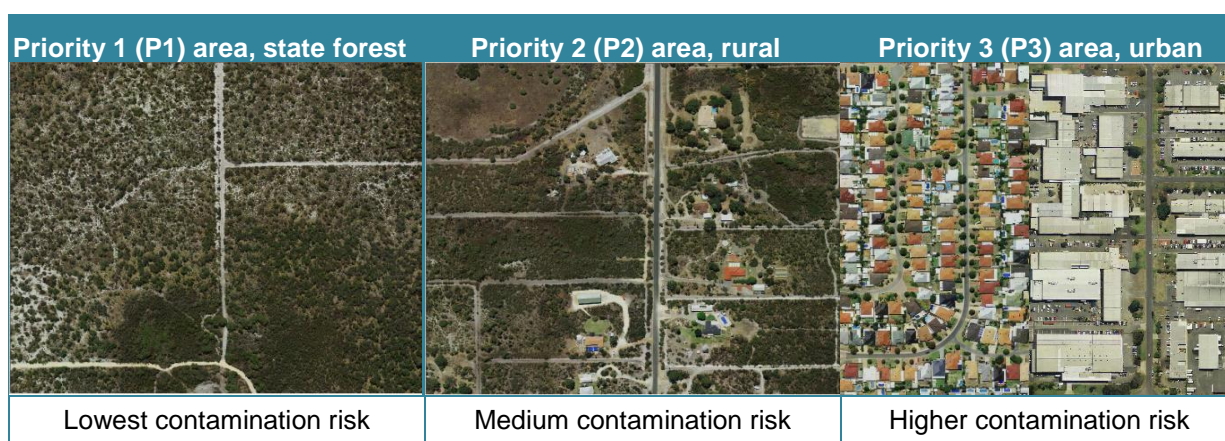


Figure 1: Urban areas pose a higher risk to water quality

Contamination hazards from urban development include:

- pathogens from leaks from sewerage systems and domestic animal waste
- hydrocarbons and heavy metals from vehicles and transport

- chemicals used in households and at commercial or industrial sites
- nutrients from fertilisers
- pesticides used around homes and in parks
- cross-contamination from private bores.

These risks are higher when the source of drinking water is vulnerable to contamination, as is the case for the Gnangara and Jandakot PDWSAs in Perth where groundwater is drawn from shallow, unconfined aquifers with sandy soils.

Sometimes, drinking water bores in urban areas need to be shut down due to water quality contamination as they pose an unacceptable risk to public health. The cost of developing alternative water sources is significant. This is why it's important to protect and maintain our existing sources of drinking water.

Recommendations

The following recommendations should be reflected in all phases of the planning approvals process (see Table 2), via conditions and water management plans and strategies, which are required by *Better urban water management* (WAPC 2008). The following recommendations are additional to those in *Better urban water management*.

1. Development proposals in P3* areas should have DWER's early involvement to maximise the potential to protect drinking water quality and public health.
2. DWER recommends that the following land uses² are avoided in P3* areas due to the risks posed to drinking water quality and public health. Although these land uses are not recommended in P3* areas, they are considered appropriate in P3 areas, consistent with WQPN no. 25: *Land use compatibility tables in public drinking water source areas*:

• airport	• golf course
• amusement park (e.g. Adventureworld)	• landfill, waste transfer station, recycling depot
• aquatic centre (unless backwash is disposed to reticulated sewerage, which requires a trade waste agreement with the wastewater service provider)	• light, heavy and rural industry (including dry cleaner)
• caravan and park home park, campground (unless connected to reticulated sewerage)	• motor vehicle repair, wash, sales and racing
• cemetery	• service station, fuel depot, works depot, underground fuel and chemical storage, bulk chemical storage/handling (e.g. warehouse)
• hospital	• wastewater treatment plant, ponds, irrigation and managed aquifer recharge (if not treated to drinking water standards).
• education – tertiary and scientific research	

² Definitions for land uses are provided in the *Model scheme template*, under the Planning and Development Regulations (Local Planning Schemes) Regulations 2015.

These recommendations may, on occasion, vary as a result of special circumstances, such as more detailed site-specific information, a proven reduction in the present contamination risk, or a strategic government-approved project. This means DWER may support a land use that is normally incompatible, or oppose a land use that is usually acceptable or compatible with conditions. Incompatible land uses receiving planning approval should:

- be consistent with a region or local planning scheme or a local planning strategy that has been endorsed by the WAPC
- be in the best interests of the community
- pose no unacceptable contamination risk to water quality
- have DWER's early involvement to maximise the opportunity to protect the drinking water source.

3. Best management practices should be applied to appropriate land uses (see Table 3).

Table 3: DWER's advice for protecting water quality in P3* areas

The measures in this table are additional to *Better urban water management* (WAPC 2008) to recognise the increased risk posed to the drinking water source and should be incorporated into the relevant water management strategy or plan. This table should be read in conjunction with *Better urban water management*.

	District water management strategy (DWMS)	Local water management strategy (LWMS)	Urban water management plan (UWMP)
Planning scale	District	Local	Subdivision
Planning stage	District structure plan, local planning strategy, region scheme amendment	Local planning scheme amendment, local structure plan	Subdivision application
Land uses	<ul style="list-style-type: none">Restricted to certain types of land uses (see Recommendation no. 2).		
	<ul style="list-style-type: none">Determine potential impact of proposed land use change on water quality, using <i>Australian drinking water guidelines</i>.		
Sewerage	<ul style="list-style-type: none">Development must be connected to reticulated sewerage.		
	<ul style="list-style-type: none">Pre-development water quality monitoring program and sampling and analysis plan, including for pathogens, nutrients and other contaminants.Sewerage plans should be developed with a risk assessment process that considers PDWSAs, particularly, location of wellhead protection zones (WHPZs) and giving them the highest protection.	<ul style="list-style-type: none">Pre-development water quality monitoring program in place, including for pathogens, nutrients and other contaminants. Results should be presented in the LWMS.Water quality monitoring program and sampling and analysis plan during and post-construction, including for pathogens. Identify contingency action plans, triggers and timeframes.If temporary sewage pumping arrangements are essential, they should be located as far away as possible from bores. Automated telemetry of sewerage levels needs to be in place to prevent overflows.If sewage pump stations cannot be located outside PDWSAs, they are, at the very least, to avoid WHPZs.Sewage pump stations should be sized for capacity and use of the development only (i.e. not to service a larger catchment area extending beyond the development).	<ul style="list-style-type: none">Water quality monitoring program and sampling and analysis plan pre, during and post construction, including for pathogens, nutrients and other contaminants. A contingency action plan with appropriate trigger values, responsibilities and reporting requirements is to be provided (see <i>Wastewater overflow response procedures</i>, Department of Health 2013).Connection to sewerage at earliest opportunity (i.e. not based on development funding).Best practice construction methods and operational procedures are required.

	District water management strategy (DWMS)	Local water management strategy (LWMS)	Urban water management plan (UWMP)
Public open space	<ul style="list-style-type: none">Incorporate WHPZs into public open space where possible, preferably in conservation open space.	<ul style="list-style-type: none">Design to reduce demand for local water supplies, fertiliser and pesticides e.g. use local native species and minimise turf.	<ul style="list-style-type: none">Include information about PDWSA on signs to educate the community.
Stormwater and groundwater management	<ul style="list-style-type: none">Use the <i>Stormwater management manual for Western Australia</i> and <i>Decision process for stormwater management in Western Australia</i>.		
	<ul style="list-style-type: none">Site-responsive design to direct surface and subsoil drainage away from drinking water extraction points such as via slopes and road cambers (curve upwards in the middle).Recognise that current water infiltration rates and groundwater levels may change as a result of urbanisation (b).	<ul style="list-style-type: none">Make a commitment to refer the urban water management plan to DWER prior to finalisation.End of conveyance stormwater infrastructure and subsoil drains should not outlet within WHPZs.Infiltration areas should be outside WHPZs where possible, but if unavoidable, biofiltration should be used.	<ul style="list-style-type: none">Provide a monitoring and maintenance program to demonstrate that stormwater and groundwater management systems will be regularly maintained.
Managing chemicals, fuels, fertilisers and litter	<ul style="list-style-type: none">Adequate contingency planning in case of groundwater or surface water contamination, i.e. emergencies (c)		
	<ul style="list-style-type: none">Risk assessment in accordance with <i>Australian drinking water guidelines</i>.Basic raw materials extraction (d) needs to consider protection of drinking water, for example retain areas of native vegetation in WHPZs, and recontouring prior to development.	<ul style="list-style-type: none">Fertiliser application rates and irrigation requirements should be matched to local soils and plant requirements, to manage leaching and contamination of local water sources.Only use clean fill that is suitable for protecting drinking water quality, i.e. doesn't introduce contaminants.	<ul style="list-style-type: none">Follow best management practices for the type of land use (a).Offer vegetation retention on blocks to land owners.Litter on building sites should be collected daily and stored in weatherproof containers until removal off-site is required.Consider barrier alternatives to traditional pesticide treatments (e.g. termite mesh barriers).Proper storage of fuels and chemicals (see WQPNs at www.dwer.wa.gov.au).No refuelling or servicing of construction machinery and vehicles within WHPZs.
	<ul style="list-style-type: none">Retain areas of existing native vegetation as much as possible.No underground fuel or chemical storage, i.e. no service stations.		
		<ul style="list-style-type: none">Adequate erosion control.Use appropriate herbicides (e).	
Education and awareness	<ul style="list-style-type: none">Commit to education and raising awareness about PDWSA protection.	<ul style="list-style-type: none">Include PDWSA awareness-raising strategies targeted at community, land sales and purchasers, and builders such as brochures (www.dwer.wa.gov.au), signs and notices.	<ul style="list-style-type: none">Landowners, contractors and staff to be made aware they are operating in a PDWSA and need to apply best management practices at all times.

	District water management strategy (DWMS)	Local water management strategy (LWMS)	Urban water management plan (UWMP)
Recycled water	<ul style="list-style-type: none"> The use of recycled water is generally not supported (subject to (a) and the level of treatment). 		
Infrastructure	<ul style="list-style-type: none"> Planned, constructed and maintained to protect drinking water source, particularly wellhead protection zones (f). 		
Bores	<ul style="list-style-type: none"> Bores need to be appropriately located and constructed to prevent contamination of the public drinking water source (g). Bores should not be located in wellhead protection zones. Bores no longer used should be properly decommissioned (g). 		

(a) Refer to WQPN no. 25: *Land use compatibility tables for public drinking water source areas* (Department of Water 2016a)

(b) Refer to Water resource considerations when controlling groundwater levels in urban development (Department of Water 2013)

(c) Refer to WQPN no. 10: *Contaminant spills – emergency response* (Department of Water 2006)

(d) Refer to WQPN no. 15: *Extractive industries near sensitive water resources* (Department of Water 2013)

(e) Refer to Use of herbicides in water catchment areas (Department of Health 2007)

(f) Refer to WQPN no. 83: *Infrastructure corridors near sensitive water resources* (Department of Water 2007)

(g) Refer to *Minimum construction requirements for water bores in Australia* (National Uniform Drillers Licensing Committee 2012)

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