



## Water quality protection note no. 44

September 2025

# Infrastructure - Road, transportation and utility corridors

## Scope

This water quality protection note (WQPN) outlines best management practices for the planning, design, construction and/or upgrading and maintenance of infrastructure corridors. This includes road and transportation corridors, and their associated works near sensitive water resources in Western Australia.

This note offers guidance for:

- transportation infrastructure: roads, railways and stations, and aircraft runways
- pipeline infrastructure: gas, sewerage, wastewater, stormwater, saltwater and drinking water
- powerline infrastructure
- telecommunications infrastructure including terminal stations or substations.

This note does not provide advice for:

- stock routes, tracks and trails (including the Bibbulmun track and Munda Biddi trail), cycle paths and bridle trails
- infrastructure corridors construction processes.

This note replaces WQPN 44: *Roads near sensitive water resources* and WQPN 83: *Infrastructure corridors near sensitive water resources* which have been consolidated and updated to include current best management practices.

The purpose and principles for the protection and management of drinking water quality is detailed in the Department of Water and Environmental Regulation's (DWER) [Strategic policy: Protecting public drinking water sources in WA](#) and [Policy – Land use compatibility in public drinking water source areas](#).

Standard information to be read in conjunction with this note can be [WQPN 3: Using water quality protection notes](#) and [WQPN 4: Sensitive water resources](#). For activities not covered by this note, see the DWER's [Drinking water matters](#) website, for further information.

## Water quality contamination risks

Infrastructure corridors and their associated works pose the following risks, among others, to the quality of water resources:

- erosion, mobilisation of sediments, and turbidity from land clearing and earthworks
- disturbance of contaminated sites and mobilisation of acid sulphate soils
- contaminant risks (e.g. hydrocarbons, pesticides, or nutrients) as a result of polluted run-off from infrastructure corridor operation, maintenance, or from erosion and sedimentation caused by construction
- interference with natural flow regimes of watercourses and the hydrology of wetlands
- increased pathogen risks from increased numbers of humans and animals in the catchment
- waste dumping and vandalism
- hydrocarbon and chemical risks from construction, machinery and increased vehicle access
- chemical risks from weed and pest management
- bushfire risk.

For general information about protecting water quality see [WQPN 8: Further reading](#).

## Recommendations

### Planning

Early consultation with DWER is recommended to allow for early consideration of potential water quality risks. For general information about development approvals and relevant statutes, see [WQPN 14: Statutory approvals](#) and [WQPN 18: Information require to assess a proposed development or activity](#).

#### *Within public drinking water source areas*

Public drinking water source areas (PDWSA) are managed and protected as water sources for public drinking water supply. They are constituted under the [Metropolitan Water Supply, Sewerage and Drainage Act 1909](#) and the [Country Areas Water Supply Act 1947](#). They include water reserves, catchment areas and underground water pollution control areas (UWPCA). PDWSA's are assigned to three different priority areas: Priority 1 (P1), Priority 2 (P2) and Priority 3 (P3/P3\*). In addition, reservoir protection zones (RPZ), for surface water sources, and wellhead protection zones (WHPZ), for groundwater sources, may be defined in areas most vulnerable to contamination. For further information on PDWSAs, priority areas and protection zones, please see [Strategic policy: Protecting public drinking water sources in WA](#).

Roads, transportation, and utility corridors (excluding wastewater infrastructure) are generally compatible, with conditions, within P1, P2 and P3/P3\* areas. For the compatibility of these land uses within PDWSA's and their priority areas and protection zones, see [WQPN 25: Land use compatibility tables for public drinking water source areas](#).

#### *Location*

- Infrastructure corridors and their associated works should, if practical, blend into the natural landscape and morphology of the site.

- When finalising the alignment and slope of a transport corridor, consider the natural features of the area, avoid areas that are already prone to erosion, minimise disturbance to vegetation, and consider sufficient area for managing runoff at the source, such as retaining and/or detaining it and treating it if required. See the [Stormwater management manual of Western Australia](#) for more information.
- Adequate buffer areas consisting of riparian vegetation and/or naturally occurring ecosystems should be maintained between infrastructure corridors and sensitive water resources and their foreshore areas in order to protect water quality and the environmental, social and economic value of these resources. These buffers act as a filter for waterbodies and overland flows, prevent erosion of surrounding banks of water bodies, and support waterways ecology. For further information on buffers see [Operational policy 4.3: Identifying and establishing waterways foreshore areas](#), [Water Note 10: Protecting riparian vegetation](#) and [WQPN 6: Vegetation buffers to sensitive water resources](#).
- Where practical, associated works, such as parking, ablution blocks and gas and chemical storage, should be separated from sensitive water resources by adequate buffers. Gas and chemical storage should include effective secondary barriers to contain the system, such as double-walled tanks and bunding. For further restrictions that apply to storage tanks see [WQPN 56: Tanks for fuel and chemical storage](#) and [WQPN 65: Toxic and hazardous substances](#).
- Infrastructure corridors should consider the hazards and risk associated with flooding. During planning and design, proponents should consult the floodplain mapping tool on DWER's [website](#) for the 1 per cent annual exceedance probability flood level. Also consult the *Decision process for stormwater management in Western Australia* (DWER 2017) for the major rainfall event management criteria such as 'maintain the 1 per cent annual exceedance probability (AEP) pre-development flood regime' (flood level, peak flow rates and storage volumes) for catchments that do not have a published catchment plan. Flood risk to infrastructure should be a risk-based decision dependent on location and designed to provide a suitable level of flood protection.
- For any developments that may impact upon wetlands and/or the Swan, Canning, Helena or Southern rivers, please contact the Department of Biodiversity, Conservation and Attractions ([www.dbca.wa.gov.au](http://www.dbca.wa.gov.au)). Also note these rivers constitute part of the Swan River Trust Development Control Area and is subject to approval under the [Swan and Canning Rivers Management Act 2006](#).

### *Waterway crossings*

- Waterway and wetland crossings should be avoided. Where unavoidable, infrastructure corridors that have crossings should:
  - have the minimum number of crossings, with the least practical interference with the natural flow, bed and banks of waterways, and aquatic ecology
  - avoid crossing of meandering or dynamic waterways, especially where there is a high risk of meander progression and increased channel erosion
  - avoid crossings at waterway bends and ensure they are made at 90 degrees to the flow channel

- replicate the natural cross-sectional area and shape of the waterway so that flows are not constrained or upstream/downstream flooding risk is not increased
- avoid alteration of the natural waterway bed and banks as required by the [Rights in Water and Irrigation Act 1914](#), unless a section 17 bed and banks permit under this act has been obtained
- allow for unrestricted movement of both aquatic flora and fauna
- incorporate design measures to minimise the risk of erosion of stream banks
- follow the natural ground contours where practical
- be constructed during low flow periods to minimise turbidity
- minimise impacts on aquatic and riparian habitats
- ensure information on possible waterway crossing hydraulics and backwater impacts is provided with the development application.

For further information see Appendix A, [Building creek crossings](#) and [Crossing Creeks: Stream crossings on farms](#).

### *Groundwater*

- Infrastructure corridors should avoid areas subject to seasonal inundation or waterlogging.
- There should be a minimum vertical separation of two metres between the activity and the highest known groundwater table. This avoids waterlogging and adverse impact on groundwater, dependent upon the landscape.
- Stormwater runoff generated from transport infrastructure should be treated appropriately before it is allowed to infiltrate groundwater.
- For development that is likely to disturb acid sulphate soils or change groundwater levels (including temporarily through dewatering), the proponent should undertake appropriate investigations and develop an acid sulphate soils management plan. See [Treatment and management of soil and water in acid sulfate soil landscapes](#) and [Acid sulfate soils](#) for further information.

For additional information on how to minimise harmful effects from short term dewatering on water resources and dispose of excess groundwater on construction sites, see the department's [WQPN 13: Dewatering of soils at construction sites](#).

### *Water supplies*

- Construction activities that require on-site dewatering and/or surface/groundwater abstraction should consider the local availability of water supply. A licence may be required under the *Rights in Water and Irrigation Act 1914*. For further details, see [Water licensing in Western Australia](#).
- Efforts should be made to identify private water supplies that could be impacted by the construction and/or maintenance of infrastructure corridors. Consideration should then be given to the potential impacts of such activity on private water supplies.

### *Vegetation*

- Clearing of native vegetation in Western Australia is regulated under the [Environmental Protection Act 1986](#), the [Environmental Protection \(Clearing of Native Vegetation\) Regulations 2004](#), and under the [Country Areas Water Supply Act 1947](#) in some

PDWSAs, and approvals under these acts may be required. For further information see [Clearing permits](#) and [Clearing in controlled catchments](#).

## Construction

Risks to sensitive water resources from construction activities can be minimised by applying best management practices. An Environmental Management Plan outlining site-specific controls and measures should be developed and implemented.

### *Facilities and equipment*

- Construction depots are often required for large scale projects and can be a source of contamination for sensitive water resources if not managed appropriately. They should be located as far as practical from sensitive water resources, including outside of protection zones (WHPZs and RPZs), on previously cleared well-drained land with a less than one in ten slope.
- Fuelling facilities for vehicles and construction plants can also be a source point for pollution and should follow the recommendations given in [WQPN 56: Tanks for above ground chemical storage near sensitive water resources](#).
- Wash down of equipment, and on-site servicing and repairs should be in accordance with [WQPN 68: Mechanical equipment wash down](#).

### *Erosion and sediment control*

- Site-specific erosion and sediment control plans should be developed to minimise impacts of stormwater run-off during construction. Measures may include:
  - Keeping exposed soil surfaces to a minimum
  - Using silt fences and sediment traps during wet seasons to prevent soil export
  - Provide temporary entry or exit roads to construction sites with a coarse rock surface to prevent the transfer of soil off site
  - Development of site-specific erosion and sediment control measures that specifically account for significant or extreme wet weather events, overland flooding or bushfire events.

### *Weed and dieback control*

The construction and/or maintenance of infrastructure corridors may introduce weeds and dieback among native vegetation. Site-specific weed and dieback control plans should be developed to minimise impacts to native vegetation and sensitive water resources.

### *Dewatering operations*

For advice on short-term dewatering operations that remove water from groundwater seepage, excavations that intersect aquifers or pits flooded by storm events, see department's [WQPN 13: Dewatering of soils at construction sites](#).

## Operation and maintenance

### *Drainage*

- Drainage systems should incorporate the principles of water-sensitive design in order to prevent localised flooding, treat polluted runoff before it is allowed to flow into receiving environments, and protect ecosystems by reducing direct run-off into water resources. For detailed information see the [Stormwater management manual for Western Australia](#) including [Decision process for stormwater management in WA](#).

### *Waste disposal*

- Any solid waste generated on site should be avoided, recovered, or disposed of at a site acceptable to the local government and that conforms to relevant legislation administered by the Department of Health (DoH) and DWER. For further information, see the Wastewater Authority's [website](#).

### *Toxic and hazardous substances*

- For best management practice in the storage and use of chemicals, fuels, pesticides and fertilisers see [WQPN 65: Toxic and hazardous substances](#).
- The use of pesticides (including herbicides) in PDWSAs should be consistent with any Codes of Practice or guidelines provided by DoH and DWER and compatible with obligations to protect public health pursuant to the general duty under the *Public Health Act 2016*. For some guidance, see on the Department of Health's website; [Guides on pesticide use for industry and local government](#) and [Hazardous chemicals](#).
- Aquatic organisms in waterways and wetlands are sensitive to chemicals and therefore infrastructure corridors need to be managed to avoid contamination. For guideline values for chemicals in aquatic ecosystems, see [Australian and New Zealand Guidelines for Fresh and Marine Water Quality](#).

Additional information about pesticides impacts are also provided in [Impact of Pesticide Toxicity in Aquatic Environment](#).

### *Accidents and emergency response*

- Any spills should be immediately cleaned up consistent with the recommendations in WQPN 10: *Contaminant spills – emergency response plan*, with the solids disposed of appropriately in sealed containers for disposal offsite, with the residue draining to a sealed collection sump.
- Any significant chemical spill or contaminated water that escapes containment should immediately be reported to the DWER's Pollution Watch Hotline, phone 1300 784 782. If the spill is significant and within a PDWSA, the Water Corporation should also be advised immediately, phone 13 13 75.
- A contingency plan should be available to address emergency situations such as accidents, fires, chemical spills, and vandalism that could impact on water resources. For more information, see our [WQPN 10: Contaminant spills – emergency response](#).

## Decommissioning

- An infrastructure corridor no longer required in a PDWSA should be closed, and the site restored to a condition compatible with WQPN 25: *Land use compatibility tables for public drinking water source areas*, the approved, planned land use, or to its original condition.
- For a guide on the rehabilitation of disturbed land, see our department's [WQPN 84: Rehabilitation of disturbed land in public drinking water source areas](#).



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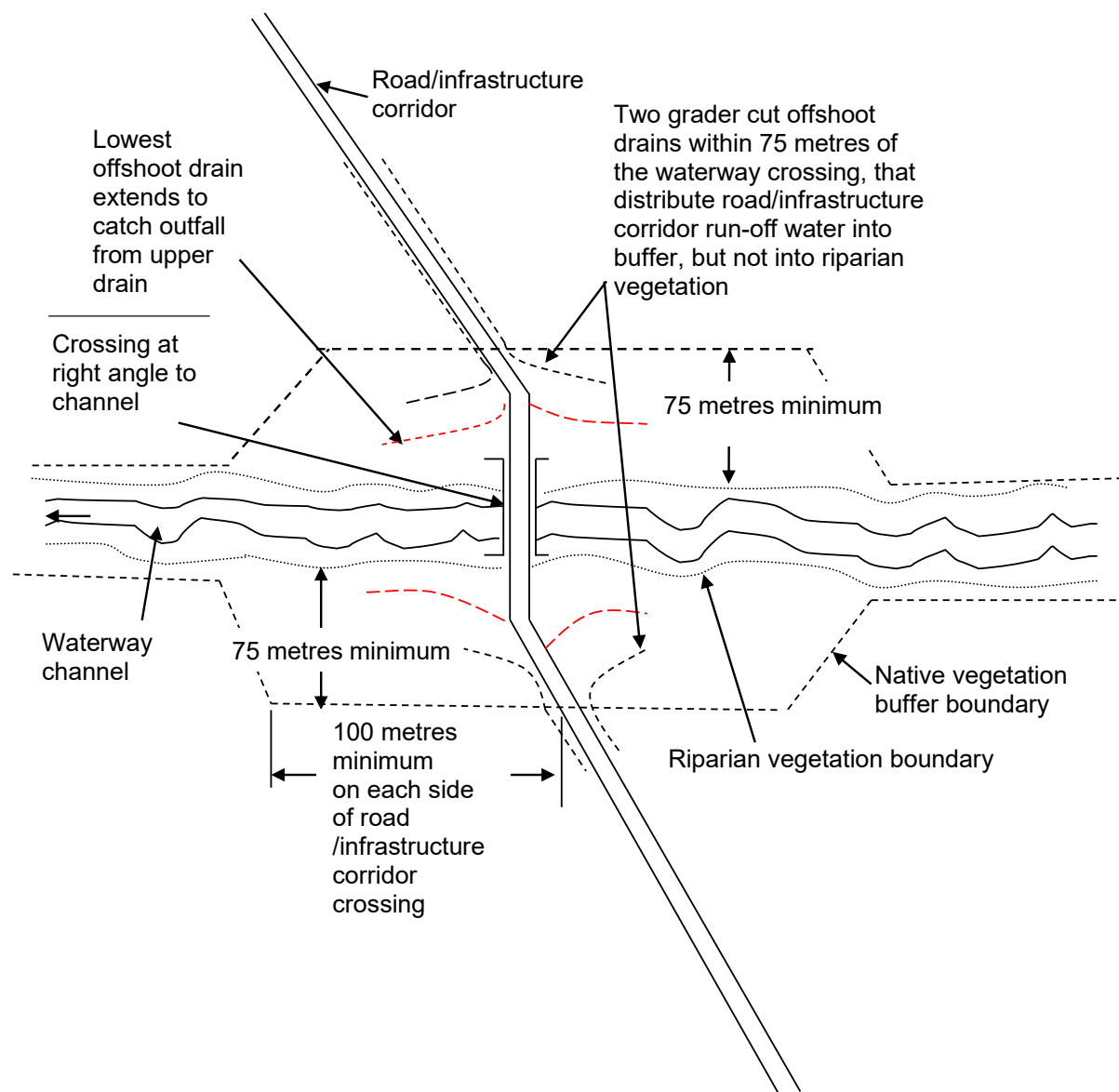
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## Appendix A - Example of protection measure for road and infrastructure corridor crossing of waterways (land permitting)



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