Water quantity management

1. Maintain the pre-development hydrologic regime and meet the ecological water requirements of the receiving environment.
2. Hydraulic requirements shall be determined by ecosystem requirements and the hydrologic form of the local and downstream environment. Physical survey measurements and a biological survey should be undertaken.
4. The effective imperviousness of a development shall be minimised. The process for achieving this is outlined below:

Less than and up to 1 year ARI events

- Generally, rainfall from 1 year average recurrence interval (ARI) events should be retained or detained on-site (i.e. as high in the catchment and as close to the source as possible), unless it can be clearly demonstrated that achievement of this objective is impractical due to site conditions.
- Generally, for detention systems, preserve the pre-development 1 year ARI peak discharge rate. Use best management practices (structural and non-structural) to treat water quality.

Greater than 1 year and up to 100 year ARI events

- Mitigate runoff from constructed impervious areas for greater than 1 year ARI events, in landscaped retention or detention areas in public open space or linear multiple use corridors. Any overflow of runoff towards waterways and wetlands shall be by overland flow paths across vegetated surfaces.
- Design for greater than 1 year and less than 10 year ARI events
- Minor system conveyance (i.e. swales and pipes).
- Design for 10 to 100 year ARI events
- Major system conveyance (i.e. via overland flow).

Water quality management

1. On-site field investigations are required to determine the appropriate water quality management measures for the site, including consideration of potential pathways of nutrients towards receiving water bodies. Receiving water bodies are defined as waterways, wetlands, coastal marine areas and groundwater aquifers.
2. The components of the water quality treatment train must be designed so that their combined effect meets the water quality management objectives as specified in the relevant regional water quality management targets (e.g. local government stormwater management plans, the Regional Natural Resource Management Strategy, Swan-Canning Cleanup Program Action Plan (SRT, 1999) and the Environmental Protection (Peel Inlet-Harvey Estuary) Policy 1992 (EPA, 1992)). The requirements for demonstration of compliance shall depend upon the scale of the proposed land development. Demonstration of compliance may be achieved by the use of appropriate assessment methods, to the satisfaction of DoE.

Protect waterways and wetlands

1. Retain and restore waterways and wetlands. For waterways, the approach should be consistent with the River Restoration Manual (WRC, 1999, 2003), Draft Waterways WA - A Policy for Statewide Management of Waterways in Western Australia (WRC, 2000), Foreshore Policy 1: Identifying the Foreshore Area (WRC, 2002) and, in the Swan and Canning Catchments, the Environmental Protection (Swan and Canning Rivers) Policy 1998 (EPA, 1998). For wetlands, the approach should be consistent with the Environmental Protection of Wetlands Position Statement No. 4 (EPA, 2004) and the Wetlands Conservation Policy for WA (Government of WA, 1997). On the Swan Coastal Plain, the approach to managing wetlands should also be consistent with the Environmental Protection (Swan Coastal Plain Lakes) Policy, 1992 (EPA, 1992) and the Position Statement: Wetlands (WRC, 2001).
2. There shall be no new constructed stormwater infrastructure within Conservation category wetlands and their buffers, or other conservation value wetlands and their buffers, or within a waterway foreshore area (e.g. no pipes or constructed channels within these wetlands and their buffers, or within waterway foreshore areas), unless authorised by the DoE or the Environmental Protection Authority. For Resource Enhancement and Multiple Use category wetlands, stormwater management shall be consistent with the objectives outlined in the Position Statement: Wetlands (WRC, 2001).
3. The creation of artificial lakes or permanent open water bodies generally will not be supported when they involve the artificial exposure of groundwater (i.e. through excavation, or lined lakes that require groundwater to maintain water levels in summer) or the modification of a wetland type (e.g. converting a dampond into a lake). Where water conservation (e.g. summer water supply) and environmental and health concerns (e.g. hydrology, water quality, mosquitoes, midges, algal blooms, acid sulfate soils and iron monosulfide minerals) can be adequately demonstrated to be addressed through design and maintenance, consideration may be given to the creation of artificial lakes/ponds. Seasonal wet infiltration areas or approved constructed waterways (i.e. ephemeral ‘Living Streams’) are preferred options.

Management of groundwater levels

1. Any proposals to control the seasonal or long-term maximum groundwater levels through a Controlled Groundwater Level (CGL) approach shall demonstrate through adequate field investigations, to the satisfaction of the Department of Environment, that local and regional environmental impacts are adequately managed.
2. The CGL may be defined as the controlled (i.e. modified) groundwater level (measured in metres Australian Height Datum) at which the DoE will permit drainage inverts to be set. The CGL must be based on local and regional environmental water requirements, determined in accordance with the Environmental Water Provisions Policy for Western Australia (WRC, 2000) and the Urban Development and Determination of Ecological Water Requirements of Groundwater Dependent Ecosystems (DoE, in preparation).
3. Where appropriate, field investigations must be undertaken to identify acid sulfate soils (ASS). Any reduction in groundwater level should not expose ASS to the air, as this may cause groundwater contamination. Refer to the ASS Guideline Series, including Identification and Investigation of Acid Sulfate Soils (DoE, 2004). If field investigations identify ASS, seek further advice from DoE.
References and further reading


Department of Environment (undated), Stormwater. Retrieved 21 February 2005 from <stormwater.environment.wa.gov.au>. Further information is available by telephoning (08) 9278 0300.


Department of Environment (undated), Waterways. Retrieved 21 February 2005 from <waterways.environment.wa.gov.au>. Further information is available by telephoning (08) 9278 0300.

Environmental Protection Authority 1992, Environmental Protection (Peel Inlet-Harvey Estuary) Policy 1992a, Environmental Protection Authority, Western Australia. Available via <www.epa.wa.gov.au> or by telephoning (08) 9222 7000.

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Environmental Protection Authority 1998, Environmental Protection (Swan and Canning Rivers) Policy 1998, Environmental Protection Authority, Western Australia. Available via <www.epa.wa.gov.au> or by telephoning (08) 9222 7000.

Environmental Protection Authority 2004, Environmental Protection of Wetlands Position Statement No. 4, Environmental Protection Authority, Western Australia. Available via <www.epa.wa.gov.au> or by telephoning (08) 9222 7000.

Government of Western Australia 1997, Wetlands Conservation Policy for Western Australia. Copies may be viewed at the Department of Environment library, telephone (08) 9278 0300.


