

## B18. Wetland and Waterways Management

The term 'wetlands' commonly refers to "...areas of seasonally, intermittently or permanently waterlogged soils or inundated land whether natural or otherwise, fresh or saline, for example, waterlogged soils, ponds billabongs, lakes, swamps, tidal flats, estuaries, rivers and their tributaries" (Wetlands Advisory Committee 1977). The term 'waterways' is applied to channel wetlands (streams, creeks, rivers and man-made drainage features); flowing either permanently or intermittently (Environmental Protection Authority, 1997)

Wetlands and waterways are important life-support systems that provide numerous environmental services such as habitat provision, maintenance of groundwater quality, and flood mitigation.

### **Wetland Management Issues**

A variety of wetland and waterway related issues may occur within a local government management area including problems associated with storm-water and drainage management, extraction of groundwater, water quality, pollution, eutrophication, weeds, feral animals and erosion due to run-off.

Wetlands and waterways in urban areas are often adversely affected by storm-water run-off. The degree and type of impact varies between locations, but it is often significantly relative to other sources of pollution and environmental degradation. Storm-water run-off adversely affects water quality and quantity, habitat and biological resources, public health, and the aesthetics of urban waterways, wetlands and other natural areas.

Where waterways or wetlands are not present, storm-water is often directed into the nearest bushland where irreversible damage is made to the local environment including changes in hydrology, soil moisture and in many cases a means by which highly invasive weeds are introduced on to a site.

Vegetation that occurs in and around wetlands is an important component of a wetland and its larger ecosystem. The vegetation provides habitat and food for fauna as well as soil stability. It filters pollutants and nutrients and provides natural beauty. Loss of vegetation will result in the loss of these values. Flora and fauna that inhabit wetlands are often dependent on a particular water regime, and may be affected by changes in water levels.

Eutrophication is a problem resulting from poor water management (on-site and off-site) that refers to the elevated nutrient status of wetlands. This can be caused by run-off that is polluted by fertilisers, animal droppings and garden refuse. As a result of the excess nutrients, algal growth increases and oxygen levels of water may decline as the algae dies off, making it less suitable for some aquatic flora and fauna species. This is particularly a problem in non-flowing water, such as in wetlands. Management can be difficult due to the diffuse nature of many nutrient sources.

Provision of bags for dog droppings, the removal of any dumped garden waste in reserves and limiting the amount of fertilisers used in wetlands and their buffers could be of immediate assistance. Education may be the best tool for reducing the long term impact of off-site nutrient sources.

Some issues in wetland management may require the services of a specialist environmental consultant to ascertain recommendations for management; especially

where past land and water uses have caused complex water quality related problems. Current and ongoing catchment issues must be dealt with on a broader catchment scale.

### **Relevant Organisations**

Some organisations involved include:

- The Department of Water (waterways, floodplains and estuaries);
- The Department of Environment and Conservation (wetlands);
- The Swan River Trust (the primary authority for areas around Swan/Canning river systems management boundary. They run a program *Riverpark* where they work with local governments to jointly manage foreshore areas. They should be consulted before any foreshore works are undertaken); and
- Catchment councils and other non-government organisations such as Perth NRM and South East Regional Centre for Urban Landcare (SERCUL), as well as Regional Councils such as the Eastern Metropolitan Regional Council (EMRC). Landcare Groups and Centres may offer advisory services and provision of information.

### **Guide to Managing and Restoring Wetlands in WA (DEC)**

The Department of Environment and Conservation is currently developing a 'Guide to managing and restoring wetlands in Western Australia'. The guide is focused on the management and rehabilitation of natural, lentic wetlands across Western Australia (channel and estuarine wetland types are not covered), with a strong focus on wetlands that retain values. The target audience are Natural Resource Management Officers, local and state government officers, NGO employees, land owners and managers and community group members who are involved in, or would like to be involved in, wetland management in Western Australia. As sections of the guide are produced they will be available on the DEC website (<http://www.calm.wa.gov.au/>).

For information on 'flowing' wetlands such as creeks, rivers and troughs, please refer to the manual on river restoration, *River Restoration*, published by the Water and Rivers Commission. This is available from the Department of Water website:

<http://portal.water.wa.gov.au/portal/page/portal/WaterQuality/Publications/RiverRestoration/Content/RR1.pdf>

### **Wetland Database (DEC)**

The State-wide Wetlands Database – Wetland Base is available on the Department of Environment and Conservation website: <http://www.dec.wa.gov.au/management-and-protection/wetlands/wetland-base.html> It brings state-wide wetlands data together from various sources enabling it to be viewed and queried through a single portal. Where wetland water chemistry, aquatic macro invertebrate and waterbird sampling has been conducted, the data can be accessed. You can download data in the form of Excel spreadsheets for viewing and sorting.

Spatial datasets associated with coastal wetlands can be seen on the map viewer. The query tools built into the database viewer allow you to search for a wetland, display it in the map viewer, show what sampling has been conducted, and generate maps and reports on your wetland of interest. You can search for a wetland by name, GPS coordinates, shire, or zoom in using the navigation tools on the map viewer.

Click on a wetland and information associated with that wetland can be displayed in report format. These reports are generated automatically and include general site

information under a number of themes such as tenure, hydrology, geomorphology, associated threatened fauna and flora, threatened ecological communities and sampling sites within 1km of the selected wetland feature.

There are also links to additional information from two additional datasets:

Aboriginal sites found in the vicinity of the selected wetland feature (Aboriginal Heritage Inquiry System); and fauna records that have been identified within 5km of the selected wetland feature (WA Museum Faunabase).

Wetland mapping for the Swan Coastal Plain and from Augusta to Walpole is also available on the WA Atlas on the Shared Land Information Platform (SLIP):

<https://www2.landgate.wa.gov.au/slip/portal/home/home.html>

SLIP also provides other useful datasets which can assist in management planning for your local government area.

### **Wetland Management References**

Listed below are references regarding wetland management.

- Godfrey, N., Jennings, P., and Nichols, O. (eds) (1992). A guide to wetland management on the Swan Coastal Plain. The Wetlands Conservation Society, Western Australia.
- Balla, S. A. (1994). Wetlands of the Swan Coastal Plain - Volume 1: Their nature and management. Water Authority of Western Australia and the Western Australian Department of Environmental Protection, Perth.
- Department of Environment and Conservation (2008). Guidelines checklist for preparing a wetland management plan. Department of Environment and Conservation, Western Australia. <http://www.dec.wa.gov.au/management-and-protection/wetlands/publications.html>
- Environmental Protection Authority (2008). Guidance Statement No. 33: Environmental guidance for planning and development. Environmental Protection Authority, Western Australia. <http://www.epa.wa.gov.au/GS33.asp>.
- Department of Environment and Conservation (2007). Protecting our wetlands in Western Australia. Department of Environment and Conservation, Western Australia. <http://www.dec.wa.gov.au/management-and-protection/wetlands/publications.html>

This reference is from Victoria but still has some useful information in it:

- National Parks Service (1996). Wetlands Conservation Report Series No. 4: Manual of wetlands management. National Parks Service, Department of Natural Resources and Environment, East Melbourne, Victoria.

You may also find some of the Water Notes and Water Facts (available on the Department of Water website) to be useful:

- <http://portal.water.wa.gov.au/portal/page/portal/WaterQuality/Publications/WaterNotes>
- <http://portal.water.wa.gov.au/portal/page/portal/WaterQuality/Publications/WaterFacts>

Of particular note are:

- [Water notes 01: Wetlands and weeds](#)

- [Water notes 02: Wetlands and fire](#)
- [Water notes 03: Wetland vegetation](#)
- [Water notes 04: Wetland buffers](#)
- [Water facts 16: Living wetlands - An introduction to wetlands](#)
- [Water facts 06: Algal blooms](#)

### **Storm Water Management**

The Department of Water has produced a Storm Water Management Manual (Department of Water 2004 - 2007). In particular, Chapter 5, 'Stormwater Management Plans', aimed at local government, may be helpful. This publication is available at: [http://portal.water.wa.gov.au/portal/page/portal/WaterManagement/Stormwater/StormwaterMgtManual/Content/StormwaterManagementManual\\_Chapter5.pdf](http://portal.water.wa.gov.au/portal/page/portal/WaterManagement/Stormwater/StormwaterMgtManual/Content/StormwaterManagementManual_Chapter5.pdf)

The Decision Process for Stormwater Management in WA (Department of Environment and Swan River Trust, 2005) is available on the Department of Water website: <http://portal.water.wa.gov.au/portal/page/portal/WaterManagement/Stormwater?pAP=WaterQuality&pAS=Stormwater>