

## 2.2 Maintenance practices

### 2.2.6 Maintenance of premises typically operated by local government

#### Description

This guideline will *briefly* address key stormwater management practices that are often required on premises that may be operated by local government. These premises include cemeteries, parks, sports fields, nurseries, depots, buildings and road reserves. These premises have the potential to contaminate stormwater and/or generate large volumes of stormwater due to a high percentage of impervious surfaces. Note that Section 2.2.7 specifically addresses stormwater management on gardens and reserves.

To identify, assess, manage, monitor and continually improve the management of stormwater-related risks from these premises, it is recommended that operators undertake a risk assessment and develop a plan to address those risks, or implement an environmental management system (EMS). As explained more fully in Section 2.5.1, an EMS provides a management framework, which is documented as an international standard, to help set objectives/policy, undertake site-specific risk assessments, develop specific management strategies (e.g. procedures), undertake regular audits to check performance, report on performance and continually improve performance. Typically, a specialist environmental manager will be engaged to establish and/or maintain an EMS. In some situations, the system will also be subject to periodic assessment and certification by an independent auditor. Alternatively, a stormwater management system could be developed. See the City of Greater Shepparton, Victoria example/case study in Section 2.5.1.

#### Applicability

These management practices are applicable to the types of premises typically operated by local government. However, this is a *generic* stormwater guideline that may need to be supplemented with site-specific practices. A risk assessment that identifies and evaluates the potential stormwater-related risks is strongly recommended prior to the application of new management practices. The guideline presented here provides a basis for undertaking the assessment and developing a tailored, site-specific stormwater management plan/procedure.

#### Recommended Practices

The following management practices are typically applicable to premises operated by local government.

##### Depots

- ✓ Identify sources of potential stormwater contamination and seek to remove the risk of stormwater contamination by covering storage areas, bunding storage areas, or removing unnecessary materials/equipment from the site (see Section 2.2.10).
- ✓ Keep stormwater that is likely to be relatively ‘clean’ separate from potentially contaminated stormwater.
- ✓ Seek to minimise the percentage of the site that has directly connected impervious surfaces. See Chapters 6 and 9 for the types of structural controls that can reduce the amount of directly connected impervious surfaces.

- ✓ Undertake washing of vehicles, equipment and plant in a sewered wash bay (see Section 2.2.8). An Industrial Waste Permit is required to connect and discharge these wastes to sewer. Further information is available from the Water Corporation via <[www.watercorporation.com.au/indwaste](http://www.watercorporation.com.au/indwaste)> or by telephoning the Customer Service Centre on 13 13 95.
- ✓ Ensure materials that are potentially erodible are covered (preferred solution), stored out of the way of drainage paths, and/or subject to downstream sediment controls.
- ✓ Ensure spill clean up kits are available, where necessary, and staff are familiar with their use (see Section 2.2.10).
- ✓ Sweep up loose materials (e.g. sediment) as soon as possible after the material has accumulated on hard surfaces, rather than flushing it to stormwater (see Section 2.2.10).
- ✓ Ensure staff using the depot are familiar with the site's stormwater-related risks, requirements (e.g. procedures), and consequences for failing to comply with these requirements.
- ✓ Seek expert advice on the installation of structural stormwater management devices (e.g. oil-water separators, devices that trap sediment and hydrocarbons), and install these devices where necessary. The installation of structural stormwater management devices should be an option of last resort. Where devices are installed, a sound maintenance regime will need to be developed and implemented (see Chapter 9).
- ✓ Stabilise any exposed soil on the site through erosion control methods (see Section 2.1.1), particularly where there is a risk that the soils may be contaminated due to historic site activities.
- ✓ Investigate opportunities to reuse stormwater and/or shallow groundwater on the site (e.g. for vehicle washing or toilet flushing).

## Buildings

- ✓ Investigate opportunities to reuse stormwater (roof water) and/or shallow groundwater in the building (e.g. for toilet flushing) or on the surrounding garden (e.g. for irrigation). Reuse should occur via water efficient devices both within the building and around the garden.
- ✓ During construction activities, ensure that sound erosion and sediment control practices are undertaken, as well as best practice housekeeping practices for construction activities (see Section 2.1.1).
- ✓ Minimise the percentage of the site's area that contains directly connected impervious surfaces (e.g. promote opportunities for filtration and infiltration of stormwater). See Chapter 9 for further information.
- ✓ Install structural stormwater management devices (e.g. rain gardens, bioretention systems), where necessary (see Chapter 9). Where devices are installed, a sound maintenance regime will need to be developed and implemented.
- ✓ Where stormwater is allowed to infiltrate into the groundwater, assess the risk of groundwater contamination and, where necessary, undertake pre-treatment of stormwater and/or recycling of shallow groundwater.

- ✓ Ensure the building's maintenance practices include regular sweeping of loose litter, sediment or leaves from hard surfaces, the provision of appropriate litter and recycling bins (with signage), and the emptying of these bins before they are 75% full (see Sections 2.2.3 and 2.2.4).
- ✓ Ensure that flaking paint on roofs does not contaminate stormwater.
- ✓ If a building is washed, contaminated wastewater should be prevented from entering stormwater (e.g. by directing wastewater to an infiltration area, or through the use of absorbent material). For more information on building maintenance practices, see Section 2.2.9.

### Planning and coordination of activities in parks, gardens and sports fields (from VSC, 1999)

- ✓ Monitor key pollution indicators for each park and garden (e.g. the number of people using the area, types of pollutants, proximity to water bodies, etc.).
- ✓ Determine appropriate work practices to minimise pollution risks, based on park activities. Determine where specialist maintenance methods and equipment may be required and, where necessary, implement structural controls to trap stormwater pollutants.
- ✓ For more information on designing and maintaining gardens and reserves, see Section 2.2.7.

### Nurseries

- ✓ Most of the management practices recommended for depots also apply to nurseries. However, there is a focus on minimising the discharge of stormwater from nurseries as there is a high risk that this stormwater could be contaminated by nutrients and pesticides.
- ✓ Seek to minimise the export of stormwater from the site by capturing stormwater for reuse as irrigation water, and capturing and reusing shallow groundwater that may be contaminated from on-site activities.
- ✓ Use slow-release fertilisers, where possible.
- ✓ Manage the nursery's watering regime to minimise runoff.
- ✓ Consider the use of soil amendment for sites with sandy soils that are not paved, to minimise the potential for contaminants to easily enter shallow groundwater (see Section 2.1.2).
- ✓ Minimise the use of insecticides through 'integrated pest management' practices.
- ✓ See Section 2.2.7 for more information on maintenance of plants/gardens.
- ✓ Refer to the *Nurseries and Garden Centres Water Quality Protection Note* (WRC, 2002) for further guidance on managing stormwater on nursery premises.
- ✓ The Nursery and Garden Industry Association, Department of Environment and other contributors are developing environmental best management practice fact sheets for nurseries. These guidelines will replace the existing guideline - *Environmental Management Best Practice Guidelines for the Nursery Industry* (Department of Agriculture, 2002).

## Highly maintained open space and sports fields (including golf courses)

- ✓ See Section 2.2.7.

## Road reserves

- ✓ Undertake erosion and sediment control on road reserves to minimise the export of sediment to stormwater (see Section 2.1.1). This is particularly important during maintenance activities involving re-grading the road shoulder and associated table drains.
- ✓ Undertake manual litter collections (see Section 2.2.3.).
- ✓ Maintain a healthy grass/vegetation cover to help filter and infiltrate stormwater.
- ✓ Minimise the use of herbicides and pesticides during the maintenance of road reserves (see Section 2.2.7).
- ✓ Further information about roadside swales and vegetated filter systems is provided in Chapter 9.

## Cemeteries

- ✓ Most of the management practices recommended for general park maintenance (see Section 2.2.7) and depots also apply to cemeteries.
- ✓ Seek to adopt the principles of water sensitive urban design along interior roadways (see Wong *et al.*, 2000, for guidance on this issue).
- ✓ Seek to minimise the export of stormwater from the site by capturing stormwater for reuse as irrigation water and/or capturing and reusing shallow groundwater that may be contaminated from on-site activities.
- ✓ Use slow-release fertilisers and integrated pest management practices where possible (see Section 2.2.7).
- ✓ Undertake basic erosion and sediment control measures on areas with disturbed soils (see Section 2.1.1).
- ✓ Where soils are poor at retaining moisture and nutrients, consider the use of soil amendment to minimise the potential for contaminants (e.g. nutrients from gardens) to easily enter shallow groundwater or stormwater (see Section 2.1.2.). Soil amendment in this circumstance will also reduce the need for fertilisation and watering of lawns.
- ✓ Implement a water efficient irrigation scheme to minimise runoff during watering periods (e.g. an automated system that uses sensors to detect soil moisture).

## Benefits and Effectiveness

The benefits and effectiveness of the practices outlined in this guideline are only discussed in general terms.

Sound stormwater management on the types of premises covered by this guideline should result in:

- Reduced loads of pollutants entering stormwater and/or shallow groundwater, thereby minimising the risk to the health of receiving waters.
- Reduced potential for organisations managing these premises to be subject to complaints from stakeholders or enforcement by environmental regulators.
- Reduced need for scheme/mains water because of stormwater and/or groundwater reuse.
- Reduced need for downstream, end-of-pipe, stormwater treatment devices (as the practices in this guideline are all *source* controls).
- Reduced need for the application of fertilisers, herbicides and/or pesticides.
- In some cases, reduced volumes of stormwater discharge (e.g. because of stormwater reuse and/or infiltration).

## Challenges

The main challenge for implementing these management practices is the cost and effort required to undertake a risk assessment at the premises, develop site-specific management practices (using this guideline), implement these practices (including training staff) and monitor their implementation. However, it is suggested that this barrier should be overcome, particularly if the organisation is a government agency that should lead by example.

## Cost

Meaningful cost information cannot be provided due to the generic content in this guideline.

## Additional Information

Section 3.20 of the Department of Environment and Swan River Trust (2004) *Environmental Management and Cleaner Production Directory for Small and Medium Businesses* contains resources for local government operations.

## Examples / Case Studies

Examples of cleaner site management practices are provided in Section 2.2.10 and of parks and gardens maintenance are provided in 2.2.7.

## References and Further Information

Lehner, P.H., Aponte Clarke, G.P., Cameron, D.M. and Frank, A.G. 1999, *Stormwater Strategies: Community Responses to Run-off Pollution*, Natural Resources Defence Council, New York, New York. Cited at <[www.nrdc.org/water/pollution/storm/stoinx.asp](http://www.nrdc.org/water/pollution/storm/stoinx.asp)>.

Department of Agriculture WA 2002, *Environmental Management Best Practice Guidelines for the Nursery Industry*, prepared by the Centre of Excellence in Cleaner Production at Curtin University in collaboration with the Department of Agriculture WA, Water and Rivers Commission and Nursery and Garden Industry WA and in conjunction with the Canning Catchment Coordinating Group, Department of Agriculture, Perth, Western Australia. Cited at: <[http://agspsrv34.agric.wa.gov.au/agency/Pubns/miscpubs/Mp02\\_2002/guidelinesNurseryInd.pdf](http://agspsrv34.agric.wa.gov.au/agency/Pubns/miscpubs/Mp02_2002/guidelinesNurseryInd.pdf)>.

Department of Environment and Swan River Trust 2004, *Environmental Management and Cleaner Production Directory for Small and Medium Businesses*, DoE and SRT, Perth, Western Australia. Section 3.20 of this Directory contains resources for local government operations. Available via <[www.environment.wa.gov.au](http://www.environment.wa.gov.au)> and <[www.swanrivertrust.wa.gov.au](http://www.swanrivertrust.wa.gov.au)> or by telephoning the Swan River Trust on (08) 9278 0900.

United States Environmental Protection Agency (US EPA) 2001, *National Menu of Best Management Practices for Storm Water Phase II*. United States Environmental Protection Agency on-line guideline. Cited at: <[www.epa.gov/npdes/menuofbmps/menu.htm](http://www.epa.gov/npdes/menuofbmps/menu.htm)>.

Victorian Stormwater Committee (VSC) 1999, *Urban Stormwater - Best Practice Environmental Management Guidelines*, CSIRO Publishing, Melbourne, Victoria.

Wong, T.H.F, Breen, P.F. and Lloyd, S.D. 2000, *Water Sensitive Road Design - Design Options for Improving Stormwater Quality of Road Runoff*, Cooperative Research Centre for Catchment Hydrology Technical Report No. 00/1, Cooperative Research Centre for Catchment Hydrology, Victoria, Melbourne.

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Water and Rivers Commission 2002, *Nurseries and Garden Centres*, Water Quality Protection Note, March 2002, Water and Rivers Commission, Perth, Western Australia.

Water and Rivers Commission 2002, *Stormwater Management at Industrial Sites*, Water Quality Protection Note, November 2002, Water and Rivers Commission, Perth, Western Australia.