



Guidelines for developing foreshore restoration plans in the Swan Canning Riverpark

Part B | February 2012



Caring for the Swan Canning Riverpark

Managing foreshores in the Swan Canning Riverpark

The Swan Canning Riverpark was established by the *Swan and Canning Rivers Management Act 2006* to conserve and manage the Swan and Canning river reserves and foreshores. The Swan River Trust (the Trust) works to enhance the environmental quality, community benefit and amenity of the Riverpark. To achieve this, the Trust encourages the preparation and use of foreshore management plans to support appropriate planning and management strategies for the foreshore.

Management plans should be brief, address the pertinent issues and provide management solutions. However, the Trust may require a foreshore restoration plan to be prepared either as a stand alone plan or as part of a foreshore management plan. In either case these guidelines have been prepared to assist proponents in the preparation of these plans.

For the purpose of this guideline, a foreshore restoration plan is a succession of actions that demonstrate how restoration objectives will be achieved. These actions may be identified within a broader foreshore plan or standalone.

Most works identified in a foreshore restoration plan will require a permit under the Swan and Canning Rivers Management Regulations 2007. Standalone plans may be approved under Part 5 of the *Swan and Canning Rivers Management Act 2006*, which may streamline approval processes. For further details please visit the Trust website www.swanrivertrust.wa.gov.au/planning.

The plan should contain sufficient detail to enable assessment and approval by the Trust. This document provides guidance on the detail and structure of a foreshore restoration plan.

Contents of a foreshore restoration plan

1. Introduction

The introduction should contain:

- the rationale for site restoration, including an overview of the site that takes into account its ecological value;
- a list of objectives that make the aim of the plan clear and where applicable, indicate milestones;
- an explanation of the effect of proposed changes to an area and its surrounds
- photographs and/or diagrams; and
- references to any relevant previous studies or site surveys.

2. Landscape plan

Proposed changes to a defined area should be presented diagrammatically. More than one diagram may be necessary (eg aerial and cross sections). A concept plan is insufficient for approval; the drawing must be at least a design development or working drawing. These can be either hand drawn or computer aided design diagrams.

More information is available in Chapter 2 of the *Best Management Practices for Foreshore Stabilisation, approaches and decision-support framework* (BMP) (Swan River Trust 2009), which can be accessed from the Trust website <http://www.swanrivertrust.wa.gov.au/science/foreshore/Content/foreshorebmp.aspx>.

A landscape plan should at minimum include:

- Title and location boundary. Show clearly the managed area from its surrounds and where necessary delineate the area to be modified.
- Date of the final drawing. Include a scale or provide dimensions on the diagram, orientation and legend.
- Map features. This may include ecological assets such as vegetation, woody debris or rock formations; built structures – existing and proposed; and any other significant features.
- Restoration layout, showing areas where different treatments are intended. This may include soil type, hydrological zones and seasonal tide lines. As a guide, see *Using rushes and sedges in revegetation of wetland areas in the south west of Western Australia* (Water and Rivers Commission 2001).
- Where possible, vegetation design should be a mix of species that reflect vegetative communities naturally occurring or that previously occurred in the landscape. More information, including planting densities, is available in Chapter 2 of the BMP.

3. Implementation of work schedule

A work schedule should include specific site preparation such as stabilisation, weed control, and revegetation. It should also include information on the addition or removal of any natural or manmade features associated with the foreshore restoration project as well as a maintenance plan. A work schedule can be presented in a table format.

Restoration activities should follow the recommendations set out in BMP and *River Restoration: A Guide to the Nature, Protection, Rehabilitation and Long Term Management of Waterways in Western Australia* (Water and Rivers Commission 2000). Impacts before, during and after restoration activities should be considered when developing a work schedule.

Note: The land manager will be the applicant under any planning approval issued by the Trust and is responsible for ensuring that all conditions are complied with. All agents, contractors and community groups implementing approved plans should be made aware of the conditions.

3.1 Occupational health and safety

Potential occupational health and safety issues associated should be identified and described.

3.2 Site access

Management of access to construction area before, during and after site works should be detailed.

3.3 Public access

Public access may be affected by the proposed works. This should be avoided where possible. If access will be restricted provide detail on how this will be managed.

3.4 Practical site preparation

Describe the works that may be required to prepare the site. This could include but not be limited to earthworks, weed control program, and bank stabilisation treatments. Indicate the proposed timing (by season, month or date), frequency and where possible, who is responsible for each aspect of site preparation. Disturbance to riparian vegetation should be minimised to maintain foreshore stability and protect important riparian habitats. To prepare the site adequately, professional advice may be required.

3.5 Weed control program

A weed control program should be outlined and take into consideration that it may not be possible or desirable to remove all the weeds from a site. External factors causing weed invasion are most likely still operating or the weeds may be acting to stabilise the bank (Department of Environment and Conservation 1999, Water and Rivers Commission 2000). A weed control program can be aided by the weed priorities described in Water Notes 1 and 29, *Wetlands and Weeds* (Department of Water 2000 & 2002) and *Revegetation of riparian zones in south-west Western Australia* (Water and Rivers Commission 1999).

A successful weed control program has three control phases. All three phases should be identified in a work schedule.

Primary weeding

Initial weed removal from a site and the elimination of nearby sources of infestation.

Secondary weeding

Removal of weeds germinating at the site following primary weeding due to disturbance of the soil. It may be necessary to control a new weed species that colonises the disturbed ground following primary weeding. Secondary weeding may last from a few months to a year and is vital to allow the regenerating native plants to survive.

Long term maintenance

The site will require visits every six or 12 months to remove scattered weeds that may be present.

When using chemical treatments, it is best to refer to the Materials Safety Data Sheet for specific chemical advice, which is available at www.msds.com.au or www.commerce.wa.gov.au/WorkSafe. A qualified contractor may be used for this purpose. Further information is available from the following links:

Department of Water (DoW) 'Managing our rivers and estuaries'
www.water.wa.gov.au/Managing+water/Rivers+and+estuaries/default.aspx

Department of Environment and Conservation (DEC) 'Invasive plants'
www.dec.wa.gov.au/content/category/31/936/2275.

3.6 Revegetation – species selection

The Trust's approval of foreshore restoration works that include planting native vegetation will require agreement on the plant species to be used. Species lists for restoration works in the Riverpark may be developed based on a hierarchical approach. The approach outlined below is based on the level of degraded native vegetation in the existing landscape, soil type, hydrological zone and the project objectives. The Trust will assess the suitability of species selected for each project site against the strategies outlined.

- **Minimal or moderately disturbed site** - species selected for revegetation should be based on existing remnant vegetation in or near each site. A floristic survey is ideal, however may not always be possible. Plant community descriptions for existing foreshore remnants can be found in Pen (1983). It is preferable to source plants grown from local provenance wherever possible. Planting species known to have occurred at a site is also encouraged.
- **Modified site with limited or no remnant vegetation** - species selection may be possible using Bush Forever reference site survey data (Western Australia Planning Commission 2000). Reference site lists refer to regionally significant bushland and associated wetlands. They are based on position in the landscape, geology, soils, wetland type (inundation pattern) and plant community. Reference sites and explanatory notes are described on the Western Australia Local Government Association website www.walga.asn.au/about/policy/pbp/projects/prpbp.

- **Extensively modified site with no remnant vegetation and no reference site list available** - species selection may be extrapolated based on landform information and soils. The *Bush Forever* volume 2 (Department of Environmental Protection 2000) provides a background on landforms and soils across the Swan Coastal Plain. However other references may also be used, eg *Foreshore management policy and guidelines for local government* (Eastern Metropolitan Regional Council 2007). A composite list of floristic community types (complexes) based on landform and soils is available from the *Trust Landscape Description*¹ (Swan River Trust 1997) (www.swanrivertrust.wa.gov.au/trust/landscape). It should be noted that only species known to have occurred in the Perth region should be selected from this list.

A list of plants proposed for a site may need to be submitted to the Trust while a project is still being planned. This is to ensure species selection is in line with Trust strategies and there is an adequate lead time to make plant orders. Planting density and approximate locations may also be requested. When submitting a species list it is ideal to clearly outline how the species list has been developed. Species lists outside strategies defined by the Trust should be supported by relevant literature references.

Although observed change, so far, on coastal plain vegetation appear to have been dominated by non-climatic influences (Swan River Trust 2010), future impacts from climate change should be allowed for by increasing recommended planting densities by no less than 10 per cent (Davies 2010).

3.7 Proposed structures

Installation of any structure will require planning approval. Advice should be sought from the Trust's Statutory Planning Branch or other appropriate regulatory agencies (eg Western Australia Planning Commission (WAPC)) during project development. Details of planning procedures and guidelines can be found on the Trust website <http://www.swanrivertrust.wa.gov.au/planning/Content/Home.aspx>.

4. Management structures

External pressures may affect the success of a project but can be mitigated with a commitment to long term management and ongoing maintenance.

4.1 Maintenance

General maintenance works should be identified during project development and included in the initial budget. Ongoing maintenance should also be identified with suitable budget provisions attached. The restoration techniques described in the BMP (Swan River Trust 2009) include maintenance recommendations.

4.2 Funding and resources

Restoration projects should be adequately resourced for implementation and ongoing maintenance until the project objectives have been fulfilled. Outline the funding arrangements for the management of the site. Include supporting information that is relevant to the site, such as pending funding and other resources that are available. For example, volunteer groups should include supporting letters and/or grant approval notification.

¹ Species names will be changed to reflect recent nomenclature changes.

Monitoring and evaluation

At the beginning of a project, a monitoring and evaluation plan should be set up using best management practice techniques that show if the project objectives have been met. More information on developing a monitoring and evaluation plan can be found in *Monitoring and evaluating river restoration works* (Water and Rivers Commission 2002) and the *Stormwater management manual for Western Australia* (Department of Water and Swan River Trust 2007), available at:

<http://www.water.wa.gov.au/Managing+water/Urban+water/Stormwater/Stormwater+management+manual/default.aspx>.

For additional information on qualitative and quantitative monitoring, refer to the Washington Department of Fish and Wildlife (WDFW) publication *Integrated streambank protection guidelines* (Washington Department of Fish and Wildlife 2003).

4.3 Review of the foreshore restoration plan

Determine a suitable period after which site management is to be reviewed. The timeline for review may vary depending on the scope of the work.

5. Checklist

Foreshore restoration plan

- 1. Introduction: The rationale for site restoration should include an overview of the site, clearly state the aim of the plan and, where applicable, project milestones.
- 2. Landscape plan: Proposed changes to a defined area should be presented diagrammatically and include title and location boundary, date of final drawing and restoration layout.
- 3. Implementation schedule: A work schedule should specify site preparation such as stabilisation, weed control and revegetation, and include a maintenance program.
- 4. Management responsibilities: Outline funding arrangements for site management and maintenance and project monitoring and evaluation.

6. References

Davies, PM 2010, 'Climate Change Implications for River Restoration in Global Biodiversity Hotspots', *Restoration Ecology*, vol. 18, issue 3, pp. 261-268, Society for Ecological Restoration International, Washington, USA.

Department of Environment and Conservation 1999, *Environmental Weed Strategy for Western Australia*; Department of Environment and Conservation, Perth, Western Australia.

Department of Environmental Protection 2000, *Bush forever Volume 2 - directory of bush forever sites*, Department of Environmental Protection, Perth, Western Australia.

Department of Water 2000, *Wetlands and Weeds*, Water note 1, Department of Water, Perth, Western Australia.

Department of Water 2002, *Long-term management of riparian vegetation* Water note 29, Department of Water, Perth, Western Australia.

Department of Water & Swan River Trust 2007, *Non-structural controls - stormwater management manual for Western Australia*, Department of Water and Swan River Trust, Perth Western Australia.

Eastern Metropolitan Regional Council 2007, *Foreshore management policy and guidelines for local government*, Eastern Metropolitan Regional Council, Perth, Western Australia.

Pen, LJ 1983, *Peripheral Vegetation of the Swan and Canning Estuaries*, Department of Conservation and Environment, Perth Western Australia.

Swan River Trust 2009, *Best management practices for foreshore stabilisation - Approaches and decision-support framework*, Swan River Trust, Perth, Western Australia.

Swan River Trust 1997, *Swan river systems-landscape description*, Swan River Trust report No. 28. Swan River Trust, Perth, Western Australia.

Swan River Trust 2010, *Potential impact of climate change on the Swan and Canning Rivers*, Swan River Trust, Perth, Western Australia.

Western Australia Planning Commission 2000, *Bush forever, Volume 1 Policies, Principles and Processes*, Western Australia Planning Commission, Perth.

Washington Department of Fish and Wildlife *Integrated streambank protection guidelines (Appendix J- Monitoring)*, Washington Department of Fish and Wildlife; <<http://wdfw.wa.gov/ahq/ispgdoc.htm>>.

Water and Rivers Commission 1999, *Revegetation of riparian zones in south-west Western Australia*; Water and Rivers Commission, Perth, Western Australia.

Water and Rivers Commission 2000, 'Guide to the Nature, Protection Rehabilitation and Long-Term Management of Waterways in Western Australia', in *River Restoration Manual*, Water and Rivers Commission, Perth, Western Australia.

Water and Rivers Commission 2001, *Using rushes and sedges in revegetation of wetland areas in the south west WA*; River Restoration Report No. RR 8, Water and Rivers Commission, Perth, Western Australia.

Water and Rivers Commission 2002 *Monitoring and evaluating river restoration works*, Report no. WN28, Water Notes, Water and Rivers Commission, Perth, Western Australia.

7. Appendix 1 - Additional reading

Websites

Flora bank: <http://www.florabank.org.au/>

Managing our Rivers e-book; Department of Water (Luke Pen Award):
<http://www.water.wa.gov.au/PublicationStore/first/85297.pdf>

Water notes: <http://www.water.wa.gov.au/>

Other publications

Department of Environment and Conservation 2009, *Guidelines checklist for preparing a wetland management plan*, Department of Environment and Conservation, Perth, Western Australia.

Environmental Protection Authority 2008, *Environmental Guidance for Planning and Development*, Guidance Statement No. 22, Environmental Protection Authority, Perth, Western Australia.

Waterways Commission 1994, *Guidelines for the preparation of waterways management planning documents – a guide for community groups, local government and the community*, Waterways Guidelines No 6, Waterways Commission, Perth, Western Australia.



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