Converting Dams to Wetlands

Farm dams provide a fantastic opportunity to recreate habitats that were once provided by natural wetlands. This brochure provides some helpful hints for planning your restoration project.

What are the advantages?

- Reduced erosion and associated management and repairs.
- Improved water quality through nutrient stripping and shading.
- Oxygenation of water and sediments.
- Creation of habitat.
- Natural pest control (can host pest predators).
- Adds to property value by improving visual amenity and creating a feature.

How do I do it?

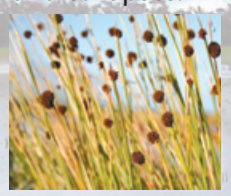
- Plan out what you want to create with a diagram of the site and a calendar of activities.
- Fence out stock – ideally wildlife should still be allowed access.
- Provide stock water troughs away from the dam area or rock an access point.
- Reshape banks and foreshores – reduce slopes (ideally to less than 1:3), create access areas and planting zones. Check for Acid Sulphate Soils before doing earthworks.
- Cover exposed soil with weed free mulch or matting to reduce erosion and weed invasion, secure in place on steeper slopes.
- Plant up the banks with local native species (see poster for suggestions).

Revegetation & Planting Zones

Revegetation works should include a variety of local native species with a range of flowering and fruiting times. These species will be suited to certain planting zones as detailed below and shown in Figure 1 (see poster for species lists).

Upper Banks *(Ephemeral)*
The upper banks will support a variety of small shrubs, herbs and groundcovers. Trees planted on natural banks provide valuable shade and shelter.

NOTE: Deep-rooted plants should not be planted on *constructed* dam walls as they can cause cracks, leaks and collapses.



Seasonally Wet *(Damp)*
The seasonally wet area can be planted up with a variety of rushes and sedges.

Shallows *(Emergent)*
Shallow water zones support emergent plants that stabilise the bed and provide habitats for a variety of macroinvertibrates and birds.

Open Water *(Submergent)*
These areas can support both floating plants and fully submerged plants.

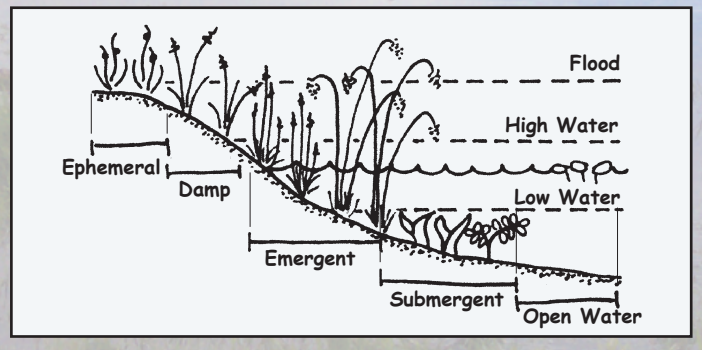


Figure 1. Planting zones.

Vegetated Filters

Erosion caused by water as it enters and exits a dam reduces the water quality of the receiving water body. These sediments will also reduce the dam's water holding capacity and cause infilling of river pools, which are important summer refuge for instream fauna.

Vegetating the areas where water enters and exits the dam reduces the movement of sediment. Spillways and swale drains should ideally contain local native species to control erosion or at least be grassed with perennial pastures as a minimum. Steep, erosion prone sections should be rock lined for stability.

Weed Control

- It is important to undertake weed control where weeds are likely to compete with native species.
- Control weeds prior to planting and follow up any new or re-occuring weeds. Ongoing weed control may be required at some sites
- Manual control and physical barriers such as mulch and weed matting can be used as alternatives to chemical control.

Introducing Fauna

- It is illegal to introduce feral species such as Red-fin Perch and Yabbies into South West dams. They can rapidly invade waterways and will voraciously consume other native animals including marron, gilgies, frogs, and insects. Yabbies will also destroy dam walls.
- It is best to stock your dam with species that are native to your local area such as marron, koonacs or gilgies. Contact Fisheries for more information.

Creating habitat

- Leaf litter, logs, rocks and nesting boxes around the dam provide excellent habitat for a variety of animals. Branches and dead trees in the water provide safe roosting sites for birds.
- Dense rushes and sedges provide excellent nesting habitat for water birds such as swamp hens, and also provide a sheltered environment for aquatic invertebrates and native fish.
- Some areas of bank should be kept open to provide varied habitat and safe entry points to the water. These areas can be lined with sand or pebbles, or may be planted with short native grasses and groundcovers.
- If your dam is constructed on a waterway, provision for fish passage can be provided via a rock ramp or bypass channel.
- Islands provide a safe refuge for birds to nest away from feral animals. Floating islands are easy to build as shown in Figure 2. Make sure they are anchored in place with enough rope to allow for water level changes and perforate the boxes to allow for drainage and root growth. The poster illustrates a terraced earth island.

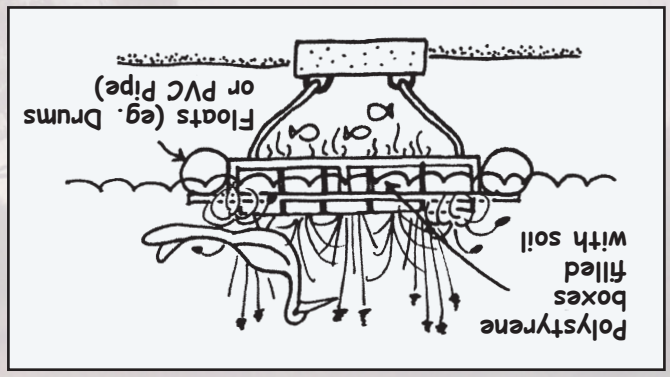


Figure 2. Constructing a floating island.

Further Information & Reading

Contact government agencies and catchment groups for advice or search the web for further information.

The following were referred to in the making of this pamphlet.

Dept. Environment, 2001 *River Restoration Manual Perth*

Dept. Land & Water Conservation NSW, 1998 *The Constructed Wetlands Manual*

Romanowski N, 1998 *Planting Wetlands and Dams* Hyde Park Press, Adelaide

Romanowski N, 1998 *The Constructed Wetlands Manual* Hyde Park Press, Adelaide

Water & Rivers Commission *Waterways WA Program* Perth

Busselton Shire Dams Policy

Photos were provided by Department of Environment and Conservation, Martin Pritchard, Nicole Lincoln, Veronica Piper, Gemma Minchertton and Katie Biggs.

Remember - Take plenty of photos before, during and after!

Project Partners

GeoCatch

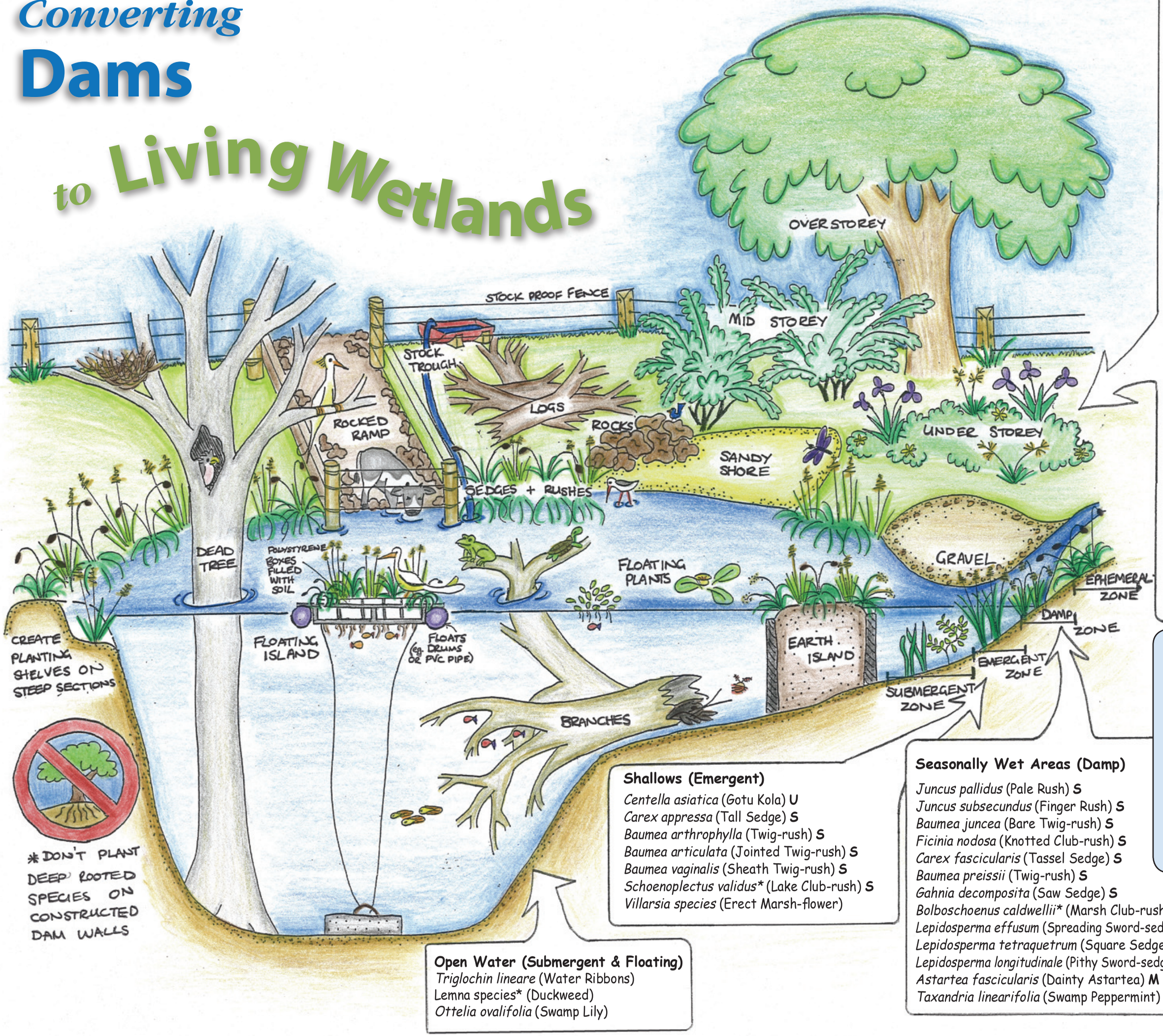
Bundaberg Rum Bush Fund

Contact GeoCatch on 9781 0111

Created by GeoCatch, October 2006

Converting Dams to Living Wetlands

Converting
Dams
to Living Wetlands



Dry Banks (Ephemeral)

Acacia urophylla (Net-leaved Wattle) **M** 2m
Acacia saligna (Orange Wattle) **M** 6m
Acacia extensa (Wiry Wattle) **M** 2m
Austrodanthonia caespitosa (Wallaby Grass) **U**
Orthrosanthus polystachyus (Morning Iris) **U**
Patersonia occidentalis (Purple Flags) **U**
Anigozanthos flavidus (Tall Kangaroo Paw) **U**
Anigozanthos manglesii (Red & Green Roo Paw) **U**
Microlaena stipoides (Weeping Grass) **U**
Banksia grandis (Bull Banksia) **O/M** 10m
Banksia attenuata (Candle Banksia) **O/M** 10m
Grevillea pulchella (Beautiful Grevillea) **M** 1m
Hakea lasianthoides **O/M** 5m
Sollya heterophylla (Australian Bluebell) **C**
Clematis pubescens (Old Man's Beard) **C**
Hibbertia cuneiformis (Cutleaf Hibbertia) **M** 3m
Callistachys lanceolata (Native Willow) **O/M** 8m
Gompholobium tomentosum (Hairy Yellow Pea) **M** 1m
Viminaria juncea (Swish Bush) **M** 4m
Hovea elliptica (Tree Hovea) **M** 3m
Hardenbergia comptoniana (Native Wisteria) **C**
Kennedia coccinea (Coral Vine) **C**
Kennedia prostrata (Running Postman) **C**
Ricinocarpos glaucus (Wedding Bush) **M** 1m
Phyllanthus calycinus (False Boronia) **M** <1m
Dodonaea ceratocarpa (Hop Bush) **M** 2m
Hypocalymma robustum (Swan River Myrtle) **M** 1m
Agonis flexuosa (Peppermint) **O** 10m
Calothamnus sanguineus (Bloodflower) **M** 2m
Melaleuca thymoides (Sand Wattle-Myrtle) **M** 2m
Eucalyptus marginata (Jarrah) **O** 30m
Eucalyptus patens (Blackbutt) **O** 45m
Corymbia calophylla (Marri) **O** 40m
Pimelea rosea (Rose Banjine) **M** 1m
Logania vaginalis (White Spray) **M** 2m

KEY

U – Under-storey
M – Mid-storey
O – Over-storey
C – Climbers and creepers
S – Sedges and Rushes

* Species that can spread rapidly (use with caution).

Note: These species are provided as general guide. If a dam is located next to an area of good wetland or waterway vegetation, the local vegetation should be used to determine your species list.

Shallows (Emergent)

Centella asiatica (Gotu Kola) **U**
Carex appressa (Tall Sedge) **S**
Baumea arthrophylla (Twig-rush) **S**
Baumea articulata (Jointed Twig-rush) **S**
Baumea vaginalis (Sheath Twig-rush) **S**
*Schoenoplectus validus** (Lake Club-rush) **S**
Villarsia species (Erect Marsh-flower)

Seasonally Wet Areas (Damp)

Juncus pallidus (Pale Rush) **S**
Juncus subsecundus (Finger Rush) **S**
Baumea juncea (Bare Twig-rush) **S**
Ficinia nodosa (Knotted Club-rush) **S**
Carex fascicularis (Tassel Sedge) **S**
Baumea preissii (Twig-rush) **S**
Gahnia decomposita (Saw Sedge) **S**
*Bolboschoenus caldwellii** (Marsh Club-rush) **S**
Lepidosperma effusum (Spreading Sword-sedge) **S**
Lepidosperma tetraquetrum (Square Sedge) **S**
Lepidosperma longitudinale (Pithy Sword-sedge) **S**
Astartea fascicularis (Dainty Astartea) **M** 2m
Taxandria linearifolia (Swamp Peppermint) **M** 4m
Eleocharis acuta (Common Spike-rush) **S**
Taxandria parviceps (Fine Teatree) **M** 4m
Pericalymma ellipticum (Swamp Teatree) **M** 3m
Beaufortia sparsa (Swamp Bottlebrush) **M** 3m
Melaleuca preissiana (Moonah) **O** 10m
Melaleuca rhaphiophylla (Swamp Paperbark) **O** 10m

Open Water (Submergent & Floating)

Triglochin lineare (Water Ribbons)
Lemna species* (Duckweed)
Ottelia ovalifolia (Swamp Lily)