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Ashfield Parade Bassendean Foreshore Management Plan

Swan River Trust
Report No 3
1991

ASHFIELD PARADE BASSENDEAN
FORESHORE MANAGEMENT PLAN

A Plan prepared by Greg Davis and Bill James for the Swan River Trust and in conjunction with the Town of Bassendean

1991

Swan River Trust
184 St Georges Terrace
PERTH WA 6000

Report 3

ACKNOWLEDGEMENTS

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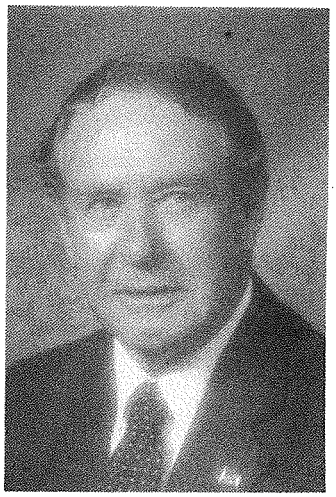
FOREWORD

The people of Western Australia regard the Swan River as one of the State's greatest natural assets. On most days, people can be seen sailing, fishing, swimming, boating, walking or cycling around the river.

The river is subject to many pressures, some of which cause loss of amenity. The area of foreshore abutting Ashfield Parade in Bassendean is very popular. People can be seen strolling through the parklands or fishing from the banks.

However, the river bank in this area is actively eroding and many trees are under threat. This management plan is part of the response to the concerns raised by many people regarding the state of the area. I congratulate the Town of Bassendean and all the concerned citizens who provided the basis for the recommendations in this plan.

BOB PEARCE MLA
MINISTER FOR THE ENVIRONMENT



The Swan River Management Strategy recommends that management plans be prepared by the Trust in consultation with affected local authorities and the public.

This management plan is an excellent example of such a process. Public input was the most important influence on the final recommendations.

The foreshore adjacent to Ashfield Parade is under great pressure and this management plan will provide an ongoing mechanism for its restoration and preservation.

JF HOWSON OBE
CHAIRMAN - SWAN RIVER TRUST

CONTENTS

1.0 INTRODUCTION

This Management Plan was commissioned by the Swan River Trust. It was a result of general recommendations 57-60 in the Swan River Management Strategy (1988). Each of these recommendations related to erosion control. They included:

- Foreshore stabilization and replanting with native vegetation
- Providing controlled public access at popular sites
- Entering into co-operative arrangements with Local Government Authorities to ensure the needs of local people are met.

The site is a popular local fishing spot with access readily gained to the riverbank. The grassed parkland affords excellent views of the river and attracts both local people and visitors from nearby residential areas. The parkland, being small and away from major roads, has a distinct neighbourhood park character.

The parkland is overlooked by houses on the north side of Ashfield Parade. The close proximity of these houses gives a very strong sense of the park "belonging" to the local people. This feeling was borne out by casual conversations with users of the park.

The major management issue is the active erosion of the riverbank by the waters of the Swan River. This erosion is threatening many of the indigenous trees and will, if left unchecked, soon cause the loss of several significant flood gums (*Eucalyptus rudis*) as well as many casuarinas (*Allocasuarina obesa*). In addition to the loss of these trees the erosion is causing quite significant collapses of the river bank so that in places there are near vertical clay banks of 3 to 4 m. While it is recognised that erosion is an integral natural process of rivers there are situations where the results of this process may be unacceptable to the community. One of the consequences of continued erosion in this case will be the ultimate loss of the narrow parkland.

The Department of Marine and Harbours have recently completed a survey of the extent and nature of erosion along this and other stretches of the Swan River. This study found that the site is "very vulnerable to erosion".

In response to these concerns and others raised by the Town of Bassendean, the Swan River Trust conducted a letter box drop and advertised for submissions on the future management of the Ashfield Parade Foreshore. Four submissions were received.

Subsequently a draft, prepared by a consultant, was made available to the Town of Bassendean and the public for comment. Later a well attended public meeting was held and this report

finalised. It differs significantly from the draft following the high level of public interest raised.

2.0 AIM OF THE MANAGEMENT PLAN

The aim of this management plan is to provide advice and recommendations which will lead to cessation of river bank regression and improvements in the environmental and aesthetic quality of Ashfield Parade, Bassendean.

3.0 THE SITE

The Study Area comprises a narrow strip of developed parkland on the Swan River adjacent to Ashfield Parade in the Town of Bassendean, and an adjoining broad flat, low-lying area of undeveloped wetland to the east of the parkland. The whole of the Study Area is presently the gazetted road reserve of Ashfield Parade. (Refer to the Landscape Plan).

The narrow strip of parkland is no greater than 40 m wide, with the majority of the land being less than 30 m.

4.0 SOILS

"The soil at the upstream end of the survey, in an area of low river flats, consists of heavy dark brown high clay content soil on light brown clay. As the general elevation of the ground rises so the soil changes to a light brown sandy clay with decreasing amounts of clay content" (Department of Marine and Harbours, 1990).

5.0 VEGETATION

At the eastern end of the site there is a community of bull rushes, *Typha orientalis*. The tree canopy is fairly broken with scattered clumps of flood gum, *Eucalyptus rudis*, she-oaks, *Allocasuarina obesa*, paperbarks, *Melaleuca raphiophylla*, occurring along the river bank and in low-lying adjoining land. The trees at the upper parkland level consist of marri, *Eucalyptus calophylla*, and an assortment of introduced tree species, notably lemon scented gums, *Eucalyptus citriodora.*

The indigenous shrub layer and ground flora has been largely replaced by introduced grasses and weed species, including blackberries, Watsonias and couch grass.

There are scattered clumps of native sedges, *Juncus kraussii*, in the shallows.

6.0 PUBLIC CONSULTATION

Initially a letter box drop was conducted seeking submissions from interested residents on issues that needed to be addressed in the draft. Four submissions were received. Issues raised included:

- River bank erosion and native tree damage.
- Worm digging.
- Uncontrolled access down the bank.
- Lack of definition to the approach of the adjacent Ashfield Flats area.
- Discontinuity of riverside pedestrian/bicycle access.

Other issues raised were beyond the scope of this management plan and included water quality and boat noise.

The consultant considered these issues and others raised by the Town of Bassendean and the Trust. Consequently a draft management plan was made available for public comment. There was considerable effort to provide opportunities for public input both in terms of time and advertising costs. Six weeks after the draft was released a well attended public meeting was convened and the report finalised. As a result of concerns raised at this meeting substantial changes to the draft were made. These included:

- deletion of post bollard fencing and informal parking bays between Ashfield Parade and the parklands,
- the need to preserve the road reserve adjacent to residential properties east of French Street,
- modification to the design of the barrier fence along the river valley,
- changing the proposed purpose of the reserve from conservation and recreation to environmental management and recreation,
- inclusion of commitments to funding and management responsibilities, and
- modification of fire control methods.

7.0 ISSUES AND RECOMMENDATIONS

7.1 Land Tenure

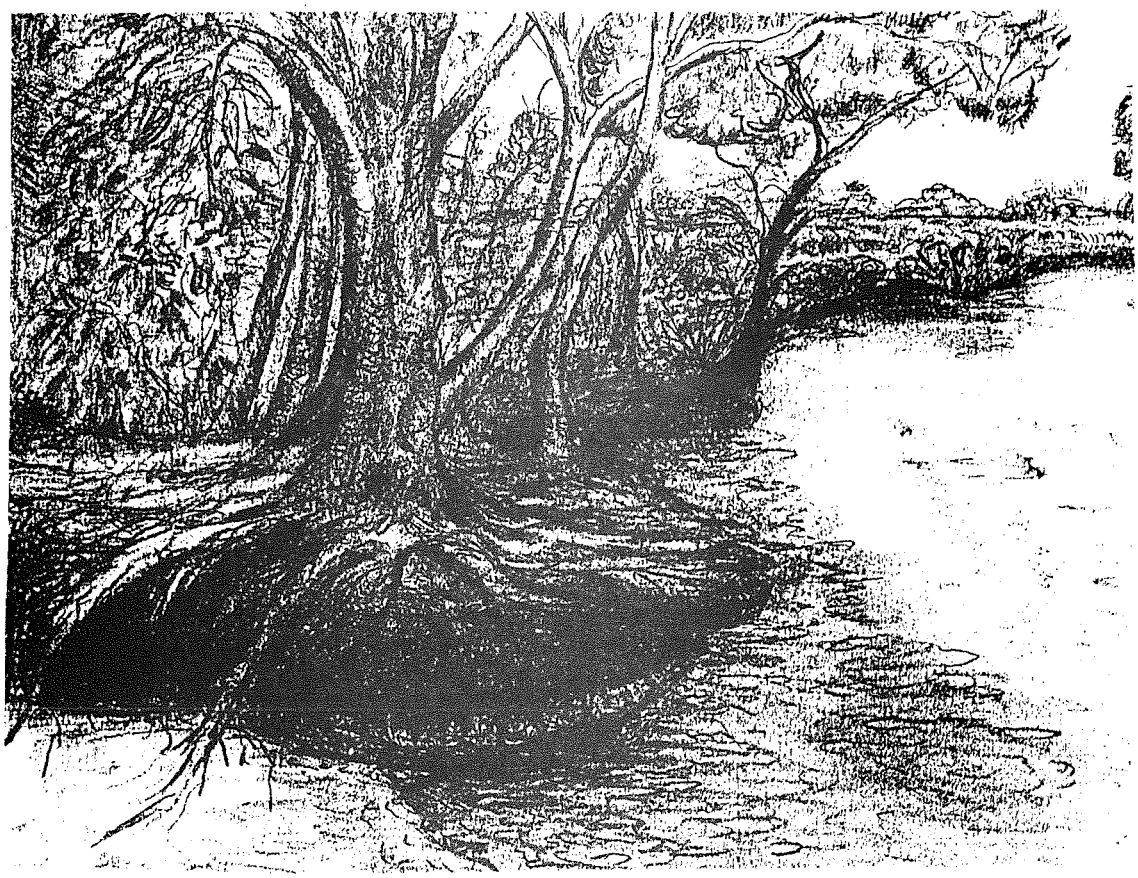
The land is currently the gazetted road reserve of Ashfield Parade. This tenure may not secure the land against uses or activities which are incompatible with the objectives of environmental management and recreation.

Recommendation

- Convert the tenure of the land west of French Street from road reserve to a foreshore reserve for the purposes of environmental management and recreation. Retain the road reserve east of French Street to ensure future residential access. The most appropriate body to vest the reserve in is the local authority who currently maintain the area.

7.2 Riverbank erosion

The entire riverbank of the study area is actively eroding. The principle causes of this erosion are wind, waves, boat wash, stream flow, foot traffic, and worm digging. Many trees, mainly *Allocasuarina obesa*, with some *Eucalyptus rudis*, and one *Eucalyptus calophylla* are threatened with collapse into the river.



The Department of Marine and Harbours (1990) report states that the site is on the outside of a bend in the river where the river is divided into two branches by Ron Courteney Island. It is therefore very vulnerable to erosion. There are 73 trees threatened. Erosion varies from scarps several metres high down to less than one metre banks which are severely undercut in places.

The consequences of erosion are most serious in the narrow parkland adjacent to Ashfield Parade. Erosion of the riverbank adjoining the broad flat land in the eastern zone of the study area does not appear to be as active and the consequences of erosion, at least on the use and amenity of the site, will not be as severe.

Given the location, shape and recreational importance of the narrow strip of land adjoining Ashfield Parade it is proposed that a programme be developed to achieve the eventual reinforcement of the entire length of this section of riverbank.

Recommendation

- Construct a combination of log walls and 'erosion fences' the length of the subject area. Sedges should be planted in association with these structures. When the sedges are fully established behind an erosion fence the fence should be removed.

The riverbank itself is one of the principle attractions of the site. Fishing is very popular and people tend to use all available spots on the water's edge. This movement, however, tends to break down the bank and accelerate erosion.

Recommendation

- Access be limited to areas that are reinforced with log walls and backfilled with sand.

7.3 Uncontrolled access down the erosion bank

There are many different access points down from the grassed area to the riverbank. In some locations these are accelerating the collapse of the bank. If allowed to continue there is little doubt that all these tracks will become points of accelerated bank collapse.

Recommendation

- Restrict access down the erosion bank by the installation of a barrier at the top of the erosion bank with steps, or ramps, leading down to the water's edge at certain locations. These barriers should be such that they do not unduly obstruct views to the

river, but at the same time encourages the reasonable person to take the desired access routes. Single log "snake hurdle" barriers are recommended.

7.4 Pathways

An issue raised in a public submission was the current condition of the path and footbridges upstream from the parkland. The path is currently unmade and becomes very wet and slippery following heavy rain. The bridges across the drainage channels are simply two railway sleepers side by side.

As this path is subject to flooding and situated on a heavy clay soil an upgraded path should be of a solid timber construction which will withstand moderate flood impact. No structures will survive severe flood events, and as a general rule is best to avoid placing structures within flood prone areas unless they are absolutely necessary.

At present the path and bridges appear to be appropriate for their location, and for the type and level of use.

Recommendation

- Monitor the condition and level of use of the paths and bridges. When it becomes necessary to upgrade them this should be in the form of timber boardwalks and enlarged sleeper decking bridges.

7.5 Loss of riverbank trees

Many of the existing riverbank trees are in danger of collapsing into the river.

Recommendations

- Plant indigenous vegetation behind the log walls.
- Plant *Casuarina obesa*, *Melaleuca raphiophylla*, *Melaleuca cuticularis* and *Eucalyptus rudis* as a broad belt of trees approximately 4 m back from the riverbank in the flat eastern portion of the site.

7.6 Weeds

The erosion bank is currently taken over by introduced weed species. Blackberries are common in certain locations, there are isolated clumps of pampas grass and Watsonia and various grasses are the dominant ground flora. Bracken fern is also very common. A species of Schinus, which is related to the peppercorn tree, has also colonised a portion of the bank. While these weeds do have a value in stabilising the soil of the bank they are neither ecologically nor visually desirable.

Recommendation

- Immediately remove the pampas grass. Develop a programme to gradually remove the remaining weed species and replace them with groundcover and shrub species which are naturally indigenous to the area.

7.7 Informal family areas

There are currently no areas which are particularly suited to family gatherings. There are two sites which lend themselves to such a use. One is the flat area beside the river under the grove of flood gums to the east. The other is the broad grass area above the erosion bank.

The area at the eastern end of the site would make an ideal shady summer area as it is adjacent to the river and the rope swing from the large flood gum. It is also a popular fishing spot. As this area is subject to flooding it is not proposed that any structures be built. The ground should simply be cleared of debris and graded to allow for slashing.

Recommendation

- Clean up and grade the flat area under the dense grove of flood gums at the eastern end of the site and provide rubbish bins.

Another particularly suitable area for viewing the river is a broad grassed area at the upper level.

Recommendation

- Provide two benches for sitting down and looking at the river. Rubbish bins should also be provided in this area.

7.8 Interpretation

An explanation of the processes of river erosion and the importance of stabilising the riverbank will assist people in understanding the need for changes to the existing use patterns.

Recommendations

- Signs should be placed at appropriate locations to explain the consequences of unchecked erosion. These signs should also explain the reasons for the changed layout and use patterns of the park and foreshore areas.

- Place one sign at the approach to the Ashfield Flats area to alert users to the environmental significance of adjacent wetlands.

7.9 Fire

Fire will always be a problem in open spaces close to built-up areas. The area with the greatest fire risk is perhaps the broad flat area to the east. There are more opportunities for an accidental or an intentional fire to occur in this area as it is largely out of sight of neighbouring houses. The existing drainage canals and associated service tracks provide convenient firebreaks through this area, although fires are known to "jump" them.

The erosion bank, although densely vegetated, is close to housing and, therefore, under a form of supervision. At least, the proximity of housing gives this impression and is likely to discourage both accidental and intentional fires.

The existing weedy vegetation on this bank becomes highly flammable in summer. The bank is too steep for easy maintenance of the grasses and bulbs and there remains an abundance of flammable material during high fire risk periods. The proposal to gradually replace these weed species with indigenous ground covers and shrubs should not increase the risk of fire in this area.

The maintained grass at the top of the erosion bank provides adequate fire protection to the properties on Ashfield Parade. There is, however, a need to provide firebreaks running between the grassed area and the river to discourage fire running along the bank. This will be achieved by the construction of the access paths down to the river as shown on the Landscape Plan.

Fires occur regularly in the adjacent Ashfield flats area. They originate either in that area or "jump" the drain separating the flats from Ashfield Parade.

Recommendations

- Maintain firebreaks adjacent to the private property which adjoins the broad flat area to the east.

- Mow long grass in the broad flat area under the *Eucalyptus rudis* to the east to reduce the flammable fuel in summer.

- Manage vegetation adjacent to access paths to reduce the risk of fire jumping the paths.

- The Department of Planning and Urban Development and the Town of Bassendean develop an integrated

fire control plan for Ashfield Parade and Ashfield flats.

7.10 Vehicle parking and access

People in vehicles commonly drive onto the grassed bank to visit adjacent residents or use the foreshore for recreational pursuits. There is evidence of some degradation resulting from vehicular movements in this area. However, consensus from a well attended public meeting was that semi formal parking areas, with restricted vehicular access to the remainder of the park land was not necessary at this stage. It was considered that the definition of parking areas may lead to an unnecessary increase in usage and result in further degradation.

Recommendation

- Monitor condition of the grassed upper banks. Consider restricting vehicle access at a later stage if excessive damage occurs.

7.11 Capital cost and funding arrangements

Complete implementation of this plan will prove costly. It is envisaged that works would take place over a number of years. The approximate capital cost of works (labour and materials) at contract rates are given in Appendix C in order of priority as listed in Section 8. The Swan River Trust will begin some works in the coming financial year.

Foreshore reserves of this nature are traditionally vested in the local authority who incur the maintenance costs. This is appropriate as the majority of the users are nearby ratepayers. However, the Swan River Trust often enters into cost sharing arrangements where bank degradation reduces the overall amenity of the waterway and the processes leading to this degradation may be attributed to external forces (e.g. wind and boat waves and river flow).

Recommendation

- The Town of Bassendean and the Swan River Trust share the costs of implementation.

8.0 MANAGEMENT PRIORITIES

A programme for the implementation of the recommendations contained in the Management Plan should be developed in accordance with the management priorities.

8.1 Threatened trees

The most pressing management issue is the threatened collapse of several flood gums into the river. In order to prevent this collapse it will be necessary to reinforce the bank around the threatened trees and to backfill around the base of the trees. The trees that should be treated as a first priority are indicated on the Landscape Plan.

8.2 Interpretation

Signs explaining the proposed changes and the reasons for these changes should be installed at the commencement of the new works. These signs will help to inform people of the nature of the changes and why they are important.

8.3 Control of access

Control of access down the erosion bank and along the riverbank to the west of the swing tree is urgently needed.

This will involve the erection of some barrier fencing on the top of the erosion bank and the construction of steps, ramps and paths down to the river bank.

8.4 Informal family areas

The preparation of these two areas should be the next priority.

8.5 Weeds

The weed removal programme should be staged over a number of years as quite intensive control measures will be needed to eradicate weed species and replace them with indigenous species. The area tackled should be manageable within the limits of available labour. The optimum time to control the weeds is when they are growing vigorously. Autumn will, therefore, be a suitable season to implement the weed control and the planting programmes. (See Appendix A).

8.6 Erosion fences

While the construction of these fences is not seen as having a low priority it is recognised that their construction will require a considerable commitment of funds and labour. It is, therefore, proposed that a programme be developed to implement the installation of these fences, together with the planting of sedges, over several years and to monitor the effect of these devices in arresting riverbank erosion.

9.0 **REFERENCES**

Department of Marine and Harbours (1990) Foreshore Erosion Study 1990 (Unpub). Prepared by the Department of Marine and Harbours for the Swan River Trust, Perth. Western Austalia.

James B (1990) Foreshore Management Plan. Ashfield Parade at Bassendean for the Swan River Trust. Draft Report (Unpub).

Government of Western Australia (1988) Swan River Management Strategy, Waterways Commission, Perth. Western Australia.

RON COURTNEY
ISLAND

NEW PLANTING OF SHE-OAKS AND PAPERBARKS

GRADE AND SLASH UNDER TREES

FLOOD GUM

RE-ESTABLISH INDIGENOUS VEGETATION ON EROSION BANK

LOG WALL WITH SAND BACKFILL

PEDESTRIAN & SERVICE RAMP

EROSION "FENCE"

FLOOD GUM

RIVER ACCESS

BENCHES

ACCESS BARRIER

RIVER ACCESS

ASHFIELD PARADE

DRAINAGE RESERVE

JOINT USER

LOT 1101

LOT 1102

FRENCH STREET

NO. 43

NO. 41

NO. 39

NO. 37

NO. 35

NO. 33

NO. 31

NO. 29

NO. 27

NO. 25

NO. 23

NO. 21

PLANT SEDGES IN FRONT OF LOG WALLS.

FLOOD GUM

LOG WALL WITH SAND BACKFILL

RE-ESTABLISH INDIGENOUS VEGETATION

EROSION "FENCE"

FLOOD GUM

PLANT SEDGES BEHIND EROSION FENCES

EXISTING SEDGES

RIVER ACCESS

RIVER ACCESS

ACCESS BARRIER

EXISTING TREES

JOINT USER

NO. 19

NO. 17

NO 15

NO. 13

NO. 11

NO. 9

NO. 7

NO. 5

NO. 3

MOOJEBING STREET

N

0 10 20 30 40 50

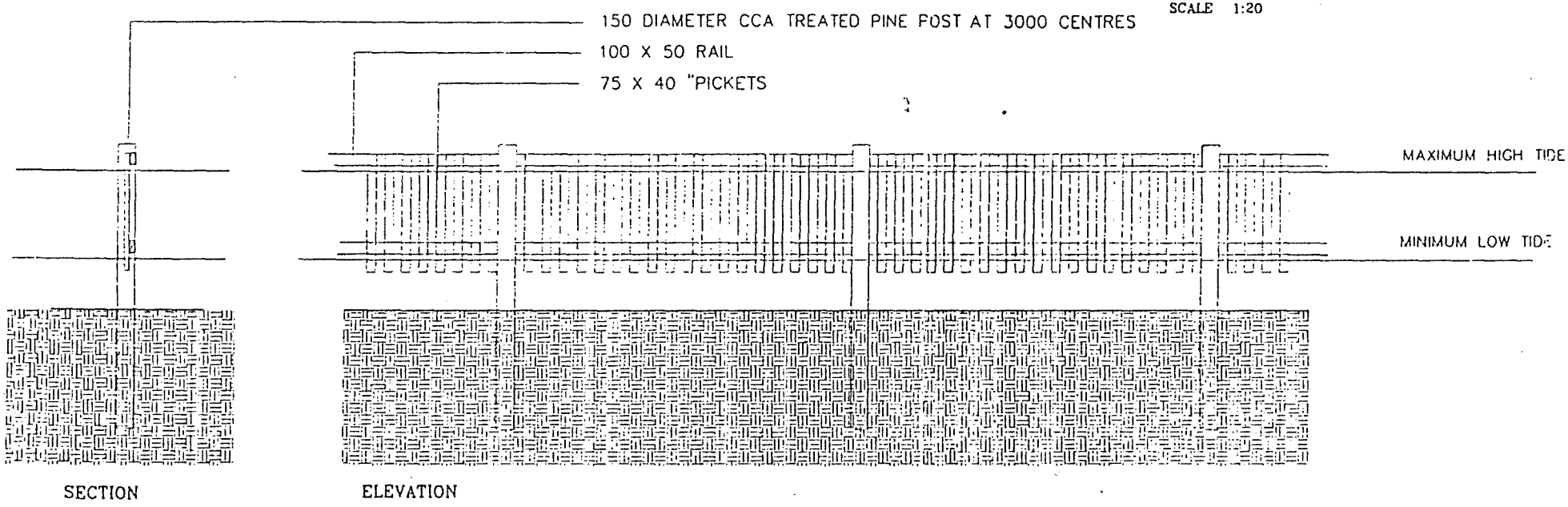
SCALE

FORESHORE MANAGEMENT PLAN
ASHFIELD PARADE — BASSENDEAN
FOR
THE SWAN RIVER TRUST

LANDSCAPE PLAN

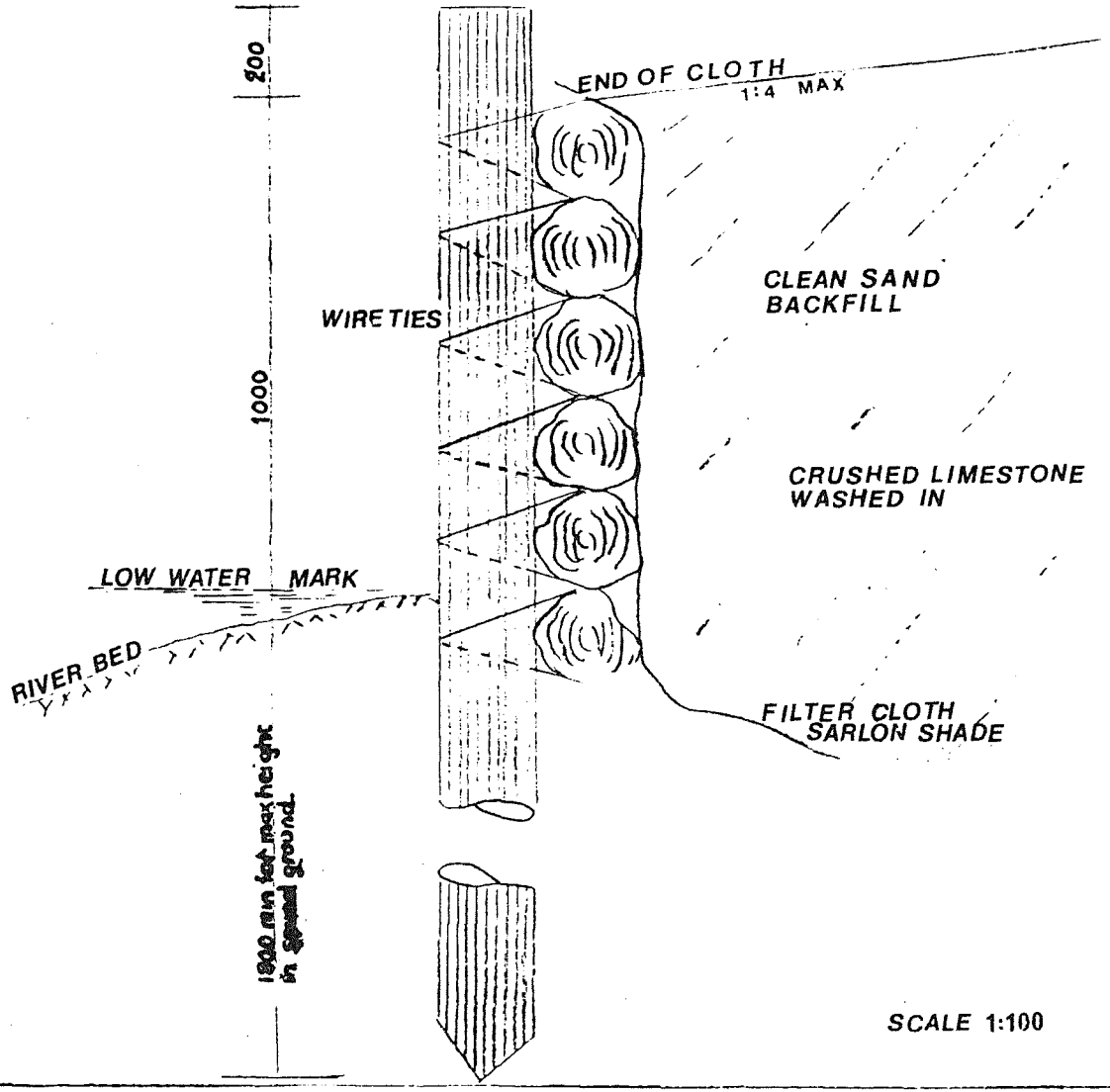
SECTION

SCALE 1:20



EROSION FENCE

NOTE: TIMBER TO BE EITHER F8 JARRAH OR CCA TREATED PINE
ALL NAILS TO BE GALVANISED.



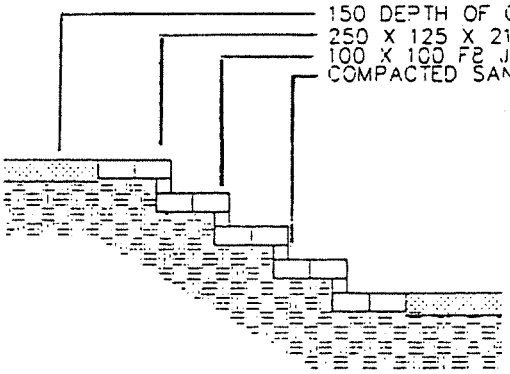
SCALE 1:100

GENERAL NOTES

1. ALL LOGS 200$^{\phi}$ x 4.5m.
2. VERTICALS SPACED AT 1·65m CENTRES WITH 0·6m OVERHANG
3. TRIM LOGS AND CLEAT TO PROVIDE SNUG FIT
4. PULL WIRES TIGHT AND TWITCH THREE CURLS. CUT AND HAMMER BACK INTO LOG AWAY FROM FILTER CLOTH.
5. WIRE TO BE 3mm DIA. GALV.
6. INDIVIDUAL SITE CONDITIONS MAY REQUIRE VARIATIONS TO THE PILE SPACING.

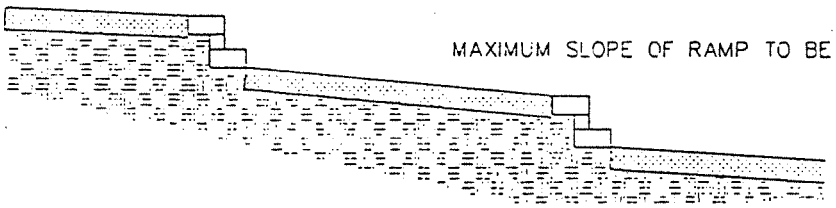
LOG WALL

DR. NO JP 1



ALL FIXING TO BE WITH GALV NAILS AND DECK SPIKES

ALL TIMBER TO BE TREATED WITH CREOSOTE BEFORE INSTALLATION



STEPS AND RAMPS

APPENDIX A

REVEGETATION SPECIFICATION

1.0 WEED SUPPRESSION

1.1 General

Prior to re-establishing indigenous species on the erosion bank it will be necessary to remove, or significantly retard the weed growth. This can be achieved either by the use of herbicides, or by mechanical means. It is likely that a combination of both means will be necessary.

It is recommended that only a small area at a time is tackled, approximately 50 m of bank should be manageable.

If a community group volunteers to supply the labour then a large amount of the weed removal can be done by hand. If, however, the weed suppression falls to the Trust or the Council it is likely that chemical suppression will be the only viable means.

1.2 Mechanical Removal

If sufficient volunteer labour is available then it will be possible to remove much of the weed material by hand. This should be carried out in two stages. The first in late winter, before the Watsonia has flowered, and again in late summer the following year when the couch grass is still growing vigorously. All possible weed material, both above and below ground, must be removed.

1.3 Chemical Suppression

Chemical suppression should also be carried out in two stages. Weeds should be sprayed when they are growing vigorously with a systemic herbicide. The Waterways Commission is undertaking trials to identify herbicides that are environmentally acceptable for use near the river.

Spraying should be carried out in early autumn when the couch grass is growing vigorously and again in winter when the Watsonia is growing vigorously. It may be necessary to carry out this spraying for two years in succession before the weeds are sufficiently set back to adequately remove competition.

2.0 DIRECT SEEDING OF INDIGENOUS TREE, SHRUB AND GROUNDCOVER SPECIES

2.1 Ground Preparation

The ground should be disturbed prior to the application of seed. The purpose of this disturbance is to present the seed with a mineral soil for the early development of the plant. It is likely that the soil under the Watsonias will be a mass of bulbs and underground stems which must be either removed, or at least broken up, before the seed is broadcast.

2.2 Seed Mix

The seed mix should comprise the following species:

Seed Mix -
Acacia lasiocarpa
Acacia pulchella
Allocasuarina obesa
Allocasuarina humilis
Clematis pubescens
Diplolaena angustifolia
Hardenbergia comptoniana
Kennedya prostrata
Stirlingia latifolia

2.3 Seeding Rates

The rate of application of seed should be as follows:

Species	Rate in kg/ha
Acacia lasiocarpa	0.4
Acacia pulchella	0.4
Allocasuarina obesa	0.15
Allocasuarina humilis	0.15
Clematis pubescens	0.15
Diplolaena angustifolia	0.2
Hardenbergia comptoniana	3.0
Kennedya prostrata	3.0
Stirlingia latifolia	3.0

2.4 Seed Preparation

All leguminous seed should be steeped in just boiled water overnight preceding the day of application. All seed so treated should be broadcast on the day following the treatment.

2.5 Broadcasting of Seed

2.5.1 *General*

The seed should be broadcast by hand or by an approved mechanical means. Application by the hydromulch method is not recommended.

2.5.2 *Mixing of Seed*

Seed to be broadcast should be mixed with dry clean sand in the ratio of 1 part seed mix to 100 parts of sand. The sand and seed should be thoroughly mixed together.

2.5.3 *Broadcasting*

The seed-sand mix should be broadcast by hand over the area from which weeds have been removed.

2.5.4 *Raking In*

After broadcasting the seed-sand mix, the seeded area should be raked over, along the contours, using a steel toothed garden rake or similar tool.

APPENDIX B

MANAGEMENT OF REVEGETATED AREAS

1. General

The revegetated areas should be monitored to determine whether satisfactory germination and development of the re-established vegetation has occurred. Particular attention should be paid to the invasion of weed species. Should the re-establishment of the desired indigenous vegetation be found to be unsatisfactory, or should weed species be found to be inhibiting the development of the desired vegetation, then remedial action should be taken.

2. Re-seeding

The seeded areas should be inspected in March of the year following sowing to determine the success of the revegetation process. Should the revegetation be found to be unsatisfactory in certain areas then additional seeding should be carried out in those areas. The re-seeding should be carried out as specified in Appendix A.

3. Control of Weeds

Should alien weed species be found to be invading the revegetated areas then the appropriate control measures should be undertaken.

Isolated woody weeds should be controlled by removal of the weed plants. Infestations of weedy grass species should be treated with an approved selective herbicide, as recommended by the Waterways Commission.

4. Management Programme

The monitoring and management of the revegetated areas should continue until a satisfactory cover of indigenous species is achieved.

APPENDIX C

CAPITAL COSTS

		$ 1,000's
1.	Walling to protect threatened trees - 120 metres	45.0
2.	Interpretation signs and informal family areas 2 benches, 2 rubbish bins, 3 signs	1.0
3.	Access control (incl 360 m of log barrier fence)	10.0
4.	Weed suppression/removal (labour not included) 1.5 ha	24.0
5.	Erosion fences - 510 metres	51.0
	(Complete cost breakdown available from the Waterways Commission)	
	TOTAL COST (maintenance not included)	**131.0**