

**AN ENVIRONMENTAL EFFECTS ASSESSMENT
PORT PHILLIP BAY COASTAL TRAIL
KANANOOK CREEK RESERVE, SEAFORD**

Prepared by

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1. Introduction

The Seaford Foreshore Reserve and the Kananook Creek Reserves are narrow linear reserves on infertile coastal dunes and are therefore fragile environments. Both are classified as Natural Reserves containing ***the last significant remnants*** of their particular plant communities around the shores of Port Phillip Bay. The Kananook Creek Reserves also have 'Land for Wildlife' classification, due mostly to the regeneration, weed eradication and trail maintenance efforts of the Kananook Creek Association Inc.

Council should have the environmental effects assessed in view of the recommendations of both the Final Kananook Creek Corridor Management Plan 1992 (Ref. 1) and the Kananook Creek Reserve Landscape Master Plan 1997 (Ref. 2) ***that trails be chipped soft surface walking trails for passive recreation.*** These plans were endorsed by Frankston Council, Melbourne Water and the Kananook Creek Association.

Kananook Creek Association reserve volunteers have worked to this objective for twenty two years when they commenced reserve restoration after the fire.

This paper is an assessment of the environmental effects of the Port Phillip Bay Coastal Trail being located in the Kananook Creek Reserves between Station Street and Mile Bridge, Seaford.

2. Background

To make the assessment it is necessary to define the aspects of the reserves which have a status that may be affected by a coastal trail for active recreation as compared to the existing or proposed chipped soft surface trails for passive recreation.

The aspects that reflect status for assessment are listed below:

- (a) The Reserves are classified as **Natural Reserves** and form part of Frankston City publication 'Frankston's Natural Reserves'.
- (b) A Management Plan was prepared and approved by Frankston City and Melbourne Water in 1992 (commenced in 1986 by the FCC and the Dandenong Valley Authority). The Plan's recommendation for the trails is – "There is considerable public support for retaining the existing informal pedestrian trail through the ...reserve...", "...FCC should negotiate with the Melbourne Transport Corporation for the possible future of a regional bicycle link along the railway reserve" and "Presently, a well defined walking track with a soft surface exists... . This track should be retained and maintained in its present form."
- (c) The Reserves received 'Land for Wildlife' classification in 1996.
- (d) A Kananook Creek Reserve Master Plan was approved by Frankston City in 1997. This Plan included the concept of a bicycle path outside the reserve and restated the principle for the existing nature trail for passive recreation, "experience of 'nature' in different vegetation communities...".

The Plan gives some definition to interpretation of its findings in the statement, "Some of these reserves can support conservation and recreational use. However, their conservation value should be paramount and decisions on the allowable level of future recreational use should await the outcome of more detailed botanical and other studies." (Ref. 3 p 16).

3. Geomorphology

The Carrum Carrum Swamps (some 4000 hectares of low lying wetland stretching from Mordialloc to Frankston) entered Port Phillip Bay via Mordialloc Creek and Kananook Creek. Kananook Creek is a "good geomorphological example of a coastal creek following the swale between dune ridges." (Ref. 1).

The processes of European settlement included draining the swamps by cutting a channel that is now Patterson River. The dune ridges to the east of Kananook Creek were substantially sand-mined and later leveled for urban development.

The remaining swamp (Seaford Wetlands), Kananook Creek and its reserves and Seaford Foreshore Reserve each contain significant remnants of indigenous flora and fauna. Together they represent the only remaining example of the complete system along the shores of Port Phillip Bay.

The formation of the creek has been dated geologically as very recent (2000 to 3000 years only). The dunes and vegetation are closely allied to that behind the primary dune on the foreshore, but the floodplains have their own community related to the different moisture content, salinity, increased nutrients and high component of silts deposited during flood times. The vegetation on the floodplains is more allied to that of the wetlands.

4. The Flora of the Reserves

The floristic vegetation community of the reserves is defined as **Coastal Banksia Woodland** (Ref. 4). The characteristic species (trees and shrubs) are Coast Banksia, Coast Manna Gum, Coast Ti-Tree, Coast Wattle and Swamp Paperbark. For (ferns, herbs, grasses, sedges) they are small-leaved Clematis, Austral Bracken, Seaberry Saltbush, Spiney Mat-rush and Bower Spinach (Ref. 5).

The community is classed as unique (Ref. 6) and the dune sub-community is described in 'The Flora of Melbourne' as follows, "**Along Kananook Creek is a unique community of Coastal Banksia Woodland**..... This sub-community is a woodland dominated by *Banksia integrifolia*. Beneath the tree canopy is a dense shrub layer of *Acacia sophorae*, *Leptospermum laevigatum*, *Luecopogon parviflorus*, *Myoporum insulare* and *Rhagodia candolleana*.....".

The remnants of one half of this unique community exists between Seaford Road and Mile Bridge, Seaford on a narrow (20-30 m) '**perched**' dune (about 3 metres above the land on either side). The community is senescing in a number of sections over its 1.25 kilometre length. Where the senescing has advanced and been subjected to tree removal for fire protection and maintenance vehicle entry the canopy is badly broken and rapid collapse of trees and understorey is occurring from wind exposure.

Attempts by the local community group to re-establish the overstorey with plantings of Coast Banksia and Coast Manna Gum have been largely unsuccessful and attempts to introduce copses of Drooping She-oak (a species believed to have been common before sand mining took place) have met with only limited success.

The ground flora is frequently dominated by introduced pasture grasses, particularly where the canopy is opened. Garden escapes are common near the residential boundary on the east side of the reserve.

5. The Flora of the Reserves

5.1 Disturbance

The construction of a 2 m hardened trail, removal and relocating of the existing soil and track material (chips), placing and compacting of new material, edging work and side works with mulch matting for revegetation will cause considerable disturbance. With an already established invasion of weed species, the disturbance can be expected to distribute stored weed seed and plant material on a wider basis and promote its generation.

5.2 Creations of microclimates

A compacted surface for a small must have a camber to shed water and protect it from deterioration and disintegration. Wherever this water is directed a new microclimate will be created with an increased precipitation equivalent. These microclimates will favour introduced species. Indigenous species are adapted to the infertile dune sands, and while a number of introduced species have invaded, the microclimate effects are likely to promote invasion by a number of new weeds and accelerate the invasion of existing weeds in a much more vigorous manner than presently exists.

The edge matting may be successful in ameliorating these effects in the initial stages but accumulating displacement of the matting with trail use and its disintegration in one to two years will lead to an eventual increased weed problem from the microclimates.

An increase in maintenance expenditure will be required if the integrity of the flora is to be improved.

5.3 Further Opening of the Understorey Canopy

The major problem to conservation of the Coast Banksia Woodland Community has been the destruction of understorey canopy coupled with loss of overstorey, mainly Coast Manna Gums and Coast Banksias. This loss of overstorey and understorey vegetation has encouraged invasion by introduced grasses and garden escapes. The process is exacerbated by depletion of the indigenous groundcovers such as Seaberry Saltbush, Bower Spinach and Small-leaved Clematis which require cover to ensure a cool root zone. Removal of fallen branches and other fine vegetative matter to reduce fire fuel loads, particularly on the residential side of the trail, does not help as these can provide a means for the groundcovers to create their own shade zone for their roots.

Further opening of the understorey by removal or pruning to provide cycle headroom and trail width will mean virtually the whole Coastal Trail section will be subjected to an aggravated weed invasion problem. The opening will further accelerate the understorey collapse and the senescence consequences.

5.4 Mulch Matting along the Trail Sides

Use of mulch or mulch matting along the trail sides will aid weed suppression and establishment of specimen species by planting. This does, however, depend on integrity. As pointed out in 5.2 (Microclimates) this is measurably finite, being 1 to 2 years.

Matting will also suppress any natural regeneration of indigenous species in the zone concerned. Survival of planted specimens without canopy protection must be regarded as low, leading to a high cost maintenance program. Survival of planted species with heavy mulch support, and on a similar perched dune situation and exposure, was zero in the case of the PTC carpark. Of the 1500 plants placed in May 1997 none were alive in May 1998 following a below average rainfall winter and summer. Whilst there was a degree of vandalism, lack of moisture and ground temperatures from exposure are considered to have been the major causes.

The same could be expected on the narrower more severely perched dune where the Coastal Trail is proposed.

The use of mulch matting (or heavy mulch) is inconsistent with a natural reserve and more akin to an active recreational reserve with selected indigenous trees and shrubs; casualties being replaced by plantings.

5.5 Revegetation Problems

Attempts to revegetate the trees by plantings and restore the upper canopy have been taking place for some years. The result has not been successful – lack of moisture and probably the surface temperature have been unsuitable for young Coast Banksia and Manna Gums. It seems essential regeneration of an understorey and probably groundcovers should proceed at the same time. These species are quicker growing and will provide a cover and shade protection for the future upperstorey trees. A cool root zone will also reduce evaporation and use less surface moisture than invasive pasture grasses.

Experience with regeneration in burnt areas in the northern end of the reserves follows this pattern and indicates it will take up to 8 years for the upperstorey trees to rise above the understorey species of wattles and ti-tree. Reduction of the understorey for passive recreational purposes should then be possible – actually, wattles (particularly the Black Wattle) tend to die off once the upperstorey starts to reduce the light availability, and as the scrub ages and the overstorey thickens most of the weaker ti-trees die also.

The proposed Coastal Trail with a 2m compacted surface and mulch matting along the sides means a clear surface area of about 6m. This will make attempts to regenerate an overstorey very difficult if not virtually impossible.

Dense indigenous ground layers of Seaberry Saltbush and Bower Spinach do not flourish in open areas, but need the understorey cover for their root zones as mentioned in 5.4.

Regeneration of an understorey of Coast Ti-tree and Coast Wattle in the vicinity of the proposed trail would mean a continual bi-annual pruning program to maintain clear width and height. Pruning of the young species would produce a hedge effect along the sides of the trail. This would be in conflict with general fire management plans as well as visual amenity aims.

5.6 Ultimate Options

If the proposed trail is constructed as designed, a program will be required during the life of the mulch matting (1-2 years) to replace and support the specimen plants and maintain the integrity of the mat itself,. ***Since the canopy will remain broken the annual program to hold back the weed invasion is likely to prove beyond resources and the only option will be a bi-annual mowing regime for open areas.*** To make this more achievable, the removal of fallen limbs, ground litter and regenerating shrubs would be predictable.

The collapse of senescent ti-trees will continue and the isolated banksias will continue to be blown over. With removal of the material the Coast Banksia Woodlands Community can be expected to become an active recreational parkland.

One half of the dune sub-community of the last remnants of Coast Banksia Woodland will have been lost.

6. References

- (i) Kananook Creek Final Management Plan: February 1992: City of Frankston and Melbourne Water
- (ii) Kananook Creek Reserves, Landscape Master Plan: July 1997: Jill Orr-Young
- (iii) Kananook Creek Reserves, Landscape Master Plan: December 1997
- (iv) Land Conservation Council: Melbourne Area District 2, Descriptive Report: August 1991
- (v) Land Conservation Council: Melbourne Area District 2, final Recommendations: July 1994
- (vi) Flora of Melbourne: SGAP Maroondah Inc.: Revised Edition 1993.