Submission to the Darwin City Council on Management Objectives for East Point Reserve

David Cooper
Aboriginal Sacred Sites Authority
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Re: Kulaluk Lease

SUBMISSION ON MANAGEMENT OBJECTIVES FOR EAST POINT RESERVE

c 1993

PREAMBLE

The emphasis of this submission is not centered on East Point itself, but rather on the wider potential that the nature reserve concept has, but which might easily be overlooked when considering management guidelines. The local context in which East Point is situated, including the presence of adjacent Aboriginal land makes the management structure crucial in realising this potential.

INTRODUCTION

The provision of natural reserves and parklands within developed urban areas is an important consideration in urban planning. The benefits of reserve areas are twofold, providing both social and ecological relief values for the negative impacts which high-density development and concentrated urban populations inevitably generate.

Although the re-development of Darwin since Cyclone Tracy has occurred at great expense to the natural environment there exists a great potential to utilize the remaining areas of natural significance in an urban greenbelt network that would greatly enhance the quality of life for present and future generations. The high profile given to tourism in the Northern Territory would also be greatly served by a more sensitive approach towards its natural assets.

Development trends in Darwin are rapidly diminishing one of its greatest assets - the tropical environment. While inappropriate building design continues to rob the environment of its tropical character, we might expect at least that ecological management in Darwin would provide an alternative avenue in which to reflect our tropical aspirations. Instead there has been a degeneration - a loss of important rainforest and tropical woodland elements and an extensive encroachment of grass and weed species through repeated burning and mowing practices. Mangrove and wetlands have also suffered at the hands of development being subject to urban landfill, rubbish dumping, sewerage works and heavy-handed drainage programmes.

Set in this background, the decision to rehabilitate the East Point Nature Reserve must be seen as a welcome step in the right direction, however the full potential of the initiative remains

unrealised. East Point lies adjacent to the estuarine mangrove environment of Ludmilla Creek which also provides the boundary of the Kulaluk Aboriginal Special Purpose Lease, occupying the beach ridge system and swamp margins of Beagle Gulf. Together these areas provide a virtually uninterrupted sequence of habitats including marshland, mangrove, woodland, rainforest / monsoon forest and grassland communities, supporting a considerable diversity of animal and plant species. The ecological connections between these three areas and the implications of usage, particularly in Ludmilla Creek, strongly suggest that any proposed managment plan should encompass the wider sphere of interactions.

The complexity of responsibilities is such that alternative management structures should also be investigated. A joint management structure such as a committee or board comprising representation from relevant groups would best suit the tasks involved.

A BIOLOGICAL SYSTEM

The first consideration in the planning of a nature reserve should be to identify the biological watershed within which the reserve will be subject to interactions and impacts. It is within the wider sphere comprising the three main areas of East Point, Ludmilla Creek and Kulaluk,that this is found.

LUDMILLA CREEK

The focus of the system is Ludmilla Creek and its associated mangrove fringing communities. It provides a richly productive habitat drawing on the drainage inputs of each of the areas, as well as regular tidal inundation. A complex biotic web is supported by the mangroves, ranging from the bacterial and algal film covering the mud surface to the large numbers of bird species which utilise the mangrove flowers and a host of small animal prey.

The diversity of habitats available is in some way related to the species diversity of mangrove plants, and thus while 19 species are found in the Darwin area, 14 of these can be found in the Ludmilla Creek complex (including one species of rare occurrence in the Darwin area), and only 9 within the present East Point Reserve. As these two areas constitute a continuous belt of vegetation (except for the interruption of Dick Ward Drive) it would make good biological sense to include the whole system within the management and protection of the reserve.

The wider inclusion also has other important advantages:

* Control and protection would be extended over a wider biological watershed, including the boundary of the Kulaluk

Special Purpose Lease which contains significant contiguous areas of natural vegetation.

* Impacts upon Ludmilla Creek must have an influence further downstream at the mouth of the Creek and along East Point itself. Control would extend to the recreatiional use of the Creek and negative impacts such as, pollutant discharge in stormwater and from the Darwin Wastewater Treatment Plant, rubbish dumping and infilling and ill-evaluated drainage schemes.

* Mangrove areas are easy to manage as they require no watering and are not subject to the danger of fires.

* Inclusion would provide an interface with Aboriginal usage of the environment, and the incentive to extend revegetation programmes beyond the present scope of East Point.

THE FAUNA OF KULALUK

The variety of plant communities and size of Kulaluk supports a rich assemblage of animal species, some of which (particularly birds, insects, wallabies and some reptiles) cross onto the southern side of Ludmilla Creek and into East Point. The diversity of animal species is greater at Kulaluk than at East Point:

* While there is not a comprehensive bird checklist for Kulaluk, its more swampy nature and extensive mangrove areas make it an important area for wading birds.

* In addition to the wallabies, bandicoots, possums and jungle fowl also found at East Point, Kulaluk contains echidna (Tachyglossus aculeatus), and at least one species each of a native cat and native water rat.

* Small saltwater crocodiles (Crocodylus porosus), have been observed in Ludmilla Creek and tributaries.

* Habitat diversity makes Kulaluk a prolific reptile area with many species of snakes and lizards present.

* Pigs and feral cats are also present and should be eradicated.

The revegetation of rainforest areas at East Point will provide an increased habitat for animal species and it would appear greatly advantageous to facilitate the environmental bridge between the two areas. This could include the revegetation of Melaleuca swamp and open forest areas and the rehabilitation of mangrove and sand dune communities in the vicinity of Spot-On Marine, to provide continuous habitat cover from mangroves to rainforest on the widest possible front. Areas constantly mowed or burned give no protection for species movement and reduce habitat possibilities.

THE VEGETATION OF KULALUK

A checklist of flora for the East Point Reserve lists 251 species present; including 45 exotic or weed species. A much more limited survey of the Kulaluk area in the dry season of 1982 lists 203 species present with 21 exotic or weed species. Further collection during the wet season would increase this number considerably. Only 127 species are common to both lists, indicating that the Kulaluk vegetation offers a much greater plant diversity.

This diversity reflects a wide range of plant communities and habitats. The most complex of these occurs on the stabilised beach ridge system and includes what is termed here for the sake of simplicity rainforest/monsoon forest.

The open woodland communities are also well represented at Kulaluk, particularly on the eastern side adjacent to Dick Ward Drive. The more well-drained areas support a Eucalypt/Pandanus dominated woodland while lower sections are subject to wet season inundation and are dominated by a Melaleuca/Pandanus association. Freshwater sedgeland swamp areas occur on the edges of the Melaleuca woodland in depressions.

KULALUK - A BIOLOGICAL RESOURCE

The significance of the biological resource which Kulaluk holds should not be overlooked on the management plan for East Point. The boundary of Kulaluk runs along the mid-line of Ludmilla Creek, so in fact, recreational use of Ludmilla Creek already involves this lease. The history of Kulaluk has involved a significant amount of environmental disturbances such as soil and shell grit removal, dumping of rubbish and the removal of rainforest/woodland elements,and it could be expected that rehabilitation of the vegetation would provide great environmental benefits. The Aboriginal lease-holders have long expressed the desire to rehabilitate areas and preserve the natural environment, however a lack of resources has prevented positive action. An approach to the lease-holders for cooperation with objectives is likely to be favourably received,and there are forceful reasons why such action should be considered :

* Rehabilitation of Kulaluk vegetation would benefit the whole biotic region as well as the Aboriginal community at Kulaluk. It would provide a positive environment for community involvement both within Kulaluk and externally in cooperation with government authorities.

* Natural areas in Kulaluk could be protected under conditions in the Special Purpose Lease. Access to areas or features for recreational or educational purposes might be negotiated with the Aboriginal community.

* The needs of the Aboriginal community for food gathering and recreation along Ludmilla Creek must be recognised in the management plan.

* The Darwin City Council (D.C.C.) could coordinate its own activities to assist in a more comprehensive management of the local area. For example, the D.C.C. Beautification Scheme would be well served by incorporating in its objectives the rehabilitation of Kulaluk vegetation adjacent to Bagot, Coconut Grove and along Dick Ward Drive.

* Employment of Aboriginal people from the Kulaluk community could be generated by specific projects.

REHABILITATION PROJECTS

Within the framework of an expanded East Point Reserve management structure, the possibility exists for remedial work to be carried out with fairly limited resources, if the D.C.C. and Conservation Commission were prepared to recognise the need and the benefits to be gained. Projects involved would include:

* The replanting of mangrove areas devastated by Cyclone Tracy and still struggling to regenerate.

* The replanting of rainforest pockets, Melaleuca swampland, and tropical woodland elements which have been destroyed or degraded by clearing and repeated burning.

* The removal of major weed species such as Mimosa pigra and 'coffee-bush' (Leuceana leucocephala) which have taken over large areas or are beginning to spread rapidly.

* Collection of seed from Kulaluk for ~~the~~ germination and planting as seedlings.

* Use of Kulaluk as a possible nursery site for ~~the~~ production of seedlings for re-vegetation.

HUMAN USAGE

Human usage reflects the prevailing attitudes of the community towards their environment: recreational, economic, aesthetic and educational values are bound together into patterns of activity. In an urban setting planning authorities should seek to broaden public appreciation of and contact with the natural environment. The issue should not simply be one of recreation, but rather of quality of life. Development proposals, including tourist developments should be subordinate to this principle.

East Point will provide a considerable recreational resource and it will be regarded primarily as such by the users - the

public. A somewhat different category of resource is offered by parts of Ludmilla Creek and Kulaluk. On the one hand the presence of Dick Ward Drive means that daily, thousands of commuters peer out into the mangroves, and marshlands and woodlands - and what they see is likely to reinforce the conception that these environments are wastelands, particularly since this land has been scarred by numerous, ugly open drains. On the other hand these areas provide an important cultural and economic resource for Aboriginal people, mostly from Bagot Reserve and Kulaluk itself.

A CULTURAL RESOURCE

A land use study of the Kulaluk and Ludmilla Creek areas completed for the Aboriginal Sacred Sites Protection Authority in July 1983, revealed a wide usage and significance of the natural environment of Kulaluk and Ludmilla Creek. Fishing and food gathering provides an important dietary alternative and the opportunity to teach young people about traditional bush resources and skills. As well as permanent residents at Kulaluk, many Aboriginal people camp for short periods of time, mostly along the beaches. Others,from Bagot or suburbs further afield make day trips to Kulaluk or Ludmilla Creek. The campers and users come from a variety of areas including Belyuen, Groote Eylandt, Bathurst and Goulburn Islands, Milingimbi and Alice Springs. The recognised traditional owners see Kulaluk as being available to all Aboriginal people in Darwin. A common factor is an awareness and value placed on things Aboriginal.

The protection of areas used in these ways by Aboriginal people, particularly along Ludmilla Creek, is an essential management requirement. The importance of food resources, particularly marine foods such as crabs, shellfish, stingray, fish and shark must be recognised. In this regard, the issue of water quality must also be tackled, and concern is expressed at the presence of toxic pollutants and bacteria. The ability of many of these organisms to bio-accumulate high concentrations of pollutants, particularly heavy metals is well documented, and the consequent risk to public health should not remain unheeded.

MANAGEMENT OBJECTIVES

An Urban Greenbelt

A primary objective should be adopted: the creation and protection of an urban greenbelt in as natural a state as possible. This would provide a continuous range of habitats for flora and fauna species and enhance the psychological and aesthetic environment within an urban context that will serve present and future generations.

The achievement of this objective relies on a strategy of secondary objectives:

1. The inclusion of Ludmilla Creek

East Point Reserve should incorporate the mangrove communities on the southern side of Ludmilla Creek and those in the headwaters between Bagot Road and Dick Ward Drive.

2. Revegetation and Rehabilitation

Degraded and cleared areas should be rehabilitated and revegetated. The main communities involved are rainforest, mangroves, Melaleuca swamp and tropical open woodlands.

3. The involvement of Kulaluk

Cooperation with the Kulaluk leaseholders in the protection and rehabilitation of natural communities will greatly extend the conservation value of the Reserve and create wider social benefits.

4. New management structure needed

An alternative management structure is required to handle the increased scope of management objectives.

MANAGEMENT TECHNIQUES

Management objectives outlined in this submission can be achieved in the main by a limited number of techniques, none of which are capital intensive. The bulk of expenditure would involve labour costs, thus generating employment opportunities.

1. Manual planting of seedlings

This method is suitable for mangrove and rainforest areas. Intensive manual planting is expected for the rainforest at East Point, however in other areas sparser planting and protection from fires and mowing would provide adequate revegetation.

2. Cease Firing and Mowing

This is an essential requirement in the re-establishment of rainforest and woodland communities. Seedlings must be given the opportunity to reach maturity. There is much evidence to support this need. For example, tropical tall grasses are perpetuated by annual burning and perennial tree species are prevented from reaching maturity. Research has shown that protection for five years allows open woodland to attain structural formation (Hoare et.al., 1980). Once a level of maturity has been attained these species can survive a low intensity burn. Reducing fuel loads could then be achieved by infrequent firing, every 2-3 years. It is important however that this be done when fuel contains moisture and conditions are such as to produce a ` mosaic burn'.

For rainforest areas, research by Darwin Community College students found that rainforest species seedlings readily appeared after the cessation of mowing (Gilham et. al., 1980). Protection from fire is an important consideration until a sufficient canopy is provided to retard grass growth.

3. Fire-break system

A system of fire-breaks is required to protect properties and fire-sensitive areas and contain the spread of damage should an outbreak occur.

4. Removal of weed species

The rehabilitation of natural communities requires the removal of weed species. The most important of these are Leuceana leucocephala (coffee bush), Mimosa pigra, Lantana camara and Delonix regia (poinciana). Mimosa pigra occurring along Dick Ward Drive is presently spreading rapidly due to the proximity of an open, unlined drain, and favourable swamp influenced habitats. Coffee bush is a major threat to rainforest areas, taking hold where disturbance occurs.

NOTES ON MANAGEMENT PROBLEM AREAS

A brief outline of management implications for selected problem areas is given below.

Mangroves

The mangroves of Ludmilla Creek and Beagle Gulf suffered extensive damage as a result of Cyclone Tracy in 1974. In many areas all the mature, adult trees were completely destroyed and revegetation has not occurred as yet in some places. Interruptions of natural drainage due to works such as the building of Dick Ward Drive and the excavation of stormwater easements have led to further areas of mortality. The lack of seed trees has impeded the re-establishment of mangroves. Manual planting of viviporous species has been shown to be extremely effective, simple and fast. School projects might even be employed as a way of achieving this form of revegetation, while at the same time providing an important educational experience for children.

Rainforests

The revegetation of rainforest (or semi-deciduous monsoon vine forest) on East Point is one of the major aims of the present East Point Reserve. It is intended to use diluted effluent from the Darwin Wastewater Treatment Plant to irrigate the area and promote rapid growth. This method is capital intensive and suitable only for a fairly limited area such as East Point.

As mentioned above, protection of certain areas from mowing

or burning will allow the seedlings of rainforest species to establish. Continued protection will result in the reformation of a mature rainforest canopy. This method requires little expenditure. Where natural seed stocks are insufficient, limited manual plantings could help create a sufficient canopy. Irrigation is also not required, particularly in Kulaluk areas because of its general low-lying character.

Attitudes to conservation

It is astonishing that, in view of the proposals to rehabilitate East Point Reserve, the Darwin City Council could have carried out its plans to excavate an extensive system of open, unlined drainage channels throughout Ludmilla Creek and Kulaluk, without an environmental impact study. Some of these drains are within the present East Point Reserve, and such action brings into question the attitudes towards conservation that have been adopted. It is not within the scope of this submission to adequately discuss the environmental implications of these drains, let alone their efficacy in mosquito eradication, but in a monsoon climate problems associated with for example, erosion, bank stability, ponding, siltation, salt water intrusion and serious loss of aesthetic amenity, erode the credibility of such an action.

The sheer extent of the drain network places an unaesthetic obstruction to both the recreational use of these environments and their perceived natural integrity and value by the public.

Re-appraisal of mosquito eradication drains

The damage that has been generated by the excavation of these drains is of major proportion. The expense of their maintenance is as yet unknown, but is likely to be high owing to the vastness of the network, and will also be ongoing, as failure to maintain the drains will lead to major problems, particularly that of mosquito breeding. The impacts should be monitored by the City Council and Conservation Commission with a view to rehabilitation where possible and the amelioration of impacts.

CONFLICT OF RESPONSIBILITIES

Coordinated planning and consequent action is constantly frustrated by the complexities of a profusion of government departments and authorities. Conflicting areas of responsibility must vie with each other for priority and inevitably the overall effect is a loss of coordination and a tendency to concentrate upon limited projects which are within a single authority's resources and which do not involve complicated and often cumbersome `group marriages' of departments.

The present East Point Reserve project is a potential victim of this process. Limited in area and scope and at present under the ownership of the Darwin City Council, it is unlikely to widen

its horizons. The following is a brief summary of the more obvious implications:

* D.C.C. might argue a lack of resources to manage and develop a reserve on a wider scale.

* The present reserve is of limited biological scope and does not offer protection for a large part of Ludmilla Creek or Kulaluk habitats.

* D.C.C. lacks the expertise to manage a biological reserve, however at present the emphasis of East Point is on recreation, not conservation.

* A larger reserve with more biological emphasis would obviate the need for involvement of the Conservation Commission on a basis other than as a landscape consultant, as is presently the case.

* The Conservation Commission is unlikely to want to jointly manage a reserve with the D.C.C. It prefers to be solely in control of a reserve.

* Present environmental degradations including the mosquito eradication drains and Darwin Wastewater Treatment Plant may deter Conservation Commission interest.

* Coastal development requires environmental assessment by the Conservation Commission.

These implications point to the conclusion that as well as widening the objectives of East Point Reserve, planners should consider an alternative management structure. This might involve a committee or board of management with representation from the D.C.C., Conservation Commission and the Aboriginal leaseholders of Kulaluk - the Gwala Dariniki Association.

Mangrove Formations

Closed Scrub

Open Scrub

Low Open Forest

Open Woodland

Mangrove Species:

Al	Aegialitis annulata
Ae	Aegiceras corniculatum
Ar	Arthrocnemum leiostachyum
A	Avicennia marina
B	Bruguiera exaristata Bruguiera parviflora
Ca	Camptostemon schultzii
C	Ceriops decandra Ceriops tagal
E	Excoecaria agallocha
L	Lumnitzera racemosa
O	Osbornia octodonta
R	Rhizophora stylosa
Sc	Scyphiphora hydrophyllacea
S	Sonneratia alba
X	Xylocarpus australasicus

Beach Ridge Forest

Semi-Deciduous Dune Forest

Monsoon Forest (Rainforest)

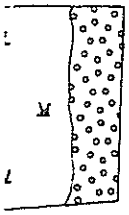
Open Woodland Communities

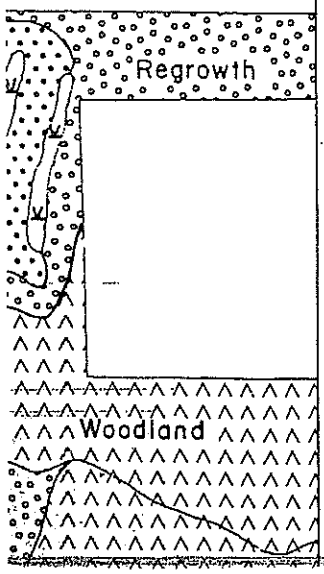
Swamp

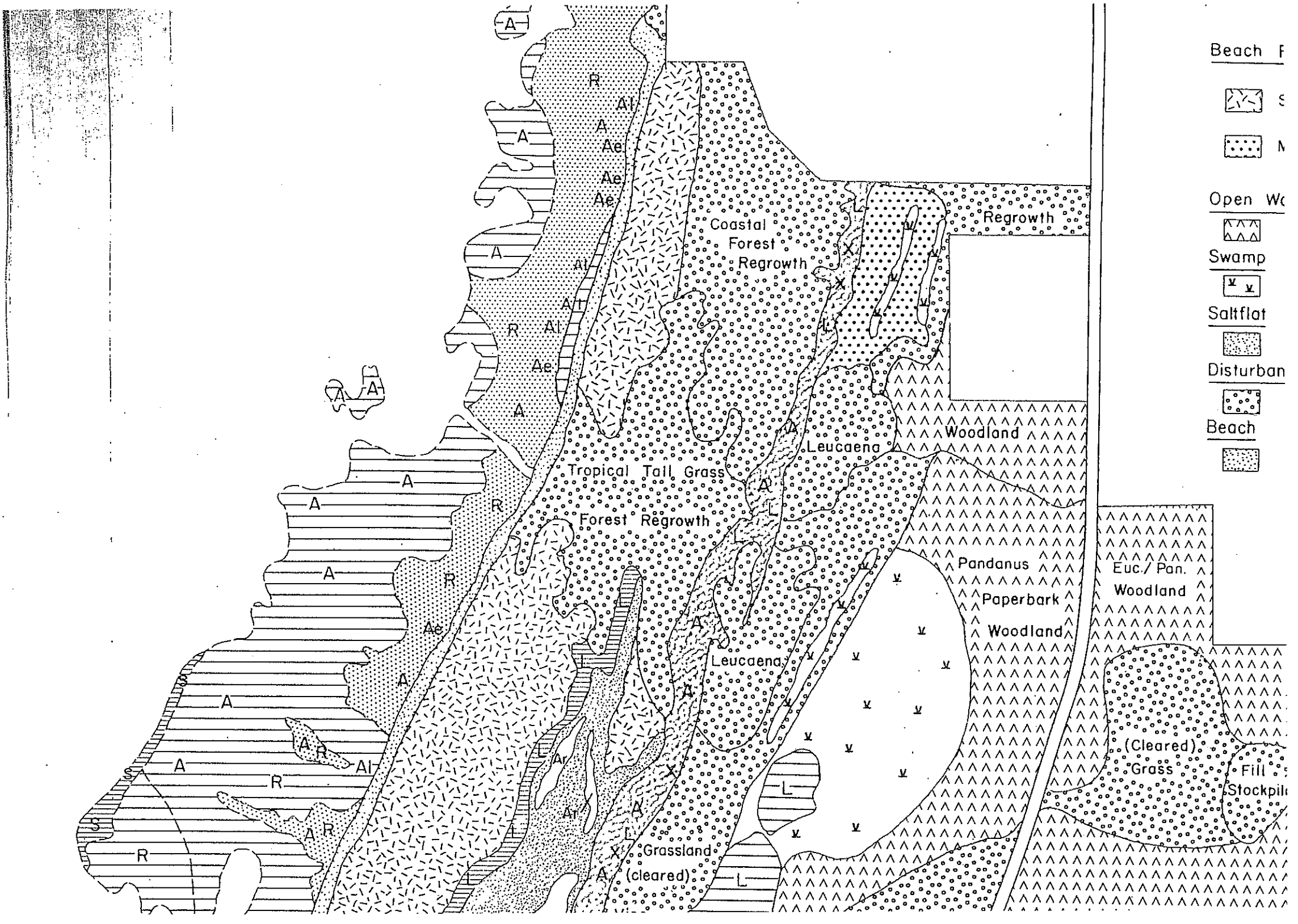
Saltflat

Disturbance Communities

Beach



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Beach
Coastal
Forest
Regrowth
Regrowth
Woodland
Leucaena
Tropical Tall Grass
Forest Regrowth
Pandanus
Paperbark
Woodland
Leucaena
Euc./ Pan.
Woodland
(Cleared)
Grass
Fill
Stockpil
Grassland
(cleared)
A
R
Ae
Al
L
X


Regrowth
Trees
Planted
Cleared
Vine
Thicket
Grass (Former Dump)
Regrowth