

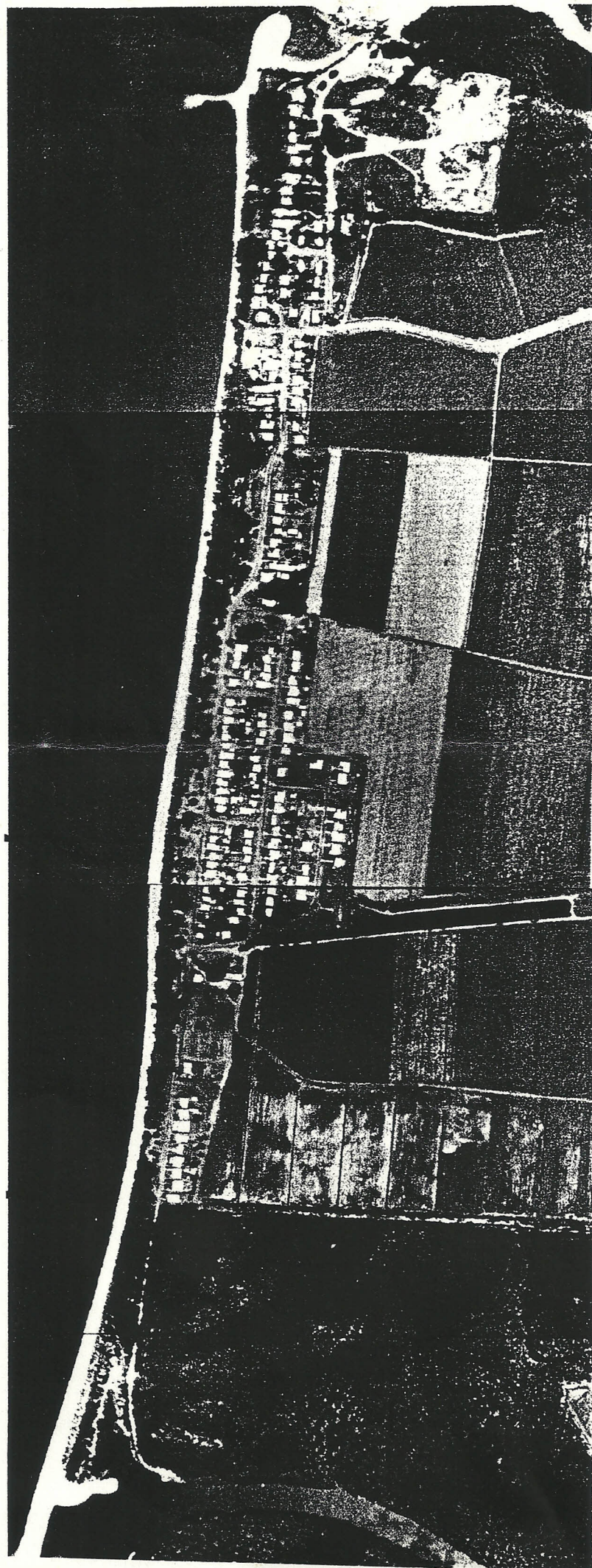
Black Fronted Plover	Vanellus tricolor	
Stilts	Recurvirostridae	
Black Winged Stilt	Himantopus nimantopus	
Sandpipers / Curlews	Scolopacidae	
Sharp Tailed Sandpiper	Calidris acuminata	
Bar Tailed Godwit	Limosa lapponica	
Eastern Curlew	Numenius madagascariensis	
Whimbrel	Numenius phaeopus	
Greenshank	Tringa nebularia	
Marsh Sandpiper	Tringa stagnatilis	
Gulls / Terns	Laridae	
Caspian Tern	Hydropogone caspia	
Kelp Gull	Larus dominicanus	
Silver Gull	Larus novaehollandiae	
Crested Tern	Sterna bergii	
Pigeons / Doves	Columbidae	
Emerald Dove	Chalcophaps indica	
Torresian Imperial Dove	Ducula spilorrhoa	Yes
Bar Shouldered Dove	Geopelia humeralis	Yes
Peaceful Dove	Geopelia striata	Yes
Topknot Pigeon	Lopholaimus antarcticus	
Rose Crowned Fruit Dove	Ptilinopus regina	
Spotted Turtle Dove	Streptopelia chinensis	Yes
Lorikeets	Loriidae	
Scaly Breasted Lorikeet	Trichoglossus chlorolepidotus	
Rainbow Lorikeet	Trichoglossus haematodus	
Fig Parrots	Opopsittidae	
Double Eyed Fig Parrot #	Psittaculirostris diophthalma	Yes
Cuckoos	Cuculidae	
Pheasant Coucal	Centropus phasianinus	Yes
Little Bronze Cuckoo	Chrysococcyx malayanus	Yes
Fan Tailed Cuckoo	Cuculus pyrrhophanus	
Brush Cuckoo	Cuculus variolosus	
Koel	Eudynamys scolopacea	
Channel Billed Cuckoo	Scythrops novaehollandiae	
Frogmouths	Podargidae	
Papuan Frogmouth	Podorgus papuensis	Yes
Swifts	Apodidae	
White Rumped Swiftlet	Apus pacificus	
White Throated Needletail	Hirundapus caudacutus	
Kingfishers	Alcedinidae	
Azure Kingfisher	Ceyx azureus	
Little Kingfisher	Ceyx pusillus	
Laughing Kookaburra	Dacelo gigas	Yes
Blue Winged Kookaburra	Dacelo leachii	

NEWELL BEACH DUNE MANAGEMENT PLAN



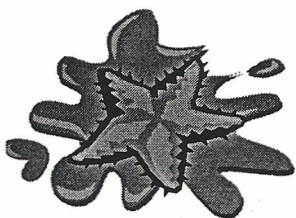
Douglas Shire Council

**May
2000**



Contents

	Page
1.0 Introduction	2
2.0 Site Description & Land Tenure	3
3.0 Vulnerability of Newell Beach to Erosion	3
4.0 Vegetation Description	4
4.1 Foredune Herbland / Pioneer Zone	
4.2 Mangroves	
4.3 Beach She-Oak Open Forest	5
4.4 Coastal Forest	
5.0 Public Consultation	5
6.0 Issues That Need to be Addressed	5
7.0 Newell Beach Dune Management Plan	6
7.1 Objectives	
7.2 Achievement of Objectives	
7.3 Zones	
7.3.1 Zone 1 Saltwater Creek Estuary	
7.3.2 Zone 2 Northern Newell Beach	7
7.3.3 Zone 3 Recreational	
7.3.4 Zone 4 Erosion Zone	8
8.0 Conclusion	9
Appendix 1 :	Erosion Prone Area Map (B.P.A.)
Appendix 2:	Newell Management Zone Map
Appendix 3:	Newell Foreshore Plant Species List
Appendix 4:	Newell Beach Bird List – <i>Birds Australia</i>



NEWELL BEACH DUNE MANAGEMENT PLAN

Douglas Shire Council, May 2000.



1.0 INTRODUCTION

The beach dune and swale system at Newell Beach is located along a 2.4 kilometre stretch of coastline between the Saltwater Creek estuary to the north and the Mossman River estuary to the south. The dune system consists of a low, slightly undulating terrace, which is primarily a wave built feature with minor aeolian sand capping.

Because of Newell Beach's proximity to two large watercourses, it is a very active beach system. Sediment loads from these watercourses have a significant influence over the material available to replenish this sand dune system.

In interpreting Coastal Observation Programme Engineering (COPE) data gathered between 1976 to 1985, Newell Beach exhibited accretion of the beach and subsequent growth of vegetation. Recent aerial photograph interpretation from the Department of Environment and Heritage has indicated a gradual erosion of sections of the foreshore to their 1974 location.

Development along Newell Beach has been linear in nature and this has resulted in a buffer zone which varies from 20 metres in the southern area of Newell to about 80 metres along parts of Marine Parade.

The narrow dunal system remaining is subjected to considerable recreational pressure, car parking, beach access, modification to existing vegetation associations, and beach character modification by the introduction of exotic plant species and invasion by weed species.

The issues that affect the management of the dunal area along Newell Beach have stimulated local community interest and the Douglas Shire Council has responded to this by seeking input from the Beach Protection Authority on how the area may be managed to alleviate some of the existing problems and to prevent long term trends which may have an adverse impact on the amenity and character of this significant Shire asset.

2.0 SITE DESCRIPTION and LAND TENURE

Newell Beach is located approximately six kilometres north-east of Mossman. Newell Beach extends for about 2400 metres and is aligned slightly north-northeast. The residential subdivision occupies a thin strip between areas under sugar cane cultivation to the west and Trinity Bay and the Coral Sea to the east.

The Saltwater Creek estuary to the north and the Mossman River estuary to the south are dominated by mangrove communities. Areas of mangrove at the northern end of Newell have been cleared for sugar cane, while at the southern end, the Council's Newell Beach Landfill has impacted on the mangroves in that area.

The strip of coastal dune-swale forest which connects these two mangrove communities has been severely impacted by human activities, to the point that its role as a habitat for native fauna has become severely degraded.

The foreshore of Newell Beach is State land dedicated either as a reserve for recreational purposes or as esplanade. This land is effectively set aside for public purposes for the benefit of the people of Queensland with Douglas Shire Council as Trustee or manager of the land. Council has a responsibility under the *Land Act 1994* to manage the land having regard to the principles of sustainability, protection, consultation and community purpose. Control, modification of or damage to this public land by adjacent residents or other persons without the consent of Council is considered to be an inappropriate use and action will be required to ensure that the land is managed in the best interest of the general community.

This land also lies wholly within the designated erosion prone area and is subject to controls on its use pursuant to the provisions of the *Beach Protection Act 1968*.

3.0 VULNERABILITY OF NEWELL BEACH TO EROSION

The Beach Protection Authority has produced erosion prone area maps for this section of coast pursuant to Section 41A(1) of the *Beach Protection Act 1968*. The width of these areas vary from 400 metres adjacent to the Mossman River and Saltwater Creek estuaries to 110 metres adjacent to the township of Newell (measured from the toe of the frontal dune – see Appendix 1).

Storm events will cause short term coastline recession, particularly in cyclonic events (between November and April), and as sand is retained in the active beach system following such events, rebuilding of the dune/beach system will occur as sand is returned shoreward. However, where there is a succession of storm activity short term changes to the buffer zone may be dramatic and this is when the buffer needs to be as wide as possible to accommodate such changes.

Reports of serious sea erosion at Newell Beach date back to 1968. This shoreline has accreted and eroded significantly over this period. Since 1974 the shoreline has accreted by some 25 metres up until 1983 when it began eroding once more. The shoreline is presently in about the same position as it was in 1974. This most recent erosion episode

has coincided with the southward growth of a spit on the north head of the Mossman River and is concentrated along a 450 metre length of Newell Beach.

At the southern end of the beach, which forms the northern bank of the Mossman River, some rock revetment work was conducted by local residents and the Council during 1975 in response to erosion processes which were threatening houses on the southern end of Newell Beach. One house, which was located on the northern bank of the Mossman River, succumbed to the erosive forces of the waves in conjunction with river flood events, eventually collapsing.

? Morphological changes to the beach/dune system on the southern end of Newell Beach are driven by both wave direction and tidal currents. Both the configuration of the Mossman River delta and the location of nearshore reefs significantly affect the direction of waves onto this beach and therefore the direction and rate of longshore transport of sand. These factors appear to be inducing the present erosion phase on this beach by their effect on wave direction. Locally (particularly Zone 4), sand transport appears to be to the south, not to the north as would normally be expected, and this local southern transport is feeding the growth of the spit to the southern end of this beach (BPA, 1998).

Natural replenishment of sand onto this beach would appear to be restricted. Historical aerial photographs indicate the highly dynamic nature of the Mossman River delta, which appears to be regularly reworked by flood flows.

? Council has received a permit from the Beach Protection Authority to push sand from the shallows to replenish the beach if required. This is a short to medium term solution which is costly, but may be considered by Council in the future.

4.0 VEGETATION DESCRIPTION

4.1 Foredune Herbland / Pioneer Zone

This zone occurs on the low mobile foredunes and is the most seaward of all vegetation. It is characterised by species such as *Ipomea pes-caprae* (Goats Foot), *Thuarea involuta* (Beach Grass), *Cyperus pendunculatus* (Beach Spinifex), *Scaveola sericea* (Beach Lettuce), *Canavalia rosea* (Wild Jack Bean).

4.2 Mangroves

Mangrove communities surround the Saltwater Creek and Mossman River estuaries. Mangroves are salt tolerant species which receive tidal flooding. The extent of mangrove areas have been reduced in the southern section where the Newell Tip is located, but are expanding into the swale behind the new dune developing at Saltwater Creek. Species present include *Avicennia marina*, *Rhizophora* sp., *Aegialitis annulata*, *Aegiceras corniculatum*, *Hibiscus tiliaceus* and *Lumnitzera littorea*.

4.3 Beach She-Oak (*Casuarina equisetifolia*) open forest

This community occurs on the crests and landward slopes of the foredunes, bordering the foredune herbland. *Scaevola sericea* is a dominant understorey species of this zone.

4.4 Coastal forest

This zone occurs on the protected landward slopes of the frontal dune. Canopy species include *Callophyllum inophyllum*, *Planchonella obovata*, *Acacia aulacocarpa*, *Dillenia alata* and *Eucalyptus tessellaris*. Shrub and ground species include: *Dodonaea polyandra*, *Clerodendrum inerme*, *Acacia flavescens*, *Acacia oraria*, *Acacia crassicarpa*, *Exocarpus latifolia*, *Myrtella obtusa*, *Dianella* sp. with the addition of vines *Flagellaria indica*, *Cissus* sp., *Smilax* sp.

5.0 PUBLIC CONSULTATION

The Council resolved at its October 1998 meeting, after consultation with the Beach Protection Authority, that a dune management plan for Newell Beach would be necessary to address the variety of management issues in an integrated and coordinated fashion, involving the opportunity for adequate community consultation.

After a number of site inspections and informal beach meetings involving local residents, the Council and the Beach Protection Authority, a public meeting was held on February 19th 1999. The residents who attended this meeting supported the need for a Dune Management Plan and provided some initial input towards the plan.

A draft plan was presented for public comment for a period of four weeks, after which a well attended public meeting was held at Newell on December 8th, 1999 to obtain further community input into this plan.

6.0 ISSUES THAT NEED TO BE ADDRESSED

- (a) Coastline erosion at the southern end of Newell Beach. —
- (b) Clearing of dunal vegetation for views and / or breezes.
- (c) Presence of weeds and exotic plant species on the dune.
- (d) Car parking and beach access for vehicles and pedestrians.
- (e) Enhancing the habitat values of the dunal area for native fauna.
- (f) Revegetation programs for Newell Beach – funding sources, volunteer groups.
- (g) Council management of the area to meet conservation, recreation and amenity objectives.

7.0 NEWELL BEACH DUNE MANAGEMENT PLAN

The historical approach to natural area management has been relatively simple – they were either developed as intense picnic areas or ignored and their qualities allowed to decline. There has been little management specifically directed towards the protection and enhancement of flora, fauna and other natural values. It is only recently that attention has been given to the notion of managed natural bushland adjacent residential areas.

7.1 Objectives

The Management Plan for Newell Beach is aimed at preserving and enhancing the values of the beach, ensuring stability against erosion, and preserving the coastal amenity and character of the area while facilitating recreational use and enjoyment by present and future generations.

7.2 Achievement of Objectives

The objectives of the Management Plan can be achieved by taking steps to provide an adequate buffer between development and the shoreline. A zoning system will be used with specific management procedures identified for each zone. The zoning system which forms the basis of the Management Plan is presented as Appendix 2.

7.3 Zones and Applicable Management Procedures.

A detailed management procedure is to be established for each zone shown on the Management Plan.

7.3.1 Zone 1 – Saltwater Creek Estuary.

The management procedures for this zone are as follows :

- (a) The dune system should be allowed to fluctuate in a natural manner.
- (b) Further expansion of the Saltwater Creek boat ramp should be restricted to the minimum area required to manoeuvre vehicles and boat trailers. Any mangrove clearing will require Council to obtain permission from the Department of Primary Industries, Fisheries.
- (c) Vehicle barriers should be retained and any further vehicle traffic is to be excluded from the dunal (eastern) side of the road.
- (d) Retain the informal parking area at its current capacity, allowing pedestrian access to the Saltwater Heads (as the sand spit on the southern side of Saltwater Creek has lengthened, people have to walk further to fish).
- (e) Some rehabilitative planting and weed control will be required within this zone, particularly along old vehicle access tracks. Any planting should be locally native species, reflecting the surrounding vegetation community.

- (f) No camping is permitted within this area, and this management regime will continue.
- (g) That sand extraction from Saltwater Creek continues at a sustainable rate and doesn't impact on the sand supply required to maintain Newell Beach, and replenish the beach after erosion events (approximately 9000m³ of sand has been extracted in the last 5 years).

7.3.2 Zone 2 – Northern Newell Beach (Residential).

The management procedures for this zone are as follows:

- (a) Beach access tracks should be limited in number and width to reduce impact on protective dunal vegetation. Access tracks should be no more than one metre in width. All existing tracks wider than this should be allowed to regrow.
- (b) Vehicle traffic is to be excluded from accessing the foreshore. The existing informal access will be blocked off and rehabilitated.
- (c) The vegetation buffer zone should be retained or rehabilitated to a 20 metre width. This will still allow a 20m wide strip of beach reserve which would be mown regularly.
- (d) The coastal scrub areas will be separated from the grassed areas by coconut logs or similar barriers where required to facilitate natural regeneration of the area to occur undisturbed by mowers or foot traffic. Large shade / habitat trees should be retained and planted where required within the grassed area.
- (e) A large area and variety of garden escape weeds occur within this zone due to residents dumping garden waste in the reserve. These weeds should be eradicated in conjunction with placement of appropriate signage prohibiting the dumping of garden waste. Weeds of concern include : *Bryophyllum* (Mother-of-millions) a declared weed under the Rural Land Protection Act, together with Singapore Daisy (*Wedelia biflora*) and Mother-in-law's Tongue (*Sansevieria trifasciata*) which are invasive environmental weeds.

7.3.3 Zone 3 – Recreational

The management procedures for this zone are as follows:

- (a) Allow for larger turfed areas for recreation and visibility / safety.
- (b) Council will continue to maintain the recreation area in an acceptable state of amenity, providing playground, picnic, BBQ and toilet facilities. Any further addition to these facilities will be dependent on future visitor use of the area.
- (c) The vegetation on the foredune should be retained or rehabilitated as required to a width of 20 metres.

- (d) Beach access tracks should be limited in number and width to reduce impact on protective dunal vegetation. Access tracks should be no more than one metre in width. All existing tracks wider than this should be allowed to regrow.
- (e) Large shade trees should be retained and maintained as required.
- (f) The small area of coastal forest remaining opposite number 22–26 Marine Parade is to be protected and used as a seed source for rehabilitation of other sections of Newell Beach. Control of garden escape weeds will be required on the southern side of this remnant. A botanical survey of this area will be undertaken by Council as it is indicative of what the Newell Beach coastal strip would have been like before development.
- (g) All vehicle traffic needs to be restricted to the main access tracks and parking areas.


7.3.4 Zone 4 – Erosion Zone / Mossman Estuary.

The management procedures for this zone are as follows:

- (a) The Council has resolved that an action plan to control further erosion will be considered if the erosion scarp (line) retreats to within ten (10) metres of freehold property boundaries. Council will be responsible for the regular monitoring of this erosion line.
- (b) This action plan could involve a number of options:
 - ❖ Sand pushing from an appropriate source of sand located nearby to replenish the eroding area (a BPA permit exists for this activity).
 - ❖ Installation of geotextile erosion control tubes (4 tubes high x 250 metres) at the cost of approximately \$275,000.
 - ❖ Construction of a rock wall (2 metres high by 250 metres long) at the cost of approximately \$100,000.

The choice of an appropriate option will be considered by Council when required, and after further consultation with coastal engineers and the Beach Protection Authority.

- (c) Revegetation of the Beach Reserve and Esplanade will be required in this area to reduce the effects of wind and wave erosion, and to help consolidate the dune area.
- (d) Planting of native trees and shrub species as per an agreed species list is permissible. Exotic plants (apart from large coconut palms) will be removed in conjunction with a revegetation program.

- 
- (e) Management of coconuts will involve: removal of seedlings, removal of dangerous plants (i.e. those posing a risk to public health), and thinning out of densely planted stands where they are restricting regeneration and growth of local coastal dune species.
 - (f) The minimum acceptable standard for the land will be: the encouragement of native ground covers to protect the sand surface from wind erosion, and the establishment of a minimum density of horsetail she-oak, sea lettuce or similar plants at 100 plants/ha (i.e. 10 metre centres) to provide a wind break and salt trap.
 - (g) The erection of any structures and barriers and the use of the land for private purposes other than recreation, or any demonstration of proprietary rights, is not permitted.
 - (h) Pedestrian access along the esplanade or reserve other than on the beach will not be encouraged. Dead trees which are restricting pedestrian movement along the beach shall be removed by Council when deemed necessary.
 - (i) Access to the beach will be provided at designated access points. Control of pedestrian traffic will be achieved by fencing or other appropriate means as required.
 - (j) Newell Beach Builders Landfill (tip) will only be receiving hard waste (building rubble, vegetation, garden waste) for the remaining life of the landfill.
 - (k) That sand extraction from the Mossman River continues at a sustainable rate and doesn't impact on the sand supply required to maintain Newell Beach, and replenish the beach after erosion events (approximately 4000m³ of sand has been extracted in the last 4 years).

4.0 CONCLUSION

The adoption of the Management Plan for Newell Beach will allow beach degradation to be countered and the retention and enhancement of coastal forest communities, address dune stability aspects and preserve the qualities and visual attractiveness of this coastal area that is appreciated by local residents and visitors to the area.

- (d) Beach access tracks should be limited in number and width to reduce impact on protective dunal vegetation. Access tracks should be no more than one metre in width. All existing tracks wider than this should be allowed to regrow.
- (e) Large shade trees should be retained and maintained as required.
- (f) The small area of coastal forest remaining opposite number 22–26 Marine Parade is to be protected and used as a seed source for rehabilitation of other sections of Newell Beach. Control of garden escape weeds will be required on the southern side of this remnant. A botanical survey of this area will be undertaken by Council as it is indicative of what the Newell Beach coastal strip would have been like before development.
- (g) All vehicle traffic needs to be restricted to the main access tracks and parking areas.

7.3.4 Zone 4 – Erosion Zone / Mossman Estuary.

The management procedures for this zone are as follows:

- (a) The Council has resolved that an action plan to control further erosion will be considered if the erosion scarp (line) retreats to within ten (10) metres of freehold property boundaries. Council will be responsible for the regular monitoring of this erosion line.
- (b) This action plan could involve a number of options:
 - ❖ Sand pushing from an appropriate source of sand located nearby to replenish the eroding area (a BPA permit exists for this activity).
 - ❖ Installation of geotextile erosion control tubes (4 tubes high x 250 metres) at the cost of approximately \$275,000.
 - ❖ Construction of a rock wall (2 metres high by 250 metres long) at the cost of approximately \$100,000.

The choice of an appropriate option will be considered by Council when required, and after further consultation with coastal engineers and the Beach Protection Authority.

- (c) Revegetation of the Beach Reserve and Esplanade will be required in this area to reduce the effects of wind and wave erosion, and to help consolidate the dune area.
- (d) Planting of native trees and shrub species as per an agreed species list is permissible. Exotic plants (apart from large coconut palms) will be removed in conjunction with a revegetation program.

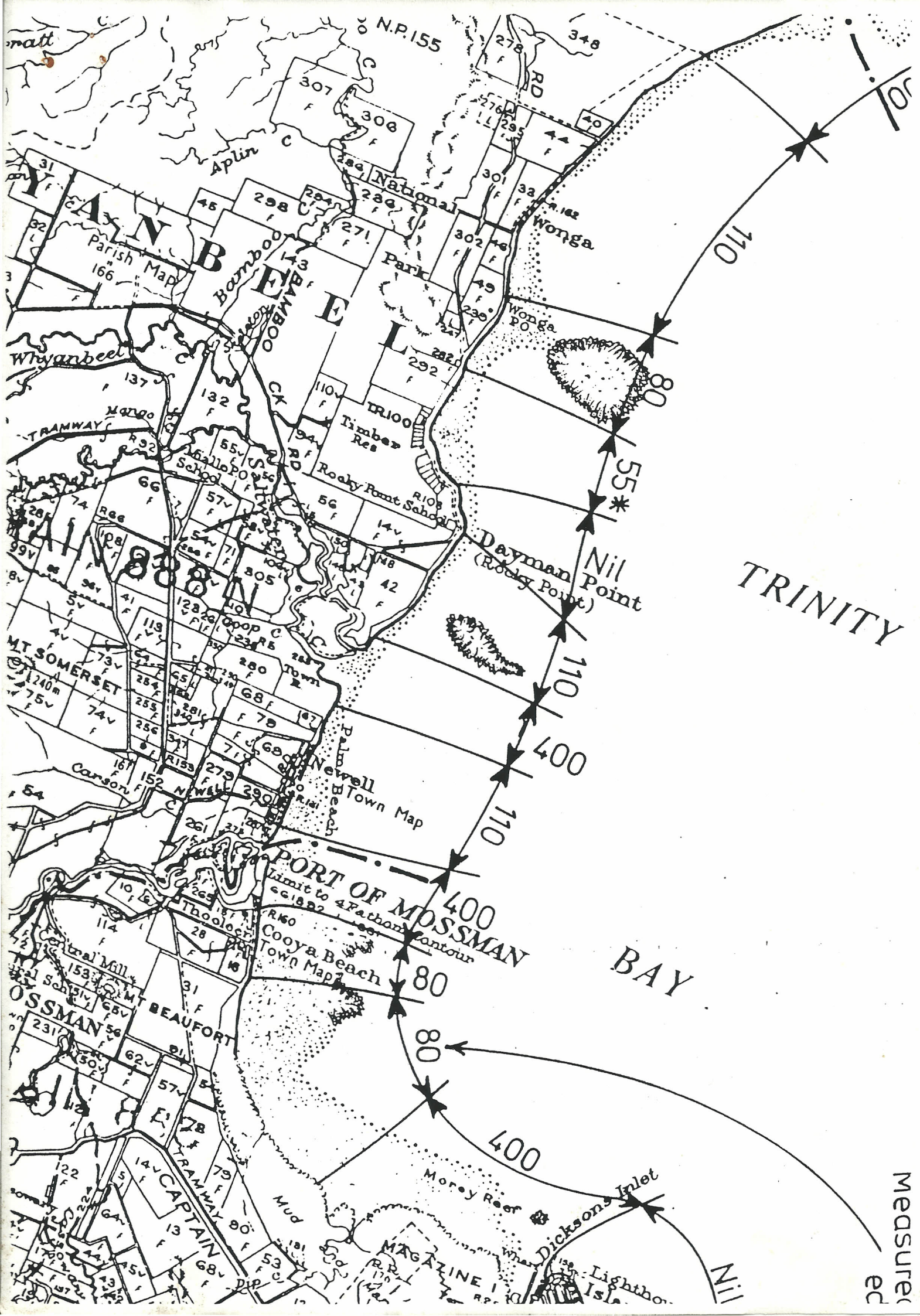
- (e) Management of coconuts will involve: removal of seedlings, removal of dangerous plants (i.e. those posing a risk to public health), and thinning out of densely planted stands where they are restricting regeneration and growth of local coastal dune species.
- (f) The minimum acceptable standard for the land will be: the encouragement of native ground covers to protect the sand surface from wind erosion, and the establishment of a minimum density of horsetail she-oak, sea lettuce or similar plants at 100 plants/ha (i.e. 10 metre centres) to provide a wind break and salt trap.
- (g) The erection of any structures and barriers and the use of the land for private purposes other than recreation, or any demonstration of proprietary rights, is not permitted.
- (h) Pedestrian access along the esplanade or reserve other than on the beach will not be encouraged. Dead trees which are restricting pedestrian movement along the beach shall be removed by Council when deemed necessary.
- (i) Access to the beach will be provided at designated access points. Control of pedestrian traffic will be achieved by fencing or other appropriate means as required.
- (j) Newell Beach Builders Landfill (tip) will only be receiving hard waste (building rubble, vegetation, garden waste) for the remaining life of the landfill.
- (k) That sand extraction from the Mossman River continues at a sustainable rate and doesn't impact on the sand supply required to maintain Newell Beach, and replenish the beach after erosion events (approximately 4000m³ of sand has been extracted in the last 4 years).

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Appendix 1

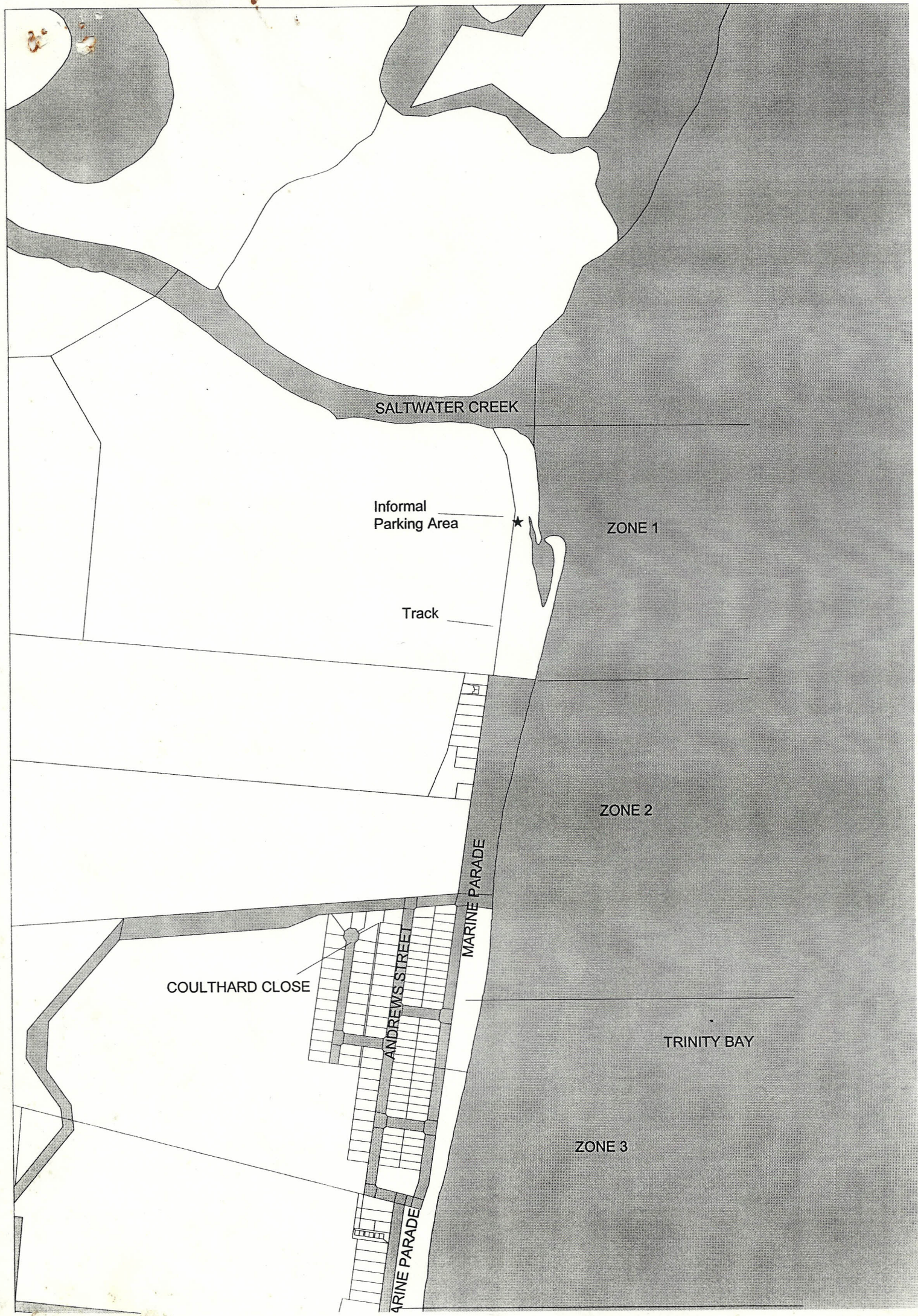
Erosion Prone Area Map.



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Appendix 2

Newell Beach Management Zones.



SALTWATER CREEK

Informal
Parking Area

Track

ZONE 1

ZONE 2

TRINITY BAY

ZONE 3

COULTHARD CLOSE

ANDREW'S STREET

MARINE PARADE

MARINE PARADE

Appendix 3

Newell Foreshore Plant Species List.

FLORA SPECIES LIST for NEWELL BEACH

Botanical Name	Common Name
TREES	
Acacia aulacocarpa	Brown Salwood
Alphitonia sp.	Sasparilla
Brachychiton acerifolius	Flame Tree
Buchanania arborescens	Green Plum
Calophyllum inophyllum	Beach Nut
Canarium australianum var. australianum	Scrub Turpentine
Casaurina equisetifolia	Beach She-oak
Chionanthus ramiflora	Pimply Olive
Corymbia tessellaris	Carbeen
Dillenia alata	Red Beech
Eucalyptus tessellaris	Carbeen
Euroschinus falcata var. falcata	Pink Poplar
Ficus microcarpa	Fig
Ganophyllum falcatum	Daintree Hickory
Glochidion harveyanum var. harveyanum	Buttonwood
Macaranga tanarius	Macaranga
Melaleuca leucadendra	Weeping Paperbark
Melia azedarach	White Cedar
Pittosporum ferrugineum	Rusty Pittosporum
Planchonella obovata	Yellow Boxwood
Pleiogynium timorense	Burdekin Plum
Pongamia pinnata	Pongamia
Schefflera actinophylla	Umbrella Tree
Terminalia catappa	Sea Almond
SHRUBS	
Acacia crassicaarpa	Brown Salwood
Acacia flavescens	Red Wattle
Acacia oraria	Coastal Wattle
Clerodendrum longiflorum var. glabrum	Flowers of Magic
Colubrina asiatica	Beach Berry Bush
Dodonaea polyandra	Hop Bush
Exocarpus latifolia	Broad Leaf Cherry
Guettarda speciosa	
Hibiscus tiliaceus	Cottonwood
Morinda citrifolia	Cheesewood
Myrtella obtusa	Beach Myrtella
Pandanus sp.	Pandanus
Premna serratifolia	Coastal Premna
Randia fitzalanii	Brown Gardenia
Scaveola sericea	Beach Lettuce

<i>Sophora tomentosa</i>	Silver Bush
<i>Tabernaemontana pandacaqui</i>	Banana Bush
<i>Thespesia populneoides</i>	Pacific Rosewood
<i>Vitex trifolia</i> var <i>trifolia</i>	Three Leaflet Vitex
MANGROVES	
<i>Aegialitis annulata</i>	Club Mangrove
<i>Aegiceras corniculatum</i>	River Mangrove
<i>Avicennia marina</i>	Grey Mangrove
<i>Lumnitzera littorea</i>	Black Mangrove
<i>Pachycornia tenuis</i>	
<i>Rhizophora</i> sp.	Red Mangrove
VINES	
<i>Alyxia spicata</i>	
<i>Canavalia rosea</i>	Beach Bean
<i>Cissus</i> sp.	
<i>Clerodendrum inerme</i>	Scrambling Clerodendrum
<i>Flagellaria indica</i>	
<i>Ipomea pes-caprae</i>	Goat's Foot
<i>Smilax australis</i>	
<i>Vigna marina</i>	
HERBS	
<i>Commelina cyanea</i>	Native Wandering Jew
<i>Dianella</i> sp.	Flax Lily
<i>Crinum pedunculatum</i>	River Lily
<i>Vitex rotundifolia</i>	
<i>Wedelia biflora</i>	Beach Daisy
GRASSES	
<i>Cyperus pedunculatus</i>	Beach Spinifex
<i>Thuarea involuta</i>	Beach Grass

Note : This is a very preliminary list and will require further botanical surveying to provide a more complete species list.

Appendix 4

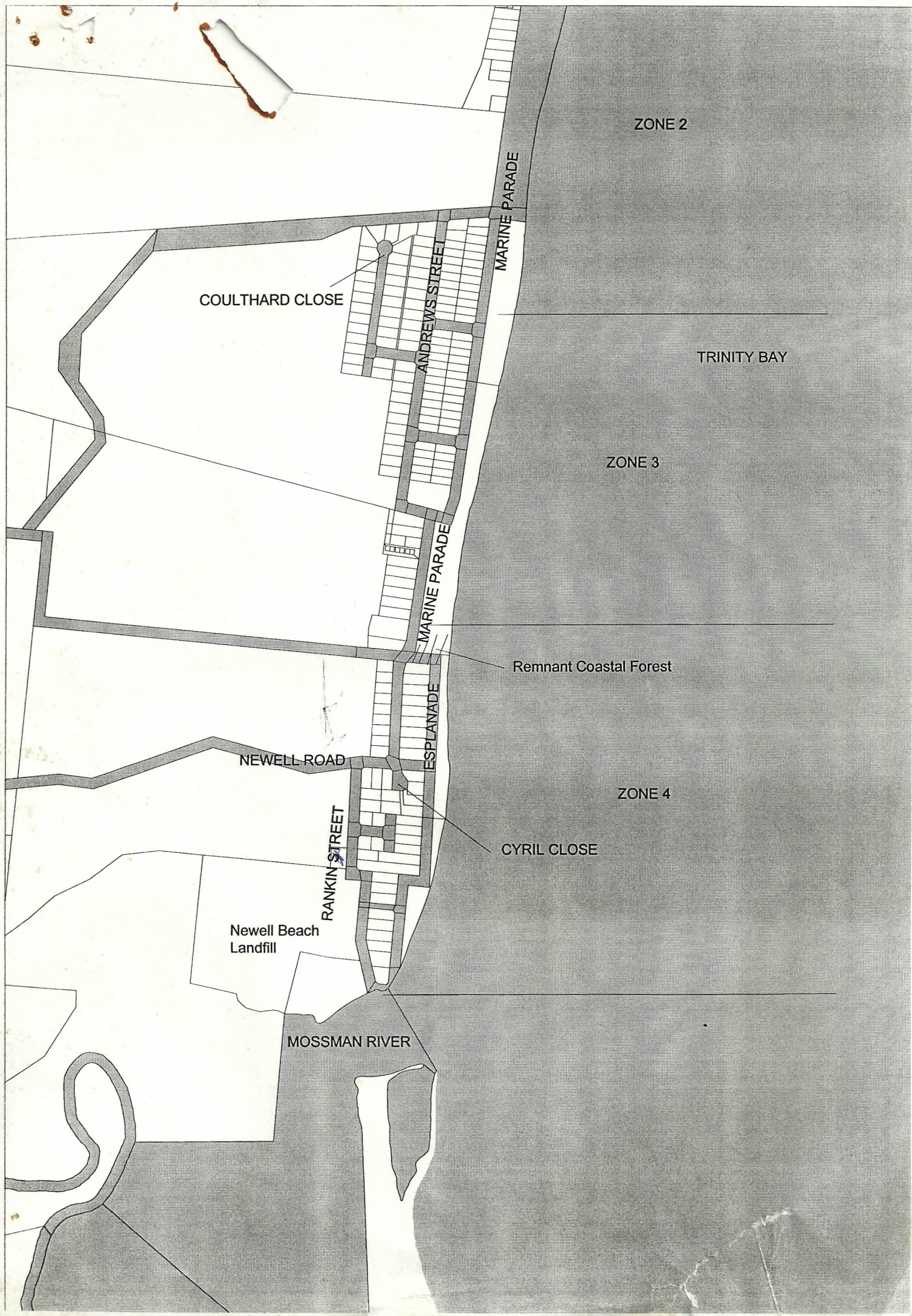
Newell Beach Bird Checklist.

BIRD CHECKLIST FOR NEWELL BEACH

Compiled by Del Richards, Birds Australia, 1999.

Common Name	Scientific Name	Breeding Site (Yes/No)
Pelicans	Pelecanidae	
Australian Pelican	Pelecanus conspicillatus	
Hérons / Egrets	Ardeidae	
White Faced Heron	Ardea novaehollandiae	
Striated Heron	Ardea	
Great Billed Heron	Ardea sumatrana	
Great Egret	Egretta alba	
Intermediate Egret	Egretta intermedia	
Little Egret	Egretta garzetta	
Reef Egret	Egretta sacra	
Storks	Ciconiidae	
Jabiru	Xenorhynchus asiaticus	
Ibises / Spoonbills	Plataleidae	
Sacred Ibis	Threskiornis molucca	
Straw Necked Ibis	Threskiornis spinicollis	
Ducks / Geese	Anatidae	
Pacific Black Duck	Anas superciliosa	
Maned Duck	Chenonetta jubata	
Raptors	Pandionidae	
Collared Sparrowhawk	Accipiter cirrhocephalus	
Pacific Baza / Crested Hawk	Aviceda subcristata	
White Bellied Sea Eagle	Haliaeetus leucogaster	
Brahminy Kite	Haliastur indicus	Yes
Whistling Kite	Haliastur sphenurus	
Square-tailed Kite @	Lophoictinia isura	
Fork-tailed Kite	Milvus migrans	
Osprey	Pandion haliaetus	
Mound Builders	Megapodiidae	
Orange-footed Scrub Fowl	Megapodius reinwardt	Yes
Button Quails	Turnicidae	
Red Backed Button Quail	Turnis maculosa	
Stone Curlews	Burhinidae	
Bush Thick Knee / Stone Curlew	Burhinus magnirostris	
Beach Thick Knee #	Burhinus neglectus	
Plovers	Charadriidae	
Large Sand Plover	Charadrius leschenaultii	
Red Capped Dotterell	Charadrius ruficapillus	
Red Kneed Dotterell	Erythrogonys cinctus	
Golden Plover	Pluvialis dominica	
Masked Lapwing	Vanellus miles	Yes

Collared Kingfisher	Halcyon chloris	
Forest Kingfisher	Halcyon macleayii	Yes
Sacred Kingfisher	Halcyon sancta	
Bee Eaters	Meropidae	
Rainbow Bee Eater	Merops ornatus	Yes
Larks	Alaudidae	
Singing Bushlark	Mirafrja javanica	
Swallows	Hirundinidae	
Tree Martin	Cecropis nigricans	
Welcome Swallow	Hirundo neovena	Yes
Barn Swallow	Hirundo rustica	
Red Rumped Swallow	??	
Pipits	Motacillidae	
Richards Pipit	Anthus novaeseelandiae	
Cuckoo Shrikes	Campephagidae	
White Bellied Cuckoo Shrike	Coracina papuensis	
Varied Triller	Lalage leucomela	
Flycatchers	Muscicapidae	
Mangrove Robin	Eopsaltria pulverulenta	
Russet Tailed Thrush	?	
Little Shrike Thrush	?	
Spectacled Monarch	Monarchia trivirgatus	
Shining Flycatcher	Myiagra alectro	
Leaden Flycatcher	Myiagra rubecula	
Broad Billed Flycatcher	Myiagra ruficollis	
Grey Fantail	Rhipidura fuliginosa	
Willy Wagtail	Rhipidura leucophrys	Yes
Old World Warblers	Sylviidae	
Clamorous Reed Warbler	Acrocephalus stentoreus	
Australian Warblers	Maluridae	
Lovely Fairy Wren	Malurus lambertii	
Red Backed Fairy Wren	Malurus melanocephalus	
Fairy Warblers	Acanthizidae	
Large Billed Gerygone	Gerygone magnirostris	Yes
Honeyeaters	Meliphagidae	
Yellow Honeyeater	Lichenostomus flavius	Yes
Varied Honeyeater	Lichenostomus versicolor	
Brown Honeyeater	Lichmera indistincta	
Lewins Honeyeater	Meliphaga lewinii	
Yellow spotted Honeyeater	Meliphaga notata	
Dusky Honeyeater	Myzomela obscura	Yes
Helmeted Friarbird	Philemon buceroides	Yes
Little Friarbird	Philemon citreogularis	
Noisy Friarbird	Philemon corniculatus	
Brown backed Honeyeater	Ramsayornis modestus	Yes



ZONE 2

COULTHARD CLOSE

MARINE PARADE

ANDREWS STREET

TRINITY BAY

ZONE 3

MARINE PARADE

Remnant Coastal Forest

NEWELL ROAD

ESPLANADE

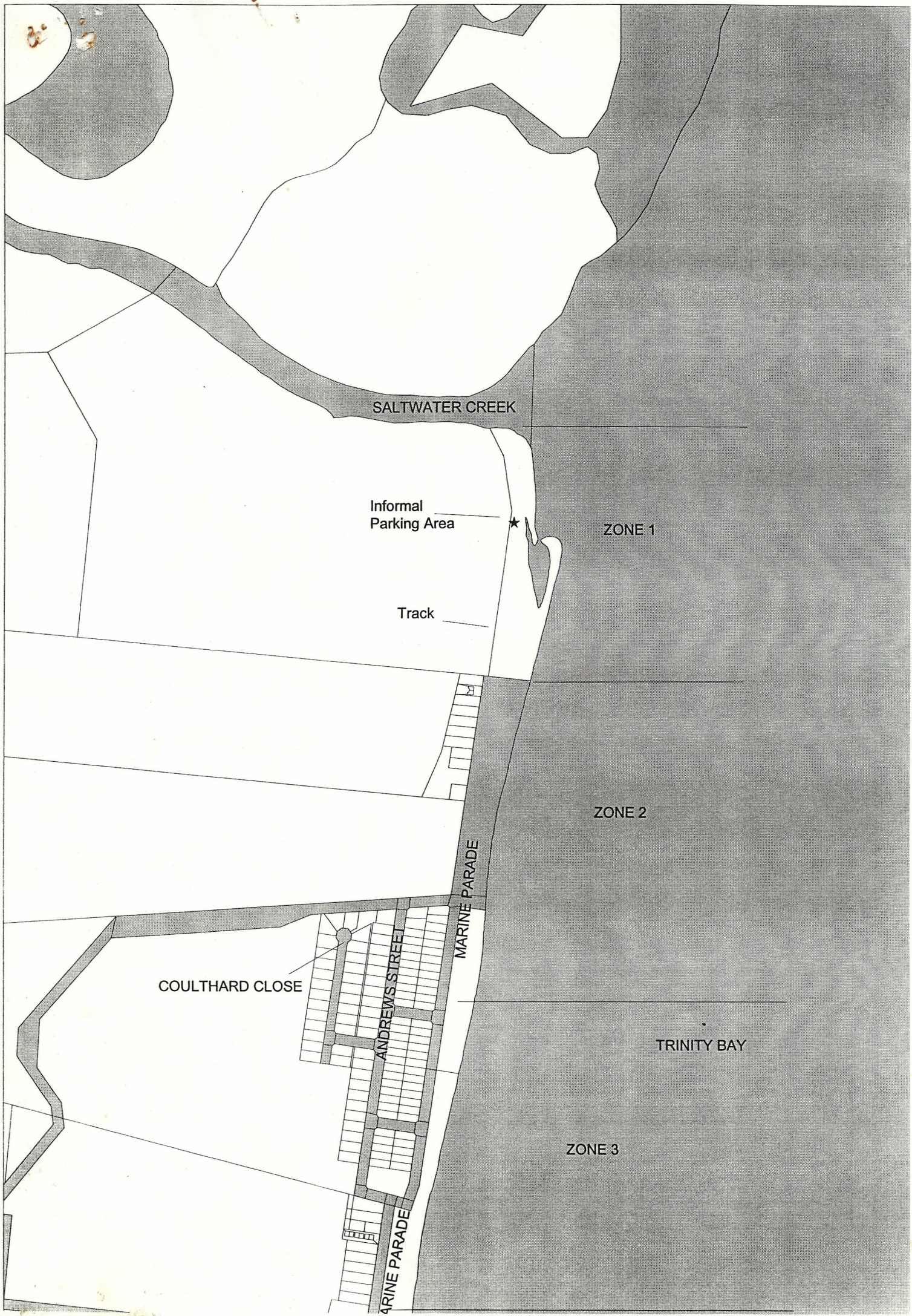
ZONE 4

RANKIN STREET

CYRIL CLOSE

Newell Beach
Landfill

MOSSMAN RIVER



SALTWATER CREEK

Informal
Parking Area

Track

ZONE 1

ZONE 2

TRINITY BAY

ZONE 3

COULTHARD CLOSE

ANDREWS STREET

MARINE PARADE

MARINE PARADE