LITTLE FISHERY CREEK RESERVE

VEGETATION MANAGEMENT PLAN

Stephanie Lymburner
October 2004

TABLE OF CONTENTS

AKNOWLEDGEMENTS

The valuable assistance in site assessment and compilation of this report from Julian Lymburner and James Brideson is gratefully acknowledged.

1. EXECUTIVE SUMMARY:

A study has been made of the Little Fishery Creek Reserve for Ballina Shire Council to create a Vegetation Management Plan, which was a recommendation made by Wetlands Care Australia to assist with the local Landcare Group who wish to maintain the area.

An assessment of the site has been carried out, during the study twenty five (25) native species were identified, some of these are species out of range, growing in the mown area, whilst they are native to Australia they are not indigenous to the area. There are also a number of exotic fruit trees planted in the area.

Thirty two (32) weed species were identified, mainly occurring adjacent to the mangrove area opposite the houses – and are probably the result of vegetative dumping. Weed control priorities have been determined within the context of an integrated approach to their removal, and a supplementary planting recommended for certain areas. ie.areas that have high public profile.

The Plan proposes landscape plantings, an on-going weed management program, the establishment of photo monitoring points to evaluate the progress of rehabilitation and the erection of educational signage to inform the broader community of the values of mangroves and sensitive estuarine systems – all of this will require a significant input by both the Council and the local Landcare group.

2. AIMS AND OBJECTIVES

AIM: *T o restore, to the extent possible the structure, function, integrity and dynamics of the pre-existing vegetation and sustaining habitat it provided.*

OBJECTIVES:

- To assist natural regeneration by systematic and integrated weed removal.
- To involve interested members of the community in the restoration project.
- To improve the habitat for fauna.
- To implement a planting, of locally indigenous species to enhance the wetland area and strengthen the estuarine system.
- To educate the broader community to the threat that weeds pose to fragile ecosystems.
- To provide information and educational signage.

3. PROFILE OF THE RESERVE

3.1 Location: The Little Fishery Creek Council Reserve is a small portion of land approximately 3 ha. and forms part of the 120 ha North Creek estuary. It is bounded on the south eastern side by residential dwellings, Bangalow Road forms the south western edge and the northern and eastern boundaries are flanked by mangroves.
(see appendix 1: aerial photograph)

3.2 Background: The majority of the site west of Little Fishery Creek is zoned 7(a) Environmental Protection (Wetland) and State Environmental Protection Provision (SEPP 14).
The land was unsurveyed vacant crown land up until the gazettal of Reserve No. 140080 for public recreation in1989, and was first zoned 7(a) Environmental Protection (Wetland) when the Ballina Local Environmental Plan (BLEP) was drawn up in February 1987. The ' parkland' site is Crown Land zoned 2a (Residential) with Ballina Shire Council (BSC) acting as Trust manager. The remainding adjoining land is mostly mangroves, also Crown land, but not under the control of BSC. (see appendix 1: aerial photograph)

3.3 Soils: The soils are holocene estuarine sands and muds. These sediments are mixed with marine Quaternary quartz sands. They are extremely low level tidal flats that are regularly inundated by brackish tidal waters. The mudflat zone is inundated except at low water and is characterised by meandering channels that rapidly widen in the downstream direction.
The mangrove zone is inundated only during high water, these zones have non directional, often interrupted drainage patterns. (Morand '94)

3.4 History: A large area of land reclaimed for industrial purposes a decade ago has been returned to mangroves by BSC to compensate for the loss of similar habitat during the construction of Angels Beach Road.

3.5 Previous Works: Ballina Shire Council with assistance from NSW Fisheries successfully undertook an extensive mangrove rehabilitation project adjacent to Little Fishery Creek a decade ago as part of the construction works associated with the building of the Angels Beach Road. There have been efforts made by the Landcare group and BSC in the past to remove weeds from the Council reserve site– more recently a Work for the Dole team under the supervision of Environmental Training and Education (EnviTE) removed an extensive amount of rubbish and weeds and implemented, with the assistance of the Landcare members, a planting of locally indigenous species to enhance the entrance.

3.6 Conservation Values: All of the adjoining land is covered by the State Environmental Planning and Protection (SEPP) 14 – but the area that this Plan is concerned with, the council reserve, has been exempted – on the specific understanding that any works undertaken by way of restoration does not intrude into the SEPP 14 area. (see appendix 8: letter to Council).

4.THREATS AND IMPACTS

4.1 Visitation: The reserve is poorly signposted from Bangalow Road, so visitation by large numbers of the public is not an issue, however, residents from adjacent properties use the reserve for car parking, clothes drying and other activities unsuitable for a public reserve.

4.2 Weeds: Pose the greatest threat to the native vegetation within the reserve, a significant outbreak of Madeira Vine (*Anredera cordifolia*), a highly invasive vine, was located in Zone B (see appendix 7: site map). Lantana (*Lantana camara*) occurs throughout most of the reserve – except in the mown area. Species such as Cocos Palm (*Syagrus romanzoffianum*), Ochna (*Ochna serrulata*) and Coastal Morning Glory (*Ipomoea cairica*) have the ability to spread throughout the neighbourhood. (see appendix 4: weed species list)

4.3 Rubbish dumping: There is evidence of the dumping of builders and household rubbish, with broken tiles and bottles adjacent to the houses and above high water. Vegetative dumping – of unwanted species and garden clippings are apparent throughout the reserve with many of these species then becoming weeds and threatening the fragile estuarine ecosystem.

5. OTHER RELEVANT ISSUES

5.1 Legislative Requirements to be considered

SEPP No.14 Coastal Wetlands amendment (15:1:96)

- Local Government Act (1993) covering any environmental restoration projects.
- Crown Land Act (1989) covering land below high water mark.
- Fisheries Act (1994) covering mangroves and all marine vegetation.

6.SITE ASSESSMENT

6.1 Physical Characteristics: The reserve is mainly reclaimed mudflat, with the western edge facing Little Fishery Creek, having a dense band of mangroves and a large area of mown grass with a variety of shrubs and tree species planted in this area. The northern section of the park has a dense border of mangroves with the edges overgrown with weed species making the access into Cawarra Street impassable.

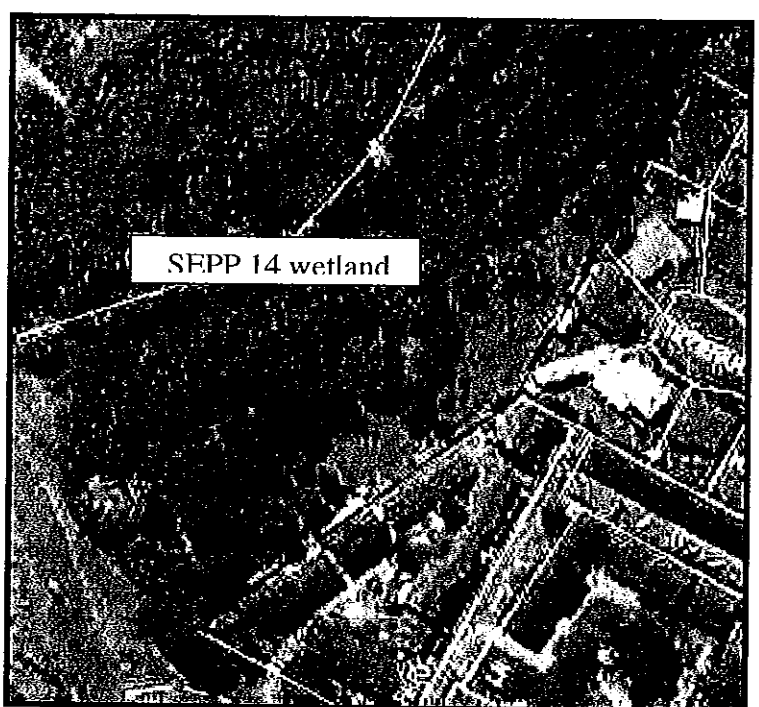


Photo: Reserve proximity to mangroves (SEPP 14 wetland)

6.2 Native fauna: No formal fauna studies have been undertaken in the reserve. Local residents have reported sighting of seventeen fauna sightings, (see appendix 6) but a comprehensive study would undoubtedly record more, due to the presence of water many migratory species may well use the area. Estuarine areas such as this provide important habitat for a wide range of faunal species, mangroves in particular are necessary for breeding purposes for many fish, crab and prawn species.
Coastal wetlands are important feeding and roosting sites for a number and resident shorebirds. Several species are subject to international conservation agreements. The agreements are "The Ramsar Convention" signed in February 1971 with Japan (Jamba) and China (Camba) aiming to conserve the most threatened group of habitats – wetlands. These are shallow open waters such as creeks and coastal fringes or any land that is regularly or intemittently saturated by water, such as mangroves, marshes and swamps.

6.1.1 Native Flora: Most of the area is highly disturbed but the riparian zone comprises mainly Milky Mangrove (*Excoecaria agallocha*). These mangroves provide vital food and shelter to a number of fish, crabs, shellfish and water birds. Mangroves are also the primary protectors of the creek acting as a buffer, filtering pollutants from land run-off, helping to maintain water quality and reducing siltation in the waterways

6.2.2 Planted Species: At an earlier time there have been significant plantings in the mown area – probably at the time of the subdivison, most of the species are not indigenous to the area and include some North Queensland rainforest species, palms and exotic fruit trees.

More recently a planting has been done at the entrance to the reserve and on the south western edge of the mown area – these plantings are of locally indigenous species.

6.3 Weeds: There are a number of other highly invasive species within the reserve including Lantana, (Lantana can be used in some circumstances to provide habitat and a visual barrier for the short term) Camphor Laurels and Ochna, many of the smaller plants are there as a result of vegetative dumping. Species such as Slash Pine (*Pinus elliotii*) and Cocos Palm *(Syagrus romanzoffianum*) have the potential to invade surrounding areas.

Madeira Vine(*Anredera cordifolia*,) was identified in the northern section of the reserve

This climber has stems up to 20 metres long, producing tubers on roots and at the nodes of aerial stems. It is widely naturalised in coastal districts, and is invasive on the margins of rainforests (Harden,1990).

This vine is extremely prolific, growing over 1 metre per week in warm, humid conditions. It produces countless vegetative aerial tubers which drop to the ground and remain dormant when conditions are not suitable for their growth. These tubers are spread by water, downhill movement and possibly rodents. The vine will rapidly smother plants of all sizes, destroying them through weight and inhibition of photosynthesis, and can block secondary succession (Hopkins, 1990). It is extremely difficult to control and is considered to be the most serious and destructive plant pest species affecting the North Coast (Joseph, 1995). Flowers in late summer /early Autumn. Cream drooping racemes make the plant highly visible.

This species should be tartgeted for early treatment– in conjunction with neighbouring properties- so that it doesn't spread further into the reserve.

6.4 Assessment and Management Zones (see appendix 7: site map)

Zone A Is the mown area and has a significant number of exotic and non- indigenous trees planted there. The area is highly disturbed with encroachments, such as clothes lines, sheds and carparking apparent. Whilst the resident have kept the area mown and tidy there is a sense of 'ownership' of this portion of the public reserve.

Photo: Mown area in Zone A.

Zone B Continues along past the mown area , the area has been neglected for some years as evidenced by the dense Lantana, Madeira Vine and exotic grasses. Several hybrid Grevillias have been planted and form tangled branches – making thoroughfare impossible. However it is in this zone that the Mangroves are thickest – providing excellent habitat for many creatures.

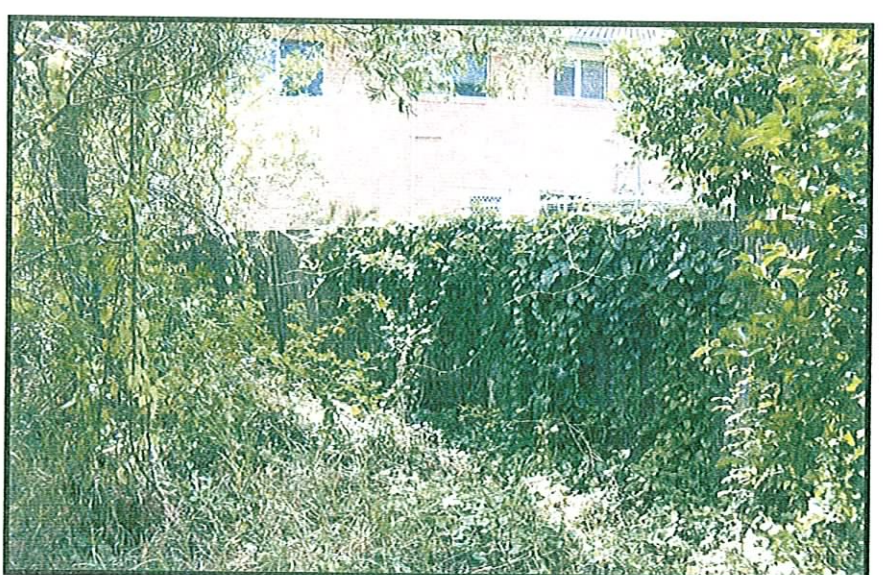


photo: Madeira Vine infestation in Zone B.

Zone C: This is partly riparian zone and abuts zone A and the mangrove fringe–the zone has a line of Mat Rush *(Lomandra longifolia*)planted in a bed outlined with tree branches and mulch forming a boundary between the mangrove and intertidal zone and the mown parkland area. Rubbish dumping is evident along the waters edge. Directly opposite the houses the vegetation is thin but it becomes much denser in the northern section of the reserve in Zone B. Some locally indigenous plantings have been done recently at the entrance and along the boundary with the tidal zone. Whilst weed removal work has commenced in this zone it will take an on-going commitment to maintain and continue the work.

Photo: Mat Rush planting defines the boarder of Zone C.

7. RECOMMENDATIONS

7.1 Zone A

- Erect educational signage – focussing on the threat to the estuarine ecosystem by vegetative and rubbish dumping, also the positive values of Mangroves and the important habitat they provide.
- Implement an integrated weed control program.
- Continue planting of appropriate locally indigenous species (see appendix 3).
- Clear the household rubbish from within the reserve – discuss the problems with adjacent households. (this could be done as part of a 'Clean up Australia Day' with a sausage sizzle at the end of the morning).
- Print a brochure for letter box drop in adjacent streets – using the information from the signage – a 'good neighbour guide'.
- Manage exotic tree species – with removal being a long term goal.
- Restrict unauthorised vehicular access to the reserve.
- Hold a weed identification and removal techniques training day.

7.1.2 Zone B

- Control Madeira Vine outbreak.
- Implement an integrated weed control program.
- Manage exotic tree species – with removal being a long term goal.
- Remove remaining Lantana – in an integrated and systematic program – to decrease the potential habitat loss - in bands with plantings from the suggested planting list (see appendix 3).
- Investigate the potential for funding to build a walkway linking Bangalow Road to Cawarra Street – with some viewing areas and eductional signage.

7.1.3 Zone C

- Leave a buffer of Lantana near the entrance until the plantings provide habitat and a traffic and visual barrier to Bangalow Road.
- Remove rubbish from waters edge.
- Implement an integrated weed control program.
- Manage exotic tree species – with removal being a long term goal.
- Implement a systematic planting of locally indigenous species in the zone to strengthen the biodiversity of the reserve (see appendix 3).

8. PROJECT MONITORING AND EVALUATION

Many projects falter and sometimes fail due to a lack of monitoring, mainly because the people doing the hard work, don't record what the site looked like before they started. Monitoring provides people with valuable photographic evidence of what they have achieved. Photographic points should be established before the project starts and regular recording sessions undertaken, in conjunction with work sheet records. This type of monitoring greatly assists evaluation of the project and the direction of future work plans.

9. CONCLUSION:

The value of estuarine systems, such as this reserve are often underestimated by the community with mangroves seen as odourous and harbouring undesirable species such as mosquitos. Yet they play an important role in the life cycle of many aquatic species and migratory birds. Whilst the adjacent area is covered by SEPP 14 legislation, the future of this small remnant is under threat from numerous invasive plant pest species and the likelihood of further invasion by 'garden escapes' and well meaning community members planting exotic species.

An ongoing commitment by BSC and the local landcare group is required to remove the weeds, to educate the broader community to the reserves values and to encourage natural regeneration. A planting program of locally indigenous littoral rainforest and estuarine species would greatly benefit the reserve and community perception of this important ecosystem.

10. SUMMARY OF RECOMMENDATIONS
In order of priority

- Control Madeira Vine outbreak.
- Print a brochure for letter box drop in adjacent streets– a 'good neighbour guide'.
- Erect educational signage – focussing on the threat to the estuarine ecosystem by vegetative and rubbish dumping, also the positive values of Mangroves and the important habitat they provide.
- Clear the household rubbish from within the reserve – discuss the problems with adjacent households.
- Continue planting of appropriate locally indigenous species.
- Leave bank of Lantana, near entrance, until the plantings provide habitat and a visual barrier to Bangalow Road.
- Restrict unauthorised vehicular access to the reserve.
- Hold a weed identification and removal techniques training day.
- Remove remaining Lantana –within a integrated and systematic program – to decrease the potential habitat loss - in bands with plantings from the suggested planting list (see appendix 3).
- Manage exotic species – with removal being a long term goal.
- Investigate the potential for funding to build a walkway linking Bangalow Road to Cawarra Street – with some viewing areas and eductional signage.

11. REFERENCES

Auld B.A and Medd R.W. 1992 Weeds: an illustrated botanical guide to weeds of Australia, Inkata Press, Melb., Sydney, Australia.

Cogger H.G. 1986 Reptiles and Amphibians of Australia Reed Books Frenchs Forest N.S.W Australia.

Floyd A. 1990 Australian Rainforests in N.S.W. Vol 2, Surrey Beatty and Sons Pty.Ltd. N.S.W. Australia.

Harden G. (ed).1990, 1991,1992, 1993 Flora of N.S.W. vols.1-4 , University Press, Sydney, Australia.

Morand D.T. 1994 Soil Landscapes of the Lismore-Ballina 1:100 000 Sheet Report. Soil Conservation Service of N.S.W. Sydney.

Slater P. 1992 The Slater Field Guide to Australian Birds. Weldon Publishing. The Griffen Press. Adelaide.

Wetland Care Australia Information Bulletin (2003) Little Fishery Creek Estuary Care Project.

Williams J.B., Harden G.J. and W.J.F. McDonald. 1984 Trees and Shrubs in Rainforests of N.S.W. and S.E.Queensland. University of New England.

Aerial Photograph (Sept. 2003) - BSC Land - Little Fishery Creek

Produced by: F. A. King Dept: Regulatory Services

Referred to: James Brideson Date: 16/09/2004

DISCLAIMER

Although all care is taken in the preparation of this plan, Ballina Shire Council accepts no responsibility for any misprints, errors, omissions or inaccuracies.

The information contained within this plan is for pictorial representation only. Do not scale. Accurate measurements should be undertaken by survey.

GDA

2. Native Plant Species List

Family	Botanical Name	Common Name
Arecaceae	Archontophoenix cunninghamiana	Bangalow Palm
Avicenniaceae	Avicennia marina	Grey Mangrove
Commelinaceae	Commelina cyanea	Native Wandering Jew
Euphorbiaceae	Breynia oblongifolia	Breynia
	Excoecaria agollocha	Milky Mangrove
Fabaceae	Milletia megasperma	Native Wisteria
Lauraceae	Cryptocarya triplinervis	Three Veined Laurel
Meliaceae	Toona ciliata	Red Cedar
Mimosaceae	Acacia melanoxylon	Blackwood
	Acacia sophorae var.sophorae	Coast Wattle
Moraceae	Ficus watkinsiana	Strangler Fig
	Maclura cochinchinensis	Cockspur
Myrtaceae	Acmena smithii	Lilly Pilly
	Callitris viminalis	Weeping Bottle Brush
	Corymbia intermedia	Pink Bloodwood
	Melalueca quinquenervia	Paperbark
	Syncarpia glomulifera	Turpentine
	Waterhousia floribunda	Weeping Lilly Pilly
Philesiaceae	Geitonoplesium cymosum	Scrambling Lily
Pittosporaceae	Pittosporum undulatum	Sweet Daphne
Proteaceae	Banksia integrifolia	Banksia
	Grevillia robusta (planted 2004)	Silky Oak
Sapindaceae	Cupaniopsis anacardiodes	Tuckeroo
	Guioa semiglauca	Guioa
Sterculiaceae	Brachychiton acerfolius	Flame Tree
Xanthoraceae	Lomandra longifolia	Mat rush

Other species have been planted in the reserve – some of these are North Queensland or New Zealand species as well as a number of fruit trees. There is the distinct possiblity that further indigenous native species will be recorded during working bees.

3. Suggested species for planting

Family	Botanical name	Common Name
Adiantaceae	Adiantum hispidulum	Rough Maidenhair
Agavaceae	Cordyline rubra	Red Fruited Palm Lily
	Cordyline stricta	Narrow-leafed Palm Lily
Arecaceae	Archontophoenix cunninghamiana	Bangalow Palm
Aspleniaceae	Asplenium australasica	Bird's Nest Fern
Casurinaceae	Casuarina glauca	Swamp She Oak
Elaeaocarpaceae	Elaeocarpus reticulatus	Blueberry Ash
Euphorbiaceae	Breynia oblongifolia	Breynia
	Excoecaria agollocha	Milky Mangrove
	Glochidion fernandi	Cheese Tree
	Glochidion sumatranum	Umbrella Cheese Tree
Lauraceae	Cryptocarya triplinervis	Three-Veined Laurel
	Neolitsea australiensis	Green Bolly Gum
Liliaceae	Crinum pedunculatum	Crinum Lily
	Dianella caerulea	Blue Flax Lily
Malvaceae	Hibiscus tiliaceus	Cottonwood
Myrtaceae	Acmena smithii	Lilly Pilly
	Austromyrtus dulcis	Midyim
	Callistemon viminalis	Weeping Bottlebrush
	Corymbia intermedia	Pink Bloodwood
	Lophostomon confertus	Brush Box
	Syzygium australe	Brush Cherry
	Syzygium oleosum	Blue Lilly Pilly
Pittosporaceae	Pittosporum revolutum	Hairy Pittosporum
	Pittosporum undulatum	Sweet Daphne
Rubiaceae	Canthium coprosmoides	Coast Canthium
Proteaceae	Banksia integrifolia	Coastal Banksia
Rutaceae	Achronychia imperorata	Coast Acronychia
	Melicope elleryana	Pink Euodia
Sapindaceae	Alectryon coriaceus	Beach Alectryon
	Cupaniopsis anacardiodes	Tuckeroo
	Guioa semiglauca	Guioa
Solanaceae	Duboisia myoporoides	Duboisia/ Corkwood
Sterculiaceae	Commersonia bartramia	Brown Kurrajong
Xanthoraceae	Lomandra longifolia	Spiny Mat rush
	Lomandra hystrix	Mat Rush

4. Weed Species List

Family	Botanical Name	Common Name
Araceae	Monstera deliciosa	Monstera
Araliaceae	Schefflera actinophylla	Umbrella Tree
Areaceae	Syagrus romanzoffianum	Cocos Palm
	Phoenix canariensis	Phoenix Palm
Asparagaceae	Protasparagus aethiopicus	Ground Asparagus
	Protasparagus africanus	Giant Climbing Asparagus
Asteraceae	Ageratina riparia	Mistflower
	Ageratum houstonianum	Blue Billygoat Weed
Basellaceae	Anredera cordifolia	Madeira Vine
Bignoniaceae	Tecoma capensis	Cape Honeysuckle
	Tecoma stans	Golden Bell
	Spathodea campanulata ssp.rotundata	African Tulip Tree
Balsaminaceae	Impatien walleriana	Busy Lizzie, Impatiens
Cannaceae	Canna indica	Canna Lily
Caryophyllaceae	Drymaria cordata	Tropical Chickweed
Convolulaceae	Ipomoea cairica	Coastal Morning Glory
Crassulaceae	Bryophyllum sp.	Mother of Millions
Cypressaceae	Pinus elliotii	Slash Pine
Davallaceae	Nephrolepis cordifolia	Fishbone Fern
Fabacae	Erythrina crista-galli	Cockspur Coral Tree
	Senna pendula var.glabrata	Cassia, Winter Senna
Lauraceae	Cinnamomum camphora	Camphor Laurel
Moraceae	Morus alba	Mulberry
Myrtaceae	Eugenia uniflora	Brazilian/ Surinam Cherry
	Psidium guajava	Guava
Ochnaceae Ochna	Ochna serrulata	Mickey Mouse Plant /
Passifloraceae	Passiflora edulis	Passionfruit
	Passiflora suberosa	Corky Passionfruit
	Passifora subpeltata	White Passionfruit
Rutaceae	Citrus sp.	Bush Lemon, Cumquat
Solanaceae	Solanum seaforthianum	BrazilianNightshade
Verbenaceae	Lantana camara	Lantana

Other garden escapes and exotic grasses occur on the site in small numbers, this list will probably be expanded during the course of on-going restoration work.

Family	Botanical Name	Common Name	Removal Technique
Araliaceae	Schefflera actinophylla	Umbrella Tree	*CS&P,keep cut pieces off the ground*
Areaceae	Syagrus romanzoffianum	Cocos Palm	*hand remove small plants*
	Phoenix canariensis	Phoenix Palm	*as for Cocos Palms*
Asparagaceae	Protasparagus aethiopicus	Ground Asparagus	*knife out small plants and spray larger areas – checking first for any native seedlings*
	Protasparagus africanus	Giant Climbing Asparagus	*cut stems,spray regrowth with glyphosate at 1:1.5*
Asteraceae	Ageratina riparia	Mistflower	*hand removal or spray large areas with glyphosate 1:100*
	Ageratum houstonianum	Blue Billygoat Weed	*hand removal or spray large areas with glyphosate 1:100*
Basellaceae	Anredera cordifolia	Madeira Vine	***SDP see removal techniques***
Bignonaceae	Tecoma capensis	Cape Honeysuckle	CS&P
	Tecoma stans	Golden Bell	CS&P
Balsaminaceae	Impatiens walleriana	Busy Lizzie, Impatiens	*hand removal and compost*
Cannaceae	Canna indica	Canna Lily	*hand removal and compost*
Caryophyllaceae	Drymaria cordata	Tropical Chickweed	*Spray with glyphosate 1:100*
Convolulaceae	Ipomoea cairica	Coastal Morning Glory	CS&P *roll up runners and hang up off the ground until they are completely dried out*
Crassulaceae	Bryophyllum sp	Mother of Millions	*hand removal*
Cypressaceae	Pinus elliotii	Slash Pine	CS&P
Davallaceae	Nephrolepis cordifolia	Fishbone Fern	*hand removal*
Fabacae	Erythrina crista-galli	Cockspur Coral Tree	CS&P
	Senna pendula var.glabrata	Cassia, Winter Senna	*stem inject all large trees, CS&P smaller trees, hand removal of seedlings*
Lauraceae	Cinnamomum camphora	Camphor Laurel	CS&P
Moraceae	Morus alba	Mulberry	CS&P
Myrtaceae	Eugenia uniflora	Brazilian/ Surinam Cherry	CS&P
	Psidium guajava	Guava	CS&P
Ochnaceae	Ochna serrulata	Mickey Mouse Plant / Ochna	CS&P
Passifloraceae	Passiflora edulis	Passionfruit	*hand removal CS&P larger stems*

	Passiflora suberosa	Corky Passionfruit	*collect all fruit, compost, hand removal of all plant matter*
	Passifora subpeltata	White Passionfruit	*collect all fruit, compost, hand removal of all plant matter*
Rutaceae	Citrus sp	Bush Lemon, Cumquat	CS&P
Solanaceae	Solanum seaforthianum	Brazilian Nightshade	CS&P
Verbenaceae	Lantana camara	Lantana	CS&P

5.Weed removal techniques

The information is based on knowledge and understanding at the time of writing However,because of advances in knowledge,users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer from BSC. When using herbicides always read and follow the label and ensure that the herbicide is registered or there is an appropriate permit for the intended use.

1. **Cut-scrape-paint method**: (CS&P) This method applies to all woody shrubs, trees and some vines.
(a) Cut plant low to the ground at an angle.
(b) Apply glyphosate immediately at the rate of 1:1.5 with a paint brush.
(c) Scrape sides lightly to reveal green tissues and apply the herbicide to the scraped area.
(d) Take care that the brush is not contaminated with soil.

2. **Scrape-ditch-paint method**: (SDP) This method applies to many species of vines where it is desirable to treat the vines intact, particularly those with aerial tubers such as Madeira Vine, or those which will propagate from segments.
Collect as many tubers as possible, bag and compost or remove from site.
(a) Scrape the stem tissue on one side of the stem only for 20-30 centimetres if possible. (Note: on Madeira Vine it is necessary to scrape heavily.) Scrape as many sections of the stem as possible.
(b) Apply glyphosate at the rate of 100% with a paint brush.
(c) On stems which are thicker or horizontal, make a ditch into the stem with a knife and apply herbicide (Note: Care must be taken not to sever the stem)

3.**Tree injection**: (TI) This method applies to all woody trees and shrubs with a diameter greater than 6-10 centimetres.
Stem injection this method applies to large trees
(a)Drill downward angled holes of 5cms deep around the base of the tree at 20cm intervals
(b) Fill holes IMMEDIATELY with glyphosate 1:1 – if uptake is rapid, refill holes.
(c) Drill holes in any exposed roots and fill with glyphosate

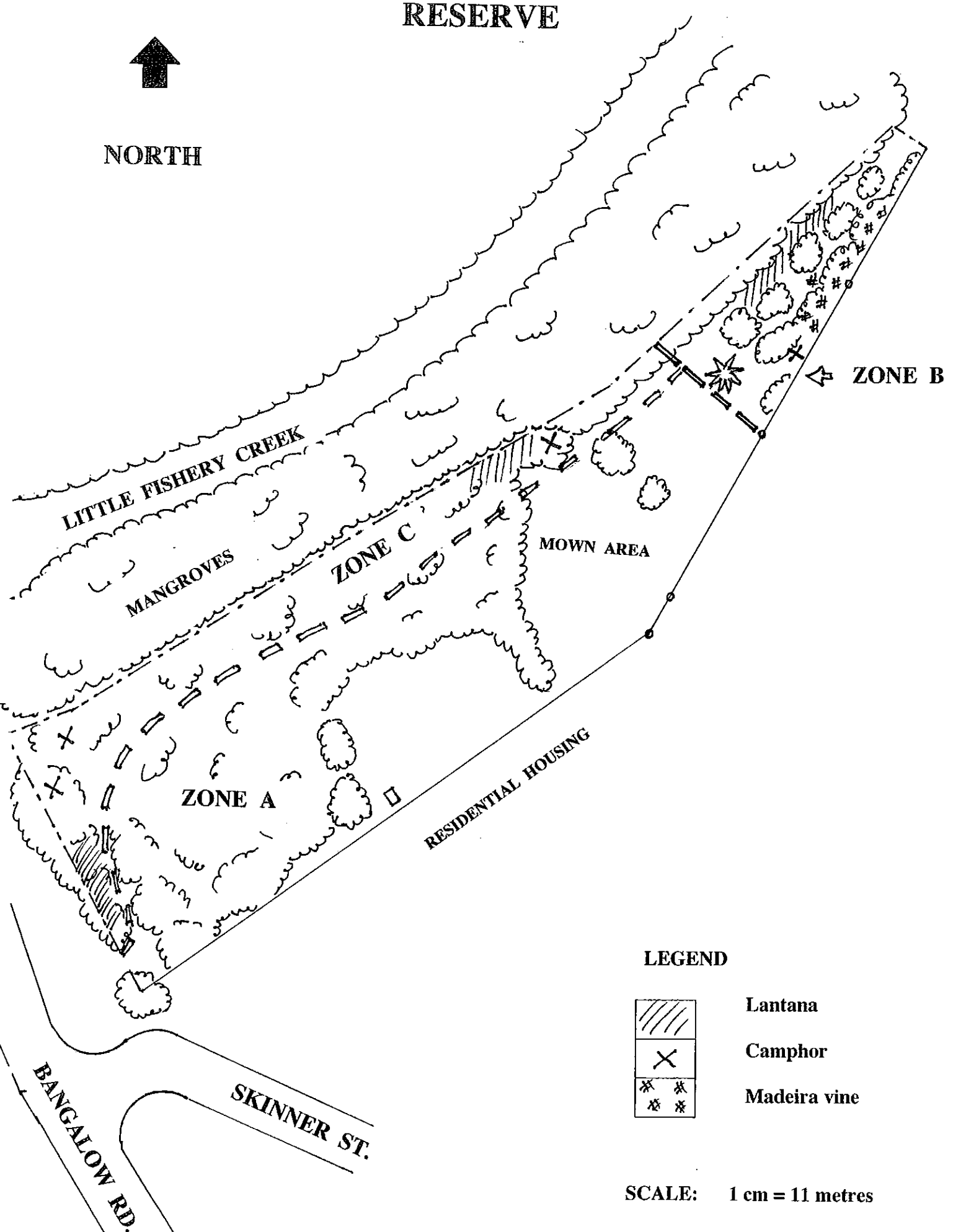
4. **Spray:** (S) Back pack is the recommended means of spraying.
Groundcovers (Madeira Vine, Wandering Jew): Glyphosate at 1:50 + Li 700 (a surfactant).
Annuals, Tropical Chickweed and exotic grass species: Glyphosate at 1:100.
Ground Asparagus: Spray large infestations with metsulfuron methyl at 1-2 g in 10 litres of water.

6. Fauna Species list:

Scientific Name	Common Name
Entomyzon cyanotis	Blue Faced Honey Eater
Alectura lathami	Brush Turkey
Cracticus nigrogularis	Pied Butcherbird
Strepera graculina	Pied Currawong
Cacatua pastinator	Corella
Platycercus eximis	Eastern Rosella
Trichoglossus haematodus	Rainbow Lorikeet
Dacelo novoaeguineae	Kookaburra
Manorina melanocephala	Noisy Miner
Centropus phasianinus	Pheasant Coucal
Acanthorhynchus tenuirostis	Scarlet Honey Eater
Dicrurus megarhynchus	Spangled Drongo
Podargus strigiodes	Tawny Frogmouth
Physignathus lesueurii	Eastern Water Dragon

This list was compiled by residents adjacent to the reserve and does not reflect a complete list of species – most notably no estuarine bird species recorded.

LITTLE FISHERY CREEK RESERVE



SCALE: 1 cm = 11 metres

Department of
Infrastructure, Planning and Natural Resources

Contact: Name
Phone: 02 6642 0622
Fax: 02 6642 0640
Email: northcoast@dipnr.nsw.gov.au

Our ref: G91/00055

Mr S McPherson
General Manager
Ballina Shire Council
PO Box 450
BALLINA NSW 2478

19 April, 2004

Attention: James Brideson

Dear Mr McPherson

Boundary to SEPP 14 Wetland Area No. 88a, Adjoining Little Fisheries Creek in Ballina

The Department is writing to Council with regards to the above matter. In January, 2004 the Little Fisheries Creek Landcare Group wrote to the Hon Craig Knowles, Minister for Infrastructure and Minister for Planning and Natural Resources with concerns regarding proposed works by the Group being affected by the provisions of State Environmental Planning Policy (SEPP) No.14- Coastal Wetlands yet being on land which does not exhibit wetland characteristics. This matter was previously raised in Council's letter to the Department dated 24 November, 2004.

With a view to resolving this matter, on 15 April, 2004, Craig Bellamy from this Office met with representatives of the Landcare Group and James Brideson of Council. The purpose of the meeting was to establish where the wetland boundary is located on the site and to ascertain the extent in the error to the SEPP No.14 mapping (at the scale of 1:25 000).

During the site inspection it was noted that, in this instance, the wetland boundary was very distinct being at the base of a small bank where the mangrove area begins. The area south of this boundary is distinctly raised and contains non-wetland type vegetation (including eucalypts, littoral rainforest species and exotic plantings). In this instance the Department is of the opinion that remapping of the boundary is not really necessary given that the edge to the wetland is well defined (by the bank and mangroves) and given that moving the boundary on the map some 20-30 metres is somewhat problematic at the 1:25 000 scale used by the Policy. The Department is therefore agreeable to the Council adopting a sensible approach in the interpretation of the SEPP No.14 boundary on this site so that it is read as the mangrove edge. Therefore, it would be open for the Council to decide that the works proposed by it and the newly formed Landcare group to rehabilitate this bushland area, are exempt from the provisions of SEPP No.14 (and the need to prepare an environmental impact statement). This is provided that the works do not extend north of the wetland edge into the mangrove area.

The Department has written to the Little Fisheries Creek Landcare Goup with similar information and advising them to consult further with the Council on this matter.

I trust that the above information assists Council. Should you have any queries with regards to this matter please do not hesitate to contact Craig Bellamy of this office on 6642 0624.

Yours sincerely

Steve Murray
Deputy Regional Director
North Coast Region