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Port of Brisbane Corporation

Final Report

Plant Survey of Lucinda Drain - Port of Brisbane

June 2006

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Executive Summary

This Plant Survey Report is the eleventh report prepared following an assessment of plants occurring along the banks of the Lucinda Drain, Port of Brisbane. The Lucinda Drain is located along the eastern side of the Port of Brisbane and is approximately 2.5 kilometres in length. The drain provides tidal, stormwater and wash-drainage from all hardstands and roof water runoff for the majority of facilities and roads along the eastern section of the Port of Brisbane.

Natural Solutions Environmental Consultants Pty Ltd was commissioned to undertake this plant survey of Lucinda Drain.

Summary of findings

The following points summarise the findings of the March 2006 plant survey of Lucinda Drain.

1. No individuals of Groundsel (*Baccharis halimifolia*) were recorded during the survey.
2. Four individuals of the Broad-leaf Pepper Tree (*Schinus terebinthifolia*) were recorded during the survey.
3. Siratrio (*Macroptilium atropurpureum*), Green panic (*Panicum maximum*), Rhodes grass (*Chloris gayana*), Feather-top Rhodes grass (*C. virgata*), Red Natal grass (*Melinis repens*) and Blady Grass (*Imperata cylindrica*) were the dominant plant species along the eastern bank of the drain.
4. 56 plant species were recorded. This consisted of 21 native/planted species and 35 environmental weed species.

No target weed species identified by Australian Quarantine and Inspection Service (AQIS) (see **Appendix C**) were located during the plant survey.

All environmental weed species that have been identified following the implementation of the plants surveys are being managed in accordance with a land management schedule. No unusual plant species or potential exotic plant incursions were identified during this and the previous plant surveys.

Recommendations regarding the long-term management of environmental weeds within the Lucinda Drain area are provided in Section 5 of this report.

1.0 INTRODUCTION

This is the eleventh report in a series of reports detailing the findings from surveys of plant species along the Lucinda Drain, Port of Brisbane[1]. The previous reports were prepared from surveys undertaken in:

- February (summer) 2001;
- October – December (spring) 2001;
- February (summer) 2002;
- November (spring) 2002;
- March (summer) 2003;
- November (spring) 2003;
- March (summer) 2004;
- October (spring) 2004;
- April (summer) 2005; and
- November (spring) 2005.

These plant surveys have been implemented in a response to a request from the Australian Quarantine and Inspection Service (AQIS) to increase surveillance relating to potential pest incursions. The surveys, commissioned by the Port of Brisbane Corporation (PBC), represents a long-term monitoring program at the port to survey for, and identify, exotic plant species which may enter the country on containers or other materials shipped and unloaded at the Port of Brisbane facility.

The biannual plant survey is undertaken on a six monthly interval, during (summer) February and (spring) October of each year.

The current survey was undertaken in March 2006.

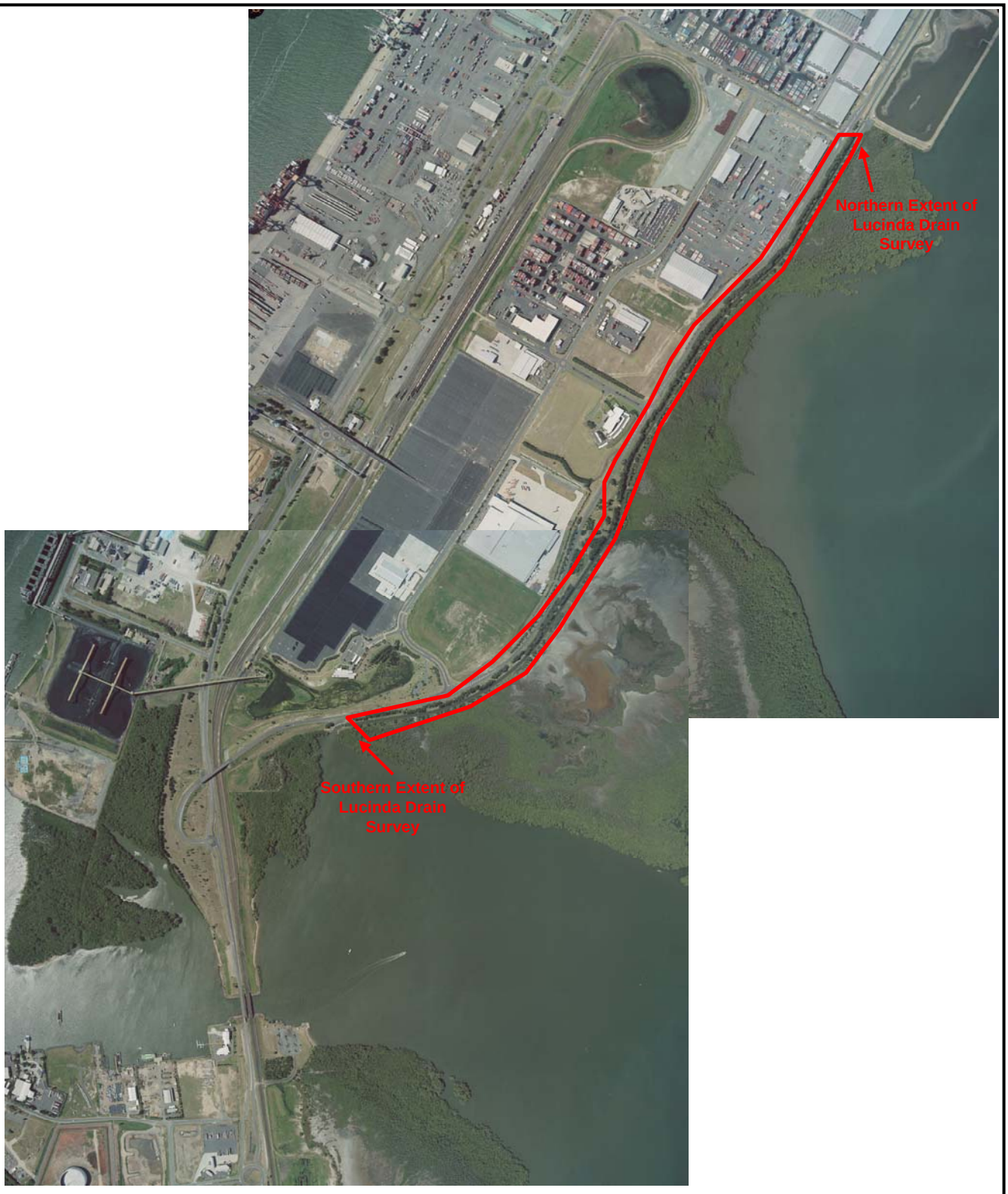
1.1 Site Description

The plant surveys focus on the Lucinda Drain area at the Port of Brisbane (**Figure 1)**. The Lucinda Drain is located along the eastern side of the Port of Brisbane and provides drainage for stormwater run-off from the hardstand areas adjacent to the drain.

The Lucinda Drain is a constructed drainage channel using concrete filled geo-textile sandwich construction some 2.5 kilometres in length. The berms of the channel consist of sand above the geo-textile sandwich.

The channel currently has a regular maintenance schedule that provides for the west bank of the drain, adjacent to Lucinda Drive, to be mowed and sprayed for noxious weeds.

[1] The Port of Brisbane was originally called Fisherman Islands. Fisherman Islands, however no longer exists as a location and is now known officially as Port of Brisbane.



Ref: J05-145
Date: April 2006
Scale: NTS
Source: PBC 2006
Client: PBC

Figure 1

Site Location – Lucinda Drain, Port of Brisbane

Plant Survey of Lucinda Drain – Port of Brisbane

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2.0 METHODOLOGY

This plant survey of the Lucinda Drain was undertaken on the 7 March 2006.

The survey consisted of one transect on the eastern side of the Lucinda Drain.

This technique was trialled during the November 2003 survey of the Lucinda Drain. An analysis of the data collected following this third survey using this survey methodology revealed that the results are consistent with the previous survey data in terms of the number of plants recorded.

As the western bank is difficult to access the waters edge in places an inspection of this bank was taken visually at regular intervals from the eastern bank of the drain.

All plant species observed during the survey were recorded on the survey data sheet (see **Appendix E**).

The east bank of the drain has an irregular maintenance program with some time between maintenance events. The west bank has a high maintenance schedule resulting in the mowing and spraying with herbicides of all areas apart from the landscaping on that bank.

2.1 AQIS Target Weeds List

AQIS has prepared a list of weed species identified as presenting a threat to natural and agriculture systems. This list is contained in **Appendix C**.

None of the target weed species identified by AQIS were located during this plant survey.

3.0 FINDINGS

Appendix A contains a list of plant species recorded from the March 2004 survey to date. **Appendix B** contains a schedule of all plant species recorded within the survey sites as well as those recorded incidentally during all surveys.

The following points summarise the findings of the March 2006 plant survey of Lucinda Drain:

1. No individuals of Groundsel (*Baccharis halimifolia*) were recorded during the survey.
2. Four individuals of the Broad-leaved Pepper Tree (*Schinus terebinthifolia*) were recorded during the survey.
3. Siratrio (*Macroptilium atropurpureum*), Green panic (*Panicum maximum*), Rhodes grass (*Chloris gayana*), Feather-top Rhodes grass (*C. virgata*), Blady Grass (*Imperata cylindrica*) and Red Natal grass (*Melinis repens*) were the dominant plant species along the eastern bank of the drain.
4. 56 plant species were recorded. This consisted of 21 native/planted species and 35 environmental weed species.

4.0 DISCUSSION

4.1 Weediness of Plants Observed

This eleventh survey of plants occurring along the banks of Lucinda Drain has identified a total number of 56 plant species. Of these 35 are considered weeds.

The following weeds have been listed as declared weeds in the *Land Protection (Pest and Stock Route Management) Regulation* 2003 (LPR 2003).

- No Class 1 pest species were recorded within the Lucinda Drain area;
- One Class 2 pest species, Parthenium Weed (Parthenium hysterophorus), was recorded within the Lucinda Drain.
- Four Class 3 Pest species were recorded within the Lucinda Drain:
    - Lantana (*Lantana camara*).
    - Creeping Lantana (*Lantana montevidensis*)
    - Singapore Daisy (*Sphagneticola trilobata*)
    - Broad-leaved Pepper Tree (*Schinus terebinthifolia*)

The following weed species not listed under Land Protection (Pest and Stock Route Management) Regulation 2003 (LPR 2003) but listed as noxious weeds by Brisbane City Council (BCC) were observed during this survey:

- Johnson Grass (Sorghum halepense); and
- Stinking Roger (*Tagetes minuta*).

In addition, one species listed as an environmental weed by BCC (Mile-a-Minute, *Ipomoea cairica*) was observed during this study.

4.2 General Comments

The long-term management of these environmental weed species should be integrated into a program of habitat management, including actions such as:

1. Shading through the development of a canopy and understorey;
2. Increase the understorey diversity to increase competition for resources with the potential decrease in weediness and weed plant diversity; and
3. Targeted herbicide application.

4.3 Comparisons Between Surveys

An analysis of the numbers and species recorded during this survey and compared to the previous surveys indicates that there is little variation between both species and the number of species recorded.

The following table (**Table 1**) highlights the numbers of weed plants identified in the previous eleven plant surveys of Lucinda Drain.

Table 1: Number of weed species recorded per survey

Survey	Number of Weed Species Recorded
February 01	37
October 01	35
February 02	27
November 02	35
May 03	27
November 03	36
March 04	27
October 04	29
April 05	33
November 05	37
March 06	**35**

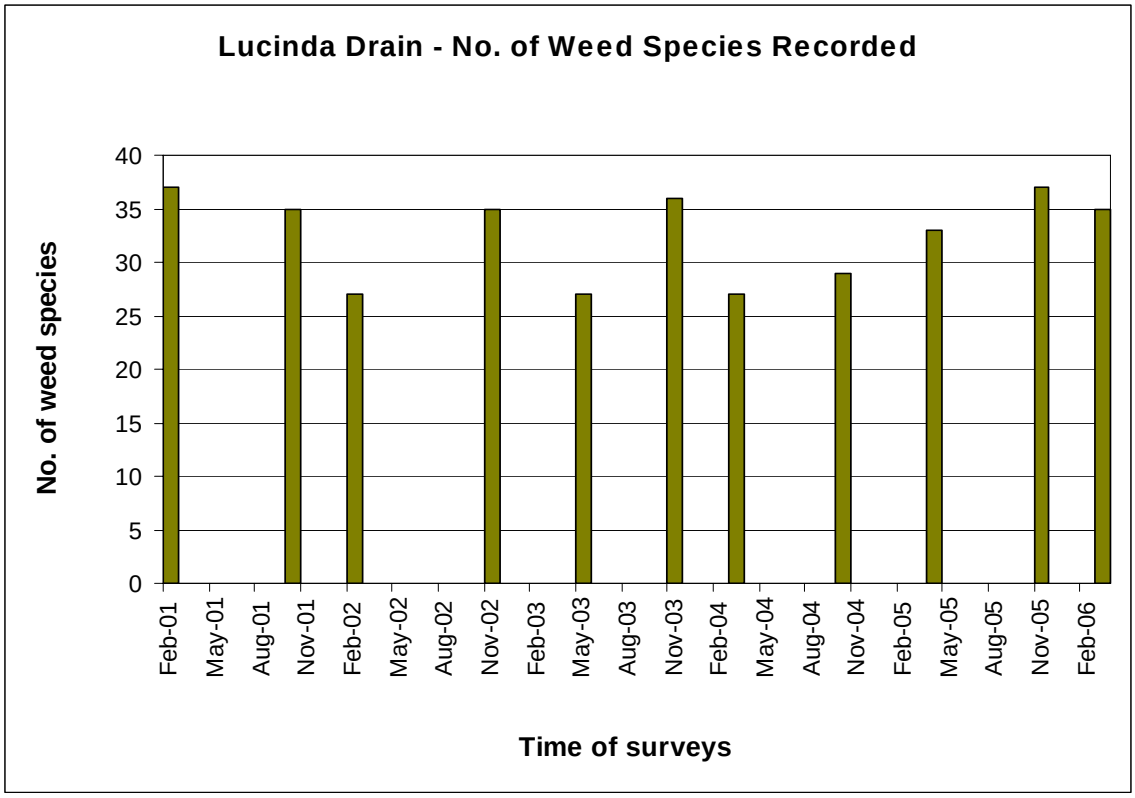
Table 2: Number of weed species by family for March 2006 survey

Family	Number of Weed Species
Poaceae	9
Asteraceae	8
Fabaceae	5
Malvaceae	2
Cyperaceae	2
Verbenaceae	2
Amaranthaceae	1
Anacardiaceae	1
Boraginaceae	1
Convolvulaceae	1
Asclepiadaceae	1
Commelinaceae	1
Ulmaceae	1

The above **Tables 1** and **2** indicate:

- There is a relatively consistent trend of the number of weed species along the banks of Lucinda Drain in the post summer and post winter surveys (see **Figure 2**);
- **Figure 2** identifies the survey outcome trend that surveys taken early in the calendar year provides less plant weed species than those conducted in the later half of the calendar year;
- The number of weeds identified in this survey is approximately 15.9% more than the average number of weeds recorded (30.2 over the five summer surveys)
- Plant cover throughout the eastern portion of the drain was greater than 95 % within those areas which had not been slashed;
- Grasses (Poaceae) continue to be the dominant family along the drain followed by plant species within the family Asteraceae; and
- The trend of less plants following the drier periods of the year leading up to the summer survey than the period following the summer months.

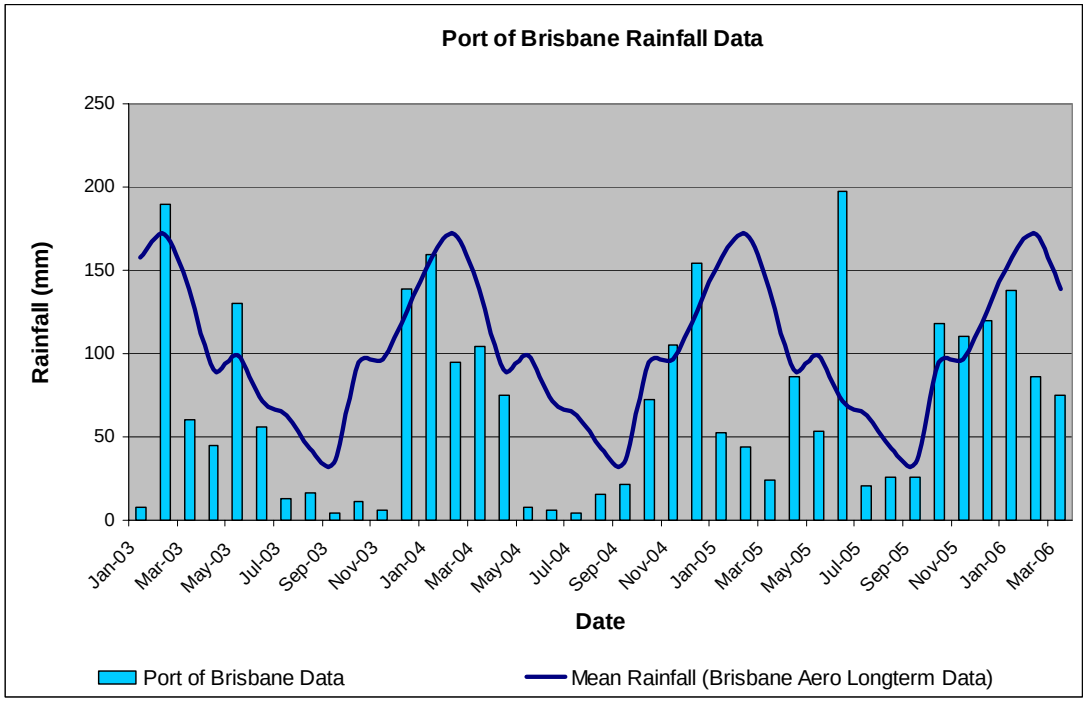
Figure 2: Number of weed species vs survey date



4.4 Weather Conditions

The following graph (**Figure 3**) portrays the rainfall recorded at the Port of Brisbane as well as the mean rainfall for the Brisbane region based on long-term data.

Figure 3: Rainfall averages – Port of Brisbane



The following can be derived from this data with respect to the plant growth around the Lucinda Drain:

- There was near average rainfall leading up to January 2006.
- The rainfall in June 2005, October 2005 and November 2005 was significantly above average.
- Rainfall in the months preceding the current survey (June 2005 – December 2005) have been more reflective of average conditions. Rainfall throughout 2003 and early 2004 was much lower than average.

The reasonable levels of rainfall experienced prior to the survey are likely to have provided suitable conditions for introduced plant. As such, the non-detection of additional introduced or known weed species is encouraging.

5.0 RECOMMENDATIONS

Recommendations relating to the management of the banks of the Lucinda Drain and of the inflow of stormwater into the drain which may transport and introduce exotic plant material to the drain have been made in previous reports.

It is assumed that either these recommendations have been adopted and are being implemented or they are yet to be implemented.

Therefore, as there has been no significant alteration in the environmental weed status and the management of the banks of the Lucinda Drain the following recommendations are made:

1. Maintain all existing weed management programs along both banks of the Lucinda Drain; and
2. Continue programmed monitoring of the diversity and status of plant species along the banks of the Lucinda Drain through twice-yearly plant surveys.

6.0 REFERENCES

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Appendix A: Survey Analysis

Species	Common name	LPR class	Mar 06	Nov 05	Mar 05	Oct 04	Mar 04
Aizoaceae							
Carpobrotus glaucescens	Pigface*	-	X	X	X	X	X
Sesuvium portulacastrum	Sea Purslane*	-	X	X	X	X	X
Amaranthaceae							
Alternanthera pungens	Khaki Weed	-			X		
Amaranthus quitensis	South American Amaranthus	-		X			
Amaranthus viridis	Green Amaranths	-			X		
Gomphrena celosoides	Gomphrena Weed	-	X				
Anacardiaceae							
Schinus terebinthifolius	Broad-leaved Peppertree	3	X	X		X	X
Asclepiadaceae							
Gomphocarpus physocarpus	Balloon Cotton Bush	-	X				
Asteraceae							
Ageratum houstonianum	Blue Billy-Goat	-		X			
Ambrosia artemisiifolia	Annual Ragweed	2		X		X	X
Baccharis halimifolia	Groundsel Bush	2				X	X
Bidens pilosa	Cobblers Pegs	-	X	X	X	X	X
Calyptocarpus vialis	Creeping Cinderella Weed	-			X		
Cirsium vulgare	Spear Thistle	-		X		X	
Conyza bonariensis	Faxleaf Fleabane	-	X	X	X		
Conyza pusilla	Canadian Fleabane	-	X	X			
Crassocephalum crepidioides	Thickhead	-		X	X	X	
Emilia sonchifolia	Emilia	-	X				
Hypochaeris radicata	Flatweed	-	X			X	
Parthenium hysterophorus	Parthenium Weed	2	X				
Sonchus oleraceus	Rough Sow Thistle	-		X	X		
Sphagneticola trilobata	Singapore Daisy	3	X			X	X
Tagetes minuta	Stinking Roger	-	X		X		
Avicenniaceae							
Avicennia marina	Grey Mangrove*	-	X	X	X	X	
Boraginaceae							
Heliotropium amplexicaule	Blue Heliotrope	-	X	X			
Cactaceae							
Opuntia sp	Prickly Pear	2					
Casuarinaceae							
Casuarina equisetifolia	Coastal Sheoak*	-	X	X	X	X	X
Casuarina littoralis	Black Sheoak*	-	X	X	X	X	X
Caesalpiniaceae							

Species	Common name	LPR class	Mar 06	Nov 05	Mar 05	Oct 04	Mar 04
Crotalaria paniculata	Poor Mans Gold	-					
Senna pendula var glabrifolia	Easter Cassia	-					
Commelinaceae							
Commelina diffusa (C. cyanea)	Wandering Jew	-	X				
Convolvulaceae							
Cuscuta campestris	Dodder	-			X		
Convolves arvensis	European Bindweed	-					
Ipomoea so (alba)	White Ipomoea	-		X			
Ipomoea cairica	Mile-a-Minute	-	X	X		X	
Ipomoea pes-caprae	Goats Foot Convolvus*	-		X	X	X	X
Cyperaceae							
Carex appressa	Tall Sedge*	-	X				
Cyperus sp.	A sedge						X
Cyperus congestus	Clustered Flatsedge	-		X			
Cyperus eragrostis	Umbrella Sedge	-		X			
Cyperus rotundus	Nut Grass	-	X				
Cyperus polystachyos	Bunchy Sedge	-	X				
Euphorbiaceae							
Chamaesyce maculata	Caustic Weed	-			X		
Euphorbia hirta	Asthma Plant	-				X	
Euphorbia prostrata	Caustic Creeper	-		X			
Euphorbia sp.	Spurge	-					X
Macaranga tanarius	Macaranga*	-	X	X	X	X	X
Phyllantus virgatus	Creeping Phyllantus	-			X		
Fabaceae							
Crotalaria pallida	Rattle Pod	-	X	X	X		
Desmodium uncinatum	Silver Leafed Desmodium	-			X		X
Macroptilium atropurpureum	Siratro	-	X	X	X	X	X
Medicago sativa	Lucerne	-	X	X		X	X
Melilotus indicus	Sweet Melilotus	-		X		X	
Neonotonia wightii	Glycine	-		X			
Sesbania cannabina	Sesbania Pea	-	X	X	X		X
Trifolium repens	Clover	-	X				
Vigna marina	Yellow Beach Bean*	-	X				
Lauraceae							
Cinnamomum camphora	Camphor Laurel	3				X	
Malvaceae							
Hibiscus tiliaceus	Cotton Tree*	-	X	X	X	X	X
Modiola caroliniana	Red Flower Mallow*	-					
Sida cornifolia	Flannel Weed	-	X	X	X	X	X
Sida rhombifolia	Common Sida	-	X		X		X

Species	Common name	LPR class	Mar 06	Nov 05	Mar 05	Oct 04	Mar 04
Mimosaceae							
Acacia aulacocarpa	Hickory Wattle*	-	X	X		X	X
Myrtaceae							
Eucalyptus robusta	Swamp Mahogany*	-	X	X	X		
Lophostemon confertus	Brush Box*	-	X	X	X	X	X
Melaleuca linariifolia	Flax-leafed Paperbark*	-	X	X	X	X	X
Melaleuca quinquenervia	Paperbark Teatree*	-	X	X	X	X	X
Callistemon viminalis	Weeping Bottlebrush			X			
Onagraceae							
Oenothera drummondii	Beach Evening Primrose*	-	X	X	X	X	X
Oxalidaceae							
Oxalis corniculata	Creeping Oxalis	-					
Pandanaceae							
Pandanus tectorius	Screw Pine*	-	X	X	X	X	X
Passifloraceae							
Passiflora cairica	Stinking Passion Vine	-				X	
Passiflora subpeltata	White Passion Flower	-		X		X	X
Poaceae							
Brachiaria decumbens	Signal Grass		X		X		
Brachiaria mutica	Para Grass				X	X	X
Cenchrus ciliaris	Buffel Grass	-					
Cenchrus echinatus	Mossman River Grass	-	X	X	X	X	X
Chloris gayana	Rhodes Grass	-	X	X	X	X	X
Chloris truncata	Windmill Grass	-	X		X	X	X
Chloris virgata	Feather-top Rhodes Grass	-	X	X	X		
Cynodon dactylon	Couch Grass	-	X	X	X	X	X
Dichanthium aristatum	Angleton Grass	-					
Digitaria ciliaris	Summer Grass						
Eleusine indica	Crowsfoot Grass	-			X		
Hemarthria uncinata	Mat Grass	-					
Imperata cylindrica	Blady Grass*	-	X				
Melinis repens	Red Natal Grass	-	X	X	X	X	X
Melinis minutiflora	Molasses Grass						
Poa annua	Winter Grass	-					
Panicum effusum	Hairy Panic	-		X	X		X
Panicum maximum	Green Panic	-	X	X	X	X	X
Paspalum dilatatum	Paspalum	-	X				X
Phragmites australis	Common Reed*	-		X	X	X	X
Sorghum halepense	Johnson Grass*	-	X	X	X	X	X

Species	Common name	LPR class	Mar 06	Nov 05	Mar 05	Oct 04	Mar 04
Typha orientalis	Cumbungi / Typha*	-	X	X	X	X	
Urochloa mosambicenis	Sabi Grass	-		X			
Portulacaceae							
Portulaca pilosa	Hairy Pigweed	-		X	X		
Primulaceae							
Anagallis arvensis	Scarlet Pimpernel	-		X			
Proteaceae							
Banksia integrifolia	Coastal Banksia*	-	X	X	X	X	X
Sapindaceae							
Cardiospermum halicacabum	Balloon Vine	-			X		
Cupaniopsis anacardioides	Tuckeroo*	-	X	X	X	X	X
Dodonaea triquetra	Hop Bush						X
Solanaceae							
Solanum nigrum	Brazilian Nightshade	-		X	X		X
Ulmaceae							
Celtis sinensis	Chinese Celtis	-	X				
Verbenaceae							
Lantana camara	Lantana	3	X	X	X	X	X
Lantana montevidensis	Creeping Lantana	3	X				
Verbena bonariensis	Purple Top	-		X			X
Verbena aristigera	Mayne's Pest	-					
Vitex trifolia var trifolia	Coastal Vitex*	-		X			X

Notes: -

- * designates indigenous species
- LPRA – *Land Protection (pest and stock route management) Regulations* 2003, Schedule 2.

Appendix B: Plant Species List

This species list is a combination of the all plant surveys undertaken along the Lucinda Drain, Fisherman Islands.

Form code: - T = tree; t = small tree; s = shrub; g = grass; h = herb; f = fern; v = vine; w = weed; a = aquatic plant; (p) = planted, n = native or planted. Highlighted species indicate new species recorded during the plant survey. LPA – Land *Protection (pest and stock route management) regulations* (2003)

Family/Species	Common name	Form	Declaration category (LPR)
Aizoaceae			
Carpobrotus glaucescens [n]	Pigface	v	-
Sesuvium portulacastrum [n]	Sea Purslane	h	-
Amaranthaceae			
Alternanthera pungens	Khaki Weed	h,w	-
Amaranthus quitensis	South American Amaranthus	h,w	
Amaranthus viridis	Green Amaranthus	h,w	-
Gomphrena celosioides	Gomphrena Weed	h,w	-
Anacardiaceae			
Schinus terebinthifolia	Broad-leaved Peppertree	s,w	-
Asclepiadaceae			
Gomphocarpus physocarpus	Balloon Cotton Bush	s,w	-
Asteraceae			
Ageratum houstonianum	Blue Billy-Goat	h,w	-
Ambrosia artemisiifolia	Annual Ragweed	h,w	2
Baccharis halimifolia	Groundsel Bush	s,w	2
Bidens pilosa	Cobblers Pegs	h,w	-
Calyptocarpus vialis	Creeping Cinderella Weed	h,w	-
Cirsium vulgare	Spear Thistle	h,w	-
Conyza bonariensis	Flaxleaf Fleabane	h,w	-
Conyza pusilla	Canadian Fleabane	h,w	-
Crassocephalum crepidioides	Thickhead	h,w	-
Emilia sonchifolia	Emilia	h,w	-
Hypochaeris radicata	Flatweed	h.w	-
Parthenium hysterophorus	Parthenium Weed	h,w	2
Senecio sp (lautus)	Fireweed	h	-
Sonchus oleraceus	Rough Sow Thistle	h,w	-
Sphagneticola trilobata	Singapore Daisy	h,w	3
Tagetes minuta	Stinking Roger	h,w	-
Avicenniaceae			
Avicennia marina [n]	Grey Mangrove	t	-
Boraginaceae			
Heliotropium amplexicaule	Blue Heliotrope	h,w	-
Cactaceae			
Opuntia sp.	Prickly Pear	s,w	2

Casuarinaceae			
*Casuarina equisetifolia**	Coastal Sheoak	t	-
*Allocasuarina littoralis**	Black Sheoak	t	-
Caesalpiniaceae			
Crotalaria paniculata	Poor Mans Gold	h	-
Senna pendula var *glabrifolia*	Easter Cassia	s,w	-
Commelinaceae			
Commelina diffusa (C. cyanea)	Wandering Jew	h,w	-
Convolvulaceae			
Cuscuta campestris	Dodder	v,w	-
Convolvulus arvensis	European Bindweed	h,w	-
Ipomoea sp. (alba)		v,w	-
Ipomoea cairica	Mile-a-Minute	v,w	-
Ipomoea pes-caprae [n]	Goats Foot Convolvus	v	-
Cyperacea			
Carex appressa[n]	Tall Sedge	g	-
Cyperus sp.	A sedge	a,w	-
Cyperus congestus	Clustered Flatsedge	a,w	-
Cyperus eragrostis	Umbrella Sedge	a,w	-
Cyperus rotundus	Nut Grass	g,w	-
Cyperus polystachyos	Bunchy Sedge	g,w	-
Euphorbiaceae			
Chamaesyce maculata	Caustic weed	h,w	-
Euphorbia hirta	Asthma Plant	h,w	-
Euphorbia prostrata	Caustic Creeper	h,w	-
Euphorbia sp.	Spurge	h,w	-
Macaranga tanarius [n]	Macaranga	t (p)	-
Phyllanthus virgatus	Creeping Phyllanthus	h,w	-
Fabaceae			
Crotalaria pallida	Rattle Pod	h,w	-
Desmodium uncinatum	Silver-Leafed Desmodium	v,w	-
Macroptilium atropurpureum	Siratro	v,w	-
Medicago sativa	Lucerne	h,w	-
Melilotus indicus	Sweet Melilotus	h,w	-
Neonotonia wightii	Glycine	v,w	-
Sesbania cannabina	Sesbania Pea	h,w	-
Trifolium repens	White Clover	h,w	-
Vigna marina[n]	Yellow Beach Bean	h	-
Lauraceae			
Cinnamomum camphora	Camphor Laurel	t,w	3
Malvaceae			
Hibiscus tiliaceus [n]	Cotton Tree	t	-
Modiola caroliniana [n]	Red Flower Mallow	h,w	-
Sida cornifolia	Flannel Weed	h,w	-
Sida rhombifolia	Common Sida	h,w	-
Mimosaceae			
Acacia aulacocarpa [n]	Hickory Wattle	t	-
Myrtaceae			
Eucalyptus robusta [n]	Swamp Mahogany	t,(p)	-
Lophostemon confertus [n]	Brush Box	t,(p)	-

Melaleuca linariifolia [n]	Flax-Leafed Paperbark	t,(p)	-
Melaleuca quinquenervia [n]	Paperbark Teatree	t,(p)	-
Onagraceae			
Oenothera drummondii [n]	Beach Evening Primrose	s	-
Oxalidaceae			
Oxalis corniculata	Creeping Oxalis	h,w	-
Pandanaceae			
Pandanus tectorius [n]	Screw Pine	t,(p)	-
Passifloraceae			
Passiflora cairica	Stinking Passion Vine	v,w	-
Passiflora subpeltata	White Passion Vine	v,w	-
Plantaginaceae			
Plantago lanceolata	Lamb's Tongue	h,w	-
Plantago major	Great Plantain	h,w	-
Poaceae			
Brachiaria decumbens	Signal Grass	g,w	-
Brachiaria mutica	Para Grass	g,w	-
Cenchrus ciliaris	Buffel Grass	g,w	-
Cenchrus echinatus	Mossman River Grass	g,w	-
Chloris gayana	Rhodes Grass	g,w	-
Chloris truncata	Windmill Grass	g,w	-
Chloris virgata	Feather-Top Rhodes Grass	g,w	-
Cynodon dactylon	Couch Grass	g,w	-
Dichanthium aristatum	Angleton Grass	h,w	-
Digitaria ciliaris	Summer Grass	g,w	-
Eleusine indica	Crowsfoot Grass	g,w	-
Hemarthria uncinata	Mat Grass	g,w	-
Imperata cylindrica [n]	Blady Grass	g	-
Melinis repens	Red Natal Grass	g,w	-
Melinis minutifolia	Molasses Grass	g,w	-
Poa annua	Winter Grass	g,w	-
Panicum effusum	Hairy Ganic	g	-
Panicum maximum	Green Panic	g,w	-
Paspalum dilatatum	Paspalum	g,w	-
Phragmites australis [n]	Common Reed	g	-
Sorghum halepense [n]	Johnson Grass	g,w	-
Typha orientalis [n]	Typha	g	-
Urochloa mosambicenis	Sabi Grass	g,w	-
Portulacaceae			
Portulaca pilosa	Hairy Pigweed	h,w	-
Primulacea			
Anagallis arvensis	Scarlet Pimpernel	h,w	-
Proteaceae			
Banksia integrifolia [n]	Coastal Banksia	t (p)	-
Sapindaceae			
Cardiospermum halicacabum	Balloon Vine	v,w	-
Cupaniopsis anacardioides [n]	Tuckeroo	t	-
Dodonaea triquetra	Hop Bush	s	-

Solanaceae			
Solanum nigrum	Brazilian Nightshade	s,w	-
Ulmaceae			
Celtis sinensis	Chinese Celtis	t,w	-
Verbenaceae			
Lantana camara	Lantana	s,w	3
Verbena bonariensis	Purple Top	h,w	-
Verbena aristigera		h,w	-
Vitex trifolia var trifolia [n]		s	-
Lantana montevidensis	Creeping Lantana	v,w	3

Appendix C: Weed Target List (AQIS)

Family	Genus species	Author	Common name	Comments
Amaranthaceae	*Amaranthus dubius*	Mart. ex Thell	Chinese Spinach	annual crops, rice, gardens, disturbed sites and secondary vegetation.
Asteraceae	*Austroeupatorium inulaefolium*	(H.B.K.) King and Robinson		tea, rubber, rosella and other plantation crops; roadsides; environmental weed in secondary forests.
Asteraceae	*Chromolaena odorata*	(L.) King and Robinson	Siam Weed, Christmas Bush	pastures, oil palm, rubber, coffee, cashew, fruit, maize, forestry. Toxic to livestock. Major environmental weed: secondary forests, roadsides, disturbed sites.
Asteraceae	*Mikania cordata*	(Burm. f.) B.L. Robinson		rubber, coffee, banana, cocoa and oil palm plantations, pastures; potential environmental weed
Asteraceae	*Mikania micrantha*	H.B.K.	Mile-a-Minute	cocoa, coconut, orchards, rubber, oil palm, sugarcane, vegetables, upland rice, pastures; serious environmental weed
Capparaceae	*Cleome rutidosperma*	DC.	Spiderflower	crops including vegetables, bananas, maize, tobacco, watermelons, cocoa, pineapples and coconuts; weed of disturbed ground and immature plantations.
Cyperaceae	*Fimbristylis umbellaris*	(Lam.) Vahl	Globular Fimbristylis	rice, pastures; swamps.
Cyperaceae	*Schoenoplectus juncoides*	(Roxb.) Palla		rice, freshwater and tidal swamps.
Cyperaceae	*Scirpus maritimus*	L.		rice, freshwater and tidal swamps.
Equisetaceae	*Equisetum ramosissimum*	Desf. subsp. debile (Vauch.) Hauke	Horsetail, Scouring Rush	rice terraces and bunds, tea plantations.
Eriocaulaceae	*Eriocaulon truncatum*	Buch. - Ham. ex Mart		rice, wetlands, river banks and floodplains
Euphorbiaceae	*Croton hirtus*	L'Herit		rubber plantations; crops including mung beans, peanuts, soybeans, papaya, vegetables and tobacco.
Fabaceae	*Mucuna pruriens*	DC.	Velvet Bean,	weed of pastures and a wide range of dryland crops;

Family	Genus species	Author	Common name	Comments
			Cow-Itch	smothering habit and ability to climb to tree tops makes a significant potential environmental weed. Irritant hairs can kill livestock if ingested and cause severe skin reaction if touched.
Haloragaceae	*Myriophyllum spicatum*	L.	Eurasian Watermilfoil	serious weed of lakes, water-storages, canals and rivers. Affects fish and shellfish production and recreational use of water bodies
Lamiaceae	*Hyptis brevipes*	Poit.	Lesser Roundweed	plantation crops, orchards, vegetables rice; secondary forest, and disturbed sites in areas of high rainfall.
Limnocharitaceae	*Limnocharis flava*	(L.) Buchenau	Yellow Bur-head, Yellow Sawah Lettuce	serious weed of rice and wetlands. Used as a green vegetable.
Lythraceae	*Rotala indica*	(Willd.) Koehne	Toothcup	rice fields, river banks, ditches and moist environments
Melastomaceae	*Clidemia hirta*	(L.) D. Don.	Koster's Curse, Soap Bush	cocoa, tea, coconut, oil palm and rubber plantations, cultivated areas, pastures, secondary forest and woodlands; other disturbed sites.
Myrtaceae	*Rhodomyrtus tomentosa*	(Ait.) Hassk.	Downy Rose Myrtle	environmental weed; pastures, rangelands and untended areas.
Nyctaginaceae	*Boerhavia erecta*	L.		peanuts, sorghum, rice and other annual crops; weed of cultivated land, pastures and coastal environments.
Piperaceae	*Piper aduncum*	L.		weed of grazing lands and secondary forest, roadsides; environmental weed.
Poaceae	*Brachiaria paspaloides*	(Presl.) C.E. Hubb	Common Brachiaria, Thurston Grass	orchards, tea, coffee, rice, lawns, roadsides, disturbed sites.
Poaceae	*Coix aquatica*	Roxb.	Job's Tears	serious weed of waterways, rice
Poaceae	*Digitaria fuscescens*	(Presl.) Henr.	Common Crabgrass	tobacco, vegetables, rubber, rice; pastures, disturbed sites, roadsides, coastal dunes, dry forests.
Poaceae	*Digitaria insularis*	(L.) Mes ex Ekman		pineapples; unpalatable weed of pastures, headlands, roadsides.
Poaceae	*Echinochloa*	Munro ex	A barnyard	rice, maize.

Family	Genus species	Author	Common name	Comments
	glabrescens	Hook. f.	grass	
Poaceae	*Echinochloa stagnina*	(Retz) Beauv.		rice; lakes, rivers, wetlands; roadsides, open places. Potential major environmental weed.
Poaceae	*Eriochloa polystachya*	H.B.K.	Carib Grass	rice, riverbanks, swamps, drains and ditches; suppresses other vegetation.
Poaceae	*Ischaemum timorense*	Kunth.	Centipede Grass	cloves, cocoa, rubber, coconut, oil palm, sugarcane and rice plantations; weed of roadsides, ditches, forest margins.
Poaceae	*Leptochloa chinensis*	(L.) Nees.	Red Sprangletop, Feathergrass	rice, cotton, soybean, maize, sugarcane, pineapple, sweet potato, vegetables, peanuts, tea, bananas.
Poaceae	*Leptochloa panicea*	(Retz.) Ohwi	Sprangletop	rice, cotton, soybeans, peas, sugarcane, maize, peanuts, pastures.
Poaceae	*Sacciolepis interrupta*	(Willd.) Stapf.		rice, irrigation channels, wetlands. Potential environmental weed.
Rubiaceae	*Diodia sarmentosa*	Sw.		coffee, tea, leucaena, Stevia sp. plantations.
Rubiaceae	*Paederia foetida*	L.	Lesser Malayan Stinkwort	sugarcane, secondary forest; climbs over shrubs and trees - potential environmental weed.
Rubiaceae	*Spermacoce assurgens*	Ruiz & Pav.		rice, maize, coconuts, sugarcane, bananas, pasture, gardens, forest clearings
Rubiaceae	*Spermacoce mauritiana*	Gideon		invades tracks in primary rainforest; rice, sugarcane, gardens, lawns.
Salviniaceae	*Salvinia cucullata*	Roxb.	Salvinia	rice, waterways, wetlands.
Salviniaceae	*Salvinia natans*	(L.) All.	Salvinia	rice, waterways wetlands.
Scrophulariaceae	*Striga angustifolia*	(D. Don.) C.J. Saldanha	Witchweed	root parasite on rice, sorghum, sugarcane.
Scrophulariaceae	*Striga asiatica*	(L.) O. Ktze.	Witchweed	serious root parasite on rice, maize, sorghum, sugarcane, millet; also on some broadleaf crops including sunflower, tomatoes, some legumes.
Violaceae	*Hybanthus attenuatus*	(Humb. & Bonpl.) G.K. Schulze		rice, a wide diversity of annual crops, pastures, waste places.

Source: http://www.affa.gov.au

Appendix D: Land Protection Regulations 2003 - Classes

The following table contains a list of species recorded from Lucinda Drain and which have been listed in Schedule 2 of the *Land Protection (Pest and Stock Route Management) Regulations* 2003.

Class	Species
Class 1 pests	▪ No species recorded
Class 2 pests	▪ Groundsel Bush - *Baccharis halimifolia* ▪ Prickly Pear - *Opuntia spp.* ▪ Annual Ragweed – *Ambrosia artemisiifolia* ▪ Parthenium Weed (*Parthenium hysterophorus*)
Class 3 pests	▪ Broad-leafed Peppertree – *Schinus terebinthifolia* ▪ Camphora Laurel – *Cinnamomum camphora* ▪ Lantana – *Lantana camara* ▪ Singapore Daisy – *Sphagneticola trilobata* ▪ Creeping Lantana (*Lantana montevidensis*)

Appendix E: Plant Survey Data Sheet

Family/Species	Common name	Form	Declaration category (LPA)	Presence	Abundance
Aizoaceae					
Carpobrotus glaucescens [n]	Pigface	v	-		
Sesuvium portulacastrum [n]	Sea Purslane	h	-		
Amaranthaceae					
Alternanthera pungens	Khaki Weed	h,w	-		
Amaranthus quitensis	South American Amaranthus	h.w	-		
Amaranthus viridis	Green Amaranthus	h,w	-		
Anacardiaceae					
Schinus terebinthifolia	Broad-leaved Peppertree	s,w	3		
Asclepiadaceae					
Gomphocarpus physocarpus	Balloon Cotton Bush	s,w	-		
Asteraceae					
Ageratum houstonianum	Blue Billy-Goat	h,w	-		
Ambrosia artemisiifolia	Annual Ragweed	h,w	2		
Baccharis halimifolia	Groundsel Bush	s,w	2		
Bidens pilosa	Cobblers Pegs	h,w	-		
Calyptocarpus vialis	Creeping Cinderella Weed	h,w	-		
Cirsium vulgare	Spear Thistle	h,w	-		
Conyza bonariensis	Flaxleaf Fleabane	h,w	-		
Conyza pusilla	Canadian Fleabane	h,w	-		
Crassocephalum crepidioides	Thickhead	h,w	-		
Hypochaeris radicata	Flatweed	h.w	-		
Parthenium hysterophorus	Parthenium Weed	h,w	2		
Senecio sp (lautus)	Fireweed	h	-		
Sonchus oleraceus	Rough Sow Thistle	h,w	-		
Sphagneticola trilobata	Singapore Daisy	h,w	3		
Tagetes minuta	Stinking Roger	h,w	-		
Avicenniaceae					
Avicennia marina [n]	Grey Mangrove	t	-		
Boraginaceae					
Heliotropium amplexicaule	Blue Heliotrope	h,w	-		
Cactaceae					
Opuntia sp.	Prickly Pear	s,w	2		

Family/Species	Common name	Form	Declaration category (LPA)	Presence	Abundance
Casuarinaceae					
*Casuarina equisetifolia**	Coastal Sheoak	t	-		
*Allocasuarina littoralis**	Black Sheoak	t	-		
Caesalpiniaceae					
Crotalaria paniculata	Poor Mans Gold	h	-		
Senna pendula var *glabrifolia*	Easter Cassia	s,w	-		
Convolvulaceae					
Cuscuta campestris	Dodder	v,w	-		
Convolvulus arvensis	European Bindweed	h,w	-		
Ipomoea sp. (alba)		v,w	-		
Ipomoea cairica	Mile-a-Minute	v,w	-		
Ipomoea pes-caprae [n]	Goats Foot Convolvus	v	-		
Cyperaceae					
Cyperus congestus	Clustered Flatsedge	a,w	-		
Cyperus eragrostis	Umbrella Sedge	a,w	-		
Euphorbiaceae					
Chamaesyce maculata	Caustic Weed	h,w	-		
Euphorbia hirta	Asthma Plant	h,w	-		
Euphorbia prostrata	Caustic Creeper	h,w			
Euphorbia sp.	Spurge	h,w	-		
Macaranga tanarius [n]	Macaranga	t (p)	-		
Phyllanthus virgatus	Creeping Phyllanthus	h,w	-		
Fabaceae					
Crotalaria pallida	Rattle Pod	h,w	-		
Desmodium uncinatum	Silver-leafed Desmodium	v,w	-		
Macroptilium atropurpureum	Siratro	v,w	-		
Medicago sativa	Lucerne	h,w	-		
Melilotus indicus	Sweet Melilotus	h,w	-		
Neonotonia wightii	Glycine	v,w	-		
Sesbania cannabina	Sesbania Pea	h,w	-		
Trifolium repens	White Clover	h,w	-		
Lauraceae					
Cinnamomum camphora	Camphor Laurel	t,w	3		
Malvaceae					
Hibiscus tiliaceus [n]	Cotton Tree	t	-		
Modiola caroliniana [n]	Red Flower Mallow	h,w	-		
Sida cornifolia	Flannel Weed	h,w	-		
Sida rhombifolia	Common Sida	h,w	-		
Mimosaceae					
Acacia aulacocarpa [n]	Hickory Wattle	t	-		
Myrtaceae					
Eucalyptus robusta [n]	Swamp Mahogany	T,(p)	-		
Lophostemon confertus	Brush Box	T,(p)	-		

Family/Species	Common name	Form	Declaration category (LPA)	Presence	Abundance
[n]					
Melaleuca linariifolia [n]	Flax-leafed Paperbark	t,(p)	-		
Melaleuca quinquenervia [n]	Paperbark Teatree	T,(p)	-		
Onagraceae					
Oenothera drummondii [n]	Beach Evening Primrose	s	-		
Oxalidaceae					
Oxalis corniculata	Creeping Oxalis	h,w	-		
Pandanaceae					
Pandanus tectorius [n]	Screw Pine	t,(p)	-		
Passifloraceae					
Passiflora cairica	Stinking Passion Vine	v,w	-		
Passiflora subpeltata	White Passion Vine	v,w	-		
Plantaginaceae					
Plantago lanceolata	Lamb's Tongue	h,w	-		
Plantago major	Great Plantain	h,w	-		
Poaceae					
Brachiaria decumbens	Signal Grass	g,w	-		
Brachiaria mutica	Para Grass	g,w	-		
Cenchrus ciliaris	Buffel Grass	g,w	-		
Cenchrus echinatus	Mossman River Grass	g,w	-		
Chloris gayana	Rhodes Grass	g,w	-		
Chloris truncata	Windmill Grass	g,w	-		
Chloris virgata	Feather-top Rhodes Grass	g,w	-		
Cynodon dactylon	Couch Grass	g,w	-		
Dichanthium aristatum	Angleton Grass	h,w	-		
Digitaria ciliaris	Summer Grass	g,w	-		
Eleusine indica	Crowsfoot Grass	g,w	-		
Hemarthria uncinata	Mat Grass	g,w	-		
Imperata cylindrica [n]	Blady Grass	g	-		
Melinis repens	Red Natal Grass	g,w	-		
Melinis minutifolia	Molasses Grass	g,w	-		
Poa annua	Winter Grass	g,w	-		
Panicum effusum	Hairy Panic	g	-		
Panicum maximum	Green Panic	g,w	-		
Paspalum dilatatum	Paspalum	g,w	-		
Phragmites australis [n]	Common reed	g	-		
Sorghum halepense [n]	Johnson grass	g,w	-		
Typha orientalis [n]	Typha	g	-		
Urochloa mosambicenis	Sabi Grass	g,w	-		
Portulacaceae					
Portulaca pilosa	Hairy pigweed	h,w	-		
Primulaceae					
Angallis arvensis	Scarlet Pimpernel	h,w	-		

Family/Species	Common name	Form	Declaration category (LPA)	Presence	Abundance
Proteaceae					
Banksia integrifolia [n]	Coastal Banksia	t (p)	-		
Sapindaceae					
Cardiospermum halicacabum	Balloon Vine	v,w	-		
Cupaniopsis anacardioides [n]	Tuckeroo	T	-		
Dodonaea triquetra	Hop Bush	s	-		
Solanaceae					
Solanum nigrum	Brazilian Nightshade	s,w	-		
Verbenaceae					
Lantana camara	Lantana	s,w	3		
Verbena bonariensis	Purple Top	h,w	-		
Verbena aristigera		h,w	-		
Vitex trifolia var trifolia [n]		s	-		