Plant Assessment Report
Lucinda & Port Gate Drains

Port of Brisbane Corporation

Final Report
March 2009

"IMPORTANT NOTE"

We have prepared this report for the sole purposes of [Port of Brisbane Corporation] ("Client") for the specific purpose only for which it is supplied. This report is strictly limited to the Purpose and the facts and matters stated in it and does not apply directly or indirectly and will not be used for any other application, purpose, use or matter.

In preparing this report we have made certain assumptions. We have assumed that all information and documents provided to us by the Client or as a result of a specific request or enquiry were complete, accurate and up-to-date. Where we have obtained information from a government register or database, we have assumed that the information is accurate. Where an assumption has been made, we have not made any independent investigations with respect to the matters the subject of that assumption. We are not aware of any reason why any of the assumptions are incorrect.

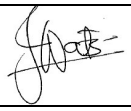
This report is presented without the assumption of a duty of care to any other person (other than the Client) ("Third Party"). The report may not contain sufficient information for the purposes of a Third Party or for other uses. Without the prior written consent of Conics (Brisbane) Pty Ltd:

a) this report may not be relied on by a Third Party; and

b) Conics (Brisbane) Pty Ltd will not be liable to a Third Party for any loss, damage, liability or claim arising out of or incidental to a Third Party publishing, using or relying on the facts, content, opinions or subject matter contained in this report.

If a Third Party uses or relies on the facts, content, opinions or subject matter contained in this report with or without the consent of Conics (Brisbane) Pty Ltd, Conics (Brisbane) Pty Ltd disclaims all risk and the Third Party assumes all risk and releases and indemnifies and agrees to keep indemnified (Conics Brisbane) Pty Ltd from any loss, damage, claim or liability arising directly or indirectly from the use of or reliance on this report.

In this note, a reference to loss and damage includes past and prospective economic loss, loss of profits, damage to property, injury to any person (including death) costs and expenses incurred in taking measures to prevent, mitigate or rectify any harm, loss of opportunity, legal costs, compensation, interest and any other direct, indirect, consequential or financial or other loss.

Quality Assurance Statement				
Revision No.	Author	Reviewer	Approved for Issue	
			Signature	Date
0	Liz Fisher Sarah Stone	Nicole Lechner	Justin Watson	30/03/09
1	Liz Fisher			6/04/09

CONTENTS

PO Box 1559, Fortitude Valley Qld 4006
Ph : (07) 3237 8899 Fx : (07) 3237 8833

FIGURES

TABLES

APPENDICES

EXECUTIVE SUMMARY

Conics (Brisbane) Pty Ltd (previously known as Natural Solutions) has been commissioned to undertake a plant survey of Lucinda and Port Gate Drains, Port of Brisbane. This is the 17th report for Lucinda Drain, and the fourth report for the Port Gate Drain.

The primary purpose of the survey and associated reporting is to monitor the occurrence and abundance of weed species listed by the Australian Quarantine and Inspection Service (AQIS). In addition to this, the survey also monitors the occurrence and abundance levels of species considered to be exotic including species declared under the *Land Protection (Stock Route Management) Regulations 2003* (LPR) and locally occurring weeds. Recommendations with respect to the ongoing management of plants along Lucinda and Port Gate Drain are also provided.

Summary of Findings

The following points summarise the findings of the March 2009 plant survey of Lucinda Drain:

- Sixty plant species were recorded. This consisted of 20 native / planted species and 40 exotic species;
- Out of the 40 exotic species none were AQIS listed weed species;
- Two exotic species were recorded for the first time during the current survey (none of which are declared under the LPR). These are Creeping Indigo (*Indigofera spicta*) and Millet Panic (*Panicum miliaceun*), which are common weeds to most disturbed areas;
- Occurrences of Broad-leaved Pepper Tree (*Schinus terebinthifolia*), Lantana (*Lantana camara*), Groundsel Bush (*Baccharis halimifolia*), Asparagus Fern (*Asparagus aethiopicus* cv. *Sprengeri*), Singapore Daisy (*Sphagneticola trilobata*) and Prickly Pear (*Opuntia* sp.) - all declared under the LPR - were recorded during the current March 2009 survey;
- New occurrences of immature Lantana (*Lantana camara*) were identified along the transect, suggesting that this classified species may be spreading;
- In comparison with previous surveys, no occurrences of Creeping Lantana (*Lantana montevidensis*), Annual Ragweed (*Ambrosia artemisiifolia*), Parthenium Weed (*Parthenium hysterophorus*), Fireweed (*Senecio madagacariensis*), Camphor Laurel (*Cinnamomum camphora*) and Chinese Elm (*Celtis sinensis*) were identified during the current survey;
- A variety of exotic grasses including Red Natal Grass (*Melinis repens*), Green Panic (*Megathyrsus maximus* var. *maximus*), and Rhodes Grass (*Chloris gayana*) were the dominant groups of exotic species along Lucinda Drain with periodic dominance of Siratro (*Macroptilium atropurpureum*), and Glycine (*Neonotonia wightii*) occurring in sections of the transect; and
- Exotic species diversity has slightly decreased in comparison to the survey results of November 2008, whereas a noticeable increase in abundance and coverage of exotic species has occurred.

The following points summarise the findings of the March 2009 plant survey of Port Gate Drain:

- Forty-five plant species were recorded. This consisted of 17 native / planted species and 28 exotic species;
- Out of the 28 exotic species none were AQIS listed weeds;
- Four new species (including two native) were recorded for the first time during the current survey (none of which are declared under the LPR). The two newly recorded exotic species are Creeping Indigo (*Indigofera spicta*) and Millet Panic (*Panicum miliaceum*), which are common weeds to most disturbed areas;
- Broad-leaf Pepper Tree (*Schinus terebinthifolia*), Groundsel Bush (*Baccharis halimifolia*) and Lantana (*Lantana camara*), declared under the LPR and recorded in previous surveys, were recorded again in the current survey (March 2009);
- In comparison to previous surveys, no occurrences of Annual Ragweed (*Ambrosia artemisiifolia*), Camphor Laurel (*Cinnamomum camphora*) and Creeping Lantana (*Lantana montevidensis*) were identified during the current survey;
- Exotic and native invasive grasses, in particular Red Natal Grass (*Melinis repens*), Green Panic (*Megathyrsus maximus* var. *maximus*), Feather-top Rhodes Grass (*Chloris virgata*) and Common Reed (*Phragmites australis*) were the dominant species along Port Gate Drain with periodic dominance of Siratro (*Macroptilium atropurpureum*) and Sesbania Pea (*Sesbania cannabina*) occurring in sections of the transect;
- The drain was dominated by exotic species; however the number of exotic species has decreased since the previous survey in November, 2008. The number of native species present along the drain remains the same; and
- Whilst exotic species diversity has decreased, the abundance and coverage has remained relatively consistent since the last survey.

Summary of Recommendations

Recommendations regarding the short and long-term management of exotic species within the Lucinda and Port Gate Drain areas are provided in this report. All maintenance activities are to continue as scheduled and should be extended to include exotic species removal, particularly those declared under the LPR. It is noted that some of the declared species may be located along banks and the method of removal should be sensitive to bank stability (e.g. stem injection or cut and paint).

Furthermore it is recommended that the long term management of the exotic species along Lucinda Drain is implemented, especially the recommendation to increase the native plant cover.

1.0 INTRODUCTION

Conics (Brisbane) Pty Ltd (previously known as Natural Solutions) has been commissioned by Port of Brisbane Corporation (PBC) to undertake a survey of AQIS listed weed species along Lucinda and Port Gate Drains, Port of Brisbane[1] and to produce associated reporting detailing the findings from this survey. In addition species considered to be exotic/invasive, including species declared under the *Land Protection (Stock Route Management) Regulations 2003* (LPR) and locally occurring weeds (from hereafter collectively referred to as exotic species) as well as invasive natives, have been included in this survey and the report.

The 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 AQIS listed pest incursions. The surveys represent a long-term monitoring program at the Port to survey for and identify AQIS listed weed species which may enter the country on containers or other materials shipped and unloaded at the Port of Brisbane facility.

The biannual plant survey for Lucinda Drain and Port Gate Drain is undertaken on a six monthly interval, during post-summer months (around February / March) and post-winter months (around October / November) of each year. The current survey was undertaken in March 2009 (i.e. post summer). This is the fourth report for the Port Gate Drain with the previous surveys for this drain occurring in November 2007, March 2008 and November 2008. This is the 17th report for Lucinda Drain with previous reports for this drain prepared from surveys undertaken in:

- February (summer) 2001;
- October – December (spring) 2001;
- February (summer) 2002;
- November (spring) 2002;
- March (autumn) 2003;
- November (spring) 2003;
- March (autumn) 2004;
- October (spring) 2004;
- April (autumn) 2005;
- November (spring) 2005;
- March (autumn) 2006;
- October (spring) 2006;
- March (autumn) 2007;
- November (spring) 2007;
- March (autumn) 2008; and
- November (spring) 2008.

[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.

1.1 SITE DESCRIPTION

The plant surveys focus on the Lucinda and Port Gate Drain areas at the Port of Brisbane. 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 (**Figure 1**). This drain also experiences tidal influence from the Boat Passage, where it discharges through the Lucinda Weir.

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. The east bank of the drain has an irregular maintenance program with some time between maintenance events.

Port Gate Drain is located in the south-west portion of the Port of Brisbane at Port Gate. The drain also provides drainage for stormwater run-off from the hardstand areas adjacent to the drain as well as partially receiving tidal waters from the mouth of the Brisbane River (**Figure 2**). The drain is separated into two portions by Howard Smith Drive and tidal flow is prevented from entering the part of the drain to the south of this road. Unlike Lucinda Drain, the area either side of Port Gate Drain (especially in the northern portion of the drain) consists of either concrete, gravel or compacted earth, which allows for only sparse vegetation growth with the majority of vegetation located in the southern portion of the drain.

Figure 1 - Site Map of Lucinda Drain

Port of Brisbane Corporation

Compiled	Compiled By	Project Manager	Reference	Datum	Scale @ A4
01-04-2008	AC	NL	J08015_Figure1_SiteMap	GDA94	1:10,000

0 150 300
Meters

natural solutions
environmental consultants
NATURAL SOLUTIONS ENVIRONMENTAL CONSULTANTS
BRISBANE - CAIRNS - TOOWOOMBA - SUNSHINE COAST
ABN 38 103 132 716
Ph: 07 3124 9400
Fax: 07 3124 9499
www.naturalsolutions.com.au

Figure 2 - Site Map of Port Gate Drain

Port of Brisbane Corporation

Compiled	Compiled By	Project Manager	Reference	Datum	Scale @ A4
01-04-2008	AC	NL	J08015_Figure2_SiteMap	GDA94	1:6,000

0 100 200
Meters

natural solutions
environmental consultants
NATURAL SOLUTIONS ENVIRONMENTAL CONSULTANTS
BRISBANE - CAIRNS - TOOWOOMBA - SUNSHINE COAST
ABN 38 103 132 716
Ph: 07 3124 9400
Fax: 07 3124 9499
www.naturalsolutions.com.au

2.0 METHODOLOGY

The plant surveys of Lucinda and Port Gate Drains were undertaken on the 11th of March, 2009. The survey for Port Gate Drain consisted of two transects running the entire length of the eastern and western banks and measuring approximately 2m wide. Transects were undertaken on foot using the random meander technique to ensure the majority of the drain (including the bed, bank and top of bank areas) was surveyed. The presence and abundance of any AQIS listed weeds as well as exotic or invasive species that occurred along the transects was recorded on data sheets (**Appendix A**).

The survey for Lucinda Drain consisted of one transect which ran along the entire length of the drain's eastern bank and measured approximately 2m in width. Transects were undertaken on foot using the random meander technique to ensure the majority of the drain (including the bed, bank and top of bank areas) was surveyed. A second complete transect was not undertaken on the western bank of Lucinda Drain as the waters edge along this portion of the drain is difficult to access in places. Therefore, an inspection of this bank was taken visually at regular intervals from the eastern bank of the drain, and the random meander technique was undertaken of the areas of the western bank that are readily accessible from Lucinda Drive. The presence and abundance of any AQIS listed weeds as well as exotic or invasive species that occurred along the eastern bank transect and discovered during visual inspections of the western bank was recorded on data sheets (**Appendix A**).

Any plant species from both survey areas that were unable to be immediately identified on the site, were collected for further detailed analysis, and appropriately labelled. Plant identifications were carried out by experienced ecologists using available flora and botanical reference material, where necessary.

2.1 AQIS TARGET WEED 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 B**.

3.0 RESULTS

3.1 LUCINDA DRAIN

Appendix C contains a list of plant species recorded during each survey from the March 2005 survey to date (March, 2009).

The following points summarise the findings of the March 2009 plant survey of Lucinda Drain:

- Sixty plant species were recorded. This consisted of 20 native / planted species and 40 exotic species;
- Out of the 40 exotic species none were AQIS listed weed species;
- Two exotic species were recorded for the first time during the current survey (none of which are declared under the LPR). These are Creeping Indigo (*Indigofera spicta*) and Millet Panic (*Panicum miliaceun*), which are common weeds to most disturbed areas;
- Occurrences of Broad-leaved Pepper Tree (*Schinus terebinthifolia*), Lantana (*Lantana camara*), Groundsel Bush (*Baccharis halimifolia*), Asparagus Fern (*Asparagus aethiopicus* cv. *Sprengeri*), Singapore Daisy (*Sphagneticola trilobata*) and Prickly Pear (*Opuntia* sp.) - all declared under the LPR - were recorded during the current March 2009 survey;
- New occurrences of immature Lantana (*Lantana camara*) were identified along the transect, suggesting that this classified species may be spreading;
- In comparison with previous surveys, no occurrences of Creeping Lantana (*Lantana montevidensis*), Annual Ragweed (*Ambrosia artemisiifolia*), Parthenium Weed (*Parthenium hysterophorus*), Fireweed (*Senecio madagacariensis*), Camphor Laurel (*Cinnamomum camphora*) and Chinese Elm (*Celtis sinensis*) were identified during the current survey;
- A variety of exotic grasses including Red Natal Grass (*Melinis repens*), Green Panic (*Megathyrsus maximus* var. *maximus*), and Rhodes Grass (*Chloris gayana*) were the dominant groups of exotic species along Lucinda Drain with periodic dominance of Siratro (*Macroptilium atropurpureum*), and Glycine (*Neonotonia wightii*) occurring in sections of the transect; and
- Exotic species diversity has slightly decreased in comparison to the survey results of November 2008, whereas a noticeable increase in abundance and coverage of exotic species has occurred.

3.2 PORT GATE DRAIN

Appendix D contains a list of plant species recorded during the current and previous survey for this drain. The following points summarise the findings of the March 2009 plant survey of Port Gate Drain:

- Forty-five plant species were recorded. This consisted of 17 native / planted species and 28 exotic species;
- Out of the 28 exotic species none were AQIS listed weeds;
- Four new species (including two native) were recorded for the first time during the current survey (none of which are declared under the LPR). The two newly recorded exotic species are Creeping Indigo (*Indigofera spicta*) and Millet Panic (*Panicum miliaceum*), which are common weeds to most disturbed areas;
- Broad-leaf Pepper Tree (*Schinus terebinthifolia*), Groundsel Bush (*Baccharis halimifolia*) and Lantana (*Lantana camara*), declared under the LPR and recorded in previous surveys, were recorded again in the current survey (March 2009);

- In comparison to previous surveys, no occurrences of Annual Ragweed (*Ambrosia artemisiifolia*), Camphor Laurel (*Cinnamomum camphora*) and Creeping Lantana (*Lantana montevidensis*) were identified during the current survey;
- Exotic and native invasive grasses, in particular Red Natal Grass (*Melinis repens*), Green Panic (*Megathyrsus maximus* var. *maximus*), Feather-top Rhodes Grass (*Chloris virgata*) and Common Reed (*Phragmites australis*) were the dominant species along Port Gate Drain with periodic dominance of Siratro (*Macroptilium atropurpureum*) and Sesbania Pea (*Sesbania cannabina*) occurring in sections of the transect;
- The drain was dominated by exotic species; however the number of exotic species has decreased since the previous survey in November, 2008. The number of native species present along the drain remains the same; and
- Whilst exotic species diversity has decreased, the abundance and coverage has remained relatively consistent since the last survey.

4.0 DISCUSSION

4.1 LUCINDA DRAIN

4.1.1 Weed Species Observed at Lucinda Drain

The 17th survey of plants occurring along Lucinda Drain has identified a total number of 60 plant species. Of these, 40 are considered exotic.

No AQIS listed weed species (**Appendix B**) were recorded during the March 2009 plant survey. However, six declared species listed under the LPR were recorded within Lucinda Drain during the survey. The species, their Class under LPR and abundance / indicative location are outlined in **Table 1**. **Appendix E** provides GPS co-ordinates of the location of these declared species recorded during the previous surveys (November 2007, March 2008 and November 2008) as well as during the current survey (March 2009).

TABLE 1 THE CLASS AND ABUNDANCE OF THE DECLARED WEED SPECIES (UNDER LPR) RECORDED DURING THE LUCINDA DRAIN SURVEY

CLASS	SPECIES	ABUNDANCE / LOCATION
2	Groundsel Bush (*Baccharis halimifolia*)	Low abundance along the western bank
	Prickly Pear (*Opuntia* sp.)	Low abundance along the eastern bank
3	Broad-leafed Peppertree (*Schinus terebinthifolia)*	Medium abundance mainly along the eastern bank.
	Asparagus Fern (*Asparagus aethiopicus* cv. *Sprengeri*)	Low abundance along the western bank.
	Singapore Daisy (*Sphagneticola trilobata*)	Low abundance along the eastern bank.
	Lantana (*Lantana camara)*	Medium abundance along the eastern bank.

A comparison between previous and current GPS co-ordinates, abundance levels and indicative locations suggests that many individual LPR Class 2 (i.e. Groundsel Bush and Prickly Pear) and Class 3 pest species (i.e. Broad-leafed Peppertree and Lantana) identified during the previous surveys were again noted in the current March 2009 survey. Furthermore, recruitment of Lantana was observed in the current survey with new occurrences of juvenile Lantana found along the eastern bank of Lucinda Drain.

The type of LPR declared species recorded has changed since the previous survey (November 2008), however overall the number of LPR declared species remains consistent in comparison to the previous November 2008 plant survey.

Under the LPR landholders are obliged to attempt to remove Class 2 species and encouraged to remove Class 3 species. Consideration should be given to remove the declared species, including individuals that have been planted in the past. It is noted that some of these declared species are located along the banks of the drain, and therefore the appropriate removal techniques need to be employed to ensure issues relating to bank stability do not arise. Fact sheets for declared pests identified on the site are provided in **Appendix F**.

Several species that are not listed under LPR, but are listed as environmental / noxious weeds by Brisbane City Council (BCC), were identified during the current survey and are provided in **Table 2**.

TABLE 2 BCC LISTED EXOTIC FLORA SPECIES RECORDED DURING THE LUCINDA SURVEY

SCIENTIFIC NAME	COMMON NAME	BCC CLASSIFICATION
Asparagus aethiopicus cv. *Sprengeri*	Asparagus Fern	C
Lantana spp.	Lantana (all species)	C
Megathyrsus maximus	Guinea Grass	C
Neonotonia wightii	Glycine	C
Schinus terebinthifolius	Broad-leaved Pepper Tree	C
Cenchrus echinatus	Mossman River Grass	R
Chloris gayana	Rhodes Grass	R
Ipomoea cairica	Coastal Morning Glory	R
Macroptilium atropurpureum	Siratro	R
Urochloa decumbens	Signal Grass	R

BCC environmental / noxious weeds must be managed according to their classification as follows:

- **Class C** (containment and reduction) – landholders are urged to remove the parent plant or source of infestation and if removal is not immediately possible, prevent seeding by using the appropriate control method for the species (often not effective with large trees) and schedule for the earliest possible removal. Any small surrounding infestation should also be removed. It is recommended that removal occurs from the top of a catchment downstream and from the outside of a large infestation inwards; and
- **Class R** (reduce population as part of routine maintenance) – landholders are urged to look out for infestations and plan for their removal during routine maintenance.

4.1.2 Comparisons Between Lucinda Drain Surveys

No AQIS listed species have ever been recorded during the surveys of Lucinda Drain. Therefore, this finding from the current survey is consistent with the previous survey results. However, variations in exotic species abundance and diversity levels have been evident in previous survey results.

Table 3 and **Figure 3** highlight the number of exotic species identified in the previous plant surveys of Lucinda Drain since the commencement of the monitoring program in February 2001.

TABLE 3 NUMBER OF EXOTIC SPECIES RECORDED PER SURVEY ALONG LUCINDA DRAIN

SURVEY	NUMBER OF EXOTIC SPECIES RECORDED
February 2001	37
October 2001	35
February 2002	27
November 2002	35
May 2003	27
November 2003	36
March 2004	27
October 2004	29
April 2005	33
November 2005	37
March 2006	35
October 2006	41
March 2007	24
November 2007	33
March 2008	46
November 2008	45
March 2009	**40**

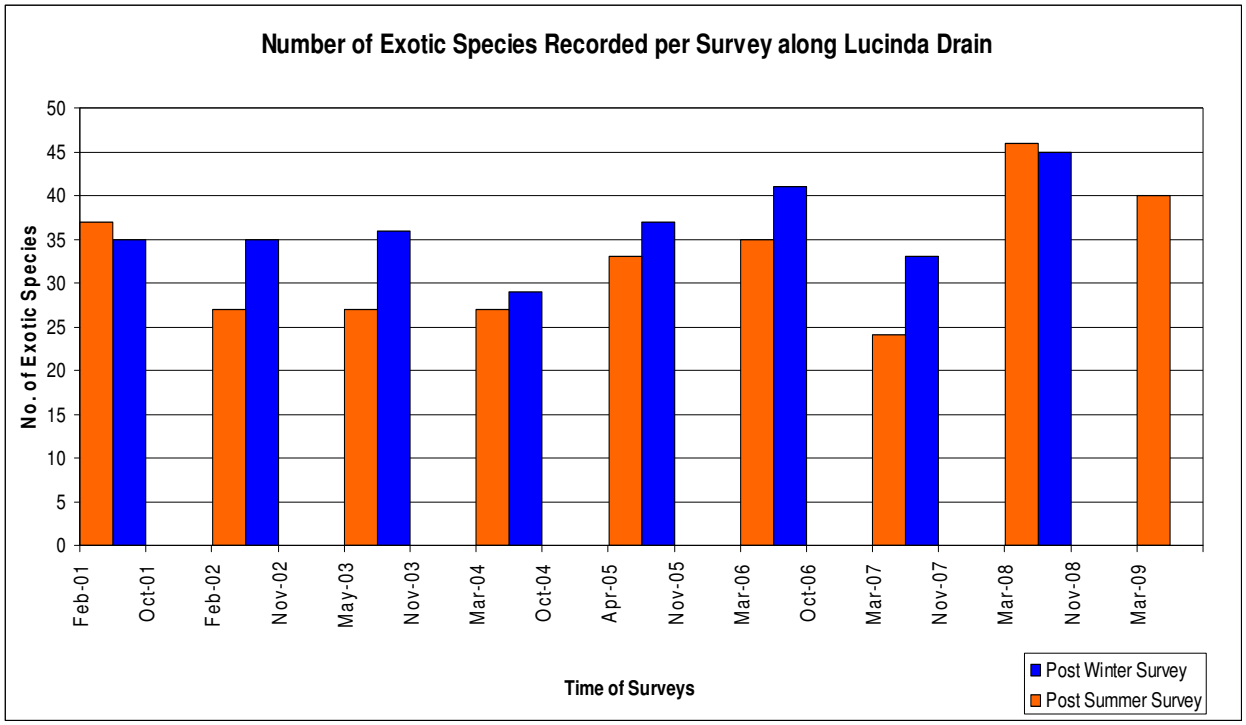


Figure 3 Number of Exotic Species Recorded per Survey along Lucinda Drain

Table 4 outlines the numbers of exotic species within each family that were recorded in the current March 2009 survey, and previous surveys.

TABLE 4 NUMBER OF EXOTIC SPECIES BY FAMILY FOR LUCINDA DRAIN

FAMILY	NOVEMBER 2007	MARCH 2008	NOVEMBER 2008	MARCH 2009
	NUMBER OF EXOTIC SPECIES PRESENT			
ASTERACEAE	**8**	**9**	**10**	**9**
POACEAE	5	8	7	7
FABACEAE	5	6	8	6
VERBENACEAE	4	3	4	3
PORTULACACEAE	1	1	2	2
SOLANACEAE	1	1	1	2
AMARANTHACEAE	0	2	1	1
ANACARDIACEAE	1	1	1	1
ASPARAGACEAE	0	1	0	1
CACTACEAE	1	0	1	1
CONVOLVULACEAE	1	1	2	1
EUPHORBIACEAE	0	1	0	1
LORANTHACEAE	0	0	0	1
MALVACEAE	2	2	1	1
ONAGRACEAE	0	1	2	1
OXALIDACEAE	1	1	1	1
PRIMULACEAE	1	1	1	1
AGAVACEAE	0	1	1	0
ASCLEPIADACEAE	0	0	0	0
BORAGINACEAE	0	0	0	0
BRASSICACEAE	0	1	1	0
CAESALPINIACEAE	0	0	0	0
COMMELINACEAE	1	2	0	0
CYPERACEAE	0	1	0	0
LAURACEAE	0	0	0	0
PASSIFLORACEAE	0	0	0	0
PLANTAGINACEAE	1	1	1	0
RUBIACEAE	0	1	0	0
SAPINDACEAE	0	0	0	0
ULMACEAE	0	0	0	0

Shading indicates dominant family group

From the data contained within **Tables 3** and **4** as well as **Figure 3** the following can be deduced:

- There has been a relatively consistent trend of the number of exotic species along Lucinda Drain in the post summer and post winter surveys. Generally surveys undertaken early in the calendar year (post summer) generally provides less exotic species (i.e. species diversity) than those conducted in the later half of the calendar year (post winter);
- Current survey results are consistent with this trend as the number of exotic species recorded in the March 2009 post summer survey (40 exotic species) are less than the number of exotic species recorded in the November 2008 post winter survey (45 exotic species). The number of exotic species for the current survey (March 2009 post summer) is still, however, a much higher recording than the previous post summer results (excluding March 2008) and some previous post winter results;
- Abundance and coverage has noticeably increased since the last survey (November 2008);
- Unlike the previous November 2008 plant survey, maintenance activities prior to the current March 2009 plant survey along Lucinda Drain did not occur recently thus resulting in an increase in the abundance and coverage of exotic species for the March 2009 plant survey. The recorded high abundance and coverage was most likely also assisted through relatively consistent rainfall during the months proceeding the March 2009 plant survey (see **Section 5.3**);
- As a result, resilient exotic species have been permitted to establish dominance in areas along Lucinda Drain thereby reducing species diversity though competition; and
- Dominance in Family type for the current March 2009 survey remained the same as the previous November 2008 survey with the greatest number of exotic species originating from the Asteraceae family.

4.2 PORT GATE DRAIN

4.2.1 Weed Species Observed at Port Gate Drain

The fourth survey of plants occurring along Port Gate Drain has identified a total number of 45 plant species. Of these, 28 are considered exotic.

No AQIS listed weed species were recorded during the March 2009 plant survey. However, three LPR declared species were recorded within Port Gate Drain during the survey. The species, their Class under LPR and abundance / indicative locations are outlined in **Table 5**. **Appendix E** provides GPS co-ordinates of the location of the declared species recorded during the previous surveys (November 2007, March 2008 and November 2008). No GPS co-ordinates were recorded for this site due to poor GPS signal reception, which would have resulted in poor accuracy. As such comparisons in locations of individual LPR declared species between the current and previous survey are based on field observations.

TABLE 5 THE CLASS AND ABUNDANCE OF THE DECLARED SPECIES (UNDER LPR) RECORDED DURING THE PORT GATE DRAIN SURVEY

CLASS	SPECIES	ABUNDANCE / LOCATION
2	Groundsel Bush (*Baccharis halimifolia)*	Several clusters recorded along the drain
3	Lantana (*Lantana camara)*	Low abundance recorded along the southern drain
	Broad-leaved Peppertree (*Schinus terebinthifolia*)	Several clusters recorded along the drain

A comparison between previous abundance levels and indicative locations suggests that occurrences of Lantana (*Lantana camara*), Broad-leaved Peppertree (*Schinus terebinthifolia*) and Groundsel Bush (*Baccharis halimifolia*) identified during the previous surveys were again noted in the recent March 2009 survey. Under the LPR landholders are obliged to attempt to remove Class 2 species and encouraged to remove Class 3 species. Therefore, consideration should be given to remove these declared species and control further establishment. Fact sheets for declared pests identified on the site are provided in **Appendix F**.

The number of LPR declared species has decreased since the previous survey. Camphor Laurel (*Cinnamomum camphora*) and Creeping Lantana (*Lantana montevidensis*), which were recorded in the previous survey (November 2008) were not recorded in the March 2009 plant survey. The decrease in the number of LPR declared exotic species may be attributed to a number of factors including reduced rainfall totals since the previous survey (**Section 4.3**) or lack of detection resulting in a false-absence record (i.e. a species is present, but not detected) during the current March 2009 plant survey. Maintenance activities along Port Gate Drain prior to the March 2009 plant survey may have also removed some of the declared species.

Several species that are not listed under LPR, but are listed as environmental / noxious weeds by Brisbane City Council (BCC), were identified during the current survey and are provided in **Table 6**.

TABLE 6 BCC LISTED EXOTIC FLORA SPECIES RECORDED DURING THE PORT GATE DRAIN SURVEY

SCIENTIFIC NAME	COMMON NAME	BCC CLASSIFICATION
Lantana spp.	Lantana (all species)	C
Neonotonia wightii	Glycine	C
Schinus terebinthifolius	Broad-leaved Pepper Tree	C
Cenchrus echinatus	Mossman River Grass	R
Ipomoea cairica	Coastal Morning Glory	R
Macroptilium atropurpureum	Siratro	R
Ricinus communis	Castor Oil Plant	C
Sorghum halepense	Johnson Grass	R
Chloris virgata	Feathertop Rhodes Grass	R
Chloris gayana	Rhodes Grass	R

BCC environmental / noxious weeds must be managed according to their classification as follows:

- **Class C** (containment and reduction) – landholders are urged to remove the parent plant or source of infestation and if removal is not immediately possible, prevent seeding by using the appropriate control method for the species (often not effective with large trees) and schedule for the earliest possible removal. Any small surrounding infestation should also be removed. It is recommended that removal occurs from the top of a catchment downstream and from the outside of a large infestation inwards; and
- **Class R** (reduce population as part of routine maintenance) – landholders are urged to look out for infestations and plan for their removal during routine maintenance.

4.2.2 Comparisons Between Port Gate Drain Surveys

No AQIS listed species have ever been recorded during a Port Gate Drain plant survey. These findings are consistent with the previous survey results. However, an analysis of the diversity and abundance of exotic vegetation recorded during the current survey, compared to the previous surveys, indicates that there is a variation between both exotic species type and the number of exotic species recorded.

Table 7 and **Figure 4** highlight the numbers of exotic species identified in the previous and current plant surveys of Port Gate Drain since the commencement of the monitoring program in November 2007.

TABLE 7 NUMBER OF EXOTIC SPECIES RECORDED PER SURVEY ALONG PORT GATE DRAIN

SURVEY	NUMBER OF EXOTIC SPECIES RECORDED
November 07	29
March 08	36
November 08	39
March 09	**28**

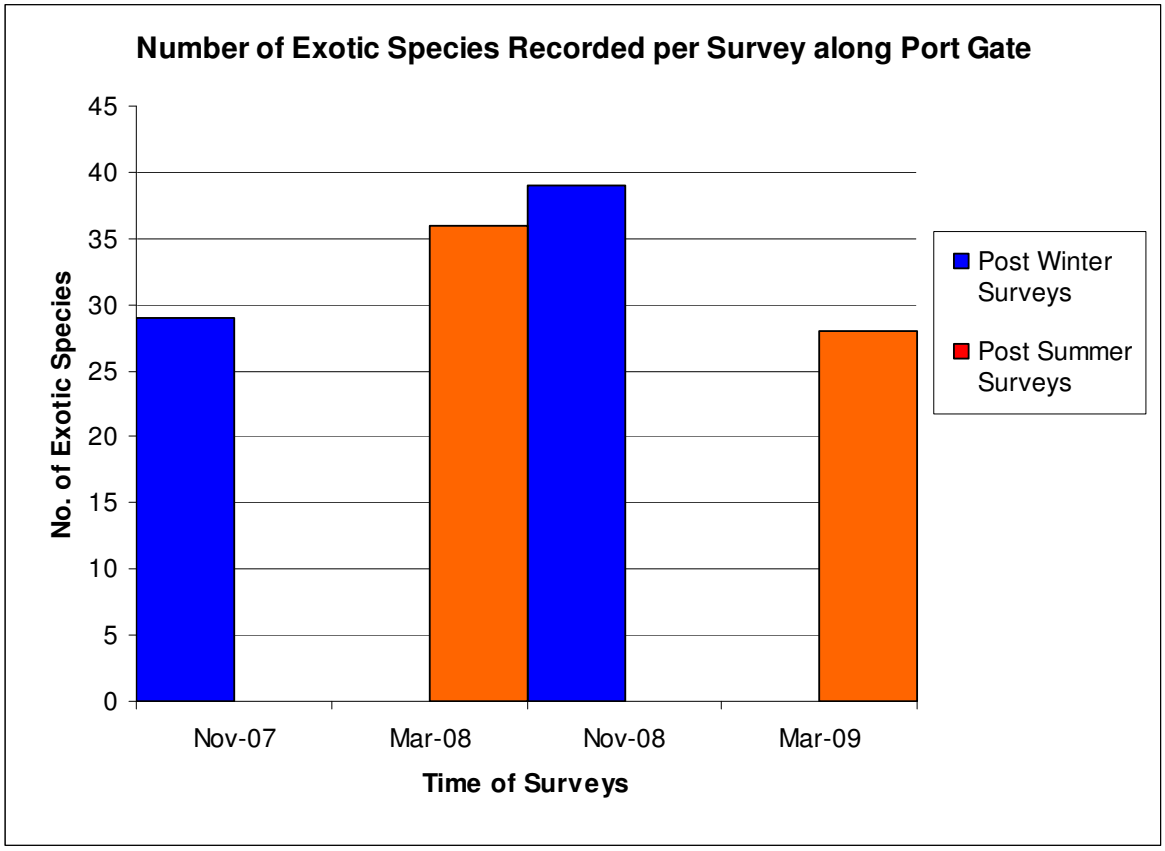


Figure 4 Number of Exotic Species Recorded per Survey along Port Gate Drain

Table 8 outlines the numbers of exotic species within each Family that were recorded in the current March 2009 survey, and previous surveys.

TABLE 8 NUMBER OF EXOTIC SPECIES BY FAMILY FOR PORT GATE DRAIN SURVEY

FAMILY	NOVEMBER 2007	MARCH 2008	NOVEMBER 2008	MARCH 2009
	NUMBER OF EXOTIC SPECIES			
FABACEAE	6	7	8	**8**
POACEAE	**7**	**9**	**9**	7
ASTERACEAE	5	5	**9**	4
VERBENACEAE	1	2	3	1
ANACARDIACEAE	0	0	1	1
ASCLEPIADACEAE	1	1	1	1
BORAGINACEAE	0	0	1	1
CONVOLVULACEAE	1	1	1	1
EUPHORBIACEAE	0	2	1	1
PLANTAGINACEAE	0	0	1	1
PORTULACACEAE	1	1	1	1
BRASSICACEAE	0	0	0	1
LAURACEAE	0	0	1	0
PRIMULACEAE	1	0	1	0
AMARANTHACEAE	0	1	0	0
CYPERACEAE	0	2	0	0
CHENOPODIACEAE	0	1	0	0
MYRTACEAE	1	1	0	0
PASSIFLORACEAE	1	1	0	0
PHYTOLACCACEAE	1	1	0	0
SOLANACEAE	1	1	0	0
AGAVACEAE	0	0	0	0
ASPARAGACEAE	0	0	0	0
CACTACEAE	0	0	0	0
CAESALPINIACEAE	0	0	0	0
COMMELINACEAE	0	0	0	0
MALVACEAE	0	0	0	0
OXALIDACEAE	0	0	0	0
PAPAVERACEAE	1	0	0	0
ULACEAE	0	0	0	0

Shading indicates dominant family group

From the data contained within **Tables 7** and **8** as well as **Figure 4** the following can be deduced:

- The number of exotic species recorded in the current Port Gate Drain post summer survey (28 in March 2009) is lower than the number of exotic species recorded in the previous post winter survey (39 in November 2008). The obvious trend occurring (as depicted in **Figure 4**) is generally consistent with that observed for Lucinda Drain. This trend indicates that the post summer surveys exhibit a lower species diversity than the post winter surveys;
- Unlike Lucinda Drain, the area either side of Port Gate Drain (especially in the northern portion of the drain) consists of concrete, gravel or compacted earth, which allows for only sparse vegetation growth. Therefore abundance and coverage remain fairly consistent between the surveys;
- Reduced exotic species diversity recorded during the current March 2009 plant survey may be attributed to the decrease in rainfall totals since the previous November 2008 plant survey (see **Section 5.3**); and
- The Fabaceae family is the dominant family for the current March 2009 plant survey. This dominance could be attributed to the overall harsh conditions that surround the drain and the ability of these resilient species to grow successfully in poor soil (i.e. due to their nitrogen fixing capabilities). An evident decrease in the number Poaceae and Asteraceae family species was recorded, in comparison to the previous plant survey (November 2008). This decrease may be a result of species transition and competition with resilient species, such as those within the Fabaceae family.

4.3 WEATHER CONDITIONS

The following graph (**Figure 5**) portrays the rainfall recorded at the Port of Brisbane as well as the long term rainfall and temperature averages (taken from the Brisbane Airport).

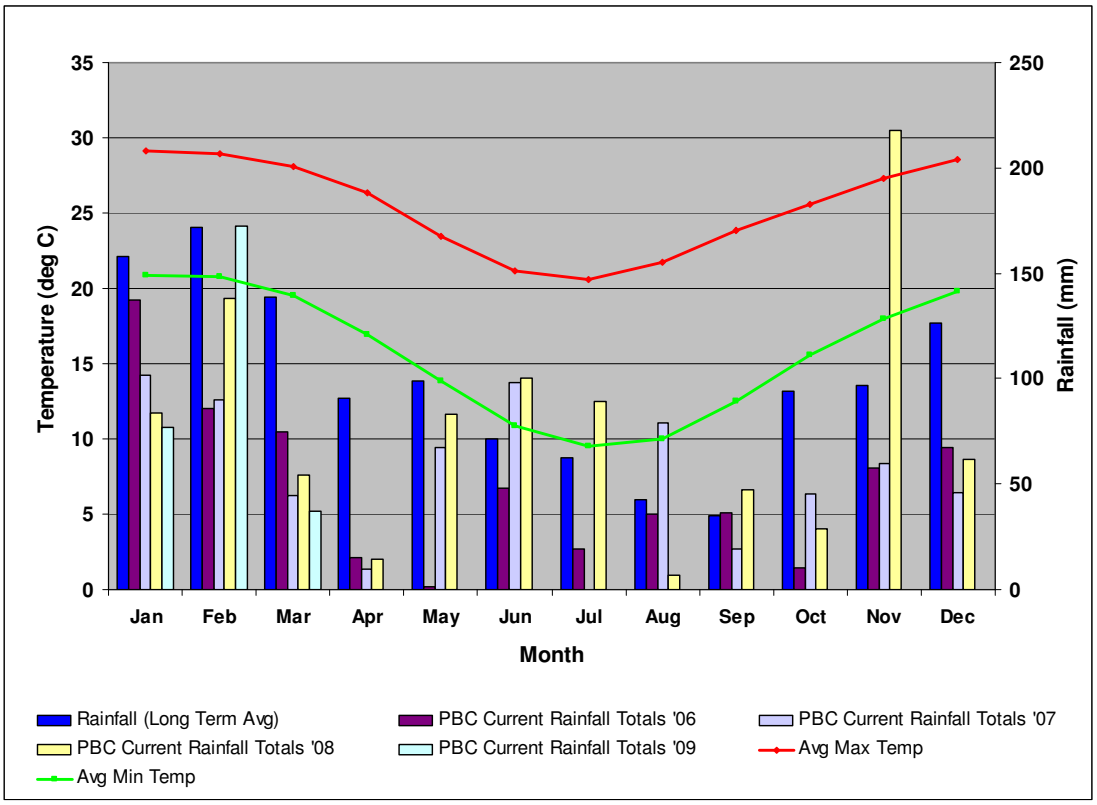


Figure 5 Long-term Climatic Averages compared with the Port of Brisbane Rainfall Data

The following can be derived from this data with respect to the plant growth around Lucinda and Port Gate Drains:

- The month of November received very high rainfall totals that were more than double the longer term average for that month (**Figure 5**). This combined with the warmer temperatures of spring may have produced favourable conditions that are usually conducive to plant germination and growth. Such weather conditions are considered to be the main contributing factor to the higher diversity of exotic species for the November 2008 plant survey at Lucinda and Port Gate Drains;
- Particularly for Lucinda Drain, the low abundance and coverage created by maintenance activities during the November 2008 plant survey may have allowed exotic species to take advantage of the low plant competition and germinate, creating a diverse community of exotic species for the November 2008 plant survey;
- Rainfall totals for the months proceeding the current March 2009 survey have either been below average (i.e. January 2009) or average (February 2009) (**Figure 5**), which may have attributed to the low species diversity along Lucinda and Port Gate Drains; and
- Particularly for Lucinda Drain the overgrown condition of the vegetation, as a result of the scheduling of maintenance activities, appears to have resulted in an increase in the abundance and coverage levels of exotic species during the current March 2009 plant survey. Due to competition from resilient pioneering species the establishment of a diverse exotic community has been hindered.

5.0 RECOMMENDATIONS

The following recommendations pertain to the presence of exotic species occurring along both Lucinda and Port Gate Drains. As no AQIS listed species have been detected recommendations addressing AQIS listed weed species have not been given.

5.1 LUCINDA DRAIN

Recommendations relating to the management of the banks of the Lucinda Drain and of the inflow of stormwater have been made in previous reports. In addition to these the following recommendations are made:

- Ensure all existing maintenance programs occur along the eastern bank as well as the western bank of the Lucinda Drain. This should include regular mowing and spot spraying/hand pulling as well as other weed removal techniques along the eastern bank;
- Ensure attempts are made to remove **all** declared species under the LPR (see **Appendix E** for GPS locations). As there may be bank stability issues associated with the removal of some of these species, it is recommended that a stem injection removal technique is employed. This method will ensure the tree (and associated root structure) remains in-situ for as long as possible, whilst simultaneously ensuring all seeding / propagule material is controlled. Also, the routine management of this area should include appropriate maintenance of these species;
- Continue programmed monitoring of the diversity and status of plant species along the banks of the Lucinda Drain through twice-yearly plant surveys.

The positive effects of native vegetation cover, in relation to potentially suppressing or decreasing exotic vegetation cover, have been observed along Lucinda Drain in previous surveys, especially in regards to species from the Casuarinaceae family. Such canopy species provide shading and dense matting from dropped needles produced conditions which potentially aid in decreasing the amount of understorey exotic vegetation. Thus the long-term management of exotic species present at Lucinda Drain should be incorporated into a program of integrated weed management, including actions such as:

- Exotic species suppression through mulching and shading via the planting of a native canopy and understorey;
- Planting density of native species should be responsive to still allowing access for the regular maintenance program; and
- Increasing the native understorey diversity to increase competition for resources.

5.2 PORT GATE DRAIN

The Port Gate Drain has different environmental conditions and disturbance regimes, which require a slightly different management approach. As some areas surrounding the drain are concreted and will remain in this disturbed and unnatural state, the establishment of native plants to shade out exotic vegetation is limited and only possible in certain locations such as the southern end of the drain. In this area it is still recommended that this long-term management approach is adopted and that these areas are successfully rehabilitated.

Therefore, for the remaining areas of this drain, other strategies will play an important role for the long-term management of this area. The following recommendations for these areas include:

- Implementation of weed control strategies such as mechanical removal through mowing. Chemical weed removal should be kept to a minimum and only used when necessary. It should only involve spot spraying using an environmentally sensitive herbicide during low flow periods;
- Ensure attempts are made to remove **all** declared species under the LPR are to be removed (see **Appendix E** for GPS locations);
- Continue scheduled maintenance programs along the drain; and
- Continue to monitor of the drain's weed status at regular intervals.

6.0 REFERENCES

Auld, B.A. & Medd, R.W. (1999). *Weeds an illustrated botanical guide to the Weeds of Australia*. Inkata Press, Sydney.

Blood. K., et al. (2001). *Environmental Weeds – A Field Guide for SE Australia*. C H Jewrram, Victoria.

Department of Natural Resources (DNR) (2000). *Weed Pocket Guide*. DNR. Brisbane.

Johns, L. (2006). *Field Guide to Common Saltmarsh Plants of Queensland*. DPI&F, Brisbane.

Kleinschmidt H., Holland, A. & Simpson, P. (1996). *Suburban Weeds* 3rd ed. DPI. Brisbane.

Lamp, L. & Collet, C. (1989). *Field Guide to Weeds in Australia*. Inkata Press, Sydney.

Navie, S., Markwell, B. Playford, J. & Adkins, S. (2002). *Suburban and Environmental Weeds* – An Identification and Information – South-east Queensland CD. University of Queensland.

Queensland Museum (2003). *Wild Plants of Greater Brisbane*. Queensland Museum, Brisbane, Australia.

Richardson, F.J., Richardson, R.G. & Shepherd, R.C.H. (2006). *Weeds of the South-East: An identification guide for Australia.* F.J. Richardson & R.G. Richardson, Victoria.

Sainty, G.R. & Jacobs, S.W.L. (1994). *Water plants in Australia* – A Field Guide. Sainty & Assoc, Darlinghurst.

Tothill, J.C. & Hacker, J.B. (1996). *The Grasses of Southern Queensland, Queensland*: Tropical Grassland Society of Aust Inc.

APPENDIX A Plant Survey Data Sheet

FAMILY / SPECIES	COMMON NAME	FORM	DECLARATION CATEGORY (LPA)	PRESENCE	ABUNDANCE
AIZOACEAE					
Carpobrotus glaucescens [n]	Pigface	c	-		
Sesuvium portulacastrum [n]	Sea Purslane	c	-		
AMARANTHACEAE					
Alternanthera pungens	Khaki Weed	c	-		
Amaranthus quitensis	South American Amaranthus	h	-		
Amaranthus viridis	Green Amaranthus	h	-		
Gomphrena celosoides	Gomphrena Weed	h	-		
ANACARDIACEAE					
Schinus terebinthifolia	Broad-leaved Peppertree	t	3		
ASCLEPIADACEAE					
Gomphocarpus physocarpus	Balloon Cotton Bush	s	-		
ASPARAGACEAE					
Asparagus aethiopicus cv. Sprengeri	Asparagus Fern	v	3		
ASTERACEAE					
Ageratum houstonianum	Blue Billy-Goat	h	-		
Ambrosia artemisiifolia	Annual Ragweed	h	2		
Baccharis halimifolia	Groundsel Bush	s	2		
Bidens pilosa	Cobblers Pegs	h	-		
Calyptocarpus vialis	Creeping Cinderella Weed	c	-		
Cirsium vulgare	Spear Thistle	h	-		
Conyza bonariensis	Flaxleaf Fleabane	h	-		
Conyza pusilla	Canadian Fleabane	h	-		
Crassocephalum crepidioides	Thickhead	h	-		
Emilia sonchifolia	Emilia	h	-		
Hypochaeris radicata	Flatweed	h	-		
Parthenium hysterophorus	Parthenium Weed	h	2		
Senecio sp (lautus)	Fireweed	h	-		
Sonchus oleraceus	Rough Sow Thistle	h	-		
Sphagneticola trilobata	Singapore Daisy	c	3		
Tagetes minuta	Stinking Roger	h	-		

FAMILY / SPECIES	COMMON NAME	FORM	DECLARATION CATEGORY (LPA)	PRESENCE	ABUNDANCE
AGAVACEAE					
Agave sp.	Agave	s	-		
AVICENNIACEAE					
Avicennia marina [n]	Grey Mangrove	t	-		
BORAGINACEAE					
Heliotropium amplexicaule	Blue Heliotrope	h	-		
CACTACEAE					
Opuntia sp.	Prickly Pear	s	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	-		
CONVOLVULACEAE					
Cuscuta campestris	Dodder	v	-		
Convolvulus arvensis	European Bindweed	c	-		
Ipomoea sp. (alba)		v	-		
Ipomoea cairica	Mile-a-Minute	v	-		
Ipomoea pes-caprae [n]	Goats Foot Convolvus	v	-		
CYPERACEAE					
Cyperus congestus	Clustered Flatsedge	a	-		
Cyperus eragrostis	Umbrella Sedge	a	-		
EUPHORBIACEAE					
Chamaesyce maculata	Caustic Weed	h	-		
Euphorbia hirta	Asthma Plant	h	-		
Euphorbia prostrata	Caustic Creeper	c			
Euphorbia sp.	Spurge	h	-		
Macaranga tanarius [n]	Macaranga	t	-		
Phyllanthus virgatus	Creeping Phyllanthus	h	-		
FABACEAE					
Crotalaria pallida	Rattle Pod	h	-		
Desmodium uncinatum	Silver-leafed Desmodium	v	-		
Macroptilium atropurpureum	Siratro	v	-		

FAMILY / SPECIES	COMMON NAME	FORM	DECLARATION CATEGORY (LPA)	PRESENCE	ABUNDANCE
Macroptilium lathyroides	Phasey Bean	s	-		
Medicago polymorpha	Burr Medic	c			
Medicago sativa	Lucerne	h	-		
Melilotus indicus	Sweet Melilotus	h	-		
Neonotonia wightii	Glycine	v	-		
Sesbania cannabina	Sesbania Pea	s	-		
Trifolium repens	White Clover	c	-		
LAURACEAE					
Cinnamomum camphora	Camphor Laurel	t	3		
MALVACEAE					
Hibiscus tiliaceus [n]	Cotton Tree	t	-		
Modiola caroliniana [n]	Red Flower Mallow	c	-		
Sida cornifolia	Flannel Weed	h	-		
Sida rhombifolia	Common Sida	h	-		
MIMOSACEAE					
Acacia aulacocarpa [n]	Hickory Wattle	t	-		
MYRTACEAE					
Eucalyptus robusta [n]	Swamp Mahogany	t	-		
Lophostemon confertus [n]	Brush Box	t	-		
Melaleuca linariifolia [n]	Flax-leafed Paperbark	t	-		
Melaleuca quinquenervia [n]	Paperbark Teatree	t	-		
ONAGRACEAE					
Oenothera drummondii [n]	Beach Evening Primrose	h	-		
OXALIDACEAE					
Oxalis corniculata	Creeping Oxalis	c	-		
PANDANACEAE					
Pandanus tectorius [n]	Screw Pine	t	-		
PASSIFLORACEAE					
Passiflora cairica	Stinking Passion Vine	v	-		
Passiflora subpeltata	White Passion Vine	v	-		
PLANTAGINACEAE					
Plantago lanceolata	Lamb's Tongue	h	-		
Plantago major	Great Plantain	h	-		

FAMILY / SPECIES	COMMON NAME	FORM	DECLARATION CATEGORY (LPA)	PRESENCE	ABUNDANCE
POACEAE					
Brachiaria decumbens	Signal Grass	g	-		
Brachiaria mutica	Para Grass	g	-		
Cenchrus ciliaris	Buffel Grass	g	-		
Cenchrus echinatus	Mossman River Grass	g	-		
Chloris gayana	Rhodes Grass	g	-		
Chloris truncata	Windmill Grass	g	-		
Chloris virgata	Feather-top Rhodes Grass	g	-		
Cynodon dactylon	Couch Grass	g	-		
Dichanthium aristatum	Angleton Grass	g	-		
Digitaria ciliaris	Summer Grass	g	-		
Eleusine indica	Crowsfoot Grass	g	-		
Hemarthria uncinata	Mat Grass	g	-		
Imperata cylindrica [n]	Blady Grass	g	-		
Melinis repens	Red Natal Grass	g	-		
Melinis minutifolia	Molasses Grass	g	-		
Poa annua	Winter Grass	g	-		
Panicum effusum	Hairy Panic	g	-		
Megathyrsus maximus var. maximus	Green Panic	g	-		
Paspalum dilatatum	Paspalum	g	-		
Phragmites australis [n]	Common reed	g	-		
Sorghum halepense [n]	Johnson grass	g	-		
Typha orientalis [n]	Typha	a	-		
Urochloa mosambicenis	Sabi Grass	g	-		
PORTULACACEAE					
Portulaca pilosa	Hairy pigweed	c	-		
PRIMULACEAE					
Angallis arvensis	Scarlet Pimpernel	c	-		
PROTEACEAE					
Banksia integrifolia [n]	Coastal Banksia	t	-		
SAPINDACEAE					
Cardiospermum halicacabum	Balloon Vine	v	-		
Cupaniopsis anacardioides [n]	Tuckeroo	t	-		
Dodonaea triquetra	Hop Bush	s	-		

FAMILY / SPECIES	COMMON NAME	FORM	DECLARATION CATEGORY (LPA)	PRESENCE	ABUNDANCE
SOLANACEAE					
Solanum nigrum	Brazilian Nightshade	h	-		
VERBENACEAE					
Lantana camara	Lantana	s	3		
Lantana montevidensis	Creeping Lantana	c	3		
Verbena bonariensis	Purple Top	h	-		
Verbena aristigera		h	-		
Vitex trifolia var *trifolia* [n]		s	-		

Form: t = tree, **s =** shrub, **h =** herb, **g =** grass, **c =** creeper, **v =** vine, **a =** aquatic
[n] = native

APPENDIX B AQIS Weed Target List

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, Cow-Itch	Weed of pastures and a wide range of dryland crops; 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.

FAMILY	GENUS SPECIES	AUTHOR	COMMON NAME	COMMENTS
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,
POACEAE	*Echinochloa glabrescens*	Munro ex Hook. f.	A barnyard grass	Rice, maize.
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.

FAMILY	GENUS SPECIES	AUTHOR	COMMON NAME	COMMENTS
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 C Survey Results for Lucinda Drain

SPECIES	COMMON NAME	LPR CLASS	MAR 09	NOV 08	MAR 08	NOV 07	MAR 07	OCT 06	MAR 06	NOV 05
AIZOACEAE										
Carpobrotus glaucescens	Pigface*	-	**X**	X	X	X	X	X	X	X
Sesuvium portulacastrum	Sea Purslane*	-	**X**	X	X	X	X	X	X	X
Tetragonia tetragonioides	New Zealand Spinach*	-	**X**	X	X	X				
AMARANTHACEAE										
Alternanthera pungens	Khaki Weed	-								
Amaranthus quitensis	South American Amaranthus	-								X
Amaranthus viridis	Green Amaranths	-	**X**		X					
ANACARDIACEAE										
Schinus terebinthifolius	Broad-leaved Peppertree	3	**X**	X	X	X	X	X	X	X
ASCLEPIADACEAE										
Gomphocarpus physocarpus	Balloon Cotton Bush	-						X	X	
ASPARAGACEAE										
Asparagus aethiopicus cv. Sprengeri	Asparagus Fern	3	**X**		X			X		
ASTERACEAE										
Ageratum houstonianum	Blue Billy-Goat	-			X			X		X
Ambrosia artemisiifolia	Annual Ragweed	2				X	X	X		X
Ambrosia tenuifolia	Lacy Ragweed	-				X				
Baccharis halimifolia	Groundsel Bush	2	**X**	X						
Bidens pilosa	Cobblers Pegs	-	**X**	X	X	X	X	X	X	X
Calyptocarpus vialis	Creeping Cinderella Weed	-	**X**	X			X			
Cirsium vulgare	Spear Thistle	-						X		X
Conyza bonariensis	Flax-leaf Fleabane	-	**X**	X	X				X	X
Conyza pusilla	Canadian Fleabane	-			X	X	X	X	X	X

SPECIES	COMMON NAME	LPR CLASS	MAR 09	NOV 08	MAR 08	NOV 07	MAR 07	OCT 06	MAR 06	NOV 05
Conyza sumatrensis	Tall Fleabane	-	**X**	X						
Crassocephalum crepidioides	Thickhead	-								X
Gamochaeta calviceps	Cudweed	-		X		X				
Emilia sonchifolia	Emilia	-	**X**	X				X	X	
Hypochaeris radicata	Flatweed	-	**X**	X	X	X	X	X	X	
Parthenium hysterophorus	Parthenium Weed	2							X	
Senecio madagacariensis	Fireweed	2		X						
Sonchus oleraceus	Rough Sow Thistle	-	**X**	X	X	X				X
Sphagneticola trilobata	Singapore Daisy	3	**X**		X			X	X	
Tagetes minuta	Stinking Roger	-			X	X		X	X	
Tridax procumbens	Tridax Daisy	-			X					
AGAVACEAE										
Agave sp.	Agave	-		X	X			X		
AVICENNIACEAE										
Avicennia marina	Grey Mangrove*	-	**X**	X	X	X	X	X	X	X
BORAGINACEAE										
Heliotropium amplexicaule	Blue Heliotrope	-						X	X	X
BRASSICACEAE										
Lipidium africanum	Common Peppercress	-		X	X					
CACTACEAE										
Opuntia sp	Prickly Pear	2	**X**	X		X	X			
CAMPANULACEAE										
Wahlenbergia graniticola	Granite Bluebell*	-		X						
CASUARINACEAE										
Casuarina equisetifolia	Coastal Sheoak*	-	**X**	X	X	X	X	X	X	X
Casuarina littoralis	Black Sheoak*	-	**X**	X	X	X	X	X	X	X

SPECIES	COMMON NAME	LPR CLASS	MAR 09	NOV 08	MAR 08	NOV 07	MAR 07	OCT 06	MAR 06	NOV 05
CAESALPINIACEAE										
Senna pendula var *glabrifolia*	Easter Cassia	-								
CHENOPODIACEAE										
Enchylaena tomentose	Ruby saltbush*	-	**X**							
Suaeda australis	Sea Blite*	-	**X**	X						
COMMELINACEAE										
Commelina benghalensis	-	-			X					
Commelina diffusa (C. cyanea)	Wandering Jew	-			X	X			X	
CONVOLVULACEAE										
Cuscuta campestris	Dodder	-						X		
Convolves arvensis	European Bindweed	-								
Ipomoea so (alba)	White Ipomoea	-								X
Ipomoea cairica	Coastal Morning Glory	-	**X**	X	X	X	X	X	X	X
Ipomoea indica	Purple Morning Glory	-		X						
Ipomoea pes-caprae	Goats Foot Convolvus*	-	**X**	X	X					X
CYPERACEAE										
Carex appressa	Tall Sedge*	-							X	
Cyperus congestus	Clustered Flatsedge	-								X
Cyperus eragrostis	Umbrella Sedge	-			X					X
Cyperus rotundus	Nut Grass	-							X	
Cyperus polystachyos	Bunchy Sedge	-							X	
EUPHORBIACEAE										
Chamaesyce maculata	Caustic Weed	-								
Euphorbia hirta	Asthma Plant	-								
Euphorbia prostrata	Caustic Creeper	-	**X**		X					X
Euphorbia sp.	Spurge	-								
Macaranga tanarius	Macaranga*	-	**X**	X	X	X	X	X	X	X
Phyllanthus virgatus	Creeping Phyllantus	-								

SPECIES	COMMON NAME	LPR CLASS	MAR 09	NOV 08	MAR 08	NOV 07	MAR 07	OCT 06	MAR 06	NOV 05
FABACEAE										
*Canavalia rosea**	Coastal Jack Bean*	-	**X**		X					
Crotalaria incana	Wooly Rattle Pod	-			X					
Crotalaria lanceolata	Lance-leaf Rattle Pod	-	**X**	X						
Crotalaria pallida	Rattle Pod	-				X	X	X	X	X
Desmodium uncinatum	Silver Leafed Desmodium	-						X		
Indigofera spicata	Creeping Indigo	-	**X**							
Macroptilium atropurpureum	Siratro	-	**X**	X	X	X	X	X	X	X
Macroptilium lathyroides	Phasey Bean	-	**X**					X		
Medicago lupulina	Black Medic	-		X		X		X		
Medicago sativa	Lucerne	-							X	X
Melilotus albus	Bokhara	-		X		X				
Melilotus indicus	Sweet Melilotus	-		X				X		X
Neonotonia wightii	Glycine	-	**X**		X	X	X	X		X
Sesbania cannabina	Sesbania Pea*	-	**X**	X	X				X	X
Stylosanthes hamata	Verano Stylo	-	**X**	X	X					
Trifolium repens	Clover	-		X	X		X	X	X	
*Vigna marina**	Yellow Beach Bean*	-							X	
LAURACEAE										
Cinnamomum camphora	Camphor Laurel	3						X		
LORANTHACEAE										
Amyema sp.	A Mistletoe	-	**X**							
MALVACEAE										
Hibiscus tiliaceus	Cotton Tree*	-	**X**	X	X	X	X		X	X
Sida cornifolia	Flannel Weed	-	**X**	X	X	X	X		X	X
Sida rhombifolia	Common Sida	-			X	X			X	
MIMOSACEAE										
Acacia aulacocarpa	Hickory Wattle*	-					X		X	X
Acacia leiocalyx	Curracabah*	-				X				

SPECIES	COMMON NAME	LPR CLASS	MAR 09	NOV 08	MAR 08	NOV 07	MAR 07	OCT 06	MAR 06	NOV 05
MYRTACEAE										
Eucalyptus robusta	Swamp Mahogany*	-					X	X	X	X
Lophostemon confertus	Brush Box*	-	**X**	X	X	X	X	X	X	X
Melaleuca linariifolia	Flax-leafed Paperbark*	-	**X**	X	X	X	X	X	X	X
Melaleuca quinquenervia	Paperbark Teatree*	-	**X**	X	X	X	X	X	X	X
Callistemon viminalis	Weeping Bottlebrush*	-				X		X		X
ONAGRACEAE										
Oenothera drummondii subsp. drummondii	Beach Primrose	-	**X**	X	X	X	X	X	X	X
Oenothera laciniata	Cut-leaf Evening Primrose	-		X						
OXALIDACEAE										
Oxalis corniculata	Creeping Oxalis	-	**X**	X	X	X				
PANDANACEAE										
*Pandanus tectorius**	Screw Pine*	-	**X**	X	X	X	X	X	X	X
PASSIFLORACEAE										
Passiflora cairica	Stinking Passion Vine	-						X		
Passiflora subpeltata	White Passion Flower	-								X
PLANTAGINACEAE										
Plantago lanceolata	Lamb's Tongue	-		X	X	X				
POACEAE										
Brachiaria decumbens	Signal Grass	-	**X**		X		X		X	
Brachiaria mutica	Para Grass	-			X		X			
Cenchrus ciliaris	Buffel Grass	-								
Cenchrus echinatus	Mossman River Grass	-	**X**	X	X			X	X	X
Chloris gayana	Rhodes Grass	-	**X**	X	X	X	X	X	X	X
Chloris truncata	Windmill Grass	-				X			X	
Chloris virgata	Feather-top Rhodes Grass	-							X	X
Cynodon dactylon	Couch Grass	-	**X**	X	X	X	X	X	X	X

SPECIES	COMMON NAME	LPR CLASS	MAR 09	NOV 08	MAR 08	NOV 07	MAR 07	OCT 06	MAR 06	NOV 05
Dichanthium aristatum	Angleton Grass	-								
Digitaria ciliaris	Summer Grass	-								
Echinochloa telmatopila	Swamp Barnyard Grass	-			X					
Eleusine indica	Crowsfoot Grass	-								
Eragrostis tenuifolia	Elastic Grass	-		X						
Hemarthria uncinata	Mat Grass	-								
*Imperata cylindrical**	Blady Grass*	-			X	X	X	X	X	
Melinis repens	Red Natal Grass	-	**X**	X	X	X	X	X	X	X
Melinis minutiflora	Molasses Grass	-						X		
Poa annua	Winter Grass	-								
Panicum effusum	Hairy Panic	-								X
Panicum miliaceum	Millet Panic	-	**X**							
Megathyrsus maximus var. maximus	Green Panic	-	**X**	X	X	X	X	X	X	X
Paspalum dilatatum	Paspalum	-							X	
*Phragmites australis**	Common Reed*	-	**X**	X	X	X	X	X		X
Sorghum halepense	Johnson Grass	-						X	X	X
Sporobolus elongates	Slender Rat's Tail	-		X						
*Typha orientalis**	Cumbungi / Typha*	-						X	X	X
Urochloa mosambicensis	Sabi Grass	-								X
PORTULACACEAE										
Portulaca oleraceae	Pigweed	-	**X**	X						
Portulaca pilosa	Hairy Pigweed	-	**X**	X	X	X	X	X		X
PRIMULACEAE										
Anagallis arvensis	Scarlet Pimpernel	-	**X**	X	X	X		X		X
PROTEACEAE										
*Banksia integrifolia**	Coastal Banksia*	-	**X**	X	X	X	X	X	X	X
RUBIACEAE										
Richardia brasiliensis	Mexican Clover	-			X					

SPECIES	COMMON NAME	LPR CLASS	MAR 09	NOV 08	MAR 08	NOV 07	MAR 07	OCT 06	MAR 06	NOV 05
SAPINDACEAE										
Cardiospermum halicacabum	Balloon Vine	-								
*Cupaniopsis anacardioides**	Tuckeroo*	-	**X**	X	X	X	X	X	X	X
Dodonaea triquetra	Hop Bush	-								
SOLANACEAE										
Solanum seaforthianum	Brazilian Nightshade	-	**X**					X		X
Solanum nigrum	Blackberry Nightshade	-	**X**	X	X	X	X			
ULMACEAE										
Celtis sinensis	Chinese Celtis	3					X		X	
VERBENACEAE										
Lantana camara	Lantana	3	**X**	X	X	X	X	X	X	X
Lantana montevidensis	Creeping Lantana	3		X		X		X	X	
Verbena bonariensis	Purple Top	-	**X**	X	X	X	X	X		X
Verbena aristigera	Mayne's Pest	-	**X**	X	X	X		X		
Vitex trifolia var *trifolia**	Coastal Vitex*	-								X

Notes: -

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

APPENDIX D Port Gate Drain Survey Results

SPECIES	COMMON NAME	LPR CLASS	MAR 09	NOV 08	MAR 08	NOV 07
AIZOACEAE						
*Carpobrotus glaucescens**	Pigface*	-	**X**	X	X	X
*Sesuvium portulacastrum**	Sea Purslane*	-	**X**	X	X	X
AMARANTHACEAE						
Amaranthus viridis	Green Amaranthus	-			X	
APOCYNACEAE						
*Parsonsia straminea**	Monkey Rope Vine*	-		X	X	
ASCLEPIADACEAE						
Gomphocarpus physocarpus	Balloon Cotton Bush	-	**X**	X	X	X
ASTERACEAE						
Ambrosia artemisiifolia	Annual Ragweed	2				X
Aster subulatus	Wild Aster	-		X	X	
Baccharis halimifolia	Groundsel Bush	2	**X**	X	X	X
Bidens pilosa	Cobblers Pegs	-	**X**	X		X
Cirsium vulgare	Spear Thistle	-		X		
Conyza bonariensis	Flaxleaf Fleabane	-	**X**	X	X	
Conyza canadensis	Canadian Fleabane	-			X	X
Conyza sumatrensis	Tall Fleabane	-		X		
Crassocephalum crepidoides	Thickhead	-			X	
Emilia sonchifolia	Emilia	-	**X**	X		
Gomphrena celosoides	Gomphrena Weed	-		X		
Sonchus oleraceus	Rough Sow Thistle	-		X		
Tagetes minuta	Stinking Roger	-				X
ANACARDIACEAE						
Schinus terebinthifolia	Broad-leaved Peppertree	3	**X**	X		
BORAGINACEAE						
Heliotropium amplexicaule	Blue Heliotrope	-	**X**	X		
BRASSICACEAE						
Lipidium africanum	Common Peppercress	-	**X**	X		
CASUARINACEAE						
*Casuarina equisetifolia**	Coastal Sheoak*	-		X	X	
*Casuarina littoralis**	Black Sheoak*	-		X	X	
CHENOPODIACEAE						
*Atriplex muelleri**	Annual Saltbush*	-	**X**	X	X	X

SPECIES	COMMON NAME	LPR CLASS	MAR 09	NOV 08	MAR 08	NOV 07
*Dysphania littoralis**	Red Crumbweed*	-	X	X	X	
*Enchylaena tomentose**	Ruby saltbush*	-	X		X	
*Sarcocrnia quinqueflora**	Bead Weed*	-	X	X	X	
Suaeda australis	Sea Blite*	-	X	X	X	
CONVOLVULACEAE						
Ipomoea cairica	Coastal Morning Glory	-	X	X		
CYPERACEAE						
Cyperus eragrostis	Umbrella Sedge	-			X	
Cyperus involucratus	-	-			X	
Cyperus polystachyos	Bunchy Sedge*	-	X	X		
Fimbristylis dichotoma	Fringe Rush*	-	X	X		
Isolepis cernua	Nodding Club Rush*	-	X	X	X	
EUPHORBIACEAE						
Euphorbia hirta	Asthma Plant	-			X	
Ricinus communis	Castor Oil Plant	-	X	X	X	
FABACEAE						
Centaurium erythraea	Common Centaury	-				X
Crotaria incana	Wooly Rattle Pod	-			X	
Crotalaria lanceolata	Lance-leaf Rattle Pod	-	X	X		
Crotalaria pallida	Rattle Pod	-				X
Cullen *tenax*	Emu-foot*	-	X			
Indigofera hirsute	Hairy Indigo	-	X	X	X	
Indigofera spicata	Creeping Indigo	-	X			
Macroptilium atropurpureum	Siratro	-	X	X	X	X
Macroptilium lathyroides	Phasey Bean	-	X	X	X	X
Melilotus indicus	Sweet Melilotus	-		X		
Medicago polymorpha	Burr Medic	-		X	X	X
Medicago sativa subsp. Sativa	Lucerne	-	X	X	X	
Neonotonia wightii	Glycine	-	X			X
Sesbania cannabina	Sesbania Pea*	-	X	X	X	
Stylosanthes hamata	Verano Stylo	-	X			
LAURACEAE						
Cinnamomum camphora	Camphor Laurel	3		X		
MYRTACEAE						
Psidium guajava	Yellow Guava	-			X	X

SPECIES	COMMON NAME	LPR CLASS	MAR 09	NOV 08	MAR 08	NOV 07
PAPAVERACEAE						
Argemone ochroleuca	Mexican Poppy	-				X
PASSIFLORACEAE						
Passiflora foetida	Stinking Passion Flower	-			X	X
PHYTOLACCACEAE						
Phytolacca octandra	Ink Weed	-			X	X
PLANTAGINACEAE						
Plantago lanceolata	Lamb's Tongue	-	**X**	X		X
POACEAE						
Arundo donax	Giant Reed	-			X	
Brachiaria decumbens	Signal Grass	-		X		
Brachiaria mutica	Para Grass	-			X	X
Cenchrus echinatus	Mossman River Grass	-	**X**	X	X	
Chloris gayana	Rhodes Grass	-	**X**	X	X	X
Chloris truncata	Windmill Grass	-				X
Chloris virgata	Feather-top Rhodes Grass	-	**X**	X	X	X
*Cymbopogan refractus**	Barbed Wire Grass*	-	**X**	X	X	
Cynodon dactylon	Couch Grass	-	**X**		X	X
Dichanthium sericeum	Queensland Bluegrass*	-	**X**			
Eragrostis tenuifolia	Elastic Grass	-		X		
Melinis repens	Red Natal Grass	-	**X**	X	X	X
Megathyrsus maximus var. maximus	Green Panic	-		X	X	X
Paspalum dilatatum	Paspalum	-				
Paspalum urvillei	-	-	**X**	X		
*Phragmites australis**	Common Reed*	-	**X**	X	X	
Setaria sphacelata	Pigeon Grass	-			X	
Sorghum halepense	Johnson Grass	-	**X**	X		
*Sporobolus virginicus**	Salt Cooch*	-	**X**	X	X	X
Typha orientalis	Cumbungi / Typha*	-	**X**	X		X
PORTULACACEAE						
Portulaca pilosa	Hairy Pigweed	-	**X**	X	X	X
PRIMULACEAE						
Anagallis arvensis	Scarlet Pimpernel	-		X		X
SOLANACEAE						
Solanum nigrum	Blackberry Nightshade	-			X	X

SPECIES	COMMON NAME	LPR CLASS	MAR 09	NOV 08	MAR 08	NOV 07
VERBENACEAE						
Lantana camara	Lantana	3	**X**	X	X	X
Lantana montevidensis	Creeping Lantana	3		X	X	
Verbena bonariensis	Purple Top	-		X		

Notes: -

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

APPENDIX E Location of Declared Species

The following table lists the GPS location of the declared species listed in Schedule 2 of the *Land Protection (Pest and Stock Route Management) Regulations 2003* that were recorded during the previous and current survey for Lucinda and Port Gate Drains. GPS readings recorded during the previous survey that are similar to the current survey reading are in bold.

Lucinda Drain

CLASS	SPECIES	GPS LOCATION (LATITUDE AND LONGITUDE)			
		NOVEMBER 2007	MARCH 2008	NOVEMBER 2008	MARCH 2009
1	No species recorded	-	-	-	-
2	Prickly Pear – *Opuntia* sp.	-	-	**27.3898, 153.1741**	**27.3898, 153.1740**
	Groundsel Bush – *Baccharis halimifolia*	-	-	27.3814, 153.1787	27.4025, 153.1607
3	Broad-leafed Peppertree - *Schinus terebinthifolia*	**27.3922, 153.1706** **27.3921, 153.1714** **27.3918, 153.1718** **27.3910, 153.1729** **27.3833, 153.1778** **27.3801, 153.1804** 27.3921, 153.1710 27.3910, 153.1732	No points taken	**27.3922, 153.1706** **27.3919, 153.1714** **27.3917, 153.1719** **27.3912, 153.1729** **27.3833, 153.1778** **27.3802, 153.1803** 27.3925, 153.1688 27.3914, 153.1724	**27.3922, 153.1706** **27.3920, 153.1713** **27.3918, 153.1717** **27.3911, 153.1729** **27.3833, 153.1777** - 27.3820, 153.1786 27.4028, 153.1607
	Lantana – *Lantana camara*	**27.3921, 153.1713** **27.3827, 153.1782** **27.3819, 153.1788** - 27.3833, 153.1778	**27.3921, 153.171** **27.3827, 153.1782** - -	**27.3919, 153.1711** **-** **27.3818, 153.1788** **27.3923, 153.1703** 27.3797, 153.1809	**27.3922, 153.1709** **27.3827, 153.1780** **27.3820, 153.1786** **27.3923, 153.1703** 27.3816, 153.1789
	Singapore Daisy – *Sphagneticola trilobata*	-	27.3811, 153.1794	-	**27.3830 E153.1779**
	Asparagus Fern – *Asparagus aethiopicus* cv. *Sprengi*	-	-	-	**-**

Bold - GPS readings recorded during the previous survey that are similar to the current survey reading.

Port Gate Drain

CLASS	SPECIES	GPS LOCATION (LATITUDE AND LONGITUDE)			
		NOVEMBER 2007	MARCH 2008	NOVEMBER 2008	MARCH 2009
1	No species recorded	-	-	-	No points taken
2	Groundsel Bush – Baccharis halimifolia	-	27.4099, 153.1623 27.4086, 153.1616	27.4097, 153.1619 27.41, 153.1624	No points taken
3	Broad-leafed Pepper Tree - *Schinus terebinthifolia*	-	-	27.408, 153.1616 27.409, 153.1617 27.4094, 153.1617 27.4097, 153.1619 27.4098, 153.1621 27.41, 153.1624 27.4104, 153.1629 27.4105, 153.163	No points taken
	Camphor Laurel – *Cinnamomum camphora*	-	-	27.409, 153.1617	No points taken
	Lantana – *Lantana camara*	**27.4089, 153.1617**	**27.409, 153.1617**	**27.409, 153.1617**	No points taken

Bold - GPS readings recorded during the previous survey that are similar to the current survey reading.

APPENDIX F Declared Weed Fact Sheets