Coastal Wetlands *of* South East Queensland

Mapping and survey

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1. INTRODUCTION

1.1 Introduction

The aim of this project was to undertake a survey of the coastal wetlands vegetation communities and to produce maps of the vegetation communities subject to coastal influence for south-east Queensland from the boundary of Noosa Shire and Maroochy Shire in the north to the Queensland-New South Wales border in the south. The area subject to coastal influences has been defined for the purposes of this study as the area which falls below the 2.5m contour. The mapping of these communities has been undertaken at a scale of 1:25,000, with a minimum polygon size of 1.2 hectares.

The study area covers approximately 200km of coastline and includes the areas below 2.5m elevation occurring in the Local Government Authority (LGA) areas of: Shire of Maroochy, City of Caloundra, Shire of Caboolture, Shire of Pine Rivers, City of Redcliffe, City of Brisbane, City of Logan, Shire of Redland and the City of Gold Coast. The LGA boundaries as used for data analysis purposes are shown in figure 15. These boundaries were extended past the coastline to deal with inconsistancies created by different mapping bases.

A seamless digital coverage of existing coastal wetlands vegetation for this area has been produced. The vegetation coverage has been derived through photo interpretation of colour aerial photographsat scales ranging from 1:18000 to 1:40000. These have been overlaid onto corrected 1:25,000 digital base maps supplied by the Department of Natural Resources. Extensive field work involving both traverses and site sampling has been used to ground truth the coverage. The vegetation mapping is underpinned by a total of 342 secondary and tertiary level sites based on 0.05 hectare plots (50x10m) using the standard Queensland Herbarium methodology (Neldner et al 1998). Over 800 quaternary sites for ground truthing purposes were also collected during the project. The sites and traverses were distributed as evenly as practicable across the landscape, considering time constraints, accessibility and the fragmented distribution of the remnant vegetation. A total of 66 map units are presently defined and mapped for the study area comprising 14 mangrove, 1 claypan, 1 samphire, 4 grassland, 9 swamp oak, 11 sedgeland, 14 paperbark, 1 heath, 5 water, and 6 Bribie Island non-wetland map units. All plant names used in this report and supplied with the CORVEG data follow those listed in Henderson (1997), except where names have changed since this publication, in which case the most recent names from the Queensland Herbarium HERBRECS database are used.

Data are supplied giving the current extent of each of the units. These are based on the results of the current survey. For comparative purposes, current areas of mangroves based on 1995-1997 photography are compared with those mapped from 1973 photography by Dowling (1975, 1986). The line work of Dowling has been digitised so that comparisons can be made using Geographic Information Systems (GIS) between the 1974 and 1998 data. This line work is supplied as a layer in the current coverages.

A seamless digital coverage of vegetation map units represents the remnant native vegetation present in 1995-1997, which is the date the aerial photographs.

Botanical names used in this report are those in Henderson (1997) except were the name has been changed since then, in which case the updated name is used. Names used are those current at 30th October 1999.

1.2 Project scope

The aim of the project was to map those areas subject to or likely to be subject to coastal influence using selected criteria in a consistent and replicable manner rather than to produce a comprehensive map of all the remnant areas of the mapped vegetation types within the shires and cities covered by this study. This has resulted in some remnant areas, particularly areas of *Melaleuca quinquenervia*, which fall outside the scope of this study not being mapped. Remnant vegetation in this study was defined as vegetation where the structure of the woody vegetation was still intact, ie. there was more than 50% of the normal canopy cover of the community present, and the canopy height was at least 70% of the normal canopy height of the community. While the basic structure of the canopy of remnant vegetation was relatively intact, the condition of the ground and shrub layers and floristic composition of these layers could be significantly altered from the natural state.

The extent of the area which this project has surveyed and mapped is shown in figure 1. The relevant 1:25,000 map sheets with their name and number are shown in figure 2. These map sheets follow the standard Department of Natural resources (Sunmap) format except for the Wynnum map sheet which has been extended slightly to the south to take in a small area on the Capalaba map sheet to its south. The Sandgate and Woongoolba map sheets also include an inset to include the small areas of the study area on the map sheets to their west rather than produce another two map sheets with only a small amount of information on them.

Vegetation units mapped within the defined area are

- mangroves
- samphire
- claypan
- *Sporobolus virginicus* grassland associations
- *Casuarina glauca* associations
- sedgelands
- *Melaleuca quinquenervia* associations
- heathland

Vegetation units not included in the scope of this project but which may fall below the 2.5m contour include:

- littoral rainforests
- dunal headland communities
- remnant riverine communities
- coastal heathlands

All remnant vegetation types as defined above which occur below the 2.5m contour and which are contiguous with a waterway or drainage line under tidal influence are included. Where the vegetation types listed above are contiguous above the 2.5m level they are continued until their furthest extent or until an artificial barrier is reached whichever is the sooner. Artificial barriers include major public roads and/or highways, clearing, residential development and pine plantations. Areas that fall below 2.5m but which are not contiguous or which fall below 2.5m and are dissected by roadways are not mapped where they are not contiguous with a waterway or drainage line under tidal influence. In particular some areas in the floodplain of the Maroochy River (which is predominantly below 2.5m) fall within this category. This criteria has been used and strictly adhered to so as to enable consistency in mapping for all areas. A copy of the limits of the mapping is included in the GIS coverage. In general this falls below the 2.5m contour but in parts extends above for the reasons of contiguity as noted earlier. The total area of vegetation units mapped under these criteria by this study is 37,065ha.

The coastal heathlands have been mapped where they are intermixed or are contiguous with the target mapping units. The original scope of the project proposal was to include these areas, however due to insufficient funding it was not possible to extend the scope of the survey to these areas. As it is likely that these areas will be mapped in detail in the future, they have been identified on the maps so that they can be readily accessed in any future mapping. However no detailed site information was collected and no attempt has been made to further subdivide this group into its component floristic and structural map units. In addition map units are provided to cover the whole of Bribie Island as these were specifically requested for planning purposes during the course of the study even though they are not considered to be wetland units under the terms of this study. No floristic lists, descriptions or data are provided for these units and they have been excluded from any data analysis. They are referred to as Bribie Island non-wetland communities (Map Units 11) in the mapping and on the legend.

Figure 1 2.5m Contour - Extent of Study Area

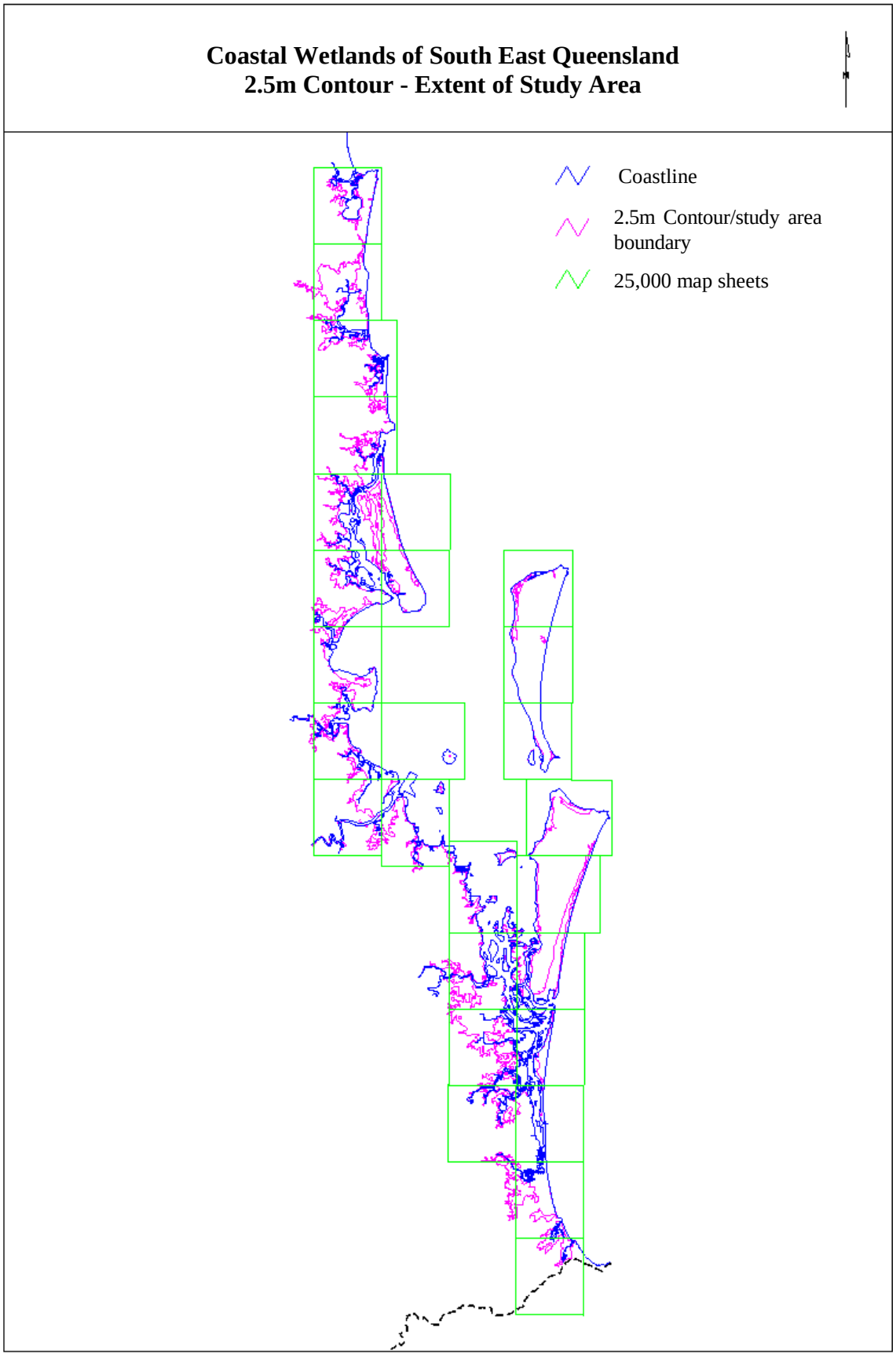
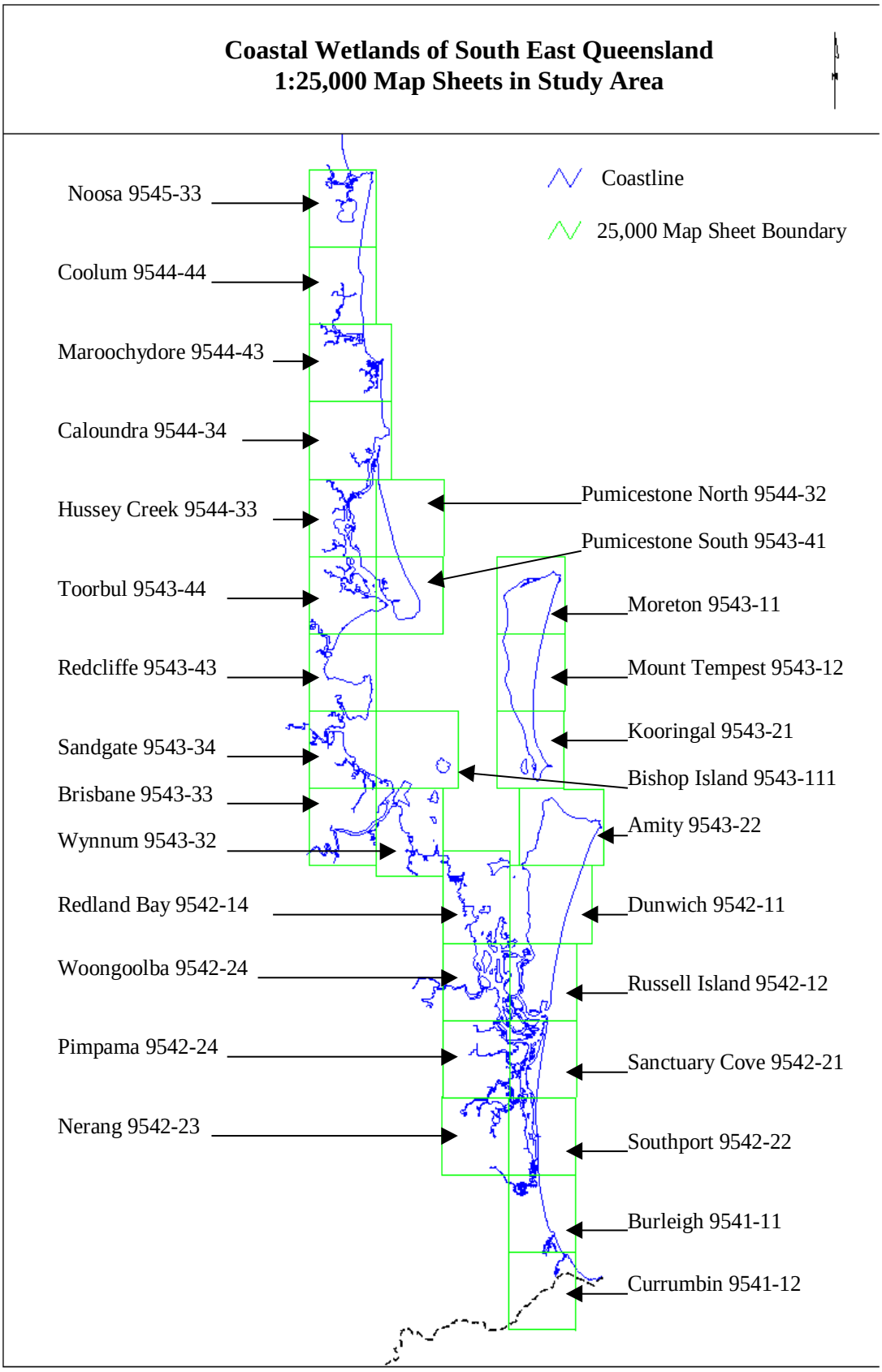


Figure 2 1:25,000 Map Sheets in Study Area



1.3 Previous Vegetation Studies

A number of vegetation studies of the coastal wetlands of South-east Queensland have been undertaken. Early studies include Blake (1940) who mapped the vegetation of Goat Island and Bird Island in Moreton Bay and Smith (1945) who completed a thesis on the mangroves of the North Pine River.

In the early 1970s the (then) Queensland Littoral Society began a series of surveys in the littoral areas of South-east Queensland. Shine, Ellway & Hegerl (1973) undertook surveys of the Tallebudgera Creek mangrove communities.

Development pressure, especially towards the mouth of the Brisbane River resulted in a number of surveys being undertaken in the 1970's. The mangroves of the Pine River were surveyed by the Co-ordinator Generals Department (1975) as part of a gravel extraction study. Serpentine Creek and Fisherman Islands at the mouth of the Brisbane River were surveyed and mapped by Durrington (1973) for the Port of Brisbane Strategic Plan while Durrington (1977a) undertook mapping and survey of the Brisbane Airport Development.

Dowling (1975, 1979a, 1979b, 1986) undertook a series of surveys of the mangroves and associated vegetation over the current study area and mapped these at the 1:25,000 scale.

The other mapping surveys which have included the coastal wetlands in their studies include Durrington (1977b) (Moreton Island), Clifford & Specht (1979) (North Stradbroke Island), McDonald & Elsol (1979) (Bribie Island) and Sparshott and Bostock (1993) (the north-western part of North Stradbroke Island).

The study area was also included within the Moreton Series Vegetation Mapping which was undertaken in the late 1970s. This mapping was conducted at the 1:100 000 scale and includes the following maps: Caloundra by Elsol and Sattler (1978), Brisbane by Dowling and McDonald (1976), Beenleigh by Elsol and Dowling (1978), and Murwillumbah by McDonald and Whiteman (1979). This mapping has been updated by the Queensland Herbarium to its 1997 extent by Ryan (1997b), Ryan (1997a), Dowling and Cartan (1997), and Sullivan and McDonald (1997) respectively. In addition Batianoff and Elsol (1989) have mapped in detail the coastal vegetation of the Sunshine Coast.

2. METHODOLOGY

2.1 Introduction

The methodology for the vegetation survey and mapping has been previously developed through more than 20 years of Queensland Herbarium mapping activity (Neldner 1993) and the current Queensland Herbarium mapping methodology is documented in Neldner et al (1998).

Photo interpretation of the most recent colour aerial photographs available was undertaken. This varied in date and scale as shown in table 1.

Table 1: Aerial photography used as basis for mapping.

Area Covered	Scale	Date	Area covered
Laguna Bay 100,000 Map Sheet	1: 40,000	1996	Maroochy Shire
Caloundra 100,000 Map Sheet	1: 18,000	1995	Maroochy Shire, City of Caloundra, Caboolture Shire
Caloundra 100,000 Map Sheet	1: 25,000	1997	Maroochy Shire, City of Caloundra, Caboolture Shire
Caboolture 100,000 Map Sheet	1: 25,000	1997	Caboolture Shire, Pine River Shire
Brisbane 100,000 Map Sheet	1: 25,000	1997	Caboolture Shire, Pine River Shire, City of Redcliffe, City of Brisbane, Redland Shire
Beenleigh 100,000 Map Sheet	1: 25,000	1997	City of Brisbane, City of Logan, Redland Shire, City of Gold Coast
Cleveland to Gold Coast	1: 18,000	1995	City of Gold Coast
Cleveland to Gold Coast	1: 18,000	1996	City of Gold Coast

Linework from photo interpretation of the above aerial photography was digitised using ARCVIEW software directly on screen using 1:25,000 DNR rectified images as the base map. These 1:25,000 images cover the same area as the standard 1:25,000 topographic (orthophoto) maps. The rectified images are accurate to ±10m. This linework produced the draft vegetation map which along with the aerial photography was used as the foundation for field site location and ground truthing of pattern interpretation. Data was collected from a representative series of secondary, tertiary and quaternary sites. The information collected at each of these levels is outlined in detail in Neldner et al (1998).

In brief, the main purposes of each of the types of sites are:

secondary sites: detailed descriptions of the vegetation types and flora lists
tertiary sites: brief descriptions of the vegetation types for map legends
quaternary sites: distribution of vegetation types.

This site information is available in digital form from CORVEG, the database established by Queensland Herbarium for ecological site information. Details of the data structures of CORVEG are documented in McDonald and Dillewaard (1994). Data from CORVEG exists in dbf format and consists of a series of relational tables. A number of standard validation procedures were applied to ensure the correct locality data and nomenclature was used.

A complete species list from the CORVEG site data is given in Appendix 4.

2.2 Map Production

All maps have been produced using ARCVIEW and ARCINFO software on the Geographical Information System (GIS) at the Queensland Herbarium and are available in both hard copy and digital format (see section 2.7).

2.3 Legend

The descriptions of the existing vegetation map units are based on the site data. Each site has been allocated to a vegetation map unit based on the field knowledge of the botanists involved. The dominant canopy species are listed, together with a summary of the height and canopy cover. The legend is based primarily on floristic groupings of dominant species and then subdivided on structural formation. The structural classification nomenclatural system used is that as proposed by Specht et al (1995) but modified to follow Neldner (1993) where the dominant layer defining the community is that which contributes the greatest biomass to the community rather than the tallest stratum as proposed by Specht. Specht's classification system is listed in table form in Appendix 1.

The map legend attached to the maps themselves is a summary of the more detailed legend given in Appendix 2. Because of map production limitations it is not possible to show different colours for each of the 66 map units on the hard copy maps so that it is necessary to group map units on the hard copy maps for colouring purposes. However full detail is provided for the polygons (which are the uniquely defined areas on a map or digital coverage) on both the hard copy maps and the GIS data.

2.4 Labelling Polygons

The secondary, tertiary and quaternary sites were used as a GIS layer to assist in the labelling of polygons for each map sheet. Where more than one vegetation type occurs within one polygon (eg. samphire and claypan), the relative percentages of each vegetation type within the polygon are attached to each polygon in the attribute table.

2.5 Reliability codes

Reliability codes are attached to each polygon. This code consists of two components which assigns a separate value to both the linework and attribute accuracy.

The first value (L) relates to the accuracy of the boundaries where

A = High confidence in accuracy of polygon boundary.
B = Moderate confidence in accuracy of polygon boundary.
C = Low confidence in accuracy of polygon boundary.

The majority of the polygons in this project have a high accuracy (class A) as they are clearly defined on the imagery. Some diffuse boundaries occur between different

Melaleuca communities and *Melaleuca - Eucalyptus* sp. communities and these are given a lower accuracy rating (class B or C).

The second value in the reliability code (V) relates to the accuracy of the polygon attributes (ie the vegetation units and their proportions)

A = High confidence in accuracy of polygon attributes.
B = Moderate confidence in accuracy of polygon attributes.
C = Low confidence in accuracy of polygon attributes.

Where a polygon had a site located within it or was traversed there is a high confidence in the attributes. Some wetland communities have highly distinctive photo patterns, especially at the scale of the photography used and although they were not sampled, a high confidence in the attributes can be allocated to such polygons. A large percentage of the mapping therefore has high confidence in the polygon attributes. Some of the polygons which contain a combination of map units are given a lower reliability because of a degree of uncertainty of the relative percentages which have been assigned to them. Additionally there are polygons which were unable to be verified by ground truthing but for which there was reasonable confidence in the photo interpretation. Such polygons have been given a moderate confidence rating (class B). Some communities have an indistinct photopattern and were unable to be accessed to verify interpretation and these receive a low reliability rating (class C).

The information attached to each polygon therefore consists of three parts:

1. Map Unit Code from the legend
2. Percentage of the polygon occupied by each of the map units making up the polygon.
3. Reliability Code

2.6 Site Locations

The location of all sites was recorded using a hand held GPS (Global Positioning System). Site locations as supplied may not exactly match their actual location on the ground. This occurs because of the limitations of the Global Positioning System technology used. The standard rated accuracy of a GPS is ±100m 95% of the time. The other 5% of the time the accuracy can be substantially less than this and it is not possible to determine when this occurs or the length of this time (it may be all day), due to the selective availability of the system. It was determined that a greater level of accuracy than this was obtained when the recorded sites were viewed over the georeferrenced Department of Natural Resources Image in which the site location could be seen. Precise locations can only be obtained in GPS systems when using differentially corrected GPS systems such as used in surveying quality GPS. Due to the high cost of these systems at the time of the study, a differential GPS system was not used. Where the location of sites was known to be different from the GPS location, these have been physically moved and placed in their correct geographic location using the GIS system. Locational positions supplied reflect any of these changes. The site locations are shown in figure 14 and their co-ordinates can be found at Appendix 12.

2.7 Digital Data

The following data:

- Current wetland distribution (1998)-ArcInfo coverage, ArcView shapefile format.
- 1974 mangrove distribution-ArcInfo coverage, ArcView shapefile format.
- CORVEG data for current wetland distribution (1998) in dbf format.

and all maps are available in both digital and printed format from:

Queensland Herbarium,
Environmental Protection Agency,
Mt Coot-tha Botanic Gardens,
Mt Coot-tha Rd., Toowong 4066,

upon request.

3. ANALYSIS

The data has been analysed for area using ArcInfo GIS. The total areas of each of the different map units are found in Appendix 7 (1974 mangrove mapping) and Appendix 8 (current mapping).

Discrepancies between the data in the various tables is a result of rounding by the GIS system which calculates to 6 decimal figures but which has been rounded to 1 decimal place. This can result in differences when adding up rounded figures and when adding up the base figures and then rounding. In general these changes are of the order of 0.1or 0.2 of a hectare but in some cases may be higher than this. The larger figures usually apply to the total overall area when added by all map units so that the percentage error is therefore relatively small.

Care has to be taken when comparing the 1974 mangrove mapping of Dowling (1975, 1986) and the current data. Errors exist due to the different mapping bases used between the current survey and the 1974 surveys. For the 1974 survey there was little geographical referencing on the original maps, making it difficult to exactly align the two datasets. While considerable effort was made to align the 1974 to the 1998 base to reduce errors and to make the data comparable this error has to be taken into account when interpreting the figures between 1974 and 1998 or when viewing the coverages.

Comparisons can only be made for the mangroves (current broad vegetation group 1), (see table 2), as the other communities were not mapped in full by Dowling (1975, 1986). The saltmarsh complex (claypan, samphire, and marine couch communities, grouped vegetation types 2, 3 and 4) was not mapped in a consistent manner over the current study area in 1974. The figures in the reports of Dowling (1975, 1986) indicate a figure of 14,125 ha of mangroves within the current study area in 1974. These published figures are at variance from the GIS calculated figures for the same 1974 area, which calculates an area of 15495.5 ha of mangroves. The difference between the two figures is due to the difference in technology used to calculate the areas. The original published figures were obtained using a planimeter to measure area whereas the

current area figure is obtained using GIS technology. It is assumed that the GIS based figure is the more accurate of the two.

The change of mangrove areas in each of the shires between 1974 and the current study (1998) is listed in table 3. The shire boundaries used for this comparison are the current boundaries and not as they existed in 1974.

Table 2: Comparison of areas of mangroves between 1974 and 1998.

Vegetation	1974 area(ha)	1998 area(ha)	Change in 24 years
Mangroves	15495.5	15274.8	-220.7

Table 3: Comparison of areas of mangroves in Local Government Authority areas between 1974 and 1998.

LGA	Area 1974 (ha)	Area 1998 (ha)	Change in Area (ha) 1974-1998
Brisbane	2835.8	2230.1	**-605.7**
Caboolture	1678	1796.1	**118.1**
Caloundra	1089.8	1216.4	**126.6**
Gold Coast	5098.3	5014.8	**-83.5**
Logan	13.4	18.1	**4.7**
Maroochy	416.3	509.9	**93.6**
Pine Rivers	631.6	692.1	**60.5**
Redcliffe	371.9	375.5	**3.6**
Redland	3359.8	3421.9	**62.1**
Total	**15494.9**	**15274.9**	**-220**

There has been an overall loss of 220.7ha of mangroves in the period 1974 to 1998. When these losses are examined on a Local Government Authority (LGA) basis only the City of Brisbane and the City of Gold Coast have reduced areas of mangroves. The large amount lost in the Brisbane LGA is the result of clearing for the construction of the Brisbane Airport and the Port of Brisbane development and losses on Mud Island due to coral dredging and infilling of the island by coral rubble during this period. All other LGAs have seen increases in the areas of mangroves since 1974. Offset against the major losses at the Brisbane Airport and Port Development in Brisbane has been planting of mangroves along the tidal canal associated with the airport and large natural increases on the south west side of Moreton Island which is included in the Brisbane LGA area. Elsewhere within the study area increases have mainly been as a result of siltation. Some increase has also occurred as a result of natural shifts and increase in sand bars within the study area. The largest areas of these are on the south western side of Moreton Island and near the mouth of the Maroochy River. Losses due to natural erosional processes are currently occurring in the southern part of Moreton Bay on the islands surrounding Jumpinpin.

There has also been a relatively large loss of saltmarsh communities. This is mainly as a result of their loss within the Brisbane Airport and Port of Brisbane

developments. Some small areas of natural loss of marine couch areas at the upper tidal limits have also occurred as a result of invasion by *Casuarina glauca*.

Hyland and Butler (1989) review the areas of mangroves and saltmarsh in southern Queensland in 1988 and provide figures on losses and gains within this area. Though there are some obvious flaws in their calculations, especially when it comes to areas lost due to the Brisbane Airport and the Port of Brisbane Developments, their report helps to clarify the rates of change and locations of this change in the middle of the period between the 1974 and 1998. The current work, because of its GIS basis will allow a more accurate assessment of change and its distribution within the study area.

The current mapping units do not correspond on a one-to-one basis with the survey of mangroves undertaken in 1974/1975. As a result any comparison on a individual map unit basis would not be valid. This is why only totals of broad vegetation groups have been compared here. A generalised equivalence comparison of the current mapping units with the mangrove mapping of 1974 are given in Appendix 14.

Table 4 gives a comparison of the Grouped Vegetation Types (GVT) in each shire for the current mapping. These GVT's group together mapped communities which have similar floristic and/or structural attributes and which occur in similar positions in the landscape.

The largest grouped vegetation type mapped was mangroves (GVT 1), with most of these areas occurring within Moreton Bay and Pumicestone Passage which is covered by the Brisbane, Caboolture, Caloundra, Gold Coast and Redland LGA's.

The next largest vegetation type (GVT 7) is *Melaleuca quinquenervia* communities with Caboolture, Caloundra, Maroochy and Redland LGAs having the largest areas of these. The large area of sedgeland (GVT 6) is the result of the very large areas of this GVT occurring on North Stradbroke and Moreton Islands, (significantly 18 Mile Swamp on North Stradbroke Island). As a result, more than half the sedgelands occur within Redland Shire.

The overall distribution of all Grouped Vegetation Types (GVT) can be found in figures 3 and 4 while the distribution of each individual GVT is given in figures 5 to 13. The following table shows the GVT units and the figures that they can be found in.

GVT	Description	Figure
1.	**Mangrove communities**	5
2.	**Claypan**	6
3.	**Samphire communities**	7
4.	**Grassland communities**	8
5.	**Swamp oak communities**	9
6.	**Sedgeland communities**	10
7.	**Paperbark communities**	11
10.	**Water**	12
11.	**Bribie Island non-wetland communities**	13

Figure 3 Distribution of Grouped Vegetation Types - Northern Section

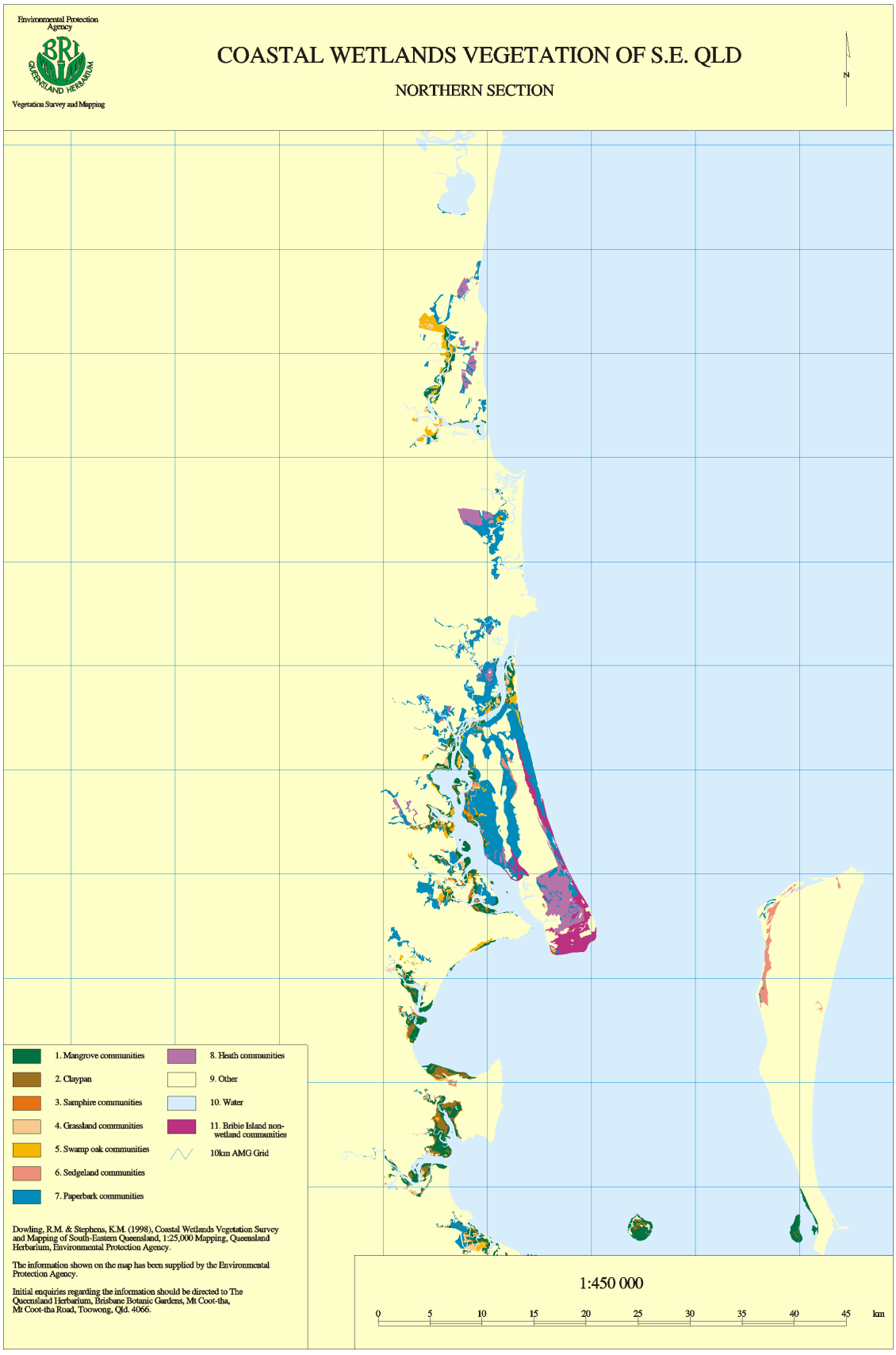


Figure 4 Distribution of Grouped Vegetation Types - Southern Section

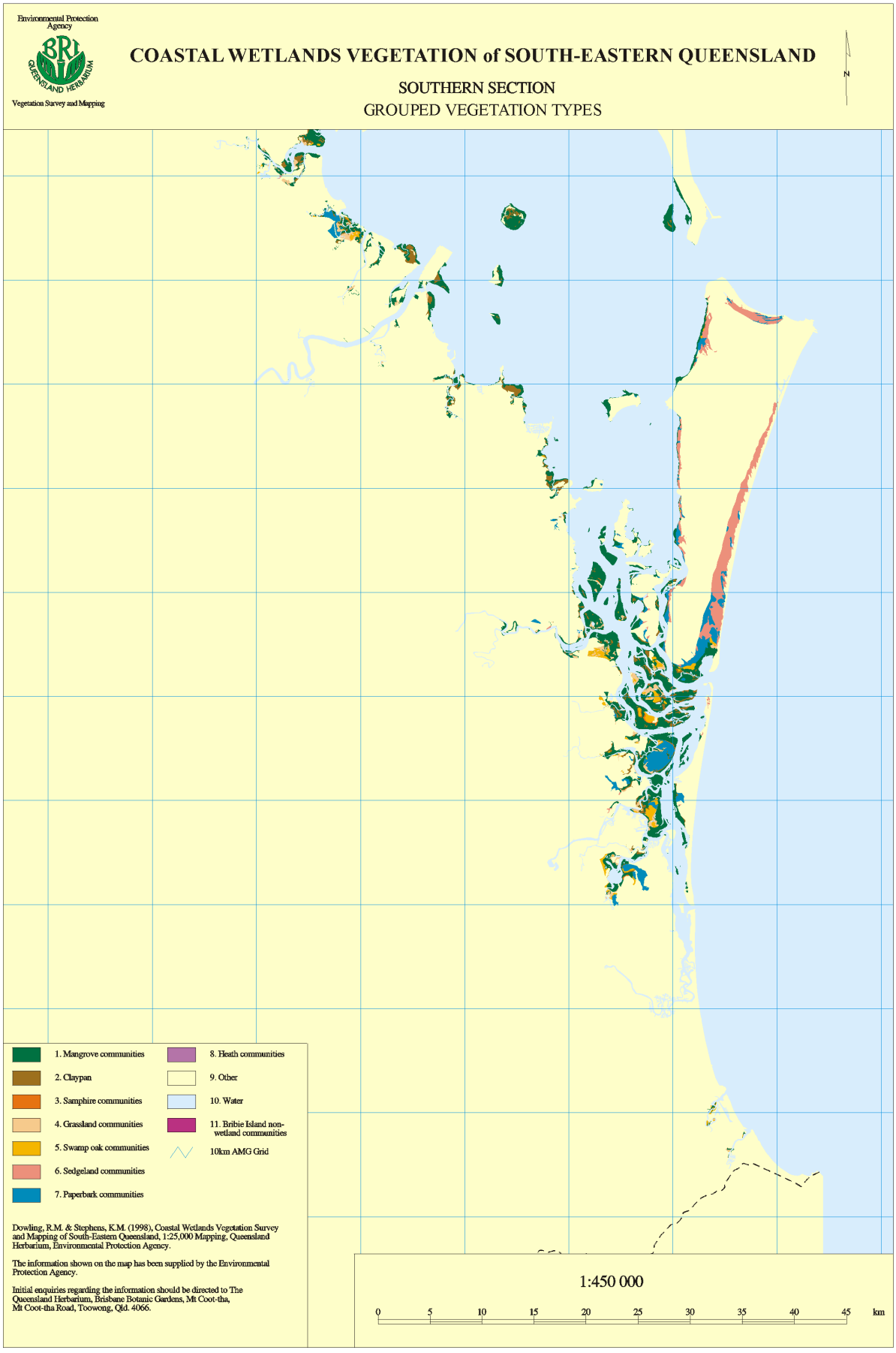


Figure 5 **Distribution of Grouped Vegetation Type 1 - Mangrove communities**

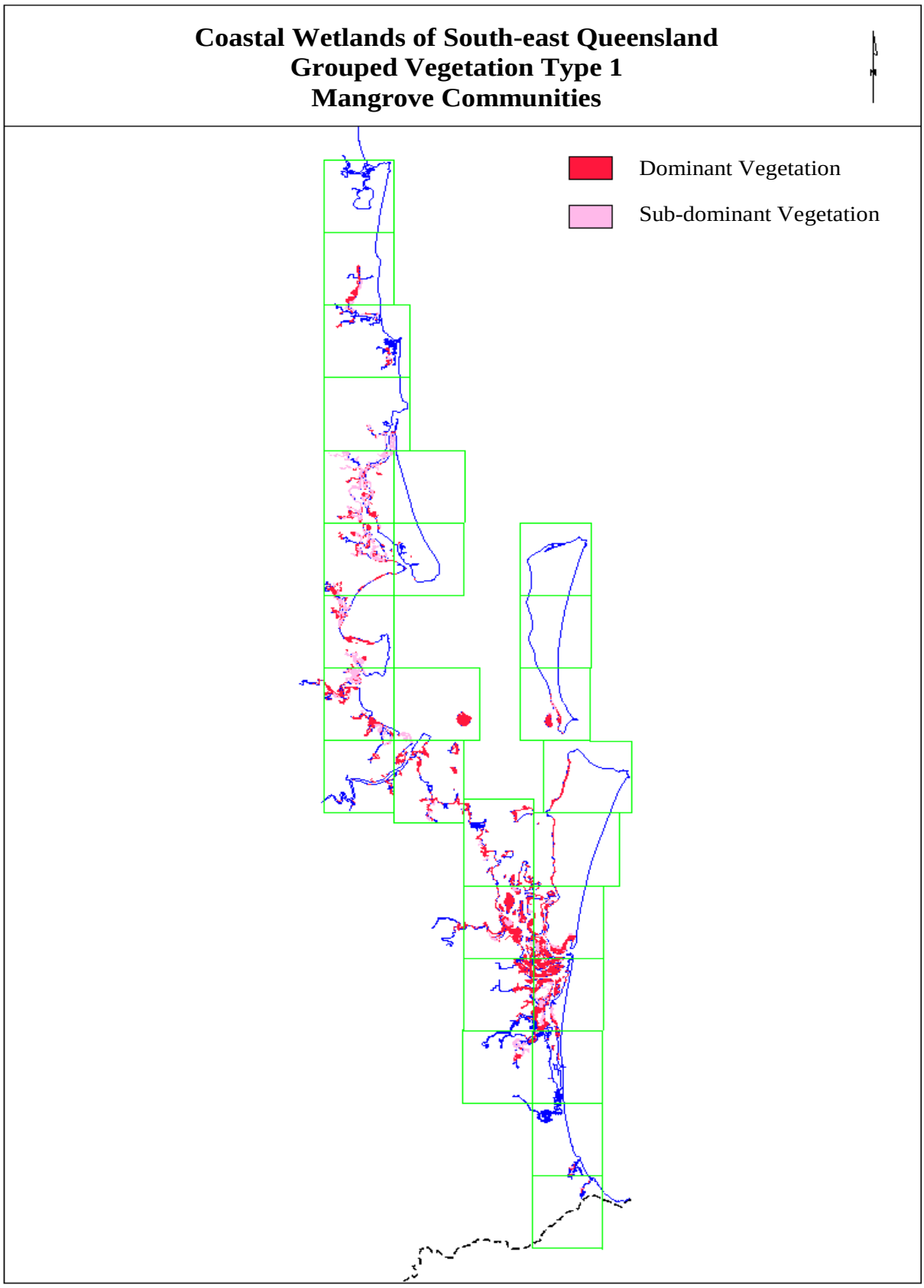


Figure 6 Distribution of Grouped Vegetation Type 2 - Claypan

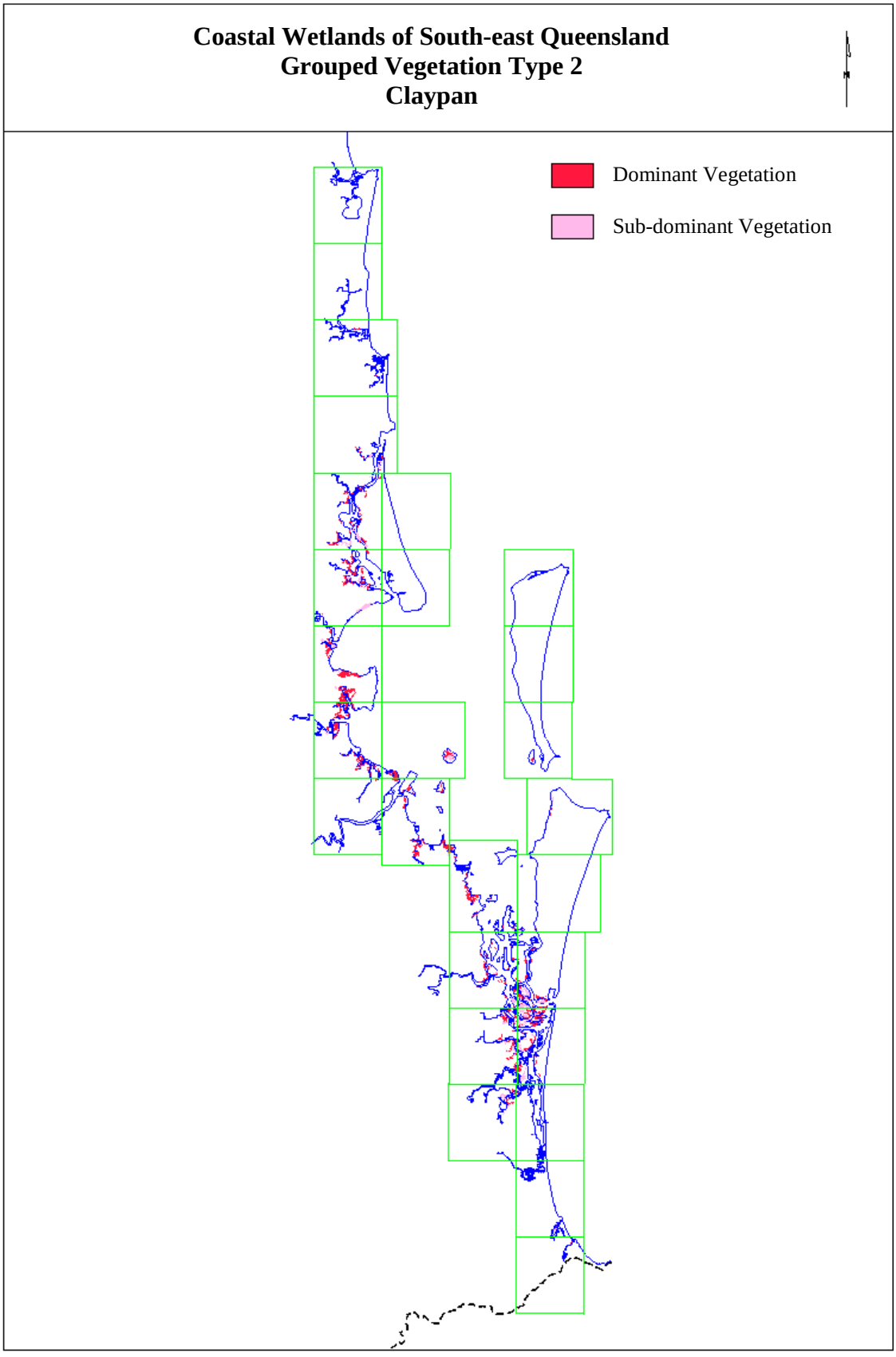


Figure 7 **Distribution of Grouped Vegetation Type 3 - Samphire communities**

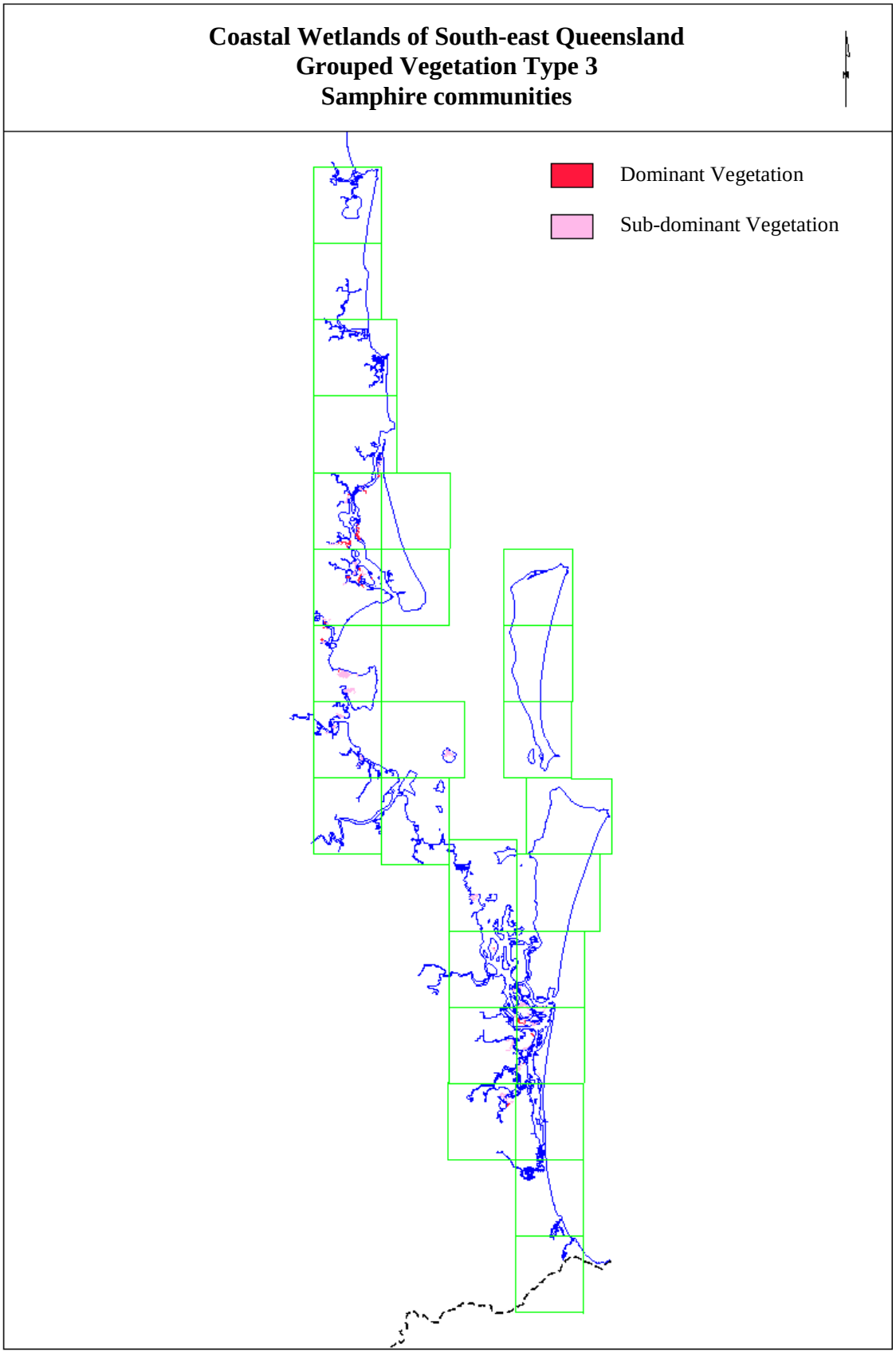


Figure 8 **Distribution of Grouped Vegetation Type 4 - Grassland communities**

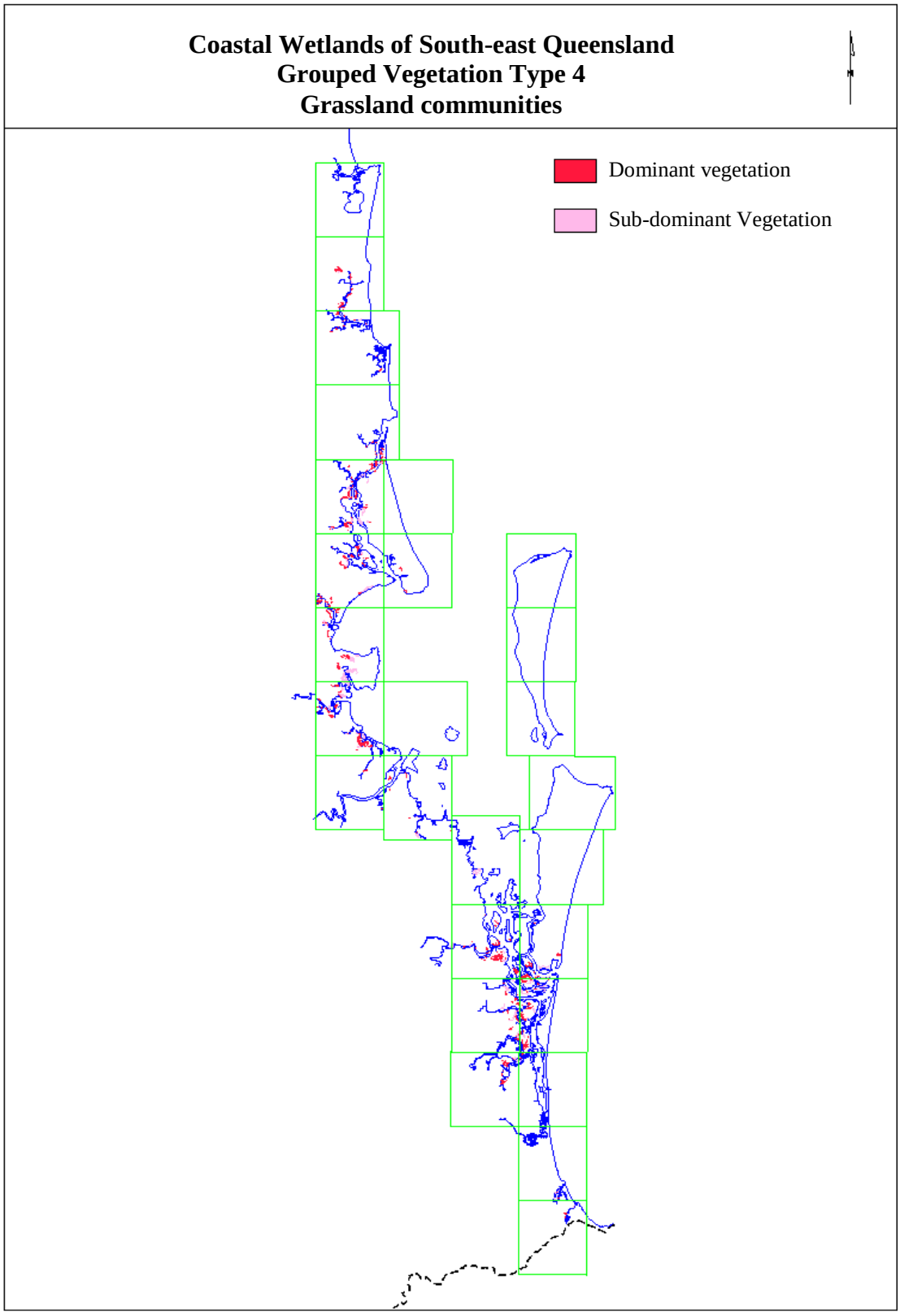


Figure 9 **Distribution of Grouped Vegetation Type 5 - Swamp oak communities**

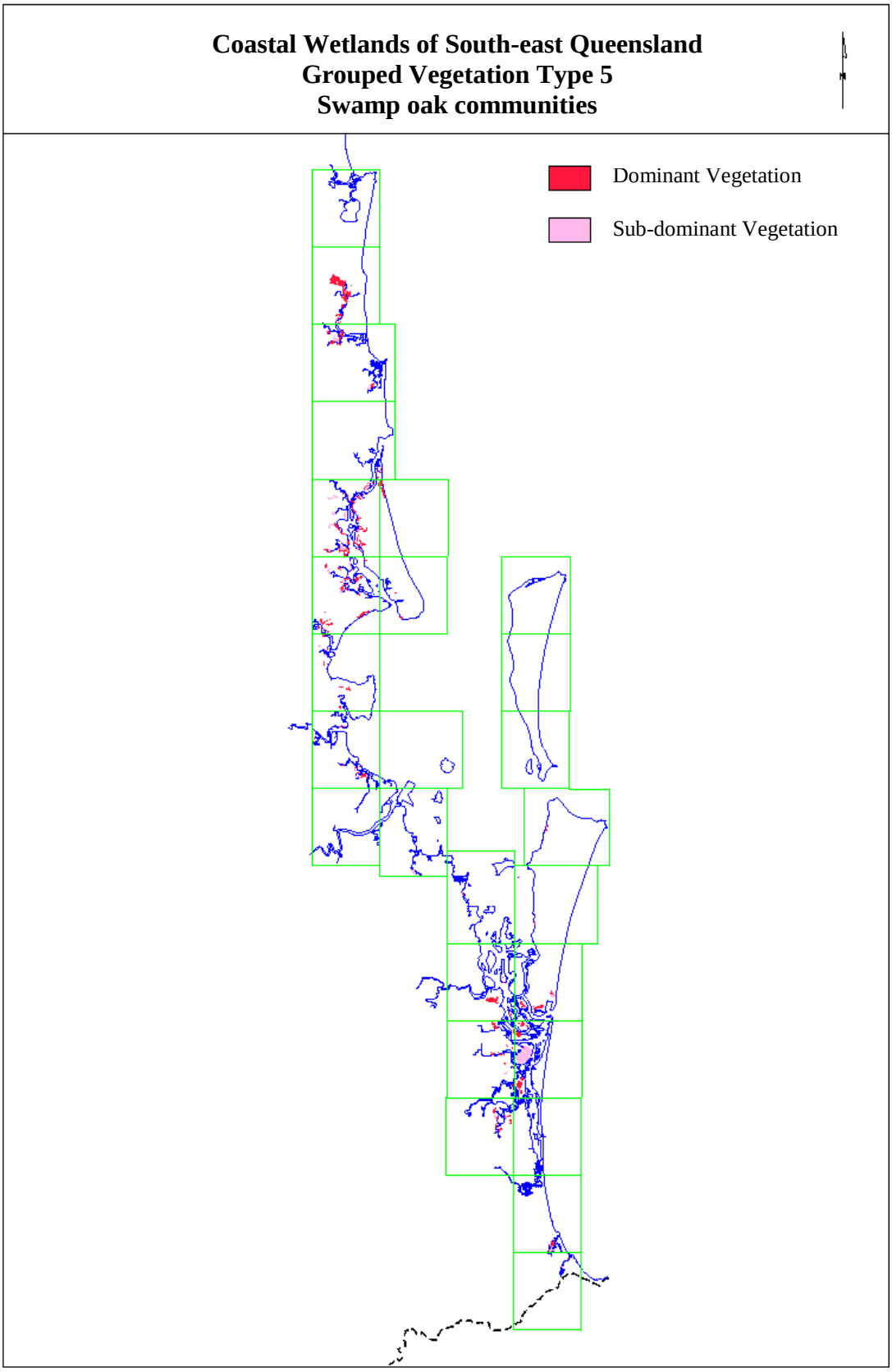


Figure 10 **Distribution of Grouped Vegetation Type 6 - Sedgeland communities**

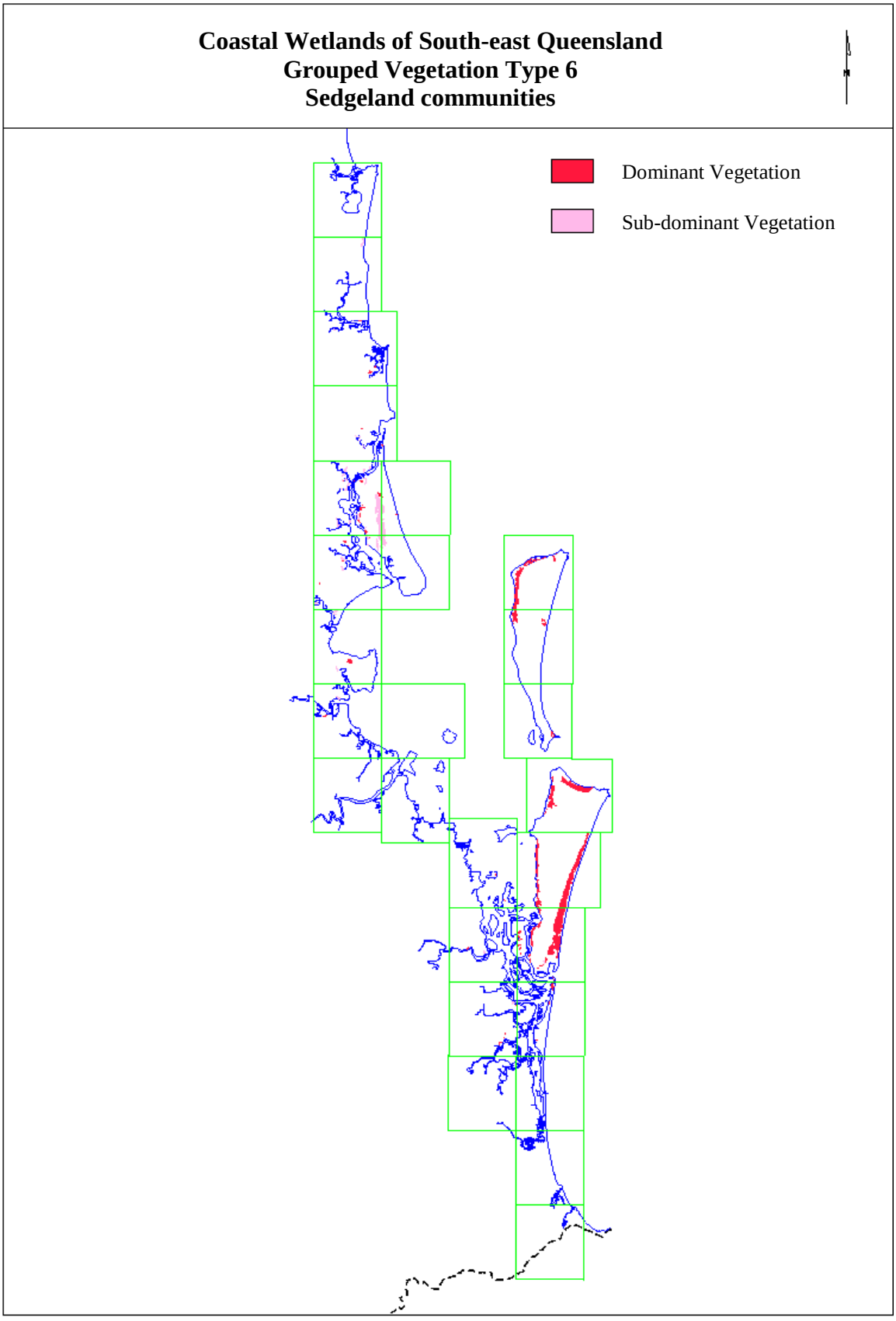


Figure 11 **Distribution of Grouped Vegetation Type 7 - Paperbark communities**

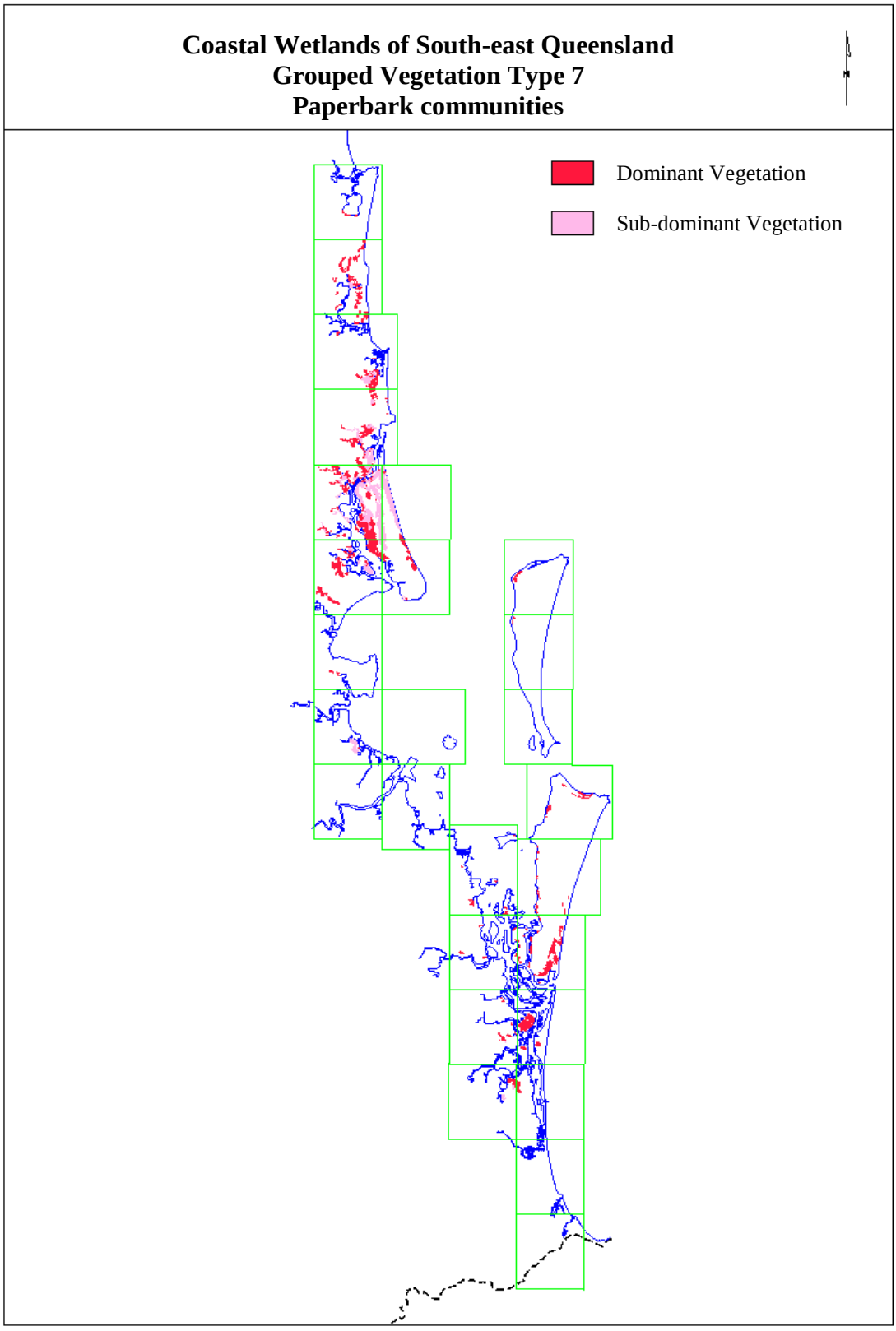


Figure 12 Distribution of Grouped Vegetation Type 10 - Water

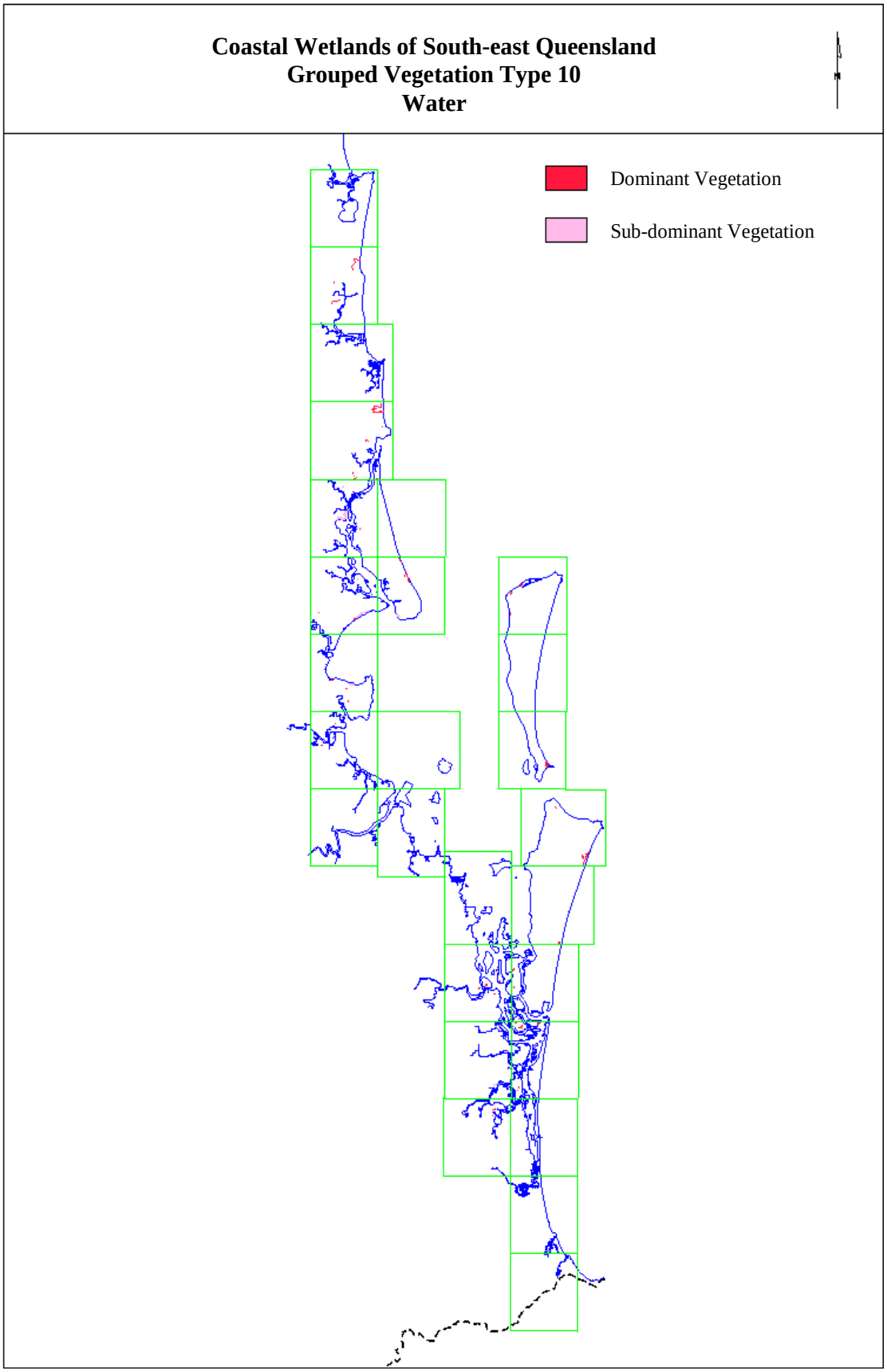


Figure 13 **Distribution of Grouped Vegetation Type 11 - Bribie Island non wetland communities**

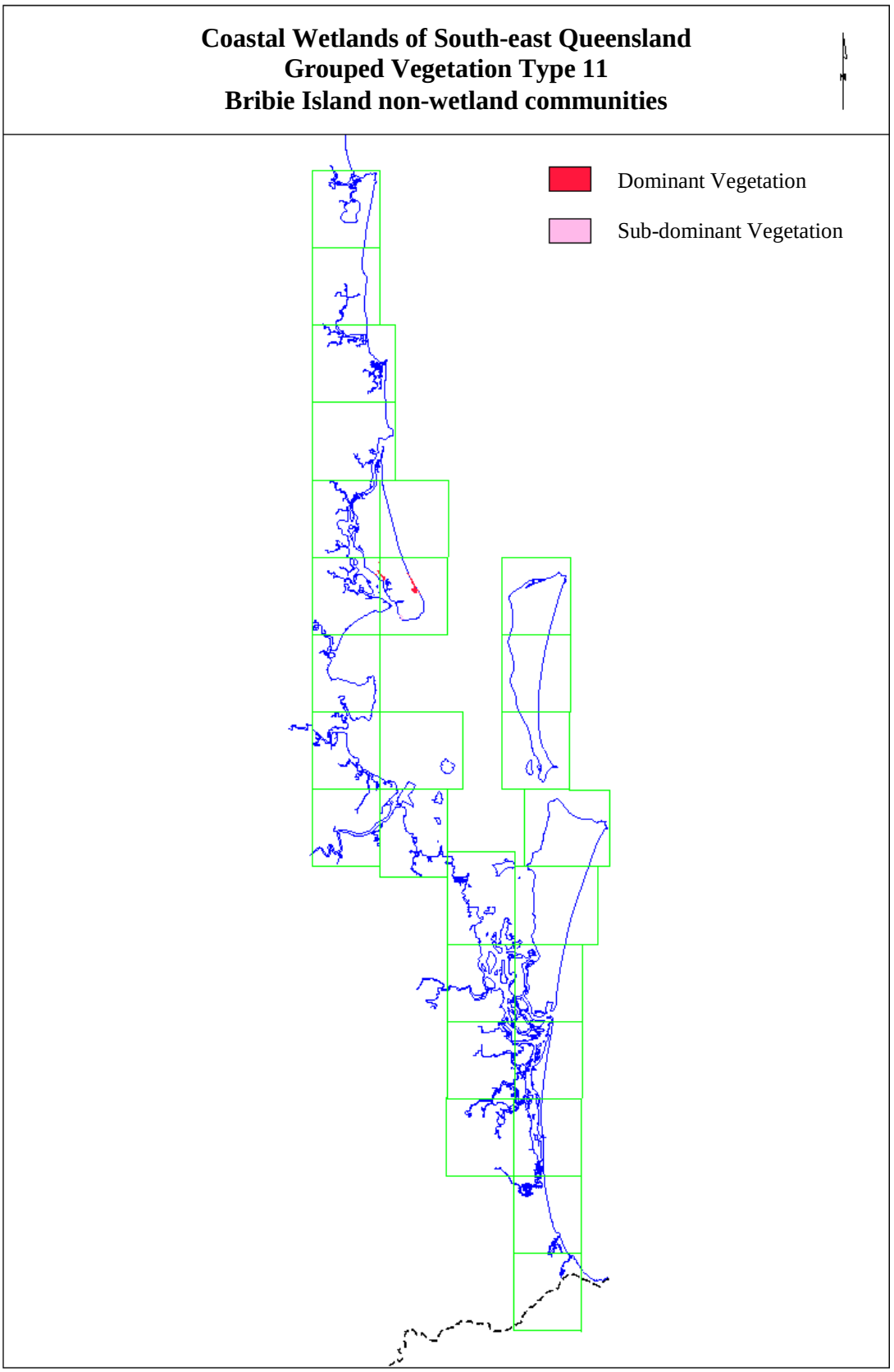


Table 4: Areas of Grouped Vegetation Types (GVT) by Shire, 1998.

GVT		BRISBANE	CABOOLTURE	CALOUNDRA	GOLD COAST	LOGAN	MAROOCHY	PINE RIVERS	REDCLIFFE	REDLAND	Total
1	**Mangrove communities**	2230.1	1796.1	1216.4	5014.8	18.1	509.9	692.1	375.5	3421.9	**15274.9**
2	**Claypan**	387.9	309.3	76.6	515		7.5	159	247.4	416.1	**2118.8**
3	**Samphire communities**	25	161.9	30.1	112.4		0.6	4.8	43	20.8	**398.6**
4	**Grassland communities**	234.3	303.6	144.9	562.3	11.8	121.1	120	75.3	83	**1656.3**
5	**Swamp oak communities**	52.3	400.2	263.7	715.1		607.4	29.9	12.6	99.4	**2180.6**
6	**Sedgeland communities**	593.9	550.4	117.4	40.7	4.5	27.1	1.5	24.2	2918.1	**4277.8**
7	**Paperbark communities**	252.2	3431.5	3741	794.4	24.8	1033.5	12.5	10.7	1032.6	**10333.2**
8	**Heath communities**		99.8	114.3			141.8				**355.9**
10	**Water**	54.5	50.5	92.2	34.7		28	0.6	8.1	64.5	**333.1**
11	**Bribie Island non-wetland communities**		135.3								**135.3**
subtotal		**3830.2**	**7238.6**	**5796.6**	**7789.4**	**59.2**	**2476.9**	**1020.4**	**796.8**	**8056.4**	**37064.5**

Of the current wetland units mapped, 18.1% of the remaining vegetation is conserved either in Conservation Park or in National Park (table 5). As all mangroves (unit 1) are protected by the *Fisheries Act 1994* the relatively small percentage of this unit in reserve is not a cause for concern. The relatively low amounts of map units 2 and 4 in reserves is of concern as these areas are subject to damage and deterioration by motor vehicles and motorbikes. While the vegetation that grows on these areas is subject to the *Fisheries Act 1994*, the Act does not appear to be being enforced in these areas in regard to damage being caused by vehicles.

Table 5: Area of Grouped Vegetation Types (GVT) in the study area and in reserves in 1998

GVT	Description	Total Area (ha)	Area (ha) in Reserves	% in Reserves
1	Mangrove communities	15274.9	1030.3	6.7
2	Claypan	2118.7	245.3	11.6
3	Samphire communities	398.6	94.9	23.8
4	Grassland communities	1656.3	241	14.6
5	Swamp oak communities	2180.6	686.7	31.5
6	Sedgeland communities	4278	658	15.4
7	Paperbark communities	10333.2	3600.3	34.8
8	Heath communities	355.9	67.9	19.1
10	Water	333.2	53.2	16.0
11	Bribie Island non-wetland communities	135.3	17.9	13.2
Total		**37064.7**	**6695.5**	**18.1**

The total amount of wetland units in reserve in each Local Government Authority is given in table 6.

Table 6: Area of coastal wetland vegetation in shires by reserve type

LGA	TotalArea (ha)	Area (ha) in CP	Area (ha) in NP	Total Area (ha) in Reserves	% in reserves
City of Brisbane	**3830.2**	**0**	**663.6**	**663.6**	**17.3**
Shire of Caboolture	**7238.6**	**84**	**2321.9**	**2405.9**	**33.2**
City of Caloundra	**5796.6**	**5.2**	**1122**	**1127.2**	**19.4**
City of Gold Coast	**7789.4**	**125.9**	**1510.9**	**1636.8**	**21.0**
City of Logan	**59.2**	**0**	**0**	**0**	**0**
Shire of Maroochy	**2476.9**	**199.8**	**380.6**	**580.4**	**23.4**
Shire of Pine Rivers	**1020.4**	**144.7**	**0**	**144.7**	**14.2**
City of Redcliffe	**796.8**	**129.1**	**0**	**129.1**	**16.2**
Shire of Redland	**8056.4**	**3.4**	**0**	**3.4**	**0.0**
Total	**37064.5**	**692.1**	**5999**	**6691.1**	**18.1**

4. VEGETATION

4.1 Classification

The classification of the site data was according to the structural classification system proposed by Specht et al (1995) but modified to follow Neldner (1993) where the dominant layer defining the community is that which contributes the greatest biomass to the community rather than the tallest stratum as proposed by Specht. This system is based on height and foliage projective cover (FPC) rather than the crown cover based system of Walker & Hopkins as expressed in McDonald et al (1990). However, crown cover for each site was also recorded and is stored in the CORVEG database so comparisons may be made with data using Walker & Hopkins' system if required. Specht's classification system is listed in table form in Appendix 1.

4.2 Ordering, Grouped Vegetation Type (GVT) and Map Units

The map units in the map legend are ordered, firstly according to degree of influence of coastal processes (ocean to inland), and secondly by grouped vegetation type. The map units are grouped together into broad vegetation groups, so that all of the units that are dominated by similar species or occur in similar landscape positions are described together. Each broad vegetation group (GVT) is further subdivided into a number of units based on the dominant species (floristics), then by structure (following modified Specht 1995). The sedgeland units (broad vegetation group 6) are ordered with the saline/brackish units first (6A units), followed by the fresh water units (6B units). These form the map units by which the map polygons have been labelled. Detailed information is found in the map unit descriptions. The complete map legend is given in Appendix 2.

4.3 Sites

The location of each site, the legend code and the map unit in which it occurs is given together with its CORVEG database reference number (VR number) in Appendix 12. This information can also be obtained by using appropriate software, as the sample sites are included as a layer in the digital coverage. Figure 14 shows the distribution of sites over the study area.

Figure 14 Site Locations

Coastal Wetlands of South-east Queensland
Site Locations

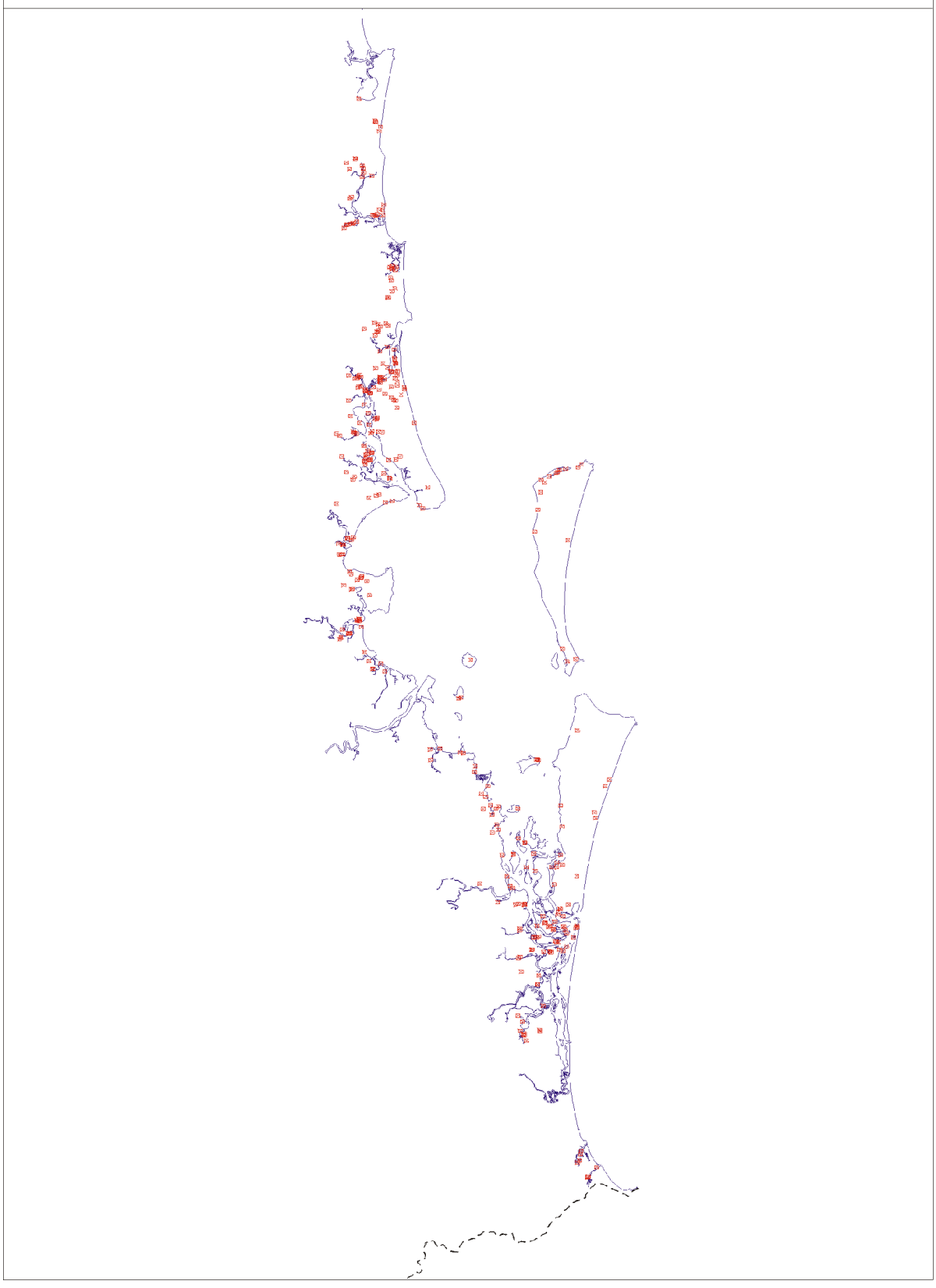
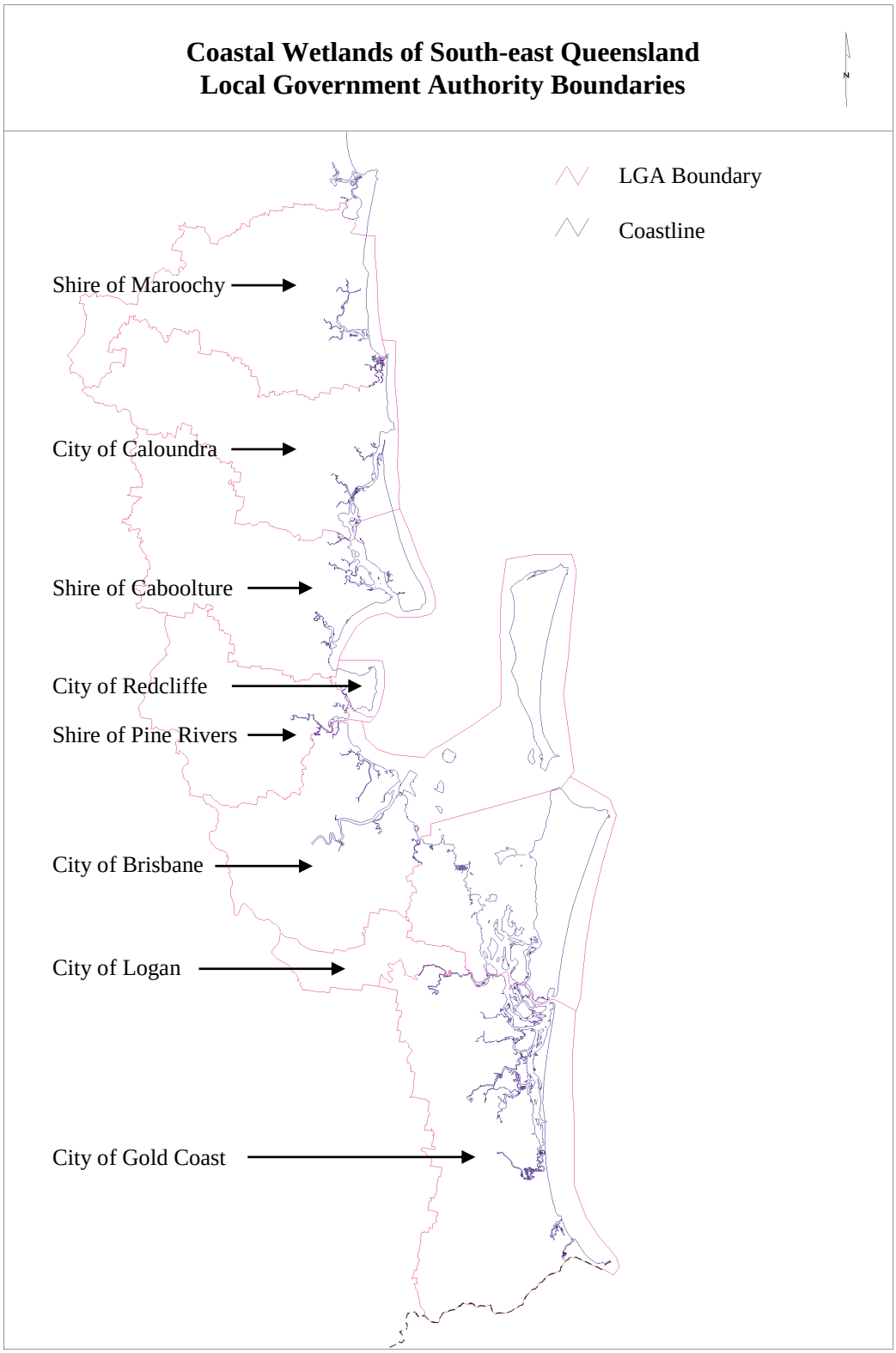


Figure 15 Local Government Authority Boundaries



4.4 Regional Ecosystems (REs) of Concern at the Regional Level.

Sattler and Williams (1999) provide a basis for Regional Ecosystem (REs) classification within Queensland for the purpose of conservation assessment. A table of the relevant Regional Ecosystems (RE) in which each map unit is included is given in Appendix 13. The Regional Ecosystems are defined at 1:100,000 scale mapping and are therefore not entirely appropriate for 1:25,000 scale mapping. Because of these differences valid comparisons between the areas of the REs at 1:100,000 and 1:25,000 is not possible. The REs listed as "of concern" at the South East Queensland bioregional level which include areas covered by the current survey and mapping are 12.1.1, 12.3.5 and 12.3.6 (see table 7). These are the swamp oak communities (GVT 5) and most of the paperbark communities (GVT).

It can be seen from table 7 that a total of 12,337.9 ha of these ecosystems "of concern" remain in the study area. Of this only 4,265 ha are in a reserve of some kind. Incorporating the remaining areas of these units into conservation reserves should be given high priority by the respective LGAs which have areas of *Casuarina glauca* and *Melaleuca quinquenervia* communities outside the reserve system.

Table 7: Areas of REs of Concern in the study area

RE "of concern"	Map Units Making up Regional Ecosystem										Total
12.1.1	**5A(i)a**	**5A(i)b**	**5A(ii)a**	**5A(ii)b**	**5B(i)**	**5B(ii)**	**5C(i)**	**5C(ii)**	**5C(iii)**	**7E(i)**	
Area mapped (ha)	1100.4	180.2	354	47.8	399.8	62.1	11.5	7.4	17.4	129	**2309.6**
Area in reserves (ha)	151.3	104.9	140.5	33.6	217.2	37.9	0	1.2	0	9.9	**696.5**
12.3.5	**7A(i)**	**7A(ii)a**	**7A(ii)b**	**7A(iii)a**	**7A(iii)b**	**7B(i)**	**7C(i)**				
Area mapped (ha)	248.9	3133.6	1363.2	862.5	427.4	6.4	591.6				**6633.6**
Area in reserves (ha)	60.8	877.5	390.4	264.8	8.1	0	398				**1999.6**
12.3.6	**7C(iii)**	**7C(iv)**	**7D(i)**	**7D(ii)**							
Area mapped (ha)	251.7	2295.8	494.6	352.6							**3394.7**
Area in reserves (ha)	37.6	1504.7	26.6	0							**1568.9**

5. GIS MAPPING INFORMATION

5.1 Coverages

The following coverages are available in digital form:

1998 wetland mapping linework
1974 digitised mangrove mapping linework
CORVEG site coverage

5.2 Point attribute tables

Each site has a point attribute table associated with it, which is linked to the CORVEG database.

Each polygon has the following information associated with it: Map unit label, proportions if not a homogeneous polygon, reliability rating as explained in section 2.5

5.3 Map products

Hard copy maps at 1:25,000 scale are available for the following map sheets:

Map Name

Map Name	Map Number
Amity	9543-22
Bishop Island (Special)	9543-111
Brisbane	9543-33
Burleigh	9541-11
Caloundra	9544-34
Coolum	9544-44
Currumbin	9541-12
Dunwich	9542-11
Hussey Creek	9544-33
Kooringal	9543-21
Maroochydore	9544-43
Moreton	9543-11
Mount Tempest	9543-12
Nerang	9542-23
Noosa	9545-33
Pimpama	9542-24
Pumicestone North (Special)	9544-32
Pumicestone South (Special)	9543-41
Redcliffe	9543-43
Redland Bay	9542-14
Russell Island	9542-12
Sanctuary Cove (Special)	9542-21
Sandgate	9543-34
Southport	9542-22
Toorbul	9543-44
Woongoolba	9542-13
Wynnum	9543-32

Map Number

Map Number	Map Name
9541-11	Burleigh
9541-12	Currumbin
9542-11	Dunwich
9542-12	Russell Island
9542-13	Woongoolba
9542-14	Redland Bay
9542-21	Sanctuary Cove (Special)
9542-22	Southport
9542-23	Nerang
9542-24	Pimpama
9543-11	Moreton
9543-111	Bishop Island (Special)
9543-12	Mount Tempest
9543-21	Kooringal
9543-22	Amity
9543-32	Wynnum
9543-33	Brisbane
9543-34	Sandgate
9543-41	Pumicestone South (Special)
9543-43	Redcliffe
9543-44	Toorbul
9544-32	Pumicestone North (Special)
9544-33	Hussey Creek
9544-34	Caloundra
9544-43	Maroochydore
9544-44	Coolum
9545-33	Noosa

The location and reference number of these maps is given in figure 2.

5.4 Corveg site database

Detailed floristic and structural information for the 342 sites is available from the CORVEG database. A full species list was recorded at each site. However as noted under section 6.1 data regarding the location of species listed under the schedules of the *Nature Conservation Act 1992* has been withheld.

5.5 Access to information

Requests for any of the above products and information on costs etc should be addressed in the first instance to :

The Manager
Queensland Herbarium
Environmental Protection Agency
Brisbane Botanic Gardens Mt Coot-tha
Mt Coot-tha Road
TOOWONG
Queensland 4066

6. FLORISTICS

A full species list for each map unit is given in Appendix 3. The GVT map units with the highest species diversity are the *Melaleuca quinquenervia* and *Casuarina glauca* communities, due in part to the increased weediness of these communities. The communities with the lowest diversity were those with the highest salinity, namely the mangroves and samphire communities. A total of 482 species in 128 genera were recorded for the coastal wetland survey and mapping project. A full species list with the frequency of occurrence in each broad vegetation group is given in Appendix 5.

6.1 Rare and Threatened Plants

The following plants (table 8), listed in the schedules of the *Nature Conservation Act 1992*, were recorded during the survey. The location data for these plants has not been supplied either in this report or in the accompanying CORVEG data in accordance with the Departmental Policy for the protection of these plants. Those parties that may have a legitimate need for this information may contact the Manager as noted above (see section 5.5).

Table 8: Rare and Threatened Plants encountered in survey area.

Species	Status	Number of sites in which species recorded
Phaius tancarvilleae	E - endangered	2
Durringtonia paludosa	R - rare	1
Schoenus scabripes	R - rare	9

6.2 Weeds

A full list of weed species recorded during the survey is given in Appendix 6. A total of 90 weed species were recorded from the 342 sites. The most common weeds encountered during the survey were *Baccharis halimifolia*, groundsel (26% of sites), *Lantana camara*, lantana (13% of sites), *Ipomoea cairica*, mile-a-minute (7% of sites) and *Schinus terebenthifolia*, broad-leaf pepper tree (4% of sites). Many garden plants have naturalised either by seed dispersal by birds and wind or else have established as a result of being dumped as garden waste. This corresponds with the findings of Batianoff and Franks (1997,1998). Dumping is most pronounced in areas of *Melaleuca quinquenervia* adjacent to urbanisation, especially in areas where there is a road between the houses and the *Melaleuca quniquenervia* community.

7. RECOMMENDATIONS

The study area in south-east Queensland from Maroochy Shire northern boundary to the NSW border is covered by 9 different Local Government Authorities. This area is subject to the most rapidly increasing developmental and population pressure in the State. Of the total 37,065 ha of coastal lowland wetland communities mapped, 6,696 ha are currently protected in conservation reserve. This report aims to place the coastal wetlands in a regional perspective so that Local Government decision-makers will be better able to make informed decisions on the regional significance of their coastal wetland communities.

The development pressure to clear many of these communities is high, and this makes it imperative that action be taken to conserve what remains of these unique ecosystems.

The highest priority is the need to conserve as much as possible of the remaining areas of *Casuarina glauca* and *Melaleuca quinquenervia* communities included in the "of concern" Regional Ecosystems 12.1.1, 12.3.5, and 12.3.6 which occur within the study area (see table 7). The greatest pressure for clearing these areas appears to come from expansion of the sugar industry, especially within the Maroochy River floodplain. In the south the aquaculture industry, is expanding at the expense of coastal wetland vegetation, especially towards the mouth of the Logan River and south to the Pimpama River.

Some other units, although not "of concern" at the Regional Ecosystem level, are of high conservation significance locally, mainly because of their very limited distribution. They were not picked up at the RE level because of the scale of RE

mapping. The relevant Local Government Authorities and/or State Government Departments should investigate the possibility of incorporating the following areas into existing reserve systems:

These units are

1C(ii) *Bruguiera gymnorhiza, Casuarina glauca* closed-forest, open-forest.
This unit is situated in Coolum Creek in the Maroochy Shire.

6A(iii) *Schoenus nitens* closed-sedgeland, sedgeland.
This unit is situated south of Jumpinpin on the northern end of South Stradbroke Island in the City of Gold Coast.

6A(iv) *Carex pumila* sedgeland.
This unit is situated south of Jumpinpin on the northern end of South Stradbroke Island in the City of Gold Coast.

6A(vi) *Cyperus laevigatus, Paspalum vaginatum, Triglochin striatum, Schoenus nitens* sedgeland.
This unit is situated at Mirapool, Moreton Island in the City of Brisbane.

7B(i) *Melaleuca quinquenervia*, rainforest species tall closed-forest, tall open-forest.
This unit is situated south of the sewage treatment works Main Dve, Kawana Waters in Caloundra City.

The following map units are unique but are already contained in the following reserves.

4D(i) *Triglochin striatum, Sporobolus virginicus* closed grassland, grassland.
This unit is situated south of Lake Coombabah in the City of Gold Coast in the Coombabah Lake Environmental Park.

7F(i) *Melaleuca quinquenervia, Banksia robur* heathland, open-heathland.
This unit occurs in Peregian Environmental Park.

Education of the public to prevent dumping of garden waste in wetland communities should be a priority of the Local Government Authorities. Some education of the public in the value and ecological importance of wetlands is already occuring at Boondall Wetlands (City of Brisbane) and Maroochy River Wetland Reserve (Shire of Maroochy) and this work is highly acclaimed. Particular attention in these and other council general education programs is needed to target the dumping of garden waste in coastal wetland areas.

By-laws and physical barriers are needed to limit access by motor vehicles and motorbikes to areas of claypan, saltmarsh and marine couch communities to prevent further degradation of these communities. This problem is particularly marked in the

Caboolture Shire and to a lesser extent the Maroochy Shire. In addition the existing Fisheries Act needs to be fully enforced especially in relation to damage by vehicles and motor bikes to 'marine plants' in areas of saltmarsh and marine couch. Many of these areas are favoured fishing sites as they provide ready vehicle access to river banks which is resulting in their degradation.

Mapping and data from this study will provide valuable resource information for inclusion in the draft Regional Coastal Management Plan for South-east Queensland.

8. MAP UNIT DESCRIPTIONS

8.1 Map Units - Derivation and Description

The map unit descriptions are derived by retrieving the detailed site data (collected in 1997-1998) for each map unit from CORVEG and running a retrieval program to calculate frequency of occurrence of each species in each layer, the mean and range of the structural attributes, height, crown cover, projective foliage cover (PFC), and basal area. Basal areas were measured using a Bitterlich stick at each field site, and appropriate conversion calculations are done in CORVEG. Dominant species are those that contribute most to the biomass at a site or in a layer. As well having a high frequency of occurrence, they also occur with a high basal area (trees only), stem density (trees and shrubs only) and/or PFC. These data for individual species are stored in CORVEG, but only summary ranges of values are included in the descriptions. The projective foliage cover categories used are those accepted by both Specht (1970) and Walker and Hopkins (1990): dense (> 70%); mid-dense (30-70%); sparse (10-30%) and very sparse (< 10%).

The description refers to the typical appearance of the unit at a site, while the range of values for the structural attributes is calculated from all CORVEG data sites that represent the map unit. Time and access constraints, especially in urbanised areas, meant that a few map units were unable to be sampled, hence for some map unit descriptions there are only limited structural data. If only one measurement was made then the upper and lower limits of the range will equal the mean. For map units with wide ranges in their structural attributes the mean may not necessarily represent the most frequent value. For some descriptions, no data were recorded for some attributes

Some of the species recorded as occurring in a map unit are deleted from the description to keep the descriptions concise. Generally species that occur in less than 5% of the sample sites are removed and if a taxon is only known to generic level, eg. *Aristida* spp., it must occur in at least 40% of the sites to be retained in the description. These general rules may be relaxed for some descriptions, particularly for the ground layer, where presence at a site due to their seasonal nature, can be dependent on the timing of sampling. Climbing vines and epiphytic plants are listed in the layer in which they most commonly occur. The frequent species are listed for each layer, and include a frequency which is expressed as the percent of all sites that species was recorded from for that map unit. 100% indicates it occurred on all sites, 50% on half the sites, and so on.

The calculation of the area for each map unit uses the proportion assigned to that map unit in each polygon in the vegetation coverage, and produces a more accurate estimate

than assuming a polygon is totally occupied by the dominant unit. Generally the dominant unit (V_1) in each polygon will occupy 50% or more of the area of the polygon, while subdominant units (V_2, V_3 and V_4) may only occupy 10%.

The sampling index is calculated by dividing the area of the unit by the number of detailed sample sites. Information used in compiling the ecological notes were obtained from the authors' field observations.

The total number of species recorded, mean and standard deviation (s.d.) for each unit are calculated from the relevant sample sites. These calculations are based only on validly published names and accepted HISPID names. All taxa not identified to species level are not included in the calculations, hence these figures are an underestimate of the true species richness.

8.2 Photographs

Most sites were photographed and an example of each map unit, where available, has been selected, scanned, and embedded in the descriptive text.

8.3 Map Unit Descriptions

Map Unit 1A(i): ***Aegiceras corniculatum*** **open-scrub**

Structural Formation Range: closed-scrub, open-scrub (100%), low closed-scrub, low open-scrub.

Basal Area Estimate m^2ha^{-1}: Not recorded.

Emergent Layer
Height: 6.0m.
Crown Cover: 5.0%.
Frequent species: *Avicennia marina* subsp. *australasica* (100%).

Canopy Layer
Height: mean 3.5m; range: 3.0-4.0.
Crown Cover: 100.0%.
Frequent species: *Aegiceras corniculatum* (100%), *Rhizophora stylosa* (100%).

Total species recorded: 4. **Mean species per site:** 4 with a s.d. of 0.

Number of Sites: 1.

Sampling Index: 1 site per 520 ha.

Representative Site: 45.

Ecological Notes:

Found in the middle to upper tidal plane, often in areas that are subject from time to time to freshwater influence. Usually occurs on firm marine clays.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 520.1 ha of this vegetation unit, 33.4 ha (6.4%) is presently in reserve.

Map Unit: 1B(i) ***Avicennia marina* subsp. *australasica* low open-forest**

Description: *Avicennia marina* subsp. *australasica* predominates forming a dense canopy that is usually 8-10m tall. *Rhizophora stylosa* occasionally occurs in the canopy. Where a shrub layer exists, it is usually sparse and is predominantly *Avicennia marina* subsp. *australasica*, but also includes other mangrove species. The shrub layer is usually about half the canopy height. The very sparse ground layer consists mainly of mangrove seedlings and occasional patches of marine couch and samphire species.

Structural Formation Range: closed-forest, open-forest (10%), woodland, low closed-forest, low open-forest (71%), low woodland (19%), low open-woodland.

Basal Area Estimate m^2ha^{-1}: mean 18.1; range 5.5-38.0.
Avicennia marina subsp. *australasica* (*17.9 m^2ha^{-1}), Rhizophora stylosa* (*0.2 m^2ha^{-1}).*

Canopy Layer
Height: mean 7.8m; range: 4.0-14.0.
Crown Cover: mean 68.2%; range: 5.0-100.0.
Frequent species: *Avicennia marina* subsp. *australasica* (87%), *Rhizophora stylosa* (16%), *Bruguiera gymnorhiza* (9%).

Shrub Layer
Height: mean 2.6m; range: 0.5-8.0.
Crown Cover: mean 24.5%; range: 1.0-95.0.
Frequent species: *Avicennia marina* subsp. *australasica* (54%), *Rhizophora stylosa* (32%), *Aegiceras corniculatum* (16%), *Bruguiera gymnorhiza* (16%), *Ceriops tagal* (9%).

Ground Layer
Height: mean 0.3m; range: 0.1-1.0.
Crown Cover: mean 15.4%; range: 1.0-50.0.
Frequent species: *Avicennia marina* subsp. *australasica* (74%), *Sporobolus virginicus* (9%), *Rhizophora stylosa* (6%), *Suaeda arbusculoides* (6%), *Suaeda australis* (6%).

Total species recorded: 15. **Mean species per site:** 3 with a s.d. of 2.

Number of Sites: 31.

Sampling Index: 1 site per 158 ha.

Representative Sites: 40, 42, 122, 129, 132, 133, 137, 154, 163, 164, 168, 170, 171, 178, 183, 190, 198, 222, 223, 234, 244, 251, 256, 257, 258, 286, 291, 292, 304, 326, 335.

Ecological Notes:

This map unit is usually found inland of the seaward edge of the mangroves but is also often found towards the centre of the larger tidally inundated islands of Moreton Bay.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 4887.6 ha of this vegetation unit, 272.5 ha (5.6%) is presently in reserve.

Map Unit: 1B(ii)a *Avicennia marina* subsp. *australasica* open-scrub

Description: This map unit consists of *Avicennia marina* subsp. *australasica*, generally about 6m tall, with occasional occurrences of other mangroves, notably *Rhizophora stylosa* and *Bruguiera gymnorhiza*. A secondary mid-dense layer of a variety of mangrove species often exists which may in places form a dense thicket. A sparse ground layer of mangrove seedlings with patches of samphire is often present.

Structural Formation Range: closed-scrub, open-scrub (97%), tall shrubland (3%).

Basal Area Estimate m^2ha^{-1}: mean 12.3; range 0.0-28.5.
Avicennia marina subsp. *australasica* (9.8 m^2ha^{-1}), *Aegiceras corniculatum* (1.7 m^2ha^{-1}), *Rhizophora stylosa* (0.6 m^2ha^{-1}), *Bruguiera gymnorhiza* (0.1 m^2ha^{-1}), *Casuarina glauca* (0.1 m^2ha^{-1}).

Canopy Layer
Height: mean 5.6m; range: 2.0-12.0.
Crown Cover: mean 62.9%; range: 20.0-98.0.
Frequent species: *Avicennia marina* subsp. *australasica* (40%), *Rhizophora stylosa* (7%).

Shrub Layer
Height: mean 3.0m; range: 0.3-8.0.
Crown Cover: mean 53.4%; range: 5.0-100.0.
Frequent species: *Avicennia marina* subsp. *australasica* (77%), *Aegiceras corniculatum* (37%), *Ceriops tagal* (14%), *Rhizophora stylosa* (11%), *Bruguiera gymnorhiza* (7%).

Ground Layer
Height: mean 0.4m; range: 0.1-1.5.
Crown Cover: mean 26.2%; range: 1.0-100.0.
Frequent species: *Avicennia marina* subsp. *australasica* (59%), *Aegiceras corniculatum* (14%), *Suaeda australis* (14%), *Ceriops tagal* (11%), *Rhizophora stylosa* (11%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (7%).

Total species recorded: 17**.** **Mean species per site:** 3 with a s.d. of 1.

Number of Sites: 27.

Sampling Index: 1 site per 155 ha.

Representative Sites: 17, 28, 30, 82, 150, 179, 194, 201, 203, 207, 211, 212, 214, 216, 220, 228, 275, 277, 279, 281, 284, 290, 305, 317, 318, 323, 329.

Ecological Notes:

This map unit is normally found in the mid to upper tidal range.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 4189.1 ha of this vegetation unit, 184.1 ha (4.4%) is presently in reserve.

Map Unit: 1B(ii)b ***Avicennia marina*** **subsp.** ***australasica*** **tall shrubland**

Description: *Avicennia marina* subsp. *australasica* predominates with the sparse canopy usually being about 3m tall. Other mangrove species are frequently present, notably *Ceriops tagal* and *Rhizophora stylosa*. There are occasional emergent trees of *Avicennia marina* subsp. *australasica* to 6m tall. The ground layer is mid-dense and consists of *Sporobolus virginicus* and samphires.

Structural Formation Range: tall shrubland (71%), tall open shrubland (29%).

Basal Area Estimate m^2ha^{-1}: mean 3.9; range 0.0-19.0.
Avicennia marina subsp. *australasica* (3.9 m^2ha^{-1}).

Emergent Layer
Height: mean 5.0m; range: 4.0-6.0.
Crown Cover: mean 5.0%; range: 5.0-5.0.
Frequent species: *Avicennia marina* subsp. *australasica* (9%).

Shrub Layer
Height: mean 2.5m; range: 0.3-8.0.
Crown Cover: mean 24.7%; range: 2.0-69.0.
Frequent species: *Avicennia marina* subsp. *australasica* (100%), *Ceriops tagal* (33%), *Rhizophora stylosa* (14%).

Ground Layer
Height: mean 0.3m; range: 0.1-1.0.
Crown Cover: mean 41.6%; range: 1.0-100.0.
Frequent species: *Sporobolus virginicus* (42%), *Avicennia marina* subsp. *australasica* (38%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (28%), *Suaeda australis* (23%), *Suaeda arbusculoides* (9%).

Total species recorded: 13. **Mean species per site:** 3 with a s.d. of 2.

Number of Sites: 21.

Sampling Index: 1 site per 91 ha.

Representative Sites: 35, 123, 144, 148, 155, 175, 180, 187, 197, 227, 247, 255, 263, 268, 289, 296, 297, 298, 302, 303, 322.

Ecological Notes:

This community is commonly found towards the upper tidal limits, often adjacent to or intermingled with areas of marine couch, samphires and claypans.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 1912.8 ha of this vegetation unit, 327.1 ha (17.1%) is presently in reserve.

Map Unit: 1B(ii)c ***Avicennia marina*** **subsp.** ***australasica*** **tall shrubland that are dying due to waterlogging**

Description: This map unit was previously a tall shrubland to open-scrub of *Avicennia marina* subsp. *australasica* (map unit 1B(i)) which has now died due to waterlogging caused by ponding.

Structural Formation Range: tall shrubland, tall open-shrubland.

Basal Area Estimate m^2ha^{-1}: 0.

Shrub Layer
Height: mean 2.5m; range: 2.0-3.0.
Crown Cover: 0.
Frequent species: *Avicennia marina* subsp. *australasica* (100%).

Ground Layer
Height: 0.1m.
Crown Cover: 10.0%.
Frequent species: *Sarcocornia quinqueflora* subsp. *quinqueflora* (100%).

Total species recorded: 2. **Mean species per site:** 2 with a s.d. of 0.

Number of Sites: 1.

Sampling Index: 1 site per 69 ha.

Representative Site: 193.

Ecological Notes:

Some extensive areas of this unit occur, mainly near the mouth of the Pine River due to changing shoreline configurations, which results in ponding of water around and over the root systems of the mangroves. Some areas of dieback appear to be the result of collapse of the soil surface due to the breakdown of the underlying acid sulphate soils.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 69.2 ha of this vegetation unit, 8.5 ha (12.3%) is presently in reserve.

Map Unit: 1B(iii) ***Avicennia marina* subsp. *australasica* low shrubland**

Description: An open community generally 1m high dominated by *Avicennia marina* subsp. *australasica*. A mid-dense patchy ground layer exists that is dominated by *Sporobolus virginicus* and *Suaeda arbusculoides*. Occasional emergent small trees of *Avicennia marina* subsp. *australasica* to 4m are usually present.

Structural Formation Range: low open-scrub, low shrubland (92%), low open-shrubland (8%).

Basal Area Estimate m^2ha^{-1}: mean 0.9; range 0.0-5.0.
Avicennia marina subsp. *australasica* (0.9 m^2ha^{-1}).

Emergent Layer
Height: mean 3.7m; range: 3.0-4.0.
Crown Cover: mean 7.5%; range: 5.0-10.0.
Frequent species: *Avicennia marina* subsp. *australasica* (25%).

Shrub Layer
Height: mean 1.2m; range: 0.2-2.0.
Crown Cover: mean 30.3%; range: 15.0-58.0.
Frequent species: *Avicennia marina* subsp. *australasica* (100%), *Ceriops tagal* (16%), *Rhizophora stylosa* (8%).

Ground Layer
Height: mean 0.2m; range: 0.1-0.5.
Crown Cover: mean 33.3%; range: 10.0-90.0.
Frequent species: *Avicennia marina* subsp. *australasica* (41%), *Sporobolus virginicus* (41%), *Suaeda arbusculoides* (33%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (16%), *Suaeda australis* (8%).

Total species recorded: 7. **Mean species per site:** 3 with a s.d. of 1.

Number of Sites: 12.

Sampling Index: 1 site per 57 ha.

Representative Sites: 23, 37, 41, 127, 166, 169, 196, 218, 254, 269, 270, 274.

Ecological Notes:

This community occurs high on the tidal plane towards the upper limits and is often found adjacent to claypans and samphire flats. It also occurs in areas that are from time to time subject to freshwater influence.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 688.9 ha of this vegetation unit, 26.5 ha (3.8%) is presently in reserve.

Map Unit: 1C(i) ***Bruguiera gymnorhiza* low closed-forest**

Description: A uniform dense canopy about 8-10m high is dominated by *Bruguiera gymnorhiza*. Scattered *Avicennia marina* subsp. *australasica* and *Casuarina glauca* trees are emergent to about 12m. The ground layer is usually sparse because of the dense shade but where present it is dominated by clumps of *Acrostichum speciosum* and *Cynanchum carnosum*.

Structural Formation Range: closed-forest, open-forest, low closed-forest (100%), low open-forest.

Basal Area Estimate m^2ha^{-1}: 21.0.
Bruguiera gymnorhiza (13.5 m^2ha^{-1}), *Casuarina glauca* (4.0 m^2ha^{-1}), *Avicennia marina* subsp. *australasica* (3.5 m^2ha^{-1}).

Emergent Layer
Height: mean 13.0m; range: 12.0-14.0.
Crown Cover: 10.0%.
Frequent species: *Avicennia marina* subsp. *australasica* (100%), *Casuarina glauca* (100%).

Canopy Layer
Height: mean 9.0m; range: 8.0-10.0.
Crown Cover: 98.0%.
Frequent species:
Bruguiera gymnorhiza (100%), *Dockrillia linguiformis* (100%).

Shrub Layer
Height: mean 1.5m; range: 1.0-2.0.
Crown Cover: 2.0%.
Frequent species: *Baccharis halimifolia* (100%), *Bruguiera gymnorhiza* (100%), *Hibiscus tiliaceus* (100%).

Ground Layer
Height: mean 0.5m; range: 0.5-1.0.
Crown Cover: 5.0%.
Frequent species: *Acrostichum speciosum* (100%), *Bruguiera gymnorhiza* (100%), *Crinum pedunculatum* (100%), *Cynanchum carnosum* (100%).

Total species recorded: 9.

Number of Sites: 1.

Sampling Index: 1 site per 28 ha.

Representative Site: 293.

Ecological Notes:

This unit is found at the upper tidal limits of rivers in areas subject to freshwater influence or soakage.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 28.2 ha of this vegetation unit, 5.9 ha (20.9%) is presently in reserve.

Map Unit: 1C(ii) ***Bruguiera gymnorhiza, Casuarina glauca*** **open-forest**

Description: The canopy at 10-12m is dominated by *Bruguiera gymnorhiza* with *Casuarina glauca* sometimes present. *Casuarina glauca* more frequently emerges above the canopy at 14-16m. A very sparse shrub layer of young *Bruguiera gymnorhiza* occurs at 4m. The ground layer varies from very sparse to mid-dense according to the openness of the community and is dominated by *Acrostichum speciosum*.

Structural Formation Range: closed-forest, open-forest (67%), low open-forest (33%).

Basal Area Estimate m^2ha^{-1}: mean 32.0; range 23.0-41.0.
Bruguiera gymnorhiza (20.3 m^2ha^{-1}), *Casuarina glauca* (6.7 m^2ha^{-1}), *Excoecaria agallocha* (3.3 m^2ha^{-1}), *Avicennia marina* subsp. *australasica* (1.0 m^2ha^{-1}), *Cupaniopsis anacardioides* (0.7 m^2ha^{-1}).

Emergent Layer
Height: mean 13.0m; range: 10.0-16.0.
Crown Cover: mean 10.7%; range: 2.0-20.0.
Frequent species: *Casuarina glauca* (100%).

Canopy Layer
Height: mean 8.0m; range: 4.0-12.0.
Crown Cover: mean 49.5%; range: 2.0-97.0.
Frequent species: *Bruguiera gymnorhiza* (100%), *Avicennia marina* subsp. *australasica* (66%), *Excoecaria agallocha* (66%), *Casuarina glauca* (33%), *Cupaniopsis anacardioides* (33%).

Shrub Layer
Height: mean 3.0m; range: 3.0-3.0.
Crown Cover: mean 10.0%; range: 10.0-10.0.
Frequent species: *Bruguiera gymnorhiza* (33%), *Flagellaria indica* (33%).

Ground Layer
Height: mean 1.3m; range: 0.5-2.0.
Crown Cover: mean 18.3%; range: 5.0-40.0.
Frequent species: *Acrostichum speciosum* (100%), *Bruguiera gymnorhiza* (100%).

Total species recorded: 17. **Mean species per site:** 10 with a s.d. of 2.

Number of Sites: 3.

Sampling Index: 1 site per 29 ha.

Representative Sites: 10, 74, 75.

Ecological Notes:

This unit occurs at the upper tidal limits at the interface of saline and freshwater environments. The most significant areas of this map unit are found at the headwaters of Coolum Creek, a tributary of the Maroochy River.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 85.8 ha of this vegetation unit, 4.3 ha (5.0%) is presently in reserve.

Map Unit: 1D(i) ***Ceriops tagal* open-scrub**

Description: Usually occurring as a mid-dense canopy about 4m high dominated by *Ceriops tagal*, with emergent trees of *Avicennia marina* subsp. *australasica* up to 10m and a very sparse ground layer of young *Ceriops tagal* about 30cm tall. Occasional small trees of *Bruguiera gymnorhiza* may be present. A sparse ground layer of seedlings of *Aegiceras corniculatum*, *Avicennia marina* subsp. *australasica* and *Ceriops tagal* is often present.

Structural Formation Range: closed-scrub (24%), open-scrub (53%), tall shrubland (13%), tall open-shrubland.

Basal Area Estimate m^2ha^{-1}: mean 19.9; range 6.0-33.5.
Ceriops tagal (15.6 m^2ha^{-1}), *Avicennia marina* subsp. *australasica* (2.6 m^2ha^{-1}), *Bruguiera gymnorhiza* (1.5 m^2ha^{-1}), *Aegiceras corniculatum* (0.1 m^2ha^{-1}), *Rhizophora stylosa* (0.1 m^2ha^{-1}).

Emergent Layer
Height: mean 6.5m; range: 4.0-10.0.
Crown Cover: mean 5.5%; range: 2.0-10.0.
Frequent species: *Avicennia marina* subsp. *australasica* (50%).

Shrub Layer
Height: mean 3.0m; range: 1.5-6.0.
Crown Cover: mean 62.3%; range: 5.0-98.0.
Frequent species: *Ceriops tagal* (100%), *Aegiceras corniculatum* (50%), *Bruguiera gymnorhiza* (50%), *Avicennia marina* subsp. *australasica* (25%), *Rhizophora stylosa* (25%), *Excoecaria agallocha* (12%).

Ground Layer
Height: mean 0.4m; range: 0.1-0.7.
Crown Cover: mean 3.8%; range: 2.0-5.0.
Frequent species: *Ceriops tagal* (62%), *Avicennia marina* subsp. *australasica* (12%), *Suaeda australis* (12%).

Total species recorded: 9. **Mean species per site:** 4 with a s.d. of 1.

Number of Sites: 8.

Sampling Index: 1 site per 1070 ha.

Representative Sites: 22, 145, 235, 239, 249, 260, 265, 271.

Ecological Notes:

This community is found at the upper tidal limits usually on organically rich clay soils. The organic matter in the soils is a result of leaf drop not washing away due to the height on the tidal plane which results in decreased frequency and strength of tidal flushing.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 8559.8 ha of this vegetation unit, 36.1 ha (4.2%) is presently in reserve.

Map Unit: 1D(ii) ***Ceriops tagal* low shrubland**

Description: This community is 1-2m tall with the mid-dense canopy dominated by *Ceriops tagal* and with *Avicennia marina* subsp. *australasica* commonly being present as an emergent up to 5-6m tall. A ground layer is usually absent but when present consists of a sparse layer of *Ceriops tagal* seedlings.

Structural Formation Range: low open-scrub (26%), low shrubland (62%), low open-shrubland (12%).

Basal Area Estimate m^2ha^{-1}: mean 5.5; range 0.0-14.0.
Ceriops tagal (4.4 m^2ha^{-1}), *Avicennia marina* subsp. *australasica* (1.0 m^2ha^{-1}), *Bruguiera gymnorhiza* (0.1 m^2ha^{-1}).

Emergent Layer
Height: mean 4.3m; range: 2.0-8.0.
Crown Cover: mean 6.5%; range: 2.0-10.0.
Frequent species: *Avicennia marina* subsp. *australasica* (87%).

Shrub Layer
Height: mean 1.2m; range: 0.5-3.0.
Crown Cover: mean 47.1%; range: 5.0-74.0.
Frequent species: *Ceriops tagal* (100%), *Bruguiera gymnorhiza* (25%), *Avicennia marina* subsp. *australasica* (12%), *Rhizophora stylosa* (12%).

Ground Layer
Height: mean 0.2m; range: 0.1-0.3.
Crown Cover: mean 1.0%; range: 1.0-1.0.
Frequent species: *Ceriops tagal* (25%), *Avicennia marina* subsp. *australasica* (12%).

Total species recorded: 7. **Mean species per site:** 3 with a s.d. of 1.

Number of Sites: 8.

Sampling Index: 1 site per 25 ha.

Representative Sites: 149, 165, 236, 250, 264, 272, 273, 299.

Ecological Notes:

This community occurs in areas high on the tidal plane, often on yellow clay soils. It usually occurs in areas slightly lower on the tidal plane than map unit 1D(i).

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 198.3 ha of this vegetation unit, 34.0 ha (17.1%) is presently in reserve.

Map Unit: 1E(i) ***Rhizophora stylosa*** **open-scrub**

Description: The mid-dense canopy is usually about 2-3m in height and consists of *Rhizophora stylosa* with *Avicennia marina* subsp. *australasica* present as an emergent. There is usually a sparse shrub layer consisting of *Avicennia marina* subsp. *australasica, Aegiceras corniculatum* and *Bruguiera gymnorhiza*. The ground cover is very sparse and consists of *Rhizophora stylosa* and *Aegiceras corniculatum* seedlings about 50cm tall.

Structural Formation Range: closed scrub, open-scrub (74%), tall shrubland (13%), tall open-shrubland, low open-scrub (13%).

Basal Area Estimate m^2ha^{-1}: mean 13.1; range 2.0-21.0.
Rhizophora stylosa (11.9 m^2ha^{-1}), *Avicennia marina* subsp. *australasica* (1.0 m^2ha^{-1}), *Bruguiera gymnorhiza* (0.1 m^2ha^{-1}), *Ceriops tagal* (0.1 m^2ha^{-1}).

Emergent Layer
Height: mean 6.3m; range: 3.0-12.0.
Crown Cover: mean 52.0%; range: 2.0-98.0.
Frequent species: *Avicennia marina* subsp. *australasica* (37%), *Rhizophora stylosa* (37%), *Bruguiera gymnorhiza* (12%).

Shrub Layer
Height: mean 2.2m; range: 1.0-4.0.
Crown Cover: mean 51.6%; range: 5.0-90.0.
Frequent species: *Rhizophora stylosa* (75%), *Aegiceras corniculatum* (62%), *Avicennia marina* subsp. *australasica* (25%), *Bruguiera gymnorhiza* (25%), *Ceriops tagal* (12%).

Ground Layer
Height: mean 0.6m; range: 0.4-1.0.
Crown Cover: mean 3.9%; range: 1.0-10.0.
Frequent species: *Rhizophora stylosa* (50%), *Aegiceras corniculatum* (12%).

Total species recorded: 10. **Mean species per site:** 4 with a s.d. of 2.

Number of Sites: 8.

Sampling Index: 1 site per 75 ha.

Representative Sites: 26, 73, 151, 238, 243, 278, 300, 301.

Ecological Notes:

This community mainly occurs as the outer most fringe of mangrove communities in sheltered environments, often on soft unconsolidated muds.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 599.4 ha of this vegetation unit, 30.4 ha (5.1%) is presently in reserve.

Map Unit: 1F(i) ***Aegiceras corniculatum, Avicennia marina*** **subsp.** ***australasica, Rhizophora stylosa, Bruguiera gymnorhiza*** **open-scrub**

Description: This community is usually dominated by two layers; a dense canopy of *Bruguiera gymnorhiza*, *Avicennia marina* subsp. *australasica* and sometimes *Rhizophora stylosa* at about 6m, and a mid-dense lower layer dominated by *Aegiceras corniculatum*, *Rhizophora stylosa*, *Bruguiera gymnorhiza* and *Ceriops tagal*. There may be an emergent layer to 10m of *Avicennia marina* subsp. *australasica* and *Bruguiera gymnorhiza*. The sparse ground layer, when present, consists of mixed mangrove seedlings to about 50cm tall.

Structural Formation Range: closed scrub (10%), open-scrub (36%), tall shrubland (27%), low closed-scrub, low open-scrub (27%).

Basal Area Estimate m^2ha^{-1}: mean 12.4; range 3.5-28.0.
Rhizophora stylosa (4.1 m^2ha^{-1}), *Bruguiera gymnorhiza* (3.3 m^2ha^{-1}), *Avicennia marina* subsp. *australasica* (3.1 m^2ha^{-1}), *Ceriops tagal* (1.3 m^2ha^{-1}), *Aegiceras corniculatum* (0.6 m^2ha^{-1}).

Emergent Layer
Height: mean 7.0m; range: 4.0-10.0.
Crown Cover: mean 8.6%; range: 5.0-15.0.
Frequent species: *Avicennia marina* subsp. *australasica* (63%), *Bruguiera gymnorhiza* (27%), *Casuarina glauca* (9%).

Canopy Layer
Height: mean 5.7m; range: 4.0-8.0.
Crown Cover: mean 73.3%; range: 57.0-85.0.
Frequent species: *Bruguiera gymnorhiza* (27%), *Avicennia marina* subsp. *australasica* (18%), *Rhizophora stylosa* (9%).

Shrub Layer
Height: mean 2.4m; range: 0.5-8.0.
Crown Cover: mean 52.3%; range: 5.0-95.0.
Frequent species: *Aegiceras corniculatum* (81%), *Rhizophora stylosa* (72%), *Bruguiera gymnorhiza* (63%), *Ceriops tagal* (54%), *Avicennia marina* subsp. *australasica* (18%).

Ground Layer
Height: mean 0.4m; range: 0.2-0.7.
Crown Cover: mean 8.3%; range: 5.0-20.0.
Frequent species: *Aegiceras corniculatum* (27%), *Avicennia marina* subsp. *australasica* (27%), *Bruguiera gymnorhiza* (9%), *Rhizophora stylosa* (9%), *Suaeda australis* (9%).

Total species recorded: 11. **Mean species per site:** 5 with a s.d. of 2.

Number of Sites: 11.

Sampling Index: 1 site per 24 ha.

Representative Sites: 7, 12, 24, 25, 39, 72, 121, 143, 237, 245, 246.

Ecological Notes:

This community is usually found fringing creeks that are under freshwater influence.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 259.5 ha of this vegetation unit, 16.2 ha (6.2%) is presently in reserve.

Map Unit: 1F(ii) ***Avicennia marina*** **subsp.** ***australasica*****,** ***Aegiceras corniculatum*** **closed-scrub**

Description: This scrub is usually dominated by an open canopy of *Avicennia marina* subsp. *australasica* at 5-6m giving light penetration to allow the development of a very dense shrub layer of *Aegiceras corniculatum* at 2-3m. The ground layer, where present, consists of seedlings of both species.

Structural Formation Range: closed-scrub (100%), open-scrub.

Basal Area Estimate m^2ha^{-1}: mean 22.0.
Aegiceras corniculatum (21.5 m^2ha^{-1}), *Avicennia marina* subsp. *australasica* (0.5 m^2ha^{-1}).

Canopy Layer
Height: mean 5.5m; range: 5.0-6.0.
Crown Cover: 15.0%.
Frequent species: *Avicennia marina* subsp. *australasica* (100%).

Shrub Layer
Height: mean 2.5m; range: 2.0-3.0.
Crown Cover: 100.0%.
Frequent species: *Aegiceras corniculatum* (100%).

Ground Layer
Height: mean 0.2m; range: 0.2-0.3.
Crown Cover: 5.0%.
Frequent species: *Aegiceras corniculatum* (100%), *Avicennia marina* subsp. *australasica* (100%).

Total species recorded: 2.

Number of Sites: 1.

Sampling Index: 1 site per 952 ha.

Representative Site: 177.

Ecological Notes:

This community is commonly found fringing creek banks in the saline to brackish reaches of rivers and streams. Large areas also occur away from riverbanks in areas subject to freshwater influence.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 952.3 ha of this vegetation unit, 50.9 ha (5.3%) is presently in reserve.

Map Unit: 1F(iii) ***Avicennia marina* subsp. *australasica*, *Bruguiera gymnorhiza*, *Excoecaria agallocha* open-forest**

Description: The dense canopy of *Avicennia marina* subsp. *australasica*, *Bruguiera gymnorhiza* and *Excoecaria agallocha* at about 10m usually has emergent *Casuarina glauca*. There is sometimes a shrub layer of *Excoecaria agallocha* and *Hibiscus tiliaceus*. The ground layer varies in density and is dominated by clumps of *Acrostichum speciosum*.

Structural Formation Range: open-forest (50%), low open-forest (50%).

Basal Area Estimate m^2ha^{-1}: mean 31.5; range 28.0-35.0.
Excoecaria agallocha (12.0 m^2ha^{-1}), *Casuarina glauca* (9.0 m^2ha^{-1}), *Avicennia marina* subsp. *australasica* (4.5 m^2ha^{-1}), *Bruguiera gymnorhiza* (4.0 m^2ha^{-1}), *Hibiscus tiliaceus* (2.0 m^2ha^{-1}).

Emergent Layer
Height: mean 13.5m; range: 12.0-16.0.
Crown Cover: mean 7.5%; range: 5.0-10.0.
Frequent species: *Casuarina glauca* (100%).

Canopy Layer
Height: mean 10.5m; range: 10.0-12.0.
Crown Cover: mean 82.0%; range: 77.0-87.0.
Frequent species: *Avicennia marina* subsp. *australasica* (100%), *Bruguiera gymnorhiza* (100%), *Excoecaria agallocha* (100%), *Casuarina glauca* (50%), *Hibiscus tiliaceus* (50%).

Shrub Layer
Height: mean 3.0m; range: 2.0-4.0.
Crown Cover: mean 30.0%; range: 30.0-30.0.
Frequent species: *Excoecaria agallocha* (50%), *Hibiscus tiliaceus* (50%).

Ground Layer
Height: mean 1.4m; range: 1.0-2.0.
Crown Cover: mean 40.0%; range: 10.0-70.0.
Frequent species: *Acrostichum speciosum* (50%).

Total species recorded: 21. **Mean species per site:** 14 with a s.d. of 2.

Number of Sites: 2.

Sampling Index: 1 site per 12 ha.

Representative Sites: 66, 77.

Ecological Notes:

This community is found towards the upper tidal limits of creeks in areas subject to freshwater influence.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.3.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 23.8 ha of this vegetation unit, none is presently in reserve.

Map Unit: 2 Claypan

Description: A saline claypan subject to tidal inundation by only the highest tides. The surface forms a cracking crust on drying between inundations. It is usually devoid of vegetation, but occasional very sparse patches of samphire, such as *Sarcocornia quinqueflora* subsp. *quinqueflora,* and *Sporobolus virginicus* may occur.

Structural Formation Range: Not applicable.

Basal Area Estimate m^2ha^{-1}: 0.

Total species recorded: 2.

Number of Sites: 1.

Sampling Index: 1 site per 2119 ha.

Representative Site: 181.

Ecological Notes:

This unit occurs at the upper tidal limits and may in part become hypersaline. Many areas close to habitation are subject to gross interference by motorbikes and motor vehicles as they make excellent "skid pans" for exuberant drivers. There is an urgent need to protect them from further damage as due to the lack of ground cover they are subject to erosion once disturbed.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.2.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 2118.7 ha of this vegetation unit, 245.3 ha (11.6%) is presently in reserve.

Map Unit: 3A(i) ***Sarcocornia* spp., *Suaeda australis, Suaeda arbusculoides* dwarf closed-shrubland**

Description: A dwarf ground cover community with a cover that varies from very sparse to dense. It is usually patchy in nature, with areas of bare marine clay and patches of *Sporobolus virginicus*. Composition of species varies seasonally, with *Sarcocornia quinqueflora* subsp. *quinqueflora* and *Suaeda australis* being predominant during the time of our sampling. The maximum community height is about 20cm.

Structural Formation Range: dwarf closed-shrubland (49%), dwarf shrubland (17%), dwarf open-shrubland (17%), dwarf sparse-shrubland (17%).

Basal Area Estimate m^2ha^{-1}: 0.

Ground Layer
Height: mean 0.1m; range: 0.1-0.2.
Crown Cover: mean 62.8%; range: 14.0-99.0.
Frequent species: *Sarcocornia quinqueflora* subsp. *quinqueflora* (83%), *Suaeda australis* (83%), *Sporobolus virginicus* (66%), *Avicennia marina* subsp. *australasica* (16%), *Fimbristylis polytrichoides* (16%), *Halosarcia pergranulata* subsp. *queenslandica* (16%), *Suaeda arbusculoides* (16%).

Total species recorded: 12. **Mean species per site:** 5 with a s.d. of 3.

Number of Sites: 6.

Sampling Index: 1 site per 66 ha.

Representative Sites: 124, 167, 189, 252, 283, 325.

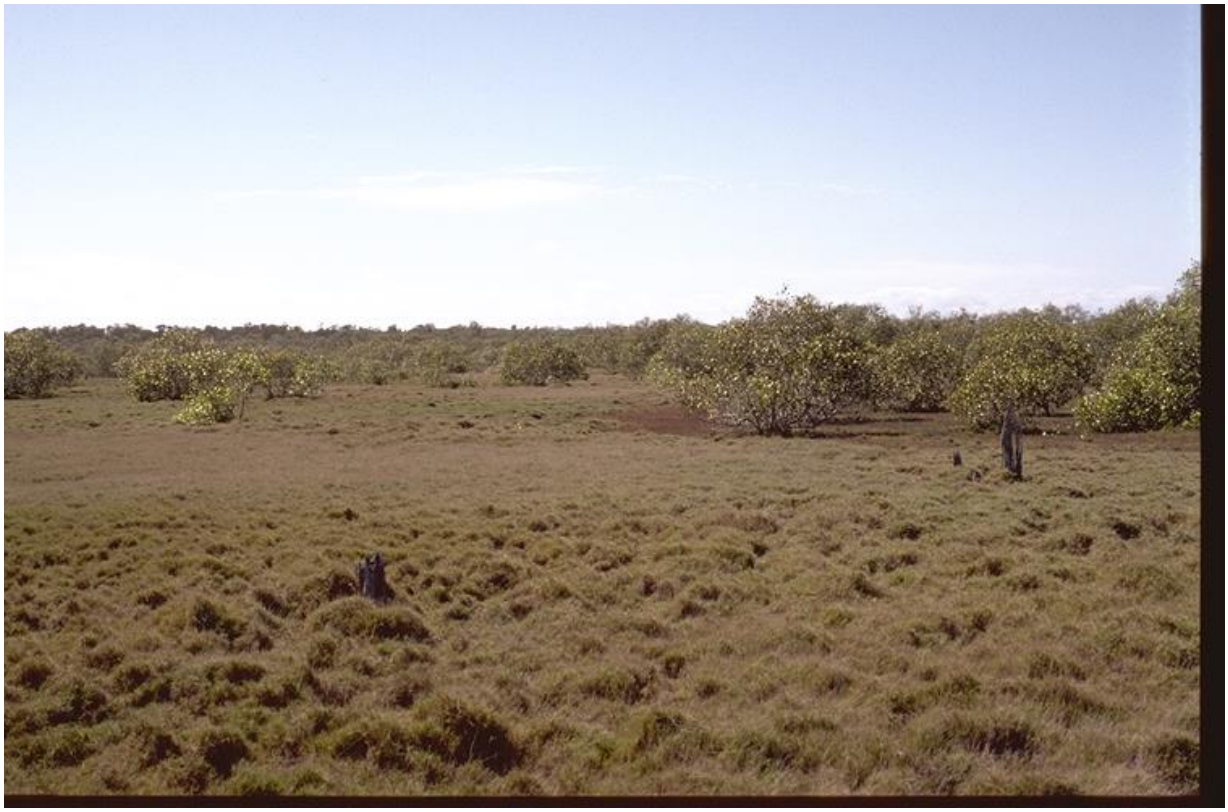
Ecological Notes:

The species composition of the samphire communities is seasonal in nature and varies over time. This variation over time is probably due to due to rainfall changes. Associations of claypan, samphire and marine couch form a mosaic commonly known as saltmarsh. The saltmarshes are commonly found behind the mangroves at the upper tidal limits though they may extend to river banks where the river has eroded into them. The soils in which the samphire communities occur are generally highly saline. The samphire communities commonly revert to areas of bare clay in extended periods of low rainfall or drought.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.2.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 398.6 ha of this vegetation unit, 94.9 ha (23.8%) is presently in reserve.

Map Unit: 4A(i) ***Sporobolus virginicus*** **closed-grassland**



Description: *Sporobolus virginicus* forms a dense ground cover usually about 20cm high. Patches of samphire occur, with *Sarcocornia quinqueflora* subsp. *quinqueflora* being the most frequent samphire species under these conditions. In infrequently disturbed situations, hummocking occurs due to a build up of organic matter around the base of the plants. Rarely isolated emergent low shrubs of *Avicennia marina* subsp. *australasica* may be present in these grasslands.

Structural Formation Range: closed-grassland (64%), grassland (36%).

Basal Area Estimate m^2ha^{-1}: mean 0.5; range 0.0-1.0.
Avicennia marina subsp. *australasica* (0.5 m^2ha^{-1}).

Emergent Layer
Height: mean 1.5m; range: 1.0-2.0.
Crown Cover: mean 4.0%; range: 4.0-4.0.
Frequent species: *Avicennia marina* subsp. australasica (9%).

Ground Layer
Height: mean 0.2m; range: 0.1-0.5.
Crown Cover: mean 91.7%; range: 53.0-100.0.
Frequent species: *Sporobolus virginicus* (100%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (63%), *Suaeda australis* (27%), *Fimbristylis ferruginea* (9%), *Halosarcia pergranulata* subsp. *queenslandica* (9%).

Total species recorded: 10. **Mean species per site:** 3 with a s.d. of 1.

Number of Sites: 11.

Sampling Index: 1 site per 135 ha.

Representative Sites: 15, 19, 29, 174, 188, 195, 213, 229, 233, 321, 327.

Ecological Notes:

Sporobolus virginicus often occurs as a dense community which may form in patchy distribution together with samphires and claypan. Extensive meadows of this low springy grass are common. The soils in which they occur are often waterlogged due to the density of the *Sporobolus virginicus* which collects rainfall that falls on them as well as restricting saltwater intrusion. These grasslands appear to be recovering their original structure due to changing land use patterns. They were previously grazed and burnt on a regular basis to promote fresh growth for grazing purposes as *Sporobolus virginicus* is an excellent fodder. Due to continued coastal urbanisation, grazing and firing of *Sporobolus virginicus* areas no longer occurs, which has allowed them to regrow and thicken. In thick stands that are ungrazed or burnt, these grasslands take on a hummocky character due to the build up in peat at the base of the clumps.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.2.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 1480.9 ha of this vegetation unit, 178.7 ha (12.1%) is presently in reserve.

Map Unit: 4B(i) ***Paspalum vaginatum*** **closed-grassland**

Description: *Paspalum vaginatum* dominates a dense grassland sward about 20cm high, with *Sporobolus virginicus* and *Zoysia macrantha* as minor components. Isolated clumps of salt-tolerant sedges occur, notably *Juncus kraussii* and *Eleocharis dulcis*, as well as the grass *Phragmites australis*, but these species only account for about 5% of the cover. Low trees of *Casuarina glauca* may be present as emergents to 6m tall.

Structural Formation Range: closed-grassland(100%), grassland.

Basal Area Estimate m^2ha^{-1}: 0.

Emergent Layer
Height: mean 5.0m; range: 4.0-6.0.
Crown Cover: 5.0%.
Frequent species: *Casuarina glauca* (100%).

Ground Layer
Height: mean 0.6m; range: 0.2-1.0.
Crown Cover: 90.0%.
Frequent species: *Eleocharis dulcis* (100%), *Juncus kraussii* (100%), *Paspalum vaginatum* (100%), *Phragmites australis* (100%), *Sporobolus virginicus* (100%), *Zoysia macrantha* (100%).

Total species recorded: 8.

Number of Sites: 1.

Sampling Index: 1 site per 11 ha.

Representative Site: 112.

Ecological Notes:

This community occurs in areas with freshwater seepage, but subject to tidal influence on the highest tides. They are found in slightly less saline situations and slightly higher on the tidal plane than *Sporobolus virginicus* and also often occur on sandy substrates.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.2.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 10.9 ha of this vegetation unit, 10.9 ha (100%) is presently in reserve.

Map Unit: 4C(i) ***Phragmites australis*** **grassland**

Description: *Phragmites australis* dominates a mid-dense grassland to 2m tall with patches of shorter salt-tolerant species such as *Sporobolus virginicus*, *Fimbristylis ferruginea*, and *Sesuvium portulacastrum* occurring in the more open areas. Scattered emergent low trees of *Casuarina glauca* and *Melaleuca quinquenervia* are sometimes present.

Structural Formation Range: grassland (80%), open-grassland (20%).

Basal Area Estimate m^2ha^{-1}: 0.

Emergent Layer
Height: mean 4.2m; range: 3.0-6.0.
Crown Cover: mean 5.7%; range: 2.0-10.0.
Frequent species: *Baccharis halimifolia* (20%), *Casuarina glauca* (20%), *Melaleuca quinquenervia* (20%).

Ground Layer
Height: mean 1.5m; range: 0.2-2.0.
Crown Cover: mean 68.0%; range: 30.0-100.0.
Frequent species: *Phragmites australis* (100%), *Sporobolus virginicus* (40%), *Fimbristylis ferruginea* (20%), *Paspalum vaginatum* (20%), *Sesuvium portulacastrum* (20%).

Total species recorded: 20. **Mean species per site:** 6 with a s.d. of 3.

Number of Sites: 5.

Sampling Index: 1 site per 29 ha.

Representative Sites: 94, 113, 153, 224, 226.

Ecological Notes:

This unit usually occurs in areas that are shallowly inundated with brackish to fresh water. It commonly dies back in winter and grows again in spring. In many areas *Phragmites australis* has invaded areas that were originally *Sporobolus virginicus* grasslands but which for a number of reasons now pond fresh or brackish water.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.2.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 143.8 ha of this vegetation unit, 31.5 ha (21.9%) is presently in reserve.

Map Unit: 4D(i) ***Triglochin striatum, Sporobolus virginicus*** **grassland**

Description: This a dense low community is dominated by the herbaceous aquatic plant *Triglochin striatum* at about 30-50cm high while *Sporobolus virginicus* forms a lower layer at about 20cm. Clumps of sedges such as *Fimbristylis dichotoma* and *Schoenoplectus littoralis* and weeds such as *Aster subulatus* are also present within the community.

Structural Formation Range: closed-grassland, grassland (100%).

Basal Area Estimate m^2ha^{-1}: 0.

Ground Layer
Height: mean 0.4m; range: 0.3-0.5.
Crown Cover: 75.0%.
Frequent species: *Sporobolus virginicus* (100%), *Triglochin striatum* (100%).

Total species recorded: 7.

Number of Sites: 1.

Sampling Index: 1 site per 21 ha.

Representative Site: 205.

Ecological Notes:

This community forms small patches at the fresh water–saline water interface of *Sporobolus virginicus* grasslands. It has a limited restricted distribution and only one area large enough to be mapped at the 1:25,000 scale is to be found in the Coombabah Lake Environmental Park Reserve, to the south of the Gold Coast Highway at Helensvale.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.2.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 20.7 ha of this vegetation unit, 19.9 ha (96.1%) is presently in reserve.

Map Unit: 5A(i)a *Casuarina glauca* woodland

Description: *Casuarina glauca* froms a mid-dense canopy generally at 10-12m in height. *Melaleuca quinquenervia* is a frequent secondary component of the canopy. A weedy shrub layer dominated by *Baccharis halimifolia* is usually present in variable density. The shrubs *Myoporum acuminatum* and *Cupaniopsis anacardioides* are also commonly present in this layer. The ground layer is usually grassy and is dominated by *Sporobolus virginicus* and *Cynodon dactylon*.

Structural Formation Range: open-forest (37%), woodland (63%).

Basal Area Estimate m^2ha^{-1}: mean 21.2; range 9.0-39.0.
Casuarina glauca (18.9 m^2ha^{-1}), *Melaleuca quinquenervia* (1.6 m^2ha^{-1}), *Avicennia marina* subsp. *australasica* (0.3 m^2ha^{-1}), *Eucalyptus tereticornis* (0.2 m^2ha^{-1}), *Cupaniopsis anacardioides* (0.1 m^2ha^{-1}), *Myoporum acuminatum* (0.1 m^2ha^{-1}).

Canopy Layer
Height: mean 10.6m; range: 6.0-16.0.
Crown Cover: mean 51.7%; range: 5.0-85.0.
Frequent species: *Casuarina glauca* (100%), *Melaleuca quinquenervia* (37%), *Avicennia marina* subsp. *australasica* (12%), *Eucalyptus tereticornis* (12%), *Cupaniopsis anacardioides* (6%), *Myoporum acuminatum* (6%), *Platycerium bifurcatum* (6%), *Pyrrosia rupestris* (6%).

Shrub Layer
Height: mean 3.1m; range: 1.0-6.0.
Crown Cover: mean 18.5%; range: 5.0-60.0.
Frequent species: *Baccharis halimifolia* (43%), *Casuarina glauca* (43%), *Myoporum acuminatum* (18%), *Cupaniopsis anacardioides* (12%), *Schinus terebinthifolia* (12%), *Acrostichum speciosum* (6%), *Bruguiera gymnorhiza* (6%), *Excoecaria agallocha* (6%), *Lantana camara* (6%), *Livistona australis* (6%), *Maclura cochinchinensis* (6%), *Melaleuca quinquenervia* (6%).

Ground Layer
Height: mean 0.3m; range: 0.1-1.2.
Crown Cover: mean 49.8%; range: 2.0-100.0.
Frequent species: *Sporobolus virginicus* (43%), *Cynodon dactylon* (25%), *Phragmites australis* (18%), *Commelina diffusa* (12%), *Einadia hastata* (12%), *Enchylaena tomentosa* var. *glabra* (12%), *Ipomoea cairica* (12%), *Juncus kraussii* (12%), *Sesuvium portulacastrum* (12%), *Suaeda australis* (12%), *Acrostichum speciosum* (6%), *Ageratum houstonianum* (6%), *Alternanthera denticulata* (6%), *Brachiaria mutica* (6%), *Chloris gayana* (6%), *Conyza bonariensis* (6%), *Dianella sp* (6%), *Entolasia marginata* (6%), *Fimbristylis polytrichoides* (6%), *Geitonoplesium cymosum* (6%), *Lantana camara* (6%), *Ottochloa gracillima* (6%), *Oxalis chnoodes* (6%), *Passiflora suberosa* (6%), *Sida cordifolia* (6%), *Solanum americanum* (6%), *Solanum seaforthianum* (6%), *Sonchus oleraceus* (6%).

Total species recorded: 86. **Mean species per site:** 12 with a s.d. of 7.

Number of Sites: 16.

Sampling Index: 1 site per 69 ha.

Representative Sites: 9, 27, 34, 67, 71, 78, 146, 162, 176, 182, 200, 210, 225, 231, 248, 253.

Ecological Notes:

This is a widespread community occurring just at or above the upper limits of tidal inundation. This community is commonly invaded by the weed *Baccharis halimifolia* and to a lesser extent *Lantana camara* as well as a large range of common weeds, especially in the ground layer.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.1.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 1100.4 ha of this vegetation unit, 151.3 ha (13.7%) is presently in reserve.

Map Unit: 5A(i)b *Casuarina glauca* open-woodland

Description: *Casuarina glauca* forms a sparse canopy generally at 10-12m height. The ground layer is usually grassy and is dominated *Sporobolus virginicus* and *Cynodon dactylon*.

Structural Formation Range: open-woodland.

Basal Area Estimate m^2ha^{-1}: No estimates.

Canopy Layer
Height: mean 10.0m; range: 4.0-14.0.
Crown Cover: mean 12.0%; range: 2.0-20.0.
Frequent species: *Casuarina glauca*

Ground Layer
Height: mean 0.2m; range: 0.1-0.5.
Crown Cover: mean 60.0%; range: 5.0-100.0.
Frequent species: *Sporobolus virginicus, Cynodon dactylon, Phragmites australis, Einadia hastata, Enchylaena tomentosa* var. *glabra, Juncus kraussii, Suaeda australis, Alternanthera denticulata, Fimbristylis polytrichoides.*

Number of Sites: 0.

Sampling Index: Not sampled.

Representative Sites: No detailed sites, description based on numerous observational sites.

Ecological Notes:

This community occurs just above the upper limits of tidal inundation. Because of its more open nature, a dense ground layer of *Sporobolus virginicus* forms. As a result, there are no bare patches to colonise and there are less weeds than in the denser but similar map unit 5A(i)a.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.1.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 180.2 ha of this vegetation unit, 104.9 ha (58.2%) is presently in reserve.

Map Unit: 5A(ii)a *Casuarina glauca* low woodland

Description: *Casuarina glauca* forms a mid-dense canopy at about 8m height. *Melaleuca quinquenervia* is also often present. A sparse low shrub layer to about 5m sometimes occurs, and contains young *Casuarina glauca*, *Melaleuca quinquenervia* and *Myoporum acuminatum*. A dense grassy understorey is dominated by *Sporobolus virginicus* and *Phragmites australis* with saltbushes and sedges also present.

Structural Formation Range: low open-forest, low woodland (100%).

Basal Area Estimate m^2ha^{-1}: mean 15.3; range 1.5-27.0.
Casuarina glauca (15.1 m^2ha^{-1}), *Melaleuca quinquenervia* (0.2 m^2ha^{-1}).

Canopy Layer
Height: mean 7.3m; range: 4.0-12.0.
Crown Cover: mean 46.5%; range: 5.0-74.0.
Frequent species: *Casuarina glauca* (100%), *Melaleuca quinquenervia* (33%), *Excoecaria agallocha* (22%), *Cupaniopsis anacardioides* (11%).

Shrub Layer
Height: mean 2.7m; range: 1.0-4.0.
Crown Cover: mean 21.0%; range: 5.0-40.0.
Frequent species: *Casuarina glauca* (55%), *Melaleuca quinquenervia* (22%), *Myoporum acuminatum* (11%).

Ground Layer
Height: mean 0.8m; range: 0.1-2.0.
Crown Cover: mean 68.3%; range: 5.0-100.0.
Frequent species: *Sporobolus virginicus* (66%), *Phragmites australis* (55%), *Baccharis halimifolia* (22%), *Acacia aulacocarpa* (11%), *Acrostichum speciosum* (11%), *Cynodon dactylon* (11%), *Einadia hastata* (11%), *Enchylaena tomentosa* var. *glabra* (11%), *Fimbristylis dichotoma* (11%), *Ipomoea cairica* (11%), *Juncus kraussii* (11%), *Myoporum acuminatum* (11%), *Passiflora suberosa* (11%), *Solanum seaforthianum* (11%), *Stenotaphrum secundatum* (11%), *Tetragonia tetragonioides* (11%).

Total species recorded: 36. **Mean species per site:** 8 with a s.d. of 4.

Number of Sites: 9.

Sampling Index: 1 site per 39 ha.

Representative Sites: 18, 70, 125, 141, 152, 217, 219, 221, 230.

Ecological Notes:

This widespread community often forms a narrow fringe on the landward side of the mangroves, samphires and sedgelands but in these areas it is usually too narrow to map. Weeds frequently occur, with *Baccharis halimifolia* commonly being present. *Melaleuca quinquenervia* is commonly found to its landward edge.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.1.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 354 ha of this vegetation unit, 140.5 ha (39.7%) is presently in reserve.

Map Unit: 5A(ii)b ***Casuarina glauca*** **low open-woodland**

Description: *Casuarina glauca* forms a sparse canopy at about 6m. There is a dense grass layer 50cm tall dominated by *Paspalum vaginatum*, with *Sporobolus virginicus* also present. A very sparse cover of *Phragmites australis* (1.5m tall) emerges above this layer.

Structural Formation Range: low open-woodland (100%).

Basal Area Estimate m^2ha^{-1}: 1.0.
Casuarina glauca (*1.0 m^2ha^{-1}).*

Canopy Layer
Height: mean 6.0m; range: 4.0-8.0.
Crown Cover: 13.0%.
Frequent species: *Casuarina glauca* (100%).

Ground Layer
Height: mean 1.0m; range: 0.5-1.5.
Crown Cover: 70.0%.
Frequent species: *Fimbristylis ferruginea* (100%), *Paspalum vaginatum* (100%), *Phragmites australis* (100%), *Sporobolus virginicus* (100%).

Total species recorded: 10.

Number of Sites: 1.

Sampling Index: 1 site per 48 ha.

Representative Site: 206.

Ecological Notes:

This unit is usually grassy underneath and commonly contains areas of ponded freshwater.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.1.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 47.8 ha of this vegetation unit, 33.6ha (70.3%) is presently in reserve.

Map Unit: 5B(i) ***Casuarina glauca, Melaleuca quinquenervia*** **open-forest**

Description: A mid-dense canopy of *Casuarina glauca* and *Melaleuca quinquenervia* co-dominate at about 14m. There is sometimes a second tree layer at about 8m, where *Melaleuca quinquenervia* is more dominant than *Casuarina glauca*. A sparse shrub layer of juveniles of both species frequently occurs at about 4m. A dense ground layer is usually present, dominated by grass and a variety of herbs.

Structural Formation Range open-forest (80%), woodland, low open-forest, low woodland (20%).

Basal Area Estimate m^2ha^{-1}: mean 35.6; range 19.0-53.0.
Melaleuca quinquenervia (20.8 m^2ha^{-1}), *Casuarina glauca* (13.8 m^2ha^{-1}), *Eucalyptus tereticornis* (0.8 m^2ha^{-1}), *Alphitonia excelsa* (0.2 m^2ha^{-1}).
Canopy Layer
Height: mean 13.9m; range: 8.0-20.0.
Crown Cover: mean 65.2%; range: 10.0-88.0.
Frequent species: *Casuarina glauca* (100%), *Melaleuca quinquenervia* (100%), *Eucalyptus tereticornis* (20%).

Subcanopy Layer
Height: mean 8.1m; range: 2.0-16.0.
Crown Cover: mean 20.0%; range: 10.0-50.0.
Frequent species:
Melaleuca quinquenervia (60%), *Casuarina glauca* (40%), *Alphitonia excelsa* (20%), *Eucalyptus tereticornis* (20%), *Ipomoea cairica* (20%), *Schinus terebinthifolia* (20%).

Shrub Layer
Height: mean 4.2m; range: 1.0-6.0.
Crown Cover: mean 25.0%; range: 5.0-40.0.
Frequent species: *Casuarina glauca* (40%), *Melaleuca quinquenervia* (40%), *Cupaniopsis anacardioides* (20%), *Schinus terebinthifolia* (20%), *Solanum seaforthianum* (20%).

Ground Layer
Height: mean 0.7m; range: 0.2-2.0.
Crown Cover: mean 69.0%; range: 40.0-100.0.
Frequent species: *Acrostichum speciosum* (20%), *Asparagus densiflorus* (20%), *Commelina diffusa* (20%), *Dianella brevipedunculata* (20%), *Dianella caerulea* (20%), *Digitaria didactyla* (20%), *Einadia hastata* (20%), *Imperata cylindrica* (20%), *Lomandra longifolia* (20%), *Myoporum acuminatum* (20%), *Ottochloa gracillima* (20%), *Phragmites australis* (20%), *Themeda triandra* (20%).

Total species recorded: 102. **Mean species per site:** 28 with a s.d. of 11.

Number of Sites: 5.

Sampling Index: 1 site per 80 ha.

Representative Sites: 20, 130, 191, 199, 324.

Ecological Notes:

This community occurs at the interface between fresh and brackish water. The *Casuarina glauca* are often taller than the *Melaleuca quinquenervia*. Weed invasion is extensive and commonly includes *Baccharis halimifolia*, *Lantana camara*, *Schinus terebinthifolia* and *Solanum seaforthianum*. Garden escapes or dumped plants readily establish and are frequently present.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.1.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 399.8 ha of this vegetation unit, 217.2 ha (54.3%) is presently in reserve.

Map Unit: 5B(ii) (dying) ***Casuarina glauca, Melaleuca quinquenervia*** **open-forest**

Description: This is the same as the previous community (5B(i)), but is suffering dieback. There is a dense shrub layer at 2m of *Baccharis halimifolia*.

Structural Formation Range: open-forest**,** woodland (100%), low open-forest.

Basal Area Estimate m^2ha^{-1}: mean 14.0.
Melaleuca quinquenervia (12.0 m^2ha^{-1}), *Casuarina glauca* (2.0 m^2ha^{-1}).

Canopy Layer
Height: 12.0m.
Crown Cover: 47.0%.
Frequent species: *Casuarina glauca* (100%), *Melaleuca quinquenervia* (100%).

Shrub Layer
Height: 2.0m.
Crown Cover: 80.0%.
Frequent species: *Baccharis halimifolia* (100%), *Melaleuca quinquenervia* (100%).

Ground Layer
Height: 0.5m.
Crown Cover: 5.0%.
Frequent species: *Fimbristylis dichotoma* (100%).

Total species recorded: 6.

Number of Sites: 1.

Sampling Index: 1 site per 62 ha.

Representative Site: 43.

Ecological Notes:

This unit occurs at the interface between areas under saline and freshwater influence. It mainly occurs on Bribie Island and Pumicestone Passage, especially around Tripcony Bight. It is probably the result of lowered water tables due to the recent prolonged drought causing the breakdown of acid sulphate soils.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.1.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 62.1 ha of this vegetation unit, 37.9 ha (61.0%) is presently in reserve.

Map Unit: 5C(i) ***Casuarina glauca, Bruguiera gymnorhiza, Excoecaria agallocha*** **low open-forest**

Description: An uneven canopy at about 8-10m is dominated by *Casuarina glauca* which reaches to 12m, and *Excoecaria agallocha* and *Bruguiera gymnorhiza* at about 6-8m comprising about 30% of the canopy. A sparse weedy layer dominated by *Baccharis halimifolia* sometimes occurs. The ground is uneven, with pooled water being common. The patchy ground layer is dominated by *Digitaria didactyla*, *Acrostichum speciosum* and *Fimbristylis ferruginea*.

Structural Formation Range: woodland (100%), low open-forest.

Basal Area Estimate m^2ha^{-1}: 21.0.
Casuarina glauca (15.0 m^2ha^{-1}), *Melaleuca quinquenervia* (2.0 m^2ha^{-1}), *Avicennia marina* subsp. *australasica* (2.0 m^2ha^{-1}), *Eucalyptus crebra* (1.0 m^2ha^{-1}), *Excoecaria agallocha* (1.0 m^2ha^{-1}).

Canopy Layer
Height: mean 9.0m; range: 6.0-12.0.
Crown Cover: 71.0%.
Frequent species: *Casuarina glauca* (100%), *Eucalyptus crebra* (100%), *Excoecaria agallocha* (100%), *Melaleuca quinquenervia* (100%).

Shrub Layer
Height: 3.0m.
Crown Cover: 20.0%.
Frequent species: *Baccharis halimifolia* (100%).

Ground Layer
Height: mean 1.5m; range: 1.0-2.0.
Crown Cover: 40.0%.
Frequent species: *Acrostichum speciosum* (100%), *Digitaria didactyla* (100%), *Fimbristylis ferruginea* (100%), *Juncus continuus* (100%), *Juncus kraussii* (100%).

Total species recorded: 17.

Number of Sites: 1.

Sampling Index: 1 site per 12 ha.

Representative Site: 65.

Ecological Notes:

This community occurs in the upper reaches of Hussey Creek and is subject to freshwater pooling underneath.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.1.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 11.5 ha of this vegetation unit, none is presently in reserve.

Map Unit: 5C(ii) ***Casuarina glauca, Avicennia marina*** **subsp. *australasica* low open-forest**

Description: An uneven canopy usually about 8-10m tall is dominated by *Casuarina glauca* with *Avicennia marina* subsp. *australasica* comprising about 40% of the canopy. A mid-dense second layer is usually present, and may contain other mangroves such as *Excoecaria agallocha* and *Ceriops tagal*, as well as young plants of the upper canopy species. *Myoporum acuminatum* and *Melaleuca quinquenervia* also be present. The ground layer has pools of water with patches of *Suaeda australis*, *Acrostichum speciosum* and *Phragmites australis*. In places, this community has a canopy reaching 18-20m in height.

Structural Formation Range: open-forest (50%), low open-forest (50%).

Basal Area Estimate m^2ha^{-1}: mean 29.5; range 22.0-37.0.
Casuarina glauca (22.5 m^2ha^{-1}), *Excoecaria agallocha* (4.0 m^2ha^{-1}), *Avicennia marina* subsp. *australasica* (2.5 m^2ha^{-1}), *Melaleuca quinquenervia* (0.5 m^2ha^{-1}).

Canopy Layer
Height: mean 14.0m; range: 8.0-20.0.
Crown Cover: mean 83.5%; range: 77.0-90.0.
Frequent species: *Avicennia marina* subsp. *australasica* (100%), *Casuarina glauca* (100%), *Excoecaria agallocha* (50%), *Melaleuca quinquenervia* (50%).

Subcanopy Layer
Height: mean 9.5m; range: 6.0-14.0.
Crown Cover: mean 35.0%; range: 30.0-40.0.
Frequent species: *Casuarina glauca* (100%), *Avicennia marina* subsp. *australasica* (50%), *Ceriops tagal* (50%), *Excoecaria agallocha* (50%), *Melaleuca quinquenervia* (50%), *Myoporum acuminatum* (50%).

Ground Layer
Height: mean 0.8m; range: 0.2-2.0.
Crown Cover: mean 35.0%; range: 10.0-60.0.
Frequent species: *Acrostichum speciosum* (50%), *Phragmites australis* (50%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (50%), *Suaeda australis* (50%).

Total species recorded: 21. **Mean species per site:** 12 with a s.d. of 6.

Number of Sites: 2.

Sampling Index: 1 site per 4 ha.

Representative Sites: 16, 202.

Ecological Notes:

This community occurs at the interface between *Casuarina glauca* and mangroves in areas in which there is substantial freshwater seepage, but over which the highest spring tides may occur.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.1.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 7.4 ha of this vegetation unit, 1.2 ha (16.2%) is presently in reserve.

Map Unit: 5C(iii) ***Casuarina glauca, Avicennia marina*** **subsp.** ***australasica, Aegiceras corniculatum*** **open-forest**

Description: A canopy usually about 10-14m tall is dominated by *Casuarina glauca*, with *Avicennia marina* subsp. *australasica* always contributing significantly to the canopy. A dense lower tree layer is present and is dominated by *Aegiceras corniculatum*. The ground layer is mostly bare due to the shading effects of the dense mangrove understorey.

Structural Formation Range: open-forest, woodland.

Basal Area Estimate m^2ha^{-1}: No estimates.

Canopy Layer
Height: mean 14.0m; range: 10.0-18.0.
Crown Cover: mean 60.0%; range: 20.0-80.0.
Frequent species: *Avicennia marina* subsp. *australasica, Casuarina glauca.*

Subcanopy Layer
Height: mean 2.0m; range: 1.5-3.0.
Crown Cover: mean 70.0%; range: 60.0-100.0.
Frequent species: *Aegiceras corniculatum.*

Number of Sites: 0.

Sampling Index: not sampled.

Representative Sites: Not sampled.

Ecological Notes:

This community occurs along the lower reaches of King John Creek and was probably more extensive than at present but due to clearing it is now limited in extent. It represents the interface between low lying areas under tidal influence and adjacent areas under freshwater influence.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.1.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 17.4 ha of this vegetation unit, none is presently in reserve.

Map Unit: 6A(i) ***Juncus kraussii* ±*Restio pallens* open-sedgeland**

Description: *Juncus kraussii* or *Restio pallens* dominate an open to very dense sedgeland up to about 1m high. *Baumea juncea, Baumea rubiginosa,* and *Fimbristylis ferruginea* are other commonly occurring sedges in the main layer. A dense lower ground layer of *Sporobolus virginicus* to 20cm tall is frequently found in gaps between the clumps of sedges. Isolated emergent shrubs of *Avicennia marina* subsp. *australasica* 4-6m tall are also sometimes present.

Structural Formation Range: closed-sedgeland (17%), sedgeland (17%), open-sedgeland (66%).

Basal Area Estimate m^2ha^{-1}: mean 0.8; range 0.0-2.5.
Avicennia marina subsp. *australasica* (*0.8 m^2ha^{-1}).*

Emergent Layer
Height: mean 5.0m; range: 4.0-6.0.
Crown Cover: mean 34.0%; range: 34.0-34.0.
Frequent species: *Avicennia marina* subsp. *australasica* (16%).

Ground Layer
Height: mean 0.6m; range: 0.1-50.0.
Crown Cover: mean 83.5%; range: 60.0-100.0.
Frequent species: *Juncus kraussii* (83%), *Sporobolus virginicus* (83%), *Baumea juncea* (33%), *Baumea rubiginosa* (16%), *Fimbristylis ferruginea* (16%), *Juncus continuus* (16%), *Paspalum vaginatum* (16%), *Philydrum lanuginosum* (16%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (16%).

Total species recorded: 34. **Mean species per site:** 9 with a s.d. of 4.

Number of Sites: 6.

Sampling Index: 1 site per 32 ha.

Representative Sites: 36, 68, 81, 111, 185, 330.

Ecological Notes:

This community generally occurs in areas subject to freshwater seepage or pondage landward of the mangroves and seaward of the *Casuarina glauca* communities. It is widespread in distribution, usually occurring as a narrow fringe, but is seldom extensive in area.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.2.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 191.4 ha of this vegetation unit, 61.8 ha (32.3%) is presently in reserve.

Map Unit: 6A(ii) ***Schoenoplectus littoralis, Juncus kraussii, Fimbristylis ferruginea* ±*Phragmites australis* closed-sedgeland**

Description: This is a very dense sedgeland dominated by *Schoenoplectus litoralis*, *Juncus kraussii* or *Fimbristylis ferruginea* usually about 1m tall, but sometimes up to 1.5m. *Phragmites australis* is often present as a co-dominant. *Sporobolus virginicus* occurs below the sedges at 20cm.

Structural Formation Range: closed-sedgeland (60%), sedgeland (20%), open-sedgeland (20%).

Basal Area Estimate m^2ha^{-1}: mean 1.4; range 0.0-7.0.
Casuarina glauca (0.8 m^2ha^{-1}), *Melaleuca quinquenervia* (0.4 m^2ha^{-1}), *Eucalyptus tereticornis* (0.2 m^2ha^{-1}).

Emergent Layer
Height: mean 3.0m; range: 1.0-8.0.
Crown Cover: mean 2.7%; range: 2.0-5.0.
Frequent species: *Avicennia marina* subsp. *australasica* (40%), *Casuarina glauca* (40%), *Aegiceras corniculatum* (20%), *Lumnitzera racemosa* (20%).

Ground Layer
Height: mean 0.5m; range: 0.2-1.5.
Crown Cover: mean 89.0%; range: 80.0-100.0.
Frequent species: *Sporobolus virginicus* (100%), *Juncus kraussii* (60%), *Phragmites australis* (60%), *Fimbristylis dichotoma* (40%), *Fimbristylis ferruginea* (40%), *Juncus continuus* (40%), *Baumea rubiginosa* (20%), *Paspalum vaginatum* (20%), *Samolus repens* (20%), *Schoenoplectus litoralis* (20%).

Total species recorded: 27. **Mean species per site:** 10 with a s.d. of 3.

Number of Sites: 5.

Sampling Index: 1 site per 0.7 ha.

Representative Sites: 31, 46, 76, 159, 184.

Ecological Notes:

This community occurs in saline or brackish situations.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.2.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 3.5 ha of this vegetation unit, 1.9 ha (54.3%) is presently in reserve.

Map Unit: 6A(iii) ***Schoenus nitens*** **closed-sedgeland**

Description: This is a very dense low sedgeland 10-20cm tall dominated by *Schoenus nitens* to the exclusion of most other species. It forms a dense low sand-binding mat.

Structural Formation Range: closed-sedgeland (100%), sedgeland.

Basal Area Estimate m^2ha^{-1}: 0.

Ground Layer
Height: mean 0.1m; range: 0.1-0.2.
Crown Cover: mean 93.5%; range: 87.0-100.0.
Frequent species: *Samolus repens* (100%), *Schoenus nitens* (100%), *Bacopa monnieri* (50%), *Juncus kraussii* (50%).

Total species recorded: 12. **Mean species per site:** 9 with a s.d. of 4.

Number of Sites: 2.

Sampling Index: 1 site per 10 ha.

Representative Sites: 240, 241.

Ecological Notes:

This community occurs on low nutrient sands in areas subject to freshwater seepage. It may be occasionally inundated by the highest tides or be subject to salt water intrusion from the groundwater table on the highest tides. It has a restricted distribution, being found only on South Stradbroke Island to the south of Jumpinpin in recently stabilised areas.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.2.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 20.0 ha of this vegetation unit, none is presently in reserve.

Map Unit: 6A(iv) ***Carex pumila*** **sedgeland**

Description: *Carex pumila* dominates a mid-dense sedgeland to 20cm tall. A variety of other species occur in small numbers.

Structural Formation Range: sedgeland (100%)..

Basal Area Estimate m^2ha^{-1}: 0.

Ground Layer
Height: 0.2m.
Crown Cover: 50.0%.
Frequent species: *Carex pumila* (100%).

Total species recorded: 13. **Mean species per site:** 13 with a s.d. of 0.

Number of Sites: 1.

Sampling Index: 1 site per 2 ha.

Representative Site: 242.

Ecological Notes:

This is a pioneer community found in sand at the foot of the dunes between regularly tidally inundated areas and the dunes proper in areas of freshwater seepage. It is subject to tidal inundation on the highest tides and is found on the northern tip of South Stradbroke Island.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.2.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 2.0 ha of this vegetation unit, none is presently in reserve.

Map Unit: 6A(v) ***Juncus kraussii, Cyperus laevigatus, Triglochin striatum*** **closed-sedgeland**

Description: This dense sedgeland 1-1.5m tall is dominated by *Juncus kraussii* with lesser quantities of *Cyperus laevigatus* and *Triglochin striatum*. A variety of other plants occur in small numbers.

Structural Formation Range: closed-sedgeland (100%), sedgeland.

Basal Area Estimate m^2ha^{-1}: 0.

Ground Layer
Height: mean 1.2m; range: 1.0-1.5.
Crown Cover: 90.0%.
Frequent species: *Cynanchum carnosum* (100%), *Fimbristylis ferruginea* (100%), *Juncus kraussii* (100%), *Triglochin striatum* (100%).

Total species recorded: 20.

Number of Sites: 1.

Sampling Index: 1 site per 22 ha.

Representative Site: 338.

Ecological Notes:

This is a sedgeland of brackish situations which is found at the northern end of Moreton Island.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.2.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 21.7 ha of this vegetation unit, 13.9 ha (64.1%) is presently in reserve.

Map Unit: 6A(vi) ***Cyperus laevigatus, Paspalum vaginatum, Triglochin striatum, Schoenus nitens*** **closed-sedgeland**

Description: This dense sedgeland about 50cm tall is dominated by *Cyperus laevigatus* which contributes about 50% of the cover. The other major components of the cover are *Paspalum vaginatum*, about 30%, and *Triglochin striatum* and *Schoenus nitens* about 10% each. Isolated occurrences of a variety of other plants are also present.

Structural Formation Range: closed-sedgeland (100%), sedgeland.

Basal Area Estimate m^2ha^{-1}: 0.

Ground Layer
Height: mean 0.5m; range: 0.3-1.0.
Crown Cover: 100.0%.
Frequent species: *Cyperus laevigatus* (100%), *Paspalum vaginatum* (100%), *Triglochin striatum* (100%).

Total species recorded: 20.

Number of Sites: 1.

Sampling Index: 1 site per 5 ha.

Representative Site: 334.

Ecological Notes:

This community occurs on the south eastern tip of Moreton Island under brackish conditions in areas of freshwater seepage surrounding Mirapool Lagoon.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.2.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 5.4 ha of this vegetation unit, none is presently in reserve.

Map Unit: 6B(i) ***Baumea articulata, Lepironia articulata, Phragmites australis*** **closed-sedgeland**

Description: These freshwater reed swamps up to 2m tall are dominated by *Baumea articulata* with clumps of *Lepironia articulata* and varying amounts of *Phragmites australis* also present. These closed-sedgelands frequently occur in water 0.5-0.75m deep.

Structural Formation Range: closed-sedgeland (100%).

Basal Area Estimate m^2ha^{-1}: 0.

Emergent Layer
Height: 4.0m.
Crown Cover: 2.0%.
Frequent species: *Melaleuca quinquenervia* (100%).

Ground Layer
Height: mean 1.7m; range: 1.5-2.0.
Crown Cover: 95.0%.
Frequent species: *Baumea rubiginosa* (100%), *Callistemon pachyphyllus* (100%).

Total species recorded: 9.

Number of Sites: 1.

Sampling Index: 1 site per 300 ha.

Representative Site: 100.

Ecological Notes:

This is a freshwater sedgeland community. It occurs in deep water, and is often found in association with *Melaleuca quinquenervia* communities. Its often impenetrable nature makes this a favoured nesting community for waterbirds.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.2.15.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 300.4 ha of this vegetation unit, 21.9 ha (7.3%) is presently in reserve.

Map Unit: 6B(ii) ***Bolboschoenus caldwellii, Eleocharis dulcis ±Phragmites australis, Typha domingensis*** **closed-sedgeland**

Description: This dense sedgeland up to 1m tall is dominated by *Eleocharis dulcis* with *Bolboschoenus caldwellii* subdominant. *Phragmites australis* and *Typha domingensis* are not always present, but when present they contribute a higher layer to the sedgeland. Other sedges and grasses occur in small amounts.

Structural Formation Range: closed-sedgeland (100%).

Basal Area Estimate m^2ha^{-1}: 0.

Ground Layer
Height: mean 0.7m; range: 0.3-1.0.
Crown Cover: mean 95.0%; range: 90.0-100.0.
Frequent species: *Bolboschoenus caldwellii* (100%), *Eleocharis dulcis* (100%), *Baumea rubiginosa* (50%), *Cynodon dactylon* (50%), *Paspalum vaginatum* (50%).

Total species recorded: 16**.** **Mean species per site:** 10 with a s.d. of 1.

Number of Sites: 2.

Sampling Index: 1 site per 38 ha.

Representative Sites: 192, 328.

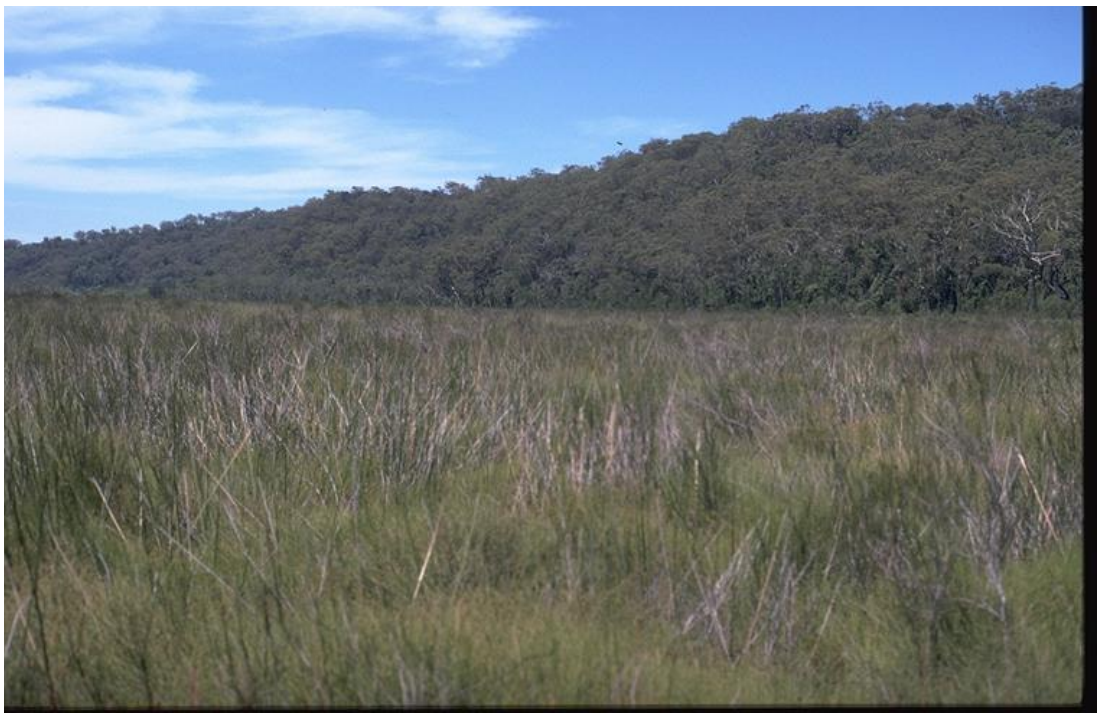
Ecological Notes:

This community, which occurs adjacent to the Redcliffe Airport forms an ephemeral freshwater sedgeland. The occurrence and frequency of species present is likely to change over time depending on seasonal conditions and water inundation. It is also a major water bird habitat.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.2.15.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 75.8 ha of this vegetation unit, none is presently in reserve.

Map Unit: 6B(iii) ***Empodisma minus, Gleichenia mendellii* ±*Gahnia sieberiana* closed-sedgeland**



Description: *Empodisma minus* dominates this very dense tangle of sedges 1-1.5m tall. The fern *Gleichenia mendellii* is commonly a co-dominant while *Gahnia sieberiana* to 2m tall often forms a difficult to penetrate outer ecotonal fringe between the freshwater swamp and the adjacent higher country. A mixture of sedges and heath species adds to the complexity of this community.

Structural Formation Range: closed-sedgeland (100%).

Basal Area Estimate m^2ha^{-1}: 0.

Ground Layer
Height: mean 1.2m; range: 0.5-2.0.
Crown Cover: mean 97.0%; range: 90.0-100.0.
Frequent species: *Empodisma minus* (90%), *Gahnia sieberiana* (80%), *Gleichenia mendellii* (50%), *Epacris microphylla* (20%), *Baumea rubiginosa* (10%), *Baumea teretifolia* (10%), *Blechnum indicum* (10%), *Epacris obtusifolia* (10%), *Lepironia articulata* (10%), *Leptospermum liversidgei* (10%), *Schoenus scabripes* (10%).

Total species recorded: 38. **Mean species per site:** 12 with a s.d. of 3.

Number of Sites: 10.

Sampling Index: 1 site per 150 ha.

Representative Sites: 261, 266, 308, 310, 316, 331, 333, 337, 340, 341.

Ecological Notes:

This map unit mainly occurs at the base of the dunes on the western side of Moreton and North Stradbroke Islands. This community is often referred to as "Gahnia sedgeland". In reality the *Gahnia sieberiana* only occurs in the 2 to 5m wide gutter-like ecotone between the adjacent higher ground and lower area of the swamp proper, generally in areas subject to shade. The ground within the community is often hummocky and clumps of *Gahnia sieberiana* may be scattered throughout on these hummocks. The dense tangle of ferns and sedges in the hummocky terrain makes progress very difficult. An unusual form of *Drosera spatulata* was found on North Stradbroke Island in one of these sedgelands.

Regional Ecosystem:

This map unit contains *Schoenus scabripes* in 70% of the sites sampled. This plant is listed as "Rare" in the schedules of the Nature Conservation Act, 1992.

Regional Ecosystem which contains this map unit: 12.2.15.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 1498.2 ha of this vegetation unit, 531.6 ha (35.5%) is presently in reserve.

Map Unit: 6C(i) Sedgeland and myrtaceous species heathland

Description: *Lepironia articulata* dominates this 1.5m tall mid-dense sedgeland, with *Blechnum indicum* as a major component. Heath species such as *Callistemon pachyphyllus* and *Epacris microphylla* also form major components of this community. Other sedges such as *Baumea rubiginosa*, R*estio tetraphyllus* and *Restio pallens* frequently occur. Emergent stunted trees up to 6m tall, of water-tolerant species, such as *Eucalyptus robusta*, *Lophostemon suaveolens* and *Melaleuca quinquenervia* often occur in open clumps.

Structural Formation Range: heathland, sedgeland (100%).

Basal Area Estimate m^2ha^{-1}: 4.0.
Eucalyptus robusta (4.0 m^2ha^{-1}).

Emergent Layer
Height: mean 4.5m; range: 3.0-6.0.
Crown Cover: 18.0%.
Frequent species: *Eucalyptus robusta* (100%), *Lophostemon suaveolens* (100%).

Ground Layer
Height: mean 1.5m; range: 1.0-2.0.
Crown Cover: 82.0%.
Frequent species: *Baumea rubiginosa* (100%), *Blechnum indicum* (100%), *Callistemon pachyphyllus* (100%), *Lepironia articulata* (100%).

Total species recorded: 14.

Number of Sites: 1.

Sampling Index: 1 site per 283 ha.

Representative Site: 101.

Ecological Notes:

These wet heath sedgelands have a high species diversity. The water table is usually at or slightly above ground level. The myrtaceous species usually occur on small peaty mounds or rises within the community. The trees within these communities usually have a depauperate growth form, probably as a result of frequent severe fires.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.2.12.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 283.2 ha of this vegetation unit, 27.0 ha (9.5%) is presently in reserve.

Map Unit: 6D(i) Eighteen Mile Swamp sedge complex closed-sedgeland

Description: This is a large complex of sedgelands where different sedges occur as a series of monocultures usually about 1.5m tall, arranged in a patchy distribution. Common dominants are *Empodisma minus*, *Gleichenia mendellii*, *Lepironia articulata* and *Cladium procerum*. Scattered emergents of stunted *Melaleuca quinquenervia* to about 3m, and clumps of *Gahnia sieberiana* to about 2.5m occur throughout in wetter patches.

Structural Formation Range: closed-sedgeland (100%).

Basal Area Estimate m^2ha^{-1}: 0.

Emergent Layer
Height: mean 1.5m; range: 1.0-2.0.
Crown Cover: mean 5.0%; range: 5.0-5.0.
Frequent species: *Gahnia sieberiana* (50%), *Melaleuca quinquenervia* (25%).

Ground Layer
Height: mean 1.4m; range: 0.5-2.5.
Crown Cover: mean 100.0%; range: 100.0-100.0.
Frequent species: *Blechnum indicum* (75%), *Baumea rubiginosa* (50%), *Gleichenia mendellii* (50%), *Cladium procerum* (25%), *Empodisma minus* (25%), *Lepironia articulata* (25%), *Schoenus scabripes* (25%).
Total species recorded: 17. **Mean species per site:** 6 with a s.d. of 4.

Number of Sites: 4.

Sampling Index: 1 site per 469 ha.

Representative Sites: 312, 313, 314, 315.

Ecological Notes:

This large complex of different sedgelands stretches along most of the eastern edge of North Stradbroke Island behind the frontal dunes. It is dominated by many different sedge species and needs to by mapped in greater detail to unravel the detail of the complex.

Regional Ecosystem:

This map unit contains *Schoenus scabripes* in 25% of the sites sampled. This plant is listed as "Rare" in the schedules of the Nature Conservation Act, 1992.

Regional Ecosystem which contains this map unit: 12.2.15.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 1876.4 ha of this vegetation unit, none is presently in reserve.

Map Unit: 7A(i) ***Melaleuca quinquenervia*** **tall open-forest**

Description: This tall dense open-forest is dominated by *Melaleuca quinquenervia*. It sometimes has a sparse variable height subcanopy dominated by *Livistona australis* and *Glochidion sumatranum* and lianes of *Parsonsia straminea*. This subcanopy usually forms on the alluvial soils. A mid-dense tall ground layer 1m high is dominated by ferns such as *Blechnum indicum* and *Lygodium microphylla*, and sedges.

Structural Formation Range: tall closed-forest, tall open-forest (100%), tall woodland.

Basal Area Estimate m^2ha^{-1}: 35.0.
Melaleuca quinquenervia (35.0 m^2ha^{-1}).

Canopy Layer
Height: 25.0m.
Crown Cover: 73.0%.
Frequent species: *Melaleuca quinquenervia* (100%).

Subcanopy Layer
Height: mean 8.0m; range: 6.0-10.0.
Crown Cover: 5.0%.
Frequent species: *Glochidion sumatranum* (100%), *Livistona australis* (100%).

Ground Layer
Height: mean 1.2m; range: 1.0-1.5.
Crown Cover: 60.0%.
Frequent species: *Blechnum indicum* (100%), *Cyperus lucidus* (100%).

Total species recorded: 18.

Number of Sites: 1.

Sampling Index: 1 site per 249 ha.

Representative Site: 5.

Ecological Notes:

This community is relatively weed free due to the dense ground layer.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.3.5.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 248.9 ha of this vegetation unit, 60.8 ha (24.4%) is presently in reserve.

Map Unit: 7A(ii)a *Melaleuca quinquenervia* open-forest

Description: *Melaleuca quinquenervia* forms a mid-dense canopy at about 10-12m, with *Casuarina glauca* and *Lophostemon suaveolens* often present. The sparse shrub layer when it exists is dominated by younger *Melaleuca quinquenervia*, *Baccharis halimifolia*, *Lantana camara* and *Acacia aulacocarpa* regrowth. The ground layer is usually mid-dense with *Blechnum indicum* the predominant species. Sedges such as *Baumea rubiginosa*, and the grass *Phragmites australis* occur in the wetter sites and grasses such as *Imperata cylindrica* in the drier sites. The ground layer varies according to recent fire history.

Structural Formation Range: closed-forest, open-forest (90%), woodland (10%).

Basal Area Estimate m^2ha^{-1}: mean 42.3; range 17.0-72.0.
Melaleuca quinquenervia (40.2 m^2ha^{-1}), *Allocasuarina littoralis* (0.7 m^2ha^{-1}), *Casuarina glauca* (0.6 m^2ha^{-1}), *Eucalyptus tereticornis* (0.3 m^2ha^{-1}), *Lophostemon suaveolens* (0.2 m^2ha^{-1}), *Corymbia intermedia* (0.1 m^2ha^{-1}), *Acacia aulacocarpa* (0.1 m^2ha^{-1}), *Glochidion sumatranum* (0.1 m^2ha^{-1}).

Canopy Layer
Height: mean 12.0m; range: 4.0-24.0.
Crown Cover: mean 55.2%; range: 5.0-96.0.
Frequent species: *Melaleuca quinquenervia* (100%), *Casuarina glauca* (28%), *Lophostemon suaveolens* (28%), *Eucalyptus tereticornis* (19%), *Glochidion sumatranum* (19%).

Shrub Layer
Height: mean 3.1m; range: 1.0-8.0.
Crown Cover: mean 21.1%; range: 2.0-80.0.
Frequent species: *Melaleuca quinquenervia* (33%), *Baccharis halimifolia* (28%), *Acacia aulacocarpa* (9%), *Lantana camara* (9%).

Ground Layer
Height: mean 1.1m; range: 0.1-3.0.
Crown Cover: mean 66.4%; range: 10.0-100.0.
Frequent species: *Blechnum indicum* (66%), *Baumea rubiginosa* (19%), *Imperata cylindrica* (19%), *Phragmites australis* (19%), *Baumea articulata* (14%), *Lepironia articulata* (14%), *Melastoma affine* (9%), *Persicaria strigosa* (9%), *Pteridium esculentum* (9%), *Restio pallens* (9%), *Themeda triandra* (9%).

Total species recorded: 142. **Mean species per site:** 16 with a s.d. of 6.

Number of Sites: 21.

Sampling Index: 1 site per 149 ha.

Representative Sites: 8, 13, 51, 52, 53, 59, 63, 80, 86, 95, 102, 126, 135, 139, 172, 215, 232, 280, 288, 307, 339.

Ecological Notes:

This community is commonly invaded by the weeds *Baccharis halimifolia* and *Lantana camara* in the shrub layer, especially where they are adjacent to areas subject to salt water influence such as *Sporobolus virginicus* grasslands, claypan or saltmarsh. These weeds may in these situations form a very dense shrub layer.

Regional Ecosystem:

This map unit contains *Durringtonia paludosa* in 4% of the sites sampled. This plant is listed as "Rare" in the schedules of the Nature Conservation Act, 1992.

Regional Ecosystem which contains this map unit: 12.3.5.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 3133.6 ha of this vegetation unit, 877.5 ha (28.0%) is presently in reserve.

Map Unit: 7A(ii)b ***Melaleuca quinquenervia*** **woodland**

Description: *Melaleuca quinquenervia* dominates the canopy at 14-16m. Often a second layer of younger trees occurs at 8-10m. A sparse shrub layer is common and varies in height about 4m. As well as *Melaleuca quinquenervia*, it contains regrowth of *Acacia leiocalyx*, *Alphitonia excelsa* and *Glochidion sumatranum* and weedy species such as *Baccharis halimifolia*. The ground layer is dense and dominated by either *Blechnum indicum* or *Imperata cylindrica*. Other sedges, grasses and weed species also occur.

Structural Formation Range: woodland (100%), open-woodland.

Basal Area Estimate m^2ha^{-1}: mean 34.4; range 0.0-59.0.
Melaleuca quinquenervia (34.0 m^2ha^{-1}), *Casuarina glauca* (0.3 m^2ha^{-1}), *Eucalyptus crebra* (0.1 m^2ha^{-1}).

Canopy Layer
Height: mean 15.6m; range: 8.0-25.0.
Crown Cover: mean 51.3%; range: 5.0-74.0.
Frequent species: *Melaleuca quinquenervia* (100%), *Casuarina glauca* (8%), *Eucalyptus crebra* (8%), *Eucalyptus tereticornis* (8%), *Parsonsia straminea* (8%).

Subcanopy Layer
Height: mean 9.3m; range: 6.0-12.0.
Crown Cover: mean 15.8%; range: 5.0-50.0.
Frequent species: *Melaleuca quinquenervia* (41%), *Casuarina glauca* (8%), *Corymbia intermedia* (8%), *Lophostemon suaveolens* (8%), *Parsonsia straminea* (8%).

Shrub Layer
Height: mean 4.1m; range: 1.5-8.0.
Crown Cover: mean 13.6%; range: 2.0-60.0.
Frequent species: *Melaleuca quinquenervia* (58%), *Acacia leiocalyx* (25%), *Alphitonia excelsa* (25%), *Glochidion sumatranum* (25%), *Baccharis halimifolia* (16%), *Casuarina glauca* (8%), *Eucalyptus crebra* (8%), *Hibiscus diversifolius* (8%), *Leptospermum polygalifolium* (8%), *Lophostemon suaveolens* (8%), *Parsonsia straminea* (8%), *Schefflera actinophylla* (8%).

Ground Layer
Height: mean 1.3m; range: 0.5-2.5.
Crown Cover: mean 82.7%; range: 30.0-100.0.
Frequent species: *Blechnum indicum* (41%), *Imperata cylindrica* (41%), *Baumea rubiginosa* (33%), *Gahnia sieberiana* (25%), *Leersia hexandra* (25%), *Baccharis halimifolia* (16%), *Lepironia articulata* (16%), *Lomandra longifolia* (16%), *Parsonsia straminea* (16%), *Paspalum scrobiculatum* (16%), *Phragmites australis* (16%), *Acacia leiocalyx* (8%), *Alphitonia excelsa* (8%), *Banksia oblongifolia* (8%), *Banksia robur* (8%), *Baumea articulata* (8%), *Baumea juncea* (8%), *Dianella congesta* (8%), *Entolasia marginata* (8%), *Fimbristylis ferruginea* (8%), *Gleichenia mendellii* (8%), *Hibiscus diversifolius* (8%), *Leucopogon pimeleoides* (8%), *Lophostemon suaveolens* (8%), *Lygodium microphyllum* (8%), *Melaleuca quinquenervia* (8%), *Ottochloa gracillima* (8%), *Paspalidium distans* (8%), *Philydrum lanuginosum* (8%), *Schoenus brevifolius* (8%), *Stephania japonica* (8%), *Themeda triandra* (8%), *Viola hederacea* (8%).

Total species recorded: 92. **Mean species per site:** 14 with a s.d. of 7.

Number of Sites: 12.

Sampling Index: 1 site per 114 ha.

Representative Sites: 54, 93, 140, 157, 158, 173, 204, 262, 267, 295, 306, 342.

Ecological Notes:

Baccharis halimifolia is often present as a weed in this community.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.3.5.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 1363.2 ha of this vegetation unit, 390.4 ha (28.6%) is presently in reserve.

Map Unit: 7A(iii)a *Melaleuca quinquenervia* low open-forest

Description: This low spindly dense *Melaleuca quinquenervia* community is commonly about 8m tall. Because of the density of stems, a shrub layer is rarely present. Where present it is very sparse and dominated by *Acacia aulacocarpa* and *Baccharis halimifolia*. The ground layer when present is a dense cover of either *Blechnum indicum* or *Themeda triandra*.

Structural Formation Range: low closed-forest, low open-forest (75%), low woodland (25%).

Basal Area Estimate m^2ha^{-1}: mean 42.5; range 28.0-48.0.
Melaleuca quinquenervia (42.5 m^2ha^{-1}).

Canopy Layer
Height: mean 8.5m; range: 6.0-10.0.
Crown Cover: mean 74.5%; range: 67.0-81.0.
Frequent species: *Melaleuca quinquenervia* (100%).

Shrub Layer
Height: mean 2.7m; range: 1.0-4.0.
Crown Cover: mean 5.0%; range: 5.0-5.0.
Frequent species: *Acacia aulacocarpa* (25%), *Baccharis halimifolia* (25%), *Banksia robur* (25%), *Macaranga tanarius* (25%), *Melaleuca quinquenervia* (25%).

Ground Layer
Height: mean 0.8m; range: 0.2-1.5.
Crown Cover: mean 77.5%; range: 60.0-100.0.
Frequent species: *Blechnum indicum* (50%), *Lepironia articulata* (25%), *Lygodium microphyllum* (25%), *Phragmites australis* (25%), *Themeda triandra* (25%).

Total species recorded: 39. **Mean species per site:** 14 with a s.d. of 10.

Number of Sites: 4.

Sampling Index: 1 site per 216 ha.

Representative Sites: 56, 89, 92, 309.

Ecological Notes:

This community appears to form on the poorer, low nutrient sandy soils.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.3.5.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 862.5 ha of this vegetation unit, 264.8 ha (30.7%) is presently in reserve.

Map Unit: 7A(iii)b *Melaleuca quinquenervia* low woodland

Description: *Melaleuca quinquenervia* dominates an open canopy at about 8-10m. There is a very sparse heath shrub layer of various species in which *Banksia aemula*, *Leptospermum liversidgei*, and *Leucopogon juniperinus* commonly occur. The ground layer is dense with *Blechnum indicum*, *Xanthorrhoea fulva* and *Restio pallens* predominating.

Structural Formation Range: low woodland (50%), low open-woodland (50%).

Basal Area Estimate m^2ha^{-1}: mean 15.5; range 8.0-23.0.
Melaleuca quinquenervia (12.0 m^2ha^{-1}), *Banksia aemula* (3.5 m^2ha^{-1}).

Canopy Layer
Height: mean 10.0m; range: 8.0-14.0.
Crown Cover: mean 39.0%; range: 26.0-52.0.
Frequent species: *Melaleuca quinquenervia* (100%).

Shrub Layer
Height: mean 2.0m; range: 1.0-3.0.
Crown Cover: mean 5.0%; range: 5.0-5.0.
Frequent species: *Acacia leiocalyx* (50%), *Banksia aemula* (50%), *Leptospermum liversidgei* (50%), *Leucopogon juniperinus* (50%), *Melaleuca quinquenervia* (50%), *Persoonia virgata* (50%).

Ground Layer
Height: mean 0.7m; range: 0.5-1.0.
Crown Cover: mean 70.0%; range: 70.0-70.0.
Frequent species: *Blechnum indicum* (50%), *Restio pallens* (50%), *Restio tetraphyllus* (50%), *Xanthorrhoea sp* (50%), *Xanthorrhoea fulva* (50%).

Total species recorded: 28. **Mean species per site:** 16 with a s.d. of 8.

Number of Sites: 2.

Sampling Index: 1 site per 214 ha.

Representative Sites: 87, 117.

Ecological Notes:

This community usually occurs on sandy coastal soils. It often contains areas of peat and depressions that retain water.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.3.5.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 427.4 ha of this vegetation unit, 8.1 ha (1.9%) is presently in reserve.

Map Unit: 7B(i) ***Melaleuca quinquenervia*, rainforest species tall open-forest**

Description: The tall canopy is dominated by *Melaleuca quinquenervia*. A multi-layered structure below this forms a very dense cover and the limited light penetrating the upper layers gives rise to a very sparse ground cover with dense litter. *Archontophoenix cunninghamiana* and *Livistona australis* dominate the subcanopy and low tree layers. The subcanopy is very dense and varies in height from 14-20m. The subcanopy layer which is at about 6-8m is more open and contains a variety of rainforest species. A sparse shrub layer of rainforest understorey plants such as *Alpinia caerulea* and *Cordyline petiolaris* occurs at 1-2m. The very sparse ground layer is predominantly *Carex breviculmis,* with lesser amounts of ferns and grasses.

Structural Formation Range: tall closed-forest, tall open-forest (100%).

Basal Area Estimate m^2ha^{-1}: 32.0.
Melaleuca quinquenervia (9.0 m^2ha^{-1}), *Archontophoenix cunninghamiana* (9.0 m^2ha^{-1}), *Livistona australis* (7.0 m^2ha^{-1}), *Lophostemon suaveolens* (6.0 m^2ha^{-1}), *Blechnum indicum* (1.0 m^2ha^{-1}).

Canopy Layer
Height: mean 26.0m; range: 25.0-27.0.
Crown Cover: 60.0%.
Frequent species: *Lophostemon suaveolens* (100%), *Melaleuca quinquenervia* (100%).

Subcanopy Layer
Height: mean 17.0m; range: 14.0-20.0.
Crown Cover: 80.0%.
Frequent species: *Archontophoenix cunninghamiana* (100%), *Livistona australis* (100%).

Low Tree Layer
Height: mean 7.0m; range: 6.0-8.0.
Crown Cover: 40.0%.
Frequent species: *Archontophoenix cunninghamiana* (100%), *Endiandra discolor* (100%), *Ficus coronata* (100%), *Glochidion sumatranum* (100%), *Livistona australis* (100%), *Melicope elleryana* (100%), *Wilkea huegeliana* (100%).

Shrub Layer
Height: 1.5m.
Crown Cover: 30.0%.
Frequent species: *Alpinia caerulea* (100%), *Cordyline petiolaris* (100%).

Ground Layer
Height: 0.5m.
Crown Cover: 10.0%.
Frequent species: *Carex breviculmis* (100%), *Hypolepis muelleri* (100%), *Oplismenus aemulus* (100%).

Total species recorded: 20. **Mean species per site:** 20 with a s.d. of 0.

Number of Sites: 1.

Sampling Index: 1 site per 6 ha.

Representative Site: 6.

Ecological Notes:

This community is associated with riverine alluvial deposits. The height, together with the palm-dominated rainforest understorey make this an aesthetically pleasing community which should be conserved in the public interest. The small remaining area of this community is south of the sewage treatment works Main Dve, Kawana Waters and adjacent to an old rubbish dump and is at risk of being cleared (site 6). This unit was of probably of limited extent prior to clearing of the coastal wetlands.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.3.5.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 6.4 ha of this vegetation unit, none is presently in reserve.

Map Unit: 7C(i) ***Melaleuca quinquenervia, Corymbia intermedia, Glochidion sumatranum*** **open-forest**

Description: The mid-dense canopy is usually about 14-16m high and is dominated by *Melaleuca quinquenervia* and *Glochidion sumatranum*. *Lophostemon suaveolens* and *Corymbia intermedia* are other common canopy components. A scattering of shrubs at about 4-6m are usually predominantly *Acacia* spp. regrowth while *Lantana camara* is often present. A ground layer dominated by ferns such as *Blechnum indicum*, *Pteridium esculentum* and *Calochlaena dubia* about 1m high is the most common understorey.

Structural Formation Range: open-forest (72%), woodland (14%), open-woodland (14%).

Basal Area Estimate m^2ha^{-1}: mean 34.3; range 10.0-50.0.
Melaleuca quinquenervia (28.6 m^2ha^{-1}), *Glochidion sumatranum* (2.0 m^2ha^{-1}), *Lophostemon suaveolens* (0.9 m^2ha^{-1}), *Glochidion ferdinandi* (0.7 m^2ha^{-1}), *Corymbia intermedia* (0.6 m^2ha^{-1}), *Melicope elleryana* (0.4 m^2ha^{-1}), *Eucalyptus robusta* (0.3 m^2ha^{-1}), *Eucalyptus tereticornis* (0.3 m^2ha^{-1}), *Alphitonia excelsa* (0.2 m^2ha^{-1}), *Allocasuarina littoralis* (0.1 m^2ha^{-1}), *Acacia leiocalyx* (0.1 m^2ha^{-1}), *Corymbia tessellaris* (0.1 m^2ha^{-1}).

Canopy Layer
Height: mean 14.6m; range: 8.0-24.0.
Crown Cover: mean 58.2%; range: 5.0-97.0.
Frequent species: *Melaleuca quinquenervia* (100%), *Glochidion sumatranum* (71%), *Lophostemon suaveolens* (57%), *Melicope elleryana* (42%), *Corymbia intermedia* (28%), *Eucalyptus tereticornis* (28%), *Glochidion ferdinandi* (28%), *Acacia aulacocarpa* (14%), *Acacia leiocalyx* (14%), *Allocasuarina littoralis* (14%), *Alphitonia excelsa* (14%), *Corymbia tessellaris* (14%), *Eucalyptus robusta* (14%), *Parsonsia straminea* (14%).

Shrub Layer
Height: mean 3.2m; range: 1.0-6.0.
Crown Cover: mean 16.7%; range: 5.0-50.0.
Frequent species: *Lantana camara* (57%), *Alphitonia excelsa* (28%), *Acacia leiocalyx* (14%), *Acacia melanoxylon* (14%), *Allocasuarina littoralis* (14%), *Cupaniopsis anacardioides* (14%), *Glochidion ferdinandi* (14%), *Glochidion sumatranum* (14%), *Melaleuca quinquenervia* (14%), *Melicope elleryana* (14%), *Ochna serrulata* (14%).

Ground Layer
Height: mean 0.9m; range: 0.0-1.5.
Crown Cover: mean 43.6%; range: 5.0-90.0.
Frequent species: *Blechnum indicum* (42%), *Calochlaena dubia* (14%), *Dianella caerulea* (14%), *Gahnia clarkei* (14%), *Imperata cylindrica* (14%), *Oplismenus aemulus* (14%), *Pteridium esculentum* (14%).

Total species recorded: 79. **Mean species per site:** 23 with a s.d. of 6.

Number of Sites: 7.

Sampling Index: 1 site per 85 ha.

Representative Sites: 33, 44, 49, 62, 103, 104, 285.

Ecological Notes:

This community occurs on slightly higher and drier rises in the coastal plain. The soils on which it occurs also have a higher clay content than surrounding areas. *Lantana camara* is the most frequent weed of this community.

Regional Ecosystem:

This map unit contains *Phaius tancarvilleae* in 14% of the sites sampled. This plant is listed as "Endangered" in the schedules of the Nature Conservation Act, 1992.
Regional Ecosystem which contains this map unit: 12.3.5.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 591.6 ha of this vegetation unit, 398 ha (67.3%) is presently in reserve.

Map Unit: 7C(ii) ***Melaleuca quinquenervia, Eucalyptus robusta*** **woodland**

Description: This community varies in height from 4-22m, but is always co-dominated by *Melaleuca quinquenervia* and *Eucalyptus robusta*. The canopy is usually open. There is usually no shrub layer, but when it occurs it consists of stunted trees to about 4m high of *Elaeocarpus reticulatus, Lophostemon confertus* and *Melicope elleryana.* A very dense ground layer is dominated by clumps to 2m tall of either *Blechnum indicum* or *Gahnia sieberiana* with masses of *Lygodium microphyllum* tangled throughout. The terrain is hummocky and uneven, with water pooling common.

Structural Formation Range: open-forest (29%), woodland (42%), low woodland (29%).

Basal Area Estimate m^2ha^{-1}: mean 25.3; range 8.0-50.0.
Melaleuca quinquenervia (16.8 m^2ha^{-1}), *Eucalyptus robusta* (2.8 m^2ha^{-1}), *Melaleuca sieberi* (1.7 m^2ha^{-1}), *Lophostemon suaveolens* (1.6 m^2ha^{-1}), *Melicope elleryana* (0.8 m^2ha^{-1}), *Glochidion sumatranum* (0.7 m^2ha^{-1}), *Leptospermum polygalifolium* (0.5 m^2ha^{-1}), *Lophostemon confertus* (0.2 m^2ha^{-1}), *Livistona australis* (0.2 m^2ha^{-1}).

Canopy Layer
Height: mean 12.3m; range: 4.0-22.0.
Crown Cover: mean 37.9%; range: 2.0-84.0.
Frequent species: *Eucalyptus robusta* (100%), *Melaleuca quinquenervia* (100%), *Lophostemon suaveolens* (60%), *Glochidion sumatranum* (40%), *Livistona australis* (20%), *Melaleuca sieberi* (20%), *Melicope elleryana* (20%).

Shrub Layer
Height: mean 4.4m; range: 1.0-8.0.
Crown Cover: mean 37.5%; range: 5.0-70.0.
Frequent species: *Elaeocarpus reticulatus* (20%), *Lantana camara* (20%), *Lophostemon confertus* (20%), *Macaranga tanarius* (20%), *Melicope elleryana* (20%), *Pultenaea myrtoides* (20%), *Pultenaea villosa* (20%).

Ground Layer
Height: mean 1.2m; range: 0.5-2.0.
Crown Cover: mean 74.5%; range: 30.0-100.0.
Frequent species: *Blechnum indicum* (60%), *Ageratum houstonianum* (20%), *Baumea rubiginosa* (20%), *Calochlaena dubia* (20%), *Entolasia stricta* (20%), *Gahnia sieberiana* (20%), *Lygodium microphyllum* (20%), *Themeda triandra* (20%).

Total species recorded: 73. **Mean species per site:** 20 with a s.d. of 10.

Number of Sites: 6.

Sampling Index: 1 site per 26 ha.

Representative Sites: 5, 50, 99, 105, 119, 156.

Ecological Notes:

There is often waterlogging in this community. It commonly occurs as a long, narrow fringing community forming an ecotonal band between the higher dry non wetland communities and the wet *Melaleuca* or sedgeland communities. In many areas it is too narrow to map at the 1:25,000 scale. The larger, mappable stands appear to occur on sands or sandy alluviums. It is generally weed free.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.3.4.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 155.5 ha of this vegetation unit, 1.6 ha (1.0%) is presently in reserve.

Map Unit: 7C(iii) ***Melaleuca quinquenervia, Lophostemon suaveolens*** **open-forest**

Description: The mid-dense canopy at 12-14m is dominated by *Melaleuca quinquenervia* and *Lophostemon suaveolens*. There is often no shrub layer, but when it is present it is dominated by weeds such as *Baccharis halimifolia, Acacia* spp. regrowth and heath species. The ground layer at about 1m high is usually dense and is dominated by either *Blechnum indicum* or grasses such as *Imperata cylindrica* and *Themeda triandra*.

Structural Formation Range: tall open-forest, closed-forest, open-forest (63%), woodland (25%), low open-forest, low woodland (12%).

Basal Area Estimate m^2ha^{-1}: mean 36.3; range 18.0-55.0.
Melaleuca quinquenervia (29.6 m^2ha^{-1}), *Lophostemon suaveolens* (3.7 m^2ha^{-1}), *Glochidion sumatranum* (0.9 m^2ha^{-1}), *Livistona australis* (0.6 m^2ha^{-1}), *Melaleuca linariifolia* (0.4 m^2ha^{-1}), *Callitris columellaris* (0.3 m^2ha^{-1}), *Lophostemon confertus* (0.3 m^2ha^{-1}), *Eucalyptus racemosa* (0.3 m^2ha^{-1}), *Casuarina glauca* (0.1 m^2ha^{-1}), *Corymbia intermedia* (0.1 m^2ha^{-1}).

Canopy Layer
Height: mean 13.2m; range: 6.0-20.0.
Crown Cover: mean 55.3%; range: 10.0-90.0.
Frequent species: *Melaleuca quinquenervia* (100%), *Lophostemon suaveolens* (85%), *Glochidion sumatranum* (42%), *Acacia leiocalyx* (14%), *Callitris columellaris* (14%), *Casuarina glauca* (14%), *Corymbia intermedia* (14%), *Eucalyptus racemosa* (14%), *Livistona australis* (14%), *Lophostemon confertus* (14%).

Shrub Layer
Height: mean 3.9m; range: 2.0-8.0.
Crown Cover: mean 30.7%; range: 20.0-60.0.
Frequent species: *Baccharis halimifolia* (28%), *Glochidion sumatranum* (28%), *Acacia concurrens* (14%), *Acacia leiocalyx* (14%), *Hakea actites* (14%), *Hakea florulenta* (14%), *Lantana camara* (14%), *Lophostemon suaveolens* (14%), *Melaleuca linariifolia* (14%), *Melaleuca quinquenervia* (14%), *Pultenaea villosa* (14%).

Ground Layer
Height: mean 1.1m; range: 0.5-2.0.
Crown Cover: mean 69.2%; range: 20.0-95.0.
Frequent species: *Blechnum indicum* (71%), *Imperata cylindrica* (42%), *Lepironia articulata* (28%), *Lygodium microphyllum* (28%), *Baumea juncea* (14%), *Cladium procerum* (14%), *Hypolepis muelleri* (14%), *Leersia hexandra* (14%), *Lepyrodia caudata* (14%), *Phragmites australis* (14%), *Themeda triandra* (14%).

Total species recorded: 77. **Mean species per site:** 19 with a s.d. of 6.

Number of Sites: 8.

Sampling Index: 1 site per 31 ha.

Representative Sites: 57, 58, 60, 118, 136, 138, 311, 336.

Ecological Notes:

This community occurs in drier situations, usually on soils with a high clay content. *Lantana camara* and *Baccharis halimifolia* are often present as weeds in this community while *Blechnum indicum* sometimes forms clumps on peaty hummocks.

Regional Ecosystem:

This map unit contains *Phaius tancarvilleae* in 14% of the sites sampled. This plant is listed as "Endangered" in the schedules of the Nature Conservation Act, 1992. It also contained *Schoenus scabripes* in 14% of the sites sampled. This plant is listed as "Rare" in the schedules of the Nature Conservation Act, 1992.
Regional Ecosystem which contains this map unit: 12.3.6.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 251.7 ha of this vegetation unit, 37.6 ha (14.9%) is presently in reserve.

Map Unit: 7C(iv) ***Melaleuca quinquenervia, Lophostemon suaveolens, Eucalyptus tereticornis, Corymbia intermedia*** **open-forest**

Description: The mid-dense canopy of this *Melaleuca quinquenervia* community often has a number of *Eucalyptus* species present in the main canopy. The most frequent species are *Melaleuca quinquenervia*, *Lophostemon suaveolens*, *Eucalyptus tereticornis* and *Corymbia intermedia*. There is often a sparse subcanopy layer at about 8m of saplings of the mature trees and *Acacia* spp. A sparse shrub layer is almost always present at about 4m. It contains various *Acacia* species, weeds and heath components. There is a dense grassy ground layer about 1m high dominated by *Imperata cylindrica* and *Themeda triandra*.

Structural Formation Range: open-forest (62%), woodland (19%), low closed-forest, low open-forest, low woodland (19%).

Basal Area Estimate m^2ha^{-1}: mean 30.2; range 11.0-60.0.
Melaleuca quinquenervia (24.2 m^2ha^{-1}), *Corymbia intermedia* (1.8 m^2ha^{-1}), *Lophostemon suaveolens* (1.5 m^2ha^{-1}), *Eucalyptus tereticornis* (1.1 m^2ha^{-1}), *Acacia leiocalyx* (0.3 m^2ha^{-1}), *Alphitonia excelsa* (0.2 m^2ha^{-1}), *Banksia oblongifolia* (0.2 m^2ha^{-1}), *Glochidion sumatranum* (0.2 m^2ha^{-1}), *Acacia aulacocarpa* (0.2 m^2ha^{-1}), *Glochidion ferdinandi* (0.2 m^2ha^{-1}), *Homalanthus nutans* (0.1 m^2ha^{-1}), *Eucalyptus crebra* (0.1 m^2ha^{-1}), *Casuarina glauca* (*0.1 m^2ha^{-1}).*

Canopy Layer
Height: mean 13.4m; range: 6.0-18.0.
Crown Cover: mean 57.9%; range: 2.0-82.0.
Frequent species: *Melaleuca quinquenervia* (100%), *Lophostemon suaveolens* (64%), *Eucalyptus tereticornis* (58%), *Corymbia intermedia* (35%), *Glochidion ferdinandi* (17%), *Alphitonia excelsa* (11%), *Acacia aulacocarpa* (5%), *Acacia leiocalyx* (5%), *Casuarina glauca* (5%), *Eucalyptus crebra* (5%), *Eucalyptus robusta* (5%).

Subcanopy Layer
Height: mean 8.3m; range: 5.0-12.0.
Crown Cover: mean 19.6%; range: 5.0-50.0.
Frequent species: *Lophostemon suaveolens* (64%), *Melaleuca quinquenervia* (64%), *Glochidion sumatranum* (23%), *Acacia leiocalyx* (17%), *Corymbia intermedia* (17%), *Alphitonia excelsa* (11%), *Glochidion ferdinandi* (11%), *Banksia oblongifolia* (5%), *Pinus elliottii* (5%).

Shrub Layer
Height: mean 3.5m; range: 1.0-8.0.
Crown Cover: mean 19.6%; range: 2.0-80.0.
Frequent species: *Acacia leiocalyx* (35%), *Baccharis halimifolia* (35%), *Melaleuca quinquenervia* (28%), *Acacia aulacocarpa* (17%), *Lophostemon suaveolens* (17%), *Glochidion sumatranum* (23%), *Alphitonia excelsa* (11%), *Banksia robur* (11%), *Hakea florulenta* (11%), *Lantana camara* (11%), *Livistona australis* (11%), *Allocasuarina littoralis* (5%), *Banksia oblongifolia* (5%), *Hakea actites* (5%), *Melastoma affine* (5%), *Persoonia cornifolia* (5%), *Pultenaea myrtoides* (5%), *Pultenaea villosa* (5%), *Xanthorrhoea fulva* (5%).

Ground Layer
Height: mean 1.0m; range: 0.5-1.5.
Crown Cover: mean 77.8%; range: 50.0-100.0.
Frequent species: *Imperata cylindrica* (64%), *Themeda triandra* (58%), *Blechnum indicum* (29%), *Pteridium esculentum* (11%), *Xanthorrhoea fulva* (11%), *Banksia robur* (5%), *Baumea rubiginosa* (5%), *Chorizandra cymbaria* (5%), *Entolasia marginata* (5%), *Gahnia sieberiana* (5%), *Lepyrodia scariosa* (5%), *Lomandra longifolia* (5%), *Ochna serrulata* (5%), *Omalanthus nutans* (5%), *Ottochloa gracillima* (5%), *Restio pallens* (5%).

Total species recorded: 143. **Mean species per site:** 23 with a s.d. of 5.

Number of Sites: 16.

Sampling Index: 1 site per 143 ha.

Representative Sites: 1, 2, 3, 11, 14, 21, 47, 48, 64, 83, 96, 97, 98, 120, 160, 161.

Ecological Notes:

Baccharis halimifolia and *Lantana camara* are common shrubby weeds. A variety of ground layer weeds are also usually present. This community generally occurs on alluvial deposits in the floodplains of the coastal lowlands.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.3.6.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 2295.8 ha of this vegetation unit, 1504.7 ha (65.5%) is presently in reserve.

Map Unit: 7D(i) ***Melaleuca quinquenervia, Corymbia intermedia, Eucalyptus tereticornis, Acacia leiocalyx*** **open-forest**

Description: The mid-dense canopy of this drier community varies around 12-14m in height and is characterised by the presence of *Acacia leiocalyx* as a component of the tree layer. *Melaleuca quinquenervia*, *Corymbia intermedia* and *Eucalyptus tereticornis* are the other major components. A subcanopy layer of saplings of the mature trees is often found at about 8m. A sparse heath shrub layer exists at 2-3m although it is dominated by weeds such as *Baccharis halimifolia*, *Lantana camara* and *Acacia* spp. shrubs. The ground layer at about 1m tall is dominated by *Imperata cylindrica* and *Pteridium esculentum*, indicating that these communities are frequently burnt.

Structural Formation Range: open-forest (45%), woodland (27%), low open-forest (18%), low woodland (10%).

Basal Area Estimate m^2ha^{-1}: mean 30.5; range 20.0-40.0.
Melaleuca quinquenervia (24.6 m^2ha^{-1}), *Corymbia intermedia* (1.4 m^2ha^{-1}), *Eucalyptus tereticornis* (1.0 m^2ha^{-1}), *Acacia aulacocarpa* (0.9 m^2ha^{-1}), *Acacia leiocalyx* (0.9 m^2ha^{-1}), *Lophostemon suaveolens* (0.6 m^2ha^{-1}), *Banksia integrifolia* (0.4 m^2ha^{-1}), *Alphitonia excelsa* (0.3 m^2ha^{-1}), *Eucalyptus bancroftii* (0.2 m^2ha^{-1}), *Allocasuarina littoralis* (0.1 m^2ha^{-1}), *Pinus elliottii* (0.1 m^2ha^{-1}).

Canopy Layer
Height: mean 12.5m; range: 6.0-18.0.
Crown Cover: mean 65.2%; range: 5.0-84.0.
Frequent species: *Melaleuca quinquenervia* (100%), *Corymbia intermedia* (63%), *Eucalyptus tereticornis* (27%), *Acacia leiocalyx* (18%), *Acacia aulacocarpa* (9%), *Allocasuarina littoralis* (9%), *Alphitonia excelsa* (9%), *Eucalyptus bancroftii* (9%), *Lophostemon suaveolens* (9%), *Pinus elliottii* (9%).

Subcanopy Layer
Height: mean 8.3m; range: 4.0-14.0.
Crown Cover: mean 16.1%; range: 5.0-40.0.
Frequent species: *Melaleuca quinquenervia* (72%), *Lophostemon suaveolens* (45%), *Corymbia intermedia* (36%), *Acacia leiocalyx* (27%), *Alphitonia excelsa* (18%), *Allocasuarina littoralis* (9%), *Banksia integrifolia* (9%), *Casuarina glauca* (9%), *Eucalyptus tereticornis* (9%), *Glochidion sumatranum* (9%).

Shrub Layer
Height: mean 2.5m; range: 1.0-6.0.
Crown Cover: mean 16.0%; range: 5.0-40.0.
Frequent species: *Baccharis halimifolia* (54%), *Acacia aulacocarpa* (27%), *Acacia leiocalyx* (27%), *Acacia melanoxylon* (18%), *Alphitonia excelsa* (18%), *Lantana camara* (18%), *Acacia maidenii* (9%), *Dodonaea triquetra* (9%), *Glochidion sumatranum* (9%), *Hakea florulenta* (9%), *Hovea acutifolia* (9%), *Leucopogon pimeleoides* (9%), *Lophostemon suaveolens* (9%), *Melaleuca quinquenervia* (9%), *Melastoma affine* (9%), *Persoonia virgata* (9%), *Pultenaea myrtoides* (9%).

Ground Layer
Height: mean 0.9m; range: 0.5-1.5.
Crown Cover: mean 55.0%; range: 5.0-95.0.
Frequent species: *Imperata cylindrica* (63%), *Pteridium esculentum* (45%), *Blechnum indicum* (18%), *Lomandra longifolia* (18%), *Baccharis halimifolia* (9%), *Gahnia sieberiana* (9%), *Hibbertia scandens* (9%), *Lepidosperma laterale* (9%), *Lygodium microphyllum* (9%), *Restio tetraphyllus* (9%), *Schoenus brevifolius* (9%), *Themeda triandra* (9%).

Total species recorded: 104. **Mean species per site:** 21 with a s.d. of 6.

Number of Sites: 11.

Sampling Index: 1 site per 45 ha.

Representative Sites: 4, 32, 38, 61, 84, 88, 91, 114, 128, 131, 147.

Ecological Notes:

Baccharis halimifolia and *Lantana camara* are significant weeds of this community. In some areas, especially on Bribie Island, invasion by *Pinus elliottii* from nearby plantations occurs. It is a drier community occurring on soils with a high clay content and is subject to frequent burning.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.3.6.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 494.6 ha of this vegetation unit, 26.6 ha (5.4%) is presently in reserve.

Map Unit: 7D(ii) ***Melaleuca quinquenervia, Eucalyptus tereticornis, Eucalyptus crebra*** **open-forest**

Description: The mid-dense canopy of *Melaleuca quinquenervia* and *Eucalyptus tereticornis* is characterised by the presence of scattered *Eucalyptus crebra* in the canopy. It occurs where the lowland *Melaleuca quinquenervia*, *Eucalyptus tereticornis* community extends up gentle rises. A very sparse shrub layer is sometimes present at about 4m tall and it is dominated by *Baccharis halimifolia* and *Casuarina glauca*. A dense grassy ground layer is usually present at about 50cm. It is dominated by *Imperata cylindrica* and weed species.

Structural Formation Range: open-forest (60%), woodland (40%).

Basal Area Estimate m^2ha^{-1}: mean 32.6; range 22.0-50.0.
Melaleuca quinquenervia (19.4 m^2ha^{-1}), *Casuarina glauca* (5.2 m^2ha^{-1}), *Eucalyptus tereticornis* (4.2 m^2ha^{-1}), *Lophostemon suaveolens* (1.8 m^2ha^{-1}), *Eucalyptus siderophloia* (1.0 m^2ha^{-1}), *Eucalyptus crebra* (0.6 m^2ha^{-1}), *Corymbia tessellaris* (0.2 m^2ha^{-1}), *Corymbia intermedia* (0.2 m^2ha^{-1}).

Canopy Layer
Height: mean 12.5m; range: 6.0-18.0.
Crown Cover: mean 55.2%; range: 20.0-97.0.
Frequent species: *Eucalyptus tereticornis* (100%), *Melaleuca quinquenervia* (100%), *Casuarina glauca* (40%), *Lophostemon suaveolens* (40%), *Corymbia intermedia* (20%), *Corymbia tessellaris* (20%), *Eucalyptus crebra* (20%), *Eucalyptus siderophloia* (20%).

Shrub Layer
Height: mean 3.9m; range: 1.0-6.0.
Crown Cover: mean 8.7%; range: 5.0-20.0.
Frequent species: *Baccharis halimifolia* (60%), *Casuarina glauca* (60%), *Acacia concurrens* (20%), *Acacia leiocalyx* (20%), *Lophostemon suaveolens* (20%), *Melaleuca quinquenervia* (20%).

Ground Layer
Height: mean 0.6m; range: 0.5-1.0.
Crown Cover: mean 87.0%; range: 50.0-100.0.
Frequent species: *Imperata cylindrica* (80%), *Conyza bonariensis* (40%), *Ageratum houstonianum* (20%), *Alphitonia excelsa* (20%), *Aster subulatus* (20%), *Banksia oblongifolia* (20%), *Bidens pilosa* (20%), *Carex appressa* (20%), *Centella asiatica* (20%), *Cirsium vulgare* (20%), *Cynodon dactylon* (20%), *Hardenbergia violacea* (20%), *Hydrocotyle acutiloba* (20%), *Leersia hexandra* (20%), *Lobelia purpurascens* (20%), *Lomandra longifolia* (20%), *Oxalis chnoodes* (20%), *Panicum effusum* (20%), *Pteridium esculentum* (20%), *Setaria sphacelata* (20%), *Sida rhombifolia* (20%), *Themeda triandra* (20%), *Viola betonicifolia* (20%).

Total species recorded: 78. **Mean species per site:** 22 with a s.d. of 6.

Number of Sites: 5.

Sampling Index: 1 site per 71 ha.

Representative Sites: 134, 208, 209, 319, 320.

Ecological Notes:

This community is often invaded by *Baccharis halimifolia* in the shrub layer and a variety of herbaceous weeds in the ground layer. It occurs on low rises in the coastal lowlands, usually on soils with a high clay content and because of its drier nature is subject to frequent low intensity fires.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.3.6.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 352.6 ha of this vegetation unit, none is presently in reserve.

Map Unit: 7E(i) ***Melaleuca quinquenervia, Casuarina glauca*** **open-forest**

Description: The uneven canopy at about 16m tall is dominated by *Melaleuca quinquenervia* and *Casuarina glauca*, with the *Casuarina glauca* often being somewhat taller than the *Melaleuca quinquenervia*. A sparse subcanopy of younger trees sometimes occurs at about 8m. A weedy sparse shrub layer dominated by *Baccharis halimifolia* is usually present. A grass and sedge dominated ground layer up to 2m often occurs. This layer is dominated by *Phragmites australis* with *Paspalum conjugatum, Entolasia marginata*, and *Leersia hexandra* also being frequently present.

Structural Formation Range: open-forest (88%), woodland (12%).

Basal Area Estimate m^2ha^{-1}: mean 42.1; range 32.0-55.0.
Melaleuca quinquenervia (33.5 m^2ha^{-1}), *Casuarina glauca* (8.1 m^2ha^{-1}), *Eucalyptus tereticornis* (0.4 m^2ha^{-1}), *Glochidion sumatranum* (0.1 m^2ha^{-1}).

Canopy Layer
Height: mean 16.4m; range: 10.0-24.0.
Crown Cover: mean 65.2%; range: 5.0-87.0.
Frequent species: *Casuarina glauca* (100%), *Melaleuca quinquenervia* (100%), *Eucalyptus tereticornis* (12%).

Subcanopy Layer
Height: mean 8.1m; range: 4.0-12.0.
Crown Cover: mean 22.5%; range: 10.0-40.0.
Frequent species: *Melaleuca quinquenervia* (50%), *Casuarina glauca* (37%), *Glochidion sumatranum* (25%), *Alphitonia excelsa* (12%).

Shrub Layer
Height: mean 4.0m; range: 1.5-10.0.
Crown Cover: mean 19.2%; range: 5.0-30.0.
Frequent species: *Baccharis halimifolia* (37%), *Parsonsia straminea* (25%), *Casuarina glauca* (12%), *Celtis sinensis* (12%), *Cupaniopsis anacardioides* (12%), *Eucalyptus tereticornis* (12%), *Glochidion sumatranum* (12%), *Ipomoea cairica* (12%), *Lantana camara* (12%), *Melaleuca quinquenervia* (12%).

Ground Layer
Height: mean 0.9m; range: 0.1-2.0.
Crown Cover: mean 69.4%; range: 30.0-100.0.
Frequent species: *Phragmites australis* (37%), *Ipomoea cairica* (25%), *Paspalum conjugatum* (25%), *Rhynchospora corymbosa* (25%), *Acrostichum speciosum* (12%), *Alternanthera denticulata* (12%), *Commelina diffusa* (12%), *Entolasia marginata* (12%), *Lantana camara* (12%), *Leersia hexandra* (12%), *Panicum maximum* (12%), *Solanum seaforthianum* (12%), *Viola hederacea* (12%).

Total species recorded: 94. **Mean species per site:** 23 with a s.d. of 6.

Number of Sites: 8.

Sampling Index: 1 site per 16 ha.

Representative Sites: 69, 79, 85, 115, 142, 259, 276, 287.

Ecological Notes:

This community is often heavily invaded by weeds including *Baccharis halimifolia*, *Lantana camara* and *Ipomoea cairica*. A large number of garden escapes are also common as weeds in these communities, usually as a result of dumping of garden waste from adjacent urbanised areas.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.1.1.
The Regional Ecosystem to which this belongs is of concern.
Of a total of 129.0 ha of this vegetation unit, 9.9 ha (7.7%) is presently in reserve.

Map Unit: 7F(i) ***Melaleuca quinquenervia, Banksia robur*** **heathland**

Description: This community of dwarf *Melaleuca quinquenervia* (comprising about 70% of the canopy) and *Banksia robur* (about 30%) is 1-1.5m high. A mixture of heath and sedge plants occur below at about 20cm high.

Structural Formation Range: heathland (100%), open-heathland.

Basal Area Estimate m^2ha^{-1}: 0.

Shrub Layer
Height: mean 1.2m; range: 1.0-1.5.
Crown Cover: 72.0%.
Frequent species: *Banksia robur* (100%), *Melaleuca quinquenervia* (100%).

Ground Layer
Height: 0.2m.
Crown Cover: 0.0%.
Frequent species: *Epacris microphylla* (100%), *Leucopogon leptospermoides* (100%), *Epacris pulchella* (100%), *Restio tenuiculmis* (100%), *Leptocarpus tenax* (100%).

Total species recorded: 15. **Mean species per site:** 15 with a s.d. of 0.

Number of Sites: 1.

Sampling Index: 1 site per 20 ha.

Representative Site: 90.

Ecological Notes:

This community is of very restricted distribution. It is is entirely conserved within Peregian Environmental Park (site 90). The lack of height is probably due to the fact that it is growing on severely nutrient deficient sands.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.2.12.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 20.3 ha of this vegetation unit, all 20.3 ha (100%) is presently in reserve.

Map Unit: 10B(i) Free standing fresh water with emergent species sparse-sedgeland

Description: This is a community of freshwater with emergent *Baumea articulata* dominant around the margins and *Nymphoides indica* the most common floating aquatic plant. There is often a fringe of *Phragmites australis* around the edges. The banks of these water bodies are often extensively invaded by weed species.

Structural Formation Range: sparse-sedgeland (100%).

Basal Area Estimate m^2ha^{-1}: 0.

Emergent Layer
Height: mean 1.2m; range: 1.0-1.5.
Crown Cover: 5.0%.
Frequent species: *Baumea articulata* (100%), *Phragmites australis* (100%).

Ground Layer
Height: mean 0.1m; range: 0.1-0.2.
Crown Cover: 10.0%.
Frequent species: *Nymphoides indica* (100%).

Total species recorded: 12. **Mean species per site:** 12 with a s.d. of 0.

Number of Sites: 1.

Sampling Index: 1 site per 10 ha.

Representative Site: 116.

Ecological Notes:

This map unit is a haven for waterbirds which nest in the reeds fringing the water. The banks of such waterholes are often very heavily weed infested, mainly with garden dumpings, which detracts from the otherwise visually pleasing community. The presence of fresh water and the protective environment encourages a large range of wildlife, especially birds, to use the habitat provided by these communities.

Regional Ecosystem:

Regional Ecosystem which contains this map unit: 12.2.15.
The Regional Ecosystem to which this belongs is of no concern at present.
Of a total of 9.5 ha of this vegetation unit, 2.1 ha (22.1%) is presently in reserve.

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Appendices:

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1. Specht Structural Classification System.
2. Map Unit Legend.

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4. Species list.
5. Grouped Vegetation Types and Species Frequency.
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8. Map Unit Areas, 1998.
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Appendix 1.

Structural formations in Australia (Specht 1995)

Life form and height of tallest stratum		Foliage Projective Cover of the Tallest Stratum (%)			
		100-70 (4)#	**70-30** (3)**	**30-10 (2)**	**<10 (1)**
Trees* > 30m	(T)#	tall closed-forest	tall open-forest	tall woodland	-
Trees 10-30m	(M)	closed-forest	open-forest	woodland	open-woodland
Trees 5-10m	(l)	low closed-forest	low open-forest	low woodland	low open-woodland
Trees < 5m	(VL)	v. low closed-forest	v. low open-forest	v. low woodland	v. low open-woodland
Shrubs* > 2m	(S)	closed-scrub	open-scrub	tall shrubland	tall open-shrubland
Shrubs 0.25-2m sclerophyllous &	(Z)	closed heathland	heathland	open-heathland	sparse heathland
semi-sclerophyllous non-sclerophyllous	(C)	low closed-scrub	low open-scrub	low shrubland	low open-shrubland
Shrubs < 0.25m sclerophyllous &	(D)	-	-	dwarf open-heathland (fell-field)	dwarf sparse-heathland (fell-field)
semi-sclerophyllous non-sclerophyllous	(W)	-	-	dwarf open-shrubland	dwarf sparse-shrubland
Hummock grasses	(H)	-	dense hummock grassland	hummock grassland	open hummock grassland
Herbaceous layer					
graminoids & grass	(G)	closed (tussock) grassland	(tussock) grassland	open (tussock) grassland	sparse (tussock) grassland
sedges	(Y)	closed-sedgeland	sedgeland	open-sedgeland	sparse-sedgeland
herbs	(X)	closed-herbland	herbland	open-herbland	sparse-herbland
ferns	(f)	closed-fernland	fernland	-	-
reeds/rushes	®	closed-reedland	reedland	-	-

* a tree is defined as a woody plant usually with a single stem; a shrub is a woody plant with many stems arising at or near the base

\# Symbols and numbers given in parentheses may be used to describe the formation, e.g. tall closed-forest = T4

** this cover class may be subdivided into cover intervals 70-50% and 50-30% to distinguish commercial forests

Appendix 2.

Coastal Wetlands of South-east Queensland

Map Unit Legend

Grouped Vegetation Types

1. **Mangrove communities**
2. **Claypan**
3. **Samphire communities**
4. **Grassland communities**
5. **Swamp oak communities**
6. **Sedgeland communities**
7. **Paperbark communities**
8. **Heath communities**
9. **Other**
10. **Water**
11. **Bribie Island non-wetland communities**

Map Units

1. Mangrove communities

1A(i) *Aegiceras corniculatum* closed-scrub, open-scrub, low closed-scrub, low open-scrub

1B(i) *Avicennia marina* closed-forest, open-forest, woodland, low closed-forest, low open-forest, low woodland, low open-woodland

1B(ii)a *Avicennia marina* closed-scrub, open-scrub

1B(ii)b *Avicennia marina* tall shrubland, tall open-shrubland

1B(ii)c *Avicennia marina* tall shrubland, tall open-shrubland that are dying due to waterlogging

1B(iii) *Avicennia marina* low open-scrub, low shrubland, low open-shrubland

1C(i) *Bruguiera gymnorhiza* closed-forest, open-forest, low closed-forest, low open-forest

1C(ii) *Bruguiera gymnorhiza*, *Casuarina glauca* closed-forest, open-forest

1D(i) *Ceriops tagal* closed-scrub, open-scrub, tall shrubland, tall open-shrubland

1D(ii) *Ceriops tagal* low open-scrub, low shrubland, low open-shrubland

1E(i) *Rhizophora stylosa* closed-scrub, open-scrub, tall shrubland, tall open-shrubland

1F(i) *Aegiceras corniculatum*, *Avicennia marina*, *Rhizophora stylosa*, *Bruguiera gymnorhiza* closed-scrub, open-scrub, low closed-scrub, low open-scrub

1F(ii) *Avicennia marina*, *Aegiceras corniculatum* closed-scrub, open-scrub

1F(iii) *Avicennia marina*, *Bruguiera gymnorhiza*, *Excoecaria agallocha* open-forest, low open-forest

2. Claypan

2 Claypan of marine clay. Usually devoid of vegetation

3. Samphire communities

3A(i) *Sarcocornia* spp., *Suaeda australis*, *Suaeda arbusculoides* dwarf closed shrubland, dwarf shrubland, dwarf open-shrubland, dwarf sparse-shrubland

4. Grassland communities

4A(i) *Sporobolus virginicus* closed grassland, grassland

4B(i) *Paspalum vaginatum* closed grassland, grassland

4C(i) *Phragmites australis* closed grassland, grassland

4D(i) *Triglochin striatum*, *Sporobolus virginicus* closed grassland, grassland

5. Swamp oak communities

5A(i)a *Casuarina glauca* open-forest, woodland

5A(i)b *Casuarina glauca* open-woodland

5A(ii)a *Casuarina glauca* low open-forest, low woodland

5A(ii)b *Casuarina glauca* low open-woodland

5B(i) *Casuarina glauca*, *Melaleuca quinquenervia* open-forest, woodland, low open-forest

5B(ii) *Casuarina glauca*, *Melaleuca quinquenervia* open-forest, low open-forest (dying)

5C(i) *Casuarina glauca*, *Bruguiera gymnorhiza*, *Excoecaria agallocha* low open-forest

5C(ii) *Casuarina glauca*, *Avicennia marina* low open-forest

5C(iii) *Casuarina glauca*, *Avicennia marina*, *Aegiceras corniculatum* open-forest, woodland.

6. Sedgeland communities

6A(i) *Juncus kraussii* ✂*Restio pallens* closed-sedgeland, sedgeland

6A(ii) *Schoenoplectus littoralis*, *Juncus kraussii*, *Fimbristylis ferruginea* ✂*Phragmites australis* closed-sedgeland, sedgeland

6A(iii) *Schoenus nitens* closed-sedgeland, sedgeland

6A(iv) *Carex pumila* sedgeland

6A(v) *Juncus kraussii*, *Cyperus laevigatus*, *Triglochin striatum* sedgeland

6A(vi) *Cyperus laevigatus*, *Paspalum vaginatum*, *Triglochin striatum*, *Schoenus nitens* sedgeland

6B(i) *Baumea articulata*, *Lepironia articulata*, *Phragmites australis* closed-sedgeland

6B(ii) *Bolboschoenus caldwellii*, *Eleocharis dulcis* ✂*Phragmites australis*, *Typha domingensis* closed-sedgeland

6B(iii) *Empodisma minus*, *Gleichenia mendellii* ✂*Gahnia sieberiana* closed-sedgeland

6C(i) Sedgeland and myrtaceous species

6D(i) Eighteen Mile Swamp sedge complex

7. Paperbark communities

7A(i) *Melaleuca quinquenervia* tall closed-forest, tall open-forest, tall woodland

7A(ii)a *Melaleuca quinquenervia* closed-forest, open-forest

7A(ii)b *Melaleuca quinquenervia* woodland, open-woodland

7A(iii)a *Melaleuca quinquenervia* low closed-forest, low open-forest

7A(iii)b *Melaleuca quinquenervia* low woodland, low open-woodland

7B(i) *Melaleuca quinquenervia*, rainforest species tall closed-forest, tall open-forest

7C(i) *Melaleuca quinquenervia*, *Corymbia intermedia*, *Glochidion sumatranum* open-forest

7C(ii) *Melaleuca quinquenervia*, *Eucalyptus robusta* woodland, low woodland

7C(iii) *Melaleuca quinquenervia*, *Lophostemon suaveolens* tall open-forest, closed-forest, open-forest, low open-forest, low woodland

7C (iv) *Melaleuca quinquenervia*, *Lophostemon suaveolens*, *Eucalyptus tereticornis*, *Corymbia intermedia* open-forest, woodland, low closed-forest, low open-forest, low woodland

7D(i) *Melaleuca quinquenervia*, *Corymbia intermedia*, *Eucalyptus tereticornis*, *Acacia melanoxylon* open-forest, woodland, low open-forest, low woodland

7D(ii) *Melaleuca quinquenervia*, *Eucalyptus tereticornis*, *Eucalyptus crebra* open-forest, woodland

7E(i) *Melaleuca quinquenervia*, *Casuarina glauca* open-forest

7F(i) *Melaleuca quinquenervia*, *Banksia robur* heathland, open-heathland

8. Heath communities

9. Other (other non-wetland vegetation communities, rural areas, urbanised, cleared, plantation etc)

10. Water

10A(i)a	Free standing water - fresh
10A(i)b	Free standing water- saline/brackish
10B(i)	Free standing fresh water with emergent species
10B(ii)	Free standing fresh water with floating species
10C	Drainage lines with periodic flows of water and areas of free standing water

11. Bribie Island non-wetland communities

11A	*Corymbia intermedia, Lophostemon confertus, Callitris columellaris, Banksia* spp open-forest
11B	*Eucalyptus robusta* ✂*Melaleuca quinquenervia, Lophostemon suaveolens* open-forest, woodland, open-woodland
11C	*Banksia aemula,* low woodland ✂*Corymbia intermedia, Eucalyptus robusta* and *Melaleuca quinquenervia* emergents
11D	*Acacia* spp , *Allocasuarina littoralis* open-scrub
11E	*Corymbia intermedia, Lophostemon confertus, Banksia spp* low open-forest
11F	*Melaleuca quinquenervia, Lophostemon suaveolens, Corymbia intermedia* woodland

Appendix 3.

Species List for each Map Unit

Frequency of occurrence on sites for each species is given in parentheses.

Species list for map unit 1A(i):

Aegiceras corniculatum (100%), *Avicennia marina* subsp. *australasica* (100%), *Bruguiera gymnorhiza* (100%), *Rhizophora stylosa* (100%*).*

Species list for map unit 1B(i):

Avicennia marina subsp. *australasica* (100%), *Rhizophora stylosa* (58%), *Aegiceras corniculatum* (25%), *Bruguiera gymnorhiza* (22%), *Ceriops tagal* (16%), *Sporobolus virginicus* (12%), *Suaeda arbusculoides* (9%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (6%), *Suaeda australis* (6%), *Apium prostratum* (3%), *Fimbristylis ferruginea* (3%), *Lumnitzera racemosa* (3%), *Ruppia maritima* (3%), *Sesuvium portulacastrum* (3%), *Triglochin striatum* (3%*).*

Species list for map unit 1B(ii)a:

Avicennia marina subsp. *australasica* (100%), *Aegiceras corniculatum* (48%), *Rhizophora stylosa* (29%), *Suaeda australis* (29%), *Sporobolus virginicus* (22%), *Bruguiera gymnorhiza* (18%), *Ceriops tagal* (14%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (14%), *Suaeda arbusculoides* (11%), *Cannabis sativa* (3%), *Casuarina glauca* (3%), *Excoecaria agallocha* (3%), *Ficus microcarpa* (3%), *Juncus continuus* (3%), *Juncus kraussii* (3%), *Lumnitzera racemosa* (3%), *Phragmites australis* (3%*).*

Species list for map unit 1B(ii)b:

Avicennia marina subsp. *australasica* (100%), *Sporobolus virginicus* (47%), *Suaeda australis* (42%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (38%), *Ceriops tagal* (33%), *Suaeda arbusculoides* (23%), *Aegiceras corniculatum* (19%), *Rhizophora stylosa* (14%), *Fimbristylis ferruginea* (4%), *Halosarcia halocnemoides* subsp. *tenuis* (4%), *Halosarcia pergranulata* subsp. *queenslandica* (4%), *Juncus kraussii* (4%), *Triglochin striatum* (4%), *Ulva sp* (4%).

Species list for map unit 1B(ii)c:

Avicennia marina subsp. *australasica* (100%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (100%).

Species list for map unit 1B(iii):

Avicennia marina subsp. *australasica* (100%), *Suaeda arbusculoides* (50%), *Ceriops tagal* (41%), *Sporobolus virginicus* (41%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (25%), *Rhizophora stylosa* (16%), *Suaeda australis* (16%).

Species list for map unit 1C(i):

Acrostichum speciosum (100%), *Avicennia marina* subsp. *australasica* (100%), *Baccharis halimifolia* (100%), *Bruguiera gymnorhiza* (100%), *Casuarina glauca* (100%), *Crinum pedunculatum* (100%), *Cynanchum carnosum* (100%), *Dockrillia linguiformis* (100%), *Hibiscus tiliaceus* (100%).

Species list for map unit 1C(ii):

Acrostichum speciosum (100%), *Bruguiera gymnorhiza* (100%), *Casuarina glauca* (100%), *Flagellaria indica* (100%), *Avicennia marina* subsp. *australasica* (66%), *Cupaniopsis anacardioides* (66%), *Excoecaria agallocha* (66%), *Maclura cochinchinensis* (66%), *Aegiceras corniculatum* (33%), *Cynanchum carnosum* (33%), *Exocarpos latifolius* (33%), *Ficus virens* (33%), *Hibiscus tiliaceus* (33%), *Ipomoea cairica* (33%), *Lygodium microphyllum* (33%), *Notelaea longifolia forma glabra* (33%), *Rapanea variabilis* (33%).

Species list for map unit 1D(i):

Ceriops tagal (100%), *Aegiceras corniculatum* (75%), *Avicennia marina* subsp. *australasica* (75%), *Bruguiera gymnorhiza* (50%), *Rhizophora stylosa* (37%), *Suaeda australis* (37%), *Excoecaria agallocha* (25%), *Lumnitzera racemosa* (12%), *Sporobolus virginicus* (12%).

Species list for map unit 1D(ii):

Ceriops tagal (100%), *Avicennia marina* subsp. *australasica* (87%), *Rhizophora stylosa* (37%), *Bruguiera gymnorhiza* (25%), *Aegiceras corniculatum* (12%), *Sporobolus virginicus* (12%), *Suaeda australis* (12%).

Species list for map unit 1E(i):

Rhizophora stylosa (100%), *Aegiceras corniculatum* (75%), *Avicennia marina* subsp. *australasica* (75%), *Bruguiera gymnorhiza* (50%), *Ceriops tagal* (25%), *Apium prostratum* (12%), *Halosarcia pergranulata* subsp. *queenslandica* (12%), *Juncus continuus* (12%), *Juncus kraussii* (12%), *Triglochin striatum* (12%).

Species list for map unit 1F(i):

Aegiceras corniculatum (90%), *Avicennia marina* subsp. *australasica* (90%), *Rhizophora stylosa* (90%), *Bruguiera gymnorhiza* (81%), *Ceriops tagal* (54%), *Excoecaria agallocha* (18%), *Suaeda australis* (18%), *Casuarina glauca* (9%), *Juncus continuus* (9%), *Juncus kraussii* (9%), *Sporobolus virginicus* (9%).

Species list for map unit 1F(ii):

Aegiceras corniculatum (100%), *Avicennia marina* subsp. *australasica* (100%).

Species list for map unit 1F(iii):

Acrostichum speciosum (100%), *Avicennia marina* subsp. *australasica* (100%), *Baccharis halimifolia* (100%), *Bruguiera gymnorhiza* (100%), *Casuarina glauca* (100%), *Excoecaria agallocha* (100%), *Baumea juncea* (50%), *Cynanchum carnosum* (50%), *Elaeocarpus obovatus* (50%), *Fimbristylis ferruginea* (50%), *Flagellaria indica* (50%), *Hibiscus tiliaceus* (50%), *Ipomoea cairica* (50%), *Juncus kraussii* (50%), *Juncus usitatus* (50%), *Maclura cochinchinensis* (50%), *Phragmites australis* (50%), *Rhizophora stylosa* (50%), *Solanum americanum* (50%), *Solanum seaforthianum* (50%), *Stephania japonica* (50%).

Species list for map unit 2:

Sarcocornia quinqueflora subsp. *quinqueflora* (100%), *Suaeda australis* (100%).

Species list for map unit 3A(i):

Suaeda australis (100%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (83%), *Sporobolus virginicus* (66%), *Avicennia marina* subsp. *australasica* (50%), *Fimbristylis polytrichoides* (33%), *Halosarcia pergranulata* subsp. *queenslandica* (33%), *Suaeda arbusculoides* (33%), *Bacopa monnieri* (16%), *Casuarina glauca* (16%), *Centaurium erythraea* (16%), *Cynanchum carnosum* (16%), *Excoecaria agallocha* (16%).

Species list for map unit 4A(i):

Sporobolus virginicus (100%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (63%), *Suaeda australis* (36%), *Fimbristylis ferruginea* (18%), *Fimbristylis polytrichoides* (18%), *Halosarcia pergranulata* subsp. *queenslandica* (18%), *Avicennia marina* subsp. *australasica* (9%), *Carex pumila* (9%), *Juncus kraussii* (9%), *Suaeda arbusculoides* (9%).

Species list for map unit 4B(i):

Casuarina glauca (100%), *Eleocharis dulcis* (100%), *Juncus kraussii* (100%), *Melaleuca quinquenervia* (100%), *Paspalum vaginatum* (100%), *Phragmites australis* (100%), *Sporobolus virginicus* (100%), *Zoysia macrantha* (100%).

Species list for map unit 4C(i):

Phragmites australis (100%), *Baccharis halimifolia* (60%), *Casuarina glauca* (40%), *Sporobolus virginicus* (40%), *Acrostichum speciosum* (20%), *Aster subulatus* (20%), *Blechnum indicum* (20%), *Brachiaria mutica* (20%), *Cynanchum carnosum* (20%), *Fimbristylis dichotoma* (20%), *Fimbristylis ferruginea* (20%), *Halosarcia pergranulata* subsp. *queenslandica* (20%), *Hydrocotyle bonariensis* (20%), *Juncus polyanthemus* (20%), *Melaleuca quinquenervia* (20%), *Paspalum vaginatum* (20%), *Persicaria orientalis* (20%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (20%), *Sesuvium portulacastrum* (20%), *Suaeda australis* (20%).

Species list for map unit 4D(i):

Apium prostratum (100%), *Aster subulatus* (100%), *Fimbristylis dichotoma* (100%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (100%), *Schoenoplectus litoralis* (100%), *Sporobolus virginicus* (100%), *Triglochin striatum* (100%).

Species list for map unit 5A(i)a:

Casuarina glauca (100%), *Baccharis halimifolia* (56%), *Sporobolus virginicus* (56%), *Cynodon dactylon* (43%), *Melaleuca quinquenervia* (43%), *Myoporum acuminatum* (43%), *Ipomoea cairica* (37%), *Phragmites australis* (37%), *Cupaniopsis anacardioides* (31%), *Fimbristylis ferruginea* (31%), *Parsonsia straminea* (31%), *Einadia hastata* (25%), *Suaeda australis* (25%), *Acrostichum speciosum* (18%), *Avicennia marina* subsp. *australasica* (18%), *Commelina diffusa* (18%), *Cynanchum carnosum* (18%), *Excoecaria agallocha* (18%), *Juncus kraussii* (18%), *Lantana camara* (18%), *Paspalum scrobiculatum* (18%), *Passiflora suberosa* (18%), *Schinus terebinthifolia* (18%), *Sesuvium portulacastrum* (18%), *Acacia concurrens* (12%), *Aster subulatus* (12%), *Bruguiera gymnorhiza* (12%), *Enchylaena tomentosa var. glabra* (12%), *Eucalyptus tereticornis* (12%), *Jagera pseudorhus* (12%), *Maclura cochinchinensis* (12%), *Platycerium bifurcatum* (12%), *Solanum americanum* (12%), *Tetragonia tetragonioides* (12%), *Acacia aulacocarpa* (6%), *Acacia leiocalyx* (6%), *Acacia maidenii* (6%), *Ageratum houstonianum* (6%), *Alternanthera denticulata* (6%), *Amyema cambagei* (6%), *Apium prostratum* (6%), *Asclepias curassavica* (6%), *Asparagus densiflorus* (6%), *Bacopa monnieri* (6%), *Baumea juncea* (6%), *Brachiaria mutica* (6%), *Breynia oblongifolia* (6%), *Chloris gayana* (6%), *Choretrum candollei* (6%), *Conyza bonariensis* (6%), *Cyperus* (6%), *Cyperus polystachyos* (6%), *Cyperus trinervis* (6%), *Dianella* (6%), *Dianella revoluta* (6%), *Digitaria didactyla* (6%), *Elaeocarpus obovatus* (6%), *Entolasia marginata* (6%), *Enydra fluctuans* (6%), *Eriochloa crebra* (6%), *Eriochloa procera* (6%), *Fimbristylis polytrichoides* (6%), *Flagellaria indica* (6%), *Gahnia aspera* (6%), *Geitonoplesium cymosum* (6%), *Gomphocarpus physocarpus* (6%), *Lemna sp* (6%), *Livistona australis* (6%), *Lysiana subfalcata* (6%), *Ottochloa gracillima* (6%), *Oxalis chnoodes* (6%), *Panicum maximum* (6%), *Paspalidium distans* (6%), *Paspalidium gracile* (6%), *Paspalum vaginatum* (6%), *Pyrrosia rupestris* (6%), *Salvinia molesta* (6%), *Sida cordifolia* (6%), *Solanum mauritianum* (6%), *Solanum nigrum* (6%), *Solanum seaforthianum* (6%), *Solanum stelligerum* (6%), *Sonchus oleraceus* (6%), *Stenotaphrum secundatum* (6%), *Syagrus romanzoffiana* (6%), *Themeda triandra* (6%), *Triglochin striatum* (6%), *Typha orientalis* (6%), *Zehneria cunninghamii* (6%).

Species list for map unit 5A(ii)a:

Casuarina glauca (100%), *Sporobolus virginicus* (77%), *Baccharis halimifolia* (55%), *Melaleuca quinquenervia* (55%), *Phragmites australis* (55%), *Acacia aulacocarpa* (22%), *Cynodon dactylon* (22%), *Einadia hastata* (22%), *Excoecaria agallocha* (22%), *Fimbristylis dichotoma* (22%), *Fimbristylis ferruginea* (22%), *Myoporum acuminatum* (22%), *Parsonsia straminea* (22%), *Tetragonia tetragonioides* (22%), *Acrostichum speciosum* (11%), *Agrostis avenacea* (11%), *Aster subulatus* (11%), *Chloris gayana* (11%), *Cupaniopsis anacardioides* (11%), *Cyperus javanicus* (11%), *Dianella revoluta* (11%), *Enchylaena tomentosa var. glabra* (11%), *Eriochloa procera* (11%), *Ficus obliqua* (11%), *Ipomoea cairica* (11%), *Juncus kraussii* (11%), *Lantana camara* (11%), *Lysiana maritima* (11%), *Paspalum scrobiculatum* (11%), *Passiflora suberosa* (11%), *Ruppia maritima* (11%), *Schinus terebinthifolia* (11%), *Sida rhombifolia* (11%), *Solanum seaforthianum* (11%), *Stenotaphrum secundatum* (11%), *Themeda triandra* (11%), *Triglochin striatum* (11%).

Species list for map unit 5A(ii)b:

Baccharis halimifolia (100%), *Bacopa monnieri* (100%), *Casuarina glauca* (100%), *Crassocephalum crepidioides* (100%), *Fimbristylis ferruginea* (100%), *Paspalum vaginatum* (100%), *Phragmites australis* (100%), *Schoenoplectus litoralis* (100%), *Sporobolus virginicus* (100%), *Triglochin striatum* (100%).

Species list for map unit 5B(i):

Casuarina glauca (100%), *Melaleuca quinquenervia* (100%), *Parsonsia straminea* (100%), *Baccharis halimifolia* (60%), *Commelina diffusa* (60%), *Lantana camara* (60%), *Schinus terebinthifolia* (60%), *Solanum seaforthianum* (60%), *Acacia aulacocarpa* (40%), *Ageratum houstonianum* (40%), *Alphitonia excelsa* (40%), *Asparagus densiflorus* (40%), *Aster subulatus* (40%), *Baumea articulata* (40%), *Bidens pilosa* (40%), *Cupaniopsis anacardioides* (40%), *Cynodon dactylon* (40%), *Entolasia marginata* (40%), *Eucalyptus tereticornis* (40%), *Ipomoea cairica* (40%), *Lomandra longifolia* (40%), *Oxalis corniculata* (40%), *Phragmites australis* (40%), *Acacia leiocalyx* (20%), *Acronychia imperforata* (20%), *Acrostichum speciosum* (20%), *Austromyrtus dulcis* (20%), *Blechnum indicum* (20%), *Bolboschoenus caldwellii* (20%), *Buckinghamia celsissima* (20%), *Cinnamomum camphora* (20%), *Cirsium vulgare* (20%), *Conyza bonariensis* (20%), *Corymbia tessellaris* (20%), *Corymbia torelliana* (20%), *Crassocephalum crepidioides* (20%), *Crinum pedunculatum* (20%), *Cynanchum carnosum* (20%), *Cyperus polystachyos* (20%), *Dianella* (20%), *Dianella brevipedunculata* (20%), *Dianella caerulea* (20%), *Digitaria didactyla* (20%), *Digitaria parviflora* (20%), *Einadia hastata* (20%), *Elaeocarpus reticulatus* (20%), *Emilia sonchifolia* (20%), *Enchylaena tomentosa var. glabra* (20%), *Eriochloa procera* (20%), *Eugenia uniflora* (20%), *Excoecaria agallocha* (20%), *Ficus macrophylla* (20%), *Ficus rubiginosa* (20%), *Ficus virens* (20%), *Fimbristylis ferruginea* (20%), *Flagellaria indica* (20%), *Gahnia aspera* (20%), *Geitonoplesium cymosum* (20%), *Glochidion ferdinandi* (20%), *Glochidion sumatranum* (20%), *Hedera helix* (20%), *Hibbertia scandens* (20%), *Imperata cylindrica* (20%), *Jagera pseudorhus* (20%), *Lepironia articulata* (20%), *Leptochloa decipiens* (20%), *Leucopogon pimeleoides* (20%), *Maclura cochinchinensis* (20%), *Melinis repens* (20%), *Murraya paniculata* (20%), *Myoporum acuminatum* (20%), *Nephrolepis exaltata* (20%), *Nothoscordum gracile* (20%), *Ochna serrulata* (20%), *Opuntia stricta* (20%), *Ottochloa gracillima* (20%), *Panicum effusum* (20%), *Panicum maximum* (20%), *Paspalidium distans* (20%), *Passiflora foetida* (20%), *Passiflora suberosa* (20%), *Pinus elliottii* (20%), *Platycerium bifurcatum* (20%), *Plectranthus sp* (20%), *Polymeria calycina* (20%), *Pteridium esculentum* (20%), *Sansevieria trifasciata* (20%), *Schefflera actinophylla* (20%), *Senecio madagascariensis* (20%), *Setaria sphacelata* (20%), *Smilax australis* (20%), *Solanum nigrum* (20%), *Solanum torvum* (20%), *Sporobolus virginicus* (20%), *Stephania japonica* (20%), *Syagrus romanzoffiana* (20%), *Syngonium podophyllum* (20%), *Tecoma stans* (20%), *Themeda triandra* (20%), *Tillandsia usneoides* (20%), *Tradescantia zebrina* (20%), *Typha orientalis* (20%), *Velleia spathulata* (20%), *Vigna caracalla* (20%), *Viola hederacea* (20%).

Species list for map unit 5B(ii):

Baccharis halimifolia (100%), *Casuarina glauca* (100%), *Entolasia marginata* (100%), *Fimbristylis dichotoma* (100%), *Melaleuca quinquenervia* (100%), *Parsonsia straminea* (100%)

Species list for map unit 5C(i):

Acrostichum speciosum (100%), *Avicennia marina* subsp. *australasica* (100%), *Baccharis halimifolia* (100%), *Baumea juncea* (100%), *Bruguiera gymnorhiza* (100%), *Casuarina glauca* (100%), *Corymbia intermedia* (100%), *Digitaria didactyla* (100%), *Entolasia marginata* (100%), *Eucalyptus crebra* (100%), *Excoecaria agallocha* (100%), *Fimbristylis ferruginea* (100%), *Juncus continuus* (100%), *Juncus kraussii* (100%), *Lophostemon suaveolens* (100%), *Melaleuca quinquenervia* (100%), *Sporobolus virginicus* (100%).

Species list for map unit 5C(ii):

Avicennia marina subsp. *australasica* (100%), *Casuarina glauca* (100%), *Acrostichum speciosum* (50%), *Asplenium nidus* (50%), *Aster subulatus* (50%), *Baccharis halimifolia* (50%), *Bacopa monnieri* (50%), *Ceriops tagal* (50%), *Cynanchum carnosum* (50%), *Enydra fluctuans* (50%), *Excoecaria agallocha* (50%), *Hypolepis muelleri* (50%), *Melaleuca quinquenervia* (50%), *Myoporum acuminatum* (50%), *Parsonsia straminea* (50%), *Phragmites australis* (50%), *Ranunculus inundatus* (50%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (50%), *Suaeda australis* (50%), *Triglochin striatum* (50%), *Villarsia exaltata* (50%).

Species list for map unit 6A(i):

Juncus kraussii (100%), *Sporobolus virginicus* (100%), *Avicennia marina* subsp. *australasica* (50%), *Baumea juncea* (33%), *Casuarina glauca* (33%), *Centella asiatica* (33%), *Cyperus polystachyos* (33%), *Fimbristylis ferruginea* (33%), *Melaleuca quinquenervia* (33%), *Samolus repens* (33%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (33%), *Triglochin striatum* (33%), *Abildgaardia vaginata* (16%), *Baccharis halimifolia* (16%), *Bacopa monnieri* (16%), *Baumea articulata* (16%), *Baumea rubiginosa* (16%), *Bruguiera gymnorhiza* (16%), *Chorizandra cymbaria* (16%), *Digitaria ciliaris* (16%), *Eclipta prostrata* (16%), *Fimbristylis nutans* (16%), *Ipomoea cairica* (16%), *Ischaemum australe* (16%), *Ischaemum triticeum* (16%), *Juncus continuus* (16%), *Lepironia articulata* (16%), *Melinis repens* (16%), *Mucuna gigantea* (16%), *Paspalum vaginatum* (16%), *Philydrum lanuginosum* (16%), *Phragmites australis* (16%), *Sesuvium portulacastrum* (16%), *Suaeda australis* (16%).

Species list for map unit 6A(ii):

Sporobolus virginicus (100%), *Avicennia marina* subsp. *australasica* (80%), *Casuarina glauca* (80%), *Juncus kraussii* (80%), *Phragmites australis* (80%), *Fimbristylis ferruginea* (60%), *Acrostichum speciosum* (40%), *Cynanchum carnosum* (40%), *Juncus continuus* (40%), *Schoenoplectus litoralis* (40%), *Triglochin striatum* (40%), *Aegiceras corniculatum* (20%), *Bacopa monnieri* (20%), *Baumea juncea* (20%), *Baumea rubiginosa* (20%), *Bruguiera gymnorhiza* (20%), *Chorizandra sphaerocephala* (20%), *Cyperus laevigatus* (20%), *Eucalyptus tereticornis* (20%), *Fimbristylis dichotoma* (20%), *Lumnitzera racemosa* (20%), *Melaleuca quinquenervia* (20%), *Paspalum vaginatum* (20%), *Samolus repens* (20%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (20%), *Sesuvium portulacastrum* (20%), *Zoysia macrantha* (20%).

Species list for map unit 6A(iii):

Bacopa monnieri (100%), *Centaurium erythraea* (100%), *Juncus kraussii* (100%), *Samolus repens* (100%), *Schoenus nitens* (100%), *Apium prostratum* (50%), *Carex pumila* (50%), *Casuarina equisetifolia* subsp. *incana* (50%), *Cynanchum carnosum* (50%), *Halosarcia indica* (50%), *Hydrocotyle verticillata* (50%), *Stackhousia spathulata* (50%).

Species list for map unit 6A(iv):

Baccharis halimifolia (100%), *Carex pumila* (100%), *Carpobrotus glaucescens* (100%), *Casuarina equisetifolia* subsp. *incana* (100%), *Excoecaria agallocha* (100%), *Hibbertia scandens* (100%), *Hibiscus tiliaceus* (100%), *Juncus kraussii* (100%), *Rhizophora stylosa* (100%), *Sarcocornia quinqueflora* subsp. *quinqueflora* (100%), *Sesuvium portulacastrum* (100%), *Stackhousia spathulata* (100%), *Suaeda australis* (100%).

Species list for map unit 6A(v):

Acrostichum speciosum (100%), *Bacopa monnieri* (100%), *Cassytha filiformis* (100%), *Casuarina equisetifolia* subsp. *incana* (100%), *Cladium procerum* (100%), *Cyclosorus interruptus* (100%), *Cynanchum carnosum* (100%), *Cyperus laevigatus* (100%), *Cyperus polystachyos* (100%), *Fimbristylis ferruginea* (100%), *Fimbristylis polytrichoides* (100%), *Hydrocotyle verticillata* (100%), *Isolepis nodosa* (100%), *Juncus kraussii* (100%), *Paspalum vaginatum* (100%), *Samolus repens* (100%), *Schoenoplectus validus* (100%), *Schoenus ericetorum* (100%), *Sesuvium portulacastrum* (100%), *Triglochin striatum* (100%).

Species list for map unit 6A(vi):

Avicennia marina subsp. *australasica* (100%), *Bacopa monnieri* (100%), *Carex pumila* (100%), *Carpobrotus glaucescens* (100%), *Cyperus laevigatus* (100%), *Cyperus polystachyos* (100%), *Fimbristylis ferruginea* (100%), *Gamochaeta subfalcata* (100%), *Hydrocotyle bonariensis* (100%), *Ipomoea pes-caprae* (100%), *Isolepis nodosa* (100%), *Juncus kraussii* (100%), *Paspalum vaginatum* (100%), *Phyla nodiflora var. nodiflora* (100%), *Rhizophora stylosa* (100%), *Schoenoplectus validus* (100%), *Schoenus nitens* (100%), *Senecio lautus* subsp. *maritimus* (100%), *Sesuvium portulacastrum* (100%), *Triglochin striatum* (100%), *Typha orientalis* (100%).

Species list for map unit 6B(i):

Banksia robur (100%), *Baumea rubiginosa* (100%), *Callistemon pachyphyllus* (100%), *Gahnia sieberiana* (100%), *Kennedia rubicunda* (100%), *Leptospermum juniperinum* (100%), *Melaleuca quinquenervia* (100%), *Philydrum lanuginosum* (100%), *Restio pallens* (100%).

Species list for map unit 6B(ii):

Bolboschoenus caldwellii (100%), *Eleocharis dulcis* (100%), *Sporobolus virginicus* (100%), *Bacopa monnieri* (50%), *Baumea rubiginosa* (50%), *Casuarina glauca* (50%), *Cynodon dactylon* (50%), *Cyperus polystachyos* (50%), *Fimbristylis ferruginea* (50%), *Juncus continuus* (50%), *Lemna sp* (50%), *Leptochloa fusca* (50%), *Paspalum vaginatum* (50%), *Persicaria attenuata* (50%), *Phragmites australis* (50%), *Schoenoplectus litoralis* (50%), *Typha orientalis* (50%).

Species list for map unit 6B(iii):

Empodisma minus (100%), *Gahnia sieberiana* (100%), *Epacris microphylla* (80%), *Gleichenia mendellii* (80%), *Leptospermum liversidgei* (80%), *Schoenus scabripes* (70%), *Drosera binata* (60%), *Hibbertia salicifolia* (60%), *Baumea rubiginosa* (50%), *Blechnum indicum* (40%), *Lepyrodia caudata* (30%), *Melaleuca quinquenervia* (30%), *Restio pallens* (30%), *Baumea teretifolia* (20%), *Callistemon pachyphyllus* (20%), *Drosera spatulata* (20%), *Leptospermum juniperinum* (20%), *Lepyrodia interrupta* (20%), *Melastoma affine* (20%), *Selaginella uliginosa* (20%), *Utricularia caerulea* (20%), *Xyris operculata* (20%), *Aotus lanigera* (10%), *Banksia oblongifolia* (10%), *Baumea juncea* (10%), *Cassytha filiformis* (10%), *Drosera* (10%), *Epacris obtusifolia* (10%), *Eriocaulon australe* (10%), *Eucalyptus robusta* (10%), *Gonocarpus micranthus* subsp. *micranthus* (10%), *Haemodorum tenuifolium* (10%), *Leersia hexandra* (10%), *Lepironia articulata* (10%), *Leptospermum speciosum* (10%), *Leucopogon leptospermoides* (10%), *Philydrum lanuginosum* (10%), *Schoenus brevifolius* (10%), *Sprengelia sprengelioides* (10%), *Triglochin sp* (10%).

Species list for map unit 6C(i):

Baumea rubiginosa (100%), *Blechnum indicum* (100%), *Callistemon pachyphyllus* (100%), *Epacris microphylla* (100%), *Eucalyptus robusta* (100%), *Gahnia sieberiana* (100%), *Lepironia articulata* (100%), *Leptospermum polygalifolium* (100%), *Lepyrodia caudata* (100%), *Lophostemon suaveolens* (100%), *Melaleuca quinquenervia* (100%), *Pultenaea paleacea* (100%), *Restio pallens* (100%), *Restio tetraphyllus* (100%).

Species list for map unit 6D(i):

Blechnum indicum (75%), *Baumea rubiginosa* (50%), *Gahnia sieberiana* (50%), *Gleichenia mendellii* (50%), *Melaleuca quinquenervia* (50%), *Cassytha pubescens* (25%), *Cladium procerum* (25%), *Eleocharis sphacelata* (25%), *Empodisma minus* (25%), *Eriocaulon australe* (25%), *Juncus continuus* (25%), *Leersia hexandra* (25%), *Lepironia articulata* (25%), *Leptospermum liversidgei* (25%), *Schoenus brevifolius* (25%), *Schoenus scabripes* (25%), *Xyris operculata* (25%).

Species list for map unit 7A(i):

Acacia melanoxylon (100%), *Baccharis halimifolia* (100%), *Blechnum indicum* (100%), *Breynia oblongifolia* (100%), *Carex appressa* (100%), *Cyperus lucidus* (100%), *Enydra fluctuans* (100%), *Glochidion ferdinandi* (100%), *Glochidion sumatranum* (100%), *Ipomoea cairica* (100%), *Lepironia articulata* (100%), *Livistona australis* (100%), *Lygodium microphyllum* (100%), *Melaleuca quinquenervia* (100%), *Parsonsia straminea* (100%), *Persicaria strigosa* (100%), *Persicaria subsessilis* (100%), *Phragmites australis* (100%).

Species list for map unit 7A(ii)a:

Melaleuca quinquenervia (100%), *Blechnum indicum* (80%), *Baccharis halimifolia* (57%), *Casuarina glauca* (42%), *Parsonsia straminea* (42%), *Baumea rubiginosa* (33%), *Glochidion sumatranum* (33%), *Lantana camara* (33%), *Lophostemon suaveolens* (33%), *Lygodium microphyllum* (33%), *Phragmites australis* (33%), *Alphitonia excelsa* (28%), *Imperata cylindrica* (28%), *Leersia hexandra* (28%), *Lepironia articulata* (28%), *Melastoma affine* (23%), *Acacia aulacocarpa* (19%), *Baumea articulata* (19%), *Eucalyptus tereticornis* (19%), *Persicaria strigosa* (19%), *Restio pallens* (19%), *Villarsia exaltata* (19%), *Acrostichum speciosum* (14%), *Banksia robur* (14%), *Cupaniopsis anacardioides* (14%), *Dianella caerulea* (14%), *Entolasia marginata* (14%), *Eucalyptus robusta* (14%), *Gahnia sieberiana* (14%), *Hakea actites* (14%), *Hibbertia scandens* (14%), *Leptospermum juniperinum* (14%), *Melicope elleryana* (14%), *Passiflora suberosa* (14%), *Rhynchospora corymbosa* (14%), *Ageratum houstonianum* (9%), *Allocasuarina littoralis* (9%), *Alternanthera denticulata* (9%), *Baumea juncea* (9%), *Callistemon pachyphyllus* (9%), *Chorizandra cymbaria* (9%), *Commelina diffusa* (9%), *Corymbia intermedia* (9%), *Cynodon dactylon* (9%), *Dianella revoluta var. revoluta* (9%), *Entolasia stricta* (9%), *Enydra fluctuans* (9%), *Fimbristylis ferruginea* (9%), *Glochidion ferdinandi* (9%), *Hakea* (9%), *Hibiscus diversifolius* (9%), *Hypolepis muelleri* (9%), *Ipomoea cairica* (9%), *Lepyrodia caudata* (9%), *Livistona australis* (9%), *Lomandra hystrix* (9%), *Macaranga tanarius* (9%), *Melaleuca linariifolia* (9%), *Panicum effusum* (9%), *Paspalidium disjunctum* (9%), *Paspalum scrobiculatum* (9%), *Persicaria decipiens* (9%), *Phytolacca octandra* (9%), *Pteridium esculentum* (9%), *Sacciolepis indica* (9%), *Schefflera actinophylla* (9%), *Schinus terebinthifolia* (9%), *Schoenus brevifolius* (9%), *Setaria sphacelata* (9%), *Themeda triandra* (9%), *Acacia leiocalyx* (4%), *Acacia longifolia* (4%), *Acacia maidenii* (4%), *Acacia melanoxylon* (4%), *Aegiceras corniculatum* (4%), *Aster subulatus* (4%), *Austromyrtus dulcis* (4%), *Axonopus fissifolius* (4%), *Bacopa monnieri* (4%), *Banksia oblongifolia* (4%), *Baumea teretifolia* (4%), *Brachiaria mutica* (4%), *Bruguiera gymnorhiza* (4%), *Cassytha pubescens* (4%), *Centella*

asiatica (4%), *Cirsium vulgare* (4%), *Cladium procerum* (4%), *Comesperma defoliatum* (4%), *Conyza bonariensis* (4%), *Crassocephalum crepidioides* (4%), *Crinum flaccidum* (4%), *Cyclosorus interruptus* (4%), *Cymbopogon refractus* (4%), *Cynanchum carnosum* (4%), *Cyperus lucidus* (4%), *Cyperus polystachyos* (4%), *Dianella* (4%), *Dianella congesta* (4%), *Dianella revoluta* (4%), *Digitaria ciliaris* (4%), *Durringtonia paludosa* (4%), *Echinochloa crus-galli* (4%), *Eclipta prostrata* (4%), *Eleocharis equisetina* (4%), *Emilia sonchifolia* (4%), *Eriocaulon australe* (4%), *Excoecaria agallocha* (4%), *Ficus coronata* (4%), *Gahnia clarkei* (4%), *Gleichenia mendellii* (4%), *Goodenia paniculata* (4%), *Hibbertia vestita* (4%), *Hydrocotyle verticillata* (4%), *Lepidosperma laterale* (4%), *Leptospermum polygalifolium* (4%), *Leucopogon leptospermoides* (4%), *Lobelia purpurascens* (4%), *Lomandra longifolia* (4%), *Lomandra multiflora* (4%), *Maclura cochinchinensis* (4%), *Mitrasacme paludosa* (4%), *Ochna serrulata* (4%), *Ottochloa gracillima* (4%), *Paspalidium gracile* (4%), *Passiflora edulis* (4%), *Philydrum lanuginosum* (4%), *Phytolacca dioica* (4%), *Pinus elliottii* (4%), *Pratia concolor* (4%), *Ptilothrix deusta* (4%), *Pyrrosia confluens* (4%), *Rapanea variabilis* (4%), *Restio tetraphyllus* (4%), *Rubus sp* (4%), *Scaevola sp* (4%), *Schefflera arboricola* (4%), *Smilax australis* (4%), *Solanum nigrum* (4%), *Sonchus oleraceus* (4%), *Stephania japonica* (4%), *Symplocos thwaitesii* (4%), *Typha orientalis* (4%), *Viola hederacea* (4%), *Xanthorrhoea fulva* (4%), *Zehneria cunninghamii* (4%).

Species list for map unit 7A(ii)b:

Melaleuca quinquenervia (100%), *Baumea rubiginosa* (58%), *Blechnum indicum* (58%), *Baccharis halimifolia* (50%), *Imperata cylindrica* (50%), *Acacia leiocalyx* (33%), *Alphitonia excelsa* (33%), *Gahnia sieberiana* (33%), *Glochidion sumatranum* (33%), *Lophostemon suaveolens* (33%), *Melastoma affine* (33%), *Parsonsia straminea* (33%), *Paspalum scrobiculatum* (33%), *Centella asiatica* (25%), *Leersia hexandra* (25%), *Phragmites australis* (25%), *Asclepias curassavica* (16%), *Banksia robur* (16%), *Baumea articulata* (16%), *Baumea juncea* (16%), *Callistemon pachyphyllus* (16%), *Casuarina glauca* (16%), *Cyperus polystachyos* (16%), *Entolasia marginata* (16%), *Gleichenia mendellii* (16%), *Hibiscus diversifolius* (16%), *Lepironia articulata* (16%), *Leptospermum juniperinum* (16%), *Lomandra longifolia* (16%), *Panicum effusum* (16%), *Restio pallens* (16%), *Themeda triandra* (16%), *Acacia maidenii* (8%), *Acrostichum speciosum* (8%), *Andropogon virginicus* (8%), *Bacopa monnieri* (8%), *Baeckea stenophylla* (8%), *Banksia oblongifolia* (8%), *Chorizandra cymbaria* (8%), *Convolvulus arvensis* (8%), *Conyza bonariensis* (8%), *Corymbia intermedia* (8%), *Crassocephalum crepidioides* (8%), *Dianella congesta* (8%), *Dianella revoluta* (8%), *Dianella revoluta var. revoluta* (8%), *Dichelachne micrantha* (8%), *Enydra fluctuans* (8%), *Epacris microphylla* (8%), *Eriochloa procera* (8%), *Eucalyptus crebra* (8%), *Eucalyptus robusta* (8%), *Eucalyptus tereticornis* (8%), *Eustrephus latifolius* (8%), *Ficus virens* (8%), *Fimbristylis ferruginea* (8%), *Fimbristylis polytrichoides* (8%), *Glochidion ferdinandi* (8%), *Hakea actites* (8%), *Haloragis heterophylla* (8%), *Hibbertia scandens* (8%), *Hydrocotyle acutiloba* (8%), *Hydrocotyle verticillata* (8%), *Isolepis inundata* (8%), *Kennedia rubicunda* (8%), *Lantana camara* (8%), *Leptospermum liversidgei* (8%), *Leptospermum polygalifolium* (8%), *Lepyrodia caudata* (8%), *Leucopogon pimeleoides* (8%), *Lobelia purpurascens* (8%), *Ludwigia octovalvis* (8%), *Lygodium microphyllum* (8%), *Ottochloa gracillima* (8%), *Oxalis exilis* (8%), *Paspalidium disjunctum* (8%), *Paspalidium distans* (8%), *Persoonia virgata* (8%), *Philydrum lanuginosum* (8%), *Platycerium bifurcatum* (8%), *Polymeria calycina* (8%), *Psilotum nudum* (8%), *Restio tetraphyllus* (8%), *Schefflera actinophylla* (8%), *Schoenus brevifolius* (8%), *Stephania japonica* (8%), *Tricoryne elatior* (8%), *Triglochin sp* (8%), *Utricularia uliginosa* (8%), *Verbena officinalis* (8%), *Vernonia cinerea* (8%), *Villarsia exaltata* (8%), *Viola hederacea* (8%).

Species list for map unit 7A(iii)a:

Blechnum indicum (100%), *Melaleuca quinquenervia* (100%), *Parsonsia straminea* (100%), *Lygodium microphyllum* (75%), *Banksia robur* (50%), *Baumea rubiginosa* (50%), *Entolasia marginata* (50%), *Gahnia sieberiana* (50%), *Lepironia articulata* (50%), *Melastoma affine* (50%), *Acacia aulacocarpa* (25%), *Alphitonia excelsa* (25%), *Baccharis halimifolia* (25%), *Baumea juncea* (25%), *Chorizandra cymbaria* (25%), *Cyclosorus interruptus* (25%), *Dianella caerulea* (25%), *Eriocaulon australe* (25%), *Glochidion ferdinandi* (25%), *Glochidion sumatranum* (25%), *Hakea actites* (25%), *Imperata cylindrica* (25%), *Lantana camara* (25%), *Leptocarpus tenax* (25%), *Leptospermum juniperinum* (25%), *Lomandra longifolia* (25%), *Lomandra multiflora* (25%), *Lophostemon suaveolens* (25%), *Macaranga tanarius* (25%), *Persoonia cornifolia* (25%), *Persoonia virgata* (25%), *Phragmites australis* (25%), *Pinus elliottii* (25%), *Pultenaea paleacea* (25%), *Pultenaea villosa* (25%), *Restio pallens* (25%), *Themeda triandra* (25%), *Villarsia exaltata* (25%), *Xanthorrhoea fulva* (25%).

Species list for map unit 7A(iii)b:

Babingtonia virgata (100%), *Melaleuca quinquenervia* (100%), *Persoonia virgata* (100%), *Restio tetraphyllus* (100%), *Acacia leiocalyx* (50%), *Acacia longissima* (50%), *Acacia ulicifolia* (50%), *Banksia aemula* (50%), *Baumea juncea* (50%), *Blechnum indicum* (50%), *Boronia sp* (50%), *Dianella caerulea* (50%), *Entolasia stricta* (50%), *Epacris microphylla* (50%), *Epacris pulchella* (50%), *Hibbertia scandens* (50%), *Leptospermum liversidgei* (50%), *Leptospermum semibaccatum* (50%), *Leucopogon juniperinus* (50%), *Lomandra multiflora* (50%), *Ozothamnus cassinioides* (50%), *Patersonia sericea* (50%), *Pomax umbellata* (50%), *Pseudanthus orientalis* (50%), *Pultenaea paleacea* (50%), *Restio pallens* (50%), *Schizaea dichotoma* (50%), *Themeda triandra* (50%), *Xanthorrhoea* (50%), *Xanthorrhoea fulva* (50%).

Species list for map unit 7B(i):

Acmena hemilampra (100%), *Alpinia caerulea* (100%), *Archontophoenix cunninghamiana* (100%), *Blechnum indicum* (100%), *Carex breviculmis* (100%), *Cordyline petiolaris* (100%), *Endiandra discolor* (100%), *Ficus coronata* (100%), *Glochidion sumatranum* (100%), *Hypolepis muelleri* (100%), *Livistona australis* (100%), *Lophostemon suaveolens* (100%), *Melaleuca quinquenervia* (100%), *Melicope elleryana* (100%), *Mucuna gigantea* (100%), *Oplismenus aemulus* (100%), *Paspalum conjugatum* (100%), *Smilax australis* (100%), *Syzygium luehmannii* (100%), *Wilkiea huegeliana* (100%).

Species list for map unit 7C(i):

Melaleuca quinquenervia (100%), *Blechnum indicum* (85%), *Glochidion sumatranum* (85%), *Imperata cylindrica* (85%), *Lantana camara* (85%), *Alphitonia excelsa* (71%), *Lophostemon suaveolens* (71%), *Baccharis halimifolia* (57%), *Entolasia marginata* (57%), *Glochidion ferdinandi* (57%), *Melicope elleryana* (57%), *Pteridium esculentum* (57%), *Acacia leiocalyx* (42%), *Elaeocarpus obovatus* (42%), *Eustrephus latifolius* (42%), *Melastoma affine* (42%), *Parsonsia straminea* (42%), *Passiflora suberosa* (42%), *Psychotria loniceroides* (42%), *Stephania japonica* (42%), *Acacia aulacocarpa* (28%), *Acacia melanoxylon* (28%), *Baumea rubiginosa* (28%), *Centella asiatica* (28%), *Corymbia intermedia* (28%), *Cupaniopsis anacardioides* (28%), *Entolasia stricta* (28%), *Eucalyptus tereticornis* (28%), *Hypolepis muelleri* (28%), *Leersia hexandra* (28%), *Lygodium microphyllum* (28%), *Omalanthus nutans* (28%), *Paspalum scrobiculatum* (28%), *Schefflera actinophylla* (28%), *Acmena smithii* (14%), *Allocasuarina littoralis* (14%), *Austromyrtus dulcis* (14%), *Breynia oblongifolia* (14%), *Calochlaena dubia* (14%), *Carex appressa* (14%), *Cassytha pubescens* (14%), *Cinnamomum camphora* (14%), *Commelina diffusa* (14%), *Corymbia tessellaris* (14%),

Cynodon dactylon (14%), *Cyperus exaltatus* (14%), *Dianella caerulea* (14%), *Dianella caerulea var. producta* (14%), *Dicranopteris linearis var. linearis* (14%), *Elaeocarpus reticulatus* (14%), *Eucalyptus robusta* (14%), *Ficus coronata* (14%), *Gahnia clarkei* (14%), *Gahnia sieberiana* (14%), *Geitonoplesium cymosum* (14%), *Hibiscus diversifolius* (14%), *Histiopteris incisa* (14%), *Kennedia rubicunda* (14%), *Lepironia articulata* (14%), *Leptospermum polygalifolium* (14%), *Leucopogon leptospermoides* (14%), *Lomandra longifolia* (14%), *Macaranga tanarius* (14%), *Melodinus australis* (14%), *Notelaea longifolia forma glabra* (14%), *Ochna serrulata* (14%), *Oplismenus aemulus* (14%), *Passiflora subpeltata* (14%), *Persicaria strigosa* (14%), *Phaius* (14%), *Pittosporum revolutum* (14%), *Pittosporum undulatum* (14%), *Rapanea howittiana* (14%), *Rhynchospora corymbosa* (14%), *Schinus terebinthifolia* (14%), *Smilax australis* (14%), *Trema tomentosa* (14%), *Tricoryne elatior* (14%), *Wikstroemia indica* (14%).

Species list for map unit 7C(ii):

Eucalyptus robusta (100%), *Melaleuca quinquenervia* (100%), *Blechnum indicum* (80%), *Gahnia sieberiana* (80%), *Melastoma affine* (80%), *Alphitonia excelsa* (60%), *Leersia hexandra* (60%), *Lophostemon suaveolens* (60%), *Lygodium microphyllum* (60%), *Parsonsia straminea* (60%), *Acacia leiocalyx* (40%), *Entolasia marginata* (40%), *Glochidion sumatranum* (40%), *Imperata cylindrica* (40%), *Melicope elleryana* (40%), *Acacia aulacocarpa* (20%), *Acacia hubbardiana* (20%), *Acacia longifolia* (20%), *Acacia longissima* (20%), *Ageratum houstonianum* (20%), *Alpinia caerulea* (20%), *Banksia robur* (20%), *Baumea rubiginosa* (20%), *Callistemon pachyphyllus* (20%), *Calochlaena dubia* (20%), *Chorizandra cymbaria* (20%), *Chorizandra sphaerocephala* (20%), *Commelina diffusa* (20%), *Cyperus trinervis* (20%), *Drosera binata* (20%), *Elaeocarpus obovatus* (20%), *Elaeocarpus reticulatus* (20%), *Empodisma minus* (20%), *Entolasia stricta* (20%), *Eustrephus latifolius* (20%), *Ficus coronata* (20%), *Gahnia aspera* (20%), *Gleichenia mendellii* (20%), *Glochidion ferdinandi* (20%), *Hakea actites* (20%), *Hibbertia scandens* (20%), *Hibiscus diversifolius* (20%), *Histiopteris incisa* (20%), *Hygrophila angustifolia* (20%), *Ipomoea cairica* (20%), *Kennedia rubicunda* (20%), *Lantana camara* (20%), *Lepironia articulata* (20%), *Leptospermum polygalifolium* (20%), *Lepyrodia scariosa* (20%), *Leucopogon pimeleoides* (20%), *Livistona australis* (20%), *Lomandra multiflora* (20%), *Lophostemon confertus* (20%), *Macaranga tanarius* (20%), *Melaleuca nodosa* (20%), *Melaleuca sieberi* (20%), *Mirbelia rubiifolia* (20%), *Oplismenus aemulus* (20%), *Paspalum plicatulum* (20%), *Passiflora subpeltata* (20%), *Persoonia virgata* (20%), *Pimelea linifolia* subsp. *linifolia* (20%), *Pteridium esculentum* (20%), *Pultenaea myrtoides* (20%), *Pultenaea villosa* (20%), *Restio tetraphyllus* (20%), *Smilax australis* (20%), *Smilax glyciphylla* (20%), *Stephania japonica* (20%), *Themeda triandra* (20%), *Todea barbara* (20%), *Villarsia exaltata* (20%), *Xanthorrhoea fulva* (20%), *Xanthorrhoea johnsonii* (20%), *Zieria minutiflora* subsp. *minutiflora* (20%).

Species list for map unit 7C(iii):

Melaleuca quinquenervia (100%), *Lophostemon suaveolens* (85%), *Blechnum indicum* (71%), *Imperata cylindrica* (71%), *Lygodium microphyllum* (71%), *Entolasia marginata* (57%), *Glochidion sumatranum* (57%), *Lepironia articulata* (57%), *Parsonsia straminea* (57%), *Phragmites australis* (57%), *Restio pallens* (57%), *Alphitonia excelsa* (42%), *Lantana camara* (42%), *Melastoma affine* (42%), *Acacia leiocalyx* (28%), *Austromyrtus dulcis* (28%), *Baccharis halimifolia* (28%), *Banksia robur* (28%), *Baumea juncea* (28%), *Casuarina glauca* (28%), *Hypolepis muelleri* (28%), *Leersia hexandra* (28%), *Lomandra longifolia* (28%), *Persicaria strigosa* (28%), *Themeda triandra* (28%), *Villarsia exaltata* (28%), *Acacia aulacocarpa* (14%), *Acacia concurrens* (14%), *Acacia maidenii* (14%), *Banksia aemula* (14%), *Baumea articulata* (14%), *Baumea rubiginosa* (14%), *Callitris columellaris* (14%), *Calochlaena dubia* (14%), *Capillipedium spicigerum* (14%), *Carex appressa* (14%), *Carex*

fascicularis (14%), *Centella asiatica* (14%), *Chamaecrista rotundifolia* (14%), *Cladium procerum* (14%), *Conyza bonariensis* (14%), *Corymbia intermedia* (14%), *Cyclosorus interruptus* (14%), *Cyperus* (14%), *Cyperus polystachyos* (14%), *Dendrophthoe glabrescens* (14%), *Eucalyptus racemosa* (14%), *Eustrephus latifolius* (14%), *Flagellaria indica* (14%), *Glochidion ferdinandi* (14%), *Gloriosa superba* (14%), *Goodenia rotundifolia* (14%), *Hakea actites* (14%), *Hakea florulenta* (14%), *Ipomoea cairica* (14%), *Ischaemum triticeum* (14%), *Lepidosperma quadrangulatum* (14%), *Lepyrodia caudata* (14%), *Liliaceae* (14%), *Livistona australis* (14%), *Lobelia purpurascens* (14%), *Lophostemon confertus* (14%), *Melaleuca linariifolia* (14%), *Oplismenus aemulus* (14%), *Paspalum scrobiculatum* (14%), *Passiflora subpeltata* (14%), *Patersonia glabrata* (14%), *Persoonia virgata* (14%), *Phaius tancarvilleae* (14%), *Philydrum lanuginosum* (14%), *Ptilothrix deusta* (14%), *Pultenaea myrtoides* (14%), *Pultenaea villosa* (14%), *Rhynchospora corymbosa* (14%), *Schoenus scabripes* (14%), *Scleria levis* (14%), *Setaria sphacelata* (14%), *Stephania japonica* (14%), *Zieria minutiflora* subsp. *minutiflora* (14%).

Species list for map unit 7C(iv):

Lophostemon suaveolens (100%), *Melaleuca quinquenervia* (100%), *Imperata cylindrica* (88%), *Themeda triandra* (76%), *Baccharis halimifolia* (70%), *Eucalyptus tereticornis* (70%), *Glochidion sumatranum* (64%), *Melastoma affine* (64%), *Acacia leiocalyx* (58%), *Alphitonia excelsa* (58%), *Corymbia intermedia* (52%), *Blechnum indicum* (47%), *Lomandra longifolia* (47%), *Paspalum scrobiculatum* (47%), *Pimelea linifolia* subsp. *linifolia* (35%), *Pteridium esculentum* (35%), *Acacia aulacocarpa* (29%), *Banksia robur* (29%), *Entolasia marginata* (29%), *Entolasia stricta* (29%), *Hakea florulenta* (29%), *Lantana camara* (29%), *Leucopogon leptospermoides* (29%), *Restio pallens* (29%), *Xanthorrhoea fulva* (29%), *Banksia oblongifolia* (23%), *Centella asiatica* (23%), *Elaeocarpus reticulatus* (23%), *Hibbertia scandens* (23%), *Hibbertia vestita* (23%), *Livistona australis* (23%), *Pultenaea myrtoides* (23%), *Dianella caerulea* (17%), *Glochidion ferdinandi* (17%), *Panicum effusum* (17%), *Ageratum houstonianum* (11%), *Allocasuarina littoralis* (11%), *Austromyrtus dulcis* (11%), *Banksia integrifolia* (11%), *Baumea teretifolia* (11%), *Capillipedium spicigerum* (11%), *Chorizandra cymbaria* (11%), *Cynodon dactylon* (11%), *Endiandra sieberi* (11%), *Eragrostis cilianensis* (11%), *Eucalyptus pilularis* (11%), *Geitonoplesium cymosum* (11%), *Gompholobium pinnatum* (11%), *Hakea* (11%), *Hakea actites* (11%), *Leersia hexandra* (11%), *Lygodium microphyllum* (11%), *Melaleuca thymifolia* (11%), *Melicope elleryana* (11%), *Melinis repens* (11%), *Oplismenus aemulus* (11%), *Ottochloa gracillima* (11%), *Parsonsia straminea* (11%), *Passiflora edulis* (11%), *Phragmites australis* (11%), *Pinus elliottii* (11%), *Pultenaea retusa* (11%), *Sacciolepis indica* (11%), *Schoenus melanostachys* (11%), *Smilax australis* (11%), *Stephania japonica* (11%), *Tricoryne anceps* (11%), *Velleia spathulata* (11%), *Villarsia exaltata* (11%), *Acacia concurrens* (5%), *Acacia longissima* (5%), *Acacia melanoxylon* (5%), *Alternanthera denticulata* (5%), *Aristida gracilipes* (5%), *Aster subulatus* (5%), *Babingtonia virgata* (5%), *Baumea articulata* (5%), *Baumea juncea* (5%), *Baumea rubiginosa* (5%), *Cassytha pubescens* (5%), *Casuarina glauca* (5%), *Choretrum candollei* (5%), *Christella hispidula* (5%), *Cupaniopsis anacardioides* (5%), *Cyperus haspan* (5%), *Cyperus trinervis* (5%), *Daviesia villifera* (5%), *Desmodium rhytidophyllum* (5%), *Dianella caerulea var. vannata* (5%), *Digitaria didactyla* (5%), *Digitaria parviflora* (5%), *Dodonaea triquetra* (5%), *Eragrostis spartinoides* (5%), *Eucalyptus crebra* (5%), *Eucalyptus robusta* (5%), *Eucalyptus robusta x Eucalyptus tereticornis* (5%), *Eustrephus latifolius* (5%), *Fimbristylis dichotoma* (5%), *Gahnia aspera* (5%), *Gahnia sieberiana* (5%), *Glossocardia bidens* (5%), *Grevillea leiophylla* (5%), *Grewia latifolia* (5%), *Hibiscus diversifolius* (5%), *Indigofera australis* (5%), *Ischaemum australe* (5%), *Juncus polyanthemus* (5%), *Kennedia rubicunda* (5%), *Lepidosperma laterale* (5%), *Lepironia articulata* (5%), *Leptocarpus tenax* (5%), *Leptospermum juniperinum* (5%), *Lepyrodia scariosa* (5%), *Lobelia alata* (5%), *Lomandra multiflora* (5%), *Macaranga tanarius* (5%), *Melaleuca linariifolia* (5%), *Mirbelia rubiifolia* (5%), *Ochna serrulata* (5%),

Omalanthus nutans (5%), *Ozothamnus diosmifolius* (5%), *Paspalidium disjunctum* (5%), *Paspalidium gausum* (5%), *Passiflora suberosa* (5%), *Passiflora subpeltata* (5%), *Persicaria subsessilis* (5%), *Persoonia cornifolia* (5%), *Persoonia virgata* (5%), *Petrophile shirleyae* (5%), *Phyllanthus gasstroemii* (5%), *Polymeria calycina* (5%), *Psychotria loniceroides* (5%), *Pultenaea villosa* (5%), *Schoenus brevifolius* (5%), *Scleria levis* (5%), *Sida cordifolia* (5%), *Solanum torvum* (5%), *Sowerbaea juncea* (5%), *Spergularia rubra* (5%), *Tricoryne elatior* (5%), *Tricoryne muricata* (5%), *Viola hederacea* (5%), *Xanthorrhoea johnsonii* (5%), *Xyris complanata* (5%).

Species list for map unit 7D(i):

Baccharis halimifolia (100%), *Melaleuca quinquenervia* (100%), *Imperata cylindrica* (90%), *Alphitonia excelsa* (63%), *Corymbia intermedia* (63%), *Lophostemon suaveolens* (63%), *Pteridium esculentum* (63%), *Acacia leiocalyx* (54%), *Acacia aulacocarpa* (45%), *Glochidion sumatranum* (45%), *Lantana camara* (45%), *Persoonia virgata* (45%), *Themeda triandra* (45%), *Blechnum indicum* (36%), *Casuarina glauca* (36%), *Entolasia marginata* (36%), *Eucalyptus tereticornis* (36%), *Hibbertia scandens* (36%), *Lomandra longifolia* (36%), *Panicum effusum* (36%), *Parsonsia straminea* (36%), *Pinus elliottii* (36%), *Baumea juncea* (27%), *Dianella caerulea* (27%), *Entolasia stricta* (27%), *Gahnia sieberiana* (27%), *Lobelia purpurascens* (27%), *Melastoma affine* (27%), *Paspalum scrobiculatum* (27%), *Banksia integrifolia* (18%), *Banksia oblongifolia* (18%), *Desmodium rhytidophyllum* (18%), *Elaeocarpus reticulatus* (18%), *Exocarpos latifolius* (18%), *Leucopogon leptospermoides* (18%), *Oplismenus aemulus* (18%), *Restio tetraphyllus* (18%), *Sacciolepis indica* (18%), *Acacia maidenii* (9%), *Acacia melanoxylon* (9%), *Allocasuarina littoralis* (9%), *Austromyrtus dulcis* (9%), *Baumea teretifolia* (9%), *Cupaniopsis anacardioides* (9%), *Desmodium heterocarpon* (9%), *Dianella* (9%), *Dianella caerulea var. vannata* (9%), *Dianella longifolia* (9%), *Dianella revoluta* (9%), *Dichelachne micrantha* (9%), *Dicranopteris linearis var. linearis* (9%), *Dodonaea triquetra* (9%), *Emilia sonchifolia* (9%), *Epacris pulchella* (9%), *Eragrostis brownii* (9%), *Eucalyptus bancroftii* (9%), *Evolvulus alsinoides* (9%), *Fimbristylis bisumbellata* (9%), *Galactia tenuiflora* (9%), *Glochidion ferdinandi* (9%), *Gomphocarpus physocarpus* (9%), *Goodenia rotundifolia* (9%), *Grewia latifolia* (9%), *Hakea actites* (9%), *Hakea florulenta* (9%), *Hibbertia vestita* (9%), *Hovea acutifolia* (9%), *Hydrocotyle acutiloba* (9%), *Ipomoea cairica* (9%), *Juncus continuus* (9%), *Lepidosperma laterale* (9%), *Leptocarpus tenax* (9%), *Lepyrodia caudata* (9%), *Lepyrodia scariosa* (9%), *Leucopogon juniperinus* (9%), *Leucopogon melaleucoides* (9%), *Leucopogon pimeleoides* (9%), *Lomandra multiflora* (9%), *Lumnitzera racemosa* (9%), *Lygodium microphyllum* (9%), *Ottochloa gracillima* (9%), *Oxalis corniculata* (9%), *Panicum maximum* (9%), *Paspalidium disjunctum* (9%), *Passiflora subpeltata* (9%), *Patersonia sericea* (9%), *Picris angustifolia* (9%), *Pimelea linifolia* subsp. *linifolia* (9%), *Pomax umbellata* (9%), *Psychotria loniceroides* (9%), *Pultenaea myrtoides* (9%), *Rapanea variabilis* (9%), *Restio complanatus* (9%), *Schinus terebinthifolia* (9%), *Schoenus brevifolius* (9%), *Schoenus calostachyus* (9%), *Selaginella uliginosa* (9%), *Stephania japonica* (9%), *Timonius timon* (9%), *Trema tomentosa* (9%), *Tricoryne elatior* (9%), *Villarsia exaltata* (9%), *Viola hederacea* (9%), *Xanthorrhoea fulva* (9%), *Xanthorrhoea johnsonii* (9%), *Xyris complanata* (9%), *Zieria minutiflora* subsp. *minutiflora* (9%).

Species list for map unit 7D(ii):

Eucalyptus tereticornis (100%), *Melaleuca quinquenervia* (100%), *Imperata cylindrica* (80%), *Alphitonia excelsa* (60%), *Baccharis halimifolia* (60%), *Acacia leiocalyx* (40%), *Ageratum houstonianum* (40%), *Alternanthera denticulata* (40%), *Aster subulatus* (40%), *Bidens pilosa* (40%), *Carex appressa* (40%), *Casuarina glauca* (40%), *Centella asiatica* (40%), *Commelina diffusa* (40%), *Conyza bonariensis* (40%), *Dianella revoluta* (40%), *Hydrocotyle acutiloba* (40%), *Lomandra longifolia* (40%), *Lophostemon suaveolens* (40%),

Parsonsia straminea (40%), *Paspalum scrobiculatum* (40%), *Acacia concurrens* (20%), *Asclepias curassavica* (20%), *Banksia oblongifolia* (20%), *Cirsium vulgare* (20%), *Corymbia intermedia* (20%), *Corymbia tessellaris* (20%), *Crassula sieberiana* (20%), *Cymbopogon refractus* (20%), *Cynodon dactylon* (20%), *Cyperus gracilis* (20%), *Cyperus haspan* (20%), *Cyperus trinervis* (20%), *Dianella caerulea* (20%), *Digitaria didactyla* (20%), *Eclipta platyglossa* (20%), *Eclipta prostrata* (20%), *Einadia hastata* (20%), *Entolasia stricta* (20%), *Enydra fluctuans* (20%), *Eucalyptus crebra* (20%), *Eucalyptus siderophloia* (20%), *Eustrephus latifolius* (20%), *Fimbristylis bisumbellata* (20%), *Fimbristylis nutans* (20%), *Glycine tabacina* (20%), *Gomphocarpus physocarpus* (20%), *Hardenbergia violacea* (20%), *Juncus kraussii* (20%), *Leersia hexandra* (20%), *Leptospermum polygalifolium* (20%), *Lobelia purpurascens* (20%), *Ludwigia octovalvis* (20%), *Morus alba* (20%), *Oplismenus aemulus* (20%), *Oxalis chnoodes* (20%), *Oxalis perennans* (20%), *Panicum effusum* (20%), *Paspalidium disjunctum* (20%), *Paspalum vaginatum* (20%), *Passiflora foetida* (20%), *Passiflora subpeltata* (20%), *Persicaria decipiens* (20%), *Persicaria dichotoma* (20%), *Philydrum lanuginosum* (20%), *Polymeria calycina* (20%), *Pratia concolor* (20%), *Pteridium esculentum* (20%), *Pultenaea retusa* (20%), *Ranunculus inundatus* (20%), *Sacciolepis indica* (20%), *Setaria sphacelata* (20%), *Sida rhombifolia* (20%), *Sigesbeckia orientalis* (20%), *Solanum americanum* (20%), *Themeda triandra* (20%), *Verbena officinalis* (20%), *Viola betonicifolia* (20%).

Species list for map unit 7E(i):

Casuarina glauca (100%), *Melaleuca quinquenervia* (100%), *Baccharis halimifolia* (87%), *Lantana camara* (87%), *Parsonsia straminea* (87%), *Ipomoea cairica* (62%), *Alternanthera denticulata* (50%), *Cupaniopsis anacardioides* (50%), *Entolasia marginata* (50%), *Phragmites australis* (50%), *Alphitonia excelsa* (37%), *Commelina diffusa* (37%), *Crassocephalum crepidioides* (37%), *Cyperus polystachyos* (37%), *Glochidion sumatranum* (37%), *Leersia hexandra* (37%), *Panicum maximum* (37%), *Persicaria strigosa* (37%), *Rhynchospora corymbosa* (37%), *Solanum seaforthianum* (37%), *Viola hederacea* (37%), *Acrostichum speciosum* (25%), *Ageratum houstonianum* (25%), *Bidens pilosa* (25%), *Blechnum indicum* (25%), *Centella asiatica* (25%), *Eucalyptus tereticornis* (25%), *Fimbristylis ferruginea* (25%), *Flagellaria indica* (25%), *Glochidion ferdinandi* (25%), *Hibiscus diversifolius* (25%), *Lepironia articulata* (25%), *Lygodium microphyllum* (25%), *Macaranga tanarius* (25%), *Oplismenus aemulus* (25%), *Paspalum conjugatum* (25%), *Passiflora suberosa* (25%), *Passiflora subpeltata* (25%), *Schefflera actinophylla* (25%), *Schinus terebinthifolia* (25%), *Solanum torvum* (25%), *Stephania japonica* (25%), *Acacia aulacocarpa* (12%), *Acacia maidenii* (12%), *Acacia melanoxylon* (12%), *Acmena smithii* (12%), *Archontophoenix cunninghamiana* (12%), *Asparagus densiflorus* (12%), *Aster subulatus* (12%), *Bacopa monnieri* (12%), *Bromus catharticus* (12%), *Bruguiera gymnorhiza* (12%), *Carex appressa* (12%), *Cayratia clematidea* (12%), *Celtis sinensis* (12%), *Cinnamomum camphora* (12%), *Cladium procerum* (12%), *Cyathea cooperi* (12%), *Cyclosorus interruptus* (12%), *Cynanchum carnosum* (12%), *Cynodon dactylon* (12%), *Cyperus javanicus* (12%), *Dianella* (12%), *Dianella revoluta* (12%), *Digitaria didactyla* (12%), *Elaeocarpus obovatus* (12%), *Eleocharis dulcis* (12%), *Epaltes australis* (12%), *Excoecaria agallocha* (12%), *Geitonoplesium cymosum* (12%), *Hydrilla verticillata* (12%), *Hypolepis muelleri* (12%), *Imperata cylindrica* (12%), *Jagera pseudorhus* (12%), *Juncus kraussii* (12%), *Livistona australis* (12%), *Maclura cochinchinensis* (12%), *Myoporum acuminatum* (12%), *Paspalum scrobiculatum* (12%), *Passiflora edulis* (12%), *Passiflora foetida* (12%), *Persicaria attenuata* (12%), *Phytolacca octandra* (12%), *Pittosporum revolutum* (12%), *Platycerium bifurcatum* (12%), *Pteridium esculentum* (12%), *Ranunculus scleratus* (12%), *Rivina humilis* (12%), *Setaria sphacelata* (12%), *Solanum americanum* (12%), *Solanum nigrum* (12%), *Sporobolus virginicus* (12%), *Suaeda australis* (12%), *Syagrus romanzoffiana* (12%), *Triglochin multifructum* (12%).

Species list for map unit 7F(i):

Banksia robur (100%), *Cassytha pubescens* (100%), *Epacris microphylla* (100%), *Epacris pulchella* (100%), *Hakea actites* (100%), *Imperata cylindrica* (100%), *Leptocarpus tenax* (100%), *Leucopogon leptospermoides* (100%), *Lomandra multiflora* (100%), *Melaleuca quinquenervia* (100%), *Persoonia virgata* (100%), *Pimelea linifolia* subsp. *linifolia* (100%), *Restio tenuiculmis* (100%), *Strangea linearis* (100%), *Xyris complanata* (100%).

Species list for map unit 10B(i):

Asparagus densiflorus (100%), *Balanops australiana* (100%), *Baumea articulata* (100%), *Bryophyllum tubiflorum* (100%), *Euphorbia cyathocarpa* (100%), *Ipomoea purpurea* (100%), *Nymphoides indica* (100%), *Phragmites australis* (100%), *Pteridium esculentum* (100%), *Tecoma stans* (100%), *Wedelia trilobata* (100%).

Appendix 4.

Species List

Species	**Family**
Abildgaardia vaginata	Cyperaceae
Acacia aulacocarpa	Mimosaceae
Acacia concurrens	Mimosaceae
Acacia hubbardiana	Mimosaceae
Acacia leiocalyx	Mimosaceae
Acacia longifolia	Mimosaceae
Acacia longissima	Mimosaceae
Acacia maidenii	Mimosaceae
Acacia melanoxylon	Mimosaceae
Acacia ulicifolia	Mimosaceae
Acmena hemilampra	Myrtaceae
Acmena smithii	Myrtaceae
Acronychia imperforata	Rutaceae
Acrostichum speciosum	Pteridaceae
Aegiceras corniculatum	Myrsinaceae
Ageratum houstonianum	Asteraceae
Agrostis avenacea	Poaceae
Allocasuarina littoralis	Casuarinaceae
Alphitonia excelsa	Rhamnaceae
Alpinia caerulea	Zingiberaceae
Alternanthera denticulata	Amaranthaceae
Amyema cambagei	Loranthaceae
Andropogon virginicus	Poaceae
Aotus lanigera	Fabaceae
Apium prostratum	Apiaceae
Archontophoenix cunninghamiana	Arecaceae
Aristida gracilipes	Poaceae
Asclepias curassavica	Asclepiadaceae
Asparagus densiflorus	Asparagaceae
Asplenium australasicum	Aspleniaceae
Asplenium nidus	Aspleniaceae
Aster subulatus	Asteraceae
Austromyrtus dulcis	Myrtaceae
Avicennia marina subsp. *australasica*	Avicenniaceae
Axonopus fissifolius	Poaceae
Babingtonia virgata	Myrtaceae
Baccharis halimifolia	Asteraceae
Bacopa monnieri	Scrophulariaceae
Baeckea stenophylla	Myrtaceae
Balanops australiana	Balanopaceae
Banksia aemula	Proteaceae
Banksia integrifolia	Proteaceae
Banksia oblongifolia	Proteaceae
Banksia robur	Proteaceae
Baumea articulata	Cyperaceae

Species	Family
Baumea juncea	Cyperaceae
Baumea rubiginosa	Cyperaceae
Baumea teretifolia	Cyperaceae
Bidens pilosa	Asteraceae
Blechnum indicum	Blechnaceae
Bolboschoenus caldwellii	Cyperaceae
Boronia sp	Rutaceae
Brachiaria mutica	Poaceae
Breynia oblongifolia	Euphorbiaceae
Bromus catharticus	Poaceae
Bruguiera gymnorhiza	Rhizophoraceae
Bryophyllum tubiflorum	Crassulaceae
Buckinghamia celsissima	Proteaceae
Callistemon pachyphyllus	Myrtaceae
Callitris columellaris	Cupressaceae
Calochlaena dubia	Dicksoniaceae
Cannabis sativa	Cannabaceae
Capillipedium spicigerum	Poaceae
Carex appressa	Cyperaceae
Carex breviculmis	Cyperaceae
Carex fascicularis	Cyperaceae
Carex pumila	Cyperaceae
Carpobrotus glaucescens	Aizoaceae
Cassytha filiformis	Lauraceae
Cassytha glabella	Lauraceae
Cassytha pubescens	Lauraceae
Casuarina equisetifolia subsp. *incana*	Casuarinaceae
Casuarina glauca	Casuarinaceae
Cayratia clematidea	Vitaceae
Celtis sinensis	Ulmaceae
Centaurium erythraea	Gentianaceae
Centella asiatica	Apiaceae
Ceriops tagal	Rhizophoraceae
Chamaecrista rotundifolia	Caesalpiniaceae
Chloris gayana	Poaceae
Choretrum candollei	Santalaceae
Chorizandra cymbaria	Cyperaceae
Chorizandra sphaerocephala	Cyperaceae
Christella hispidula	Thelypteridaceae
Cinnamomum camphora	Lauraceae
Cirsium vulgare	Asteraceae
Cladium procerum	Cyperaceae
Comesperma defoliatum	Polygalaceae
Commelina diffusa	Commelinaceae
Convolvulus arvensis	Convolvulaceae
Conyza bonariensis	Asteraceae
Cordyline petiolaris	Dracaenaceae
Corymbia intermedia	Myrtaceae
Corymbia tessellaris	Myrtaceae

Species	Family
Corymbia torelliana	Myrtaceae
Crassocephalum crepidioides	Asteraceae
Crassula sieberiana	Crassulaceae
Crinum flaccidum	Amaryllidaceae
Crinum pedunculatum	Amaryllidaceae
Cupaniopsis anacardioides	Sapindaceae
Cyathea cooperi	Cyatheaceae
Cyclosorus interruptus	Thelypteridaceae
Cymbopogon refractus	Poaceae
Cynanchum carnosum	Asclepiadaceae
Cynodon dactylon	Poaceae
Cyperus exaltatus	Cyperaceae
Cyperus gracilis	Cyperaceae
Cyperus haspan	Cyperaceae
Cyperus javanicus	Cyperaceae
Cyperus laevigatus	Cyperaceae
Cyperus lucidus	Cyperaceae
Cyperus polystachyos	Cyperaceae
Cyperus trinervis	Cyperaceae
Daviesia villifera	Fabaceae
Dendrophthoe glabrescens	Loranthaceae
Desmodium heterocarpon	Fabaceae
Desmodium intortum	Fabaceae
Desmodium rhytidophyllum	Fabaceae
Dianella brevipedunculata	Phormiaceae
Dianella caerulea	Phormiaceae
Dianella caerulea var. *producta*	Phormiaceae
Dianella caerulea var. *vannata*	Phormiaceae
Dianella congesta	Phormiaceae
Dianella longifolia	Phormiaceae
Dianella revoluta	Phormiaceae
Dianella revoluta var. *revoluta*	Phormiaceae
Dichelachne micrantha	Poaceae
Dicranopteris linearis var. *linearis*	Gleicheniaceae
Digitaria ciliaris	Poaceae
Digitaria didactyla	Poaceae
Digitaria parviflora	Poaceae
Dockrillia linguiformis	Orchidaceae
Dodonaea triquetra	Sapindaceae
Drosera binata	Droseraceae
Drosera spatulata	Droseraceae
Durringtonia paludosa	Rubiaceae
Echinochloa crus-galli	Poaceae
Eclipta platyglossa	Asteraceae
Eclipta prostrata	Asteraceae
Einadia hastata	Chenopodiaceae
Elaeocarpus obovatus	Elaeocarpaceae
Elaeocarpus reticulatus	Elaeocarpaceae
Eleocharis dulcis	Cyperaceae

Species	Family
Eleocharis equisetina	Cyperaceae
Eleocharis sphacelata	Cyperaceae
Emilia sonchifolia	Asteraceae
Empodisma minus	Restionaceae
Enchylaena tomentosa var. *glabra*	Chenopodiaceae
Endiandra discolor	Lauraceae
Endiandra sieberi	Lauraceae
Entolasia marginata	Poaceae
Entolasia stricta	Poaceae
Enydra fluctuans	Asteraceae
Epacris microphylla	Epacridaceae
Epacris obtusifolia	Epacridaceae
Epacris pulchella	Epacridaceae
Epaltes australis	Asteraceae
Eragrostis brownii	Poaceae
Eragrostis cilianensis	Poaceae
Eragrostis spartinoides	Poaceae
Eriocaulon australe	Eriocaulaceae
Eriochloa crebra	Poaceae
Eriochloa procera	Poaceae
Eucalyptus bancroftii	Myrtaceae
Eucalyptus crebra	Myrtaceae
Eucalyptus pilularis	Myrtaceae
Eucalyptus racemosa	Myrtaceae
Eucalyptus robusta	Myrtaceae
Eucalyptus robusta x *Eucalyptus tereticornis*	Myrtaceae
Eucalyptus siderophloia	Myrtaceae
Eucalyptus tereticornis	Myrtaceae
Eugenia uniflora	Myrtaceae
Euphorbia cyathocarpa	Euphorbiaceae
Eustrephus latifolius	Philesiaceae
Evolvulus alsinoides	Convolvulaceae
Excoecaria agallocha	Euphorbiaceae
Exocarpos cupressiformis	Santalaceae
Exocarpos latifolius	Santalaceae
Ficus coronata	Moraceae
Ficus macrophylla	Moraceae
Ficus microcarpa	Moraceae
Ficus obliqua	Moraceae
Ficus rubiginosa	Moraceae
Ficus virens	Moraceae
Fimbristylis bisumbellata	Cyperaceae
Fimbristylis dichotoma	Cyperaceae
Fimbristylis ferruginea	Cyperaceae
Fimbristylis nutans	Cyperaceae
Fimbristylis polytrichoides	Cyperaceae
Flagellaria indica	Flagellariaceae
Gahnia aspera	Cyperaceae
Gahnia clarkei	Cyperaceae

Species	Family
Gahnia sieberiana	Cyperaceae
Galactia tenuiflora	Fabaceae
Gamochaeta subfalcata	Asteraceae
Geitonoplesium cymosum	Philesiaceae
Gleichenia mendellii	Gleicheniaceae
Glochidion ferdinandi	Euphorbiaceae
Glochidion sumatranum	Euphorbiaceae
Gloriosa superba	Colchicaceae
Glossocardia bidens	Asteraceae
Glycine tabacina	Fabaceae
Gomphocarpus physocarpus	Asclepiadaceae
Gompholobium pinnatum	Fabaceae
Gonocarpus micranthus subsp. *micranthus*	Haloragaceae
Goodenia paniculata	Goodeniaceae
Goodenia rotundifolia	Goodeniaceae
Grevillea leiophylla	Proteaceae
Grewia latifolia	Tiliaceae
Haemodorum tenuifolium	Haemodoraceae
Hakea actites	Proteaceae
Hakea florulenta	Proteaceae
Haloragis heterophylla	Haloragaceae
Halosarcia halocnemoides subsp. *tenuis*	Chenopodiaceae
Halosarcia indica	Chenopodiaceae
Halosarcia pergranulata subsp. *queenslandica*	Chenopodiaceae
Hardenbergia violacea	Fabaceae
Hedera helix	Araliaceae
Hibbertia salicifolia	Dilleniaceae
Hibbertia scandens	Dilleniaceae
Hibbertia vestita	Dilleniaceae
Hibiscus diversifolius	Malvaceae
Hibiscus tiliaceus	Malvaceae
Histiopteris incisa	Dennstaedtiaceae
Hovea acutifolia	Fabaceae
Hydrilla verticillata	Hydrocharitaceae
Hydrocotyle acutiloba	Apiaceae
Hydrocotyle bonariensis	Apiaceae
Hydrocotyle verticillata	Apiaceae
Hygrophila angustifolia	Acanthaceae
Hypolepis muelleri	Dennstaedtiaceae
Imperata cylindrica	Poaceae
Indigofera australis	Fabaceae
Ipomoea cairica	Convolvulaceae
Ipomoea pes-caprae	Convolvulaceae
Ipomoea purpurea	Convolvulaceae
Ischaemum australe	Poaceae
Ischaemum triticeum	Poaceae
Isolepis inundata	Cyperaceae
Isolepis nodosa	Cyperaceae
Jagera pseudorhus	Sapindaceae

Species	Family
Jasminum didymum	Oleaceae
Juncus continuus	Juncaceae
Juncus kraussii	Juncaceae
Juncus polyanthemus	Juncaceae
Juncus usitatus	Juncaceae
Kennedia rubicunda	Fabaceae
Lantana camara	Verbenaceae
Leersia hexandra	Poaceae
Lemna sp	Lemnaceae
Lepidosperma laterale	Cyperaceae
Lepidosperma quadrangulatum	Cyperaceae
Lepironia articulata	Cyperaceae
Leptocarpus tenax	Restionaceae
Leptochloa decipiens	Poaceae
Leptochloa fusca	Poaceae
Leptospermum juniperinum	Myrtaceae
Leptospermum liversidgei	Myrtaceae
Leptospermum polygalifolium	Myrtaceae
Leptospermum semibaccatum	Myrtaceae
Leptospermum speciosum	Myrtaceae
Lepyrodia caudata	Restionaceae
Lepyrodia interrupta	Restionaceae
Lepyrodia scariosa	Restionaceae
Leucopogon juniperinus	Epacridaceae
Leucopogon leptospermoides	Epacridaceae
Leucopogon melaleucoides	Epacridaceae
Leucopogon pimeleoides	Epacridaceae
Livistona australis	Arecaceae
Lobelia alata	Campanulaceae
Lobelia purpurascens	Campanulaceae
Lomandra hystrix	Xanthorrhoeaceae
Lomandra longifolia	Xanthorrhoeaceae
Lomandra multiflora	Xanthorrhoeaceae
Lophostemon confertus	Myrtaceae
Lophostemon suaveolens	Myrtaceae
Ludwigia octovalvis	Onagraceae
Ludwigia peploides subsp. *montevidensis*	Onagraceae
Lumnitzera racemosa	Combretaceae
Lygodium microphyllum	Schizaeaceae
Lysiana maritima	Loranthaceae
Lysiana subfalcata	Loranthaceae
Macaranga tanarius	Euphorbiaceae
Maclura cochinchinensis	Moraceae
Melaleuca linariifolia	Myrtaceae
Melaleuca nodosa	Myrtaceae
Melaleuca quinquenervia	Myrtaceae
Melaleuca sieberi	Myrtaceae
Melaleuca thymifolia	Myrtaceae
Melastoma affine	Melastomataceae

Species	Family
Melicope elleryana	Rutaceae
Melinis repens	Poaceae
Melodinus australis	Apocynaceae
Mirbelia rubiifolia	Fabaceae
Mitrasacme paludosa	Loganiaceae
Morus alba	Moraceae
Mucuna gigantea	Fabaceae
Murraya paniculata	Rutaceae
Myoporum acuminatum	Myoporaceae
Nephrolepis exaltata	Nephrolepidaceae
Notelaea longifolia forma *glabra*	Oleaceae
Nothoscordum gracile	Alliaceae
Nymphoides indica	Menyanthaceae
Ochna serrulata	Ochnaceae
Omalanthus nutans	Euphorbiaceae
Oplismenus aemulus	Poaceae
Opuntia stricta	Cactaceae
Ottochloa gracillima	Poaceae
Oxalis chnoodes	Oxalidaceae
Oxalis corniculata	Oxalidaceae
Oxalis exilis	Oxalidaceae
Oxalis perennans	Oxalidaceae
Ozothamnus cassinioides	Asteraceae
Ozothamnus diosmifolius	Asteraceae
Pandanus tectorius	Pandanaceae
Panicum effusum	Poaceae
Panicum maximum	Poaceae
Parsonsia straminea	Apocynaceae
Paspalidium disjunctum	Poaceae
Paspalidium distans	Poaceae
Paspalidium gausum	Poaceae
Paspalidium gracile	Poaceae
Paspalum conjugatum	Poaceae
Paspalum plicatulum	Poaceae
Paspalum scrobiculatum	Poaceae
Paspalum vaginatum	Poaceae
Passiflora edulis	Passifloraceae
Passiflora foetida	Passifloraceae
Passiflora suberosa	Passifloraceae
Passiflora subpeltata	Passifloraceae
Patersonia glabrata	Iridaceae
Patersonia sericea	Iridaceae
Persicaria attenuata	Polygonaceae
Persicaria decipiens	Polygonaceae
Persicaria dichotoma	Polygonaceae
Persicaria orientalis	Polygonaceae
Persicaria strigosa	Polygonaceae
Persicaria subsessilis	Polygonaceae
Persoonia cornifolia	Proteaceae

Species	Family
Persoonia virgata	Proteaceae
Petrophile shirleyae	Proteaceae
Phaius tancarvilleae	Orchidaceae
Philydrum lanuginosum	Philydraceae
Phragmites australis	Poaceae
Phyla nodiflora var. *nodiflora*	Verbenaceae
Phyllanthus gasstroemii	Euphorbiaceae
Phytolacca dioica	Phytolaccaceae
Phytolacca octandra	Phytolaccaceae
Picris angustifolia	Asteraceae
Pimelea linifolia subsp. *linifolia*	Thymelaeaceae
Pinus elliottii	Pinaceae
Pittosporum revolutum	Pittosporaceae
Pittosporum undulatum	Pittosporaceae
Pityrogramma calomelanos var. *austroamericana*	Adiantaceae
Platycerium bifurcatum	Polypodiaceae
Platysace linearifolia	Apiaceae
Plectranthus sp	Lamiaceae
Polymeria calycina	Convolvulaceae
Pomax umbellata	Rubiaceae
Pratia concolor	Campanulaceae
Pseudanthus orientalis	Euphorbiaceae
Psilotum nudum	Psilotaceae
Psychotria loniceroides	Rubiaceae
Pteridium esculentum	Dennstaedtiaceae
Ptilothrix deusta	Cyperaceae
Pultenaea myrtoides	Fabaceae
Pultenaea paleacea	Fabaceae
Pultenaea retusa	Fabaceae
Pultenaea villosa	Fabaceae
Pyrrosia confluens	Polypodiaceae
Pyrrosia rupestris	Polypodiaceae
Ranunculus inundatus	Ranunculaceae
Ranunculus scleratus	Ranunculaceae
Rapanea howittiana	Myrsinaceae
Rapanea var*iabilis*	Myrsinaceae
Restio complanatus	Restionaceae
Restio pallens	Restionaceae
Restio tenuiculmis	Restionaceae
Restio tetraphyllus	Restionaceae
Rhizophora stylosa	Rhizophoraceae
Rhynchospora corymbosa	Cyperaceae
Rivina humilis	Phytolaccaceae
Rubus sp	Rosaceae
Ruppia maritima	Ruppiaceae
Sacciolepis indica	Poaceae
Salvinia molesta	Salviniaceae
Samolus repens	Primulaceae

Species	Family
Sansevieria trifasciata	Dracaenaceae
Sarcocornia quinqueflora subsp. *quinqueflora*	Chenopodiaceae
Scaevola sp	Goodeniaceae
Schefflera actinophylla	Araliaceae
Schefflera arboricola	Araliaceae
Schinus terebinthifolia	Anacardiaceae
Schizaea dichotoma	Schizaeaceae
Schoenoplectus litoralis	Cyperaceae
Schoenoplectus validus	Cyperaceae
Schoenus brevifolius	Cyperaceae
Schoenus calostachyus	Cyperaceae
Schoenus ericetorum	Cyperaceae
Schoenus melanostachys	Cyperaceae
Schoenus nitens	Cyperaceae
Schoenus scabripes	Cyperaceae
Scleria levis	Cyperaceae
Selaginella uliginosa	Selaginellaceae
Senecio lautus subsp. *maritimus*	Asteraceae
Senecio madagascariensis	Asteraceae
Senna pendula var. *glabrata*	Caesalpiniaceae
Sesuvium portulacastrum	Aizoaceae
Setaria sphacelata	Poaceae
Sida cordifolia	Malvaceae
Sida rhombifolia	Malvaceae
Sigesbeckia orientalis	Asteraceae
Smilax australis	Smilacaceae
Smilax glyciphylla	Smilacaceae
Solanum americanum	Solanaceae
Solanum mauritianum	Solanaceae
Solanum nigrum	Solanaceae
Solanum seaforthianum	Solanaceae
Solanum stelligerum	Solanaceae
Solanum torvum	Solanaceae
Sonchus oleraceus	Asteraceae
Sowerbaea juncea	Anthericaceae
Spergularia rubra	Caryophyllaceae
Sporobolus virginicus	Poaceae
Sprengelia sprengelioides	Epacridaceae
Stackhousia spathulata	Stackhousiaceae
Stenotaphrum secundatum	Poaceae
Stephania japonica	Menispermaceae
Strangea linearis	Proteaceae
Suaeda arbusculoides	Chenopodiaceae
Suaeda australis	Chenopodiaceae
Syagrus romanzoffiana	Arecaceae
Symplocos thwaitesii	Symplocaceae
Syngonium podophyllum	Araceae
Syzygium luehmannii	Myrtaceae
Tecoma stans	Bignoniaceae

Species	Family
Tetragonia tetragonioides	Aizoaceae
Themeda triandra	Poaceae
Tillandsia usneoides	Bromeliaceae
Timonius timon	Rubiaceae
Todea barbara	Osmundaceae
Trachymene procumbens	Apiaceae
Tradescantia zebrina	Commelinaceae
Trema tomentosa	Ulmaceae
Tricoryne anceps	Anthericaceae
Tricoryne elatior	Anthericaceae
Tricoryne muricata	Anthericaceae
Triglochin multifructum	Juncaginaceae
Triglochin sp	Juncaginaceae
Triglochin striatum	Juncaginaceae
Typha orientalis	Typhaceae
Ulva sp	Chlorophyceae
Utricularia caerulea	Lentibulariaceae
Utricularia uliginosa	Lentibulariaceae
Velleia spathulata	Goodeniaceae
Verbena officinalis	Verbenaceae
Vernonia cinerea	Asteraceae
Vigna caracalla	Fabaceae
Villarsia exaltata	Menyanthaceae
Viminaria juncea	Fabaceae
Viola betonicifolia	Violaceae
Viola hederacea	Violaceae
Wedelia trilobata	Asteraceae
Wikstroemia indica	Thymelaeaceae
Wilkiea huegeliana	Monimiaceae
Xanthorrhoea fulva	Xanthorrhoeaceae
Xanthorrhoea johnsonii	Xanthorrhoeaceae
Xyris complanata	Xyridaceae
Xyris operculata	Xyridaceae
Zehneria cunninghamii	Cucurbitaceae
Zieria minutiflora subsp. *minutiflora*	Rutaceae
Zoysia macrantha	Poaceae

Appendix 5.

Grouped Vegetation Types and Species Frequency

Figures represent the number of species records in each unit.

	Broad Vegetation Group (BVG)										
Species	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Abildgaardia vaginata						1					
Acacia aulacocarpa					5		20		1		
Acacia concurrens					2		3				
Acacia hubbardiana							1				
Acacia leiocalyx					2		32		1		1
Acacia longifolia							2				1
Acacia longissima							3				1
Acacia maidenii					1		5				1
Acacia melanoxylon							7				1
Acacia ulicifolia							1				
Acmena hemilampra							1				
Acmena smithii							2				
Acronychia imperforata					1						
Acrostichum speciosum	6			1	7	3	6		1		
Aegiceras corniculatum	51					1	1				
Ageratum houstonianum					3		8		1		
Agrostis avenacea					1						
Allocasuarina littoralis							6				
Alphitonia excelsa					2		44				
Alpinia caerulea							2				
Alternanthera denticulata					1		9				
Amyema cambagei					1						
Andropogon virginicus							1				

Species	1	2	3	4	5	6	7	8	9	10	11
Aotus lanigera						1					1
Apium prostratum	2			1	1	1					
Archontophoenix cunninghamiana							2				
Aristida gracilipes							1				
Asclepias curassavica					1		3				
Asparagus densiflorus					3		1			1	
Asplenium australasicum									1		
Asplenium nidus					1						
Aster subulatus				2	6		5				
Austromyrtus dulcis					1		7				
Avicennia marina subsp. *australasica*	128		3	1	6	8			2		
Axonopus fissifolius							1				
Babingtonia virgata							3				
Baccharis halimifolia	3			3	21	2	58	1	1		1
Bacopa monnieri			1		3	7	3				
Baeckea stenophylla							1				
Balanops australiana										1	
Banksia aemula							2				
Banksia integrifolia							4				
Banksia oblongifolia						1	9				
Banksia robur						1	15				2
Baumea articulata					2	1	8	1		1	
Baumea juncea	1				2	4	12		1		1
Baumea rubiginosa						12	22				1
Baumea teretifolia						2	3				
Bidens pilosa					2		4				
Blechnum indicum				1	1	8	62	1	1		4
Bolboschoenus caldwellii					1	2					
Boronia sp							1				
Brachiaria mutica				1	1		1				
Breynia oblongifolia					1		2		1		

Species	1	2	3	4	5	6	7	8	9	10	11
Bromus catharticus							1				
Bruguiera gymnorhiza	38				3	2	2		1		
Bryophyllum tubiflorum										1	
Buckinghamia celsissima					1						
Callistemon pachyphyllus						4	5	1			
Callitris columellaris							1				
Calochlaena dubia							4				
Cannabis sativa	1										
Capillipedium spicigerum							3				
Carex appressa							6				
Carex breviculmis							1				
Carex fascicularis							1				
Carex pumila				1		3					
Carpobrotus glaucescens						2					
Cassytha filiformis						2					
Cassytha glabella									1		
Cassytha pubescens						1	4		1		
Casuarina equisetifolia subsp. *incana*						3			2		
Casuarina glauca	8		1	3	35	7	28				
Cayratia clematidea							1				
Celtis sinensis							1				
Centaurium erythraea			1			2					
Centella asiatica						2	14		1		
Ceriops tagal	45				1						
Chamaecrista rotundifolia							1				
Chloris gayana					2						
Choretrum candollei					1		1		1		
Chorizandra cymbaria						1	6	1	1		1
Chorizandra sphaerocephala						1	1				
Christella hispidula							1				
Cinnamomum camphora					1		2				

Species	1	2	3	4	5	6	7	8	9	10	11
Cirsium vulgare					1		2				
Cladium procerum						2	3				
Comesperma defoliatum							1				
Commelina diffusa					6		9		1		
Convolvulus arvensis							1				
Conyza bonariensis					2		5				
Cordyline petiolaris							1				
Corymbia intermedia					1		23		1		
Corymbia tessellaris					1		2				
Corymbia torelliana					1						
Crassocephalum crepidioides					2		5				
Crassula sieberiana							1				
Crinum flaccidum							1				
Crinum pedunculatum	1				1						
Cupaniopsis anacardioides	2				8		11		2		
Cyathea cooperi							1				
Cyclosorus interruptus						1	4				
Cymbopogon refractus							2		1		
Cynanchum carnosum	3		1	1	5	4	2		2		
Cynodon dactylon					11	1	7				
Cyperus exaltatus							1				
Cyperus gracilis							1				
Cyperus haspan							2				
Cyperus javanicus					1		1				
Cyperus laevigatus						3					
Cyperus lucidus							2				
Cyperus polystachyos					2	5	7		3		
Cyperus trinervis					1		3				
Daviesia villifera							1				
Dendrophthoe glabrescens							1				
Desmodium heterocarpon							1				

Species	1	2	3	4	5	6	7	8	9	10	11
Desmodium intortum									1		
Desmodium rhytidophyllum							3				
Dianella brevipedunculata					1						
Dianella caerulea					1		12				
Dianella caerulea var. *producta*							1				
Dianella caerulea var. *vannata*							2				
Dianella congesta							2				
Dianella longifolia							1				
Dianella revoluta					2		6				
Dianella revoluta var. *revoluta*							3				
Dichelachne micrantha							2				
Dicranopteris linearis var. *linearis*							2				
Digitaria ciliaris						1	1				
Digitaria didactyla					3		3				
Digitaria parviflora					1		1				
Dockrillia linguiformis	1										
Dodonaea triquetra							2				
Drosera binata						6	1				
Drosera spatulata						2					
Durringtonia paludosa							1				
Echinochloa crus-galli							1				
Eclipta platyglossa							1				
Eclipta prostrata						1	2				
Einadia hastata					7		1				
Elaeocarpus obovatus	1				1		5				
Elaeocarpus reticulatus					1		8				3
Eleocharis dulcis				1		2	1				
Eleocharis equisetina							1				
Eleocharis sphacelata						1					
Emilia sonchifolia					1		2				
Empodisma minus						11	1				

Species	1	2	3	4	5	6	7	8	9	10	11
Enchylaena tomentosa var. *glabra*					4						
Endiandra discolor							1				
Endiandra sieberi							2				
Entolasia marginata					5		31	1			3
Entolasia stricta							15	1	1		
Enydra fluctuans					2		5				
Epacris microphylla						9	3				
Epacris obtusifolia						1					
Epacris pulchella							3				
Epaltes australis							1		1		
Eragrostis brownii							1				
Eragrostis cilianensis							2				
Eragrostis spartinoides							1				
Eriocaulon australe						2	2				
Eriochloa crebra					1						
Eriochloa procera					3		1				
Eucalyptus bancroftii							1				
Eucalyptus crebra					1		3				
Eucalyptus pilularis							1				
Eucalyptus racemosa							1				
Eucalyptus robusta						2	13	1			4
Eucalyptus robusta x Eucalyptus tereticornis							1				
Eucalyptus siderophloia							1				
Eucalyptus tereticornis					4	1	29		1		
Eugenia uniflora					1				1		
Euphorbia cyathocarpa										1	
Eustrephus latifolius							8				
Evolvulus alsinoides							1				
Excoecaria agallocha	9		1		8	1	2				
Exocarpos cupressiformis									1		
Exocarpos latifolius	1						2				

Species	1	2	3	4	5	6	7	8	9	10	11
Ficus coronata							4				
Ficus macrophylla					1						
Ficus microcarpa	1										
Ficus obliqua					1						
Ficus rubiginosa					1						
Ficus virens	1				1		1				
Fimbristylis bisumbellata							2				
Fimbristylis dichotoma				2	3	1	1				
Fimbristylis ferruginea	3			3	10	8	5		1		
Fimbristylis nutans						1	1				
Fimbristylis polytrichoides			2	2	1	1	1				
Flagellaria indica	4				2		3				1
Gahnia aspera					2		2				
Gahnia clarkei							2				
Gahnia sieberiana						14	20	1			3
Galactia tenuiflora							1				
Gamochaeta subfalcata						1					
Geitonoplesium cymosum					2		4		1		
Gleichenia mendellii						10	5				
Glochidion ferdinandi					1		17				1
Glochidion sumatranum					1		45				2
Gloriosa superba							1				
Glossocardia bidens							1				
Glycine tabacina							1				
Gomphocarpus physocarpus					1		2				
Gompholobium pinnatum							2				
Gonocarpus micranthus subsp. *micranthus*						1					
Goodenia paniculata							1				
Goodenia rotundifolia							2				
Grevillea leiophylla							1				
Grewia latifolia							2				

Species	1	2	3	4	5	6	7	8	9	10	11
Haemodorum tenuifolium						1					
Hakea actites							11	1			
Hakea florulenta							6				
Haloragis heterophylla							1				
Halosarcia halocnemoides subsp. *tenuis*	1										
Halosarcia indica						1					
Halosarcia pergranulata subsp. *queenslandica*	2		2	3							
Hardenbergia violacea							1				1
Hedera helix					1						
Hibbertia salicifolia						6					
Hibbertia scandens					1	1	14				
Hibbertia vestita							5				
Hibiscus diversifolius							9				
Hibiscus tiliaceus	3					1			2		
Histiopteris incisa							2				
Hovea acutifolia							1				
Hydrilla verticillata							1				
Hydrocotyle acutiloba							4				
Hydrocotyle bonariensis				1		1					
Hydrocotyle verticillata						2	2				
Hygrophila angustifolia							1				
Hypolepis muelleri					1		8				
Imperata cylindrica					1		57	1	1		3
Indigofera australis							1				
Ipomoea cairica	2				9	1	11				
Ipomoea pes-caprae						1			1		
Ipomoea purpurea										1	
Ischaemum australe						1	1				
Ischaemum triticeum						1	1		1		
Isolepis inundata							1				

Species	1	2	3	4	5	6	7	8	9	10	11
Isolepis nodosa						2					
Jagera pseudorhus					3		1				
Jasminum didymum									1		
Juncus continuus	3				1	5	1				
Juncus kraussii	5			2	5	15	2		2		
Juncus polyanthemus				1			1				
Juncus usitatus	1										
Kennedia rubicunda						1	4				2
Lantana camara					7		37		1		1
Leersia hexandra						2	22				1
Lemna sp					1	1					
Lepidosperma laterale							3				
Lepidosperma quadrangulatum							1				
Lepironia articulata					1	4	20				
Leptocarpus tenax							4				
Leptochloa decipiens					1						
Leptochloa fusca						1					
Leptospermum juniperinum						3	7	1			2
Leptospermum liversidgei						9	2				
Leptospermum polygalifolium						1	5				
Leptospermum semibaccatum							1				
Leptospermum speciosum						1					
Lepyrodia caudata						4	5	1			1
Lepyrodia interrupta						2					
Lepyrodia scariosa							3				
Leucopogon juniperinus							2				
Leucopogon leptospermoides						1	10				
Leucopogon melaleucoides							1				
Leucopogon pimeleoides					1		3				
Livistona australis					1		10				1
Lobelia alata							1				

Species	1	2	3	4	5	6	7	8	9	10	11
Lobelia purpurascens							7		1		
Lomandra hystrix							2				
Lomandra longifolia					2		20		1		
Lomandra multiflora							7				
Lophostemon confertus							2				
Lophostemon suaveolens					1	1	52				3
Ludwigia octovalvis							2				
Ludwigia peploides subsp. *montevidensis*							1				
Lumnitzera racemosa	3					1	1		1		
Lygodium microphyllum	1						27	1			1
Lysiana maritima					1						
Lysiana subfalcata					1						
Macaranga tanarius							9				
Maclura cochinchinensis	3				3		2				
Melaleuca linariifolia							4				
Melaleuca nodosa							1				
Melaleuca quinquenervia				2	20	10	103	1	1		3
Melaleuca sieberi							1				
Melaleuca thymifolia							1				
Melastoma affine						2	35				2
Melicope elleryana							12				
Melinis repens					1	1	2				
Melodinus australis							1				
Mirbelia rubiifolia							2				
Mitrasacme paludosa							1				
Morus alba							1				
Mucuna gigantea						1	1				
Murraya paniculata					1						
Myoporum acuminatum					11		1				
Nephrolepis exaltata					1						
Notelaea longifolia forma *glabra*	1						1				

Species	1	2	3	4	5	6	7	8	9	10	11
Nothoscordum gracile					1						
Nymphoides indica										1	
Ochna serrulata					1		3				
Omalanthus nutans							3				
Oplismenus aemulus							11				
Opuntia stricta					1						
Ottochloa gracillima					2		5				
Oxalis chnoodes					1		1				
Oxalis corniculata					2		1				
Oxalis exilis							1				
Oxalis perennans							1				
Ozothamnus cassinioides							1				
Ozothamnus diosmifolius							1				
Pandanus tectorius									1		
Panicum effusum					1		12		1		
Panicum maximum					2		4				
Parsonsia straminea					14		43				1
Paspalidium disjunctum							6		1		
Paspalidium distans					2		1				
Paspalidium gausum							1				
Paspalidium gracile					1		1				
Paspalum conjugatum							3				
Paspalum plicatulum							1				
Paspalum scrobiculatum					4		22	1			
Paspalum vaginatum				2	2	5	1				
Passiflora edulis							4				
Passiflora foetida					1		2				
Passiflora suberosa					5		9		1		
Passiflora subpeltata							8				
Patersonia glabrata							1				
Patersonia sericea							2				

Species	1	2	3	4	5	6	7	8	9	10	11
Persicaria attenuata						1	1				
Persicaria decipiens							3				
Persicaria dichotoma							1				
Persicaria orientalis				1							
Persicaria strigosa							11				1
Persicaria subsessilis							2				
Persoonia cornifolia							2				
Persoonia virgata							13				
Petrophile shirleyae							1				
Phaius tancarvilleae							1				
Philydrum lanuginosum						3	4				
Phragmites australis	2			6	15	6	22	1		1	1
Phyla nodiflora var. *nodiflora*						1					
Phyllanthus gasstroemii							1				
Phytolacca dioica							1				
Phytolacca octandra							3				
Picris angustifolia							1				
Pimelea linifolia subsp. *linifolia*							8				1
Pinus elliottii					1		8				
Pittosporum revolutum							2				
Pittosporum undulatum							1				
Pityrogramma calomelanos var. *austroamericana*							1				
Platycerium bifurcatum					3		2		1		
Platysace linearifolia											1
Plectranthus sp					1						
Polymeria calycina					1		3				
Pomax umbellata							2				
Pratia concolor							2				
Pseudanthus orientalis							1				
Psilotum nudum							1				

Species	1	2	3	4	5	6	7	8	9	10	11
Psychotria loniceroides							5				
Pteridium esculentum					1		22		1	1	3
Ptilothrix deusta							2				
Pultenaea myrtoides							7	1			
Pultenaea paleacea						1	2				1
Pultenaea retusa							3				
Pultenaea villosa							4				1
Pyrrosia confluens							1				
Pyrrosia rupestris					1						
Ranunculus inundatus					1		1				
Ranunculus scleratus							1				
Rapanea howittiana							1				
Rapanea variabilis	1						2				
Restio complanatus							1				
Restio pallens						5	16	1			
Restio tenuiculmis							1				
Restio tetraphyllus						1	8				3
Rhizophora stylosa	57					2					
Rhynchospora corymbosa							8				
Rivina humilis							1				
Rubus sp							1				
Ruppia maritima	1				1						
Sacciolepis indica							7				
Salvinia molesta					1						
Samolus repens						6			1		
Sansevieria trifasciata					1						
Sarcocornia quinqueflora subsp. *quinqueflora*	18	1	5	9	1	4					
Scaevola sp							1				
Schefflera actinophylla					1		7		1		
Schefflera arboricola							1				

Species	1	2	3	4	5	6	7	8	9	10	11
Schinus terebinthifolia					7		6				
Schizaea dichotoma							1				
Schoenoplectus litoralis				1	1	3					
Schoenoplectus validus						2					
Schoenus brevifolius						2	5				
Schoenus calostachyus							1				
Schoenus ericetorum						1					
Schoenus melanostachys							1				
Schoenus nitens						3					
Schoenus scabripes						8	1				
Scleria levis							2				
Selaginella uliginosa						2	1				
Senecio lautus subsp. *maritimus*						1					
Senecio madagascariensis					1						
Senna pendula var. *glabrata*					3		3				
Sesuvium portulacastrum	1			1	3	5			1		
Setaria sphacelata					1		5				
Sida cordifolia					1		1				
Sida rhombifolia					1		1				
Sigesbeckia orientalis							1				
Smilax australis					1		6		1		
Smilax glyciphylla							1				
Solanum americanum	1				2		2				
Solanum mauritianum					1						
Solanum nigrum					2		2				
Solanum seaforthianum	1				5		3				
Solanum stelligerum					1						
Solanum torvum					1		3				
Sonchus oleraceus					1		1				
Sowerbaea juncea							1				
Spergularia rubra							1				

Species	1	2	3	4	5	6	7	8	9	10	11
Sporobolus virginicus	28		4	15	19	13	1		1		
Sprengelia sprengelioides						1					
Stackhousia spathulata						2					
Stenotaphrum secundatum					2						
Stephania japonica	1				1		12		1		
Strangea linearis							1				
Suaeda arbusculoides	17		2	1							
Suaeda australis	27	1	6	5	5	2	1				
Symplocos thwaitesii							1				
Syngonium podophyllum					1						
Syzygium luehmannii							1				
Tecoma stans					1						
Tetragonia tetragonioides					4						
Themeda triandra					3		27	1			
Tillandsia usneoides					1						
Timonius timon							1				
Todea barbara							1				
Trachymene procumbens									1		
Tradescantia zebrina					1						
Trema tomentosa							2				
Tricoryne anceps							2				
Tricoryne elatior							4				
Tricoryne muricata							1				
Triglochin multifructum							1				
Triglochin sp						1	1				
Triglochin striatum	3			1	4	6					
Typha orientalis					2	2	1				
Ulva sp	1										
Utricularia caerulea						2					
Utricularia uliginosa							1				
Velleia spathulata					1		1				

Species	1	2	3	4	5	6	7	8	9	10	11
Verbena officinalis							2				
Vernonia cinerea							1		1		
Vigna caracalla					1						
Villarsia exaltata					1		11	1			
Viminaria juncea											1
Viola betonicifolia							1				
Viola hederacea					1		7				
Wedelia trilobata										1	
Wikstroemia indica							1				
Wilkiea huegeliana							1				
Xanthorrhoea fulva							9				
Xanthorrhoea johnsonii							3				
Xyris complanata							3				
Xyris operculata						3					
Zehneria cunninghamii					1		1				
Zieria minutiflora subsp. *minutiflora*							3				
Zoysia macrantha				1		1					

Appendix 6.

Weed Species

The following weed species were recorded during the course of field work. As well as introduced species it includes some native species that are cultivated in gardens and which are not native to the area but which have now become naturalised.

Ageratum houstonianum
Andropogon virginicus
Asclepias curassavica
Asparagus densiflorus
Aster subulatus
Axonopus fissifolius
Baccharis halimifolia
Bidens pilosa
Brachiaria mutica
Bromus catharticus
Bryophyllum tubiflorum
Buckinghamia celsissima
Cannabis sativa
Celtis sinensis
Centaurium erythraea
Chamaecrista rotundifolia
Chloris gayana
Cinnamomum camphora
Cirsium vulgare
Convolvulus arvensis
Conyza bonariensis
Corymbia torelliana
Crassocephalum crepidioides
Desmodium intortum
Dicranopteris linearis var. *linearis*
Digitaria ciliaris
Digitaria didactyla
Echinochloa crus-galli
Eclipta prostrata
Emilia sonchifolia
Eragrostis cilianensis
Eugenia uniflora
Euphorbia cyathocarpa
Gamochaeta subfalcata
Gloriosa superba
Gomphocarpus physocarpus
Hedera helix
Hydrocotyle bonariensis
Ipomoea cairica
Ipomoea purpurea
Lantana camara
Melinis repens
Morus alba

Murraya paniculata
Nothoscordum gracile
Ochna serrulata
Opuntia stricta
Oxalis corniculata
Panicum maximum
Paspalum conjugatum
Paspalum plicatulum
Paspalum vaginatum
Passiflora edulis
Passiflora foetida
Passiflora suberosa
Passiflora subpeltata
Persicaria strigosa
Phytolacca dioica
Phytolacca octandra
Pinus elliottii
Pityrogramma calomelanos var. *austroamericana*
Ranunculus scleratus
Rivina humilis
Ruppia maritima
Salvinia molesta
Sansevieria trifasciata
Schefflera actinophylla
Schefflera arboricola
Schinus terebinthifolia
Senecio madagascariensis
Senna pendula var. *glabrata*
Setaria sphacelata
Sida rhombifolia
Sigesbeckia orientalis
Solanum mauritianum
Solanum nigrum
Solanum seaforthianum
Solanum torvum
Sonchus oleraceus
Spergularia rubra
Stenotaphrum secundatum
Syagrus romanzoffiana
Syngonium podophyllum
Tecoma stans
Tillandsia usneoides
Tradescantia zebrina
Verbena officinalis
Vigna caracalla
Wedelia trilobata

Appendix 7.

Map Unit Areas, 1974

Map Unit	Description	Area (ha)
2	*Avicennia marina var australasica* Low-open shrubland, Low shrubland and Open-heath	1337.8
3	*Avicennia marina var australasica* Tall open-shrubland and Tall shrubland	1727.3
4	*Avicennia marina var australasica* Open-scrub and Closed-scrub	4355.1
5	*Avicennia marina var australasica* Low open-woodland, Low woodland and Woodland	883.2
7	*Avicennia marina var australasica* Low open-forest and Open-forest	3524.3
9	*Aegiceras corniculatum* Low open-shrubland, Low shrubland and Open-heath	357.6
11	*Aegiceras corniculatum* Tall shrubland, Open-scrub and Closed-scrub	1288.1
13	*Ceriops tagal var australis* Low open-shrubland, Low shrubland, open-heath and Closed-heath	316.1
15	*Ceriops tagal var australis* Tall open-shrubland, Tall shrubland, Open-scrub and Closed-scrub	837.9
17	*Rhizophora stylosa* Open-heath	1.2
18	*Rhizophora stylosa* Tall shrubland, Open-scrub and Closed-scrub	782.6
19	*Bruguiera gymnorhiza* Low open-forest and Low closed-forest	84.3
Mangoves		**15495.5**
98	Land subject to tidal inundation comprising saltwater couch and or samphire flats or marine clays	5585.3
Total		**21080.8**

Appendix 8.

Map Unit Areas, 1998

Map Unit	Area (ha)
1A(i)	520.1
1B(i)	4887.6
1B(ii)a	4189.1
1B(ii)b	1912.8
1B(ii)c	69.2
1B(iii)	688.9
1C(i)	28.2
1C(ii)	85.8
1D(i)	859.8
1D(ii)	198.3
1E(i)	599.4
1F(i)	259.5
1F(ii)	952.3
1F(iii)	23.8
Subtotal	**15274.8**
2	2118.7
Subtotal	**2118.7**
3A(i)	398.6
Subtotal	**398.6**
4A(i)	1480.9
4B(i)	10.9
4C(i)	143.8
4D(i)	20.7
Subtotal	**1656.3**
5A(i)a	1100.4
5A(i)b	180.2
5A(ii)a	354
5A(ii)b	47.8
5B(i)	399.8
5B(ii)	62.1
5C(i)	11.5
5C(ii)	7.4
5C(iii)	17.4
Subtotal	**2180.6**
6A(i)	191.4
6A(ii)	3.5
6A(iii)	20
6A(iv)	2

Map Unit	Area (ha)
6A(v)	21.7
6A(vi)	5.4
6B(i)	300.4
6B(ii)	75.8
6B(iii)	1498.2
6C(i)	283.2
6D(i)	1876.4
Subtotal	**4278**
7A(i)	248.9
7A(ii)a	3133.6
7A(ii)b	1363.2
7A(iii)a	862.5
7A(iii)b	427.4
7B(i)	6.4
7C(i)	591.6
7C(ii)	155.5
7C(iii)	251.7
7C(iv)	2295.8
7D(i)	494.6
7D(ii)	352.6
7E(i)	129
7F(i)	20.3
Subtotal	**10333.1**
8	355.9
Subtotal	**355.9**
10A(i)a	96.1
10A(i)b	224.6
10B(i)	9.5
10B(ii)	2.3
10C	0.7
Subtotal	**333.2**
11A	88.9
11B	20.3
11C	18.9
11D	6.1
11E	1
Subtotal	**135.2**
Total	**37064.4**

Appendix 9.

Area of each Map Unit by Shire, 1998

	Local Government Authority (LGA)									
Map Unit	**Brisbane**	**Caboolture**	**Caloundra**	**Gold Coast**	**Logan**	**Maroochy**	**Pine Rivers**	**Redcliffe**	**Redland**	**Total**
1A(i)	4.8	15.7	121.7	337.6		14.5			25.9	**520.2**
1B(i)	825.9	336	215	1840.6	8.4	192.5	130.4	23.2	1315.6	**4887.6**
1B(ii)a	1119.6	499.7	362	952.1	9.7	106.9	271	193.8	674.3	**4189.1**
1B(ii)b	86	449.8	184.9	560.5		31.5	127.7	149.9	322.6	**1912.9**
1B(ii)c	2.6	6.3		12.4			47.9			**69.2**
1B(iii)	92.6	205.6	17.2	99.5			21.7		252.4	**689**
1C(i)			18.1			6.2			4	**28.3**
1C(ii)						85.8				**85.8**
1D(i)		23.5	100.3	419.8					316.2	**859.8**
1D(ii)	15.5	3.5	9.4	73.1		0.4			96.3	**198.2**
1E(i)	6.6	24.4	66.8	229.9		10.7			261.2	**599.6**
1F(i)		11	121.2	93.6		33.7				**259.5**
1F(ii)	76.5	220.7		395.7		4	93.3	8.7	153.5	**952.4**
1F(iii)						23.8				**23.8**
2	387.9	309.3	76.6	515		7.5	159	247.4	416.1	**2118.8**
3A(i)	25	161.9	30.1	112.4		0.6	4.8	43	20.8	**398.6**
4A(i)	234.3	263	144.4	474.5	11.8	74.5	120	75.3	83	**1480.8**
4B(i)		9.5				1.3				**10.8**
4C(i)		31	0.5	67		45.3				**143.8**
4D(i)				20.7						**20.7**
5A(i)a	7.1	171	21.2	279.5		527.8	18.4		75.3	**1100.3**

Map Unit	Brisbane	Caboolture	Caloundra	Gold Coast	Logan	Maroochy	Pine Rivers	Redcliffe	Redland	Total
5A(i)b	39.2	6.2		119.5			9.3		6.1	**180.3**
5A(ii)a	3.2	46.3	74.8	128.6		77.7	2.2	7.3	13.9	**354**
5A(ii)b	2.8	28		16.9						**47.7**
5B(i)		129.4	91.1	170.1				5.2	4.1	**399.9**
5B(ii)		3.9	58.2							**62.1**
5C(i)			11.5							**11.5**
5C(ii)			6.9	0.5						**7.4**
5C(iii)		15.4				2				**17.4**
6A(i)	24.9	87.5	26.9	18.7	4.5	5.3	1.5	2.3	19.7	**191.3**
6A(ii)		1.9	1.5			0.1				**3.5**
6A(iii)				20						**20**
6A(iv)				2						**2**
6A(v)	21.7									**21.7**
6A(vi)	5.4									**5.4**
6B(i)		223.8	61.6			4.9			10.2	**300.5**
6B(ii)	8.2							21.9	45.7	**75.8**
6B(iii)	533.7								964.5	**1498.2**
6C(i)		237.3	27.5			16.8			1.6	**283.2**
6D(i)									1876.4	**1876.4**
7A(i)			186.3			62.6				**248.9**
7A(ii)a	55.4	1116.5	574.6	533.5	24.8	246.3	12.5	2.3	567.7	**3133.6**
7A(ii)b	83	565	176.6	43.8		411.1		8.4	75.2	**1363.1**
7A(iii)a		84.6	623.8			54.8			99.3	**862.5**
7A(iii)b		0.2	164.6			69.8			192.8	**427.4**
7B(i)			6.4							**6.4**
7C(i)		43	502.4			17.1			29.2	**591.7**
7C(ii)		38	62.7						54.8	**155.5**

Map Unit	Brisbane	Caboolture	Caloundra	Gold Coast	Logan	Maroochy	Pine Rivers	Redcliffe	Redland	Total
7C(iii)		44.4	167.3			40				**251.7**
7C(iv)		1392.8	887.4			15.6				**2295.8**
7D(i)		72.4	388.9			33.2				**494.5**
7D(ii)	113.8	21.7		217.1						**352.6**
7E(i)		52.8				62.6			13.6	**129**
7F(i)						20.3				**20.3**
8		99.8	114.3			141.8				**355.9**
10A(i)a	12.8	14.8	13.1			3.9		2.4	49.2	**96.2**
10A(i)b	41.7	30.9	78.8	34.7		24.1	0.6	5.7	8.1	**224.6**
10B(i)		2.3							7.2	**9.5**
10B(ii)		2.3								**2.3**
10C		0.3	0.4							**0.7**
11A		88.9								**88.9**
11B		20.3								**20.3**
11C		18.9								**18.9**
11D		6.1								**6.1**
11E		1								**1**
Total	**3830.2**	**7238.6**	**5797**	**7789.3**	**59.2**	**2477**	**1020.3**	**796.8**	**8056.5**	**37064.9**

Appendix 10.

Area of Map Units in Reserves, 1998

Map Unit	Total Area	Area (ha) in CP	Area (ha) in NP	Total area (ha) in Reserves	Percent of map unit in reserves
1A(i)	520.1	13.1	20.2	33.3	6.4
1B(i)	4887.6	5	267.6	272.6	5.6
1B(ii)a	4189.1	80.1	103.9	184	4.4
1B(ii)b	1912.8	66.7	260.8	327.5	17.1
1B(ii)c	69.2	8.5	-	8.5	12.3
1B(iii)	688.9	8.7	17.8	26.5	3.8
1C(i)	28.2	5.9	-	5.9	20.9
1C(ii)	85.8	-	4.3	4.3	5.0
1D(i)	859.8		36.1	36.1	4.2
1D(ii)	198.3	0.4	33.6	34	17.1
1E(i)	599.4	4.5	25.9	30.4	5.1
1F(i)	259.5	12.8	3.4	16.2	6.2
1F(ii)	952.3	0.2	50.7	50.9	5.3
1F(iii)	23.8	-	-	-	0.0
2	2118.7	127.8	117.5	245.3	11.6
3A(i)	398.6	9.9	85	94.9	23.8
4A(i)	1480.9	53.5	125.2	178.7	12.1
4B(i)	10.9	1.3	9.5	10.8	99.1
4C(i)	143.8	8.6	22.9	31.5	21.9
4D(i)	20.7	19.9	-	19.9	96.1
5A(i)a	1100.4	60.8	90.6	151.4	13.8
5A(i)b	180.2	6.1	98.8	104.9	58.2
5A(ii)a	354	26.2	114.3	140.5	39.7
5A(ii)b	47.8	4.9	28.7	33.6	70.3
5B(i)	399.8	16	201.3	217.3	54.4
5B(ii)	62.1	-	37.9	37.9	61.0
5C(i)	11.5	-	-	-	0.0
5C(ii)	7.4	0.4	0.7	1.1	14.9
5C(iii)	17.4	-	-	-	0.0
6A(i)	191.4	6.3	55.5	61.8	32.3
6A(ii)	3.5	-	1.9	1.9	54.3
6A(iii)	20	-	-	-	0.0
6A(iv)	2	-	-	-	0.0
6A(v)	21.7	-	13.9	13.9	64.1
6A(vi)	5.4	-	-	-	0.0
6B(i)	300.4	-	21.9	21.9	7.3

Map Unit	Total Area	Area (ha) in CP	Area (ha) in NP	Total area (ha) in Reserves	Percent of map unit in reserves
6B(ii)	75.8	-	-	-	0.0
6B(iii)	1498.2	-	527.1	527.1	35.2
6C(i)	283.2	-	27	27	9.5
6D(i)	1876.4	-	-	-	0.0
7A(i)	248.9	-	60.8	60.8	24.4
7A(ii)a	3133.6	33.7	843.8	877.5	28.0
7A(ii)b	1363.2	16.1	374.3	390.4	28.6
7A(iii)a	862.5	26.2	238.6	264.8	30.7
7A(iii)b	427.4	-	8.1	8.1	1.9
7B(i)	6.4	-	-	-	0.0
7C(i)	591.6	-	398	398	67.3
7C(ii)	155.5	-	1.6	1.6	1.0
7C(iii)	251.7	-	37.6	37.6	14.9
7C(iv)	2295.8	24.4	1480.3	1504.7	65.5
7D(i)	494.6	26.6	-	26.6	5.4
7D(ii)	352.6	-	-	-	0.0
7E(i)	129	4.5	5.4	9.9	7.7
7F(i)	20.3	-	20.3	20.3	100.0
8	355.9	-	67.9	67.9	19.1
10A(i)a	96.1	-	28.5	28.5	29.7
10A(i)b	224.6	3	17.4	20.4	9.1
10B(i)	9.5	2.1	-	2.1	22.1
10B(ii)	2.3	2.1	-	2.1	91.3
10C	0.7	-	-	-	0.0
11A	88.9	4	11.9	15.9	17.9
11B	20.3	-	-	-	0.0
11C	18.9	1.3	-	1.3	6.9
11D	6.1	-	-	-	0.0
11E	1	-	0.6	0.6	60.0
Total	**37064.4**	**691.6**	**5999.1**	**6690.7**	**18.1**

Appendix 11.

Area in Shires by Reserve Type

LGA	Map Unit	TotalArea (ha)	Area (ha) in CP	Area (ha) in NP	Total Area (ha) in Reserves	% in reserves
City of Brisbane	1	2230.1		24.2	**24.2**	**1.1**
	2	387.9		1.3	**1.3**	**0.3**
	3	25			**0.0**	**0.0**
	4	234.3		0.1	**0.1**	**0.0**
	5	52.3			**0.0**	**0.0**
	6	593.9		556.3	**556.3**	**93.7**
	7	252.2		63.9	**63.9**	**25.3**
	10	54.5		17.8	**17.8**	**32.7**
	Subtotal	**3830.2**	**0**	**663.6**	**663.6**	**17.3**
Shire of Caboolture	1	1796.1	8.7	126.2	**134.9**	**7.5**
	2	309.3	9	28.9	**37.9**	**12.3**
	3	161.9		40.1	**40.1**	**24.8**
	4	303.6	8.6	47.3	**55.9**	**18.4**
	5	400.2	9.6	82.4	**92.0**	**23.0**
	6	550.4		54.8	**54.8**	**10.0**
	7	3431.5	38.5	1843.3	**1881.8**	**54.8**
	8	99.8		64.6	**64.6**	**64.7**
	10	50.5	4.2	21.8	**26.0**	**51.5**
	11	135.3	5.4	12.5	**17.9**	**13.2**
	Subtotal	**7238.6**	**84**	**2321.9**	**2405.9**	**33.2**

LGA	Map Unit	TotalArea (ha)	Area (ha) in CP	Area (ha) in NP	Total Area (ha) in Reserves	% in reserves
City of Caloundra	1	1216.4		66.9	**66.9**	**5.5**
	2	76.6		8.1	**8.1**	**10.6**
	3	30.1		4.2	**4.2**	**14.0**
	4	144.9		8.8	**8.8**	**6.1**
	5	263.7		140.7	**140.7**	**53.4**
	6	117.4		12.8	**12.8**	**10.9**
	7	3741	5.1	877.9	**883.0**	**23.6**
	8	114.3		0.3	**0.3**	**0.3**
	10	92.2	0.1	2.3	**2.4**	**2.6**
	Subtotal	**5796.6**	**5.2**	**1122**	**1127.2**	**19.4**
City of Gold Coast	1	5014.8	39.2	599.9	**639.1**	**12.7**
	2	515	11.9	79.1	**91.0**	**17.7**
	3	112.4	1.5	40.7	**42.2**	**37.5**
	4	562.3	24.5	101.5	**126.0**	**22.4**
	5	715.1	24.4	328.7	**353.1**	**49.4**
	6	40.7	3.8		**3.8**	**9.3**
	7	794.4	20.6	358.9	**379.5**	**47.8**
	10	34.7		2.1	**2.1**	**6.1**
	Subtotal	**7789.4**	**125.9**	**1510.9**	**1636.8**	**21.0**

LGA	Map Unit	TotalArea (ha)	Area (ha) in CP	Area (ha) in NP	Total Area (ha) in Reserves	% in reserves
City of Logan	1	18.1			**0.0**	**0.0**
	4	11.8			**0.0**	**0.0**
	6	4.5			**0.0**	**0.0**
	7	24.8			**0.0**	**0.0**
	Subtotal	**59.2**	**0**	**0**	**0.0**	**0.0**
Shire of Maroochy	1	509.9	45.1	7	**52.1**	**10.2**
	2	7.5	2.2	0	**2.2**	**29.3**
	3	0.6			**0.0**	**0.0**
	4	121.1	4.8		**4.8**	**4.0**
	5	607.4	78.8	20.5	**99.3**	**16.3**
	6	27.1	1.8	23.3	**25.1**	**92.6**
	7	1033.5	67.1	324.8	**391.9**	**37.9**
	8	141.8		3	**3.0**	**2.1**
	10	28		2	**2.0**	**7.1**
	Subtotal	**2476.9**	**199.8**	**380.6**	**580.4**	**23.4**
Shire of Pine Rivers	1	692.1	51.7		**51.7**	**7.5**
	2	159	55.8		**55.8**	**35.1**
	3	4.8	0.5		**0.5**	**10.4**
	4	120	34.9		**34.9**	**29.1**
	5	29.9	1.4		**1.4**	**4.7**
	6	1.5			**0.0**	**0.0**
	7	12.5			**0.0**	**0.0**
	10	0.6	0.4		**0.4**	**66.7**
	Subtotal	**1020.4**	**144.7**	**0**	**144.7**	**14.2**

LGA	Map Unit	TotalArea (ha)	Area (ha) in CP	Area (ha) in NP	Total Area (ha) in Reserves	% in reserves
City of Redcliffe	1	375.5	58.3		**58.3**	**15.5**
	2	247.4	48.8		**48.8**	**19.7**
	3	43	8		**8.0**	**18.6**
	4	75.3	10.6		**10.6**	**14.1**
	5	12.6			**0.0**	**0.0**
	6	24.2	0.7		**0.7**	**2.9**
	7	10.7	0.1		**0.1**	**0.9**
	10	8.1	2.6		**2.6**	**32.1**
	Subtotal	**796.8**	**129.1**	**0**	**129.1**	**16.2**
Shire of Redland	1	3421.9	3.2		**3.2**	**0.1**
	2	416.1			**0.0**	**0.0**
	3	20.8			**0.0**	**0.0**
	4	83			**0.0**	**0.0**
	5	99.4	0.2		**0.2**	**0.2**
	6	2918.1			**0.0**	**0.0**
	7	1032.6			**0.0**	**0.0**
	10	64.5			**0.0**	**0.0**
	Subtotal	**8056.4**	**3.4**	**0**	**3.4**	**0.0**
	Total	**37064.5**	**692.1**	**4488.1**	**6691.1**	**18.1**

Appendix 12.

CORVEG Site Information, 1998

Site No.	Corveg VR_NUM	Legend Code	Map Unit on Map	Easting	Northing
1	660041	7 C 4	7A(iii)a/7C(iv)	510719	7039220
2	660042	7 C 4	7A(iii)a/7C(iv)	510556	7039193
3	660043	7 C 4	9	511799	7040725
4	660044	7 D 1	7D(i)	511292	7040284
5	660045	7 A 1	7A(i)	511170	7042155
6	660046	7 B 1	7B(i)	511070	7042650
7	660047	1 F 1	1F(i)	511857	7043993
8	660048	7 A 2 A	7A(ii)a	511343	7044655
9	660049	5 A 1 A	5A(i)a	511197	7044400
10	660050	1 C 2	1C(ii)	511386	7044222
11	660051	7 C 4	7A(ii)a/7A(i)	510878	7044512
12	660052	1 F 1	1F(i)	512017	7044533
13	660053	7 A 2 A	7A(ii)a	508464	7026911
14	660054	7 C 4	7A(ii)a/7A(iii)a/7A(iii)b	509782	7027704
15	660055	4 A 1	4A(i)/3A(i)/2	511790	7028440
16	660056	5 C 2	5C(ii)	511776	7028636
17	660057	1 B 2 A	1B(ii)a/1B(i)	511845	7027860
18	660058	5 A 2 A	5A(ii)a	511990	7027675
19	660059	4 A 1	4A(i)/3A(i)	511943	7027798
20	660060	5 B 1	5B(i)/7A(iii)a	512329	7026459
21	660061	7 C 4	7C(iv)	511823	7026247
22	660062	1 D 1	1D(i)/1B(ii)b/1B(ii)a	511683	7030153
23	660063	1 B 3	4A(i)/1B(ii)b/1B(ii)a/2	510465	7030623
24	660064	1 F 1	1B(ii)a/1D(i)/1E(i)/1F(i)	511146	7026285
25	660065	1 F 1	1B(ii)a/1D(i)/1E(i)/1F(i)	511190	7026340
26	660066	1 E 1	1E(i)	510012	7024933
27	660067	5 A 1 A	5B(i)/7A(i)/5A(ii)a	509727	7025301
28	660068	1 B 2 A	1B(ii)a/1A(i)	509176	7025121
29	660069	4 A 1	4A(i)/3A(i)/2	509183	7025130
30	660070	1 B 2 A	1B(ii)a/1A(i)	509231	7025306
31	660071	6 A 2	7A(iii)a/6A(ii)	509241	7025413
32	660072	7 D 1	7D(i)	509311	7025299
33	660073	7 C 1	7C(i)	509156	7024700
34	660074	5 A 1 A	5A(ii)a	509327	7024487
35	660075	1 B 2 B	1B(ii)b/1B(ii)a	509221	7024579
36	660076	6 A 1	6A(i)/3A(i)/4A(i)	505384	7023541
37	660077	1 B 3	1B(iii)	505598	7023660
38	660078	7 D 1	7D(i)	505896	7023751
39	660079	1 F 1	7C(iv)/1F(i)/6A(i)	505915	7025364
40	660080	1 B 1	1B(i)/1B(iii)/1B(iii)	506650	7023269
41	660081	1 B 3	1B(i)/1B(iii)/1B(iii)	506655	7023043
42	660082	1 B 1	1B(i)/1B(iii)/1B(iii)	506738	7022906

Site No.	Corveg VR_NUM	Legend Code	Map Unit on Map	Easting	Northing
43	660083	5 B 2	5B(ii)	507509	7022678
44	660084	7 C 1	7C(i)/7C(iv)	507573	7022614
45	660085	1 A 1	1A(i)	507302	7022934
46	660086	6 A 2	7C(iv)	505400	7025497
47	660087	7 C 4	7C(iv)/1F(i)/6A(i)	505731	7025757
48	660088	7 C 4	7C(iv)/7D(i)	505267	7025175
49	660089	7 C 1	7C(i)/7C(ii)	505693	7017402
50	660090	7 C 2	7C(ii)/7A(ii)a	504144	7018641
51	660091	7 A 2 A	7A(ii)a/7A(iii)b	510215	7034725
52	660092	7 A 2 A	7A(ii)a/7A(iii)b	510692	7034303
53	660093	7 A 2 A	7A(ii)a	508973	7034533
54	660094	7 A 2 B	7A(ii)b	508957	7033165
55	660095	8	6A(i)/8	508893	7033435
56	660096	7 A 3 A	7A(iii)a	508644	7033340
57	660097	7 C 3	9	508311	7034835
58	660098	7 C 3	7A(ii)a	509324	7034175
59	660099	7 A 2 A	7A(ii)b	508375	7032597
60	660100	7 C 3	7C(iii)/7A(iii)a	506475	7033788
61	660101	7 D 1	7D(i)	509207	7029859
62	660102	7 C 1	7A(ii)a/7A(iii)a/7A(iii)b	510455	7027077
63	660103	7 A 2 A	7C(iii)/1C(i)/9	503801	7025677
64	660104	7 C 4	7C(iv)	504932	7025119
65	660105	5 C 1	5B(i)/5C(i)/5C(ii)	503790	7021276
66	660106	1 F 3	1F(iii)	502990	7051319
67	660107	5 A 1 A	5A(i)a	503412	7051826
68	660108	6 A 1	4A(i)/6A(i)	503532	7051879
69	660109	7 E 1	7E(i)	504304	7051977
70	660110	5 A 2 A	5A(i)a/5A(ii)a	504582	7052202
71	660111	5 A 1 A	5A(i)a/5A(ii)a	504520	7052089
72	660112	1 F 1	1F(i)	505196	7052410
73	660113	1 E 1	1E(i)/1B(ii)a	509703	7053497
74	660114	1 C 2	1C(ii)	506124	7062162
75	660115	1 C 2	1C(ii)	506292	7061667
76	660116	6 A 2	4A(i)/6A(ii)	506383	7060971
77	660117	1 F 3	1F(iii)	506144	7060234
78	660118	5 A 1 A	5A(i)a	504838	7063464
79	660119	7 E 1	7A(ii)b	505018	7063339
80	660120	7 A 2 A	7A(ii)a	504304	7056668
81	660121	6 A 1	6A(i)	508519	7053398
82	660122	1 B 2 A	1B(ii)a	508225	7053449
83	660123	7 C 4	7C(iv)	508769	7053627
84	660124	7 D 1	7D(i)	509890	7055429
85	660125	7 E 1	7E(i)	503908	7061546
86	661002	7 A 2 A	7A(ii)a	505543	7073788
87	661003	7 A 3 B	9	508467	7069743

Site No.	Corveg VR_NUM	Legend Code	Map Unit on Map	Easting	Northing
88	661004	7 D 1	9	508402	7069917
89	660151	7 A 3 A	7A(iii)a	509290	7068893
90	660152	7 F 1	7F(i)	509102	7068055
91	660153	7 D 1	7A(ii)a	509116	7054401
92	660154	7 A 3 A	7A(iii)a	509745	7054447
93	660155	7 A 2 B	7A(ii)b	507798	7060383
94	660156	4 C 1	4C(i)	503415	7062706
95	660157	7 A 2 A	7A(ii)a	504008	7056404
96	660160	7 C 4	7C(i)/7C(iv)	508101	7023573
97	660161	7 C 4	7C(i)/7C(iv)	509094	7023233
98	660162	7 C 4	7C(iv)/7A(ii)a	510094	7022547
99	660163	7 C 2	7C(ii)	511203	7021851
100	660164	6 B 1	6B(i)	511908	7021301
101	660165	6 C 1	6C(i)/8/6B(i)	512112	7020060
102	660166	7 A 2 A	7A(iii)b/7A(ii)b/7A(iii)a	511588	7021421
103	660167	7 C 1	7C(iv)/7A(iii)a/7C(i)	512250	7025727
104	660168	7 C 1	7C(iv)/7A(iii)a/7C(i)	511853	7025209
105	660169	7 C 2	7C(iv)/7A(iii)a/7C(i)	512104	7024597
106	660170	11 B	7C(iv)/7A(iii)a/7C(i)	512242	7023989
107	660171	7 C 2	7C(i)/7A(iii)a/7A(ii)a	511179	7023681
108	660172	11 B	11B	512879	7022381
109	659055	11 B	11B	512695	7011558
110	659056	11 B	11B	511995	7011092
111	660173	6 A 1	6A(i)	508398	7018163
112	660176	4 B 1	4A(i)/5A(ii)b/4B(i)	508652	7018021
113	660174	4 C 1	4C(i)	508720	7018270
114	660175	7 D 1	7D(i)	507968	7053528
115	659057	7 E 1	7E(i)	516678	7002564
116	659058	10 B 1	10B(i)/10B(ii)	516042	7003174
117	659059	7 A 3 B	7A(iii)b	517525	7006286
118	660158	7 C 3	7C(iii)	502190	7015240
119	660159	7 C 2	7C(iii)	501672	7015525
120	659060	7 C 4	9	506395	7013502
121	659061	1 F 1	1F(i)	506600	7013531
122	659062	1 B 1	1B(i)	507091	7012549
123	659063	1 B 2 B	1B(i)	507433	7011021
124	659064	3 A 1	4A(i)/3A(i)	507609	7010865
125	659065	5 A 2 A	5A(ii)a	507563	7011088
126	659066	7 A 2 A	7A(ii)a	507321	7010880
127	659067	1 B 3	2/1B(iii)	506640	7010681
128	659068	7 D 1	7C(iv)	506677	7010265
129	659069	1 B 1	1B(i)	506533	7010812
130	659070	5 B 1	5B(i)	502626	7011579
131	659071	7 D 1	7A(ii)a/7D(i)	509894	7008616
132	659072	1 B 1	1B(i)	510855	7007864

Site No.	Corveg VR_NUM	Legend Code	Map Unit on Map	Easting	Northing
133	659073	1 B 1	1B(i)	510989	7007673
134	659074	7 D 2	7D(ii)	504754	7008075
135	659075	7 A 2 A	7A(ii)a	504521	7007552
136	659076	7 C 3	7A(ii)a	503384	7008932
137	659077	1 B 1	1B(ii)a	511351	7003892
138	659078	7 C 3	9	507326	7004359
139	659079	7 A 2 A	9	508600	7004815
140	659080	7 A 2 B	9	509071	7004992
141	659081	5 A 2 A	5B(i)/4A(i)/2/10A(i)b	510192	7003584
142	659082	7 E 1	7A(ii)a	501696	7003400
143	660177	1 F 1	1B(i)	506492	7020599
144	660178	1 B 2 B	1B(ii)b	507164	7019118
145	660179	1 D 1	1B(ii)a/1D(i)	507357	7017148
146	660180	5 A 1 A	5A(i)a	507867	7016002
147	660181	7 D 1	7C(iv)	507668	7015614
148	660182	1 B 2 B	1B(ii)a/1B(ii)b	504534	7015961
149	660183	1 D 2	1D(ii)	504713	7015706
150	660184	1 B 2 A	1B(ii)a	504865	7015645
151	660185	1 E 1	1E(i)	505151	7015541
152	660186	5 A 2 A	5A(ii)b	508927	7015892
153	660187	4 C 1	4C(i)	509639	7015824
154	659083	1 B 1	1B(i)	507827	7012197
155	659084	1 B 2 B	1B(ii)b	507731	7012308
156	659085	7 C 2	7A(ii)a	510779	7011012
157	660188	7 A 2 B	7C(iv)/7A(iii)a/7C(i)	513443	7023593
158	660189	7 A 2 B	7C(iv)/7A(iii)a/7C(i)	513500	7023302
159	660190	6 A 2	6A(ii)	515151	7017386
160	659086	7 C 4	7C(iv)	506755	7011218
161	659087	7 C 4	7C(iv)/7A(ii)a/7A(iii)a	506752	7011907
162	659088	5 A 1 A	2/5A(i)a	506933	7011983
163	659089	1 B 1	1B(i)/1B(ii)a	504262	6997078
164	659090	1 B 1	1B(i)/1B(ii)a	504606	6997569
165	659091	1 D 2	1D(i)/1D(ii)	503559	6997402
166	659092	1 B 3	1B(iii)	503654	6997432
167	659093	3 A 1	2/3A(i)/4A(i)	505224	6983143
168	659094	1 B 1	1B(i)	505648	6983012
169	659095	1 B 3	1B(ii)a/1B(ii)b/1B(iii)	505729	6983304
170	659096	1 B 1	1B(ii)a/1B(ii)b/1B(iii)	505544	6983174
171	659097	1 B 1	1B(i)	502695	6981476
172	659098	7 A 2 A	7A(ii)a	502892	6989209
173	659099	7 A 2 B	7A(ii)b	504439	6988540
174	659100	4 A 1	4A(i)/6A(i)	504302	6988513
175	659101	1 B 2 B	1B(ii)b	507418	6987458
176	659102	5 A 1 A	5A(i)a	505310	6983094
177	659103	1 F 2	1F(ii)/1B(i)	502720	6996241

Site No.	Corveg VR_NUM	Legend Code	Map Unit on Map	Easting	Northing
178	659104	1 B 1	1F(ii)/1B(i)	502881	6996275
179	659105	1 B 2 A	1B(ii)a	502055	6996407
180	659106	1 B 2 B	1B(ii)b/1B(ii)a	502801	6994582
181	659107	2	2	502499	6994591
182	659108	5 A 1 A	5A(i)a	502151	6994534
183	659109	1 B 1	1B(ii)a	504234	6991173
184	659110	6 A 2	6A(i)	539822	7008744
185	659111	6 A 1	6A(i)	540071	7008876
186	659112	9	9	540420	7009185
187	659113	1 B 2 B	1B(ii)b	505932	6990497
188	659114	4 A 1	4A(i)/3A(i)	506011	6990589
189	659115	3 A 1	2/3A(i)	506087	6990802
190	659116	1 B 1	1B(i)	503892	6991596
191	659117	5 B 1	5B(i)	505278	6990156
192	659118	6 B 2	6B(ii)/4A(i)	506923	6989925
193	659119	1 B 2 C	1B(ii)c	505591	6983364
194	657001	1 B 2 A	1B(ii)a/1B(ii)b	546847	6888082
195	657002	4 A 1	4A(i)	545319	6886292
196	657003	1 B 3	1B(iii)	545308	6886440
197	657004	1 B 2 B	1B(ii)a/1B(ii)b	545452	6886502
198	657005	1 B 1	1B(i)	544144	6890857
199	657006	5 B 1	5B(i)	544036	6890337
200	657007	5 A 1 A	5A(i)a	543913	6889222
201	657008	1 B 2 A	1B(ii)a	543558	6888910
202	658015	5 C 2	5A(i)a/1B(i)	533594	6911792
203	658016	1 B 2 A	1B(ii)a/1B(i)	533992	6913339
204	658017	7 A 2 B	7A(ii)a/7A(ii)b	534692	6910035
205	658018	4 D 1	4D(i)	534151	6911101
206	658019	5 A 2 B	5A(ii)b	534313	6910990
207	658020	1 B 2 A	1B(ii)a	534268	6911295
208	658021	7 D 2	7D(ii)	536942	6911920
209	658022	7 D 2	7D(ii)	537060	6911694
210	658023	5 A 1 A	5A(i)a	533198	6914449
211	658024	1 B 2 A	1B(ii)a	537591	6916162
212	658025	1 B 2 A	1B(ii)a	536608	6919852
213	658026	4 A 1	4A(i)	536626	6919817
214	658027	1 B 2 A	1B(ii)a	536771	6921412
215	658028	7 A 2 A	7A(ii)a	533718	6922037
216	658029	1 B 2 A	1B(ii)a	533547	6924641
217	658030	5 A 2 A	5A(ii)a	533284	6924431
218	658031	1 B 3	1B(iii)	535727	6925941
219	658032	5 A 2 A	5A(ii)a	535559	6925898
220	658033	1 B 2 A	1B(ii)a	533506	6929564
221	658034	5 A 2 A	5A(ii)a	533489	6929218
222	658035	1 B 1	1B(i)	534349	6933876

Site No.	Corveg VR_NUM	Legend Code	Map Unit on Map	Easting	Northing
223	658036	1 B 1	1B(i)	534410	6933694
224	658037	4 C 1	4A(i)/4C(i)	534201	6933682
225	658038	5 A 1 A	5A(i)a	533271	6933851
226	658039	4 C 1	4C(i)	532811	6933748
227	658040	1 B 2 B	1B(i)/1B(ii)b	529697	6934123
228	658041	1 B 2 A	1B(ii)a	537634	6925467
229	658042	4 A 1	4A(i)	538724	6925587
230	658043	5 A 2 A	5A(ii)a	538954	6925534
231	658044	5 A 1 A	5A(i)a	539342	6929329
232	658045	7 A 2 A	7A(ii)a/5A(i)b/5A(ii)a	538981	6925345
233	658046	4 A 1	2/3A(i)	539894	6927261
234	658047	1 B 1	1B(i)	539665	6927355
235	658048	1 D 1	1D(i)	540259	6927173
236	658049	1 D 2	1D(ii)/1D(i)	540391	6925919
237	658050	1 F 1	1D(i)	541002	6925630
238	658051	1 E 1	1E(i)	541595	6926494
239	658052	1 D 1	1D(i)	542854	6928047
240	658053	6 A 3	6A(iii)	543250	6929703
241	658054	6 A 3	6A(iii)	543409	6929835
242	658055	6 A 4	6A(iv)	543518	6930061
243	658056	1 E 1	1E(i)	541630	6928691
244	658057	1 B 1	1B(i)	541392	6929241
245	658058	1 F 1	1F(i)	535919	6928005
246	658059	1 F 1	1F(i)	535959	6928068
247	658060	1 B 2 B	1B(ii)b	536475	6928018
248	658061	5 A 1 A	5A(i)a	536816	6928173
249	658062	1 D 1	1D(i)	536509	6930058
250	658063	1 D 2	1D(ii)	537550	6931704
251	658064	1 B 1	1B(i)	537832	6930462
252	658065	3 A 1	4A(i)/3A(i)/2	537944	6930678
253	658066	5 A 1 A	5A(i)a	538521	6929868
254	658067	1 B 3	1B(ii)b/1B(iii)	538791	6930019
255	658068	1 B 2 B	1B(ii)b	539460	6929487
256	658069	1 B 1	1B(i)	541175	6929875
257	658070	1 B 1	1B(i)	541126	6929931
258	658071	1 B 1	1B(i)	539593	6930732
259	658072	7 E 1	7E(i)	540964	6931686
260	658073	1 D 1	1D(i)	540084	6931894
261	658074	6 B 3	6B(iii)	540582	6933026
262	658075	7 A 2 B	7A(ii)a	540452	6933009
263	658076	1 B 2 B	1B(i)	540287	6932524
264	658077	1 D 2	1D(i)	539026	6940278
265	658078	1 D 1	1D(i)/1D(ii)	539989	6941017
266	658079	6 B 3	6B(iii)	539930	6940228
267	658080	7 A 2 B	7A(ii)a	539519	6937210

Site No.	Corveg VR_NUM	Legend Code	Map Unit on Map	Easting	Northing
268	658081	1 B 2 B	1B(ii)a	532295	6936601
269	658082	1 B 3	1B(iii)	531840	6936941
270	658083	1 B 3	1B(ii)b/1B(iii)	531236	6938693
271	658084	1 D 1	1D(i)	532438	6942385
272	658085	1 D 2	1D(ii)	532392	6942496
273	658086	1 D 2	1D(ii)	534729	6940275
274	658087	1 B 3	1B(iii)	525721	6957723
275	658088	1 B 2 A	1B(ii)a	527940	6954278
276	658089	7 E 1	7E(i)	526823	6953052
277	658090	1 B 2 A	1B(ii)a/1E(i)	527603	6952514
278	658091	1 E 1	1E(i)	528461	6951014
279	658092	1 B 2 A	1B(ii)a	525666	6956737
280	658093	7 A 2 A	9	527138	6950354
281	658094	1 B 2 A	1F(ii)/1B(ii)a	528663	6949360
282	658095	9	9	529401	6950409
283	658096	3 A 1	2/3A(i)/4A(i)	529767	6950783
284	658097	1 B 2 A	1B(ii)a	529509	6947617
285	658098	7 C 1	7C(i)	528744	6946221
286	658099	1 B 1	1B(i)	529734	6946735
287	658100	7 E 1	7A(ii)a	530428	6942271
288	658101	7 A 2 A	7A(ii)a	526565	6937290
289	659120	1 B 2 B	1B(ii)a	524912	6976243
290	659121	1 B 2 A	1B(ii)a	523341	6969693
291	659122	1 B 1	1B(i)	522918	6969558
292	658102	1 B 1	1B(i)	536591	6958978
293	658103	1 C 1	1C(i)	536431	6958908
294	658104	9	9	536717	6958819
295	658105	7 A 2 B	7A(ii)b	533206	6950417
296	658106	1 B 2 B	1B(ii)a	533310	6945246
297	658107	1 B 2 B	1B(ii)b/1B(ii)a	535931	6942589
298	658108	1 B 2 B	1B(ii)b	536144	6939604
299	658109	1 D 2	1D(ii)	534330	6944418
300	658110	1 E 1	1E(i)	534398	6944544
301	658111	1 E 1	1E(i)	540590	6942322
302	659123	1 B 2 B	1B(ii)a	523733	6960026
303	659124	1 B 2 B	1B(ii)b	523110	6960146
304	659125	1 B 1	1B(i)	519671	6960857
305	659126	1 B 2 A	1B(ii)a	517942	6960670
306	659127	7 A 2 B	9	518012	6958868
307	658112	7 A 2 A	7A(ii)a	541973	6933701
308	658113	6 B 3	6B(iii)	540896	6940647
309	658114	7 A 3 A	7A(iii)a	543391	6938702
310	658115	6 B 3	6B(iii)	540861	6947270
311	658116	7 C 2	7C(ii)	540605	6950912
312	658117	6 D 1	6D(i)	546436	6949665

Site No.	Corveg VR_NUM	Legend Code	Map Unit on Map	Easting	Northing
313	659128	6 D 1	6D(i)	546721	6948781
314	658118	6 D 1	6D(i)	549091	6955447
315	658119	6 D 1	6D(i)	548356	6954273
316	659129	6 B 3	6B(iii)	543539	6963997
317	659143	1 B 2 A	1B(ii)a	509381	6975502
318	659144	1 B 2 A	1B(ii)a/1B(i)	510070	6974230
319	659145	7 D 2	7D(ii)/7A(ii)b	507392	6976004
320	659146	7 D 2	7D(ii)	507951	6974570
321	659147	4 A 1	4A(i)	507940	6974649
322	659148	1 B 2 B	1B(ii)a/1B(ii)b	506567	6977588
323	659149	1 B 2 A	1B(ii)a	503999	6980876
324	659150	5 B 1	9	503868	6980766
325	659151	3 A 1	4A(i)/3A(i)	503722	6980840
326	659152	1 B 1	1B(ii)a/1B(i)	502557	6980189
327	659153	4 A 1	4A(i)/3A(i)/2	502518	6980069
328	659154	6 B 2	6B(ii)	502226	6979819
329	659155	1 B 2 A	1B(ii)a	505982	6981949
330	659130	6 A 1	6A(i)	544283	7010122
331	659131	6 B 3	6B(iii)	543616	7009715
332	659132	9	9	541463	7009495
333	659133	6 B 3	6B(iii)	537877	7007122
334	659134	6 A 6	6A(vi)	543189	6976356
335	659135	1 B 1	1B(i)	541737	6975974
336	659136	7 C 3	9	540934	6978197
337	659137	6 B 3	6B(iii)	541915	6997054
338	659138	6 A 5	6A(v)	538591	7008119
339	659139	7 A 2 A	7A(ii)a	537232	7007566
340	659140	6 B 3	6B(iii)	537159	7005381
341	659141	6 B 3	6B(iii)	536687	7002387
342	659142	7 A 2 B	7A(ii)b	536100	6998491

Appendix 13.

Map Units and their Equivalent SEQ Regional Ecosystem type.

Map Unit	RE	Status
1A(i)	12.1.3	no concern at present
1B(i)	12.1.3	no concern at present
1B(ii)a	12.1.3	no concern at present
1B(ii)b	12.1.3	no concern at present
1B(ii)c	12.1.3	no concern at present
1B(iii)	12.1.3	no concern at present
1C(i)	12.1.3	no concern at present
1C(ii)	12.1.3	no concern at present
1D(i)	12.1.3	no concern at present
1D(ii)	12.1.3	no concern at present
1E(i)	12.1.3	no concern at present
1F(i)	12.1.3	no concern at present
1F(ii)	12.1.3	no concern at present
1F(iii)	12.1.3	no concern at present
2	12.1.2	no concern at present
3A(i)	12.1.2	no concern at present
4A(i)	12.1.2	no concern at present
4B(i)	12.1.2	no concern at present
4C(i)	12.1.2	no concern at present
4D(i)	12.1.2a	no concern at present
5A(i)a	12.1.1	of concern
5A(i)b	12.1.1	of concern
5A(ii)a	12.1.1	of concern
5A(ii)b	12.1.1	of concern
5B(i)	12.1.1	of concern
5B(ii)	12.1.1	of concern
5C(i)	12.1.1	of concern
5C(ii)	12.1.1	of concern
5C(iii)	12.1.1	of concern
6A(i)	12.1.2a	no concern at present
6A(ii)	12.1.2a	no concern at present
6A(iii)	12.1.2a	no concern at present
6A(iv)	12.1.2a	no concern at present
6A(v)	12.1.2a	no concern at present
6A(vi)	12.1.2a	no concern at present
6B(i)	12.2.15	no concern at present
6B(ii)	12.2.15	no concern at present
6B(iii)	12.2.15	no concern at present
6C(i)	12.2.12	no concern at present
6D(i)	12.2.15	no concern at present
7A(i)	12.3.5	of concern
7A(ii)a	12.3.5	of concern

Map Unit	RE	Status
7A(ii)b	12.3.5	of concern
7A(iii)a	12.3.5	of concern
7A(iii)b	12.3.5	of concern
7B(i)	12.3.5	of concern
7C(i)	12.3.5	of concern
7C(ii)	12.3.4	no concern at present
7C(iii)	12.3.6	of concern
7C (iv)	12.3.6	of concern
7D(i)	12.3.6	of concern
7D(ii)	12.3.6	of concern
7E(i)	12.1.1	of concern
7F(i)	12.2.12	no concern at present

Appendix 14.

1974 Map Units compared with 1998 Map Units

The best equivalence comparisons of the current mapping units with the mangrove mapping of 1974 are as follows. There is not a direct one to one comparison.

1974 Mangrove Mapping	1998 SEQ Wetlands Mapping
9, 11	1A(i)
5, 7	1B(i)
4	1B(ii)a
3	1B(ii)b, 1B(ii)c
2	1B(iii)
19	1C(i), 1C(ii)
15	1D(i)
13	1D(ii)
17, 18	1E(i)