Appendix Contents

Appendix 1

Possible Environmental Levy Projects

The Following Table provides an indication of the type of environmental initiatives that could be pursued by Council using funding from an environmental levy. The list is not exhaustive, in that other projects could be considered by Council. However, it is highly improbable that that the sufficient funding would be available to pursue all projects on the list.

Program Name	Brief
Community Based Projects	
Bushland Acquisition Fund	Where Conservation objectives are at odds with landholder expectations for development a Bushland Acquisition Fund would enable the purchase of such areas for the community. This is anticipated to be the largest single use of an environmental levy, but conversely would have the greatest application for the preservation of biodiversity and environmental benefits.
Maitland Linkages Program	Maitland Linkages Program was developed to provide an opportunity for passive nature based recreation activities for residents in the Maitland LGA. To date two stages of the Linkages project have been established from Rathluba Lagoon to the end of Shamrock Lane in East Maitland. Bushland acquired by Council could be incorporated into the Linkages program.
Council Bushland Reserve Management Program	Council has a growing number of small bushland reserves given to Council as part of local developments. Without active management these reserves are being degraded through a number of process relating to weed invasion and storm water issues. Through a Bushland Reserve Management Program Council would utilise bush regeneration techniques to ensure the long term sustainability of these areas.
Landholder Incentives	
Rate Relief Fund	A rate relief fund would pay the rates accrued for bushland areas on private property where landholders request it. Rate relief is a conservation management outcome to promote the conservation of bushland on private property.
Bushland Management Fund	Once bushland areas are placed into secured community lands, financial requirements for their on going management would be necessary for the management of issues such as weed removal, rubbish removal, access control and community education. The possibility of assistance from NPWS through A Vegetation Conservation Agreement should also be considered.
Native Plant Distribution Program	The supply of locally sourced native plant species to rural landholders identified in the opportunity/priority revegetation areas will help develop a greater corridor presence through out the LGA as well as increasing the overall vegetation cover in the LGA.
Gully Erosion Control Program	Numerous major gully erosion problems are apparent through out the LGA. The Gully Erosion Control Program would provide assistance and materials to begin to restore major erosion problems in the LGA.
Riparian Zone Fencing Project	Riparian degradation is a major environmental issue for the Maitland LGA, with the majority of the Hunter River and Paterson River divide of vegetation and degraded by cattle and weed species. The fencing program would help improve this problem by providing Landholders with fencing material to control cattle access to the river.
Plantation Incentives Program	Assist interested landholders with the costs associated with the establishment of plantations or woodlots for sustainable timber production, particularly with the DA requirements of such an undertaking.
Vegetation Advisory Officer	A vegetation advisory officer would liase with landholders as to the appropriate management of existing vegetation and assistance with planning restoration projects, administering the Native Plant Distribution Fund and other proposals listed as outcomes from an Environmental Levy.

Assistance with Rural Property Planning	The proposed Vegetation Advisory Officer could assist rural property owners with the development of a Property Management Plan assisting with the identification of environmental management issues and the recommendation for their remediation.
Die Back Control Program	The Maitland LGA has been described as a hotspot for die back, which is having a severe impact on those areas of bushland that still remain in the LGA. Die back can be controlled through the establishment of specific localised land management practices associated with stock control and understorey redevelopment.
Tool Program	As part of the encouragement of restoration and revegetation works in the Maitland LGA Council could establish a tool program, comprising of a range of tools that would be useful for revegetation endeavours.
Wetland Management/Action Plan	The Wetland Management/Action Program would work with landholders to achieve a greater protection of Wetland systems found throughout the Maitland LGA. Objectives of the program would include an up date of the wetland layer on Council's GIS, with wetland edges clearly established.
Wetland Fencing Program	Fencing wetland areas would provide a major conservation outcome for the wetland areas of the Maitland LGA. Approximately 9.5% of the Maitland LGA is covered by wetland systems, the exclusion of cattle from these areas and their revegetation would have a major
Decentralised Watering Program	Strategically placed watering systems (wind mills) could be used to supply multiple properties with watering points away from the river system. This would have a major impact on the current state of water quality and the riparian environment in the Maitland LGA.
General Programs	
Grant Maximisation	Applications for environmental grants, through State and Federal funding bodies, require an in kind contribution from Council usually in the order of 50% of the total project budget. The development of a Grant Maximisation fund would significantly help Council in its application for such environmental programs.
Salinity Management Plan	Salinity is a major issue for the Maitland LGA. A Salinity Management Plan would develop a detailed inventory of issues apparent in the local area, begining with the monitoring of salt and ground water tables throughout the LGA. A strategy to deal with salinity would be developed and implemented through the special rate.
Salinity Action Program	The supply of locally sourced native plants for the establishment in recharge zones and areas of rising water tables to begin to reduce the impacts of salinity on the local environment.
Lochinvar Creek Rehabilitation Project	Lochinvar Creek is a catchment wholly within the Maitland LGA. Water quality monitoring undertaken in the water course has consistently indicated significant environmental issues apparent in the catchment relating to land use activities, lack of native vegetation and presence of weed species.
Domestic Animal Education and Control Program	Aimed at residents on the bushland urban fringe, educating as to the impact of unmanaged domestic animals and their impact on the bushland areas. Could include active management in the form of capture.
Two Mile Creek Rehabilitation Project	Two Mile Creek between the New England Hwy and the Tenambit Swamp has been heavily degraded through development in the area. A restoration program would focus on weed control, erosion control, habitat creation and revegetation with suitable riparian species.
Three Mile Creek Corridor Development	Three Mile Creek, a perennial drainage line running through Metford could be developed into an important wildlife corridor/public amenity project.

Four Mile Creek Riparian Corridor Development	Four Mile Creek provides crucial wildlife corridor potential between large structurally intact bushland areas to the south of Ashtonfield with the wetland areas to the north in the Tenambit Swamp.
Schools Environment Program	The continuation and expansion of the environmental schools program to continue educating the next generation about environmental issues.
Council Environmental Web Development	The Worlds Wide Web is an increasingly important tool for communication. The establishment of a natural resources inventory would enable the communication of monitoring results (water quality etc.) to the wider community. A variety of environmental education material and reports (SoE, Greening Plan) could also be places on the web.
Explanation of Water Quality Testing Program	Maitland City Council currently runs a water quality monitoring program throughout the LGA. With significant new development taking place throughout the LGA the sampling programs needs to be expanded to maintain it relevance.
Environmental Weed Control Program	A range of problematic plant species occur through out the Maitland LGA which do not fall under the juristinction of the Noxious Weeds Program. The environmental weeds program would target species such as Lantana and African Olive, both causing problems throughout the LGA and would provide materials for the control of these species.

Appendix 2

Sample Tree Presevation Provisions
(National Parks and Wildlife Service, 2001)

Objective

(1) The objective of this clause is to repeal existing tree preservation provisions, and to extend controls to the clearing of native vegetation generally, including but not limited to, trees.

Application of provision

(2) This clause applies to all land other than:

(a) land identified as a habitat corridor in clause 2, or

(b) land adjoining such land.

Note: Provisions applying to the clearing of native vegetation within or adjoining a habitat corridor are outlined in clause 2.

(3) This clause applies to the following trees:

(a) native or introduced trees exceeding 5 metres in height, being the distance measured vertically between the horizontal plane of the base of the tree which is immediately above the ground and the horizontal plane of the uppermost point of the tree, or

(b) individual trees, gardens or native vegetation listed in any Significant Tree and Garden Register or Development Control Plan that has been adopted by resolution of the Council for the purposes of this clause.

Consent for destruction of trees

(4) The ringbarking, cutting down, poisoning, topping, lopping, removing, injury; and wilful destruction of any tree or vegetation to which this clause applies is prohibited, except with the consent of the Council.

(5) For the purpose of this clause, wilful destruction or injury to a tree includes earthworks or drainage works carried out immediately adjoining the base of the tree.

(6) Consent is not required if:

(a) the tree is dead or dangerous and poses an immediate threat to life or property, or

(b) the tree is a declared noxious weed under the *Noxious Weeds Act 1993*, or

(c) the tree is less than five metres from a building or work that has been

(d) approved by the Council, or

(e) the tree is a fruit or other **tree that requires an annual** pruning, or is within a timber plantation, or the tree represents a bush fire hazard causing immediate risk to fife or property, or removal is authorised or required by a bush fire management plan made under to the Rural Fires Act 1997.

(f) the tree is of a species identified in a development control plan as having potential to cause damage to foundations and sewer lines, or is of a species that is identified in such a plan as an undesirable species, being a species with characteristics that may cause poisoning, weed invasion, adverse health effects, or the like.

Note: For reference, see Wyong LEP 1991 Amendment No 108 - GG 618199. Many Councils are also broadening the provisions of TPOs to include 'native vegetation' as distinct from 'trees'.

Appendix 3

Sample Conservation Incentive Provisions
(National Parks and Wildlife Service, 2001)

27 Conservation incentive

(1) Despite any other provision of this plan, the Council may consent to the carrying out of development on any land for any purpose if it is satisfied that the development will:

(a) bring about the public dedication of land of environmental significance for conservation purposes, or

(b) otherwise ensure that land of environmental significance is protected, enhanced or conserved on a perpetual basis.

(2) When granting consent to development in accordance with this clause, the Council may:

(a) disregard any development standard or requirement contained in this plan or a development control plan, including any such provision relating to:

(i) minimum lot sizes, or

(ii) floor space ratios, or

(iii) car parking, or

(iv) landscaping, and

(b) transfer the development potential pertaining to land of environmental significance to any other land.

(3) The Council must not grant consent under this clause unless it is satisfied that:

(a) achievement of the outcomes referred to in paragraphs (1)(a) or (b), in relation to the land of environmental significance:

(i) is necessary having regard to the targets referred to in clause 17, and

(ii) cannot be reasonably achieved by any other means, and

(b) the development will not adversely affect the environmental values of land and its surroundings (including at locations to which development potential is transferred), and

(c) the relevant public authority has advised the Council that it is prepared to accept transfer of the land to its responsibility (where the development seeks to bring about the public dedication of land of environmental significance for conservation purposes), and

(d) the land of environmental significance will be the subject of a public positive covenant under section 87A of the *Conveyancing Act 1919* or a conservation agreement (where the development seeks to otherwise ensure that the land is protected, enhanced or conserved on a perpetual basis).

(4) Prior to granting consent under this clause, the Council must make available for public inspection a report that addresses the matters referred to in subclause (3).

(5) Development referred to in this clause is identified as advertised development for the purposes of the definition of *advertised development* in section 4(1) of the Act.

Appendix 4

Sample Management Plan Provisions
(National Parks and Wildlife Service, 2001)

Management plans

Objective

(1) The objective of this clause is:

(a) to provide a documented link between the development assessment process and ongoing land management activities, and
(b) to provide a framework for the preparation of plans of management for implementing plan objectives.

Making and effect of management plans

(2) Where the council considers it necessary or desirable to provide more detailed provisions than are contained in this plan, it may prepare or cause to be prepared a management plan in respect of the management of land, its ecosystems and native vegetation.

(3) A management plan shall be not inconsistent with the objectives or principles of this plan, and shall be used to promote development that is constant with those objectives or principles.

(4) A management plan:

(a) shall be of no effect for the purposes of this plan unless the Council has approved the plan, and
(b) continues to have effect for so long as the Council approval specifies.

(5) An approval referred to in subclause (4) shall not be granted for a term exceeding 10 years.

(6) A management plan may include a plan prepared under any other law, provided that the requirements of this clause are satisfied.

Public consultation

(7) In preparing a management plan, the council may consult or require that consultation occur with interested parties in the community.

(8) The granting of approval to a management plan is to only occur after the plan has been exhibited for public comment and any submissions considered by the council.

Appendix 5

LHCCREMS Vegetation Community Profiles and Field Identification

MU1 Coastal Wet Gully Forest

MU1a Coastal Warm Temperate – Sub Tropical Rainforest

Canopy Label: *Syncarpia glomulifera / E. saligna / Acmena smithii / Guioa semiglauca*

No. Sites: 35

Structural Classification (Specht): Closed Forest- Tall Open Forest

Description

Coastal Wet Gully Forest describes a complex of species rich forests dominated by warm temperate suballiances as identified by Floyd (1990); 37 (*Ceratopetalum /Schizomeria / Acmena / Doryphora)* and 42 (*Acmena / Doryphora/ Dendrocnide / Ficus*) and some influences of 14 (*Doryphora-Daphnandra micrantha-Dendrocnide-Ficus-Toona*). It is most often found in gullies and on lower slopes and underneath Narrabeen sandstone benches of the coastal range. It also occurs on the rich alluvial plains of the Yarramalong, Ourimbah and Mandalong Valleys.

This assemblage describes two distinct forest structures Closed Forest (MU1a) and Tall Open Forest MU1. Analysis of floristic data did not distinguish separate assemblages based on the presence or absence of Eucalypts and Syncarpia above a rainforest canopy. Over half of the sites describing this assemblage support tall emergents of *Eucalyptus saligna* and *Syncarpia glomulifera* above a distinctive rainforest canopy usually with a projected foliage cover greater than 70%. Available structural mapping based on aerial photo interpretation was inconclusive in the identification of this community. The identification of Map Unit 1a has been undertaken using a combination of data layers each using different and unknown criteria to map rainforest. At best this can be used to flag where rainforest species are likely to be dominant in the canopy.

Variations within this group reflect distributional changes in soil fertility and rainfall. Where the rainfall decreases in the northwest Watagan Range and Broken Back range this warm temperate rainforest becomes significantly drier and increasingly restricted to the shelter of narrow gullies or creeklines. Here patches are often too small to map. Where soil fertility is greatest on the fine alluviums of the Wyong Valley subtropical elements such as palms and woody vines emerge.

The four forms that have been identified as having potential to form individual units are;

1) Alluvial valleys of Wyong, Jilliby, Ourimbah – These areas are clearly dominated by *Acmena smithii, Cryprocarya glaucescens, Guioa semiglauca* and can have emergent *Eucalyptus saligna* and a high abundance of *Archontophoenix cunninghamianna* where moisture and fire absence permit

2) Wet Gullies of low quartz sands of the Watagan range and coastal range to Gosford- typically dominated by *Acmena smithii, Doryphora sassafras, Ceratopetalum apetalum* and can have emergent *E. saligna.*

3) Gullies of low quartz sands Broken Back Range, Hunter Range and North West Watagans – Typically dominated by *Backhousia myrtifolia, Tristaniopsis laurina, Trochocarpa laurina, Dysoxylon fraserianum*, with the most common emergent being *Syncarpia glomulifera*

4) Permian sediments of the lower Hunter. *Dysoxylon fraserianum, Diospyros australis, Dendrocnide excelsa.* This group represents a combination of dry rainforest, with subtropical elements. Remnants of this form have been largely degraded and exist only as small isolated fragments.

Subtropical elements do not reach a dominance in any of the sites used to describe this assemblage however influences are clearly apparent.

This community relates to Map Unit 6: Coastal Narrabeen Moist Forest both through structural similarities and a sharing of species, the prime distinction between them is that Map Unit 6 contains a considerably less dense strata of rainforest species comprising warm temperate rather than sub tropical influences. Map Unit 2: Sandstone Ranges Warm Temperate Rainforest is also closely related however Acmena *smithii*, *Ceratopetalum apetalum* and *Doryphora sassafras* dominate a more depauparate species assemblage.

Similar assemblages of species occur to the north of the Hunter River. Forest Ecosystem 137 Southern Wet Sydney Blue Gum (NPWS, 1999(a)) describes a community dominated by *E. saligna* with a dense understorey of comparable rainforest trees and shrubs. The northern ecosystem is limited to the southern and eastern foothills of Barrington Tops ranges. Patterns in rainforest are not modelled to provide fine scale identification of rainforest suballiances as described by Floyd (1990). However the subtropical elements of this Map Unit extend from Barrington Tops to the Illawarra and then to the Clyde Valley near Bateman's Bay (*ibid*). Similarly the warm temperate influenced elements extend from the Hunter River south to the Shoalhaven.

Mean Species richness: 53.25 ± 17.4 (0.04 ha)

Vegetation Structure (n=20)

Stratum	Mean height (m)	Range (m)	Mean cover (%) (sd)	n
Emergent	38.64	25 - 45	10.00 (5.9)	11
Tallest	24.50	10 - 35	70.75 (15.7)	20
Mid	6.55	1 - 15	34.55 (25.0)	11
Mid 1	12.25	5 - 15	45.63 (18.4)	8
Mid 2	2.50	1 - 3	21.88 (12.8)	8
Lowest	1.00	0 - 1	35.63 (25.6)	19

Diagnostic plant species

		Within Community		Other Communities		
Stratum	**Species**	**Frequency**	**c / a**	**Frequency**	**c / a**	**Fidelity Class**
Emergent	*Syncarpia glomulifera*	48%	2	17%	2	positive
	Eucalyptus saligna	37%	3	3%	3	positive
	Eucalyptus deanei	17%	2	4%	3	uninformative
	Eucalyptus acmenoides	5%	2	3%	2	uninformative
	Angophora floribunda	5%	2	14%	2	uninformative
	Eucalyptus scias subsp scias	2%	3	1%	2	uninformative
	Eucalyptus pilularis	2%	2	5%	3	uninformative
Tallest	*Acmena smithii*	94%	2	5%	2	positive
	Guioa semiglauca	80%	2	2%	1	positive
	Doryphora sassafras	62%	2	1%	3	positive
	Cryptocarya glaucescens	54%	2	1%	1	positive
	Ceratopetalum apetalum	45%	3	1%	2	positive
	Cryptocarya microneura	45%	2	2%	1	positive
	Backhousia myrtifolia	37%	4	8%	3	positive
	Archontophoenix cunninghamiana	48%	2	0%	1	positive
	Alectryon subcinereus	42%	2	1%	1	positive
	Ficus coronata	57%	2	2%	1	positive
	Caldcluvia paniculosa	5%	2	0%	0	positive
	Sarcomelicope simplicifolia subsp simplicifolia	5%	2	0%	0	positive
	Mischocarpus australis	2%	2	0%	0	positive
	Synoum glandulosum	62%	1	3%	1	uninformative
	Stenocarpus salignus	54%	1	1%	1	uninformative
	Melicope micrococca	40%	1	2%	1	uninformative
	Diospyros australis	42%	1	2%	1	uninformative
	Planchonella australis	34%	3	0%	3	uninformative

	Livistona australis	22%	1	3%	1	uninformative
Mid	*Neolitsea dealbata*	57%	2	1%	1	positive
	Eupomatia laurina	54%	2	2%	1	positive
	Trochocarpa laurina	48%	2	3%	1	positive
	Symplocos thwaitesii	2%	1	0%	0	positive
	Austromyrtus acmenoides	2%	1	0%	0	positive
	Pisonia umbellifera	2%	1	0%	0	positive
	Citriobatus pauciflorus	85%	1	4%	1	uninformative
	Gymnostachys anceps	82%	1	5%	1	uninformative
	Wilkiea huegeliana	57%	1	1%	1	uninformative
	Claoxylon australe	51%	1	2%	1	uninformative
	Psychotria loniceroides	42%	1	2%	1	uninformative
	Tasmannia insipida	40%	1	0%	2	uninformative
Lowest (<1m)	*Doodia aspera*	62%	2	9%	2	positive
	Pseuderanthemum variabile	54%	2	13%	2	positive
	Lastreopsis microsora	51%	3	1%	2	positive
	Adiantum formosum	45%	2	2%	2	positive
	Polystichum australiense	45%	2	1%	2	positive
	Adiantum silvaticum	40%	2	0%	2	positive
	Blechnum cartilagineum	37%	2	6%	2	positive
	Lastreopsis decomposita	37%	2	1%	2	positive
	Oplismenus imbecillis	37%	2	12%	2	positive
	Pollia crispata	14%	1	0%	0	positive
	Asplenium attenuatum	5%	2	0%	0	positive
	Lomandra spicata	5%	1	0%	0	positive
Vines and Epiphytes	*Morinda jasminoides*	88%	2	6%	1	positive
	Cissus antarctica	68%	2	6%	1	positive
	Cissus hypoglauca	57%	2	7%	1	positive
	Ripogonum fawcettianum	51%	3	1%	1	positive
	Pyrrosia rupestris	57%	2	2%	1	positive
	Dendrobium tetragonum	5%	2	0%	0	positive
	Bulbophyllum shepherdii	5%	2	0%	0	positive
	Smilax australis	68%	1	11%	2	uninformative
	Pandorea pandorana	62%	1	21%	1	uninformative
	Asplenium australasicum	45%	1	0%	1	uninformative
	Plectorrhiza tridentata	42%	1	1%	1	uninformative

Rare / endangered Species: *Syzigium paniculatum*

MU3. Hunter Valley Dry Rainforest

MU3a. Dry Rainforest Canopy Dominant

Caopy Label: *Ficus rubiginosa / Streblus brunonianus*

No. sites: 22

Structural Classification (Specht): Closed Forest – Open forest

Description

Hunter Valley Dry Rainforest occurs on sheltered slopes and rich soils derived from basaltic intrusions into Carboniferous sediments and basalt influenced alluviums on the Hunter Valley Floor. The relatively low closed canopy is dominated by variable rainforest species including *Streblus brunonianus, Ficus rubiginosa* and *Backhousia myrtifolia*. The canopy supports a variety of climbers including *Pandorea pandorana* and *Aphanopetalum resinosum.* Emergents occur regularly within this community. Typical species are *Angophora floribunda, Corymbia maculata* and *Casuarina cunninghamiana subsp cunninghamiana* on river or stream banks. The mid-storey and understorey in this community are characteristically sparse and sometimes may be absent altogether. In areas where the tree canopy has been disturbed more substantial structural layers may develop. When present the mid-storey is characterised by shrubs and small trees such as *Clerodendrum tomentosum, Citriobatus pauciflorus, Pittosporum revolutum.* When on steep slopes rock outcropping may cover a significant proportion of ground space resulting in a sparse and patchy ground layer characterised by the grass *Oplismenus aemulus*, herbs such as *Plectranthus parviflorus* and the ferns *Pellaea paradoxa* and *Adiantum aethiopicum.*

A structural sub unit MU3a has been mapped to identify a canopy dominated by rainforest species. Other areas identifying this community are modelled from site data. Numerous sites describing this community have not been identified by aerial photograph interpretation, and no reliable relationship could be drawn between mapped polygons and the presence of this assemblage.

This community falls broadly within *SubAlliance 23 Ficus-Streblus-Dendocnide-Cassine* described by Floyd (1990). This sub alliance is described as extending from the Bellinger Valley on the north coast to the Illawarra in isolated patchy and degraded environments.

Dry rainforest has been mapped on the Hunter Valley floor for pre1750 purposes. There are virtually no remnants remaining in this environment other than scattered trees. Where possible notes of species composition were taken and analysed with sites to provide an indication of the type of vegetation once present. These areas grouped with dry rainforest as opposed to sub tropical rainforest as described by Knott et al (1998). It is likely that remnants have retained the hardier species of the former assemblage leading to bias in the conclusions reached here. Further sampling outside the region at Tocal where subtropical rainforest is known to occur would assist in further defining sub tropical rainforest influences.

Mean Species richness: 40.4 ± 13.1(0.04 ha)

Vegetation Structure (n=8)

Stratum	Mean upper height (m)	Range (m)	Mean cover(%) (sd)	n
Emergent	27.5	15 - 35	11.67 (6.1)	6
Tallest	14.63	6 - 25	70 (17.7)	8
Mid	6	1 - 6	22.5 (10.6)	2
Mid 1	13.5	8 - 15	65 (7.1)	2
Mid 2	3.5	1 - 4	17.5 (10.6)	2
Lowest	1	0 - 1	42.5 (31.6)	8

Diagnostic plant species

	Within Community	Other Communities

Stratum	Species	Frequency	c / a	Frequency	c / a	Fidelity Class
Emergent	*Angophora floribunda*	18%	3	14%	1	uninformative
	Corymbia maculata	18%	1	14%	2	uninformative
	Casuarina cunninghamiana subsp cunninghamiana	14%	1	1%	2	uninformative
Tallest	*Ficus rubiginosa*	50%	2	2%	1	positive
	Streblus brunonianus	45%	2	1%	1	positive
	Alectryon tomentosus	9%	3	0%	0	positive
	Drypetes australasica	9%	1	0%	0	positive
	Backhousia myrtifolia	32%	2	9%	2	uninformative
	Ficus coronata	41%	1	3%	1	uninformative
	Alectryon subcinereus	36%	1	2%	1	uninformative
	Cassine australis var australis	36%	1	1%	1	uninformative
	Guioa semiglauca	32%	1	3%	1	uninformative
	Elaeocarpus obovatus	23%	1	0%	1	uninformative
	Daphnandra species A	23%	2	0%	1	uninformative
	Claoxylon australe	23%	1	3%	1	uninformative
	Capparis arborea	23%	1	0%	1	uninformative
Mid	*Breynia oblongifolia*	45%	1	25%	1	uninformative
	Clerodendrum tomentosum	45%	1	8%	1	uninformative
	Citriobatus pauciflorus	41%	1	5%	1	uninformative
	Pittosporum revolutum	32%	1	9%	1	uninformative
	Rapanea variabilis	32%	1	13%	1	uninformative
	Notelaea longifolia	32%	1	12%	1	uninformative
Lowest (<1m)	*Adiantum aethiopicum*	50%	2	12%	1	positive
	Urtica incisa	36%	2	2%	1	positive
	Adiantum formosum	36%	2	3%	2	positive
	Commelina cyanea	36%	2	8%	1	positive
	Doodia aspera	36%	2	10%	1	positive
	Pellaea falcata var falcata	50%	1	5%	1	uninformative
	Plectranthus parviflorus	41%	1	11%	1	uninformative
Vines and Epiphytes	*Cayratia clematidea*	59%	2	7%	1	positive
	Cissus antarctica	50%	2	7%	1	positive
	Eustrephus latifolius	50%	2	19%	1	positive
	Aphanopetalum resinosum	45%	2	1%	2	positive
	Clematis glycinoides var glycinoides	45%	2	13%	1	positive
	Legnephora moorei	5%	1	0%	0	positive
	Pandorea pandorana	77%	1	21%	1	uninformative

Rare / endangered Species: None recorded

MU5. Alluvial Tall Moist Forest

Canopy Label: *E. saligna / S. glomulifera / Glochidion ferdinandi*

No. sites: 26

Structural Classification (Specht): Tall Open Forest – Open Forest

Description

Alluvial Tall Moist Forest occurs in areas of higher rainfall on deep alluvial soils. The tallest stratum in this community ranges between a sparse eucalypt emergent and a tall open forest. Below this is a moderately dense small tree canopy consisting of rainforest species and Melaleuca spp. In the Wyong and Ourimbah Creek valleys, the Melaleuca component of this small tree canopy is replaced by substantial development of rainforest. Understorey vegetation consists largely of mesic small trees, herbs and ferns. The tree stratum is highly varied with combinations of *Eucalyptus saligna, Syncarpia glomulifera, Angophora floribunda*, and *Eucalyptus robusta* most common. In Gosford and Wyong *Eucalyptus pilularis* tends to be the canopy dominant. On the Williams River at Port Stephens and near Minmi at Newcastle *Eucalyptus grandis* replaces *E. saligna.* In drier environment west of Wallsend at Mount Sugarloaf trees may include *Corymbia maculata, E. microcorys* and *E.acmenoides*. As alluvial valleys fan outward *E. tereticornis* becomes dominant.

The small tree stratum is typified by *Glochidion ferdinandi, Acmena smithii,, Melaleuca styphelioides, Ficus coronata, Melaleuca linariifolia, Callistemon salignus* and *Backhousia myrtifolia*. The shrub layer is floristically variable but commonly includes species *Breynia oblongifolia, Gahnia clarkei* and *Acacia irrorata subsp irrorata.* The understorey in this community also supports a moderately high diversity of climbers and twiners (11 species), the most common being *Geitonoplesium cymosum* and *Dioscorea transversa*. The moderately dense ground layer is comprised of grasses, ferns and herbs such as *Adiantum aethiopicum, Pseuderanthemum variabile, Entolasia marginata, Lomandra longifolia, Oplismenus imbecillis* and *Pratia purpurascens*.

Alluvial Tall Moist Forest represents the gradient between well -developed rainforest on alluvium and Swamp Mahogany - Paperbark Swamp Forest. Distinguishing between these map units will need to consider the variation in abundance of swamp species and mesic species.

Interstingly there is no equivalent community described or mapped in the north coast region (NPWS, 1999(a)). Further analysis may be required to establish relationships between sites north and south of the Hunter River. No community profile provided an indication of the charcteristic combination of swamp (eg. Melaleucas spp. and Ghania spp.) and mesic species which mark this assemblage. One explanation is could be that alluvial valleys remain relatively unsampled on the north coast.

Mean Species richness: 50.3 ± 13.7 (0.04 ha)

Vegetation Structure (n=23)

Stratum	Mean height (m)	Range (m)	Mean cover (%) (sd)	n
Emergent	30.80	23 - 35	11.40 (12.0)	5
Tallest	25.83	8 - 40	40.00 (16.7)	23
Mid	8.70	0 - 15	36.80 (22.7)	10
Mid 1	13.69	3 - 20	38.08 (17.9)	13
Mid 2	5.15	1 - 10	39.62 (20.8)	13
Mid 3	2.00	1 - 2	20.00	1
Lowest	1.00	0 - 1	55.70 (31.9)	23

Diagnostic plant species

Stratum	Species	Within Community Frequency	Within Community c/a	Other Communities Frequency	Other Communities c/a	Fidelity Class
Emergents	*Eucalyptus saligna*	50%	3	3%	3	positive
	Syncarpia glomulifera	38%	3	17%	2	positive
	Eucalyptus grandis	7%	4	0%	0	positive
	Angophora floribunda	26%	1	14%	2	uninformative
	Eucalyptus robusta	23%	3	2%	3	uninformative
	Eucalyptus pilularis	15%	3	4%	3	uninformative
	Eucalyptus tereticornis	11%	3	3%	2	uninformative
	Eucalyptus deanei	7%	3	4%	3	uninformative
	Eucalyptus microcorys	7%	3	1%	3	uninformative
	Eucalyptus piperita	7%	3	10%	3	uninformative
	Eucalyptus acmenoides	7%	2	2%	3	uninformative
	Eucalyptus resinifera subsp resinifera	7%	2	2%	1	uninformative
	Casuarina glauca	7%	4	2%	3	uninformative
	Corymbia maculata	7%	4	14%	3	uninformative
	Corymbia gummifera	3%	3	15%	2	uninformative
	Eucalyptus acmenoides	3%	3	3%	2	uninformative
Tallest	*Glochidion ferdinandi*	76%	2	8%	1	positive
	Acmena smithii	57%	3	5%	2	positive
	Melaleuca styphelioides	50%	3	3%	1	positive
	Ficus coronata	46%	2	2%	1	positive
	Melaleuca linariifolia	42%	2	2%	2	positive
	Backhousia myrtifolia	38%	3	8%	3	positive
	Callistemon salignus	38%	3	1%	1	positive
	Alphitonia excelsa	38%	2	4%	1	positive
	Symplocos stawellii	3%	1	0%	0	positive
	Allocasuarina torulosa	26%	1	19%	2	uninformative
	Melaleuca biconvexa	7%	3	0%	4	uninformative
	Livistona australis	3%	1	3%	1	uninformative
Lower Mid	*Gahnia clarkei*	50%	3	4%	2	positive
	Gymnostachys anceps	46%	2	5%	1	positive
	Breynia oblongifolia	76%	1	24%	1	uninformative
	Acacia irrorata subsp irrorata	65%	1	4%	1	uninformative
Lowest (<1m)	*Adiantum aethiopicum*	73%	2	11%	2	positive
	Pseuderanthemum variabile	73%	2	13%	2	positive
	Entolasia marginata	65%	2	15%	1	positive
	Lomandra longifolia	61%	2	31%	1	positive
	Oplismenus imbecillis	61%	2	11%	2	positive
	Pratia purpurascens	61%	2	26%	2	positive
	Oplismenus aemulus	53%	3	7%	2	positive
	Dichondra repens	53%	2	20%	2	positive
	Pteridium esculentum	53%	2	27%	2	positive
	Hydrocotyle laxiflora	42%	2	6%	2	positive
	Viola hederacea	42%	2	9%	2	positive
	Doodia aspera	38%	2	9%	2	positive
	Austrosteenisia blackii	3%	1	0%	0	positive

	Sparganium subglobosum	3%	1	0%	0	positive
	Youngia japonica	3%	1	0%	0	positive
	Hypolepis muelleri	30%	3	1%	2	uninformative
	Calochlaena dubia	30%	2	7%	2	uninformative
Vines and Epiphytes	*Geitonoplesium cymosum*	84%	2	12%	1	positive
	Dioscorea transversa	65%	2	5%	2	positive
	Morinda jasminoides	61%	2	6%	2	positive
	Smilax australis	57%	2	11%	2	positive
	Glycine clandestina	50%	2	25%	2	positive
	Pandorea pandorana	38%	2	21%	1	positive
	Parsonsia straminea	69%	1	8%	1	uninformative
	Stephania japonica var discolor	61%	1	7%	1	uninformative
	Cissus antarctica	42%	1	7%	1	uninformative
	Eustrephus latifolius	42%	1	19%	1	uninformative
	Sarcopetalum harveyanum	38%	1	5%	1	uninformative

Rare / endangered Species: *Melaleuca biconvexa, Syzigium paniculatum*

MU12. Hunter Valley Moist Forest

Canopy Label *: C. maculata / E. punctata*

No. Sites: 68

Structural Classification (Specht): Open Forest - Tall Open Forest

Description

Hunter Valley Moist Forest is an open forest ranging to 25 metres in height. No single species of Eucalypt dominates this map unit, although *Corymbia maculata* and *Eucalyptus punctata* were recorded at about 40% of sites. The upper mid layer is very open and often consists of *Allocasuarina torulosa* often with *Brachychiton populeneus subsp populneus*. In wetter areas *Melaleuca spp.* can occur. The lower mid layer contains both pioneer and dry rainforest species. *Sigesbeckia orientalis* and *Rapanea variabilis* are most abundant, with *Breynia oblongifolia* also appearing in most sites. A combination of herbs, *Pratia purpurascens*, *Dichondra repens*, *Plectranthus parviflorus*, ferns, *Adiantum aethiopicum*, and grasses such as *Microlaena stipoides var. stipoides* constitute the community floor.

Hunter Valley Moist Forest inhabits the transition between Map Unit 101: Hunter Valley Dry Rainforest and the drier, poorer slopes and plains of the Hunter Valley. It contains some dry rainforest species in the understorey although these are not dominant. Sites describing this community have been drawn from fragments on alluviums, sheltered shale lenses within the narabeen sandstone escarpment and basaltic intrusions and acid volcanics within the carboniferous geologies. Species diversity is noticeably higher for this community than surrounding communities.

Similar Forest Ecosystems are not described or mapped in NPWS (1999a).

Mean Species richness: 50.54± 15.6 (0.04 ha)

Vegetation Structure (n=31)

Stratum	Mean upper height (m)	Range (m)	Mean cover (%) (sd)	n
Emergent	25.00	18 - 25	7.50 (3.5)	2
Tallest	25.19	7 - 40	35.16 (11.5)	31
Mid	10.91	1 - 25	34.55 (22.0)	11
Mid 1	13.00	4 - 20	16.84 (9.9)	19
Mid 2	3.26	0 - 5	28.16 (20.7)	19
Lowest	1.00	0 - 2	54.68 (33.3)	31

Diagnostic plant species (n=68)

		Within Community		Other Communities		
Stratum	Species	Frequency	c / a	Frequency	c / a	Fidelity Class
Tallest	*Corymbia maculata*	44%	3	13%	3	positive
	Eucalyptus punctata	40%	3	25%	2	positive
	Eucalyptus siderophloia	23%	3	3%	2	uninformative
	Angophora floribunda	23%	2	14%	2	uninformative
	Eucalyptus crebra	22%	2	13%	2	uninformative
	Syncarpia glomulifera	22%	2	17%	2	uninformative
	Eucalyptus acmenoides	17%	3	2%	2	uninformative
	Eucalyptus tereticornis	13%	3	3%	2	uninformative
	Eucalyptus globoidea	13%	2	2%	2	uninformative
	Eucalyptus sparsifolia	10%	3	14%	2	uninformative
	Angophora costata	8%	2	22%	2	uninformative
	Eucalyptus deanei	5%	3	4%	3	uninformative

	Eucalyptus fibrosa	5%	3	12%	3	uninformative
	Corymbia gummifera	5%	2	16%	2	uninformative
Upper Mid	*Allocasuarina torulosa*	53%	2	18%	2	positive
	Brachychiton populneus subsp populneus	38%	1	4%	1	uninformative
	Melaleuca styphelioides	17%	1	3%	2	uninformative
Lower Mid	*Sigesbeckia orientalis*	52%	2	7%	2	positive
	Rapanea variabilis	40%	2	12%	1	positive
	Breynia oblongifolia	83%	1	23%	1	uninformative
	Maytenus silvestris	49%	1	14%	1	uninformative
	Notelaea longifolia	46%	1	11%	1	uninformative
Lowest (<1m)	*Pratia purpurascens*	77%	2	25%	2	positive
	Dichondra repens	68%	2	19%	2	positive
	Plectranthus parviflorus	62%	2	9%	1	positive
	Desmodium varians	59%	2	18%	2	positive
	Adiantum aethiopicum	55%	2	10%	2	positive
	Microlaena stipoides var stipoides	52%	2	22%	2	positive
	Plantago debilis	38%	2	6%	2	positive
	Themeda australis	38%	2	26%	2	positive
	Oplismenus aemulus	37%	2	6%	2	positive
	Entolasia marginata	35%	2	15%	1	positive
Vines and Epiphytes	*Eustrephus latifolius*	65%	2	17%	1	positive
	Geitonoplesium cymosum	56%	2	12%	1	positive
	Cayratia clematidea	47%	2	6%	1	positive
	Clematis glycinoides var glycinoides	37%	2	12%	1	positive
	Rubus parvifolius	35%	2	5%	1	positive

Rare / endangered Species: *Cynanchum elegans*

MU13. Central Hunter Riparian Forest

Canopy Label: *E. tereticornis / C. glauca / A. floribunda*

No. sites: 16

Structural Classification (Specht): Open Forest-Tall Open Forest

Description

Central Hunter Riparian Forest remains only as small heavily disturbed patches along tributaries of the Hunter Valley. The remaining areas contain some large old trees comprising *Eucalyptus tereticornis, Angophora floribinda, Eucalyptus amplifolia, and Eucalyptus camalduensis* in association with *Eucalyptus melliodora* and *E. molucanna.*

Casuarina glauca and *Allocasuarina luehmannii* often dominate the canopy on minor streams. A mid strata is generally absent. The ground cover supports a range of grasses and herbs including species such as *Cynodon dactylon, Microlaena stipoides var stipoides and Commelina cyanea.*

The REMS Study Area represents the eastern limit of this forest in the Hunter Region. Sites describing this community were located in riparian environments near Ellalong Lagoon near Cessnock. Other sites exist from outside the study area at the Singleton Army Base and at Greta. Much of it has been heavily depleted across the central to upper Hunter Valley.

No equivalent communities have been described in NPWS (1999a).

Mean Species richness: 34.25 ± 15.2 (0.04 ha)

Vegetation Structure (n=2)

Stratum	Mean upper height (m)	Range (m)	Mean cover (%) (sd)	n
Tallest	22.5	12 - 25	42.5 (24.7)	2
Mid 1	12	6 - 12	20	1
Mid 2	3	1 - 3	20	1
Lowest	1	0 - 1	52.5 (31.8)	2

Diagnostic plant species

		Within Community		Other Communities		
Stratum	Species	Frequency	c / a	c / a	Frequency	Fidelity Class
Tallest	*Casuarina glauca*	56%	4	2	2%	positive
	Eucalyptus tereticornis	37%	3	2	3%	positive
	Eucalyptus camaldulensis	6%	4	0	0%	positive
	Angophora floribunda	25%	1	2	14%	uninformative
	Eucalyptus moluccana	18%	1	2	4%	uninformative
	Eucalyptus fibrosa	12%	4	3	11%	uninformative
	Eucalyptus melliodora	12%	3	3	1%	uninformative
	Eucalyptus crebra	12%	2	2	13%	uninformative
	Eucalyptus amplifolia subsp amplifolia	6%	3	1	0%	uninformative
	Eucalyptus punctata	6%	2	2	25%	uninformative
Mid	*Allocasuarina luehmannii*	31%	4	1	1%	uninformative
Lowest (<1m)	*Cynodon dactylon*	75%	2	2	2%	positive
	Microlaena stipoides var stipoides	68%	2	2	22%	positive
	Commelina cyanea	56%	2	1	8%	positive

	Aristida vagans	37%	2	2	12%	positive
	Eragrostis leptostachya	37%	2	2	3%	positive
	Paspalidium aversum	37%	2	2	1%	positive
	Amaranthus macrocarpus var macrocarpus	6%	1	0	0%	positive
	Damasonium minus	6%	1	0	0%	positive
	Goodenia gracilis	6%	1	0	0%	positive
	Linaria pelisseriana	6%	2	0	0%	positive
	Microtis unifolia	6%	1	0	0%	positive
Vines and Epiphytes	*Lysiana exocarpi subsp tenuis*	37%	2	1	0%	positive

Rare / endangered Species: *Eucalyptus glaucina*

MU15. Coastal Foothills Spotted Gum - Ironbark Forest

Canopy Label: *C. maculata / E. umbra / E. siderophloia*

No. sites: 91

Structural Classification (Specht): Forest – Open Forest

Description

Coastal Foothills Spotted Gum - Ironbark Forest is a moderately tall open forest dominated by *Corymbia maculata* in combination with one or several ironbark species *E. siderophloia, E. paniculata* or *E.fibrosa*.. *E. acmenoides, E. umbra* and *Syncarpia glomulifera* are common associate trees. Localised abundances of canopy species vary with notable outliers including the codominance of *E.microcorys* on the Mandalong foothills behind Wyong and the dominance of *E.paniculata* and absence of *C.maculata* at Point Woolstoncraft near Lake Macquarie. The upper mid-storey is often composed of an open stratum of *Allocasuarina torulosa.* Depending on recent fire history mesic understorey elements can be present or absent Typically the shrub layer is open with species such as *Persoonia linearis, Polysicas sambucifolius, Breynia oblongifolia and Daviesia ulicifolia.* In the northern extent around Lake Macquarie *Pultenaea villosa* and *Podolobium ilicifolium* can become more prevalent. In the southern extent around Wyong the shrub layer often contains *Melaleuca nodosa*. . The ground cover is dominated by a number of common grasses including *Imperata cylindrica var major, Entolasia stricta, Themeda australis* and *Microlaena stipoides var stipoides.*

The coastal foothills from Ourimbah to Beresfield represent the length of its range. The crests and slopes of ridgelines on the northern rim of Lake Macquarie extend to coastal locations at Glenrock SRA. Outcropping of this assemblage also occur near Toronto and on Pulbah Island. At the drier extremes of its range this assemblage merges with Map Unit 17. Examples of such cross overs occur near the northern limit of the Sugarloaf range and on the western extent of the Myall Range at Quorrobolong. It is also floristically and structurally similar to Map Unit 16 Seaham Spotted Gum – Ironbark Forest.

To the north of the region this assemblage aligns to Forest Ecosystem 52 Foothills Grey Gum-Ironbark-Spotted Gum (NPWS, 1999a). Understorey features suggest a close resemblance although canopy species vary with *E. punctata* giving way to *E. propinqua* and *E. umbra* merging to *E. carnea* as northerly distance from the Hunter River increases.

Mean Species richness: 39.7 ± 6.9 (0.04 ha)

Vegetation Structure (n=1)

Stratum	Mean upper height (m)	Range (m)	Mean cover (%) (sd)	n
Tallest	20	- 20	60	1
Mid 1	10	- 10	30	1
Mid 2	2	- 2	60	1
Lowest	1	0 - 1	10	1

Diagnostic plant species

		Within Community		Other Communities		
Stratum	Species	Frequency	c / a	Frequency	c / a	Fidelity Class
Tallest	*Corymbia maculata*	82%	3	12%	2	Positive
	Eucalyptus umbra	65%	2	6%	2	Positive
	Eucalyptus siderophloia	51%	2	3%	1	Positive
	Syncarpia glomulifera	47%	1	17%	1	Uninformative
	Angophora costata	36%	1	22%	2	Uninformative
	Eucalyptus propinqua	33%	2	0%	2	Uninformative
	Eucalyptus acmenoides	31%	2	2%	2	Uninformative
	Eucalyptus punctata	31%	1	25%	2	Uninformative
	Eucalyptus fibrosa	18%	1	12%	2	Uninformative
	Eucalyptus microcorys	18%	2	1%	2	Uninformative

	Eucalyptus globoidea	16%	2	2%	1	Uninformative
	Eucalyptus paniculata subsp paniculata	13%	1	4%	1	Uninformative
Upper Mid	*Allocasuarina torulosa*	69%	1	19%	1	Uninformative
Mid	*Persoonia linearis*	64%	1	44%	1	uninformative
	Polyscias sambucifolia	56%	1	15%	1	uninformative
	Breynia oblongifolia	51%	1	24%	1	uninformative
	Daviesia ulicifolia	51%	1	10%	1	uninformative
	Melaleuca nodosa	13%	1	7%	2	uninformative
Lowest (<1m)	*Pratia purpurascens*	89%	2	25%	1	positive
	Imperata cylindrica var major	87%	2	18%	1	positive
	Entolasia stricta	84%	2	41%	2	positive
	Themeda australis	67%	2	26%	2	positive
	Pseuderanthemum variabile	64%	2	13%	1	positive
	Microlaena stipoides var stipoides	55%	2	22%	1	positive
	Pterostylis baptistii	4%	1	0%	0	positive
	Brachycome graminea	2%	1	0%	0	positive
	Pterostylis furcillata	2%	1	0%	0	positive
	Dianella caerulea	87%	1	43%	1	uninformative
	Vernonia cinerea var cinerea	71%	1	11%	1	uninformative
	Eustrephus latifolius	60%	1	18%	1	uninformative
	Lomandra longifolia	56%	1	31%	1	uninformative
	Billardiera scandens	55%	1	27%	1	uninformative
	Desmodium rhytidophyllum	55%	1	9%	1	uninformative
	Maytenus silvestris	55%	1	15%	1	uninformative
	Glycine clandestina	67%	1	24%	1	uninformative
Vines and Epiphytes	*Hardenbergia violacea*	67%	1	26%	1	uninformative

Rare / endangered Species: *Macrozamia flexuosa, Tetratheca juncea*

MU16. Seaham Spotted Gum - Ironbark Forest

Canopy Label: *C. maculata / E. crebra / E. punctata / E. fibrosa*

No. sites: 22

Structural Classification (Specht): Open Forest

Description

Seaham Spotted Gum Open Forest is a dry open forest with a grassy understorey, and occurs on Carboniferous sediments north of the Hunter River. Typically, the canopy is marked by the dominance of *Corymbia maculata* often with codominant stands of Eucalyptus *crebra, Eucalyptus punctata* and *Eucalyptus fibrosa*. *Eucalyptus acmenoides, Eucalyptus moluccana, Eucalyptus siderophloia,* and *Eucalyptus tereticornis* are other regular but not dominant associates. A sparse upper mid-storey of *Allocasuarina torulosa* is often present and *Acacia falcata, Acacia implexa, Leucopogon juniperinus, Breynia oblongifolia* and *Persoonia linearis* typify the mid-storey. Twiners such as *Glycine clandestina* and *Hardenbergia violacea* are common in this stratum. The moderately dense and diverse ground layer vegetation is characterised by the grasses *Aristida vagan*, *Cymbopogon refractus, Echinopogon ovatus, Microlaena stipoides var stipoides* and *Entolasia stricta.* Other common forest ground covers include *Pratia purpurascens, Lomandra multiflora subsp multiflora, Cheilanthes sieberi subsp sieberi, Vernonia cinerea var cinerea* and *Dianella caerulea*.

It is found on the dry slopes and ridges to the north west of Raymond Terrace. Examples are found in Wallaroo State Forest and at Glenurie Hill. It is related to Map Unit 15, which occurs on Narrabeen Sandstones and Permian sediments south of the Hunter River. Both assemblages occupy similar environments. The most notable difference between these two types is in the composition of the canopy. On Carboniferous Sediments, *Eucalyptus siderophloia* becomes a less important co-dominant and is replaced by the increasing importance of both *Eucalyptus crebra* and *Eucalyptus fibrosa*. Similarly, *Eucalyptus umbra* and *Angophora costata* are almost totally absent in this community.

Corresponding vegetation communities in the adjacent northern region are not well defined. Sites describing this assemblage fall within areas mapped as Forest Ecosystem 71 Ironbark (NPWS, 1999a) at Wallaroo State Forest. Source mapping for this area originates from SFNSW (*anon*) where Forest Type 84 Ironbark has been used to describe large areas of dry coastal forests. Broad similarities with groups of eucalypts (Spotted Gum, Ironbark, White Mahogany, Grey Boxes and Redgum) are apparent although no species information is available.

Mean Species richness: 59.2 ± 6.3 (0.04 ha)

Vegetation Structure (n=22)

Stratum	Mean upper height (m)	Range (m)	Mean cover (%) (sd)	n
Tallest	23.64	12 - 30	32.95 (8.4)	22
Mid	5	1 - 15	17.08 (11.6)	12
Mid 1	11.22	2 - 18	14.44 (6.8)	9
Mid 2	3.22	1 - 8	22.22 (16.8)	9
Mid 3	3	1 - 3	60	1
Lowest	1	0 - 1	74.09 (19.9)	22

Diagnostic plant species

		Within Community		Other Communities		
Stratum	Species	Frequency	c/a	Frequency	c/a	Fidelity Class
Tallest	*Corymbia maculata*	100%	3	13%	3	positive
	Eucalyptus crebra	45%	3	13%	2	positive
	Eucalyptus punctata	45%	2	25%	2	positive
	Eucalyptus fibrosa	40%	2	11%	3	positive
	Eucalyptus acmenoides	31%	2	2%	2	uninformative

	Eucalyptus moluccana	31%	2	4%	2	uninformative
	Eucalyptus siderophloia	31%	2	3%	2	uninformative
	Eucalyptus tereticornis	31%	2	3%	2	uninformative
Mid	*Acacia falcata*	77%	2	3%	1	positive
	Leucopogon juniperinus	81%	1	3%	1	uninformative
	Breynia oblongifolia	77%	1	24%	1	uninformative
	Persoonia linearis	63%	1	43%	1	uninformative
	Acacia implexa	59%	1	6%	1	uninformative
Lowest (<1m)	*Aristida vagans*	100%	2	12%	2	positive
	Pratia purpurascens	100%	2	26%	2	positive
	Lomandra multiflora subsp multiflora	95%	2	21%	1	positive
	Cymbopogon refractus	90%	2	11%	2	positive
	Cheilanthes sieberi subsp sieberi	86%	2	25%	2	positive
	Vernonia cinerea var cinerea	86%	2	11%	1	positive
	Dianella caerulea	81%	2	43%	1	positive
	Dichondra repens	81%	2	19%	2	positive
	Echinopogon ovatus	81%	2	9%	2	positive
	Microlaena stipoides var stipoides	81%	2	22%	2	positive
	Entolasia stricta	77%	2	42%	2	positive
	Oxalis perennans	77%	2	4%	2	positive
	Pseuderanthemum variabile	77%	2	13%	2	positive
	Themeda australis	77%	2	26%	2	positive
	Digitaria ramularis	72%	3	5%	2	positive
	Eustrephus latifolius	72%	2	18%	1	positive
	Panicum simile	72%	2	14%	2	positive
	Paspalidium distans	72%	2	5%	1	positive
	Eragrostis brownii	68%	2	6%	2	positive
	Desmodium rhytidophyllum	63%	2	9%	1	positive
	Sigesbeckia orientalis	63%	2	8%	2	positive
	Imperata cylindrica var major	63%	3	18%	2	positive
	Desmodium varians	59%	2	19%	2	positive
	Arthropodium milleflorum	54%	2	4%	1	positive
	Entolasia marginata	54%	2	15%	1	positive
	Lagenifera stipitata	54%	2	9%	1	positive
	Lepidosperma laterale	50%	2	29%	1	positive
	Oplismenus imbecillis	50%	2	12%	2	positive
	Panicum effusum	50%	2	3%	2	positive
	Dichelachne micrantha	45%	2	6%	2	positive
	Echinopogon caespitosus var caespitosus	45%	2	7%	2	positive
	Lomandra longifolia	45%	2	31%	1	positive
	Dianella tasmanica	40%	2	1%	1	positive
	Galium gaudichaudii	40%	2	1%	2	positive
	Gahnia aspera	36%	2	7%	1	positive
	Lomandra filiformis	36%	2	18%	1	positive
	Notodanthonia longifolia	36%	2	1%	2	positive
	Plectranthus parviflorus	36%	2	10%	1	positive
Vines and Epiphytes	*Glycine clandestina*	86%	2	24%	2	positive
	Hardenbergia violacea	50%	2	26%	1	positive
	Pandorea pandorana	45%	2	21%	1	positive

Rare / endangered Species: *Macrozamia flexuosa*

MU17. Lower Hunter Spotted Gum - Ironbark Forest

Canopy Label: *C. maculata / E. fibrosa / E. punctata*

No. sites: 95

Structural Classification (Specht): Woodland-Open Forest

Description

Lower Hunter Spotted Gum – Ironbark Forest is widespread throughout the central to lower Hunter Valley. *Corymbia maculata* and *Eucalyptus fibrosa* typically dominate the canopy. In localised areas *Eucalypus punctata* and/or *E. canaliculata* may occur as a dominant to codominant feature. There is a wide variety of infrequently occurring eucalypts reflecting subtle variations in substrate characteristics. These include the northern limit of *Corymbia eximia*, *Eucalyptus fergusonii sub sp. fergusonii* and species common to the coastal ranges such as *E.acmenoides*, *E. umbra* and *E.paniculata.* The understorey is marked by prickly shrubs *Daviesia ulicifolia*, *Acacia parvipinnula* and *Melaleuca nodosa*. *Melaleuca nodosa* often forms dense shrub thickets. The ground layer is very diverse but notable by the frequent occurrence of *Cheilanthes sieberi subsp sieberi*, *Entolasia stricta*, *Pomax umbellata*, *Pratia purpurascens*, *Themeda australis*, *Phyllanthus hirtellus*, and *Dianella revoluta var revoluta.*

Forests between Cessnock and Beresfield form the core of its distribution. At Beresfield this assemblage merges with Map Unit 15 Coastal Foothills Spotted Gum – Ironbark Forest where higher rainfall supports the dominance of the Grey Ironbarks *E. paniculata* and *E. siderophloia* and White Mahoganies *E. acmenoides* and *E. umbra.* A number of outliers of this assemblage can be found on the eastern escarpment of Pokolbin and Corrabare State Forests on Narabeen Sandstones.

Similar to Map Unit 18 this assemblage is characterised by stands of young regrowth eucalypts from previous timber management activities. Evidence of regular fire disturbance is also apparent across its range.

A similar forest ecosystem in the adjacent northern region is not evident in NPWS (1999a).

Mean Species richness: 40.2 ± 10 (0.04 ha)

Vegetation Structure (n=80)

Stratum	Mean height (m)	Range (m)	Mean cover (%) (sd)	N
T	21.30	8 - 30	27.63 (6.8)	80
M	4.14	0 - 8	24.39 (19.8)	44
M1	9.31	2 - 20	17.94 (13.4)	36
M2	3.03	0 - 10	22.31 (16.9)	36
L	1.03	0 - 3	38.13 (20.9)	77

Diagnostic plant species

		Within Community		Other Communities		
Stratum	Species	Frequency	c/a	Frequency	c/a	Fidelity Class
Tallest	*Corymbia maculata*	87%	3	10%	3	positive
	Eucalyptus fibrosa	73%	3	9%	2	positive
	Eucalyptus punctata	36%	2	24%	2	positive
	Eucalyptus crebra	20%	2	13%	2	uninformative
	Eucalyptus moluccana	10%	2	4%	2	uninformative
	Eucalyptus agglomerata	9%	2	3%	2	uninformative
	Eucalyptus umbra	8%	3	7%	3	uninformative
	Corymbia gummifera	8%	2	16%	2	uninformative

	Syncarpia glomulifera	7%	2	18%	2	uninformative
	Eucalyptus globoidea	7%	1	2%	2	uninformative
	Eucalyptus siderophloia	5%	2	4%	2	uninformative
	Eucalyptus paniculata subsp paniculata	4%	2	3%	2	uninformative
	Eucalyptus sparsifolia	4%	2	14%	2	uninformative
	Angophora costata	4%	1	22%	2	uninformative
	Eucalyptus acmenoides	3%	2	2%	3	uninformative
	Eucalyptus fergusonii subsp fergusonii	3%	2	0%	3	uninformative
	Eucalyptus tereticornis	3%	2	4%	2	uninformative
	Eucalyptus nubila	2%	2	1%	3	uninformative
	Corymbia eximia	2%	1	6%	2	uninformative
Mid	*Daviesia ulicifolia*	55%	2	9%	1	positive
	Acacia parvipinnula	46%	2	6%	2	positive
	Melaleuca nodosa	38%	3	6%	3	positive
	Oxylobium ellipticum	1%	1	0%	0	positive
	Daviesia leptophylla	1%	1	0%	0	positive
	Persoonia linearis	38%	1	44%	1	uninformative
	Lissanthe strigosa	34%	2	3%	1	uninformative
	Breynia oblongifolia	32%	1	24%	1	uninformative
	Pultenaea cunninghamii	22%	2	2%	2	uninformative
Lowest (<1m)	*Cheilanthes sieberi subsp sieberi*	82%	2	24%	2	positive
	Entolasia stricta	82%	2	40%	2	positive
	Pomax umbellata	73%	2	26%	1	positive
	Pratia purpurascens	67%	2	25%	2	positive
	Dianella revoluta var revoluta	65%	2	17%	1	positive
	Glycine clandestina	57%	2	23%	2	positive
	Lepidosperma laterale	55%	2	29%	1	positive
	Microlaena stipoides var stipoides	54%	2	21%	2	positive
	Themeda australis	52%	3	25%	2	positive
	Phyllanthus hirtellus	50%	2	24%	1	positive
	Vernonia cinerea var cinerea	47%	2	10%	1	positive
	Cymbopogon refractus	42%	2	10%	2	positive
	Aristida lignosa	1%	2	0%	0	positive
	Austrodanthonia induta	1%	1	0%	0	positive
	Calotis cuneata var cuneata	1%	2	0%	0	positive
	Pterostylis ophioglossa	1%	1	0%	0	positive
	Solanum papaverifolium	1%	2	0%	0	positive
	Sporobolus caroli	1%	1	0%	0	positive

Rare / endangered Species: *Macrozamia flexuosa, Persoonia pauciflora, Grevillea montana, Eucalyptus fergusonii subsp fergusonii*

MU19. Hunter Lowlands Redgum Forest

Canopy Label: *E. tereticornis / E. punctata / E. crebra/ A. floribunda / C. maculata*

No. sites: 20

Structural Classification (Specht): Open Forest

Description

Hunter Lowlands Redgum Forest is an open forest that characterises simple open depressions and drainage flats on the Permian Sediments of the Hunter Valley floor. An array of Eucalypts occurs, with the most frequently recorded being *Eucalyptus tereticornis* and *Eucalyptus punctata.* It is not uncommon that *Angophora floribunda*, *Eucalyptus crebra*, *Eucalyptus molucanna* and *Corymbia maculata* appear where the assemblage grades with the surrounding Spotted Gum-Ironbark Forests. The mid-strata are generally open with sparse shrubs of *Breynia oblongifolia*, *Leucopogon juniperinus*, *Daviesia ulicifolia,* and *Jacksonia scoparia*. More obvious is the consistent layer of grasses and herbs *Microlaena stipoides var stipoides*, *Cymbopogon refractus*, and *Echinopogon caespitosus var caespitosus*, *Cheilanthes sieberi* and *Pratia purpurascens.*

Hunter Lowland Redgum Forest extends from Muswellbrook to the Lower Hunter where it appears on gentle slopes arising from depressions. Much of its former extent has been depleted for agricultural activities.

A comparable Forest Ecosystem for the North Coast (1999a) does not easily equate with Hunter Lowlands Redgum Forest. Forest Ecosystem 47: Redgum-Apple describes a forest of similar structure and some similarity in shrub and grass species. However canopy species differ and do not reflect the frequency and abundance of those recorded in this Map Unit.

Species richness: 56.35 ± 11.6 (0.04 ha)

Vegetation Structure (n=19)

Stratum	Mean Upper height (m)	Range (m)	Mean cover (%) (sd)	n
T	24.42	10 - 30	27.11 (7.1)	19
M	5.25	1 - 10	18.75 (6.4)	8
M1	10.45	1 - 15	21.82 (14.0)	11
M2	3.09	0 - 5	28.64 (19.9)	11
L	0.95	0 - 1	59.44 (30.0)	18

Diagnostic plant species (n=20)

		Within Community		Other Communities		
Stratum	Species	Frequency	c / a	Frequency	c / a	Fidelity Class
Tallest	*Eucalyptus tereticornis*	60%	3	3%	2	positive
	Eucalyptus punctata	55%	2	25%	2	positive
	Eucalyptus crebra	50%	3	13%	2	positive
	Angophora floribunda	45%	3	14%	2	positive
	Corymbia maculata	40%	3	13%	3	positive
	Eucalyptus moluccana	20%	3	4%	2	uninformative
	Eucalyptus eugenioides	20%	1	1%	2	uninformative
	Eucalyptus globoidea	15%	3	2%	2	uninformative
	Eucalyptus fibrosa	15%	1	11%	3	uninformative
	Eucalyptus pilularis	10%	3	4%	3	uninformative
	Eucalyptus paniculata subsp paniculata	10%	2	3%	2	uninformative
	Angophora costata	5%	3	22%	2	uninformative
	Eucalyptus acmenoides	5%	3	2%	3	uninformative
	Eucalyptus amplifolia subsp amplifolia	5%	3	0%	1	uninformative

	Eucalyptus umbra	5%	3	7%	3	uninformative
	Syncarpia glomulifera	5%	3	17%	2	uninformative
Mid	*Breynia oblongifolia*	65%	2	24%	1	positive
	Leucopogon juniperinus	60%	2	4%	1	positive
	Daviesia ulicifolia	45%	2	11%	1	positive
	Persoonia linearis	40%	2	44%	1	positive
	Jacksonia scoparia	35%	2	5%	2	positive
Lowest (<1m)	*Cheilanthes sieberi subsp sieberi*	100%	2	25%	2	positive
	Microlaena stipoides var stipoides	100%	2	22%	2	positive
	Pratia purpurascens	95%	2	26%	2	positive
	Cymbopogon refractus	80%	2	11%	2	positive
	Lomandra multiflora subsp multiflora	75%	2	21%	1	positive
	Pomax umbellata	70%	2	28%	1	positive
	Dichondra repens	65%	2	20%	2	positive
	Vernonia cinerea var cinerea	65%	2	11%	1	positive
	Brunoniella australis	60%	2	7%	2	positive
	Echinopogon caespitosus var caespitosus	60%	2	7%	2	positive
	Lagenifera stipitata	55%	2	9%	1	positive
	Desmodium varians	50%	2	19%	2	positive
	Eragrostis leptostachya	50%	2	2%	2	positive
	Imperata cylindrica var major	50%	3	19%	2	positive
	Panicum simile	50%	2	14%	2	positive
	Solanum prinophyllum	50%	2	6%	1	positive
	Themeda australis	50%	2	26%	2	positive
	Digitaria parviflora	45%	2	6%	1	positive
	Entolasia stricta	45%	2	42%	2	positive
	Billardiera scandens	40%	2	27%	1	positive
	Lomandra longifolia	40%	2	31%	1	positive
	Eragrostis brownii	35%	2	7%	2	positive
	Paspalidium distans	35%	2	5%	2	positive
	Austrodanthonia monticola	5%	2	0%	0	positive
	Glycine clandestina	80%	2	24%	2	positive

Rare / endangered Species:

MU30. Coastal Plains Smoothbarked Apple Woodland

Canopy Label: *A. costata / C. gummifera / E. capitellata / E. umbra*

No. sites: 94

Structural Classification (Specht): Woodland - Open Forest

Description

Coastal Plains Smoothbarked Apple Woodland is a dry shrubby forest occurring along the coastal plain south from the Wyong Region to Medowie near Port Stephens in the north. *Angophora costata* and *Corymbia gummifera* consistently occur as dominant canopy species usually to height of between 20-25 metres. In some areas *Eucalyptus umbra* and *E.capitellata* will be dominant or co-dominant. Other noticeable variations in canopy species include the presence of *E.piperata* and *E.globoidea* in Medowie State Forest and the occasional occurrence of *C.maculata* near Wallsend to the north west of Lake Macquarie. The dry shrubby mid-story is characterised by the occurrence of *Allocasuarina littoralis*, *Banksia spinulosa*, and *Acacia myrtifolia*. These features often become well developed where the forest canopy is more open. Less commonly found in the mid-story are *Leptospermum polygalifolium, Dodonaea triquetra, Lambertia formosa*, and *Dillwynia retorta.* The ground layer is dominated by grasses such as *Entolasia stricta* and *Themeda australis.* Other common species found among the lower stratum are *Lomandra obliqua, Pteridium esculentum, Phyllanthus hirtellus*, *Imperata cylindrica var major*, and *Lepidosperma laterale*.

It is distributed across a range of sedimentary geologies from the Narabeen Group, Permian Coal Measures and Medowie sediments on low to undulating topography. Soil landscapes of Doyalson, Awaba and Medowie support typical examples of this assemblage. Evidence of frequent and/or recent fire events are apparent across its distribution in the region, as are the impacts of urban expansion.

This assemblage often merges with Map Unit 31: Coastal Plains Scribbly Gum Woodland. Floristically the map units are similar, particularly as *E.haemastoma* and *E. racemosa* occur in both. Many of the shrub species occur in both groups although the conspicuous *Banksia oblongifolia* replaces *B.spinulosa* in Map Unit 31. However, structurally Map Unit 31 tends toward an open woodland rather than forest.

Corresponding vegetation assemblages in the adjacent northern region are not well defined. Sites describing this assemblage fall within areas mapped as Forest Ecosystem 105 Smoothbarked Apple (NPWS, 1999a) at Medowie State Forest. Source mapping for this area originates from SFNSW (*anon*) where Forest Type 105 Smoothbarked Apple has been used to describe large areas of dry coastal forests. Broad similarities with groups of eucalypts (Stringybarks, Red Bloodwoods and White Mahoganies) are apparent although no species-specific information is available.

Mean Species richness: 46.7 ± 8.9 (0.04 ha)

Vegetation Structure (n=50)

Stratum	Mean Upper height (m)	Range (m)	Mean cover (%) (sd)	n
Tallest	20.52	7 - 25	32.90 (10.0)	50
Mid	4.60	1 - 10	28.87 (26.0)	15
Mid 1	7.52	2 - 15	16.15 (10.4)	33
Mid 2	2.55	0 - 6	37.00 (21.7)	33
Lowest	1	0 - 2	70.40 (21.5)	50

Diagnostic plant species

		Within Community		Other Communities		
Stratum	Species	Frequency	c/a	Frequency	c/a	Fidelity Class
Tallest	*Angophora costata*	92%	3	18%	2	positive
	Corymbia gummifera	82%	3	12%	2	positive
	Eucalyptus capitellata	46%	3	2%	2	positive

	Eucalyptus umbra	41%	3	6%	3	positive
	Eucalyptus piperita	25%	2	9%	3	uninformative
	Eucalyptus racemosa	20%	3	1%	3	uninformative
	Eucalyptus haemastoma	18%	2	4%	3	uninformative
	Eucalyptus punctata	15%	2	25%	2	uninformative
	Eucalyptus resinifera subsp resinifera	15%	2	1%	1	uninformative
	Corymbia maculata	14%	3	14%	3	uninformative
	Syncarpia glomulifera	13%	2	17%	2	uninformative
Upper Mid	*Allocasuarina littoralis*	57%	2	8%	1	positive
	Banksia spinulosa	57%	2	9%	2	positive
	Acacia myrtifolia	54%	2	4%	1	positive
	Leptospermum polygalifolium	44%	2	8%	2	positive
	Dodonaea triquetra	43%	2	11%	1	positive
	Lambertia formosa	39%	2	8%	2	positive
	Dillwynia retorta	39%	2	8%	2	positive
	Gompholobium latifolium	38%	2	8%	1	positive
	Xanthorrhoea latifolia subsp latifolia	37%	2	3%	2	positive
	Pultenaea paleacea	35%	2	1%	2	positive
	Melaleuca nodosa	10%	2	7%	3	uninformative
Lowest (<1m)	*Entolasia stricta*	97%	3	39%	2	positive
	Themeda australis	90%	3	24%	2	positive
	Lomandra obliqua	72%	2	14%	2	positive
	Pteridium esculentum	68%	2	25%	2	positive
	Imperata cylindrica var major	62%	2	17%	2	positive
	Phyllanthus hirtellus	62%	2	24%	1	positive
	Lepidosperma laterale	59%	2	28%	1	positive
	Pimelea linifolia	58%	2	15%	1	positive
	Panicum simile	48%	2	13%	2	positive
	Pratia purpurascens	38%	2	26%	2	positive
	Pseuderanthemum variabile	38%	2	13%	2	positive
	Epacris pulchella	36%	2	8%	2	positive
	Gonocarpus tetragynus	36%	2	7%	2	positive
	Aristida vagans	35%	2	12%	2	positive
	Mirbelia rubiifolia	35%	2	4%	2	positive

Rare / endangered Species: *Tetratheca juncea, Macrozamia flexuosa, and Angophora inopina*

MU35. Kurri Sand Swamp Woodland

Canopy Label: *Eucalyptus parramattensis subsp decadens/ Angophora bakeri /Melaleuca nodosa*

No. sites: 12

Structural Classification (Specht): Woodland

Description

Kurri Sand Swamp Woodland occurs on poorly drained Tertiary sand deposits that blanket Permian sediments around Kurri Kurri. The canopy is generally low and open rarely exceeding 15 metres in height and comprises *Eucalyptus parramattensis subsp decadens*, with *Angophora bakeri*, and occasionally *Eucalyptus signata* and *Eucalyptus sparsifolia*. Below this woodland canopy is a distinctive shrubby mid-storey which merges into a low heath shrub ground layer. The mid-storey is typified by *Melaleuca nodosa*, *Banksia spinulosa*, *Jacksonia scoparia, Hakea dactyloides*, *Acacia ulicifolia* and *Lambertia formosa*. The ground layer is comprised of grasses and shrubs such as *Entolasia stricta, Pimelea linifolia, Dillwynia retorta, Lissanthe strigosa* and *Melaleuca thymifolia*.

Kurri Sand Swamp Woodland extends from Cessnock in poorly drained deposits as pockets within broader Permian Sediments east to the Kurri Tomalpin area. Floristically this assemblage is closely related to Map Unit 36: Tomago Sand Swamp Woodland, however moist sedges characterise this assemblage. Elsewhere, similar species assemblages occur on Tertiary sands at the Mellong Swamps and at Agnes Banks near Penrith although different species of *E. parramattensis* occur and a different suite of Melaleuca spp. are present.

The distinctive soils underlying this community make it readily distinguishable. However mapping of this community has been difficult, as not all sand deposits have been marked on the available soil landscape maps for the region. Both its former and current estimations of distribution are likely to be underestimated.

Mean Species richness: 37 ± 13.2 (0.04 ha)

Vegetation Structure (n=12)

Stratum	Mean Upper height (m)	Range (m)	Mean cover (%) (sd)	n
Tallest	14.75	4 - 25	20.83 (8.2)	12
Mid	2.71	1 - 4	38.57 (19.5)	7
Mid 1	9.75	2 - 15	31.25 (23.9)	4
Mid 2	3.25	1 - 6	52.50 (34.3)	4
Lowest	1.17	0 - 3	35.00 (26.0)	12

Diagnostic plant species

		Within Community		Other Communities		
Stratum	**Species**	**Frequency**	**c/a**	**Frequency**	**c/a**	**Fidelity Class**
Tallest	*Eucalyptus parramattensis subsp decadens*	75%	2	0%	5	positive
	Angophora bakeri	58%	3	4%	2	positive
	Eucalyptus agglomerata	50%	1	3%	2	uninformative
	Eucalyptus fibrosa	33%	1	11%	3	uninformative
	Eucalyptus signata	16%	3	1%	3	uninformative
	Eucalyptus sparsifolia	16%	3	13%	2	uninformative
Mid	*Melaleuca nodosa*	100%	3	6%	3	positive
	Banksia spinulosa	83%	2	11%	2	positive
	Jacksonia scoparia	66%	2	5%	2	positive
	Hakea dactyloides	58%	2	12%	1	positive
	Acacia ulicifolia	50%	2	16%	1	positive
	Lambertia formosa	50%	2	9%	2	positive

	Melaleuca decora	41%	2	1%	2	positive
	Grevillea linearifolia	41%	2	1%	2	positive
	Persoonia linearis	50%	1	43%	1	uninformative
Lowest (<1m)	*Entolasia stricta*	91%	2	42%	2	positive
	Dillwynia retorta	58%	2	9%	2	positive
	Lissanthe strigosa	58%	2	4%	2	positive
	Melaleuca thymifolia	58%	2	2%	2	positive
	Pimelea linifolia	91%	1	17%	1	uninformative
	Dianella revoluta var revoluta	66%	1	19%	1	uninformative
	Phebalium squamulosum	58%	1	4%	2	uninformative
	Macrozamia flexuosa	33%	2	1%	1	uninformative

Rare / endangered Species: *Macrozamia flexuosa*, *Eucalyptus parramattensis subsp decadens*

MU37. Swamp Mahogany- Paperbark Swamp Forest

Canopy Label: *Eucalyptus robusta / Melaleuca quinquinervia/ C. glauca*

No. Sites: 29

Structural Classification (Specht): Open Forest – Closed Forest

Description

Swamp Mahogany - Paperbark Swamp Forest occurs in areas of impeded drainage near coastal swamps, lagoons and along drainage lines on alluvial flats of Quaternary sands and sediments. Structurally, this community ranges from open forest to forest with *Eucalyptus robusta* and *Melaleuca quinquenervia* forming the key diagnostic species either in combination or as monospecific stands.

There are four main variations within this group that have been identified;

- The first is a form is typified by an open forest of *Eucalyptus robusta* and *Melaleuca quinquinervia* with high abundances of *Pteridium esculentum* and *Imperata cylindrica* in the understorey. This often occurs where fire has been recent or frequent near urban environments.
- The second is a wet form where the canopy remains the same however the understorey is characterised by a high abundance of *Gahnia clarkei*. This is typical of the drier coastal plains at Wyong.
- The third is a group localised around Gosford, it contains mesic elements such as *Glochidion ferdinandii*, *Livistona australis* and also can contain *Melaleuca biconvexa* in the canopy. This is generally on alluvial sediments of the Gosford Wyong area.
- Finally the fourth is another wet form with mesic elements as the previous but with a high abundance of ferns in the lowest stratum such as *Blechnum indicum* and *Hypolepis muelleri*. This is common on the coastal sands at Belmont and at Tomago in the Port Stephens Shire.

It is not uncommon for *Casuarina glauca* and *Livistona australis* to be included in the canopy especially in areas close to estuarine fringes. Other canopy species can merge where drainage is improved however are not diagnostic for this community. This community most closely relates to Map Unit 68: Swamp Oak – Sedge Forest through similar floristic composition and Map Unit 94: Redgum- Roughbarked Apple Foreshores Forest. Where mesic elements are well developed this assemblage will merge with Map Unit 5 Alluvial Tall Moist Forest.

Similar Forest Ecosystems are not described by NPWS (1999(a)) although the assemblage is likely to be extensively though patchily distributed along the north coast of NSW. Myerscough and Carolin (1986) refer to a Swamp Forest of similar species assemblage for the Eurunderee sand mass.

Mean Species richness: 26.1 ± 6.7 (0.04 ha)

Vegetation Structure (n=21)

Stratum	Mean Upper height (m)	Range (m)	Mean cover (%) (sd)	n
Emergent	35.00	30 - 35	10	1
Tallest	21.62	10 - 35	50.95 (23.9)	21
Mid	8.43	2 - 20	34.29 (26.7)	14
Mid 1	12.71	15 - 20	33.00 (28.5)	7
Mid 2	3.29	5 - 10	40.00 (25.0)	7
Lowest	1.33	0 - 3	73.50 (30.5)	20

Diagnostic plant species

		Within Community		Other Communities		
Stratum	Species	Frequency	c / a	Frequency	c / a	Fidelity Class
Tallest	*Eucalyptus robusta*	89%	3	1%	2	positive
	Glochidion ferdinandi	68%	2	8%	1	positive

	Melaleuca quinquenervia	62%	3	1%	2	positive
	Casuarina glauca	37%	3	2%	3	positive
	Livistona australis	34%	2	3%	1	uninformative
	Melaleuca linariifolia	34%	2	2%	2	uninformative
	Angophora costata	13%	3	22%	2	uninformative
	Melaleuca biconvexa	13%	2	3%	2	uninformative
	Eucalyptus tereticornis	6%	3	3%	2	uninformative
	Eucalyptus saligna	6%	4	3%	3	uninformative
Mid	*Acacia longifolia*	37%	3	11%	1	positive
	Gahnia clarkei	75%	3	3%	2	positive
	Omalanthus populifolius	37%	1	1%	1	uninformative
	Archontophoenix cunninghamiana	3%	4	1%	1	uninformative
Lowest (<1m)	*Blechnum indicum*	55%	3	0%	1	positive
	Entolasia marginata	51%	2	15%	1	positive
	Hypolepis muelleri	44%	3	1%	2	positive
	Viola hederacea	41%	2	9%	2	positive
	Pteridium esculentum	37%	2	27%	2	positive
	Blechnum camfieldii	10%	1	0%	0	positive
	Lycopus australis	6%	3	0%	0	positive
	Atriplex cinerea	3%	1	0%	0	positive
	Baumea acuta	3%	1	0%	0	positive
	Digitaria longiflora	3%	3	0%	0	positive
	Persicaria subsessilis	3%	1	0%	0	positive
	Poa poiformis	3%	2	0%	0	positive
	Ranunculus sessiliflorus var sessiliflorus	3%	1	0%	0	positive
	Phragmites australis	27%	2	1%	2	uninformative
Vines and Epiphytes	*Parsonsia straminea*	55%	2	8%	1	positive

Rare / endangered Species: *Melaleuca biconvexa, Tetratheca juncea*

MU40. Swamp Oak - Rushland Forest

MU40a Phragmites rushland

Canopy Label: *Casuarina glauca / Melaleuca ericifolia / Baumea juncea*

No. Sites: 15

Structural Classification (Specht): Open Forest – Closed Forest

Description

Swamp Oak - Rushland Forest occurs in low-lying areas and along coastal lagoon fringes where brackish-saline groundwater or periodic inundation by saline tidal waters exerts a strong influence on the range of species present. The low forest canopy ranges from moderate to open depending on the relative abundances of *Casuarina glauca* and *Melaleuca quinquenervia*. This community is often characterised by monospecific stands of Swamp Oak. In other areas where the saline influence is less pronounced, canopy species might include *Melaleuca ericifolia, Melaleuca quinquinervia, Eucalyptus robusta* and *Eucalyptus tereticornis*. Mid-storey vegetation is sparse and often absent, although when present it is usually characterised by tall reeds and rushes (2 to 3 metres) such as *Phragmites australis* and *Cladium procerum.* The dense ground layer is characterised by salt tolerant rushes, grasses and herbs including *Baumea juncea, Juncus kraussii subsp australiensis, Sporobolus virginicus* and *Apium prostratum.* Where aerial photograph interpretation has identified open rushlands comprising Phragmites spp these have been mapped as sub unit MU40a.

Swamp Oak – Rushland Forest is widespread along lake foreshores and tributaries of the coastal plain. Examples occur on Tuggerah Lakes, Lake Macquarie and Wamberal Nature Reserve.

This community is similar structurally and floristically to Map Unit 41: Swamp Oak Sedge Forest. However, in the Estuarine Rushland-Swamp Oak Forest the understorey is characterised by salt tolerant rushes rather than freshwater sedges and herbs. Wetland communities have not been described and mapped by NPWS (1999(a)) for the north coast region.

Mean Species richness: 15.8 ± 9.2 (0.04 ha)

Vegetation Structure (n=8)

Stratum	Mean upper height (m)	Range (m)	Mean cover (%) (sd)	n
Tallest	9.57	1 - 15	61.43 (22.7)	7
Mid	2.5	1 - 3	15 (7.1)	2
Lowest	1.13	0 - 2	80.63 (26.5)	8

Diagnostic plant species

Stratum	Species	Within Community Frequency	Within Community c/a	Other Communities Frequency	Other Communities c/a	Fidelity Class
Tallest	*Casuarina glauca*	73%	5	2%	2	positive
	Melaleuca ericifolia	40%	2	0%	3	positive
	Melaleuca quinquenervia	33%	4	1%	3	uninformative
	Eucalyptus robusta	20%	1	2%	3	uninformative
	Eucalyptus tereticornis	13%	2	3%	2	uninformative
Mid	*Phragmites australis*	46%	3	1%	2	positive
	Cladium procerum	6%	1	0%	0	positive
Lowest (<1m)	*Baumea juncea*	73%	5	1%	3	positive
	Juncus kraussii subsp australiensis	66%	5	0%	1	positive

Sporobolus virginicus	40%	4	1%	3	positive
Apium prostratum var prostratum	26%	2	0%	0	positive
Apium prostratum var filiforme	13%	2	0%	0	positive
Mimulus repens	13%	3	0%	0	positive
Gratiola pedunculata	6%	2	0%	0	positive
Pratia pedunculata	6%	2	0%	0	positive
Baumea teretifolia	13%	6	0%	2	uninformative
Baumea rubiginosa	6%	6	1%	2	uninformative
Leptocarpus tenax	6%	5	2%	3	uninformative

Rare / endangered Species:

MU41. Swamp Oak Sedge Forest

Canopy Label: *Casuarina glauca / Melaleuca linariifolia*

No. sites: 7

Structural Classification (Specht): Open Forest

Description

Swamp Oak Sedge Forest occurs in low-lying areas and riparian strips along the coastal plain and alluvial flats. A small tree canopy is of a medium height (to about 20m), usually dense and characterised by *Casuarina glauca, and Melaleuca linariifolia*. A taller stratum of Eucalyptus *robusta* and occasionally *Eucalyptus tereticornis* may also be present. The key feature of this assemblage is the dense understorey of the freshwater sedge *Carex appressa*. Amongst the sedges, herbs, grasses and fern species are common. These include *Commelina cyanea, Alternanthera denticulata, Entolasia marginata, Hypolepis muelleri, Gahnia clarkei* and *Ranunculus inundatus*.

This community is closely related to 40: Swamp Oak-Rushland Forest through a sharing of high abundance of *Casuarina glauca.* However Map Unit 40 is typically found fringing estuarine environments where brackish-saline sedges and rushes are dominant.

No similar community is described in NPWS (1999(a)). Only a generic Swamp Oak community is described here. On the Cumberland Plain in Sydney NPWS (2000) describe a Riparian Woodland which exhibits a similar habitat and floristic composition although sites describing this community are few.

Mean Species richness: 23.3 ± 10.1 (0.04 ha)

Vegetation Structure (n=3)

Stratum	Mean Upper height (m)	Range (m)	Mean cover (%) (sd)	n
Tallest	21.33	15 - 24	33.33 (2.9)	3
Mid	15.00	10 - 15	20.00	1
Mid 1	14.00	10 - 14	20.00	1
Mid 2	3.00	2 - 3	10.00	1
Lowest	1.00	0 - 1	100.00 (0.0)	3

Diagnostic plant species

		Within Community		Other Communities		
Stratum	**Species**	**Frequency**	**c / a**	**Frequency**	**c / a**	**Fidelity Class**
Tallest	*Eucalyptus robusta*	28%	4	2%	3	uninformative
	Eucalyptus tereticornis	14%	4	3%	2	uninformative
Mid	*Casuarina glauca*	71%	4	2%	3	positive
	Melaleuca linariifolia	42%	4	3%	2	positive
	Melaleuca ericifolia	28%	6	1%	2	uninformative
	Melaleuca nodosa	14%	3	7%	3	uninformative
	Melaleuca styphelioides	14%	3	3%	2	uninformative
	Melaleuca quinquenervia	14%	1	1%	3	uninformative
Lowest (<1m)	*Carex appressa*	85%	5	2%	1	positive
	Commelina cyanea	85%	2	8%	1	positive
	Alternanthera denticulata	71%	3	1%	1	positive

	Entolasia marginata	57%	3	15%	1	positive
	Hypolepis muelleri	57%	6	1%	2	positive
	Gahnia clarkei	42%	2	4%	2	positive
	Ranunculus inundatus	42%	2	0%	2	positive
	Enydra fluctuans	14%	1	0%	0	positive
	Persicaria lapathifolia	14%	1	0%	0	positive
	Juncus usitatus	28%	3	1%	1	uninformative
	Persicaria decipiens	28%	3	1%	2	uninformative
	Persicaria hydropiper	28%	2	0%	1	uninformative
Vines and Epiphytes	*Parsonsia straminea*	57%	2	8%	1	positive

Rare / endangered Species: *Persicaria elatior*

MU46. Freshwater Wetland Complex

Canopy Label: *Ludwigia peploides subsp montevidensis / Paspalum distichum / Eleocharis sphacelata / Juncus usitatus*

No. Sites: 9

Structural Classification (Specht): Reedland – Sedgeland – Woodland

Description

Freshwater Wetland Complex occurs in low-lying areas permanently or periodically inundated by fresh water. Structurally, this community can range from open water with aquatic herbs, through closed sedgeland, to low woodland with a sedge understorey in areas only periodically inundated or on swamp margins. The community is very variable with different individual or paired species almost completely dominating depending on localised conditions. The most characteristic feature of this community is the very dense understorey dominated by rushes, sedges and aquatic plants. These can include *Ludwigia peploides subsp montevidensis*, *Eleocharis sphacelata*, *Paspalum distichum*, *Juncus usitatus*, *Typha orientalis*, *Persicaria decipiens* and *Azolla pinnata*. Along swamp margins the improved drainage enables emergent trees to merge with the sedge layer. Where this is the case the most common species found are *Melaleuca styphelioides*, *Casuarina glauca*, *Melaleuca linariifolia* and occasionally *Eucalyptus tereticornis*. The high variability of this community as a response to many varied localised conditions in both natural and man made wetlands means more data would be required to further refine this community.

No attempt has been made to relate this complex to communities outside the region.

Mean Species richness: 11.7 ± 5.8 (0.04 ha)

Vegetation Structure (n=6)

Stratum	Mean upper height (m)	Range (m)	Mean cover (%) (sd)	n
Emergent	8	5 - 8	5	1
Tallest	6.5	0 - 12	46.67 (44.2)	6
Lowest	1	0 - 1	96.67 (2.9)	3

Diagnostic plant species

		Within Community		Other Communities		
Stratum	**Species**	**Frequency**	**c / a**	**Frequency**	**c / a**	**Fidelity Class**
Tallest	*Melaleuca styphelioides*	33%	3	3%	2	uninformative
	Casuarina glauca	33%	1	2%	3	uninformative
	Melaleuca linariifolia	33%	1	3%	2	uninformative
	Eucalyptus tereticornis	11%	1	3%	2	uninformative
Lowest (<1m)	*Ludwigia peploides subsp montevidensis*	55%	2	0%	0	positive
	Paspalum distichum	55%	3	0%	2	positive
	Eleocharis sphacelata	44%	3	0%	2	positive
	Juncus usitatus	44%	2	1%	1	positive
	Persicaria decipiens	44%	2	0%	2	positive
	Azolla pinnata	33%	3	0%	0	positive
	Cyperus exaltatus	22%	3	0%	0	positive
	Alisma plantago-aquatica	11%	2	0%	0	positive
	Cyperus odoratus	11%	1	0%	0	positive
	Maundia triglochinoides	11%	5	0%	0	positive
	Myriophyllum crispatum	11%	2	0%	0	positive
	Typha orientalis	22%	5	0%	1	uninformative
	Baumea articulata	11%	6	0%	2	uninformative

Rare/endangered Species:

MU47. Mangrove Estuarine Complex

MU47a Saltmarsh

Canopy Label: *Avicennia marina subsp australasica / Sarcocornia quinqueflora subsp quinqueflora / Aegiceras corniculatum*

No. Sites: 12

Structural Classification (Specht): Low Open Forest – Low Woodland Herbland

Description

Mangrove Estuarine Complex occurs on intertidal mudflats, saltwater estuaries and along tidal river edges. It encompasses a broad range of structural forms from bare mud or saltmarshes on mudflats, to low closed Mangrove forest. Bare mudflats are found in areas of recently deposited or reworked tertiary sediment, and are characterised by an almost total absence of vascular plants. Saltmarsh occurs on mudflats often in conjunction with Mangroves, and tolerates higher saline conditions than Mangroves. This variation is often found in landward depressions behind Mangroves where still shallow water and high evaporation rates result in increased relative salt content. Saltmarsh is primarily characterised by *Sarcocornia quinqueflora subsp quinqueflora*, however in less saline conditions *Zoysia macrantha, Sporobolus virginicus, Triglochin striatum, Suaeda australis, Samolus repens* and *Juncus kraussii subsp australiensis* commonly occur. Where Mangroves occur, they may range structurally from scattered small trees over saltmarsh to low closed forest. There are two often co-occuring species of Mangrove in the study area: *Avicennia marina subsp australasica* and *Aegiceras corniculatum. Aegiceras corniculatum* prefers less saline conditions and therefore may extend further up tidal rivers.

Mean Species richness: 3.7 ± 1.9 (0.04 ha)

Vegetation Structure (n=9)

Stratum	Mean upper height (m)	Range (m)	Mean cover (%) (sd)	n
Tallest	5.11	0 - 10	48.89 (29.5)	9
Lowest	1.33	0 - 3	73.33 (27.3)	6

Diagnostic plant species

		Within Community		Other Communities		
Stratum	**Species**	**Frequency**	**c/a**	**Frequency**	**c/a**	**Fidelity Class**
Tallest	*Avicennia marina subsp australasica*	83%	5	0%	2	positive
	Aegiceras corniculatum	25%	2	0%	1	uninformative
Lowest (<1m)	*Sarcocornia quinqueflora subsp quinqueflora*	66%	5	0%	3	positive
	Sporobolus virginicus	66%	4	1%	2	positive
	Zoysia macrantha	25%	4	0%	3	uninformative
	Triglochin striatum	25%	2	0%	2	uninformative
	Suaeda australis	25%	1	0%	1	uninformative
	Samolus repens	16%	2	0%	1	uninformative
	Juncus kraussii subsp australiensis	16%	1	1%	4	uninformative

Rare/endangered Species:

Appendix 6

Fauna Species of Conservation Significance Recorded in the Mailtland Local Government Area

Status	Family	Scientific Name	Common Name
E	Ciconiidae	*Ephippiorhynchus asiaticus*	Black-necked Stork
E	Accipitridae	*Erythrotriorchis radiatus*	Red Goshawk
E	Hylidae	*Litoria aurea*	Green and Golden Bell Frog
E	Laridae	*Stema albifrons*	Little Tem
E	Meliphagidae	*Xanthomyza phrygia*	Regent Honeyeater
V	Anseranatidae	*Anseranas semipalmata*	Magpie Goose
V	Ardeidae	*Botaurus poiciloptilus*	Australasian Bittem
V	Cacatuidae	*Calyptorhynchus lathami*	Glossy Black-Cockatoo
V	Vespertilionidae	*Chalinolobus dwyeri*	Large Pied Bat
V	Dasyuridae	*Dasyurus maculatus*	Tiger Quoll
V	Falconidae	*Falco hypoleucos*	Grey Falcon
V	Vespertilionidae	*Falsistrellus tasmaniensis*	Great Pipistrelle
V	Meliphagidae	*Grantiella picta*	Painted Honeyeater
V	Accipitridae	*Hamirostra melanosternon*	Black-breasted Buzzard
V	Jacanidae	*Irediparra gallinacea*	Comb-crested Jacana
V	Psittacidae	*Lathamus discolor*	Swift Parrot
V	Vespertilionidae	*Miniopterus australis*	Little Bent- wing Bat
V	Vespertilionidae	*Miniopterus schreibersii*	Common Bent-wing Bat
V	Molossidae	*Mormopterus norfolkensis*	Eastern Little Mastiff-bat
V	Vespertilionidae	*Myotis adversus*	Large-footed Myotis
V	Psittacidae	*Neophema pulchella*	Turquoise Parrot
V	Strigidae	*Ninox strenua*	Powerful Owl
V	Vespertilionidae	*Scoteanax rueppellii*	Greater Broad- nosed Bat
V	Anatidae	*Stictonetta naevosa*	Freckled Duck
V	Tytonidae	*Tyto novaehollandiae*	Masked Owl

(Derived from a liturature review conducted as part of the Woodberry, Morpeth-Tenambit)

Catchment Management Plan, 1998)

E = Endangered

V = Vulnerable

As per the Threatened Species Conservation Act

Appendix 7

Mammals Known to Occur in the Maitland LGA with a Secure Conservation Status Given Current Vegetation Levels.

Family	Scientific Name	Common Name
Acrobatidae	*Acrobates pygmaeus*	Feathertail Glider
Canidae	*Canis familiaris*	Dingo and Dog feral
Dasyuridae	*Antechinus stuartii*	Brown Antechinus
Macropodidae	*Macropus robustus*	Common Wallaroo
	Macropus rufogriseus	Red-necked Wallaby
	Wallabia bicolor	Swamp Wallaby
Molossidae	*Monnopterus loriae*	Little Freetail Bat
	Mormopterus planiceps	Little Mastiff-bat
	Ayclinomus australis	White-striped Mastiff-bat
Muridae	*RattusJuscipes*	Bush Rat
	Rattus lutreolus	Swamp Rat
	Rattus sordidus	Canefield Rat
Peramelidae	*Perameles nasuta*	Long-nosed Bandicoot
Pseudocheiridae	*Petauroides volans*	Greater Glider
Petauridae	*Petaurus breviceps*	Sugar Glider
Pseudocheiridae	*Pseudocheirus peregrinus*	Common Ringtail Possum
Phalangeridae	*Trichosurus vulpecula*	Common Brushtail Possum
Rhinolophidae	*Rhinolophus megaphyllus*	Eastern Horseshoe-bat
Tachyglossidae	*Tachyglossus aculeatus*	Short-beaked Echidna
	Chalinolobus gouldii	Gould's Wattled Bat
	Chalinolobus morio	Chocolate Wattled Bat
Vespertilionidae	*Nyctophilus geoffroyi*	Lesser Long-eared Bat
	Nyctophilus gouldi	Gould's Long-eared Bat
	Scotorepens balstoni	Western Broad-nosed Bat
	Scotorepens orion	Eastern Broad-nosed Bat
	Vespadelus regulus	King River Eptesicus
	Vespadelus vulturnus	Little Forest Eptesicus

Appendix 8

Bird Species Known to Occur in the Maitland LGA with a Secure Conservation Status Given Current Habitat Extent.

Family	Scientific Name	Common Name
Accipitridae	*Accipiter fasciatus*	Brown Goshawk
	Aquila audax	Wedge-tailed Eagle
	Circus approximans	Swamp Harrier
	Elanus axillaris	Black-shouldered Kite
	Raliastur sphenurus	Whistling Kite
Aegothelidae	*Aegotheles cristatus*	Australian Owlet-nightjar
Anatidae	*Anas castanea*	Chestnut Teal
	Anas gracilis	Grey Teal
	Anas superciliosa	Pacific Black Duck
	Aythya australis	Hardhead
	Biziura lobata	Musk Duck
	Chenonettajubata	Australian Wood Duck
	Cygnus atratus	Black Swan
	Dendrocygna arcuata	Wandering Whistling-Duck
	Dendrocygna eytoni	Plumed Whistling-Duck
	Malacorhynchusmembranaceus	Pink-eared Duck
Anhingidae	*Anhinga melanogaster*	Darter
Ardeidae	*Ardea intermedia*	Intermediate Egret
	Ardeapacifica	White-necked Heron
	Egretta garzetta	Little Egret
	Egretta novaehollandiae	White-faced Heron
	Lycticorax caledonicus	Nankeen Night Heron
Artamidae	*Artamus cyanopterus*	Dusky Woodswallow
	Artamus leucorynchus	White-breastedWoodswallow
	Cracticus nigrogularis	Pied Butcherbird
	Cracticus torquatus	Grey Butcherbird
	Gymnorhina tibicen	Australian Magpie
	Strepera graculina	Pied Currawong
Cacatuidae	*Cacatua galerita*	Sulphur-crested Cockatoo
	Cacatua roseicapilla	Galah
	Nymphicus hollandicus	Cockatiel
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo Shrike
	Coracina tenuirostris	Cicadabird
	Lalage sueurii	White-winged Triller
Caprimulgidae	*Eurostopodus mystacalis*	White-throated Nightjar
Charadriiidae	*Elesyornis melanops*	Black-fronted Dotterel
	Vanellus miles	Masked Lapwing
	Vanellus tripolor	Banded Lapwing

Cinclosomatidae	*Cinclosoma punctatum*	Spotted Quail-thrush
	Psophodes olivaceus	Eastern Whipbird
Climacteridae	*Climacteris picumnus*	Brown Treecreeper
	Cormobates leucophaeus	White-throated Treecreeper
Columbidae	*Chalcophaps indica*	Emerald Dove
	Geopelia humeralis	Bar-shouldered Dove
	Geopelia striata	Peaceful Dove
	Leucosarcia melanoleuca	Wonga Pigeon
	Ocyphaps lophotes	Crested Pigeon
Coraciidae	*Eurystomus orientalis*	Dollarbird
Corvidae	*Corvus coronoides*	Australian Raven
Cuculidae	*Cacomantisflabelliformis*	Fan-tailed Cuckoo
	Scythrops novaehollandiae	Channel-billed Cuckoo
Dicaeidae	*Dicaeum hirundinaceum*	Mistletoebird
Dicruridae	*Dicrurus bracteatus*	Spangled Drongo
Iconidae	*Grallina cyanoleuca*	Magpie-lark
	Monarcha melanopsis	Black-faced Monarch
	Myiagra rubecula	Leaden Flycatcher
	Rhipidura fuliginosa	Grey Fantail
	Rhipidura leucophrys	Willie Wagtail
	Rhipidura ruffirons	Rufous Fantail
	Falco, berigora	Brown Falcon
	Falco, cenchroides	Nankeen Kestrel
	Falco longipennis	Australian Hobby
	Falco peregrinus	Peregrine Falcon
Halcyonidae	*Dacelo novaeguineae*	Laughing Kookaburra
	Todiramphus macleayii	Forest Kingfisher
	Todiramphus pyrrhopygia	Red-backed Kingfisher
	Todiramphus sanctus	Sacred Kingfisher
Hirundinidae	*Hirundo ariel*	Fairy Martin
	Hirundo neoxena	Welcome Swallow
	Hirundo nigricans	Tree Martin
Laridae	*Chlidonias hybridus*	Whiskered Tern
	Larus novaehollandiae	Silver Gull
Maluridae	*Malurus lamberti*	Variegated Fairy-wren
Meliphagidae	*Acanthorhynchus tenuirostris*	Eastern Spinebill
	Lichenostomus chrysops	Yellow-faced Honeyeater
	LichenostomusJuscus	Fuscous Honeyeater
	Lichenostomus melanops	Yellow-tufted Honeyeater
	Lichenostomuspenicillatus	White-plumed Honeyeater
	Manorina melanocephala	Noisy Miner
	Manorina melanophrys	Bell Miner
	Meliphaga lewinii	Lewin's Honeyeater
	Melithreptus brevirostris	Brown-headed Honeyeater

	Melithreptus lunatus	White-naped Honeyeater
	Myzomela sanguinolenta	Scarlet Honeyeater
	Philemon corniculatus	Noisy Friarbird
	Phylidopyris nigra	White-cheeked Honeyeater
Meropidae	*Merops ornatus*	Rainbow Bee-eater
Motacillidae	*Anthus novaeseelandiae*	Richard's Pipit
Neosittidae	*Daphoenositta chrysoptera*	Varied Sittella
Oriolidae	*Oriolus sagittatus*	Olive-backed Oriole
	Colluricincla harmonica	Grey Shrike-thrush
Pachycephalidae	*Falcunculusfrontatus*	Crested Shrike-tit
	Pachycephala pectoralis	Golden Whistler
	Pachycephala rtifiventris	Rufous Whistler
	Acanthiza chrysorrhoa	Yellow-rumped Thombill
	Acanthiza lineata	Striated Thombill
	Acanthiza nana	Yellow Thombill
	Acanthiza pusilla	Brown Thombill
	Acanthiza reguloides	Buff-rumped Thombill
Pardalotidae	*Chthonicola sagittata*	Speckled Warbler
	Gerygone olivacea	White-throated Gerygone
	Pardalotus punctatus	Spotted Pardalote
	Pardalotus striatus	Striated Pardalote
	Sericornisfrontalis	White-browed Scrubwren
	Smicrornis brevirostris	Weebill
	Lonchura castaneothorax	Chestnut-breasted Mannikin
Passeridae	*Neochmia temporalis*	Red-browed Finch
	Taeniopygia bichenovii	Double-barred Finch
	Taeniopygia guttata	Zebra Finch
Pelecanidae	*Pelecanus conspicillatus*	Australian Pelican
	Eopsaltria australis	Eastern Yellow Robin
Petroicidae	*Microecafascinans*	Jacky Winter
	Petroica multicolor	Scarlet Robin
	Petroica rosea	Rose Robin
	Phalacrocorax carbo	Great Cormorant
Phalacrocoracidae	*Phalacrocorax melanoleucos*	Little Pied Cormorant
	Phalacrocorax varius	Pied Cormorant
Podargidae	*Podargus strigoides*	Tawny Frogmouth
Podicipedidae	*Poliocephalus poliocephalus*	Hoary-headed Grebe
	Tachybaptus novaehollandiae	Australasian Grebe
Pomatostomidae	*Pomatostomus temporalis*	Grey-crowned Babbler
Psittacidae	*Alisterus scapularis*	Australian King Parrot
	Glossopsitta pusilla	Little Lorikeet
	Platycercus elegans	Crimson Rosella
	Platycercus eximius	Eastern Rosella
	Psephotus haematonotus	Red-rurnped Parrot

	Trichoglossus chlorolepidotus	Scaly-breasted Lorikeet
	Trichoglossus haematodus	Rainbow Lorikeet
	Fulica atra	Eurasian Coot
Rallidae	*Gallinula tenebrosa*	Dusky Moorhen
	Porphyrio porphyrio	Purple Swamphen
Recurvirostridae	*Himantopus himantopus*	Black-winged Stilt
Strigidae	*Ninox novaeseelandiae*	Southern Boobook
	Acrocephalus stentoreus	Clamorous Reed-Warbler
Sylviidae	*Cincloramphus cruralis*	Brown Songlark
	Cisticola exilis	Golden-headed Cisticola
	Megalurus gramineus	Little Grassbird
	Platalea flavipes	Yellow-billed Spoonbill
Threskiornithidae	*Platalea regia*	Royal Spoonbill
	Threskiornis molucca	Australian White Ibis
	Threskiornis spinicollis	Straw-necked Ibis
Tytonidae	*Tyto alba*	Barn Owl
Zosteropidae	Zosterops lateralis	Silvereye

(Derived from a literature review conducted as part of the Woodberry, Morpeth-Tenambit Catchment Management Plan, 1998)

Appendix 9

Reptiles and Amphibians Known to Occur in the Maitland LGA with a Secure Conservation Status Given Current Habitat Extent.

Group	Family	Scientific Name	Common Name
Amphibian	*Hylidae*	*Litoria dentata*	Bleating Tree Frog
		Litoriajallax	Eastern Dwarf Tree Frog
		Litoria lesueuri	Leseur's Frog
		Litoriaperonii	Peron's Tree Frog
	Myobatrachidae	Crinia signifera	Common Eastern Froglet
		Limnodynastes ornatus	Ornate Burrowing Frog
		Limnodynastes peronii	Brown-striped Frog
		Limnodynastes tasmaniensis	Spotted Grass Frog
		Pseudophryne coriacea	Red-backed Toadlet
Reptile	Agamidae	Amphibolurus muricatus	Jacky Lizard
		Physignathus lesueurii	Eastern Water Dragon
		Pogona barbata	Bearded Dragon
	Chelidae	*Chelodina longicollis*	Long-necked Tortoise
	Elapidae	*Furina diadema*	Red-naped Snake
		Pseudechisporphyriacus	Red-bellied Black Snake
		Gekkonidae Diplodactylus vittatus	Wood Gecko
	Scincidae	*Carlia tetradactyla*	No common name
		Ctenotus taeniolatus	Copper-tailed Skink
		Eulamprus quoyii	Eastern Water Skink
		Lampropholis delicata	No common name
		Saiphos equalis	Three-toed Skink
		Tiliqua scincoides	Eastern Bluetongue

(Derived from a literature review conducted as part of the Woodberry, Morpeth-Tenambit Catchment Management Plan, 1998)

Appendix 10

Introduced Animal Species Known to Occur in the Maitland LGA.

Group	Family	Scientific Name	Common Name
Mammal	Bovidae	*Bos taurus*	Cattle feral
	Canidae	*Vulpes vulpes*	Fox
		Canis familiaris familiaris	Feral Dog
	Equidae	*Equus caballus*	Horse feral
	Felidae	*Felis catus*	Cat feral
	Leporidae	*Lepus capensis*	Brown Hare
		Oryctolagus cuniculus	Rabbit
	Muridae	*Mus musculus*	House Mouse
		Rattus norvegicus	Brown Rat
		Rattus rattus	Black Rat
	Suidae	*Sus scrofa*	Pig feral
Bird	unkown	*Callipepla californica*	California Quail
	Columbidae	*Columba livia*	Rock Dove
		Streptopelia chinensis	Spotted Turtle-Dove
	Fringillidae	*Carduelis carduelis*	European Goldfinch
	Muscicapidae	*Turdus merula*	Common Blackbird
	Passeridae	*Passer domesticus*	House Sparrow
	Tycnonotidae	*Pycnonotus jocosus*	Red-whiskered Bulbul
	Sturnidae	*Acridotheres tristis*	Common Mynah
		Sturnus vulgaris	Common Starling
	Passeridae	*Carduelis carduelis*	European Goldfinch

(Derived from a literature review conducted as part of the Woodberry, Morpeth-Tenambit Catchment Management Plan, 1998)

Appendix 11
Plant List for the Maitland LGA
(LHCCREMS, 2000)

Family	Full Display Name	Common Name
Acanthaceae	*Brunoniella australis*	Blue Trumpet
	Brunoniella pumilio	Dwarf Blue Trumpet
	Pseuderanthemum variabile	Pastel Flower
Adiantaceae	*Adiantum aethiopicum*	Common Maidenhair
	Adiantum hispidulum	Rough Maidenhair
	Cheilanthes distans	Bristly Cloak Fern
	Cheilanthes sieberi subsp sieberi	
	Pellaea falcata var falcata	
	Pellaea falcata var nana	
	Pellaea paradoxa	
Amaranthaceae	*Alternanthera denticulata*	Lesser Joyweed
Anthericaceae	*Arthropodium*	
	Arthropodium milleflorum	Vanilla Lily
	Arthropodium species B	
	Caesia parviflora	Pale Grass-lily
	Laxmannia gracilis	
Apiaceae	*Centella asiatica*	Pennywort
	Hydrocotyle	
	Hydrocotyle laxiflora	Stinking Pennywort
	Hydrocotyle peduncularis	
	Platysace ericoides	
Apocynaceae	*Melodinus australis*	Southern Melodinus
	Parsonsia lanceolata	
	Parsonsia straminea	Common Silkpod
	Parsonsia velutina	
Araceae	*Gymnostachys anceps*	Settler's Flax
Araliaceae	*Polyscias sambucifolia*	Elderberry Panax
Asclepiadaceae	*Gomphocarpus fruticosus*	Narrow-leaved Cotton Bush
	Tylophora barbata	Bearded Tylophora
Asparagaceae	*Asparagus officinalis*	Asparagus
	Protasparagus	
Aspleniaceae	*Asplenium flabellifolium*	Necklace Fern
Asteraceae	*Aster subulatus**	Wild Aster
	*Bidens pilosa**	Cobbler's Pegs
	*Cassinia cunninghamii**	
	*Centaurea calcitrapa**	Star Thistle
	Chrysocephalum apiculatum	Common Everlasting
	*Cirsium vulgare**	Spear Thistle
	*Conyza**	
	*Conyza albida**	Tall Fleabane

	*Conyza bonariensis**	Flaxleaf Fleabane
	*Delairea odorata**	Cape Ivy
	*Eclipta platyglossa**	
	*Epaltes australis**	Spreading Nut-heads
	*Euchiton involucratus**	Star Cudweed
	Euchiton sphaericus	
	Facelis retusa	
	Gamochaeta americana	
	*Glossogyne tannensis**	Cobbler's Tack
	Gnaphalium	
	*Hypochaeris radicata**	Catsear
	Lagenifera stipitata	Blue Bottle-daisy
	Ozothamnus diosmifolius	White Dogwood
	*Senecio madagascariensis**	Fireweed
	Sigesbeckia orientalis	
	*Sonchus oleraceus**	Common Sowthistle
	*Vernonia cinerea**	
	Vittadinia cuneata var cuneata forma minor	
Basellaceae	*Anredera cordifolia**	Madeira Vine
Bignoniaceae	*Pandorea pandorana*	Wonga Wonga Vine
	*Tecoma capensis**	Cape Honeysuckle
Blechnaceae	*Doodia aspera*	
	Doodia media	
Brassicaceae	*Lepidium*	
Cactaceae	*Opuntia stricta var stricta**	Common Prickly Pear
Campanulaceae	*Wahlenbergia*	
	Wahlenbergia gracilis	Sprawling or Australian Bluebell
Capparaceae	*Capparis arborea*	
Casuarinaceae	*Allocasuarina luehmannii*	Bulloak
	Allocasuarina torulosa	Forest Oak
Celastraceae	*Cassine australis var australis*	
	Celastrus australis	
	Maytenus silvestris	Narrow-leaved Orangebark
Chenopodiaceae	*Einadia hastata*	Berry Saltbush
	*Einadia trigonos**	Fishweed
Clusiaceae	*Hypericum gramineum**	Small St John's Wort
Commelinaceae	*Aneilema acuminatum*	
	Commelina cyanea	
	Murdannia graminea	
Convolvulaceae	*Convolvulus erubescens*	
	Dichondra repens	Kidney Weed
	Dichondra sp.A	
	Polymeria calycina	
Cunoniaceae	*Aphanopetalum resinosum*	Gum Vine
Cyperaceae	*Carex*	
	Carex appressa	

	Carex longebrachiata	Bergalia Tussock
	Cyperus	
	Cyperus brevifolius	
	Cyperus laevis	
	Cyperus rotundus	Nutgrass
	Cyperus sanguinolentus	
	Cyperus tetraphyllus	
	Fimbristylis	
	Fimbristylis dichotoma	
	Fimbristylis ferruginea	
	Gahnia aspera	
	Gahnia clarkei	
	Lepidosperma laterale	
	Ptilothrix deusta	
Dennstaedtiaceae	*Hypolepis muelleri*	Harsh Ground Fern
	Pteridium esculentum	Bracken
Dicksoniaceae	*Calochlaena dubia*	Common Ground Fern
Dilleniaceae	*Hibbertia*	
	Hibbertia aspera	
	Hibbertia empetrifolia	
	Hibbertia obtusifolia	
	Hibbertia pedunculata	
	Hibbertia scandens	Climbing Guinea Flower
Dioscoreaceae	*Dioscorea transversa*	Native Yam
Elaeocarpaceae	*Elaeocarpus obovatus*	Hard Quandong
Epacridaceae	*Leucopogon juniperinus*	
	Lissanthe strigosa	Peach Heath
Euphorbiaceae	*Alchornea ilicifolia*	Native Holly
	Baloghia inophylla	Brush Bloodwood
	Breynia oblongifolia	Coffee Bush
	Claoxylon australe	Brittlewood
	Croton insularis	Silver Croton
	Glochidion ferdinandi	Cheese Tree
	Mallotus philippensis	Red Kamala
	Phyllanthus	
	Poranthera corymbosa	
	Poranthera microphylla	
Fabaceae (Caesalpinioideae)	*Senna**	
Fabaceae (Faboideae)	*Bossiaea scortechinii*	
	Chorizema parviflorum	Eastern Flame Pea
	Daviesia corymbosa	
	Daviesia squarrosa	
	Daviesia ulicifolia	Gorse Bitter Pea
	Desmodium brachypodum	Large Tick-trefoil
	Desmodium rhytidophyllum	
	Desmodium varians	Slender Tick-trefoil
	Dillwynia retorta	

	Glycine clandestina	
	Glycine microphylla	
	Glycine sp.A	
	Glycine sp.A	
	Glycine tabacina	
	Gompholobium uncinatum	Red Wedge Pea
	Hardenbergia violacea	False Sarsaparilla
	Indigofera australis	
	Kennedia	
	Kennedia rubicunda	Red Kennedy Pea
	Podolobium scandens	Netted Shaggy Pea
	Pultenaea cunninghamii	
	Zornia dyctiocarpa var dyctiocarpa	Zornia
Fabaceae (Mimosoideae)	*Acacia elongata var elongata*	
	Acacia elongata var elongata	
	Acacia falcata	
	Acacia fimbriata	Fringed Wattle
	Acacia implexa	Hickory Wattle
	Acacia irrorata subsp irrorata	
	Acacia parramattensis	
	Acacia parvipinnula	Silver-stemmed Wattle
	Acacia parvipinnula	Silver-stemmed Wattle
	Acacia ulicifolia	Prickly Moses
	Pararchidendron pruinosum	
Flacourtiaceae	*Scolopia braunii*	Flintwood
Geraniaceae	*Geranium homeanum*	
	Geranium solanderi	Native Geranium
Goodeniaceae	*Goodenia hederacea subsp hederacea*	
	Goodenia heterophylla	
	Goodenia rotundifolia	
Haloragaceae	*Gonocarpus tetragynus*	
Hypoxidaceae	*Hypoxis hygrometrica var hygrometrica*	
Juncaceae	*Juncus usitatus*	
Lamiaceae	*Ajuga australis*	Austral Bugle
	Plectranthus	
	Plectranthus graveolens	
	Plectranthus parviflorus	
Lauraceae	*Cassytha glabella forma glabella*	
	Cassytha pubescens	
	*Cinnamomum camphora**	Camphor Laurel
	Cryptocarya glaucescens	Jackwood
Lobeliaceae	*Pratia purpurascens*	Whiteroot
Loganiaceae	*Logania albiflora*	
Lomandraceae	*Lomandra*	
	Lomandra filiformis subsp filiformis	
	Lomandra glauca	Pale Mat-rush
	Lomandra longifolia	Spiny-headed Mat-rush

	Lomandra multiflora subsp multiflora	
	Lomandra obliqua	
Luzuriagaceae	*Geitonoplesium cymosum*	Scrambling Lily
Malvaceae	*Abutilon oxycarpum*	Flannel Weed
	Hibiscus heterophyllus subsp heterophyllus	Native Rosella
	*Sida**	
	*Sida rhombifolia**	Paddy's Lucerne
Meliaceae	*Melia azedarach*	White Cedar
Menispermaceae	*Legnephora moorei*	Round-leaf Vine
	Sarcopetalum harveyanum	Pearl Vine
	Stephania japonica var discolor	Snake Vine
Monimiaceae	*Daphnandra sp. C*	
Moraceae	*Ficus coronata*	Creek Sandpaper Fig
	Ficus macrophylla subsp macrophylla	Moreton Bay Fig
	Ficus rubiginosa	Port Jackson Fig, Rusty Fig
	Maclura cochinchinensis	Cockspur Thorn
	Maclura cochinchinensis	Cockspur Thorn
	Streblus brunonianus	Whalebone Tree
Myoporaceae	*Eremophila debilis*	Amulla
Myrsinaceae	*Rapanea howittiana*	Brush Muttonwood
	Rapanea variabilis	Muttonwood
Myrtaceae	*Acmena smithii*	Lilly Pilly
	Angophora bakeri	Narrow-leaved Apple
	Angophora costata	Sydney Red/Rusty Gum
	Angophora floribunda	Rough-barked Apple
	Backhousia myrtifolia	Grey Myrtle
	Baeckea virgata	
	Callistemon linearis	Narrow-leaved Bottlebrush
	Corymbia gummifera	Red Bloodwood
	Corymbia maculata	
	Eucalyptus	
	Eucalyptus crebra	Narrow-leaved Ironbark
	Eucalyptus fibrosa	Red Ironbark
	Eucalyptus globoidea	White Stringybark
	Eucalyptus moluccana	Grey Box
	Eucalyptus pilularis	Blackbutt
	Eucalyptus punctata	
	Eucalyptus punctata X canaliculata	
	Eucalyptus punctata X canaliculata	
	Eucalyptus resinifera subsp resinifera	
	Eucalyptus saligna	Sydney Blue Gum
	Eucalyptus siderophloia	Grey Ironbark
	Eucalyptus tereticornis	Forest Red Gum
	Eucalyptus umbra	
	Kunzea ericoides	Burgan
	Leptospermum polygalifolium	
	Melaleuca linariifolia	

	Melaleuca nodosa	
	Melaleuca styphelioides	Prickly-leaved Tea Tree
	Melaleuca thymifolia	
	Rhodomyrtus psidioides	Native Guava
	Syncarpia glomulifera	Turpentine
	Syzygium australe	Brush Cherry
	Syzygium oleosum	Blue Lilly Pilly
Ochnaceae	*Ochna serrulata*	
Oleaceae	*Jasminum volubile**	
	*Ligustrum lucidum**	Large-leaved Privet
	Notelaea longifolia	Large Mock-olive
	*Olea europaea subsp africana**	African Olive
	Olea paniculata	Native Olive
Orchidaceae	*Pterostylis*	
Oxalidaceae	*Oxalis**	
	*Oxalis chnoodes**	
	*Oxalis corniculata**	Creeping Oxalis
Passifloraceae	*Passiflora subpeltata*	White Passionflower
Peperomiaceae	*Peperomia leptostachya*	
	Peperomia tetraphylla	
Phormiaceae	*Dianella caerulea var cinerascens*	
	Dianella caerulea var producta	
	Dianella revoluta var revoluta	
Pittosporaceae	*Billardiera scandens*	Appleberry
	Bursaria longisepala	
	Bursaria spinosa	Native Blackthorn
	Citriobatus pauciflorus	Orange Thorn
	Hymenosporum flavum	Native Frangipani
	Pittosporum revolutum	
Plantaginaceae	*Plantago debilis*	
	*Plantago lanceolata**	Lamb's Tongues
	Plantago unknown	
Poaceae	*Aristida*	
	Aristida ramosa	
	Aristida vagans	Threeawn Speargrass
	Aristida warburgii	
	Austrodanthonia tenuior	
	Axonopus affinis	Narrow-leaved Carpet Grass
	Cymbopogon refractus	Barbed Wire Grass
	*Cynodon dactylon**	Common Couch
	Danthonia	
	Dichelachne micrantha	Shorthair Plumegrass
	Digitaria	
	Digitaria diffusa	
	Digitaria parviflora	Small-flowered Finger Grass
	Echinopogon caespitosus var caespitosus	Tufted Hedgehog Grass
	Echinopogon ovatus	Forest Hedgehog Grass

	*Ehrharta erecta**	Panic Veldtgrass
	Entolasia marginata	Bordered Panic
	*Entolasia stricta**	Wiry Panic
	*Eragrostis**	
	*Eragrostis benthamii**	
	*Eragrostis brownii**	Brown's Lovegrass
	*Eragrostis leptostachya**	Paddock Lovegrass
	*Eragrostis pilosa**	Soft Lovegrass
	Imperata cylindrica var major	Blady Grass
	Microlaena stipoides var stipoides	
	Oplismenus aemulus	
	Oplismenus imbecillis	
	Oplismenus imbecillis	
	Ottochloa gracillima	
	Panicum	
	Panicum effusum	Poison or Hairy Panic
	Panicum pygmaeum	Pygmy Panic
	Panicum simile	Two-colour Panic
	Paspalidium aversum	
	*Paspalidium distans**	
	*Paspalum dilatatum**	Paspalum
	Poa sieberiana	
	Setaria gracilis	Slender Pigeon Grass
	Sporobolus	
	*Sporobolus indicus var capensis**	Parramatta Grass
	Themeda australis	Kangaroo Grass
Polygonaceae	*Persicaria hydropiper*	Water Pepper
Primulaceae	*Anagallis arvensis*	Scarlet/Blue Pimpernel
Proteaceae	*Persoonia linearis*	Narrow-leaved Geebung
Ranunculaceae	*Clematis aristata*	
	Clematis glycinoides var glycinoides	
Rhamnaceae	*Alphitonia excelsa*	Red Ash
Rosaceae	*Rubus ulmifolius**	Blackberry
Rubiaceae	*Asperula conferta*	Common Woodruff
	Galium	
	Galium propinquum	
	Morinda jasminoides	
	Opercularia aspera	Coarse Stinkweed
	Opercularia diphylla	
	Opercularia hispida	Hairy Stinkweed
	Pomax umbellata	
	Sherardia arvensis	Field Madder
Rutaceae	*Geijera salicifolia*	Brush Wilga
	Melicope micrococca	Hairy-leaved Doughwood
	Zieria smithii subsp smithii	
Santalaceae	*Exocarpos cupressiformis*	Native Cherry
	Alectryon subcinereus	Wild Quince

	Alectryon tomentosus	
	Cupaniopsis anacardioides	Tuckeroo
	Dodonaea triquetra	
	Guioa semiglauca	
Sapotaceae	*Planchonella australis*	Black Apple
Scrophulariaceae	*Veronica plebeia*	Trailing Speedwell
Smilacaceae	*Smilax australis*	Sarsaparilla
Solanaceae	*Cestrum*	
	*Cestrum aurantiacum**	Orange Cestrum
	*Cestrum nocturnum**	Lady-of-the-night
	Duboisia myoporoides	Corkwood
	*Lycium ferocissimum**	African Boxthorn
	*Solanum nigrum**	Black-berry Nightshade
	*Solanum prinophyllum**	Forest Nightshade
	*Solanum seaforthianum**	Brazilian Nightshade
Sterculiaceae	*Brachychiton populneus subsp populneus*	
Stylidiaceae	*Stylidium graminifolium*	Grass Triggerplant
Thelypteridaceae	*Christella dentata*	
Thymelaeaceae	*Pimelea linifolia*	
Ulmaceae	*Trema aspera*	Native Peach
Verbenaceae	*Clerodendrum tomentosum*	
	*Lantana camara**	Lantana
	*Verbena bonariensis**	Purpletop
	*Verbena officinalis**	Common Verbena
	*Verbena rigida**	Veined Verbena
Violaceae	*Viola hederacea*	Ivy-leaved Violet
Vitaceae	*Cayratia clematidea*	Slender Grape
	Cissus antarctica	Water Vine
	Tetrastigma nitens	

(* Denotes introduced species) Source LHCCREMS, 2000.

Appendix 12

Noxious Weeds List and Introduced Plant Species of the Maitland LGA

MAITLAND CITY COUNCIL

NOXIOUS WEED DECLARATION THROUGHOUT THE

MAITLAND CITY COUNCIL AREA

NOXIOUS WEEDS ACT 1993

CONTROL CATEGORY - W1 - NOTIFIABLE WEEDS

Definition – A weed which is of limited distribution or does not occur in the state but which poses a server threat to agriculture, the environment or the community.

Action – Private landholders must notify Maitland City Council within 24 hours of detecting a W1 noxious weed on their land. Private Landholders must fully and continuously suppress and destroy W1 Noxious Weeds.

Common Name	Botanical Name
Karoo thorn	**Acacia karoo**
Siam weed	Chromolaena odorata
Horsetail	Equisetum spp
Senegal tea plant	Gymnocoronis spilanthoides
Kochia	Kochia scoparia
Lagarosiphon	Lagarosiphon major
Parthenium weed	Parthenium hysterophorus
Water lettuce	Pistia stratiotes

CONTROL CATEGORY - W2 - PRIORITY NOXIOUS WEEDS

Definition – A weed which poses a threat to agriculture, the environment or the community and has the potential to spread to other areas

Action – Private landholders must fully and continuously suppress and destroy all W2 Noxious weeds on their land.

Common name	Botanical Name
Crofton weed	**Ageratina adenophora**
Mistflower	Ageratina riparia
Alligator weed	Alternanthera philoxeroides
Mother of Millions	**Bryophyllum delagoense**
Spiny Burrgrass	Cenchrus incertus
Spiny Burrgrass	**Cenchrus longispinus**
Pampas grass	Cortaderia spp
Dodder	Cuscuta campestris
St Johns wort	Hypericum perforatum
African boxthorn	Lycium ferocissimum
Salvinia	Salvinia molesta
Johnson grass	Sorghum halepense
Columbus grass	Sorghum x almum
Giant Parramatta grass	Sporobolus indicus var. major
Rhus tree	Toxicodendron succedaneum

CONTROL CATEGORY - W3 - GENERAL NOXIOUS WEEDS

Definition – A weed which poses a threat to agriculture, the environment or the community and has the potential to spread to other areas, but is so widespread that total suppression and destruction is impractical.

Action - Landholders must prevent the spread and reduce the numbers and distribution of W3 weeds.

Common Name	Botanical Name

Green cestrum	**Cestrum parqui**
Patersons curse, Vipers /Italian bugloss	Echium spp
Water hyacinth	Eichhornia crassipes
Spiny emex	Emex australis
Cape tulips	Homeria spp
Blackberry	Rubus fruticosus
Bathurst /Noogoora /Californian /Cockle burrs	Xanthium spp

CONTROL CATEGORY - W4f - SPECIFIC NOXIOUS WEEDS

Definition – These weeds must not be sold, propagated or knowingly distributed. Any biological control or other program directed by a local control authority must be implemented

Common Name	**Botanical name**
Harrisia cactus	**Harrisia spp**
Prickly pear	Opuntia spp

CONTROL CATEGORY - W4g – SPECIFIC NOXIOUS WEEDS

Definition – These weeds must not be sold, propagated or knowingly distributed.

Common Name	**Botanical Name**
Cabomba	**Cabomba spp**

 # It is the occupier's responsibility to control noxious weeds upon their land.

Section 12 of the Noxious Weeds Act states that **"An occupier of land MUST control noxious weeds on the land, as required under the control category or categories specified in relation to the weeds concerned."**

Any further information can be obtained from councils Noxious Weeds Inspector, Mr Brian Worboys on 49349618.

Environmental Weeds that Require Control

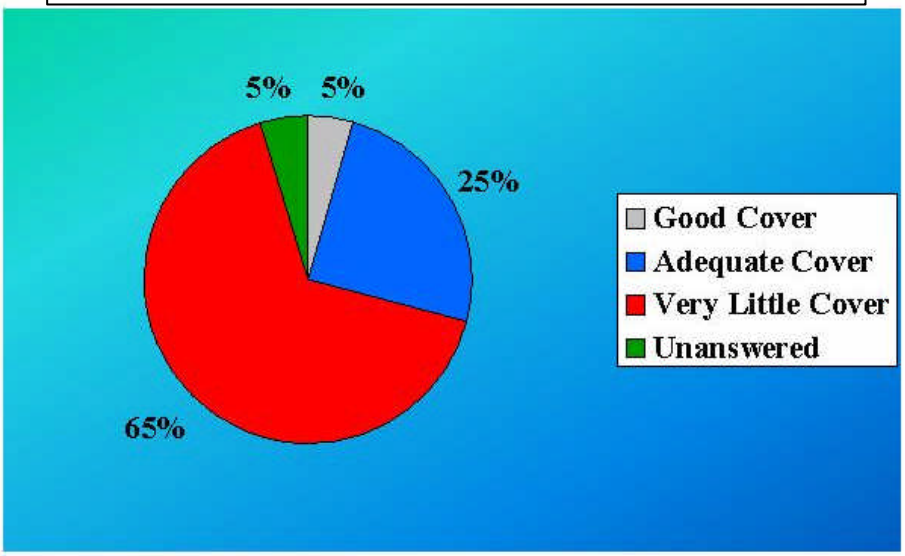
Cape Ivy	*Delairea odorata*
Madeira Vine	*Anredera cordifolia*
Cape Honeysuckle	*Tecoma capensis*
Camphor Laurel	*Cinnamomum camphora*
African Olive	*Olea europaea subsp. Africana*
Small Leaved Privet	*Ligustrum sinense*
Broad Leaved Privet	*Ligustrum lucidum*
Lantana	*Lantana camara*
Willow	*Salix sp.*

Appendix 13

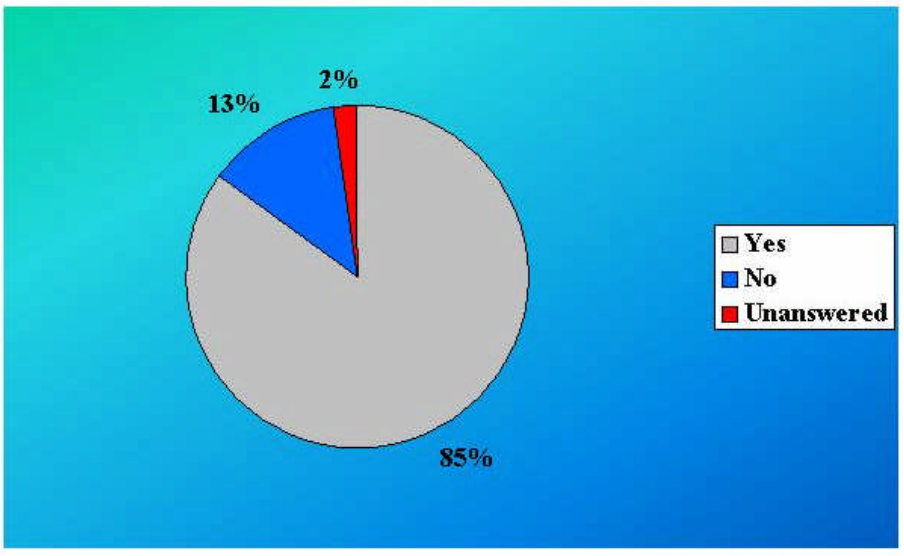
Greening Plan Survey Responses

Q.1 How would you describe the amount of native vegetation remaining in the Maitland Local Government Area?

Of the 309 surveys returned, the following results were obtained:

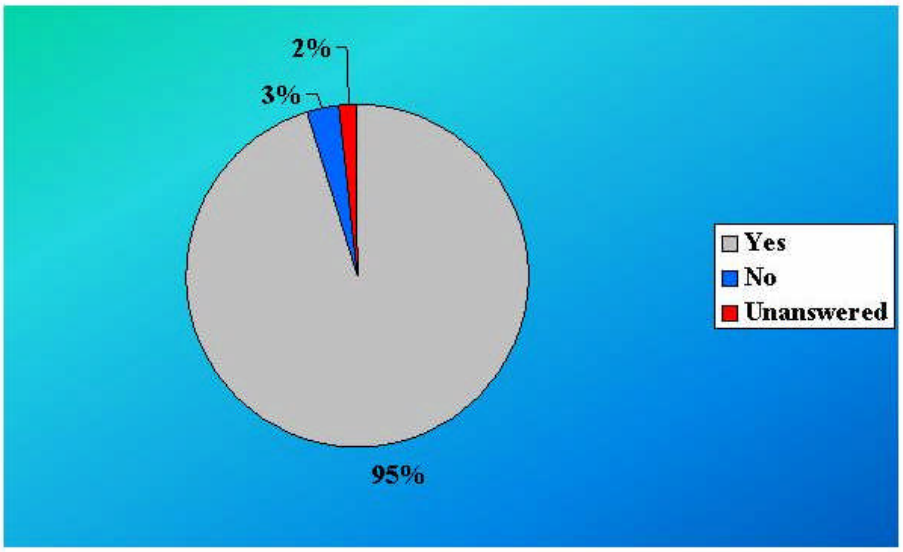


Q.2 Would you consider it a role of Local Council to be involved with vegetation management?
Of the 309 surveys returned, the following results were obtained:



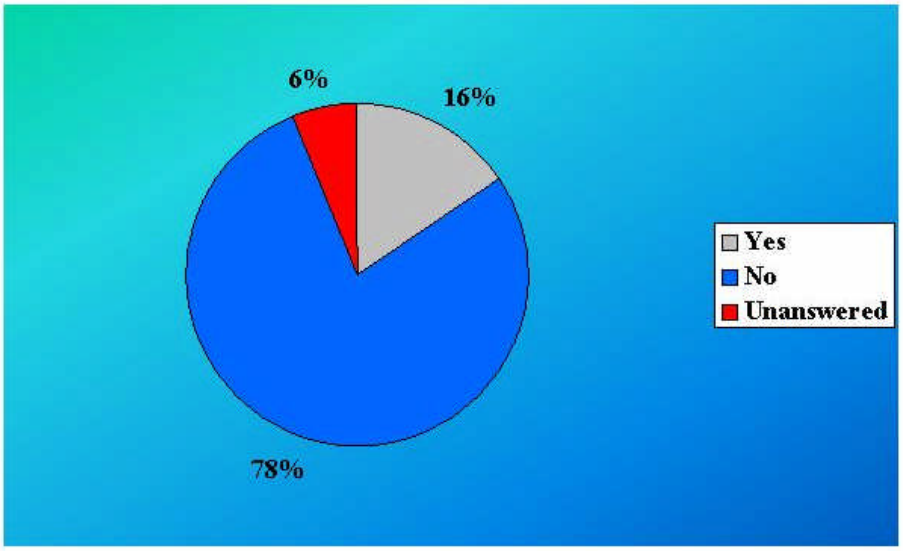
Q.3 Would you consider windbreaks and greening corridors to be a benefit to farm productivity, scenery and property values?

Of the 290 surveys returned, the following results were obtained:



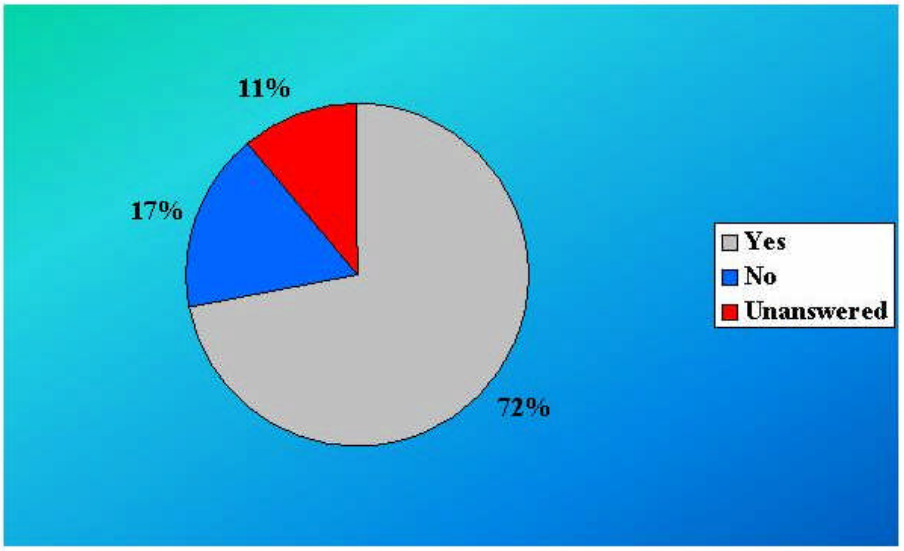
Q4. Do you consider that areas of native vegetation are an obstacle to earning an income from your land?

Of the 309 surveys returned, the following results were obtained:



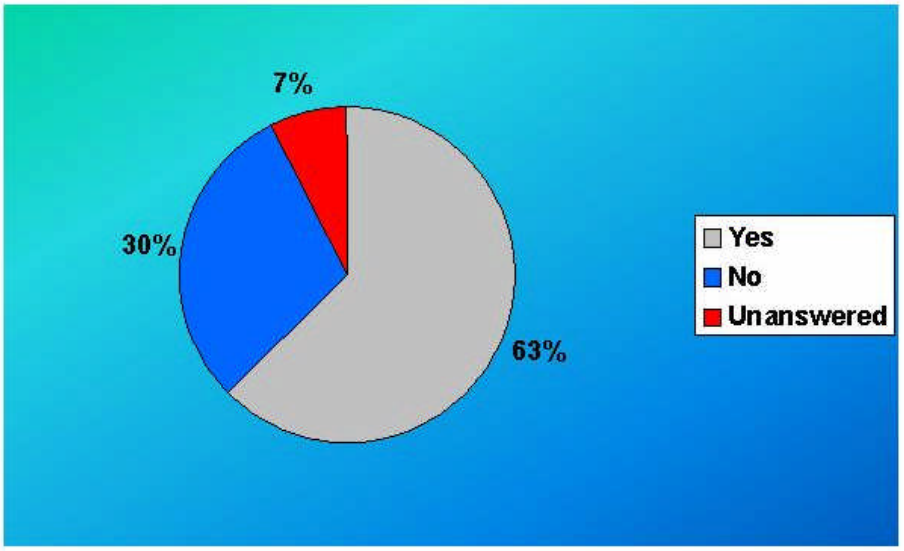
Q.5. Would you consider biodiversity as a value of your property?

Of the 309 surveys returned, the following results were obtained:



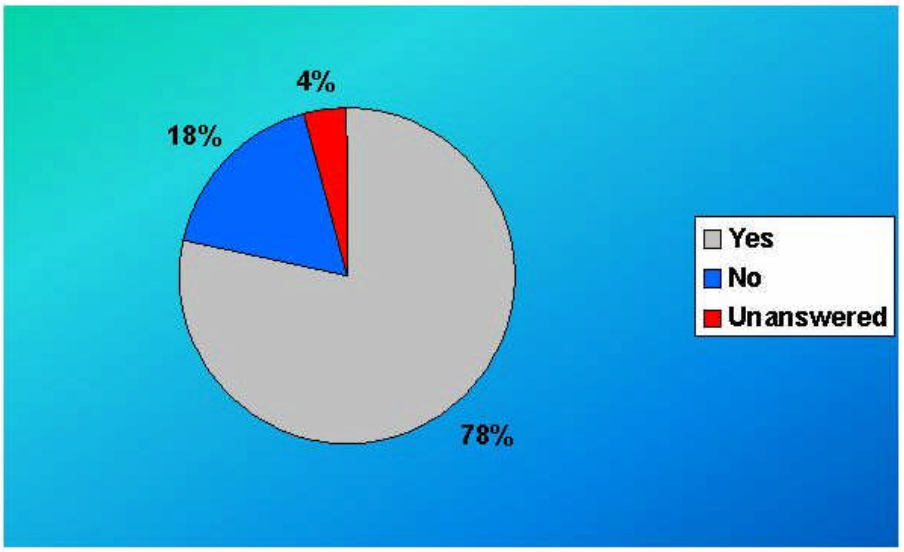
Q.6 Are you interested in being involved in the Greening Corridors Plan?

Of the 309 surveys returned, the following results were obtained:



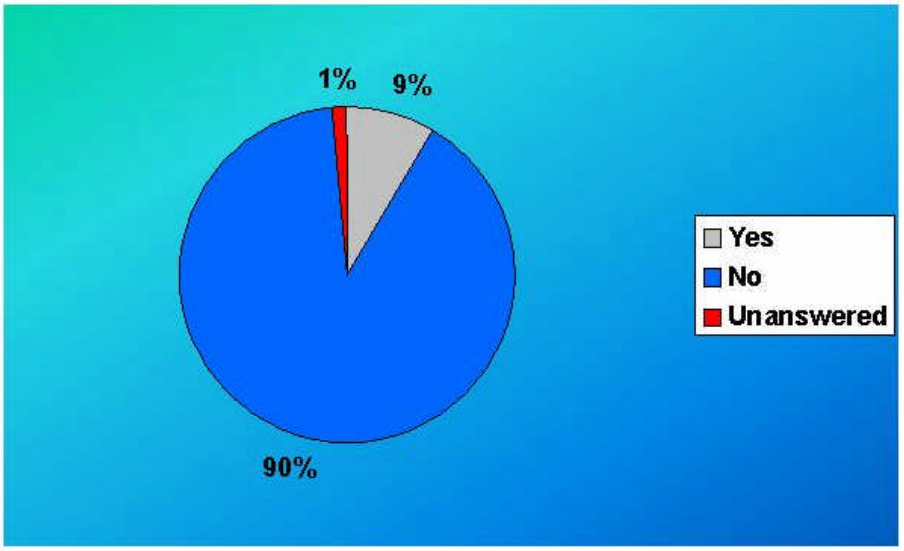
Q.7 Would you dedicate areas of your property to windbreaks or wildlife corridors?

Of the 309 surveys returned, the following results were obtained:

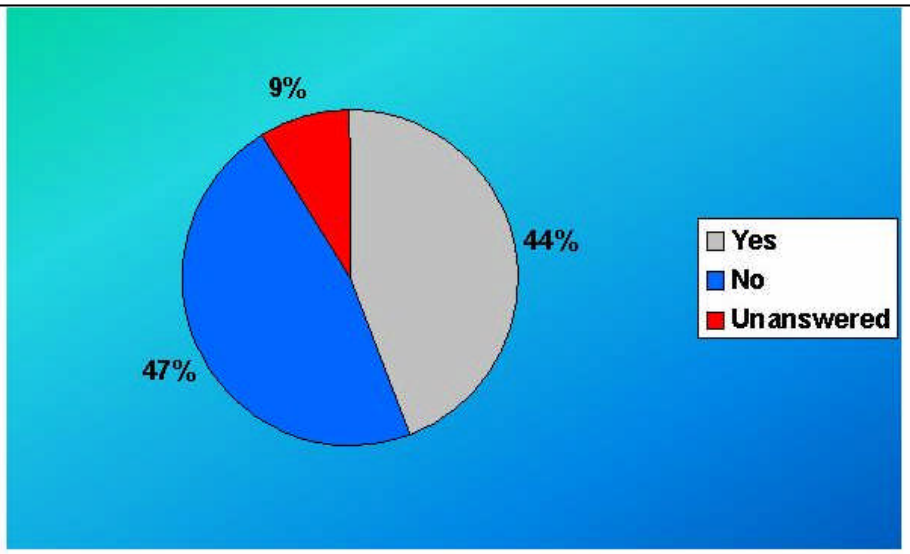


Q.8 Are you involved in the Maitland Landcare Network?

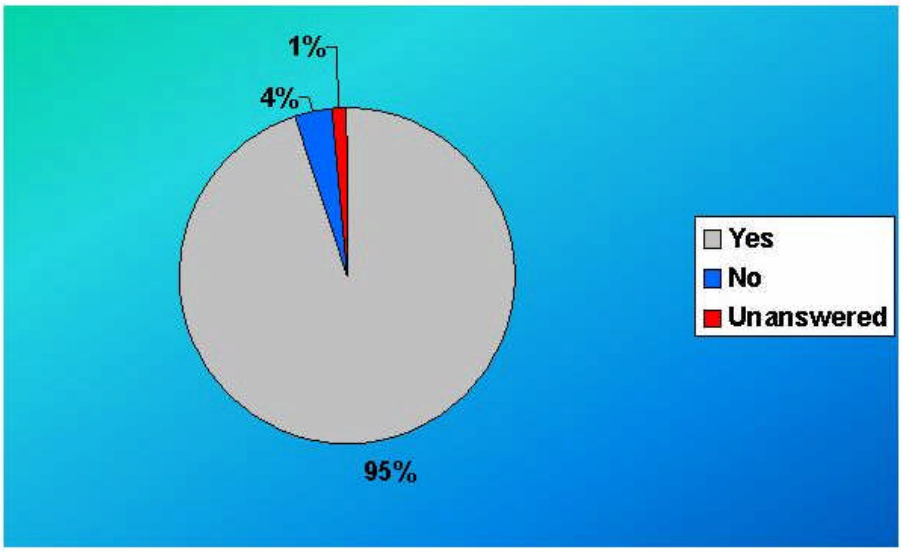
Of the 309 surveys returned, the following results were obtained:



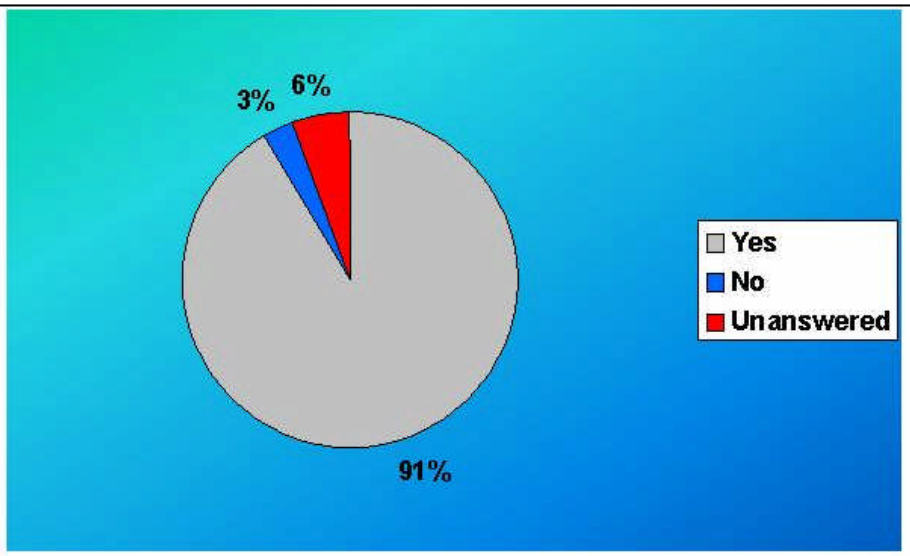
Q.9 Would you consider plantations or farm forestry as a possible land use activity on your farm?
Of the 309 surveys returned, the following results were obtained:



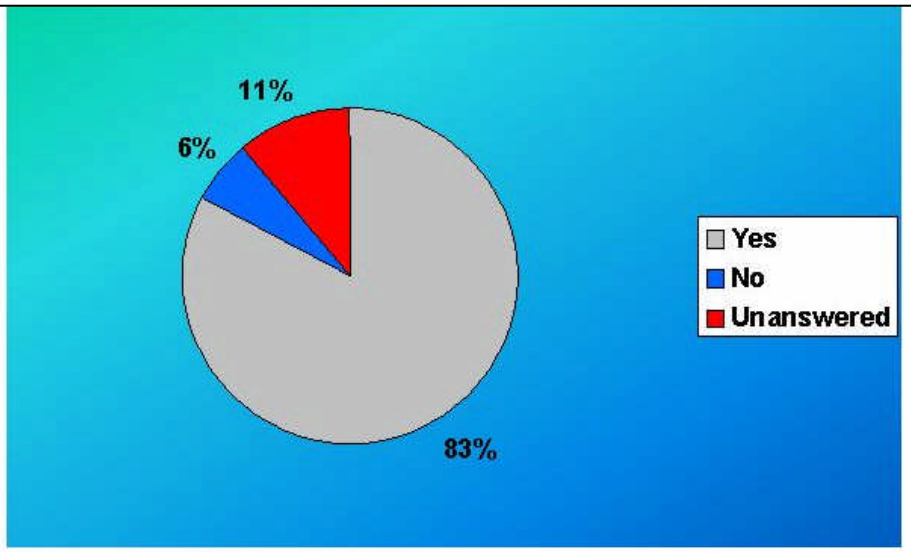
Q.10 Are you aware of the link between the increasing problem of soil erosion and soil salinity and the issue of native vegetation decline?
Of the 309 surveys returned, the following results were obtained:



Q.11 Should government assistance be made available to assist landholders in implementing conservation measures?
Of the 309 surveys returned, the following results were obtained:

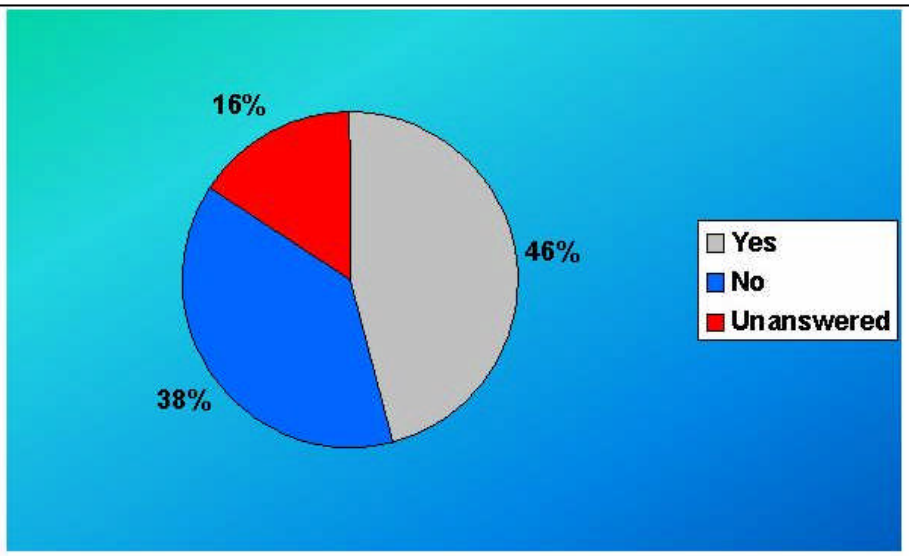


Q.12 The CSIRO has proved that windbreaks and shelterbelts lead to improved productivity rates of livestock & croplands. Do you think that these improved productivity rates are worth the loss of agricultural land for their development?
Of the 309 surveys returned, the following results were obtained:



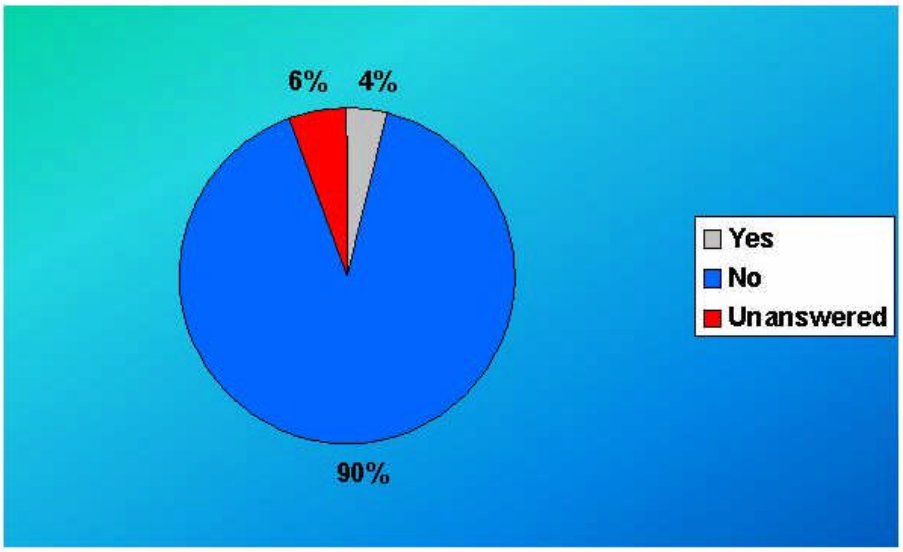
Q.13 Would Voluntary Conservation Agreements for areas of bushland or areas being regenerated on your property be of any interest to you?

Of the 309 surveys returned, the following results were obtained:



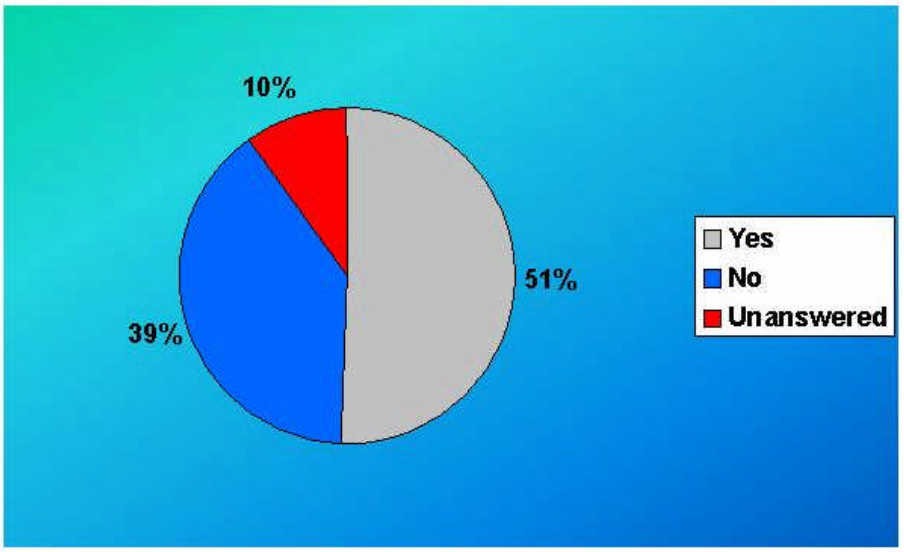
Q.14 Is your property already subject to any form of conservation agreement with either the Hunter Valley Catchment Management Trust or National Parks & Wildlife Service?

Of the 309 surveys returned, the following results were obtained:



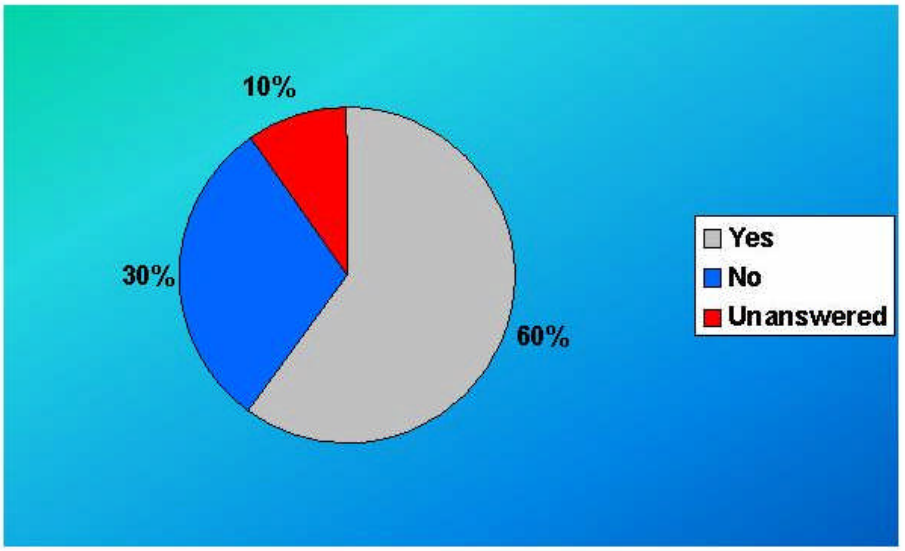
Q. 15 Would you be interested in attending workshops on sustainable land management?

Of the 309 surveys returned, the following results were obtained:

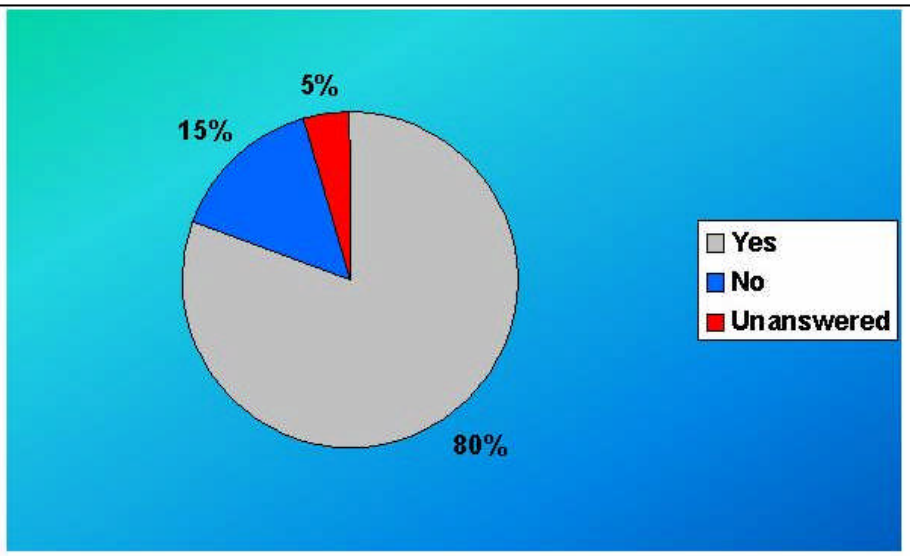


Q. 16 An Environmental Levy is a rate levy to fund restoration work throughout the Local Government Area. Do you consider an environmental levy across the whole community as being a fair way for Council to raise funds for environmental work in the area?

Of the 309 surveys returned, the following results were obtained:

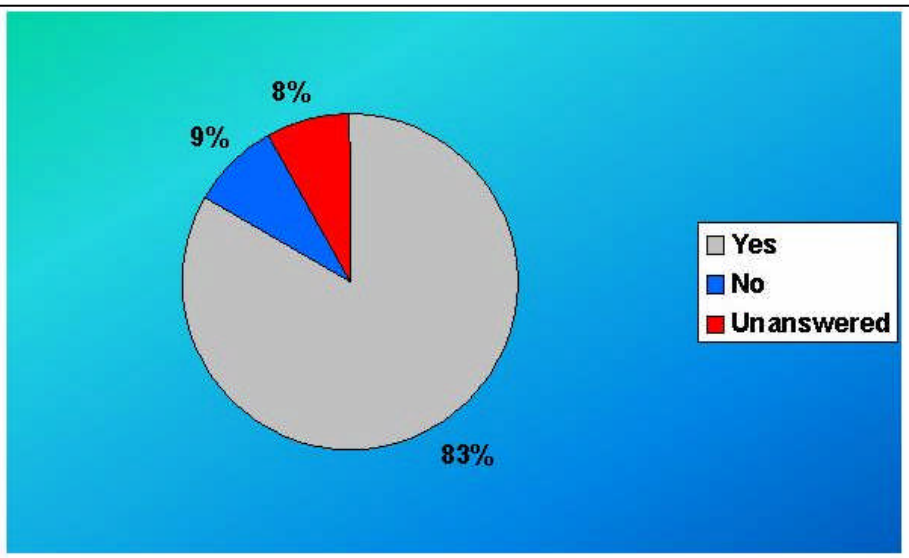


Q. 17 Are you aware that the Maitland City Council Tree Preservation Order covers all trees over three (3) metres tall in the MCC local government area including agricultural areas?
Of the 309 surveys returned, the following results were obtained:



Q.18 Would you be more inclined to carry out restoration works (windbreaks, shelterbelts, wildlife corridors etc) if Council provided appropriate plant stock for use on your property?

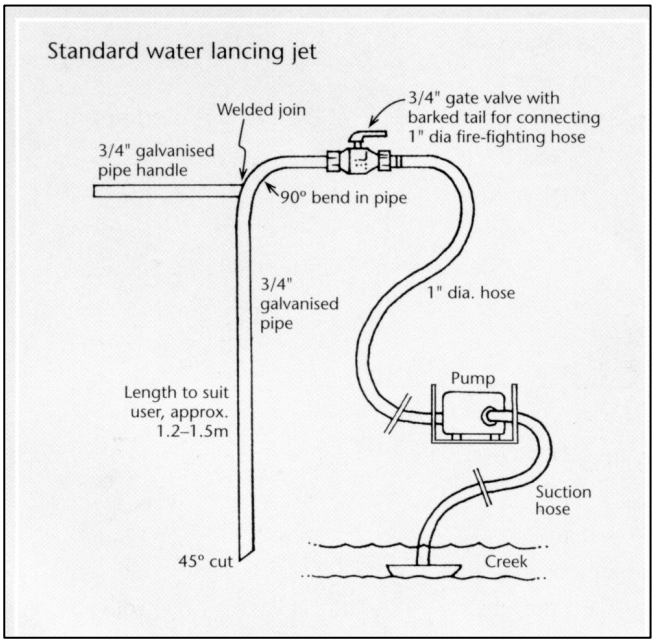
Of the 309 surveys returned, the following results were obtained:



Appendix 14

Long Stem Tube Stock Revegetation Method

The ability of many native plant species to produce new root growth from epicormic buds under the bark (which also enables new branches to develop after fire events) results in rapid establishment, and greater survival due to the proximity of the root material to the soil moisture zone.
(Photo DLWC).



Although long stem tube stock requires specialised equipment for planting, the process is relatively easy and the results speak for them selves.
(Diagram DLWC)