APPENDIX 7

FLORA AND FAUNA IMPACT ASSESSMENT

ASSESSMENT | PLANNING | MANAGEMENT

Flora & Fauna Assessment
Proposed Water Treatment Plant Site
140 Upper Orara Road, Karangi

(ELA Project No. 130-001)

Report prepared for:
Coffs Harbour Water

August 2006

ABN 87 096 512 088 | address 84 Albany Street COFFS HARBOUR NSW 2450
postal PO Box 484 COFFS HARBOUR 2450 | phone 02 6651 5484 | fax 02 66516890
web www.ecoaus.com.au

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Eco Logical Australia Pty Ltd
Ecological Assessment, GIS, Environmental Management and Planning
Ph - (02) 6651 5484
Fax - (02) 6651 6890

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1. Introduction

1.1 The Proposal

Coffs Harbour Water (CHW) is currently investigating potential sites for the location of a new Water Treatment Plant (WTP). CHW has requested that Eco Logical Australia Pty Ltd (ELA) carry out flora and fauna investigations on the property known as 140 Upper Orara Road, to determine the presence or likely presence of threatened species, populations or ecological communities and their habitat that are listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) or the Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act). and, if so, to assess potential impacts upon them of the establishment of a proposed water treatment plant, in accordance with requirements under Section 5A of the *Environmental Planning & Assessment Act* 1979 (EP&A Act), and also in accordance with local environmental planning instruments, namely the Coffs Harbour City Council (CHCC) Comprehensive Koala Plan of Management (CKPoM, Lunney et al. 1999) and the CHCC Tree Preservation Order (TPO, CHCC 2004).

No remnant vegetation will be removed under this proposal, however a number of isolated trees will be removed, including a mature Flooded Gum which is currently located adjacent to the residence. Most of the grassy river flats in the western part of the site will not be affected by the proposal.

1.2 The Study Area

The study area (Figure 1) encompasses an area within an approximate 10 km radius of the subject site, 140 Upper Orara Road, Karangi (Lot 2 DP 1083920).

The study area covers a complex of landforms centred around the headwaters of the Orara River, the principal waterway and source of drinking water for the city of Coffs Harbour, which is situated in the eastern sector of the study area. The valley floor areas are largely cleared and utilised for a variety of rural landuses such as grazing, horticulture, rural lifestyle, turf farms and orchards. The steeper valleys, foothills and surrounding low ranges are almost entirely in public tenure, with the majority of these lands dedicated as State Forest, National Park or Nature Reserve.

The subject site has, to date, been utilised as a small-scale grazing property. The site is approximately 6.7 hectares in size, and is largely devoid of vegetation, apart from approximately 0.7 hectares in two separate patches mapped by CHCC (Fisher, *et al.* 1996) as 1/ Riparian Vegetation and Camphor Laurel adjacent to the Orara River on the western boundary; 2/ Tall Open Blue Gum – Tallowwood forest with Camphor Laurel on the southern side of the entrance to the site. Both patches of vegetation are mapped as Tertiary Koala Habitat under the CHCC CKPoM.

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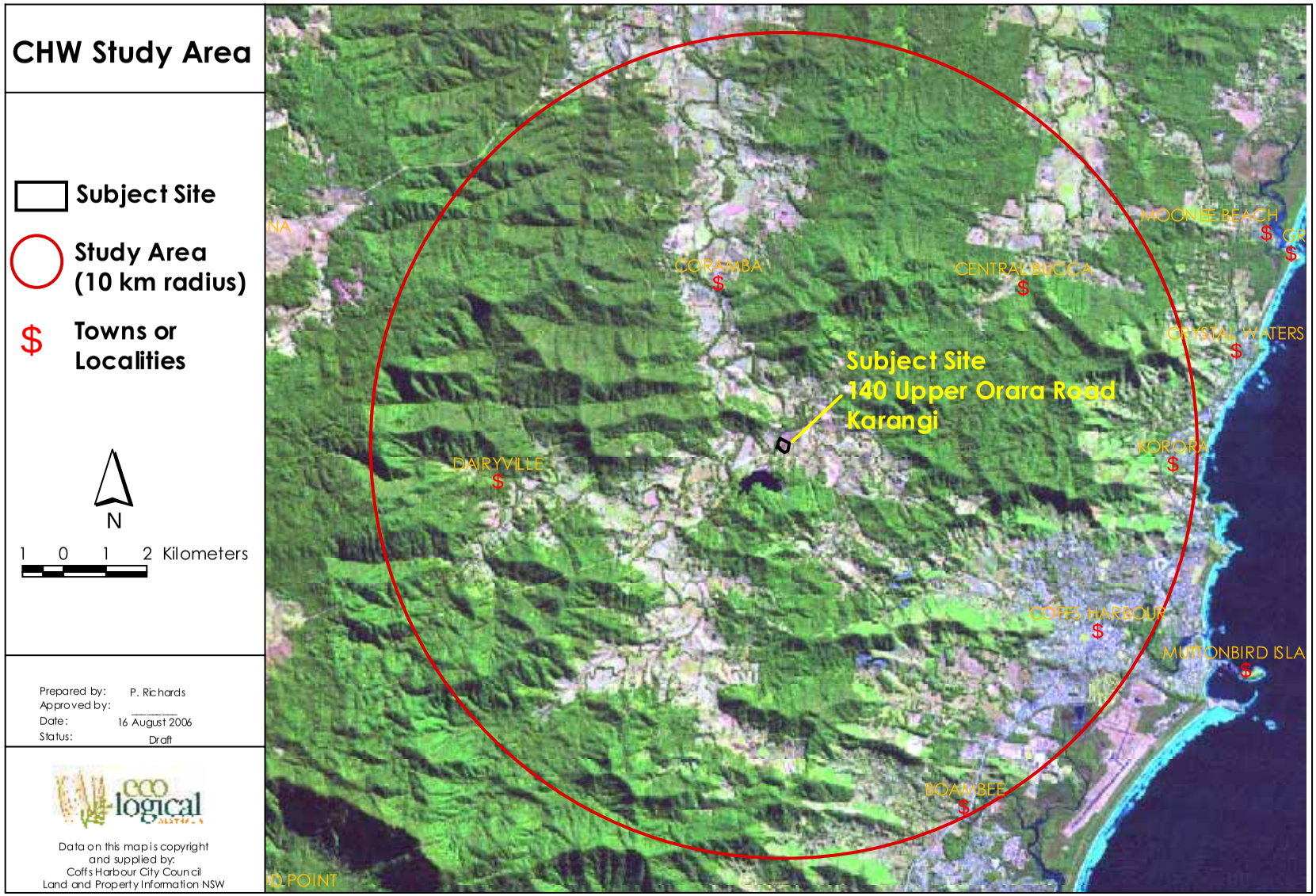
Ph - (02) 6651 5484
Fax - (02) 6651 6890

Figure 1: Study Area and Subject Site



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Fax - (02) 6651 6890

2. Methods

2.1 Audit of flora and fauna values

A preliminary list of threatened flora and fauna species, populations and ecological communities likely to occur in the study area was prepared by searching the Department of Environment & Conservation (DEC) Wildlife Atlas records for species listed under the NSW *Threatened Species Conservation Act* 1995 (TSC Act), and the Department of Environment & Heritage (DEH) database for threatened species and Matters of National Environmental Significance as listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act). Threatened species data searches were undertaken on 11th August 2006.

The DEC Wildlife Atlas search area was bounded by the following co-ordinates:

30.00 to 30.50 decimal degrees South; 152.75 to 153.25 decimal degrees East.

The EPBC data search was based upon a 10km radius circle around a point located at 30.26 decimal degrees South and 153.03 decimal degrees East.

These lists were then filtered to identify those threatened species considered likely to occur on, or utilise, the subject site, based upon information obtained during the site inspection. Any State Environment Protection Policy (SEPP) features that may affect the subject site, as well as local environmental planning instruments, such as the CHCC CKPoM and TPO, were also identified.

2.2 Site Inspection

An inspection of the subject site was undertaken on 14th August 2006. This involved a detailed traverse of the property to search for likely threatened flora species and to identify potential threatened fauna habitat. The remnant vegetation on the subject site was assessed and compared with CHCC vegetation mapping. All isolated trees on the subject site were identified and assessed for habitat value. This included an assessment in accordance with CHCC's CKPoM. A floristic species list was compiled during the site traverse. A total of 4 hours was spent undertaking the on-site inspection.

2.3 Collation of data

All data collected in the field were collated and analysed in order to make an evaluation of the threatened species values present on the subject site, and to inform an assessment of potential impacts upon them as a result of the proposed activity.

3. Results

3.1 Audit of flora and fauna values

The data search of TSC Act and EPBC Act threatened species, populations and communities produced a total of 38 threatened plant species and 65 threatened fauna species known to occur or considered likely to occur in the study area (note that sea birds, marine mammals and marine reptiles were excluded from this search). These species are listed in Appendix 1. Those species considered likely to occur on, or utilise, the subject site are highlighted in bold type in Appendix 1.

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Fax - (02) 6651 6890

3.2 Site inspection

3.2.1 Species

84 plant species were recorded during a traverse of the subject site, of which 35 (42%) are introduced species. A list of plant species recorded on the subject site is provided as Appendix 2. Note that it is highly likely that not all plant species present on the subject site were recorded. Due to the time of year the site inspection was undertaken, and the fact that the pasture areas on the site had been recently slashed, a number of species, particularly annual grasses and herbs, would have been overlooked or would be present only as seed or underground parts. No threatened plant species were recorded during the site inspection.

3.2.2 EPBC Matters of National Environmental Significance

Matters of National Environmental Significance, and other Matters listed under the EPBC Act that may be affected by the proposal, are listed in Appendix 2. No relevant species or matters were recorded on the subject site, but it is considered that some listed species may periodically utilise the site. Those species are highlighted in bold in Appendix 2.

3.2.3 Vegetation

The remnant vegetation communities on the subject site are correctly represented by the CHCC vegetation mapping (Figure 2). The remnant patch of Tallowwood – Blue Gum forest just south of the entrance to the site is heavily infested with Camphor Laurel. Most native trees in the patch are actually on the adjoining property to the south, with the exception of a large specimen of Hard Quandong, *Elaeocarpus obovatus*, a component of the original moist forest species typical of this area.

The riparian vegetation comprises scattered Flooded Gum, *Eucalyptus grandis,* over disturbed warm temperate rainforest dominated by Camphor Laurel.

The cleared areas on the site are highly modified pasture supporting a predominance of introduced grasses and herbs. There are about 25 scattered trees of the introduced Camphor Laurel, *Cinnamomum camphora,* on the subject site, as well as a mature, non hollow-bearing Flooded Gum, a large, hollow-bearing Sydney Blue Gum, *Eucalyptus saligna*, several large Hoop Pine, *Araucaria cunninghamii*, a single Black Bean tree, *Castanospermum australe*, and a single Macadamia tree, *Macadamia tetraphylla* (Figure 2). The Hoop Pines, Black Bean and Macadamia are most likely planted specimens. Although the natural distribution of Hoop Pine and Black Bean includes the Upper Orara valley, it is unlikely that these trees represent remnants of the original vegetation at this site. The Macadamia is listed as a Vulnerable species under the TSC Act, but its natural distribution lies well north of the study area.

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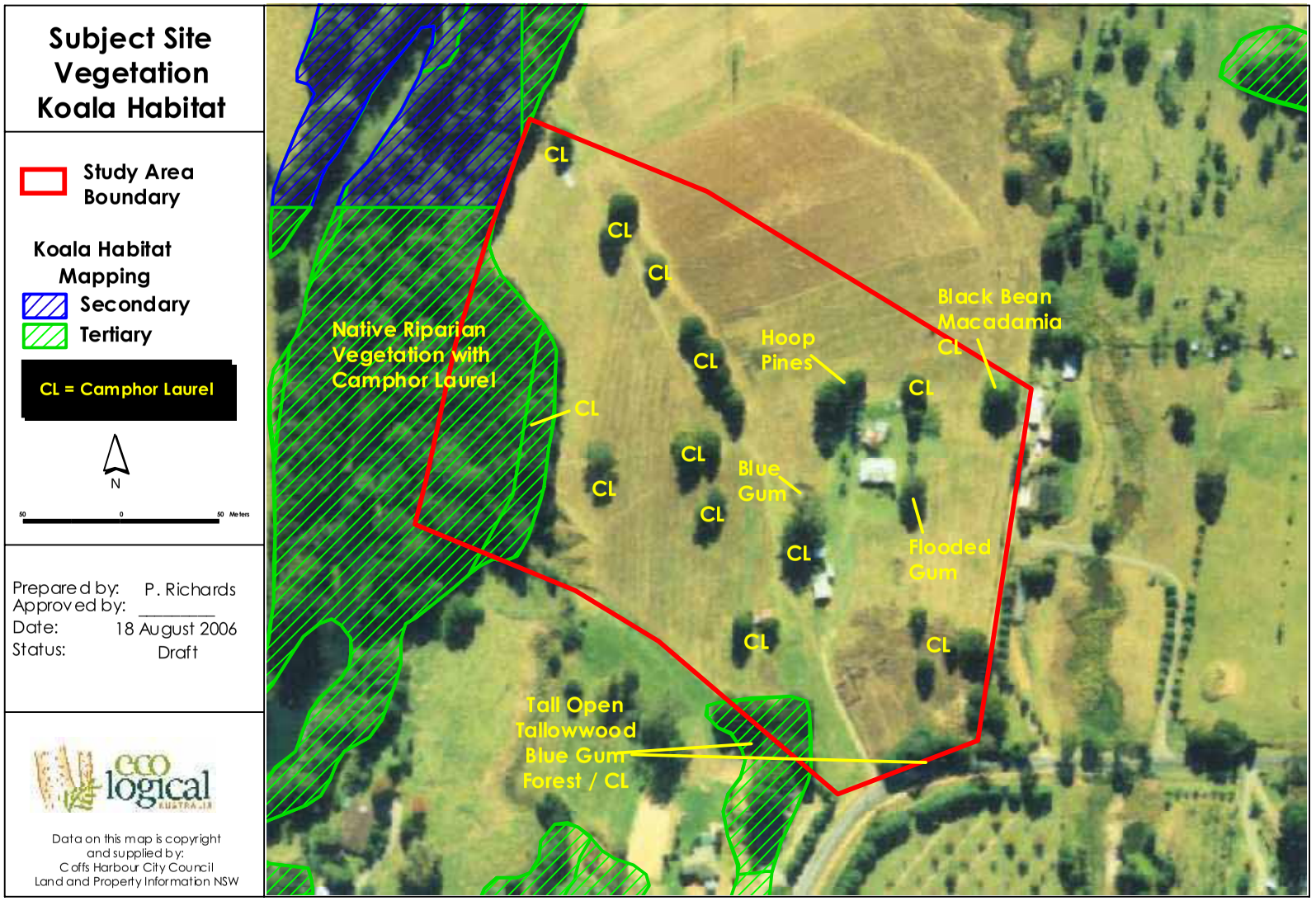
Figure 2: Subject Site, showing vegetation, scattered trees and Koala habitat.



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Fax - (02) 6651 6890

3.2.4 Habitat

The subject site contains potential habitat for 10 threatened plant species as listed in Appendix 1. A thorough search of the subject site failed to locate any threatened plants.

The subject site contains potential habitat for 36 threatened fauna species, as listed in Appendix 1. All parts of the subject site provide some form of habitat for certain threatened fauna species. The remnant vegetation provides foraging and shelter habitat for the majority of threatened species that are considered likely to occur there. Even the Camphor Laurel provides a valuable forage resource for frugivorous species such as Wompoo, Rose-crowned and Superb Fruit Doves, in the absence of suitable fleshy-fruited native tree species.

A number of species are also able to utilise the isolated trees and the grassy paddock areas as well. A Sydney Blue Gum on the site contains a large number of hollows of various sizes, and provides potential breeding habitat for hollow-dependant threatened fauna including the Glossy Black-Cockatoo and insectivorous bats such as Large-footed Myotis, Eastern Freetail Bat and Hoary Wattled Bat. This tree is known to provide breeding habitat for other, non-threatened, species including Wood Duck, Rainbow Lorikeet and Crimson Rosella (personal observation, and current property owner, pers. comm).

The grassy paddock areas, particularly on the river flats in the western part of the site, may also provide a seasonal forage resource for the Giant Barred Frog, Stuttering Frog and Green-thighed Frog. In wet weather during late spring and summer, these species are known to move well away from streams to forage for prey in open areas of grassland and move about in search of mates (DEC 2006). The grassy flats would also provide periodic foraging habitat for species such as Square-tailed Kite, Masked Owl, and Stephens Banded Snake.

3.2.5 Koala Habitat

The remnant vegetation on the subject site is mapped as Tertiary Koala habitat. Koalas are also likely to utilise the isolated trees on the site, in particular the Flooded Gum and the Sydney Blue Gum.

4. Assessment and Amelioration of impacts upon threatened species

4.1 Affected Species

The threatened species considered likely to be affected by the proposed development of a water treatment plant on the subject site are those that may utilise features that are proposed to be removed or modified. No areas of remnant vegetation will be affected by the proposal, but a number of isolated trees will require removal from the site. These trees are mainly Camphor Laurel and the planted Black Bean and Macadamia. The only native tree requiring removal is the mature Flooded Gum adjacent to the residence. The large hollow-bearing Sydney Blue Gum will be retained and protected, as it represents potential threatened species breeding habitat. The grassy flats adjacent to the Orara River will remain largely unaffected by the proposal.

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Fax - (02) 6651 6890

As the only impact proposed is the removal of a mature Flooded Gum, it is considered that the only species affected by this proposal is the Koala, therefore the application of the "7-part test" is required in accordance with S5A of the EP&A Act. This is provided as Appendix 3.

4.2 EPBC Matters of National Environmental Significance

It is considered that no EPBC Matters of National Environmental Significance are likely to be affected by the proposal.

4.3 CHCC Tree Preservation Order and Koala Plan of Management

The CHCC TPO (CHCC 2004) does not apply to the subject site, as it is zoned 1A Rural and is located west of the Pacific Highway.
The CHCC CKPoM states the following objective with regard to Tertiary Koala Habitat:
"To protect koalas and their habitat within the rural areas of the LGA by encouraging minimal removal or disturbance to preferred koala tree species and reducing barriers to koala movement."

In order to achieve this objective, the following management actions are recommended:

"The consent authority shall not grant consent to the carrying out of development in areas identified as Tertiary Koala Habitat unless it can be shown that the activity will not destroy, damage or compromise the values of the land as koala habitat in the locality. In assessing an application the consent authority shall take into consideration:

- The impacts of any development on Tertiary Koala Habitat;
- the number of trees proposed to be removed in relationship to the extent and quality of adjacent or nearby Tertiary Koala Habitat;
- the impacts to existing or potential koala movement corridors; and,
- the threats to koalas which may result from the development."

It is considered that the proposed ameliorative measures, described below, satisfy the requirements of the CHCC CKPoM.

4.4 Proposed Ameliorative Measures

Proposed amelioration and safeguard measures include:

- Retention and protection of the large, hollow-bearing Sydney Blue Gum on the site.
- Planting along the south-western boundary of the subject site with local Koala food tree species (Tallowwood, Flooded Gum, Sydney Blue Gum) to create a vegetated link between the riparian vegetation on the Orara River and the remnant Tallowwood – Blue Gum open forest at the southern corner of the site. Seed for this planting will be sourced from local trees. Planting will be undertaken according to advice from Koala experts, eg the CHCC Koala Management Advisory Committee.

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- An observer with ecological experience to be present on-site to ensure the welfare of any wildlife that are disturbed during tree removal.
- Construction personnel to be made aware of the possible presence of wildlife on the site during working hours, and to be advised to exercise caution when departing and entering the site.

5. References

Coffs Harbour City Council. 2004. Tree Preservation Order. Coffs Harbour City Council.

DEC. 2006. Giant Barred Frog – Threatened Species Profile. DEC. Hurstville.

DEC. 2006. Stuttering Barred Frog – Threatened Species Profile. DEC. Hurstville.

DEC. 2006. Green-thighed Frog – Threatened Species Profile. DEC. Hurstville.

Fisher, M., Body, M. & Gill, J. 1996. The Vegetation of the Coffs Harbour City Council LGA. Unpublished report to Coffs Harbour City Council.

Lunney, D., Moon, C., Matthews, A., & Turbill, J. 1999. Coffs Harbour City Koala Plan of Management. Parts A & B. NSW National Parks and Wildlife Service and Coffs Harbour City Council.

NPWS. 2003. Draft Recovery Plan for the Koala. New South Wales National Parks and Wildlife Service. Hurstville.

Eco Logical Australia Pty Ltd
Ecological Assessment, GIS, Environmental Management and Planning
Ph - (02) 6651 5484
Fax - (02) 6651 6890

6. Appendices

6.1 APPENDIX 1 - TSC / EPBC Act Threatened Fauna Species data search results

Fauna species

*** u = Unlikely; p = Potential to occur; l = Likely to occur**

Scientific Name	Common Name	TSC Act	EPBC Act	Count	Occurrence at subject site*
Amphibians					
Litoria aurea	Green and Golden Bell Frog	E1	V	1	u
Litoria brevipalmata	**Green-thighed Frog**	**V**		**1**	**p**
Litoria subglandulosa	Glandular Frog	V		2	u
Assa darlingtoni	Pouched Frog	V		13	u
Crinia tinnula	Wallum Froglet	V		6	u
Mixophyes balbus	**Stuttering Frog**	**E1**	**V**	**10**	**p**
Mixophyes iteratus	**Giant Barred Frog**	**E1**	**E**	**109**	**l**
Philoria sphagnicolus	Sphagnum Frog	V		18	u
Birds					
Lophoictinia isura	**Square-tailed Kite**	**V**		**21**	**p**
Pandion haliaetus	Osprey	V		117	u
Stictonetta naevosa	Freckled Duck	V		1	u
Ixobrychus flavicollis	Black Bittern	V		12	u
Esacus neglectus	Beach Stone-curlew	E1		4	u
Calyptorhynchus lathami	**Glossy Black-Cockatoo**	**V**		**176**	**p**
Coracina lineata	**Barred Cuckoo-shrike**	**V**		**14**	**p**
Dromaius novaehollandiae	Emu population in the NSW North Coast Bioregion and Port Stephens LGA	E2		1	u
Ephippiorhynchus asiaticus	Black-necked Stork	E1		48	u
Climacteris picumnus	Brown Treecreeper	V		3	u
Ptilinopus magnificus	**Wompoo Fruit-Dove**	**V**		**124**	**p**
Ptilinopus regina	**Rose-crowned Fruit-Dove**	**V**		**41**	**p**
Ptilinopus superbus	**Superb Fruit-Dove**	**V**		**6**	**p**

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Scientific Name	Common Name	TSC Act	EPBC Act	Count	Occurrence at subject site*
Stagonopleura guttata	Diamond Firetail	V		1	u
Grus rubicunda	Brolga	V		13	u
Todiramphus chloris	Collared Kingfisher	V		9	u
Irediparra gallinacea	Comb-crested Jacana	V		7	u
Grantiella picta	Painted Honeyeater	V		2	u
Xanthomyza phrygia	Regent Honeyeater	E1	E	14	u
Pachycephala olivacea	Olive Whistler	V		2	u
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V		1	u
Cyclopsitta diophthalma coxeni	Double-eyed Fig-parrot	E1		3	u
Lathamus discolor	Swift Parrot	E1	E	22	u
Pezoporus wallicus wallicus	Eastern Ground Parrot	V		1	u
Calidris tenuirostris	Great Knot	V		1	u
Limosa limosa	Black-tailed Godwit	V		1	u
Ninox strenua	**Powerful Owl**	**V**		**33**	**p**
Tyto capensis	**Grass Owl**	**V**		**4**	**p**
Tyto novaehollandiae	**Masked Owl**	**V**		**21**	**p**
Tyto tenebricosa	**Sooty Owl**	**V**		**62**	**p**
Invertebrates					
Phyllodes imperialis southern subspecies	Pink Underwing Moth	E1	E	2	u
Mammals					
Cercartetus nanus	**Eastern Pygmy-possum**	**V**		**2**	**p**
Dasyurus maculatus	**Spotted-tailed Quoll**	**V**	**E**	**39**	**p**
Phascogale tapoatafa	**Brush-tailed Phascogale**	**V**		**23**	**p**
Saccolaimus flaviventris	**Yellow-bellied Sheathtail-bat**	**V**		**1**	**l**
Macropus parma	Parma Wallaby	V		10	u
Petrogale penicillata	Brush-tailed Rock-wallaby	E1	V	7	u
Thylogale stigmatica	Red-legged Pademelon	V		6	u
Mormopterus norfolkensis	**Eastern Freetail-bat**	**V**		**3**	**p**

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Scientific Name	Common Name	TSC Act	EPBC Act	Count	Occurrence at subject site*
Petaurus australis	**Yellow-bellied Glider**	**V**		**40**	**p**
Petaurus norfolcensis	**Squirrel Glider**	**V**		**17**	**p**
Phascolarctos cinereus	**Koala**	**V**		**863**	**l**
Aepyprymnus rufescens	**Rufous Bettong**	**V**		**10**	**p**
Potorous tridactylus	**Long-nosed Potoroo**	**V**	**V**	**2**	**p**
Pteropus alecto	**Black Flying-fox**	**V**		**1**	**p**
Pteropus poliocephalus	**Grey-headed Flying-fox**	**V**	**V**	**129**	**l**
Syconycteris australis	**Common Blossom-bat**	**V**		**15**	**p**
Chalinolobus dwyeri	**Large-eared Pied Bat**	**V**	**V**	**3**	**p**
Chalinolobus nigrogriseus	**Hoary Wattled Bat**	**V**		**2**	**p**
Falsistrellus tasmaniensis	**Eastern False Pipistrelle**	**V**		**19**	**p**
Kerivoula papuensis	**Golden-tipped Bat**	**V**		**3**	**p**
Miniopterus australis	**Little Bentwing-bat**	**V**		**44**	**p**
Miniopterus schreibersii oceanensis	**Eastern Bentwing-bat**	**V**		**120**	**p**
Myotis adversus	**Large-footed Myotis**	**V**		**15**	**p**
Scoteanax rueppellii	**Greater Broad-nosed Bat**	**V**		**9**	**p**
Reptiles					
Hoplocephalus stephensii	**Stephens' Banded Snake**	**V**		**12**	**p**

Flora species

*** u = Unlikely; p = Potential to occur; l = Likely to occur**

Scientific Name	Common Name	TSC Act	EPBC Act	Count	Occurrence at Subject Site
Acacia chrysotricha	Newry Golden Wattle	E1		1	u
Acronychia littoralis	Scented Acronychia	E1		15	u
Alexfloydia repens	Floyd's Grass	E1		12	u
Allocasuarina defungens	Dwarf Heath Casuarina	E1		1	u
Amorphospermum whitei	**Rusty Plum**	**V**		**126**	**l**
Angophora robur	Sandstone Rough-barked Apple	V		6	u
Arthraxon hispidus	**Hairy Jointgrass**	**V**		**1**	**p**
Babingtonia prominens	Nymboida Babingtonia	E1		1	u
Babingtonia silvestris	Woodland Babingtonia	E1		1	u
Bertya sp. A Cobar-Coolabah	Coolabah Bertya	V		1	u
Boronia hapalophylla	Shannon Creek Boronia	E1		3	u
Boronia umbellata	Orara Boronia	V	V	12	u

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Scientific Name	Common Name	TSC Act	EPBC Act	Count	Occurrence at Subject Site
Calophanoides hygrophiloides	Native Justicia	E1		1	u
Chamaesyce psammogeton	Sand Spurge	E1		1	u
Cynanchum elegans	**White-flowered Wax Plant**	**E1**	**E**	**-**	**p**
Eleocharis tetraquetra	Square-stemmed Spike-rush	E1		4	u
Grammitis stenophylla	Narrow-leaf Finger Fern	E1		1	u
Hicksbeachia pinnatifolia	Red Boppel Nut	V		1	u
Lindsaea incisa	Slender Screw Fern	E1		8	u
Marsdenia longiloba	**Slender Marsdenia**	**E1**	**V**	**38**	**l**
Oberonia titania	**Red-flowered King of the Fairies**	**V**		**3**	**p**
Olearia flocktoniae	Dorrigo Daisy Bush	E1		177	u
Parsonsia dorrigoensis	**Milky Silkpod**	**V**	**E**	**21**	**p**
Persicaria elatior	Knotweed	V	V	-	u
Phaius australis	Southern Swamp Orchid	E1	E	3	u
Pomaderris queenslandica	**Scant Pomaderris**	**E1**		**1**	**p**
Pultenaea maritima	Coast Headland Pea	V		1	u
Quassia sp. Moonee Creek	**Moonee Quassia**	**E1**	**E**	**41**	**p**
Sarcochilus fitzgeraldii	Ravine Orchid	V		6	u
Sarcochilus hartmannii	Hartman's Sarcochilus	V		1	u
Senna acclinis	**Rainforest Cassia**	**E1**		**5**	**p**
Thesium australe	Austral Toadflax	V	V	7	u
Tinospora smilacina	Tinospora Vine	E1		2	u
Tinospora tinosporoides	Arrow-head Vine	V		1	u
Triplarina imbricata	Creek Triplarina	E1		6	u
Tylophora woollsii	**Cryptic Forest Twiner**	**E1**	**E**	**2**	**p**
Typhonium sp. aff. brownii	Stinky Lily	E1		3	u
Zieria prostrata	Headland Zieria	E1		7	u

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Fax - (02) 6651 6890

6.2 APPENDIX 2 - EPBC Act Matters

Matters of National Environmental Significance

Wetlands of International Significance (Ramsar Sites)

- LITTLE LLANGOTHLIN NATURE RESERVE

Study site is within same catchment as the above Ramsar site.

Migratory Species or species habitat likely to occur within area

- *Haliaeetus leucogaster* White-bellied Sea-Eagle
- *Hirundapus caudacutus* White-throated Needletail
- ***Monarcha melanopsis* Black-faced Monarch**
- *Monarcha trivirgatus* Spectacled Monarch
- *Myiagra cyanoleuca* Satin Flycatcher
- ***Rhipidura rufifrons* Rufous Fantail**
- *Xanthomyza phrygia* Regent Honeyeater

Migratory Wetland Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe
Rostratula benghalensis s. lat. Painted Snipe

Other Matters Protected by the EPBC Act

Species or species habitat may occur within area and/or breeding likely to occur within area
Apus pacificus Fork-tailed Swift
Ardea alba Great Egret, White Egret
***Ardea ibis* Cattle Egret**
Gallinago hardwickii Latham's Snipe, Japanese Snipe
Haliaeetus leucogaster White-bellied Sea-Eagle
Hirundapus caudacutus White-throated Needletail
Lathamus discolor Swift Parrot
Merops ornatus Rainbow Bee-eater
***Monarcha melanopsis* Black-faced Monarch**
Monarcha trivirgatus Spectacled Monarch
Myiagra cyanoleuca Satin Flycatcher
***Rhipidura rufifrons* Rufous Fantail**
Rostratula benghalensis s. lat. Painted Snipe

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Ph - (02) 6651 5484
Fax - (02) 6651 6890

6.3 APPENDIX 3: Plant Species Recorded on Subject Site

= Introduced species; + = Planted specimens

Scientific Name	Common Name	Scientific Name	Common Name	Scientific Name	Common Name
Acacia maidenii	Maidens Wattle	*Dichondra repens*	Kidneyweed	*Neolitsea dealbata*	Bolly Gum
Adiantum hispidum	Rough Maiden-hair Fern	*Doodia aspera*	Rasp Fern	*Oxalis corniculata**	Yellow Oxalis
Alocasia brisbanensis	Cunjevoi	*Doryphora sassafras*	Sassafras	*Oxalis debilis var. corymbosa**	Pink Oxalis
*Anagallis arvensis**	Scarlet Pimpernel	*Duboisia myoporoides*	Corkwood	*Parsonsia straminea*	Silkpod
*Andropogon virginicus**	Whiskey Grass	*Elaeocarpus obovatus*	Hard Quandong	*Paspalum sp.**	Paspalum
Araucaria cunninghamii+	Hoop Pine	*Elattostachys nervosa*	Beetroot	*Passiflora edulis**	Edible Passionfruit
*Araujia sericiflora**	Moth Vine	*Endiandra sieberi*	Hard Corkwood	*Passiflora subpeltata**	White Passionfruit
Archontophoenix cunninghamiana	Bangalow Palm	*Entolasia stricta*	Wiry Panic	*Pennisetum clandestinum**	Kikuyu
*Ardisia crenulata**	Ardisia	*Eucalyptus grandis*	Flooded Gum	*Pilidiostigma glabrum*	Plum Myrtle
*Bidens pilosa**	Cobblers Pegs	*Eucalyptus saligna*	Blue Gum	*Pittosporum undulatum*	Sweet Pittosporum
Callicoma serratifolia	Black Wattle	*Eustrephus latifolius*	Wombat Berry	*Plantago lanceolatus**	Plantain
Calochlaena dubia	Soft Ground Fern	*Ficus coronata*	Sandpaper Fig	*Protasparagus aethiopicus**	Asparagus Fern
Cardamine paucijuga	Bittercress	*Geranium sp.*	Native Geranium	*Phyolacca americana**	Pokeweed
Carex sp.	Sedge	*Glochidion ferdinandi*	Cheese Tree	*Rubus nebulosus*	Green Bramble
Castanospermum australe+	Black Bean	*Guioa semiglauca*	Guioa	*Rubus rosifolius*	Rose-leaved Raspberry
Casuarina cunninghamiana	River Oak	*Hibbertia scandens*	Trailing Guinea Flower	*Rumex crispus**	Dock
Cayratia clematidea	Native Grape	*Hypochaeris radicata**	Dandelion	*Senecio madagascariensis**	Fireweed
Ceratopetalum apetalum	Coachwood	*Imperata cylindrica var. major*	Bladey Grass	*Senna septemptrionalis**	Senna
Christella dentata	Binung	*Juncus sp.*	Rush	*Senna pendula var. glabrata**	Senna
*Cinnamomum camphora**	Camphor Laurel	*Lantana camara**	Lantana	*Sida rhombifolia**	Paddys Lucerne
*Cirsium vulgare**	Thistle	*Ligustrum sinense**	Small-leaved Privet	*Solanum capsicoides**	Devil's Apple
Cissus antarctica	Water Vine	*Lobelia trigonocaulis*	Forest Bluebell	*Solanum mauritianum**	Wild Tobacco

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Scientific Name	**Common Name**	**Scientific Name**	**Common Name**	**Scientific Name**	**Common Name**
*Colocasia esculenta**	Taro	*Lomandra hystrix*	Creek Mat Rush	*Sonchus oleraceus**	Soft Thistle
*Conyza albida**	Fleabane	*Lonicera japonica**	Honeysuckle	*Sporobolus africanus**	Giant Parramatta Grass
Cordyline stricta	Native Flax	*Macadamia tetraphylla+*	Macadamia	*Stenotaphrum secundatum**	Buffalo Grass
Cryptocarya glaucescens	Jackwood	*Macfadyena unguis-cati**	Cats Claw Creeper	*Trifolium repens**	White Clover
Cyathea australis	Tree Fern	*Modiola caroliniana**	Red-flowered Mallow	*Tristaniopsis laurina*	Water Gum
Cyathea cooperi	Tree Fern	*Morinda jasminoides*	Morinda	*Wilkiea heugeliana*	Veiny Wilkea

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6.4 APPENDIX 4: 7-part Test

As indicated in Section 4 above, the proposed activity has the potential to affect threatened species, populations, ecological communities, or their habitats, namely the Koala, and therefore the application of the "7-part test" is required in accordance with S5A of the EP&A Act (1979).

1. In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

The removal of one specimen of a Koala food tree (Flooded Gum, *Eucalyptus grandis*) is not likely to place the local Koala population at risk of extinction. An extensive planting of local Koala food trees is proposed as amelioration.

2. In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

No endangered population is affected by the proposed action.

3. In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

No Endangered Ecological Community or Critically Endangered Ecological Community is affected by the proposed action.

4. In relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

No threatened species habitat is proposed for removal, apart from one mature Flooded Gum. Replacement of Koala, and other threatened species, habitat is proposed through planting of local trees to link remnant native vegetation on the site.

***5.* Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).**

There is no critical habitat in the study area.

6. Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

The action proposed is consistent with the draft Koala Recovery Plan (NPWS 2003) in that planting of local Koala food trees is prposed as ameliorative measure such that the impact upon Koala is negated.

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7. **Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.**

The action of removal of a native tree specimen constitutes part of a Key Threatening Process: Clearing of Native Vegetation. However, proposed ameliorative planting is intended to replace original native vegetation on the subject site.

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Fax - (02) 6651 6890