LEGEND

- Marblewood (*Acacia bakeri*)
- Fine-leaved tuckeroo (*Lepiderema pulchella*)
- Spiny gardenia (*Randia moorei*)
- Yiel yiel (*Grevillea hilliana*)
- Coolamon (*Syzygium moorei*)
- Brush cassia (*Cassia brewsteri* var. *marksiana*)
- Scented acronychia (*Acronychia littoralis*)
- Green-leaved rose walnut (*Endiandra muelleri* subsp. *bracteata*)
- Site Outline

SOURCE:
Flora - James Warren & Associates Pty Ltd
June/July 2004, July 2006, July/Sept 2007 & Feb 2008
Aerial - Michel Group Services (Ref: 6400-197.dwg)
- photo taken March 2010

0 500m

SCALE: 1 : 12 500 @ A3

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Cobaki Lakes, Cobaki, NSW
Tweed Shire Council

FIGURE 8

PREPARED: BW
DATE: 30 June 2010
FILE: 97038_SA_Base.dwg

TITLE

LOCATION OF THREATENED FLORA

N

LEGEND

- Marblewood (*Acacia bakeri*)
- Fine-leaved tuckeroo (*Lepiderema pulchella*)
- Spiny gardenia (*Randia moorei*)
- Yiel yiel (*Grevillea hilliana*)
- Coolamon (*Syzygium moorei*)
- Brush cassia (*Cassia brewsteri* var. *marksiana*)
- Scented acronychia (*Acronychia littoralis*)
- Green-leaved rose walnut (*Endiandra muelleri* subsp. *bracteata*)
- Site Outline

SOURCE:
Flora - James Warren & Associates Pty Ltd
June/July 2004, July 2006, July/Sept 2007 & Feb 2008
Aerial - Nearmap Aerial Photography
- photo taken March 2010

0 50m 100m

SCALE: 1 : 4000 @ A3

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Cobaki Lakes, Cobaki, NSW
Shire of Tweed

FIGURE 8A

PREPARED: BW
DATE: 30 June 2010
FILE: 97038_SA_Base.dwg

TITLE

LOCATION OF THREATENED FLORA

N

LEGEND

- Marblewood (*Acacia bakeri*)
- Fine-leaved tuckeroo (*Lepiderema pulchella*)
- Spiny gardenia (*Randia moorei*)
- Yiel yiel (*Grevillea hilliana*)
- Coolamon (*Syzygium moorei*)
- Brush cassia (*Cassia brewsteri* var. *marksiana*)
- Scented acronychia (*Acronychia littoralis*)
- Green-leaved rose walnut (*Endiandra muelleri* subsp. *bracteata*)
- Site Outline

SOURCE:
Flora - James Warren & Associates Pty Ltd
June/July 2004, July 2006, July/Sept 2007 & Feb 2008
Aerial - Michel Group Services (Ref. 6400-107.dwg)
- photo taken March 2010

0 50m 100m

SCALE: 1 : 4000 @ A3

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Cobaki Lakes, Cobaki, NSW
Shire of Tweed

FIGURE 8B

PREPARED: BW
DATE: 30 June 2010
FILE: 97038_SA_Base.dwg

TITLE

LOCATION OF THREATENED FLORA

N

LEGEND

- Marblewood (*Acacia bakeri*)
- Fine-leaved tuckeroo (*Lepiderema pulchella*)
- Spiny gardenia (*Randia moorei*)
- Yiel yiel (*Grevillea hilliana*)
- Coolamon (*Syzygium moorei*)
- Brush cassia (*Cassia brewsteri* var. *marksiana*)
- Scented acronychia (*Acronychia littoralis*)
- Green-leaved rose walnut (*Endiandra muelleri* subsp. *bracteata*)
- Site Outline

SOURCE:
Flora - James Warren & Associates Pty Ltd
June/July 2004, July 2006, July/Sept 2007 & Feb 2008
Aerial - Mached Group April 2008 (Ref: 6400_Lakes.dwg)
- photo taken March 2010

0 50m 100m

SCALE: 1 : 4000 @ A3

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Cobaki Lakes, Cobaki, NSW
Shire of Tweed

FIGURE 8C

PREPARED: BW
DATE: 30 June 2010
FILE: 97038_SA_Base.dwg

TITLE

LOCATION OF THREATENED FLORA

- White lace flower (*Archidendron hendersonii*) – Vulnerable (TSC Act 1995);
- Stinking cryptocarya (*Cryptocarya foetida*) – Vulnerable (TSC Act 1995 & EPBC Act 1999);
- Pink nodding orchid (*Geodorum densiflorum*) - Endangered (TSC Act 1995);
- Rough-shelled bush nut (*Macadamia tetraphylla*) – Vulnerable (TSC Act 1995 & EPBC Act 1999); and
- Swamp orchid (*Phaius australis*) – Endangered (TSC Act 1995 & EPBC Act 1999).

The known locations of Threatened flora species adjacent to the Subject site are shown in **FIGURE 9.**

2.4.2 Fauna

Twelve (12) Threatened[3] fauna species have been recorded from the Subject site (**FIGURE 10**). These species are as follows:

- Wallum froglet (*Crinia tinnula*) – Vulnerable (TSC Act);
- Black-necked stork (*Xenorhynchus asiaticus*) – Endangered (TSC Act);
- Powerful owl (*Ninox strenua*) – Vulnerable (TSC Act);
- Masked owl – (*Tyto novaehollandiae*) - Vulnerable (TSC Act);
- Osprey (*Pandion haliaetus*) - Vulnerable (TSC Act);
- Koala (*Phascolarctos cinereus*) - Vulnerable (TSC Act);
- Grey-headed flying-fox (*Pteropus poliocephalus*) - Vulnerable (EPBC Act);
- Little bent-wing bat (*Miniopterus australis*) - Vulnerable (TSC Act);
- Common bent-wing bat (*Miniopterus schreibersii*) - Vulnerable (TSC Act);
- Eastern free-tail bat (*Mormopterus norfolkensis*) - Vulnerable (TSC Act);
- Yellow-bellied sheathtail bat (*Saccolaimus flaviventris*) - Vulnerable (TSC Act); and
- Greater broad-nosed bat (*Scoteanax rueppellii*) - Vulnerable (TSC Act).

An additional eighteen (18) Threatened species have been recorded during surveys on adjacent land, including:

- Wallum sedge-frog (*Litoria olongburensis*) - Vulnerable (TSC Act 1995) & Endangered (EPBC Act 1999);
- Bush hen (*Amaurornis moluccana*) - Vulnerable (TSC Act 1995);
- Glossy black-cockatoo (*Calyptorhynchus lathami*) - Vulnerable (TSC Act 1995);
- Brolga (*Grus rubicunda*) - Vulnerable (TSC Act 1995);
- Black bittern (*Ixobrychus flavicollis*) - Vulnerable (TSC Act 1995);
- Mangrove honeyeater (*Lichenostomus fasciogularis*) - Vulnerable (TSC Act 1995);
- White-eared monarch (*Monarcha leucotis*) - Vulnerable (TSC Act 1995);
- Wompoo fruit-dove (*Ptilinopus magnificus*) - Vulnerable (TSC Act 1995);
- Rose-crowned fruit-dove (*Ptilinopus regina*) - Vulnerable (TSC Act 1995);
- Superb fruit-dove (*Ptilinopus superbus*) - Vulnerable (TSC Act 1995);

[3] As listed within schedules of the TSC Act (1995) and EPBC Act (1999).

N

TUGUN

BILINGA

COBAKI
BROADWATER

Legend

- *Archidendron hendersonii*
- *Cryptocarya foetida*
- *Lepiderema pulchella*
- *Macadamia tetraphylla*
- *Syzygium moorei*
- Subject Site

0 500m

1 : 20 000

SOURCE: Tugun Bypass Species Impact Statement (Dec 2004) Figure 4.5

SCALE: 1 : 20 000 @ A3

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Shire of Tweed

FIGURE 9

PREPARED: BW
DATE: 30 June 2010
FILE: 97038_SA_Bypass Flora.cdr

TITLE
LOCATION OF THREATENED FLORA ADJACENT TO SUBJECT SITE

N

LEGEND

- Black-necked stork (*Ephippiorhynchus asiaticus*)
- Osprey (*Pandion haliaetus*) - Old Nest
- Osprey (*Pandion haliaetus*) - New Nest
- Powerful owl (*Ninox strenua*)
- *Grey-headed flying-fox* (*Pteropus poliocephalus*)
- Koala (*Phascolarctos cinereus*)
- Wallum froglet (*Crinia tinnula*) Locations
- Masked owl (*Tyto novaehollandiae*)
- Site Outline

SOURCE:
Fauna - James Warren & Associates Pty Ltd
Aerial - Michel Group Services (Ref: 6400-197.dwg)
- photo taken March 2010

0 500m

SCALE: 1 : 12 500 @ A3

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FIGURE 10

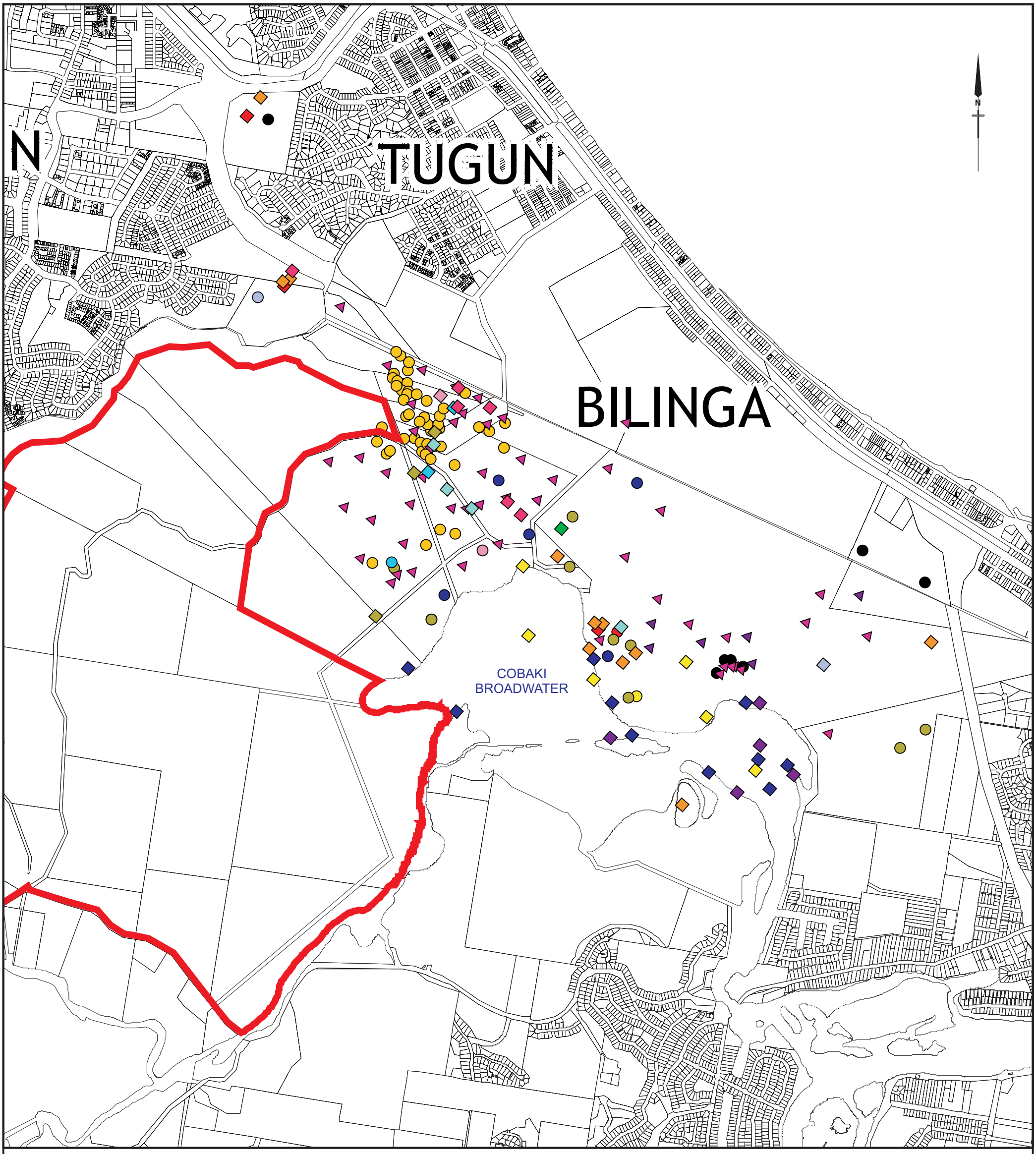
PREPARED: BW
DATE: 30 June 2010
FILE: 97038_SA_Base.dwg

TITLE

LOCATION OF THREATENED FAUNA

- Collared kingfisher (*Todiramphus chloris*) - Vulnerable (TSC Act 1995);
- Eastern grass owl (*Tyto longimembris*) - Vulnerable (TSC Act 1995);
- Large-footed myotis (*Myotis adversus*) - Vulnerable (TSC Act 1995);
- Eastern long-eared bat (*Nyctophilus bifax*) - Vulnerable (TSC Act 1995);
- Squirrel glider (*Petaurus norfolcensis*) - Vulnerable (TSC Act 1995);
- Common planigale (*Planigale maculata*) - Vulnerable (TSC Act 1995);
- Long-nosed potoroo (*Potorous tridactylus*) - Vulnerable (TSC Act 1995); and
- Common blossom bat (*Syconycteris australis*) - Vulnerable (TSC Act 1995).

The known locations of Threatened fauna sightings adjacent to the Subject site are shown in **FIGURE 11.**



Legend

- Black bittern
- Brolga
- Bush hen
- Bush hen (unconfirmed sighting)
- Glossy black cockatoo
- Eastern grass owl
- Mangrove honeyeater
- Masked owl
- Osprey
- Rose-crowned fruit-dove
- Superb fruit-dove (unconfirmed sighting)
- Wallum sedge frog
- Wallum froglet
- Black flying fox
- Common blossom bat
- Common planigale
- Eastern long-eared vat
- Grey-headed flying fox (roost site)*
- Large-footed myotis
- Little bent-wing bat
- Long-nosed potoroo
- Squirrel glider
- Subject Site

Grey-headed flying fox was recorded throughout the area.

0 500m

1 : 20 000

SOURCE: Tugun Bypass Species Impact Statement (Dec 2004) Figures 4.6-4.8

SCALE: 1 : 20 000 @ A3

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Revised Assessment of Significance
Cobaki Lakes, Cobaki, NSW
Shire of Tweed

FIGURE 11

PREPARED: BW
DATE: 30 June 2010
FILE: 97038_SA_Bypass Fauna.cdr

TITLE
LOCATION OF THREATENED FAUNA ADJACENT TO SUBJECT SITE

3. THREATENED SPECIES ASSESSMENTS

3.1 Background

An Assessment of Significance (7-part test equivalence) has been undertaken for all listed species/EEC's recorded on the site, including threatened fauna predicted to occur over time **(SECTION 2)**. Potential impacts on threatened species, populations or ecological communities, or their habitats were assessed using the *Threatened Species Assessment Guidelines: The Assessment of Significance* (DECC 2007).

The Assessment of Significance should not be considered a "pass or fail" test as such, but a system allowing proponents to undertake a qualitative analysis of the likely impacts and ultimately whether further assessment needs to be undertaken via a Species Impact Statement. All factors must be considered and an overall conclusion must be drawn from all factors in combination.

3.2 Endangered Ecological Communities

3.2.1 Introduction

Six (6) Endangered Ecological Communities (EEC's) have been recorded on the site (**FIGURE 7**). An assessment of significance has been completed for each EEC below.

3.2.2 Factors for consideration

(a) In the case of a Threatened species, whether the life cycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

Not applicable for EEC's.

(b) In the case of an endangered population, whether the life cycle of the species that constitutes the endangered population is likely to be disrupted such that the viability of the population is likely to be significantly compromised.

Not applicable for EEC's.

(c) 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

A summary of impacts on EEC's recorded on the Subject site is provided in **TABLE 1.** It should be noted that the local occurrence of EEC's includes adjacent contiguous areas which maintain the movement of individuals and exchange of genetic material, however the calculation below were available for the Cobaki Lakes site only.

It is also worth noting that areas of EEC to be removed from the Subject site occur within existing 2(c) zoned land (i.e. Urban Expansion), land proposed to be rezoned as 2(c), or land that may otherwise be cleared in accordance with existing use rights.

TABLE 1
POTENTIAL LOSS OF EEC'S FROM THE COBAKI LAKES SITE

EEC Description	Area of existing EEC (ha)	Area of EEC to be removed/ modified (ha)
Swamp sclerophyll forest on coastal floodplain	3.8	3.8 (100%)
Lowland rainforest on floodplain	1.75	0.01 (0.57%)
Lowland rainforest	9.24	0.10 (1.08%)
Freshwater wetlands	35.39	24.12 (68.15%)
Swamp oak floodplain forest	4.52	0.73 (16.15%)
Coastal saltmarsh	54.63	9.69 (17.73%)

The risk of extinction of an EEC relates to the likelihood that the local occurrence of EEC will become extinct either in the short term or the long term as a result of direct or indirect impacts.

The potential impacts of the proposed development on EEC's recorded on the site are discussed briefly below. A plan showing the locations of EEC's in relation to the proposed development is shown in **FIGURE 12**.

Potential impacts on EEC's

Swamp sclerophyll forest on coastal floodplain

This EEC occurs in the central eastern potion of the Subject site and is comprised of approximately 3.80 hectares of Mid-high open woodland (*Eucalyptus robusta*) (**FIGURE 7**).

The entire area of existing Swamp sclerophyll forest on coastal floodplain EEC will be removed from the Subject site during construction activities (**FIGURE 12**). The conservation significance of this community has been severely compromised by past land-use activities including cattle grazing and periodic slashing which has resulted in the removal of the midstorey and the prevalence of introduced grasses and common agricultural weeds in the groundcover layer. The Mid-high open woodland (*E. robusta*) community on the Subject site is therefore generally comprised of scattered trees within a slashed/grazed grassland environment.

Offsets to ensure no net loss are discussed below.

Lowland rainforest on floodplain

This EEC occurs as several isolated patches of forest in the southern and northern portions of the Subject site generally in association with drainage lines and depressions