

JAMES WARREN & Associates Pty Ltd

ENVIRONMENTAL CONSULTANTS



ASSESSMENT OF SIGNIFICANCE (7-PART TEST EQUIVALENCE)

COBAKI LAKES

PREFERRED PROJECT REPORT

OCTOBER 2009

A REPORT TO LEDA MANORSTEAD PTY LTD

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1. INTRODUCTION

1.1 Background

James Warren and Associates (JWA) have been engaged by LEDA Manorstead Pty Ltd to complete an Assessment of Significance (7-part test equivalence) to accompany the Preferred Project Report for the proposed development at Cobaki Lakes.

JWA prepared an Ecological Assessment for the Cobaki Lakes site in October 2008 in response to the Director General's Environmental Assessment Requirements (DGEAR's) issued 21st August 2007. The Ecological Assessment was placed on public exhibition along with various other reports required under the DGEAR's.

Following submissions from the public and State Agencies, some amendments have occurred to the Concept Plan. This Assessment of Significance (7-part test equivalence) has been completed to provide additional information and has considered changes to the Concept Plan.

1.2 The Subject Site

1.2.1 Site description

The Cobaki Lakes site is located in Northern NSW adjacent to the NSW - Queensland State border (**FIGURE 1**). The site occupies the lower or eastern end of the Cobaki - Piggabeen Valley system.

The Cobaki Lakes site consists of land described as Lot 1 DP 570076, Lot 2 DP 566529, Lot 1 DP 562222, Lot 1 DP 570077, Lot 1 823679, Lots 46, 54, 55, 199, 200, 201, 202, 205, 206, 209, 228 & 305 DP 755740, Cobaki Lakes, off Piggabeen Road, Tweed Heads. The site covers an area of approximately 598 hectares.

The site topography is considered as two (2) separate systems.

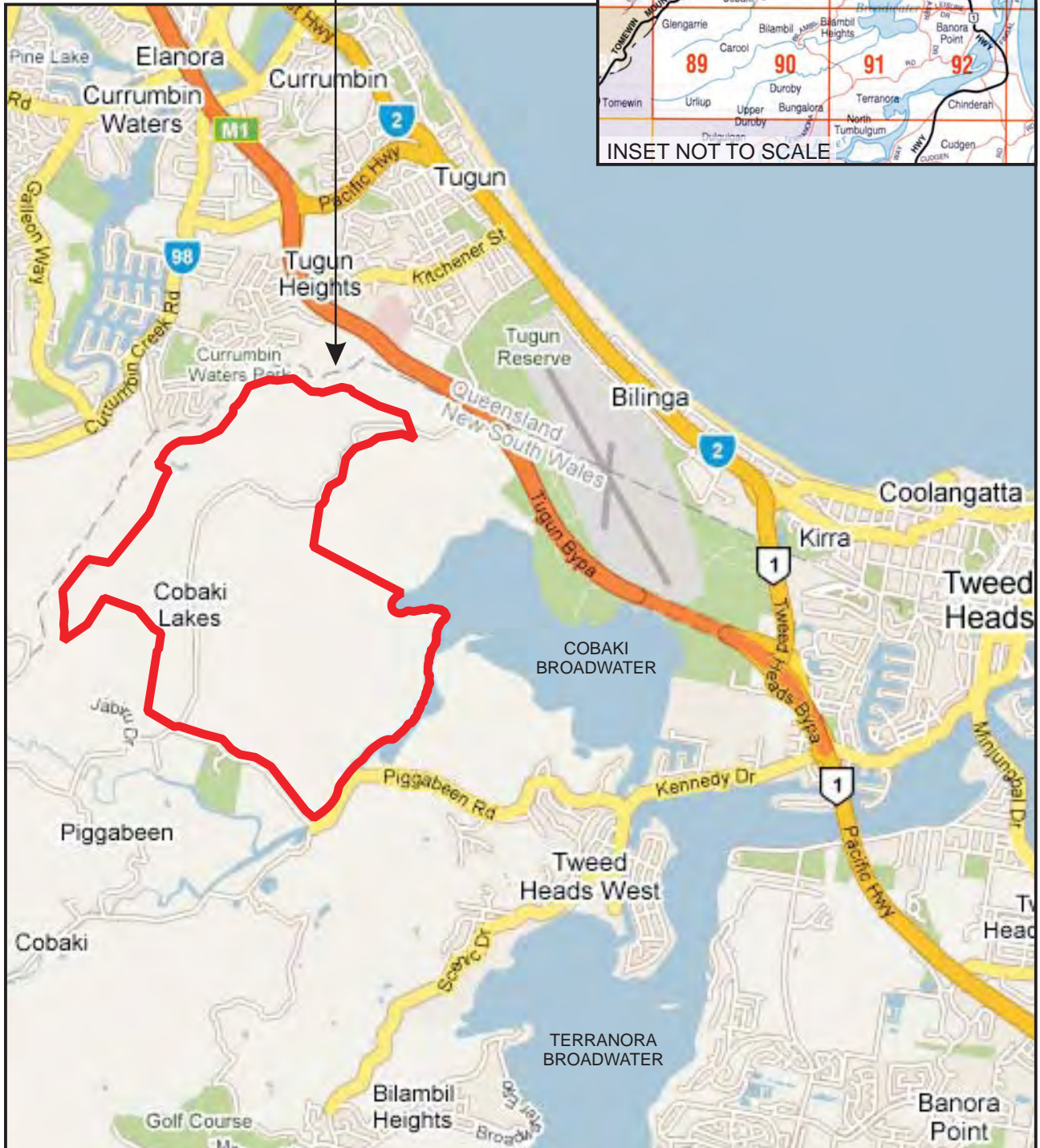
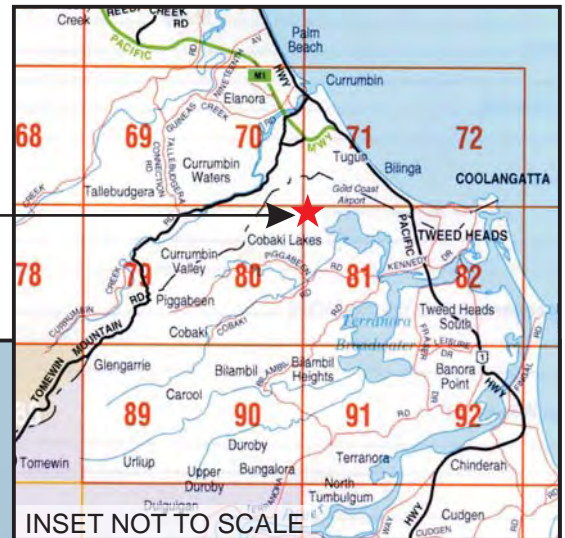
- The Sub-coastal foothills and outcrops of the eastern end of the McPherson Range which comprises the western and northern part of the site, covering an area of approximately 280 hectares.
- The hills enclose a drainage basin comprising the coastal plains in a composite of river/estuarine floodplain and sandplain being former sandbanks, beach or rolled and flattened dunes system.

FIGURE 2 shows a recent aerial photograph of the site. It is worth noting that vegetation clearing and earthworks have occurred in various locations of the subject site (in accordance with relevant approvals) subsequent to this aerial photograph. However, the vegetation assessment has utilised a combination of aerial interpretation and on-site surveys and reflects the current distribution and extent of vegetation communities.

Previous land clearing for agricultural purposes (i.e. grazing) has occurred across the majority of the site. Currently eighteen (18) broad vegetation associations comprising twenty-four (24) vegetation communities occur on the site.



SUBJECT SITE



SOURCE: Google Maps

SCALE: 1 : 50 000 @ A4

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CLIENT
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PROJECT
Assessment of Significance
Cobaki Lakes, Cobaki, NSW
Shire of Tweed

FIGURE 1

PREPARED: BW
DATE: 23 October 2009
FILE: 97038_SA_Locality.cdr

TITLE

**LOCALITY
PLAN**



LEGEND

-  Cadastral Boundaries
-  Restriction on Use Area
-  Site Outline

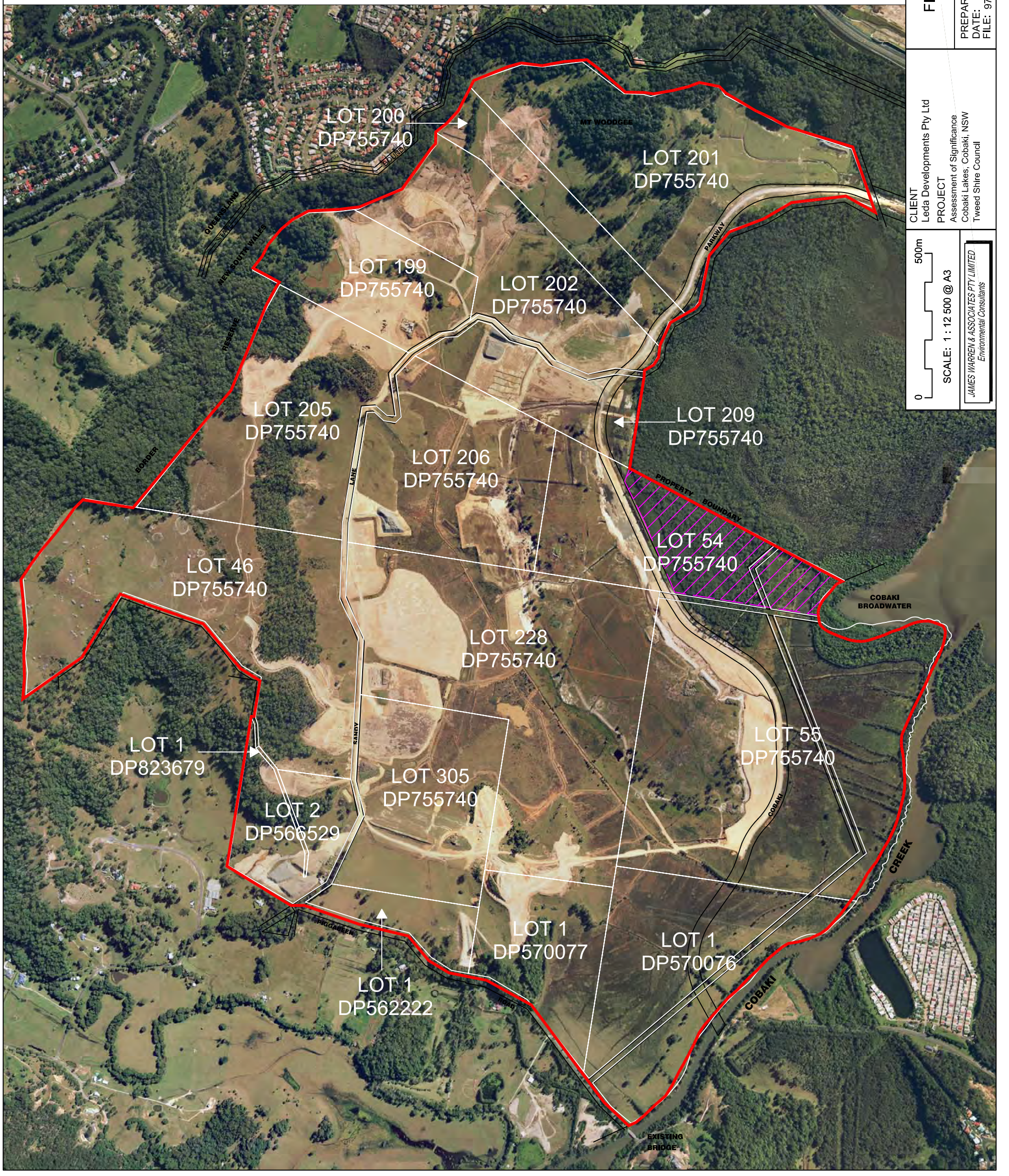
SOURCE:
Aerial - Qasco taken April 2008 (Cobaki_Lakes.tiff)

TITLE

FIGURE 2

SUBJECT SITE

PREPARED: BW
DATE: 23 October 2009
FILE: 97038_SA_Base.dwg



CLIENT
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Tweed Shire Council

0 500m

SCALE: 1 : 12 500 @ A3

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1.2.2 Existing use rights

The property has been grazed by cattle since the early 1900's. Landuse activities which have been a long term and constant feature of this site are defined in Section 106 of the EP&A Act 1979. Existing use rights occur over the subject site for routine agricultural activities including the construction and maintenance of drains, fencing and firebreaks as well as pasture improvement activities.

1.2.3 Land-use Zones

The Subject site currently contains the following landuse zones:

- 2(c) Urban Expansion
- 2(e) Residential Tourist Zone
- Recreation (Special Purposes)
- Environmental Protection (Scenic Escarpment)
- Environmental Protection (Habitat)

The current zoning plan is shown in **FIGURE 3**. It is worth noting that the Concept Plan proposes amendments to the current zoning of the site. These amendments fall into five categories as follows:

1. Amendments in accordance with Clause 52 of the Tweed LEP 2000;
2. Amendments to zonings contemplated by existing Development Consents;
3. Other proposed additions to the 2(c) Urban Expansion zone;
4. Proposed additions to the 7(l) Environmental Protection (Habitat) zone; and
5. Proposed additions to the 6(b) Recreation zone.

The proposed landuse zones are shown in **FIGURE 4**.

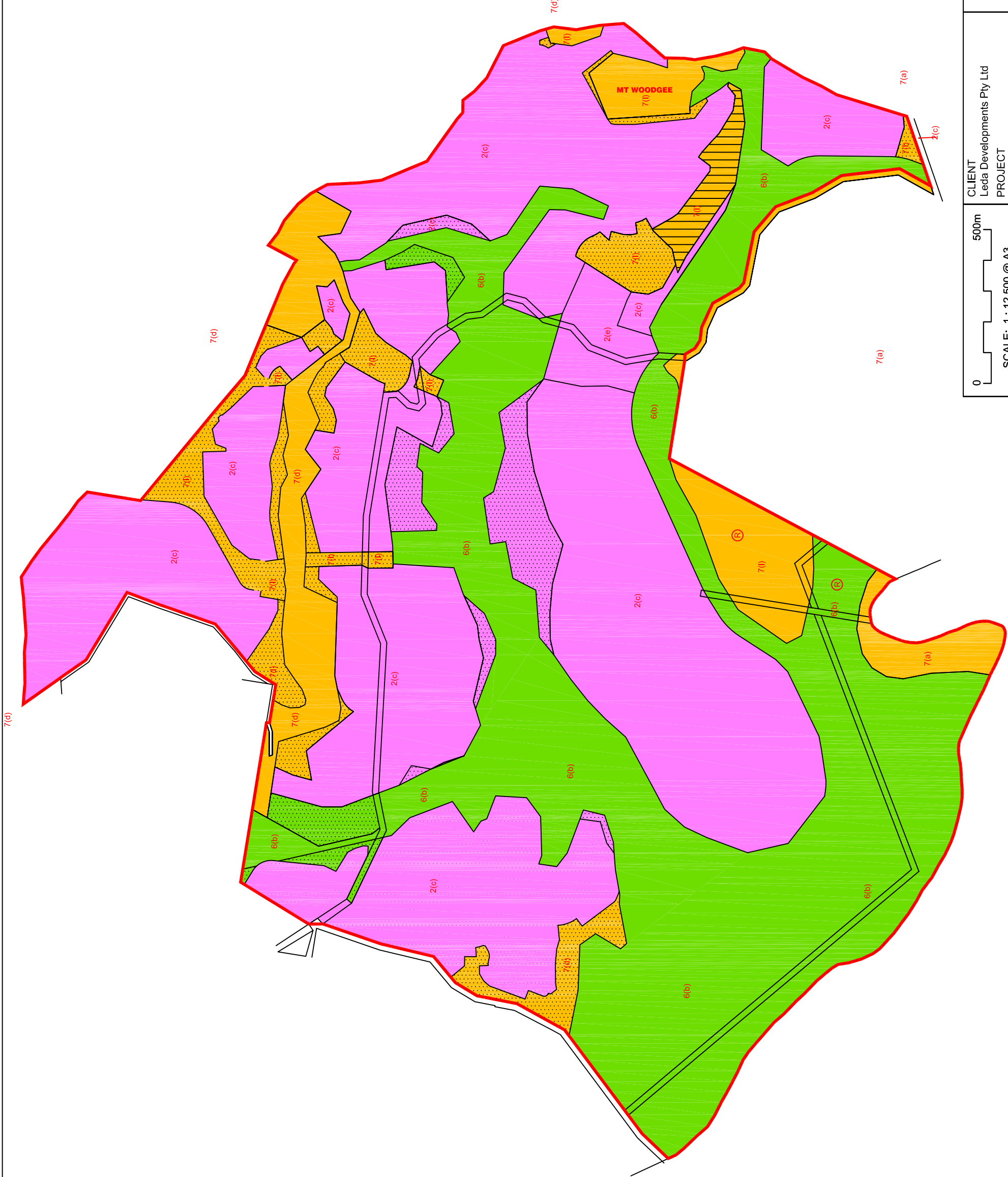
1.2.4 Soils and Geology

The Cobaki Lakes site occupies the lower or eastern end of the Cobaki - Piggabeen Valley system. The foothills enclose a coastal plain drainage basin comprising a composite of river/estuarine floodplain and sand-plain formed by sandbanks, beach or rolled and flattened dune systems.

The geology and soils of the site have been described in detail by Gilbert & Sutherland within the report Soil Survey, Geotechnical Review, Acid Sulphate Soil Assessment & Management Plan - Cobaki Lakes Concept Plan (April 2008).

1.3 Proposed Development

The site covers an area of approximately five hundred and ninety-eight (598) hectares and is proposed to be developed into a master planned residential community. A concept plan for the development is shown as **FIGURE 5**. The proposed development will include the following:



LEGEND

1. RURAL

- 1(a) Rural
- 1(b1) Agricultural Protection
- 1(b2) Agricultural Protection
- 1(c) Rural Living

2. RESIDENTIAL

- 2(a) Low Density Residential
- 2(b) Medium Density Residential
- 2(c) Urban Expansion
- 2(d) Village
- 2(e) Residential Tourist
- 2(f) Tourism

5. SPECIAL USES

- 5(a) Special Uses

6. OPEN SPACE

- 6(a) Open Space
- 6(b) Recreation

7. ENVIRONMENTAL PROTECTION

- 7(a) Environmental Protection (Wetlands & Littoral Rainforests)
- 7(d) Environmental Protection (Scenic/Escarpment)
- 7(f) Environmental Protection (Coastal Lands)
- 7(l) Environmental Protection (Habitat)

SEPP14 - Coastal Wetlands

Clause 52 (Cobaki Lakes)

Clause 52 (Cobaki Lakes)

Restriction On Use (DP1051024)

Site Outline

SOURCE:
Zoning - Michel Group Services (Ref: 6400-133A.dwg)

0 500m
SCALE: 1 : 12 500 @ A3
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Leda Developments Pty Ltd
PROJECT
Assessment of Significance
Cobaki Lakes, Cobaki, NSW
Tweed Shire Council

FIGURE 3
PREPARED: BW
DATE: 23 October 2009
FILE: 97038_SA_Base.dwg

TITLE
EXISTING
LANDUSE
ZONES



LEGEND

1. RURAL

- 1(a) Rural
- 1(b1) Agricultural Protection
- 1(b2) Agricultural Protection
- 1(c) Rural Living

2. RESIDENTIAL

- 2(a) Low Density Residential
- 2(b) Medium Density Residential
- 2(c) Urban Expansion
- 2(d) Village
- 2(e) Residential Tourist
- 2(f) Tourism

5. SPECIAL USES

- 5(a) Special Uses

6. OPEN SPACE

- 6(a) Open Space
- 6(b) Recreation

7. ENVIRONMENTAL PROTECTION

- 7(a) Environmental Protection (Wetlands & Littoral Rainforests)
- 7(d) Environmental Protection (Scenic/Escarpment)
- 7(f) Environmental Protection (Coastal Lands)
- 7(l) Environmental Protection (Habitat)

SEPP14 - Coastal Wetlands

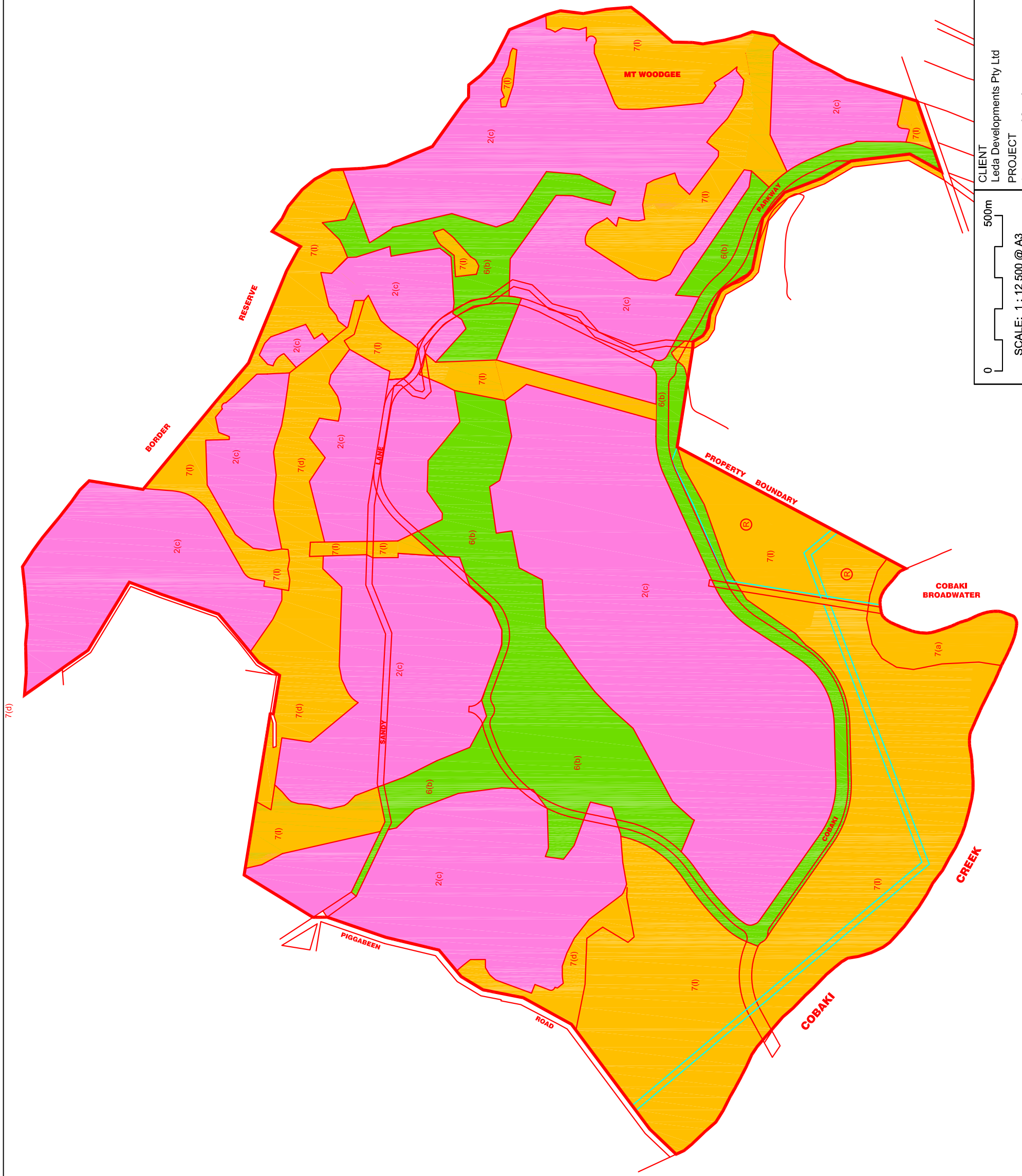
Clause 52 (Cobaki Lakes)

Clause 52 (Cobaki Lakes)

Restriction On Use (DP1051024)

Site Outline

SOURCE:
Zoning - Michel Group Services (Ref: 6400-155B.dwg)



0 500m

SCALE: 1 : 12 500 @ A3

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Cobaki Lakes, Cobaki, NSW
Tweed Shire Council

FIGURE 4

PROPOSED ZONING AMENDMENTS

PREPARED: BW
DATE: 23 October 2009
FILE: 97038_SA_Base.dwg

TITLE



LEGEND

- Town Centre / Neighbourhood Centre
- Residential
- Community Facilities/Education/Utilities
- Open Space
- Environmental Protection Area
- Lake
- * Proposed School
- * Proposed Community Facilities (Project Office - temporary use)
- * Proposed Restaurant
- Site Outline

SOURCE:
Layout - Design Forum Pty Ltd
(Ref: 01.01 Concept Plan Z.dwg)

TITLE
**DEVELOPMENT
CONCEPT
PLAN**

FIGURE 5

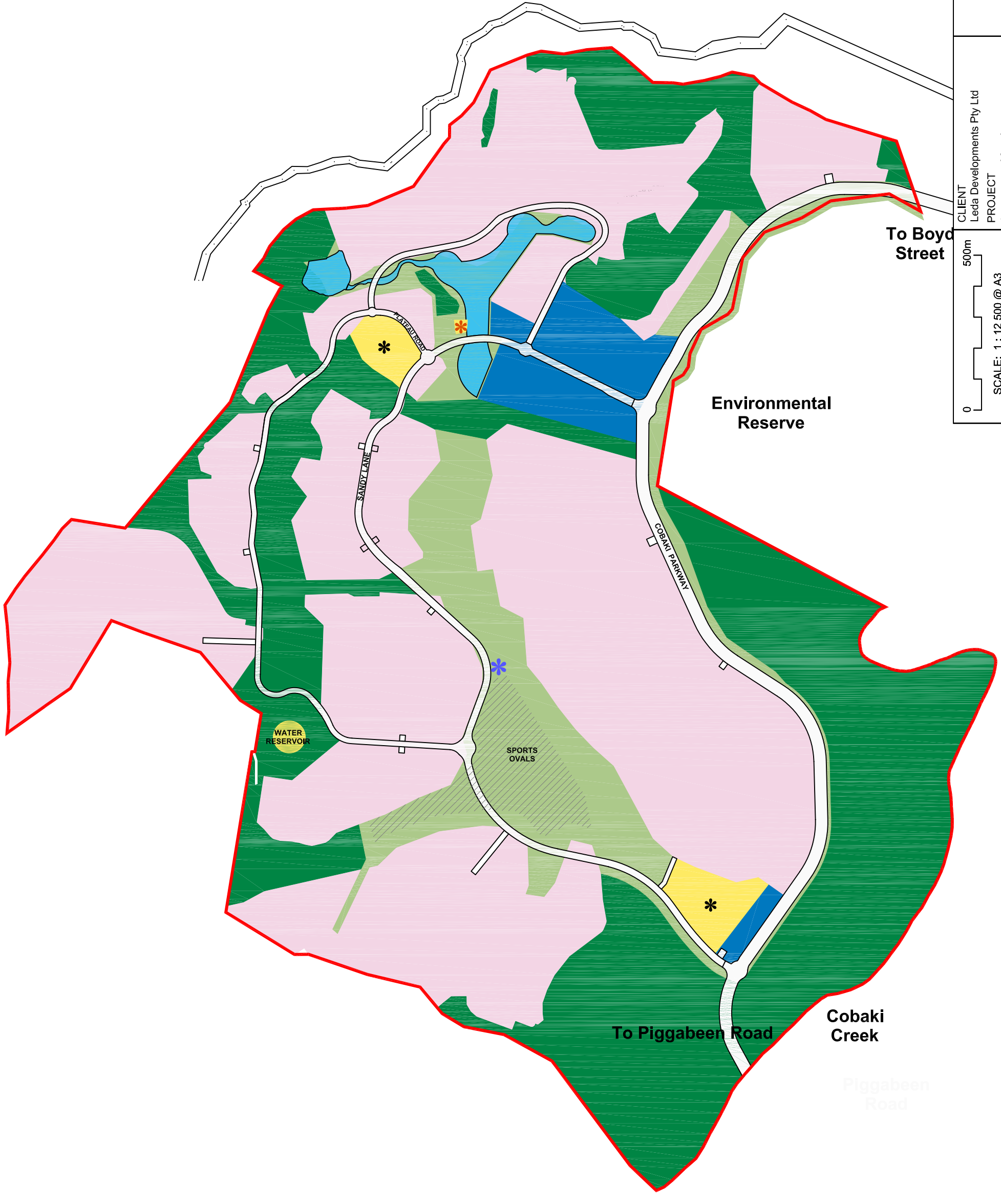
PREPARED: BW
DATE: 23 October 2009
FILE: 97038_SA_Base.dwg

CLIENT
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PROJECT
Assessment of Significance
Cobaki Lakes, Cobaki, NSW
Tweed Shire Council

0 500m
SCALE: 1 : 12 500 @ A3

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- Town centre (18.7 hectares);
- Residential (289.6 hectares);
- Education/Community facilities/Infrastructure (8.5 hectares);
- Public Open Space (76.6 hectares)
- Environmental protection areas (190.6 hectares); and
- Constructed lakes (9.2 hectares).

1.4 Scope of the Report

The NSW *Threatened Species Conservation Act 1995* (TSC Act 1995) requires that the planning and development approval process for development and other activities have regard to the potential for adverse impacts on Threatened flora and fauna species and their habitats.

The Minister for Planning has determined that the proposed development is a 'Major Project' under section 3A of the *Environmental Planning & Assessment Act 1979* (EPA Act 1979).

An Assessment of Significance (7-part test equivalence) has been undertaken for all listed species/EECs recorded on the site, including threatened species recorded adjacent to the site. Potential impacts on threatened species, populations or ecological communities, or their habitats was assessed using the *Threatened Species Assessment Guidelines: The Assessment of Significance* (DECC 2007).



2. ECOLOGICAL VALUES OF THE COBAKI LAKES SITE

2.1 Background

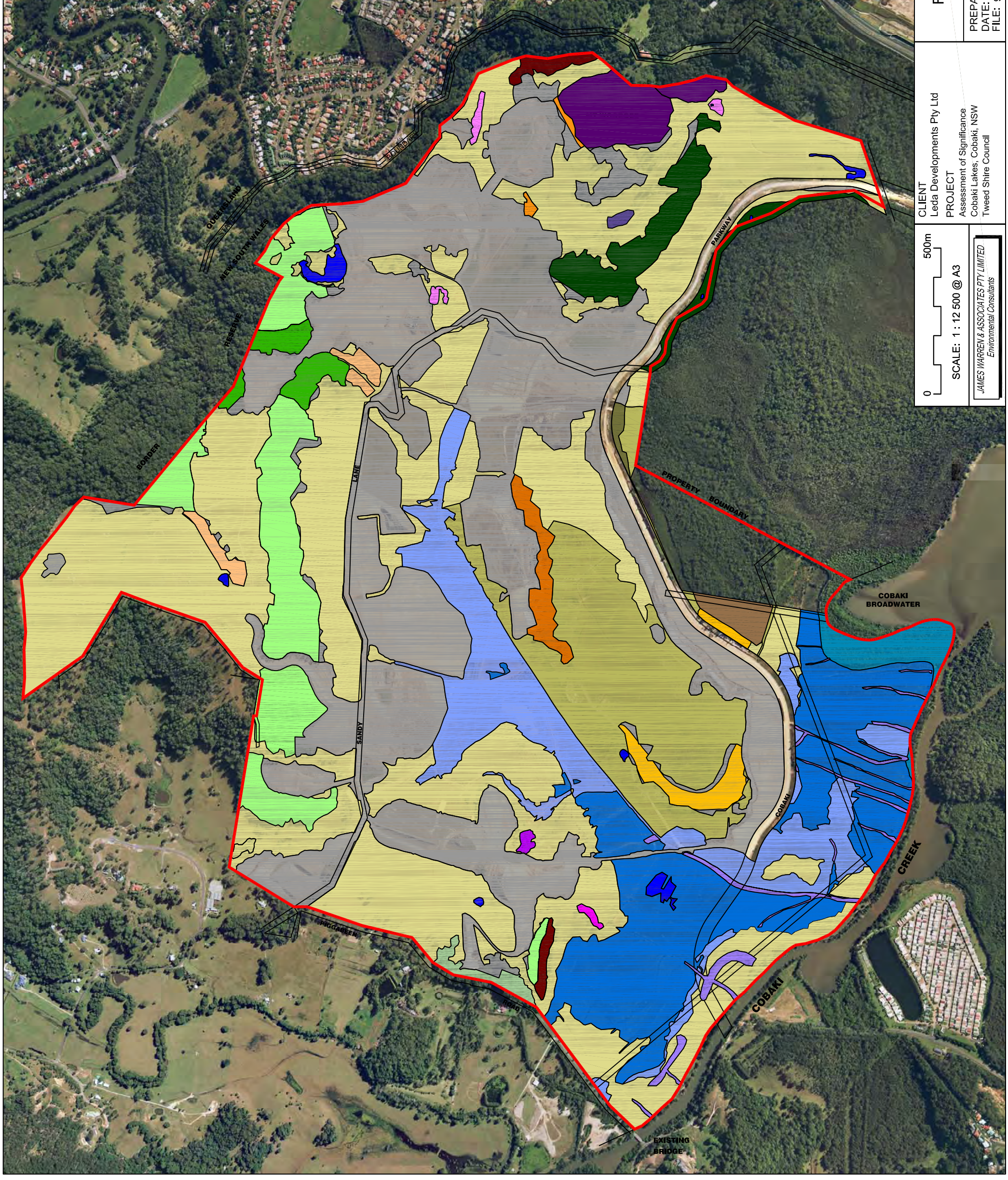
Cobaki Lakes has been comprehensively studied over the last twenty-five (25) years. The following significant ecological values have been recorded on the site:

- Twenty-four (24) vegetation communities;
- Six (6) Endangered Ecological Communities;
- Eight (8) Threatened flora species; and
- Twelve (12) Threatened fauna species.

2.2 Vegetation

The vegetation mapping for Cobaki Lakes was completed by JWA (2008) (FIGURE 6). Vegetation communities identified on site are as follows:

1. Very Tall Open/Closed Sclerophyll Forest (*Eucalyptus pilularis*, +/- *E. microcorys*, +/- *E. propinqua*, +/- *Corymbia intermedia*)
2. Tall Open/Closed Sclerophyll Forest (*E. propinqua*)
3. Tall Open Sclerophyll Woodland (*E. pilularis*)
4. Tall Open Sclerophyll Forest (*E. pilularis*, +/- *E. siderophloia* +/- *E. tereticornis*)
5. Tall Closed Forest (*Lophostemon confertus*, +/- *Araucaria cunninghamii*)
6. Tall Open Forest (*Archontophoenix cunninghamiana*)
7. Very Tall Closed Forest (*Araucaria cunninghamii*)
8. Mid-high Open/Closed Forest (Riparian species +/- Mixed species)
9. Tall/Very Tall Open/Closed Forest (*Lophostemon confertus* +/- Mixed rainforest species)
10. Tall Open Woodland (*Araucaria cunninghamii* +/- Mixed species)
11. Closed Scrub (*Banksia aemula*, *E. racemosa* +/- *Leptospermum* spp.)
12. Mid-high Open Woodland (Mixed rainforest species)
13. Mid-high Open Woodland (*Eucalyptus robusta*)
14. Mid-high Open Woodland (*Eucalyptus racemosa*)
15. Mid-high Open Woodland (*Eucalyptus siderophloia*)
16. Tall Closed Grassland/Fernland/Sedgeland (Mixed Species)
17. Low Closed Forest (Re-vegetation areas +/- Mixed *Eucalyptus* species)
18. Low Closed Grassland with Scattered Trees (Pastoral grasses +/- Mixed species)
19. Low Closed Grassland (*Sporobolus virginicus*, *Triglochin striata*, +/- *Casuarina glauca*)
20. Brackish Area (Mixed aquatic species)
21. Low to Mid-high Open Mangrove Forest (*Avicennia marina* var. *australasica* / *Aegiceras corniculatum* +/- *Casuarina glauca*)
22. Dam & Drainage Lines (Mixed aquatic species)



LEGEND

- Community 1 - Dry sclerophyll communities
- Community 1a - Very tall open/closed sclerophyll forest (*Eucalyptus pillularis* +/- *E. microcorys* +/- *E. propinqua* +/- *Corymbia intermedia*)
- Community 1b - Tall open/closed sclerophyll forest (*E. propinqua*)
- Community 1c - Tall open sclerophyll woodland (*E. pillularis*)
- Community 1d - Tall open sclerophyll forest (*E. pillularis* +/- *E. siderophloia* +/- *E. tereticornis*)
- Community 2 - Rainforest communities
- Community 2a - Tall closed forest (*Lophostemon confertus* +/- *Araucaria cunninghamii*)
- Community 2b - Tall open forest (*Archontophoenix cunninghamiana*)
- Community 2c - Very tall closed forest (*A. cunninghamii*)
- Community 2d - Mid-high open/closed forest (Riparian species +/- Mixed species)
- Community 3 - Tall/very tall open/closed forest (*L. confertus* +/- Mixed rainforest species)
- Community 4 - Tall open woodland (*A. cunninghamii* +/- Mixed species)
- Community 5 - Low closed forest (Heathland)
- Community 6 - Mid-high open woodland (Mixed rainforest species)
- Community 7 - Mid-high open woodland (*E. robusta*)
- Community 8 - Mid-high open woodland (*E. racemosa*)
- Community 9 - Mid-high open woodland (*E. siderophloia*)
- Community 10 - Tall closed grassland/fernland/segeland (Mixed species)
- Community 11 - Low closed forest (Revegetation areas +/- Mixed *Eucalyptus* species)
- Community 12 - Low closed grassland with scattered trees (Pastoral grasses +/- Mixed species)
- Community 13 - Low closed grassland (*Sporobolus virginicus*, *Triglochin striata* +/- *Casuarina glauca*)
- Community 14 - Rushland/segeland/grassland (Mixed aquatic species)
- Community 15 - Low to mid-high open mangrove forest (*Avicennia marina* var *australasica* / *Aegiceras corniculatum* +/- *Casuarina glauca*)
- Community 16 - Dams & drainage lines (Mixed aquatic species)
- Community 17 - Low open forest/woodland (*Casuarina glauca* +/- Mixed species)
- Community 18 - Slashed grassland/heathland/segeland (Mixed Species)
- Unvegetated land
- Site Outline

SOURCE:
Vegetation - James Warren & Associates Pty Ltd
July/Sept 2007 & May 2008
Aerial - Gasco taken April 2008 (Cobaki_Lakes.tiff)

FIGURE 6	TITLE VEGETATION COMMUNITIES
CLIENT Leda Developments Pty Ltd PROJECT Assessment of Significance Cobaki Lakes, Cobaki, NSW Tweed Shire Council	PREPARED: BW DATE: 23 October 2009 FILE: 97038_SA_BaseRD.dwg
SCALE: 1 : 12 500 @ A3 0 500m	JAMES WARREN & ASSOCIATES PTY LIMITED <i>Environmental Consultants</i>



23. Low open forest/woodland (*Casuarina glauca* +/- Mixed species)
24. Slashed Grassland/Heath land/Sedgeland (Mixed species)

2.3 Endangered Ecological Communities

Six (6) Endangered Ecological Communities (EECs)¹ are considered to occur on the site (JWA 2008) (FIGURE 7). These are as follows:

- Swamp sclerophyll forest on coastal floodplain - which occurs as an isolated clump of scattered Swamp mahogany in the central eastern of the Subject site;
- Lowland rainforest on floodplain - occurring at various locations generally in association with drainage lines and depressions;
- Lowland rainforest - occurring on Mt. Woodgee and on lower slopes in the northern portion of the subject site;
- Freshwater wetlands - occurring in the central and eastern portions of the site;
- Swamp oak floodplain forest - occurring in association with drainage lines in the south-east of the site; and
- Coastal saltmarsh in the NSW North Coast bioregion - occurring in the south-east of the site.

2.4 Threatened Species

2.4.1 Flora

Eight (8) Threatened² flora species have been recorded in the most recent vegetation survey (JWA 2008) (FIGURES 8, 8a & 8b). Threatened flora recorded includes the following species:

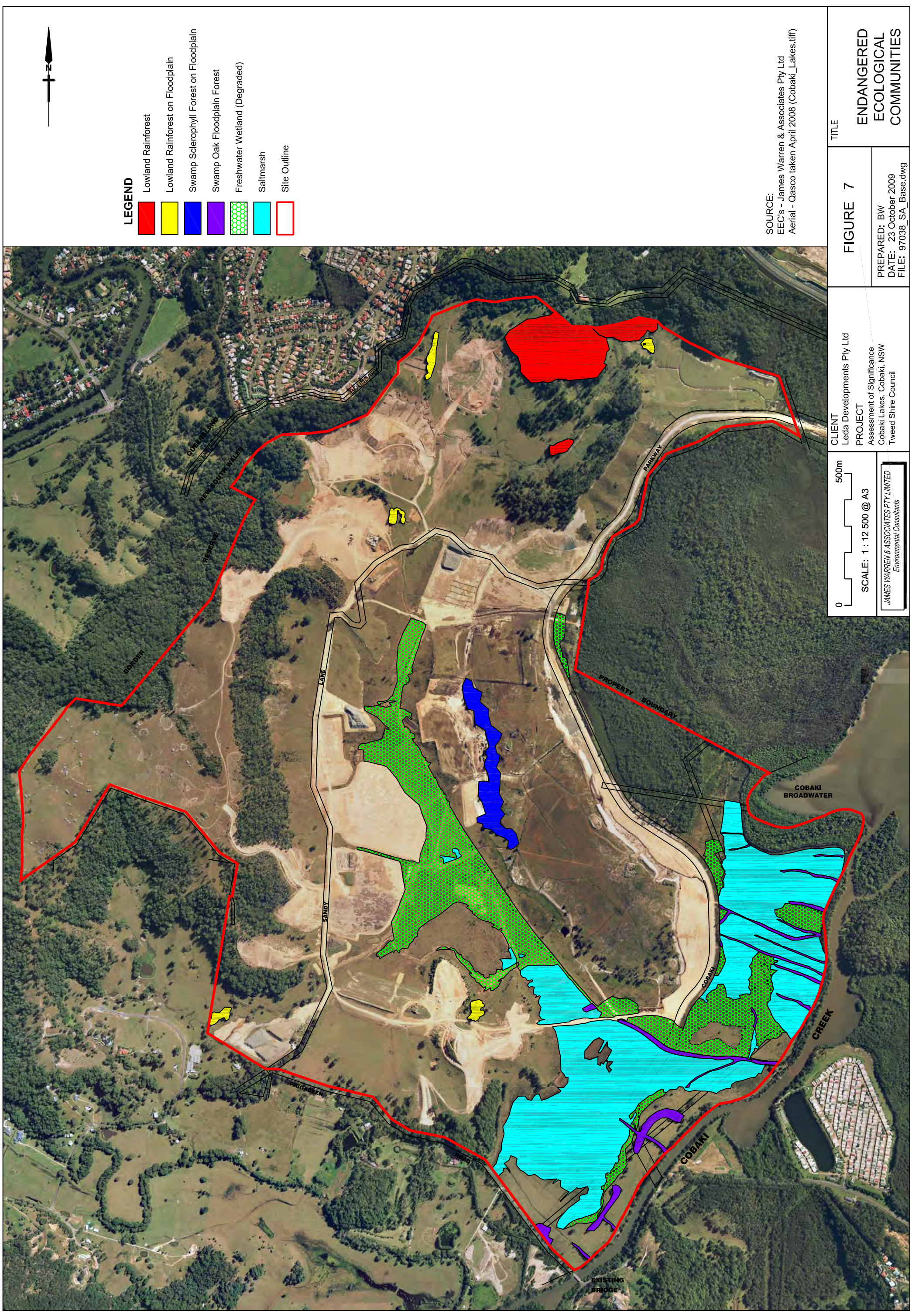
- White yiel yiel (*Grevillea hilliana*) Endangered (TSC Act);
- Scented acronychia (*A. littoralis*) - Endangered (TSC Act & EPBC Act);
- Fine-leaved tuckeroo (*Lepiderema pulchella*) - Vulnerable (TSC Act);
- Spiny gardenia (*Randia moorei*) - Endangered (TSC Act & EPBC Act);
- Marblewood (*Acacia bakeri*) - Vulnerable (TSC Act);
- Brush cassia (*Cassia brewsteri* var. *marksiana*) - Endangered (TSC Act);
- Coolamon (*Syzygium moorei*) - Vulnerable (TSC Act & EPBC Act); and
- Green-leaved rose walnut (*Endiandra muelleri* subsp. *bracteata*) -Endangered (TSC Act).

An additional five (5) Threatened species have been recorded during surveys on adjacent land, including:

- White lace flower (*Archidendron hendersonii*) - Vulnerable (TSC Act 1995);

¹ As listed within schedules of the TSC Act (1995).

² As listed within schedules of the TSC Act (1995) and EPBC Act (1999).



LEGEND

- Lowland Rainforest
- Lowland Rainforest on Floodplain
- Swamp Sclerophyll Forest on Floodplain
- Swamp Oak Floodplain Forest
- Freshwater Wetland (Degraded)
- Saltmarsh
- Site Outline

SOURCE:
 EEC's - James Warren & Associates Pty Ltd
 Aerial - Qasco taken April 2008 (Cobaki_Lakes.tiff)

FIGURE 7	TITLE
PREPARED: BW DATE: 23 October 2009 FILE: 97038_SA_Base.dwg	ENDANGERED ECOLOGICAL COMMUNITIES

CLIENT Leda Developments Pty Ltd
PROJECT Assessment of Significance Cobaki Lakes, Cobaki, NSW Tweed Shire Council

0 500m
SCALE: 1 : 12 500 @ A3
JAMES WARREN & ASSOCIATES PTY LIMITED Environmental Consultants

BORDER

QUEENSLAND
STATE
NEW SOUTH WALES
RESERVE

SANDY
LANE

PROPERTY
BOUNDARY

COBAKI
BROADWATER

COBAKI
CREEK

COBAKI

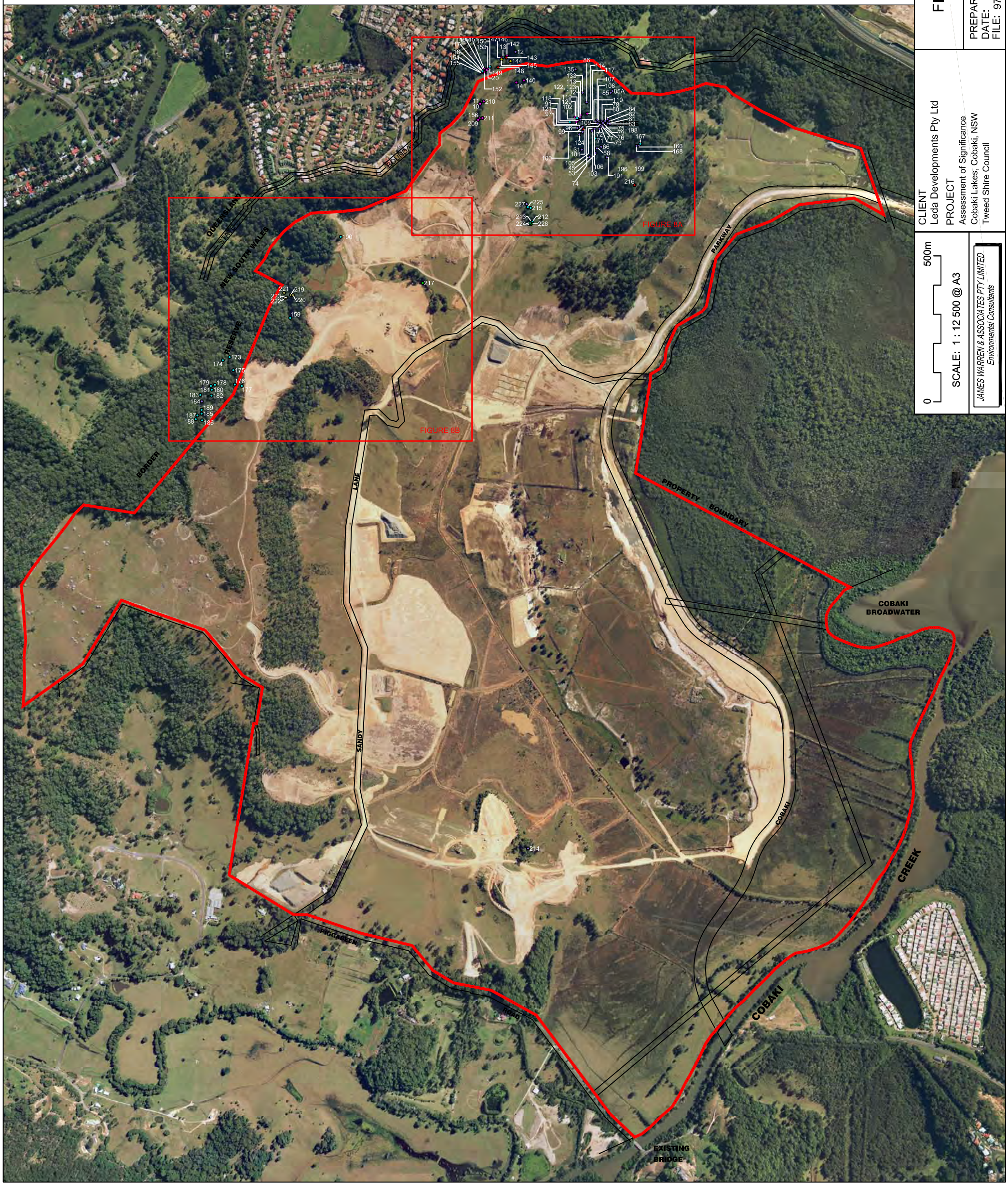
EXISTING
BRIDGE



LEGEND

- Marblewood (*Acacia bakeri*)
- Fine-leaved tuckeroo (*Lepiderema pulchella*)
- Spiny gardenia (*Randia moorei*)
- Y'iel y'iel (*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 - Qasco taken April 2008 (Cobaki_Lakes.tiff)



0 500m

SCALE: 1 : 12 500 @ A3

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PROJECT
 Assessment of Significance
 Cobaki Lakes, Cobaki, NSW
 Tweed Shire Council

FIGURE 8

PREPARED: BW
 DATE: 23 October 2009
 FILE: 97038_SA_Base.dwg

TITLE
**LOCATION OF
 THREATENED
 FLORA**



LEGEND

- Marblewood (*Acacia bakeri*)
- Fine-leaved tuckeroo (*Lepiderema pulchella*)
- Spiny gardenia (*Randia moorei*)
- Y'iel y'iel (*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 - Gasco taken April 2008 (Cobaki_Lakes.tiff)

TITLE
LOCATION OF THREATENED FLORA

FIGURE 8A

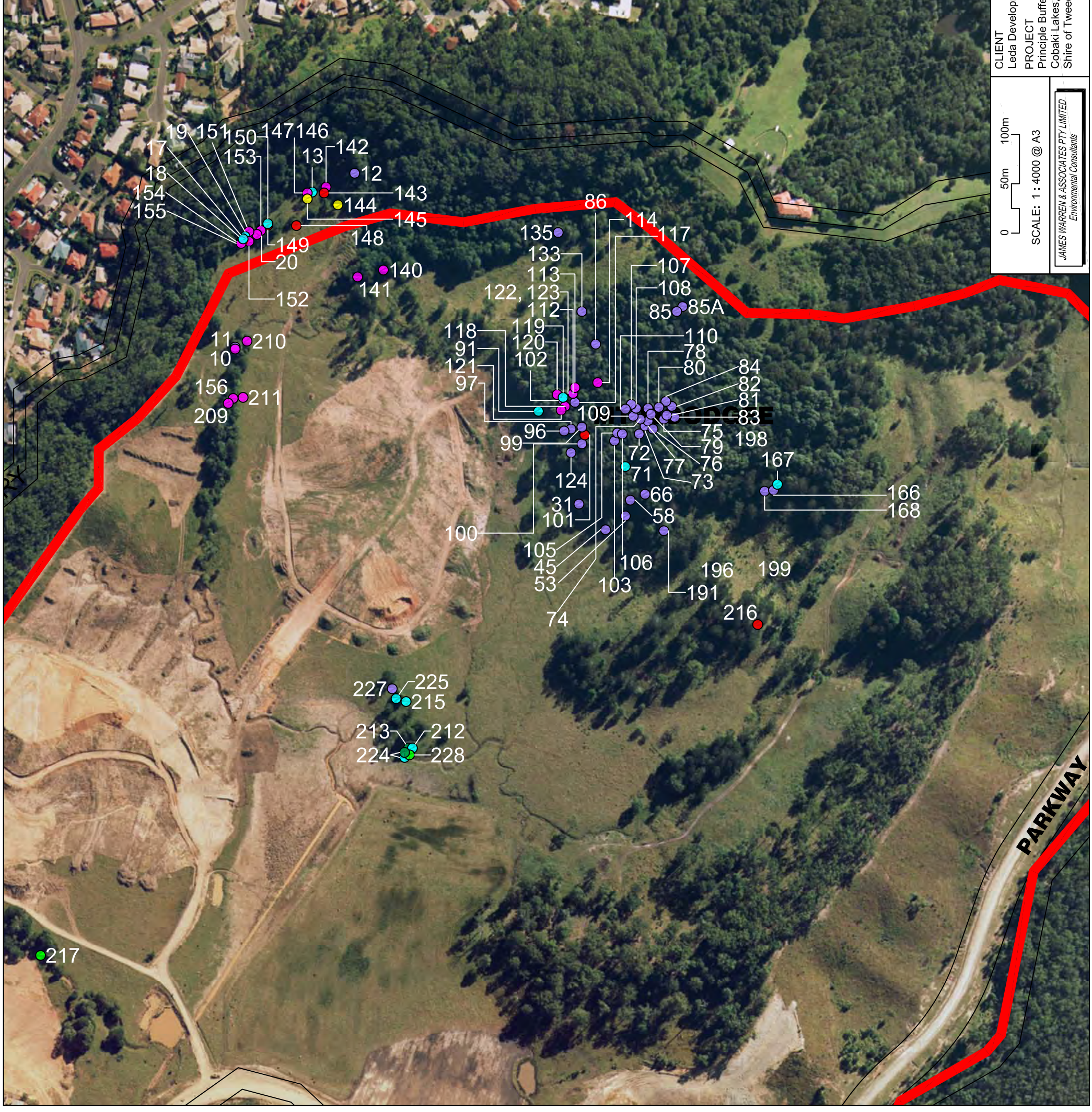
PREPARED: BW
 DATE: 19 October 2009
 FILE: 97038_BMP_Base.dwg

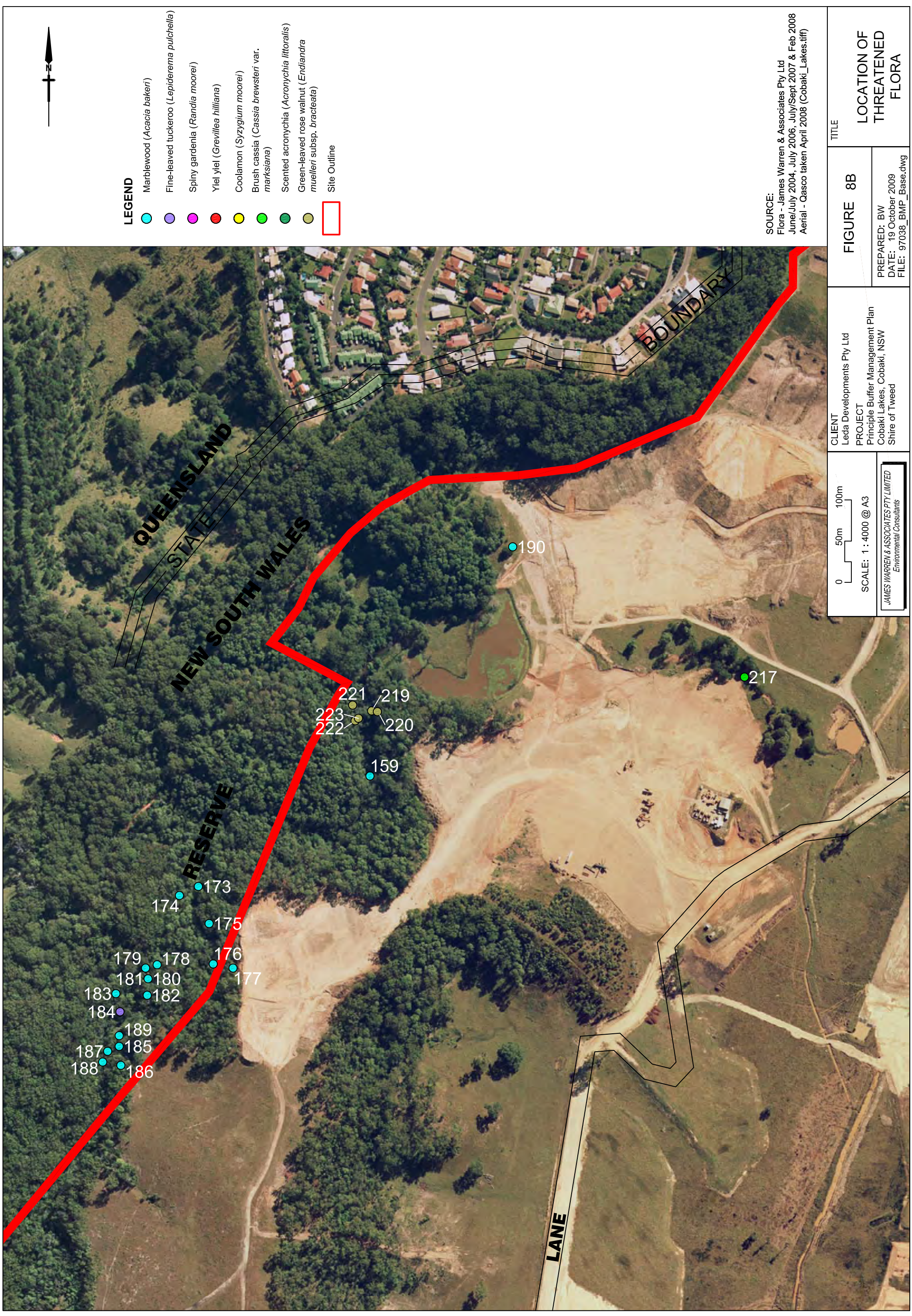
CLIENT
 Leda Developments Pty Ltd

PROJECT
 Principle Buffer Management Plan
 Cobaki Lakes, Cobaki, NSW
 Shire of Tweed

SCALE: 1 : 4000 @ A3

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LEGEND

- Marblewood (*Acacia bakeri*)
- Fine-leaved tuckeroo (*Lepiderema pulchella*)
- Spiny gardenia (*Randia moorei*)
- Y'iel y'iel (*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 - Gasco taken April 2008 (Cobaki_Lakes.tiff)

FIGURE 8B

TITLE
LOCATION OF THREATENED FLORA

PREPARED: BW
 DATE: 19 October 2009
 FILE: 97038_BMP_Base.dwg

CLIENT
 Leda Developments Pty Ltd

PROJECT
 Principle Buffer Management Plan
 Cobaki Lakes, Cobaki, NSW
 Shire of Tweed

0 50m 100m

SCALE: 1 : 4000 @ A3

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- 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

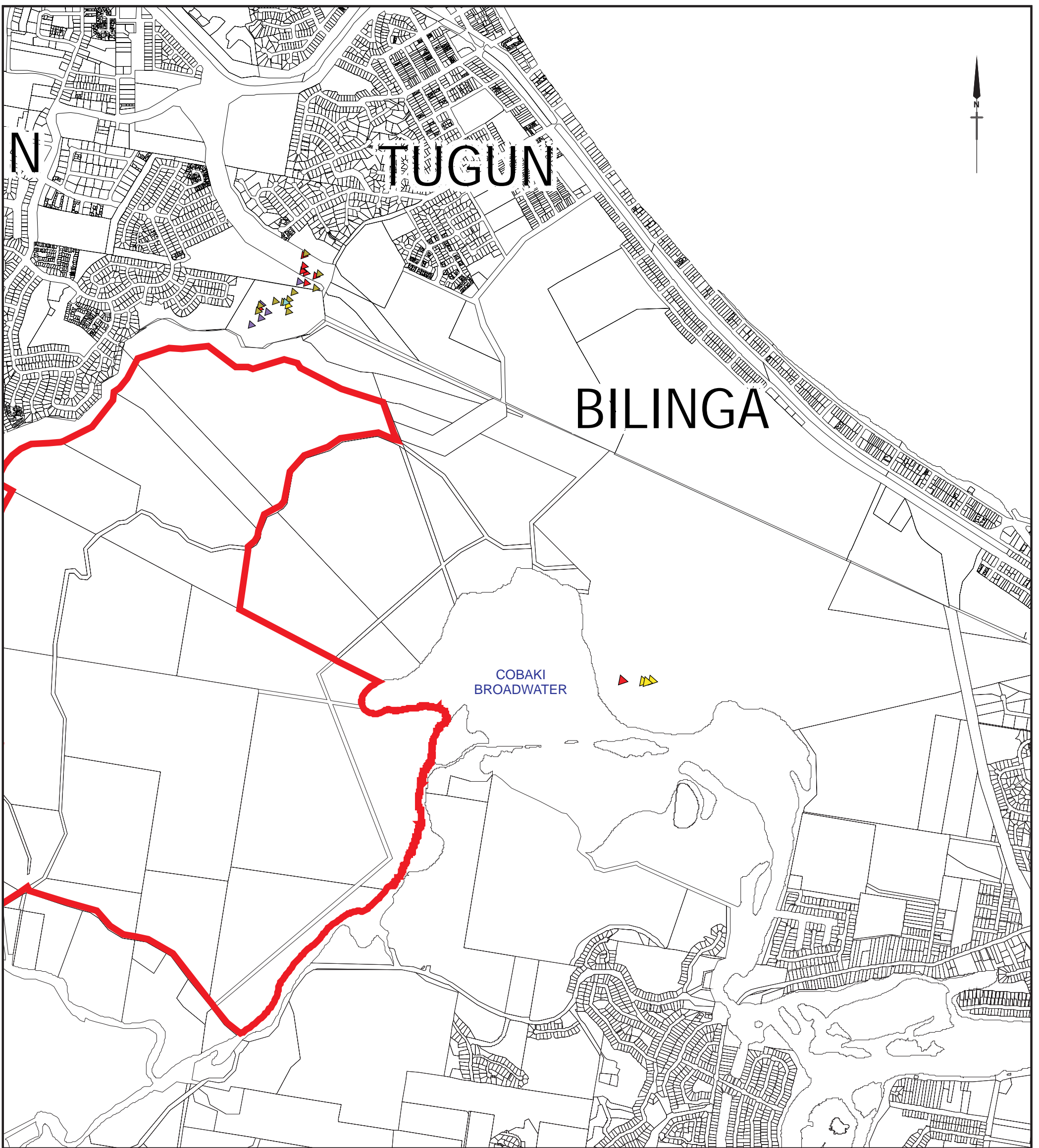
Twelve (12) Threatened³ fauna species have been recorded from the subject site (JWA 2008) (FIGURE 10). These species are as follows:

- 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 sheath-tail 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 olivaceus*) - 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 fasciocularis*) - 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);

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



- 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

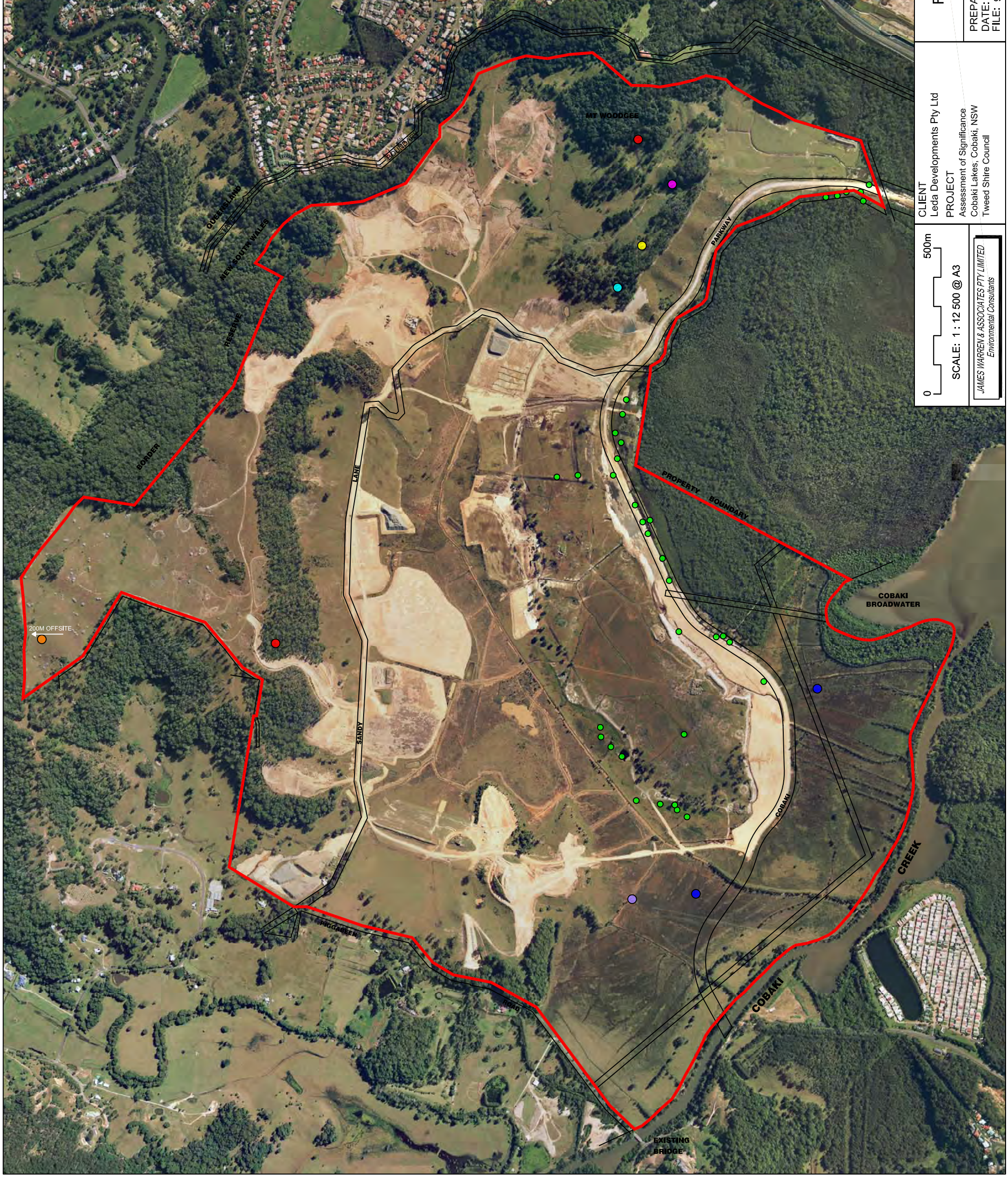
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Environmental Consultants

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

FIGURE 9

PREPARED: BW
DATE: 23 October 2009
FILE: 97038_SA_Bypass Flora.cdr

TITLE
**LOCATION OF
THREATENED FLORA
ADJACENT TO
SUBJECT SITE**



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 - Qasco taken April 2008 (Cobaki_Lakes.tiff)

FIGURE 10

LOCATION OF THREATENED FAUNA

TITLE

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0 500m

SCALE: 1 : 12 500 @ A3

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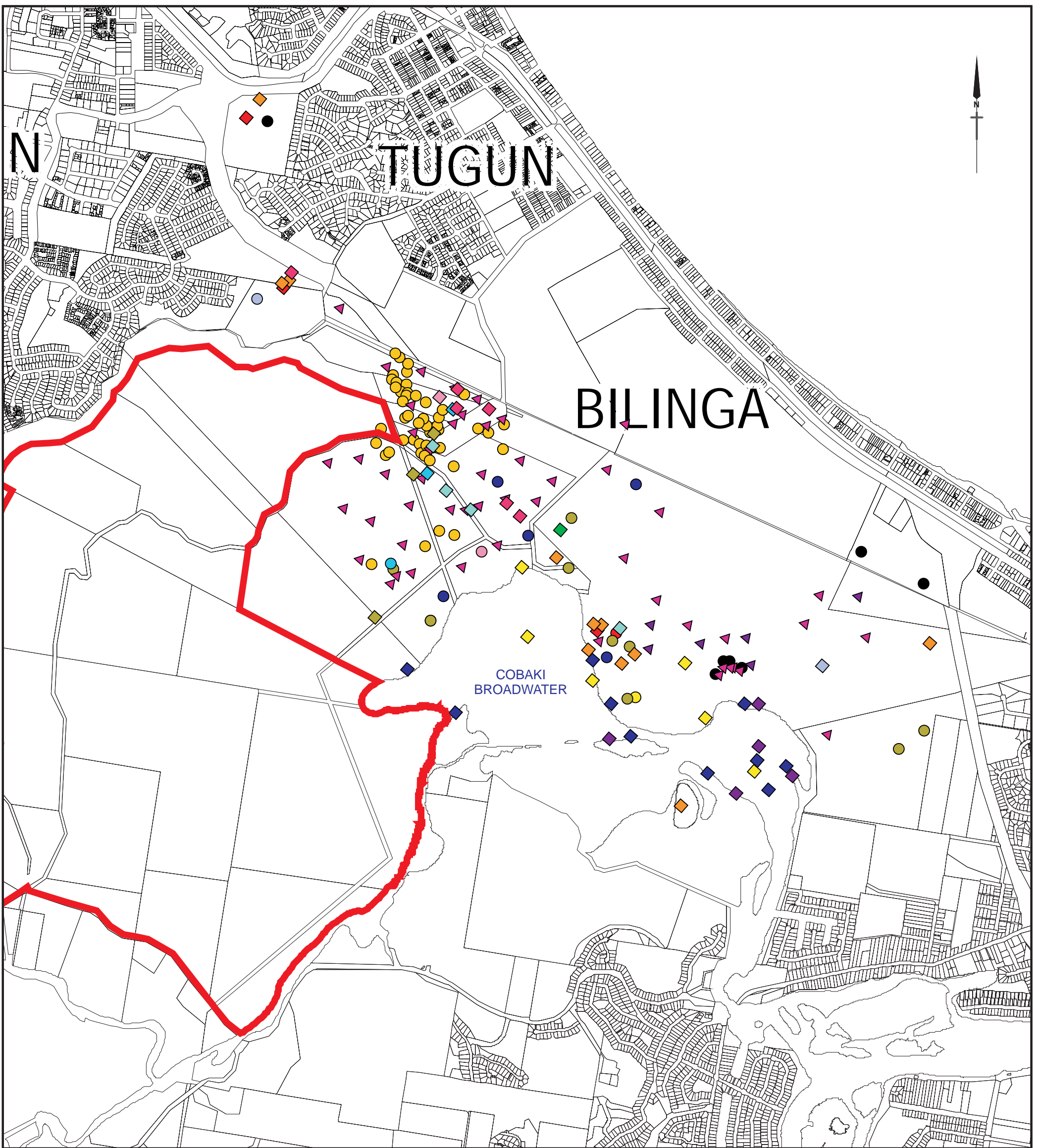
PREPARED: BW
 DATE: 23 October 2009
 FILE: 97038_SA_Base.dwg



Assessment of Significance - Cobaki Lakes PPR

- Superb fruit-dove (*Ptilinopus superbus*) - Vulnerable (TSC Act 1995);
- Collared kingfisher (*Todiramphus chloris*) - Vulnerable (TSC Act 1995);
- Eastern grass owl (*Tyto capensis*) - 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.



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

SCALE: 1 : 20 000 @ A3

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FIGURE 11

PREPARED: BW
DATE: 23 October 2009
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/EECs 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 was 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 (EECs) are considered to occur on the site, including:

- Swamp sclerophyll forest on coastal floodplain - which occurs as an isolated clump of scattered Swamp mahogany in the central eastern of the Subject site;
- Lowland rainforest on floodplain - occurring at various locations generally in association with drainage lines and depressions;
- Lowland rainforest - occurring on Mt. Woodgee and on lower slopes in the northern portion of the subject site;
- Freshwater wetlands - occurring in the central and eastern portions of the site;
- Swamp oak floodplain forest - occurring in association with drainage lines in the south-east of the site; and
- Coastal saltmarsh in the NSW North Coast bioregion - occurring in the south-east of the site.

The locations of these EEC's are shown in FIGURE 7.

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.

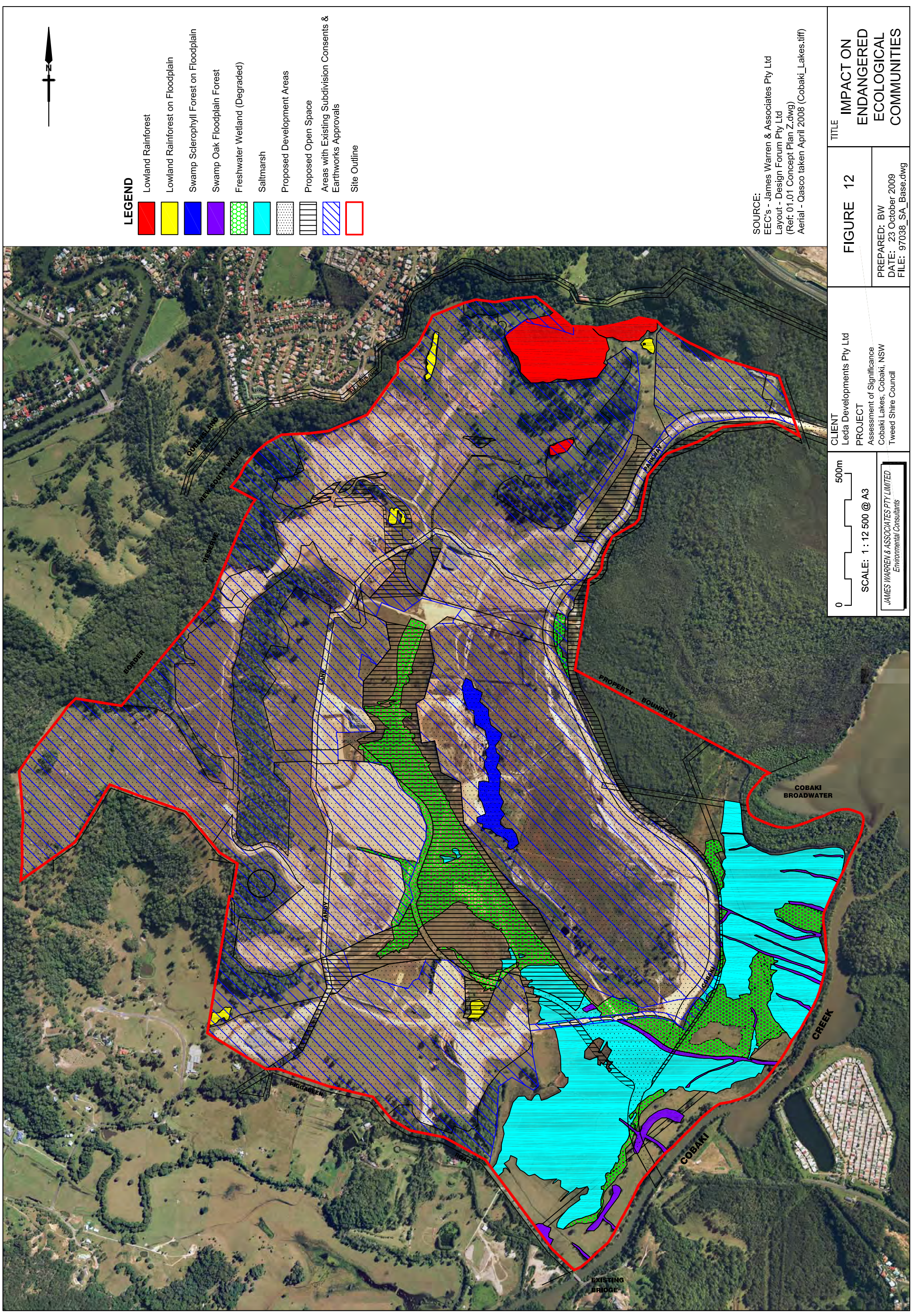
**TABLE 1
POTENTIAL LOSS OF EEC'S FROM THE COBAKI LAKES SITE**

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	1.54	0.0 (0.0%)
Lowland rainforest	9.16	0.0 (0.0%)
Freshwater wetlands	37.66	26.45 (70.23%)
Swamp oak floodplain forest	4.24	0.38 (8.96%)
Coastal saltmarsh	53.98	8.16 (15.12%)

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



LEGEND

- Lowland Rainforest
- Lowland Rainforest on Floodplain
- Swamp Sclerophyll Forest on Floodplain
- Swamp Oak Floodplain Forest
- Freshwater Wetland (Degraded)
- Saltmarsh
- Proposed Development Areas
- Proposed Open Space
- Areas with Existing Subdivision Consents & Earthworks Approvals
- Site Outline

SOURCE:
 EEC's - James Warren & Associates Pty Ltd
 Layout - Design Forum Pty Ltd
 (Ref: 01.01 Concept Plan Z.dwg)
 Aerial - Gasco taken April 2008 (Cobaki_Lakes.tiff)

FIGURE 12	TITLE IMPACT ON ENDANGERED ECOLOGICAL COMMUNITIES
PREPARED: BW DATE: 23 October 2009 FILE: 97038_SA_Base.dwg	

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 Assessment of Significance
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 Tweed Shire Council

0 500m

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Swamp sclerophyll forest on coastal floodplain

This EEC occurs in the central eastern portion 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). It is worth noting that 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.

It is also worth noting that the removal of this vegetation community will occur from an area of the site which has an existing development approval. The removal of this small area of degraded Swamp sclerophyll forest on coastal floodplain from the subject site is not considered to represent a significant impact in relation to the local distribution of this community. 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 (i.e. riparian forest) (FIGURE 7). Lowland rainforest on floodplain covers a total area of approximately 1.54 hectares on the subject site.

It is worth noting that the conservation significance of these communities has been compromised by historical clearing activities which have resulted in the fragmentation of rainforest communities.

The proposed development does not involve the removal of any Lowland rainforest on floodplain EEC (FIGURE 12). All areas of this EEC will be retained and protected in Environmental Protection Areas or by relevant Environmental Covenants.

Lowland rainforest

This EEC occurs on Mt. Woodgee and associated slopes in the northern portion of the subject site (FIGURE 7) and covers a total area of approximately 9.16 hectares. Vegetation on Mt. Woodgee (i.e. Community 2a) is relatively intact and is considered to represent one of the most ecologically significant vegetation communities on the subject site, particularly in terms of habitat value for Threatened flora species.

The proposed development does not involve the removal of any Lowland rainforest EEC (FIGURE 12). All areas of this EEC will be retained and protected in Environmental Protection Areas or by relevant Environmental Covenants.