**Adele**

PO Box 28
Moonee Beach 2450

13 July 2012

Northern Joint Regional Planning Panel
22-33 Bridge Street
SYDNEY NSW 2000

Attention: Ruth Paton, Panel Secretariat

**2011NTH032 – Coffs Harbour City Council**
**DA259/12 – Group Home, 215 Randalls Road, Bucca**

We are the applicant for the above mentioned development application for a group home for rehabilitation of men recovering from alcohol and drug abuse at the above property, which is to be considered by the Northern Joint Regional Planning Panel on 18 July 2012.

We have reviewed the assessment report prepared by the Planning Department of Coffs Harbour City Council, which raises two key issues relating to permissibility and flora and fauna.

In relation to permissibility, this issue was raised nearly 8 months after lodgement, and led us to seek legal advice from two Senior Counsel. The substance and reasoning of this advice has not been referred to in the report, and we are unsure whether these advices have been forwarded to the JRPP. For your benefit I enclose a copy of the legal advices from John Robson SC and Adrian Galasso SC - two of the State's leading barristers in environmental law - together with our advice from Pikes Lawyers. (Please see Annexure A).

The report argues that the group home is not permissible because it comprises "two separate buildings". This is incorrect. The group home, as submitted, is one building that comprises linked and interconnected pavilions. We can only surmise that the plans have been misconstrued as there are clear and physical connections between the pavilion wings of the group home. For your benefit, our architect as produced simplified plans showing the connectivity of the pavilion design as submitted in the development application. These show not only a connected slab form with interconnected services, but also a connected roof form, as well as a connection at the ground level for disabled access. These drawings are attached in Annexure B.

Further, the report seeks refusal on the grounds of inadequate flora and fauna information. This aspect of the report is particularly disappointing, as the application was originally accompanied by a detailed 59 page flora and fauna report by Ecological Australia. At no time did Council raise with us the need for additional information, nor did we believe any was required as we are not removing any vegetation. Nonetheless, on receipt of the council report, we asked Ecological to undertake and provide the additional 7 part test assessment advice. This advice has been completed and is attached in Annexure C.

We would ask that you make this information available to Panel Members.

Yours sincerely,

**Dominic Sullivan**
Board Member
Adele Dundas Inc

Attach.

## Annexure A

NSW GOVERNMENT | Health
Mid North Coast
Local Health District
*Quality and Excellence in Regional Healthcare*

22 November 2011

Mr Vince Tempone,
Adele House
Moonee NSW

Dear Vince,

Thank you for providing me with a progress report on the Adele House development. This will be a significant and very valuable addition to the range of services for the community in Coffs Harbour, and I commend the organisation in pursuing this in the interest of that community.

I understand there are some issues with your development application, in particular concerning the placement of staff accommodation on the property. As you are aware, I have long experience in managing drug and alcohol services and one of the main lessons I have learned is about the needs of staff to be able to get away from the workplace in order to maintain their own health, equilibrium and effectiveness in a very demanding job.

I would strongly encourage you to continue to seek approval to have separate accommodation for staff, and if I can be of any assistance by talking with relevant people, let me know. You may also wish to use this letter in your submissions.

All the best, and do not hesitate to call me if you need any other help.

Yours sincerely

***John Leary***
Director,
Mental Health and Drug and Alcohol Services
Mid North Coast Local Health District

Mid North Coast Local Health District
ABN 57 946 356 658
345 Pacific Highway Coffs Harbour NSW 2450
Locked Mail Bag 812 Coffs Harbour NSW 2450
Tel (02) 66487223 Fax (02) 6648 7227
Email john.leary@ncahs.health.nsw.gov.au
Website www.mnclhn.health.nsw.gov.au

TO WHOM IT MAY CONCERN.

The Buttery is a well known and well regarded provider of drug, alcohol and gambling treatment services situated in the Byron Bay hinterland, in Northern NSW. It is a not-for-profit organisation and a registered charity. Commenced in 1973, The Buttery provides drug and alcohol treatment and counselling services .

Its core service, the residential Therapeutic Community, consists of an 7.5 month live-in program of healing and recovery. In a Therapeutic Community;

- "Residents participate in the management and operation of the community
- The community, through mutual support and self-help, is the principal means for promoting behavioural change
- There is a focus on social, psychological and behavioural dimensions of substance use, with the use of the community to heal individuals emotionally and support the development of behaviours, attitudes and values of healthy living. (*Towards better Practice in Therapeutic Communities)"*

The Buttery also provides other important community based service initiatives in the form of outreach programs namely;

• Insight Network Treatment Axis (INTRA) providing assistance to adults affected by drug use in the Northern Rivers NSW.

• Northern Rivers Gambling Service providing help for problem gamblers and those affected by problem gambling.

A residential treatment centre can be an intense environment in which to work and The Buttery's experience has been that from an occupational health and safety point of view staff need to have time away from the 'coal face' in order to avoid burn out and minimize the stress associated with the job. For this reason The Buttery does not have a manager living on site, staff are rostered on during the day and at night so that the intensity of the work is diluted. In situations where a staff person is required to live on site it would be important that a separate living space away from residents in treatment is included in the design of the facility. I understand that the Salvation Army which provides residential treatment across the country follow this model of having a house for the Program Manager separate from the residential facility and expectations that they have 'time off' during the week when they can retreat to their house and not be impacted on by the needs of the client group.

In my opinion any facility design which does not provide for this separation of space and the provision of privacy for Management aggravates the risk of staff burn out.

Your sincerely,

Barry Evans
Executive Director.
24th November 2011

*Drug Court of New South Wales*

**To Whom It May Concern:**

It is with pleasure that I write a short reference for the Adele House Program and its director, Mr Vince Tempone.

Adele House has been a long-term partner of the Drug Court Program of New South Wales, and this Court and Adele House have been working together for many, many years.

The Drug Court provides judicially supervised programs for the recovery of non-violent drug addicted offenders, and the most suitable treatment plan is designated by the Health Department. It is always an encouraging sign for me when Adele House is the nominated treatment provider, as I know, from long experience, that this will enhance the participant's prospects for a successful recovery from drug addiction.

Adele House is a holistic program which addresses not only drug addiction issues, but looks to address the reasons why a person has become addicted to drugs, and has ended up before the criminal courts. The program addresses literacy issues, educational and vocational needs, and teaches everyday life skills such as cooking and self care (and self respect).

One aspect that has always impressed me is the financial skills taught in the Adele House program. Successful participants leave the program with the skills to use a computer-based financial plan, and considerable savings which allow them to make the transition into the general community. So they have the necessary funds for a bond on rental accommodation, and can afford the deposits to have essential services such as electricity connected.

The Adele House program has an emphasis on moving from welfare payments to gaining skills and a return, or even perhaps a first entry, into

*Cnr George & Marsden Sts Parramatta NSW Australia*
*PO Box 92 Parramatta NSW 2124 Australia*
*Chambers: +61 2 (02) 8688 4514*

paid work force. On many occasions Adele House participants attend my court directly from their workplace, and I take no objection to appearing in court in the brightly coloured safety clothes so often needed in the workplace, in fact it is an immediate indication of the successful transition to the ordinary world, and a great credit to the Adele program.

It is also appropriate to note, on a personal basis, that Mr Vince Tempone, the Director of the program, is a remarkable man. It takes dedication, skill, and determination to succeed in what is a very difficult endeavour. Vince is able to do that given his endless energy, fierce determination, empathy and compassion, coupled with the skill to recruit and retain the right staff.

I wish him well in this current endeavours to provide additional opportunities for those in need of the skilled assistance of Adele House.

Yours sincerely

J R Dive
Senior Judge
14 July 2011

The understanding, prevention and treatment of drug abuse is best achieved with the help of those who have lived through the experience. That's why **We help Ourselves.**

**Established 1972**

**WHOS ADMINISTRATION**
PO Box 1779
Rozelle NSW Australia 2039
Telephone: (02) 8572 7411
Facsimile: (02) 8572 7400

Mr. Vice Tempone
CEO, Adele Inc.
PO Box 28
Moonee Beach, NSW, 2450
23rd November 2011

Dear Mr. Tempone,

Re: staff accommodation within an Alcohol and other Drug Treatment Centre

Re your enquiry to me recently, I can confirm that when our organisation ran services in a rural location some years back one of the most challenging issues that presented to us was;

1. recruiting and retraining staff in a rural location, mainly due to the ongoing availability of trained staff locally and
2. for staff that commuted from neighbouring districts to work for us the expense of having two address to pay rent for was a disincentive to work for us

The only way we could provide this valuable service to the community and overcome our staffing challenges in a regional area was to provide accommodation on site for our staff.

This brought about new challenges.

Firstly we provided accommodation within the confines of our treatment centre. While this seemed to work for the first six months we started experiencing the same problems again, i.e. loosing staff.

The main reason for this was;

1. Staff felt that they could not get away from the workplace sufficiently and quickly became overwhelmed as they felt that they were "never off the job" and in a few word "permanently on call".
2. We finally overcame this dilemma. Due to our facility being in the grounds of an old agricultural school, there were houses and cottages sprinkled around the property, which were originally for the teachers and Principle of the college. This worked well for us as the staff had their own house, entrance and space away from work.

I know most non government schools (that have boarding students) and in the past (maybe still today) regional hospitals have out-buildings for their nurses and supertendants and caretakers.

I know this is the most efficient and practical way to move forward and wish you all the best for this huge undertaking your organisation is making to ease the burden on the people of NSW for individuals suffering from alcohol and drug dependence and its associated problems.

Yours sincerely
Garth Popple
Executive Director

NSW GOVERNMENT
Health
Mid North Coast
Local Health District

Drug & Alcohol Services
Locked Mail Bag 812
COFFS HARBOUR, NSW 2450
Tel 02 6648 7223 Fax 02 6648 7227

7 July 2011

TO WHOM IT MAY CONCERN

Adele House is a non-government organisation which has been providing residential rehabilitation and employment development programs for people affected by drug and alcohol abuse for many years in Sydney and in the Coffs Harbour region.

The Coffs Harbour arm of its services has been in operation for 8 years, working closely with NSW Health Drug and Alcohol Services, Courts, and other Non Government Organisation's (NGO) across the North Coast and NSW in general. It is a respected service provider which plays an important part in the spectrum of services and has always been a co-operative partner in the service system. The services provided by Adele House are of high quality and professionalism.

I am pleased and excited by the new development proposal because it represents a great opportunity to develop new and better ways to treat people with drug and alcohol problems as well as increasing the number of beds available in the local area. It is also pleasing that the proposal is coming from a group that has such a long track record of excellent service provision.

Yours sincerely

John Leary
Director
Drug and Alcohol Services

Mid North Coast Local Health District
ABN 57 946 356 658
Morton Street PORT MCAQUARIE NSW 2444
PO Box 126 PORT MACQUARIE NSW 2444
Tel 02 65882946 Fax 02 65882948
Website www.mnclhn.health.nsw.gov.au

NSW GOVERNMENT Health
Mid North Coast
Local Health District

20 July 2011

Coffs Harbour City Council
Cnr Coff and Castle Street
Coffs Harbour 2450

**Re: Adele House Group Home Residential Rehabilitation Facility**

Dear Sir / Madam

I would like to acknowledge my total support for the proposed new facility: Adele House Group Home Residential Rehabilitation Facility.

Drug and Alcohol Services have been working in close partnership with the current Adele House Facility for nearly ten years.

Adele provides an integrated residential rehabilitation program that not only focuses on the clients personal needs, health and wellbeing, but also teaches their clients important living skills and employment training.

It also provides a supportive environment focusing on the whole individual and their specific needs, not just their addiction. Adele also incorporates a return to work focus which enables residents to become self-dependent, gain employment and remain clean form their initial substance use issues. Adele's program has great assistance in reducing recidivism rate of its clients and is recognised as a quality residential rehabilitation provider, who provides a much needed service within NSW.

NSW is massively undersupplied with specialised residential rehabilitation programs like Adele I am encouraged and excited by the new proposed facility. Its remote location is an ideal setting for such a program and provides great opportunities for people with drug and alcohol problems to undertake specialised treatment.

The proposed facility also enables clients to re-train on a working farm environment, providing skills based training (e.g. mechanical, carpentry, nursery and landscaping skills) and enable clients re-enter mainstream society, self-dependant, clean and employable.

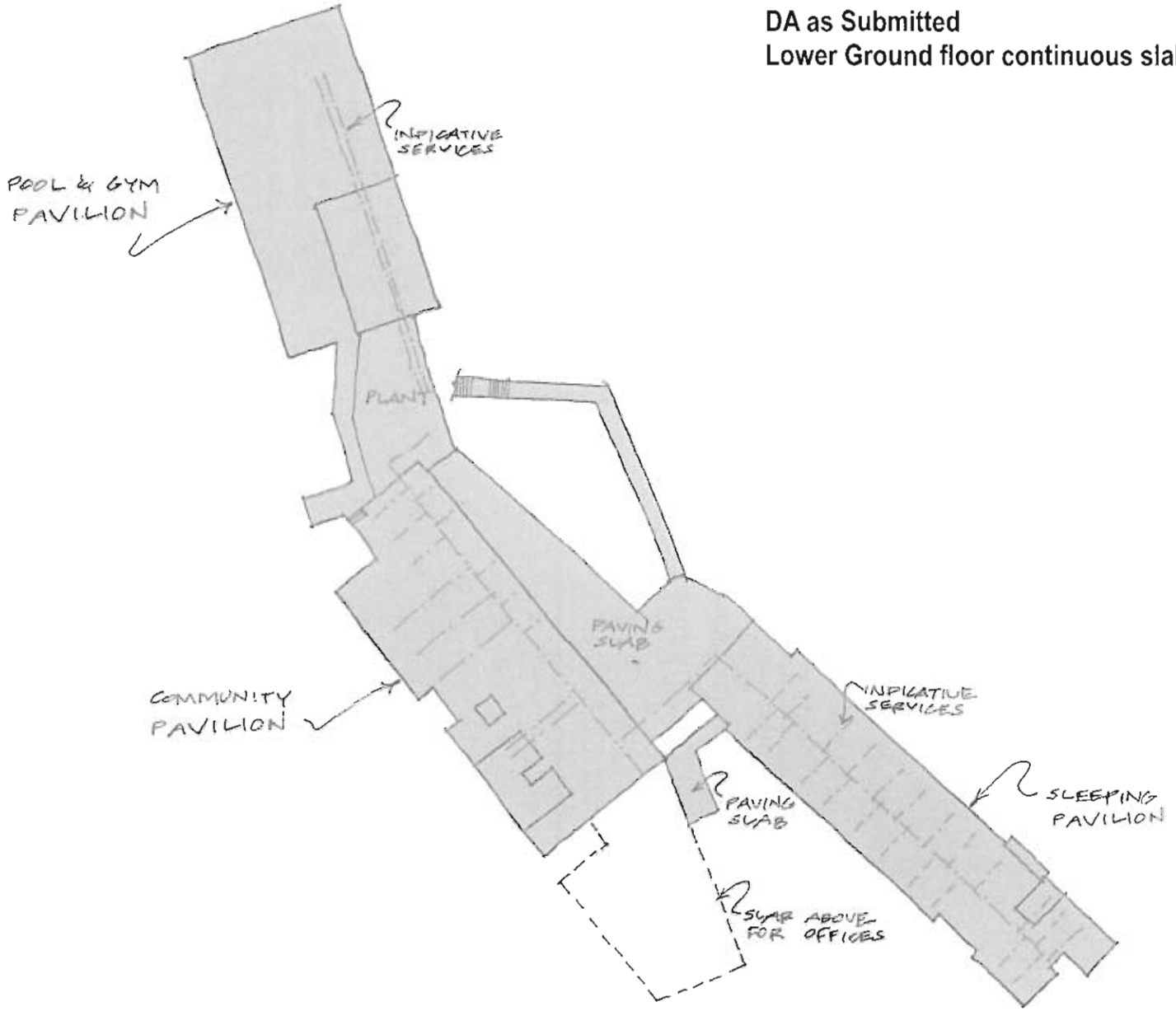
Yours Sincerely

David Rogers
Service Manager D&A Services
Hastings / Macleay Network
MNCLHD

**Mid North Coast Local Health District**
**Drug & Alcohol Services / MERIT Program**
Po Box 126 (Morton Street)
Port Macquarie NSW 2444
Tel 02 6586 6030 Fax 02 6586 6040
ABN: 57 946 356 658

Annexure B

## DA as Submitted
## Lower Ground floor continuous slab + services connectivity




ADELE DUNDAS INC
PO Box 28
Moonee Beach, NSW 2450

215 Randalls Road, BUCCA

Group Home Lower Ground Slab Plans

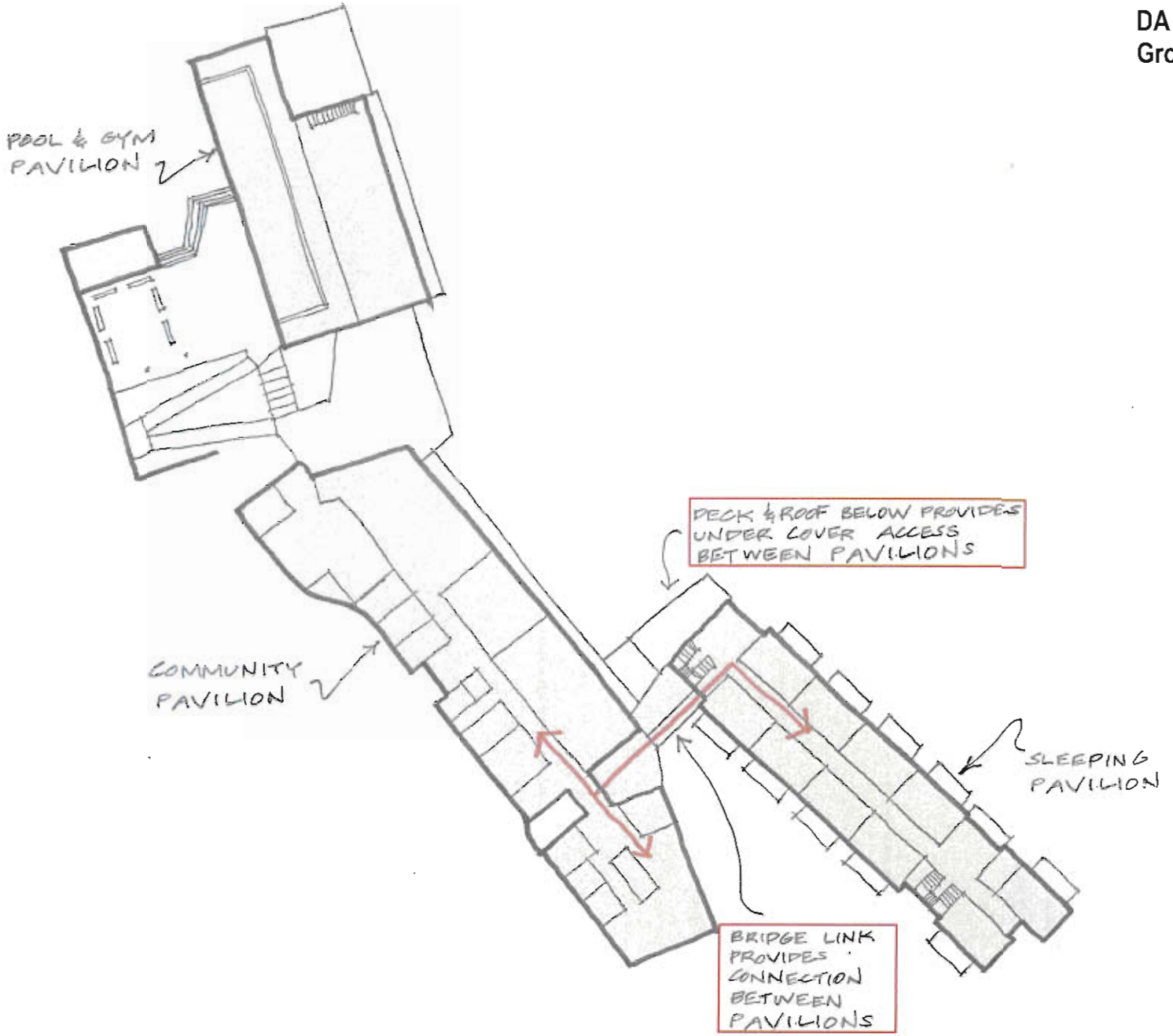
FOR INFORMATION

SK030

A

TURNER + ASSOCIATES

**DA as Submitted**
**Ground floor connectivity**




ADELE DUNDAS INC.
PO Box 23
Moonee Beach, NSW 2450

215 Randalls Road, BUCCA

Group Home Ground Plan Existing Plans

FOR INFORMATION

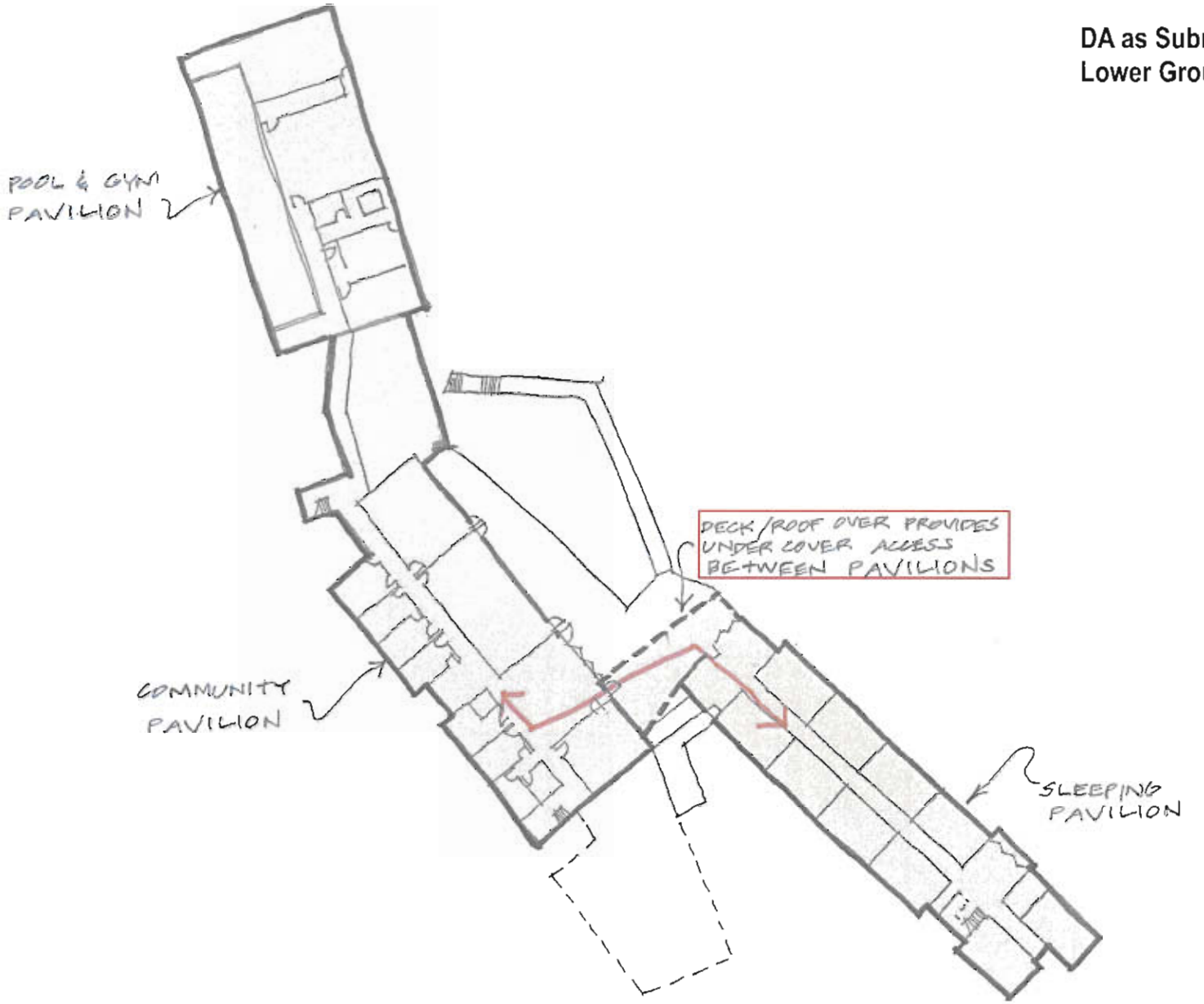
10044

SK033

A

TURNER + ASSOCIATES

**DA as Submitted**
**Lower Ground floor connectivity**




ADELE DUNDAS INC.
PO Box 28
Moonee Beach, NSW 2450

215 Randalls Road, BUCCA

Group Home Lower Ground Plan Existing Plans

10044

SK031

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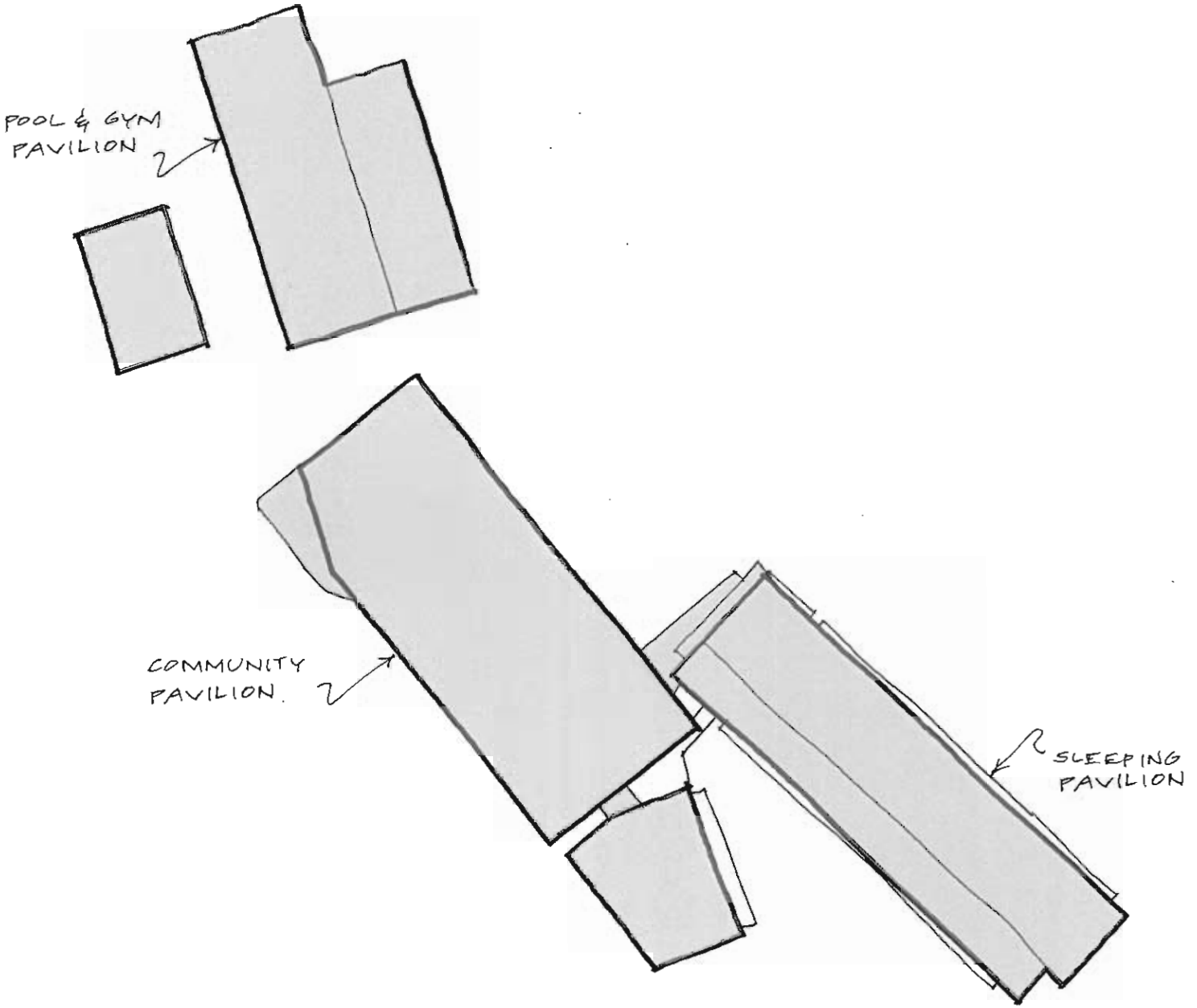
TURNER+ASSOCIATES

DA as Submitted
Roof plan




ADELE DUNDAS INC.
PO Box 28
Nelsons Beach, NSW 2450

215 Randalls Road, BUCCA

Group Home Roof Plan Existing
Plans

10044

SK035

TURNER+ASSOCIATES

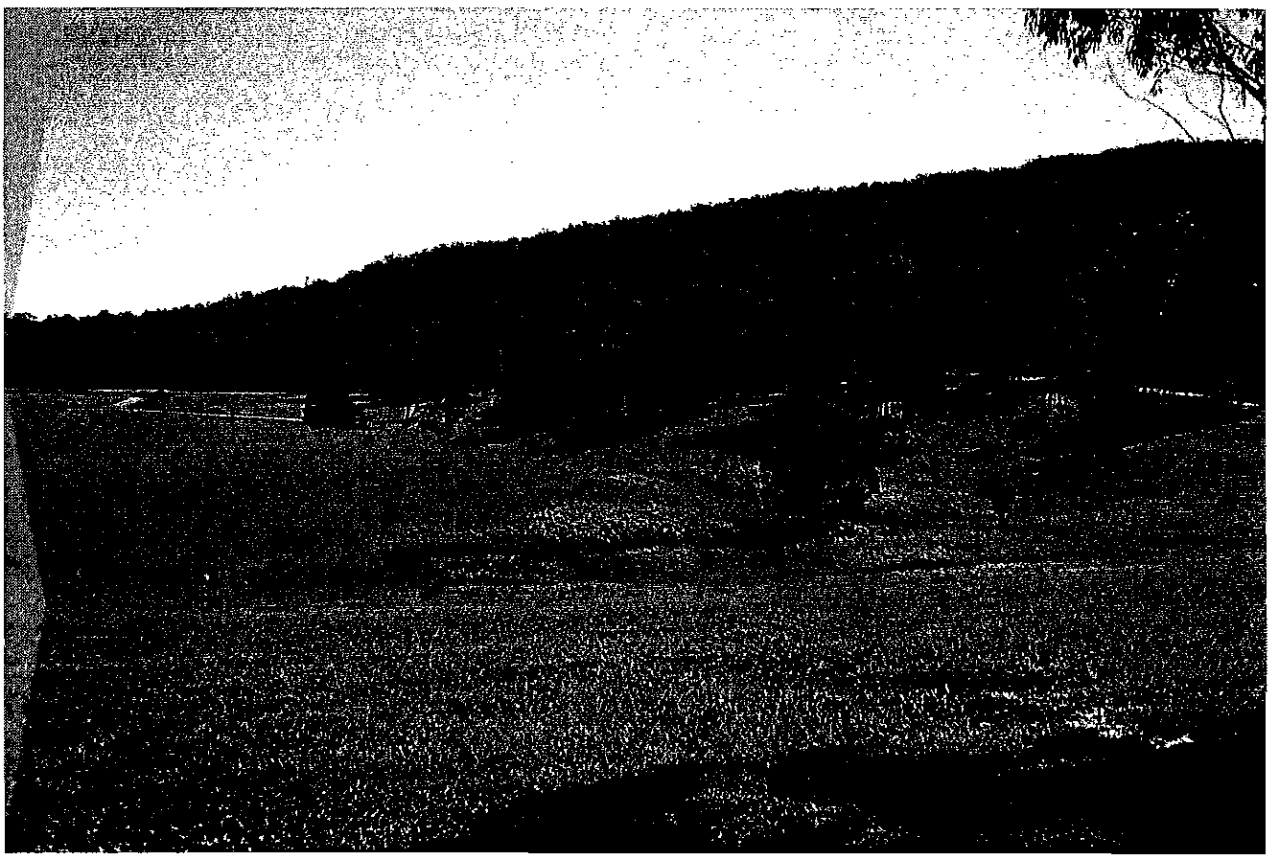
**Annexure C**

# Lots 12 and 13, Randalls Road, Bucca

# Flora and Fauna Habitat Assessment

Prepared for
**Adele Dundas Inc**

10 July 2012



## DOCUMENT TRACKING

| ITEM | DETAIL |
|---|---|
| Project Name | Randalls Road Flora and Fauna Habitat Assessment, Bucca |
| Project Number | 11COFECO - 0008 |
| File location | H:\Synergy\Projects\11COFECO\0008 - Randalls Road Eco Assessment\report |
| Prepared by | Liz Brown |
| Approved by | Peter Knock |
| Status | FINAL |
| Version Number | 7 |
| Last saved on | 10 July 2012 |
| Cover photo | Landscape at Randalls Road, Bucca. 28th April, 2011. Liz Brown. |

This report should be cited as 'Eco Logical Australia 9th June, 2011. *Lots 12 and 13, Randalls Road Road, Bucca - Flora and Fauna Habitat Assessment.* Prepared for Adele Dundas Inc.'

## ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with assistance from Tony Stodart of Turner + Associates Architects.

# Contents

# List of Figures

# 1 Background

Eco Logical Australia Pty Ltd (ELA) has been engaged to undertake a preliminary flora and fauna habitat assessment for five proposed development sites within Lot 13 DP 1161416 of Randalls Road, Bucca (Figure 3).

ELA understands that Adele Dundas Inc. (the client) is proposing to develop a new group home facility for Adele House that incorporates a number of new developments on Lot 13, including a new group home for 40 residents, a new chapel, and two staff accommodation houses.

# 2 Study Area

The study site is located approximately 20 kilometres (km) from the Coffs Harbour CBD (Figure 1). The study area is approximately 98 hectares (ha) in size, with the site centre at Easting 506394, Northing 6667852 (GDA94 MGA Zone 56).

The surrounding tenures include Conglomerate State Forest and Sherwood Nature Reserve to the north (Figure 7).

The landform of the site is mainly gently undulating with a series of man-made dams and a drainage line dissecting the site north to south. The northerly portion of the site is surrounded by steep forested slopes and Bucca Bucca Creek forms the southerly boundary of the site (Figure 2).

# 3 Description of the Proposal

ELA understands that Adele Dundas Inc. (the client) is proposing to develop a new group home facility for Adele House that incorporates a number of new developments on Lot 13. This includes a group home for 40 residents, a chapel, two staff accommodation houses, a playing field with canteen and a nursery and maintenance area on Lot 13. There will be a number of additional recreational and infrastructural features on the site.

ELA conducted a field assessment of existing flora and fauna habitat values at the five sites depicted in Figure 3 of this report to identify and list any threatened flora species that occur on-site, and delineate any high conservation value vegetation (including individual hollow-bearing trees) that may constitute threatened fauna habitat. This was completed with input from various planning instruments including the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), *Threatened Species Conservation Act 1995* (TSC Act), various State Environmental Planning Policies (SEPPs), and the Coffs Harbour Koala Plan of Management (KPoM).

Each study site is defined as the development footprint or land that will be directly affected by the proposed construction works. The study area is defined as land adjacent to, and surrounding the study site which may be directly or indirectly impacted by the Proposal. The study area at each site covers adjacent land within a 10 metre buffer surrounding the site.

The riparian zone of Bucca Bucca Creek (Figure 2) located within the southern-most portion of the study area was not assessed as part of the current survey.

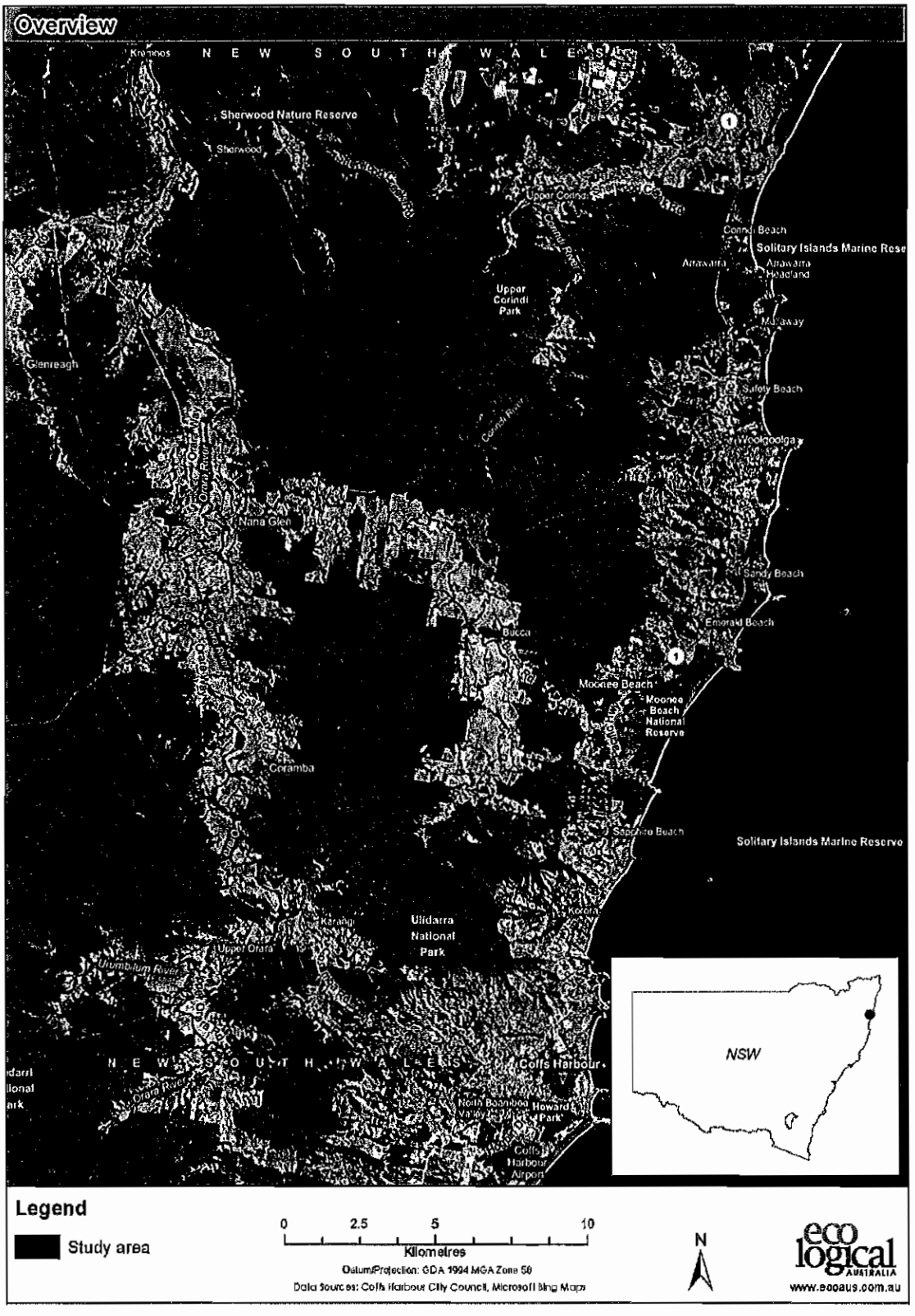



**Figure 1: Overview showing the study area, Randalls Road, Bucca**

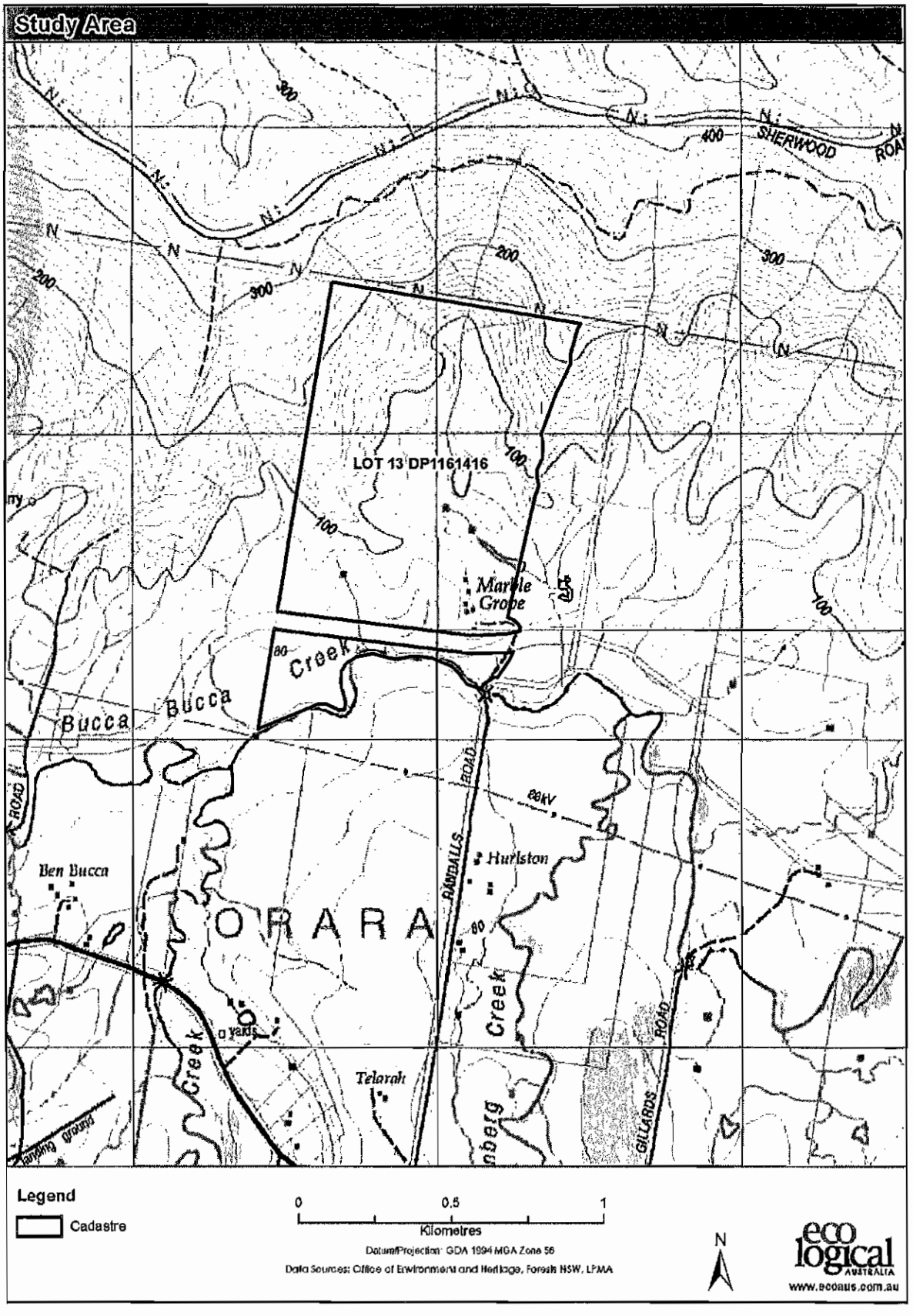



**Figure 2: The study area, Randalls Road, Bucca**

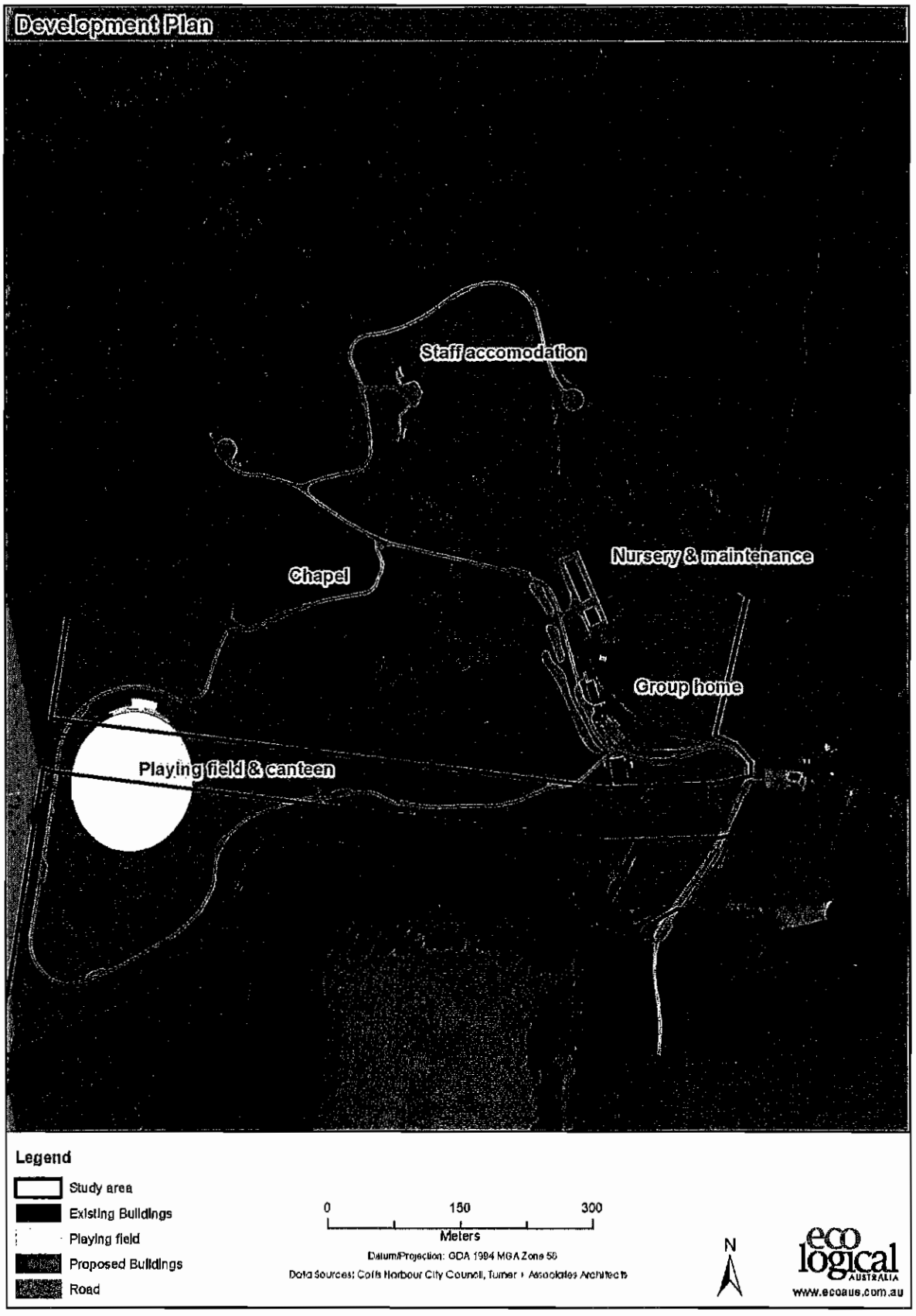



**Figure 3: Proposed development, cleared area and sites currently assessed, Randalls Road, Bucca**

# 4 RELEVANT LEGISLATION AND POLICIES

## 4.1 THE ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBC ACT)

The Commonwealth EPBC Act establishes a requirement for Australian Government environmental assessment and approval of:

- actions that are likely to have a significant impact on matters of national environmental significance;
- actions that are likely to have a significant impact on the environment on Commonwealth land;
- actions taken on Commonwealth land that are likely to have a significant impact on the environment anywhere; and
- actions by the Commonwealth that are likely to have a significant impact on the environment anywhere.

The matters of national environmental significance (commonly referred to as matters of NES) are:

- World Heritage properties and National heritage places.
- Wetlands of international importance (Ramsar wetlands).
- Listed migratory species, threatened species and ecological communities.
- Commonwealth marine areas.
- Nuclear actions (including uranium mining).

It is considered that none of these matters, areas, actions, species or ecological communities are likely to be affected by the proposal.

## 4.2 ENVIRONMENTAL PROTECTION AND ASSESSMENT ACT 1979 (EP&A ACT)

The EP&A Act is the principal planning legislation in NSW. Part 3 of the EP&A Act sets the framework for preparation of environmental planning instruments such as LEPs.

Parts 3A, 4 and 5 of the EP&A Act indicate the decision making processes for assessment of proposed development and activities. When deciding if a proposal should be approved, the consent/determining authority (e.g. Coffs Harbour City Council) must consider a range of environmental matters including maintenance of biodiversity and the likely impact on threatened species, populations or ecological communities.

Part 5A of the EP&A Act requires proponents to consider likely impacts on threatened species, populations or ecological communities, or their habitats. There were no threatened species, populations or ecological communities recorded within the sites assessed during the current survey.

## 4.3 THREATENED SPECIES CONSERVATION ACT 1995 (TSC ACT)

The TSC Act (and amendments in 2002 and 2005) identifies threatened species, communities and populations. The TSC Act indicates the assessment process for proposed development that is likely to have a significant effect on biodiversity. In this case, Coffs Harbour City Council (CHCC) is the agency responsible for determining whether a significant effect is likely to occur, irrespective of whether a recovery plan exists. CHCC has a responsibility to ensure that it makes decisions relating to threatened species, communities and populations, on the best available information.

There were no threatened species, communities and populations recorded within the sites assessed during the current survey.

## 4.4 NATIVE VEGETATION ACT 2003 NO 103 (NV ACT)

The objects of this Act include the protection of "native vegetation of high conservation value having regard to its contribution to such matters as water quality, biodiversity, or the prevention of salinity or land degradation".

Within Clause 7 of this Act, the definition of clearing native vegetation (relevant to the study area) is as follows:

"*cutting down, felling, thinning, logging or removing native vegetation*".

The Minister is the consent authority for clearing native vegetation, and for the purposes of the EP&A Act, the Minister is the consent authority for any development application made under that Act for any clearing that requires development consent.

## 4.5 LOCAL AND STATE PLANNING INSTRUMENTS

***Coffs Harbour City Council Draft Local Environment Plan (LEP) 2000***

The majority of the study site is zoned as 'Rural 1A Agricultural Zone' under the Coffs Harbour City Council Draft LEP 2000 (Figure 4). The riparian corridor to the south of the study site is zoned as 'Environmental Protection 7A' (Figure 4). The aim of the Rural 1A zone is to provide for the preservation of existing or potentially productive agricultural land. Its objectives are to enable development which is compatible with agricultural practices, with the amenity and character of the rural environment of the area and which can be adequately serviced. The aim of the 7A zoning is to protect and enhance sensitive natural habitat and waterway catchments. Its objectives are to protect habitat values and water quality and enable development which does not adversely impact upon these, to enable development that is within the environmental capacity of the land and can be adequately serviced, and to enable protection of archaeological sites of Aboriginal significance (CHCC, 2000).

The proposed construction works are in keeping with the aims and objectives of the land zoning.

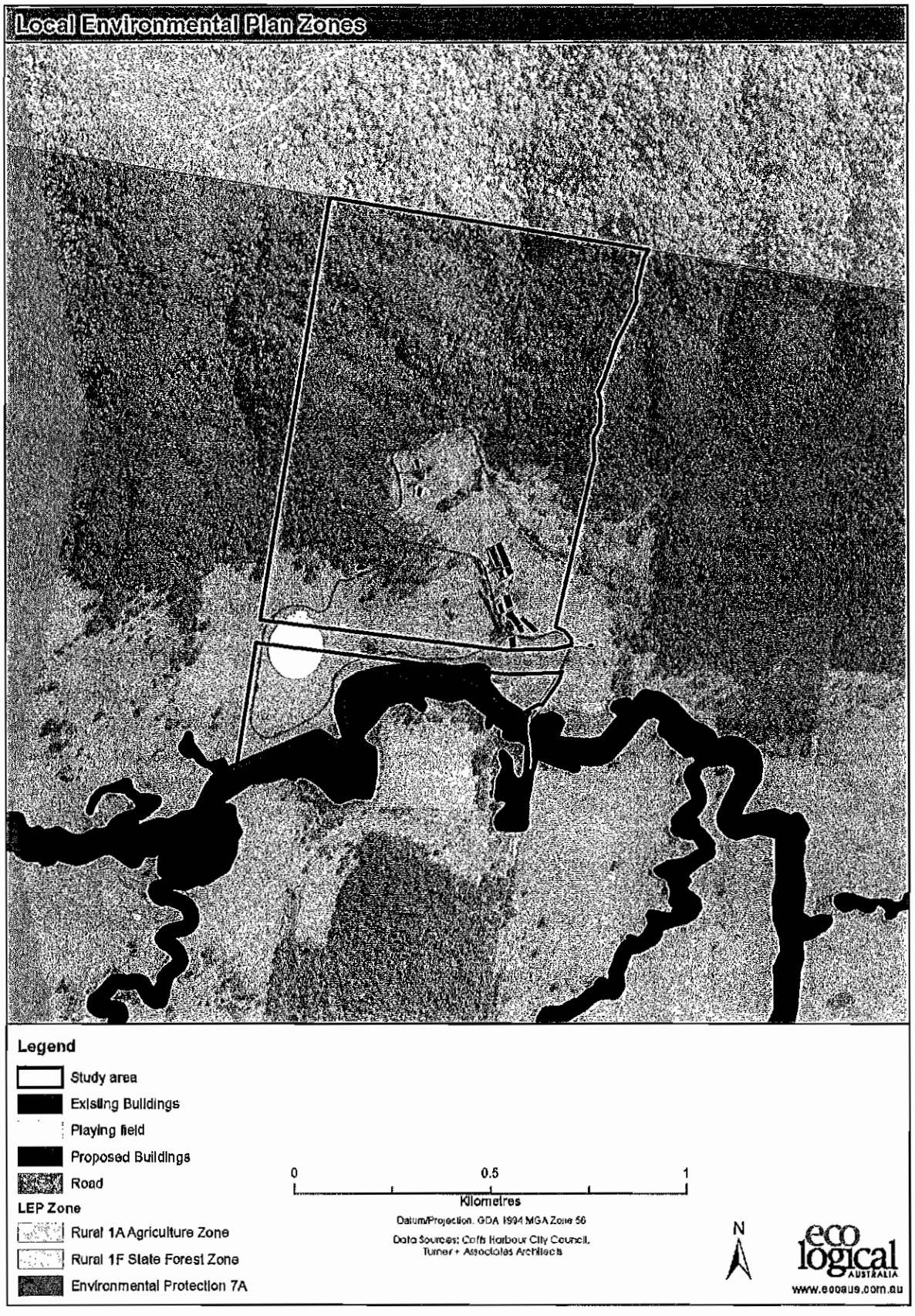



Figure 4: LEP zoning, proposed development footprint, Randalls Road, Bucca

***State Environmental Planning Policy (SEPP) 14: Coastal Wetlands***

This Policy ensures coastal wetlands are preserved and protected for environmental and economic reasons. SEPP 14 provides that mapped wetlands in coastal Local Government areas should not be cleared, drained or filled or have a levee constructed on them without the consent of Council and the concurrence of the Director- General of the Department of Planning.

No wetlands mapped under SEPP 14 occur within the study area.

***SEPP 26: Littoral Rainforests***

This Policy protects littoral rainforests, a distinct type of rainforest well suited to harsh salt-laden and drying coastal winds. The Policy requires that the likely effects of proposed development be thoroughly considered in an environmental impact statement.

The legal definition of littoral rainforest under SEPP 26 includes that which occurs on headlands as well as on sand. This is consistent with the definition of the EPBC-listed 'Critically Endangered' *Littoral Rainforest and Coastal Vine Thickets of Eastern Australia* ecological community. www.threatenedspecies.environment.nsw.gov.au.

Approximately 6.7 hectares of Littoral Rainforest are mapped within the study area under the CHCC vegetation mapping (Fisher et. al., 1996). Upon further investigation of the original vegetation mapping code (RF53 Brushbox) it is considered an attribute error to label this community as Littoral Rainforest and should be apportioned to the Sub-tropical Rainforest community. No Littoral Rainforest is mapped under SEPP 26 within the study area. No Littoral Rainforest will be disturbed or cleared as part of the proposal.

***SEPP 44: Koala Habitat Protection***

This Policy aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline.

SEPP 44 does not apply to the study area, as the CHCC Comprehensive Koala Plan of Management (KPoM) addresses Koala habitat protection issues within the Coffs Harbour LGA (see below).

***CHCC Comprehensive Koala Plan of Management (KPoM)***

The study area is largely mapped as '**Tertiary Koala Habitat**' under the KPoM (Figure 5).

In regard to Tertiary Koala Habitat, the KPoM objective is:

*"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.*

*Threats to koalas in these areas are more specifically linked to agricultural activities on these lands which involve the clearing and disturbance of koala habitat. Additionally, selective logging of the following species:*

- *Tallowwood Eucalyptus microcorys;*
- *Swamp Mahogany E. robusta;*
- *Flooded Gum E. grandis;*

- *Forest Red Gum E. tereticornis; or*
- *Small-fruited Grey Gum E. propinqua*

*within areas mapped as Tertiary Koala Habitat has the potential to impact on koalas by the removal of key resource trees. Proposals for selective logging in areas of Tertiary Koala Habitat which involve removal of the species listed above should take into account potential impacts on Koalas.*

*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.*

*The consent authority shall not grant consent to the carrying out of development in areas identified as Tertiary Koala Habitat unless the proposal demonstrates that appropriate measures are taken to:*

- *minimise barriers to koala movement;*
- *reduce the risk of koala mortality by road kill by appropriate road design, lighting and*
- *traffic speed limits;*
- *minimise the removal of koala tree species listed above under Tertiary Koala Habitat;*
- *provide preferred Koala trees in landscaping where suitable;*
- *minimise threats to Koalas by dogs i.e. banning of dogs or confining of dogs to Koala proof yards;*
- *minimise removal or disturbance of Tertiary Koala Habitat in fire protection zones, including fuel reduced zones and radiation zones".*

Small areas within the study area are mapped as '**Secondary Koala Habitat**' under the KPoM (Figure 5).

In regard to Secondary Koala Habitat, the KPoM objective is:

*"To minimise further loss, fragmentation or isolation of existing secondary koala habitat and the creation of barriers to koala movement and, where appropriate, to encourage restoration of koala habitat.*

*Areas of Secondary Koala Habitat contribute to the overall habitat available to Koalas and play a vital role in linking areas of Primary Koala Habitat. They are also important to dispersing and juvenile koalas, provide seasonal and drought foraging habitat, and may act as fire refuges.*

*The consent authority shall not grant consent to the carrying out of development on areas identified as Secondary Koala Habitat which will remove the tree species listed above unless the development will not significantly destroy, damage or compromise the values of the land as koala habitat. In assessing an application the consent authority shall take into consideration:*

- *that there will be minimal net loss of Secondary Koala Habitat;*
- *the level of significance to koalas of the trees proposed to be removed;*
- *the number of trees proposed to be removed in relationship to the extent and quality of adjacent or nearby Primary and/or Secondary Koala Habitat;*
- *the threats to koalas which may result from the development;*
- *all other options for protecting koala trees as listed above;*

- *the impacts to existing or potential koala movement corridors; and*
- *whether the land is accredited under the Timber Plantation (Harvest Guarantee) Act 1995.*

*The consent authority shall not grant consent to the carrying out of development in areas identified as Secondary Koala Habitat unless the proposal demonstrates that appropriate measures are taken to:*

- *minimise barriers to koala movement;*
- *reduce the risk of koala mortality by road kill by appropriate road design, lighting and*
- *traffic speed limits;*
- *minimise the removal of koala tree species listed above under Tertiary Koala Habitat;*
- *provide preferred Koala trees in landscaping where suitable;*
- *minimise threats to Koalas by dogs i.e. banning of dogs or confining of dogs to Koala proof yards;*
- *minimise removal or disturbance of Tertiary Koala Habitat in fire protection zones, including fuel reduced zones and radiation zones".*

Comprehensive fauna survey was not undertaken as part of the current survey. Although no Koalas were recorded during the current site inspection, the remnant vegetation within the study area is considered to represent quality Koala habitat.

No native vegetation will be cleared under the current proposal.

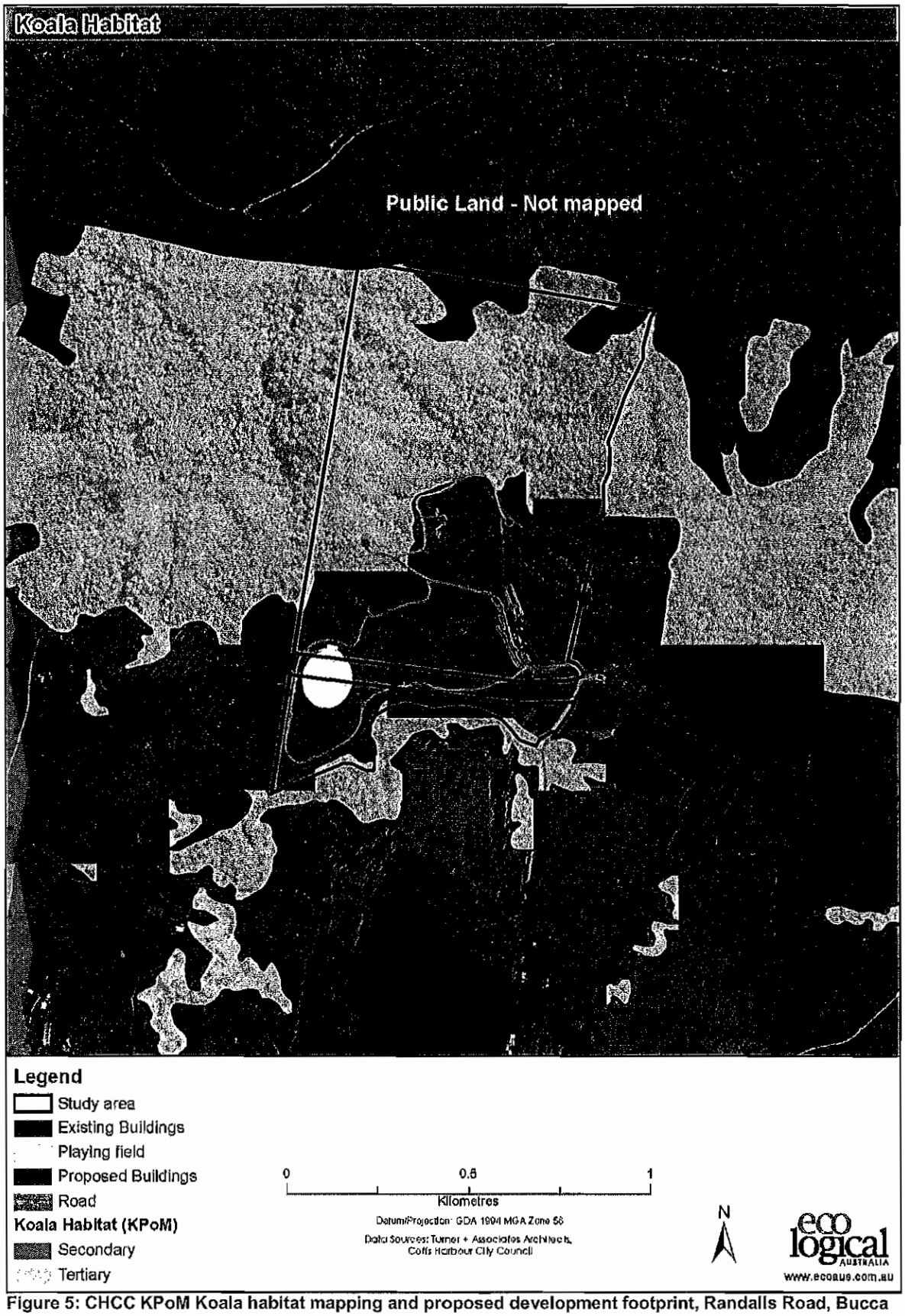



**Figure 5: CHCC KPoM Koala habitat mapping and proposed development footprint, Randalls Road, Bucca**

***SEPP 71: Coastal Protection***

This Policy aims to protect and manage the natural, cultural, recreational and economic attributes of the NSW coast and to ensure that the type, bulk, scale and size of development is appropriate for the location and protects and improves the natural scenic quality of the surrounding area.

Developments to which SEPP 71 applies include lands categorised as 'sensitive coastal locations'. These include "*land within 100m of land reserved or dedicated under the National Parks and Wildlife Act 1974 as National Parks estate; and land within 100m above mean high water mark of the sea, a bay or an estuary*".

No coastal land mapped under SEPP 71 occurs within the study area.

## 4.6 LOCAL PLANNING POLICY

***CHCC Tree Preservation Order (TPO)***

The CHCC Tree Preservation Order (CHCC, 2004) aims to promote the retention of trees and tree cover and to conserve the existing pattern of vegetation, to maintain landscape quality and remaining natural ecosystems; and to encourage the planting of trees to provide integration of trees into existing land uses.

The study area is zoned as Rural 1A and as such the responsible authority is the Northern Rivers Catchment Management Authority (NRCMA). Any native vegetation is protected from clearing under the Native Vegetation Act (NVAct) and any plans for clearing trees must be assessed by a NRCMA officer.

## 4.7 KEY THREATENING PROCESSES

The proposed actions would constitute "clearing of native vegetation" as a Key Threatening Process (KTP) as defined in the Final Determination of the Scientific Committee on Schedule 3 of the TSC Act.

The definition of clearing under this KTP is as follows:

*"... the destruction of a sufficient proportion of one or more strata (layers) within a stand or stands of native vegetation so as to result in the loss, or long term modification, of the structure, composition and ecological function of stand or stands. The definition of clearing does not preclude management activities to control exotic species, or Australian species growing outside their natural geographic range".*

The Scientific Committee has found that:

*"1. Clearing of native vegetation is recognised as a major factor contributing to loss of biological diversity.*

*2. Land Clearance is listed as a KTP under the Commonwealth's EPBC Act.*

*3. In NSW since 1788 at least 61% of the original native vegetation has been cleared, thinned or substantially or significantly disturbed (Environment Protection Authority, 1997). The proportion of area cleared varies between region and community type (Native Vegetation Advisory Council, 1999) and in some cases has exceeded 90% [e.g. South East Grassy Forests (Keith & Bedward 1999)].*

*4. Clearing of any area of native vegetation, including areas less than two hectares in extent, may have significant impacts on biological diversity*".

(www.environment.nsw.gov.au/determinations/ClearingNativeVegKTPListing.htm).

# 5 Survey Methodology

Preliminary lists of species likely to occur within the subject site were obtained by conducting searches of the OEH's Atlas of NSW Wildlife (Wildlife Atlas), for species listed under the NSW *Threatened Species and Conservation Act 1995* (TSC Act), and the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) Protected Matters Search Tool (PMST) for Matters of National Environmental Significance and species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Threatened species data searches were undertaken on 9th March, 2011.

The OEH Wildlife Atlas and PMST data searches were each based upon a 10 kilometre radius from a point centred on the midpoint of the study area. Pelagic sea birds, marine mammals, marine reptiles and EPBC listed migratory species were excluded from these searches. The resultant lists were filtered to identify threatened species considered likely or with the potential to occur on, or utilise, the subject site and these appear in bold in Appendices A and B.

Literature searches for information on the ecological communities, populations and species likely to occur in the area were also performed. This information was examined to determine the habitat requirements for the ecological communities, populations and species likely to occur in the area.

A site inspection of each of the seven sites comprising a flora and fauna habitat survey was undertaken on 28th of April, 2011. This involved traversing each site proposed for development within the study area to identify flora species, vegetation types, and habitat features within the study area (such as tree hollows and feed trees). No comprehensive fauna survey was undertaken as part of the current assessment.

A general list of flora species, vegetation communities and habitat features present within the study area was compiled during assessment. Photos of the vegetation types and condition were taken throughout the study area.

The current flora and habitat assessment was undertaken by ELA Botanist Liz Brown. Survey effort entailed 4.5 person hours, with additional travel time to and from the site.

A follow-up site assessment was undertaken on 11th May, 2011. A targeted search for threatened flora species at the proposed 'Chapel' site was undertaken, in light of the APZ requirements which resulted from the initial bushfire assessment (28th April).

# 6 Results

## 6.1 DATA SEARCHES

The data search for TSC Act and EPBC Act threatened species, populations and communities recorded numerous species known from or predicted to occur within the subject site (note that pelagic sea birds, marine mammals and marine reptiles were excluded from this search).

These species and ecological communities are listed in Appendices A and B, with those species considered likely (with some potential) to occur within or utilise the subject site (based on field-based survey and habitat assessment) highlighted in bold.

The data searches recorded the following species as either likely or with some potential to occur within the vicinity of the five sites examined during the current assessment:

- Nine threatened flora species;
- 27 threatened fauna species (including several non-threatened species listed as Migratory Species under the EPBC Act – none of these species are considered likely to be affected by the Proposal and are not considered further in this report); and
- One threatened ecological community.

Given that there will be no loss of remnant mature trees it is considered unlikely that there will be any significant impact on any threatened species as part of the current development proposal.


**Figure 6: CHCC vegetation mapping, Randalls Road, Bucca**

## 6.2 PLANT COMMUNITIES

### 6.2.1 Vegetation Communities and Mapping Units

Table 1 provides equivalence for the following vegetation type across three main vegetation classification systems used in NSW, including reference sources for each. All reference to the community in this report follows the RVC system developed by ELA for DECC (ELA, 2008).

**Table 1: Comparison between different vegetation classification systems for NSW**

| 1. CHCC Vegetation Mapping RVC | 2. PVP – BioBanking Type | 3. Fisher et. al. |
|---|---|---|
| Tallowwood tall moist shrubby forests of the NSW North Coast | Tallowwood – Brush Box moist open forest of the coastal ranges of the Central North Coast | Sydney Blue Gum (N3A) |

1. = Eco Logical Australia 2008. A Hierarchical Vegetation Classification for NSW Catchment Management Authorities: Stage 1 - Border Rivers-Gwydir, Namoi, Northern Rivers and Western. Final Draft prepared for DECC. August 2008.

2. = BioMetric Vegetation Types Database 2004. PVP Developer Tool. Department of Environment and Conservation.

3. = Fisher et. al., 1996. The Vegetation of the Coffs Harbour City Coucil LGA. Unpublished report to CHCC.

The results of the current site assessment are presented as follows. A total of five proposed development sites were assessed.

### 6.2.2 Chapel site

This previously cleared site is located on a gently sloping hill with a westerly aspect (Figure 3). A small dam is located at the base of this slope, and a dry sclerophyll tall open grassy forest type is north of the cleared area. The cleared area is routinely mowed/slashed.

**Vegetation**

The vegetation at this site consists of a previously cleared, grassy area which is dominated by Kangaroo Grass *Themeda australis*. No shrub layer exists, and the ground layer supports a mixture of native species such as Common Bracken, Blady Grass, Whiteroot, Spiny-headed Mat Rush, Blue Flax-lily *Dianella caerulea* and *Gonocarpus tetragynus.* Exotic species at the ground layer include *Sporobolus* sp., Narrow-leaved Carpet Grass *Axonopus fissifolius* and Catsear *Hypochaeris radicata.*

The canopy species which dominate the native forest surrounding this cleared area to the north, east and north-west are Narrow-leaved White Mahogany *Eucalyptus acmenoides* and Smooth-barked Apple.

Beneath the canopy the mid layer consists of species such as Blueberry Ash *Elaeocarpus reticulatus*, Tree Heath *Trochocarpa laurina*, Rose Myrtle, *Guioa semiglauca* and Large Mock-olive *Notelaea longifolia.* Scattered short, shrub species also occur such as *Daviesia umbellulata*, Wild Yellow Jasmine and Coffee Bush *Breynia oblongifolia.* Scattered exotic species such as Camphor Laurel and Lantana occur in the midlayer.

The forest ground layer consists of a grassy open layer of native grasses and herbs such as Kangaroo Grass, Common Bracken, Blady Grass, Whiteroot, Spiny-headed Mat Rush, *Oplismenus imbecillis*, *Centella asiatica*, Rainbow Fern *Calochlaena dubia*, *Pomax umbellata*, Lacy Wedge Fern *Lindsaea microphylla*, Common Everlasting *Chrysocephalum apiculatum*, *Asterolasia correifolia*, *Vernonia cinerea*, Wiry Panic *Entolasia stricta*. Weed species present incluse Whisky Grass *Andropogon virginicus*.

Vegetation at the proposed Chapel site Image: Liz Brown

**Habitat features**

A small dam is located at the base of the sloped site, which supports a fringe of native sedges and rushes which provides habitat for various frog and water bird species. Narrow-leaved White Mahogany is a known feed tree for Koalas (Lunney et. al., 1999) and this species is dominant in this area. Forest Oak trees in the area provide a food source which may be utilised by various species of Black Cockatoos. No hollow bearing trees were located within the area surrounding the proposed site for development.

### 6.2.3 Staff accommodation site

This cleared site is located on a very slight slope with a south-easterly aspect (Figure 3). The cleared area is routinely mowed/slashed.

## Vegetation

Three mature trees exist within the area proposed for development, all of which will be retained within the current development footprint (pers. comm., Tony Stodart, 2011). These trees are a large, old Tallowwood, a mature Sydney Blue Gum and a mature Forest Red Gum *Eucalyptus tereticornis*, none of which are hollow-bearing. One mature Blueberry Ash is growing alongside the Forest Red Gum.

The majority of this site is characterised by a cleared and grassy area of pasture which predominantly supports exotic species and some colonising native ground species. Exotic dominant species include *Sporobolus* sp., Broadleaf Paspalum, Catsear *Hypochaeris radicata*, Whisky Grass, Summer Grass *Digitaria sanguinalis*, Spear Thistle *Cirsium vulgare*, Rhodes Grass *Chloris gayana*, Wild Tobacco, Paddy's Lucerne *Sida rhombifolia*, Lantana and Cobbler's Pegs. Noxious weeds in this area include Fireweed and Groundsel Bush.

Native species which have re-colonised the cleared areas post-clearing include Common Fringe-sedge *Fimbristylis dichotoma*, Common Bracken, Brown's Lovegrass *Eragrostis brownii*, Bushy Hedgehog-grass *Echinopogon caespitosus*, Blady Grass, Indian Weed, Native Geranium *Geranium solanderi*, Weeping Grass *Microlaena stipoides*, Spiny-headed Mat Rush and Barbed Wire Grass *Cymbopogon refractus*.

The surrounding forest and scattered trees in pasture support canopy species such as Red Mahogany, Tallowwood, Sydney Blue Gum, Turpentine, Small-fruited Grey Gum and Smooth-barked Apple.

Vegetation at the proposed staff accommodation site Image: Pru Coffey

**Habitat features**

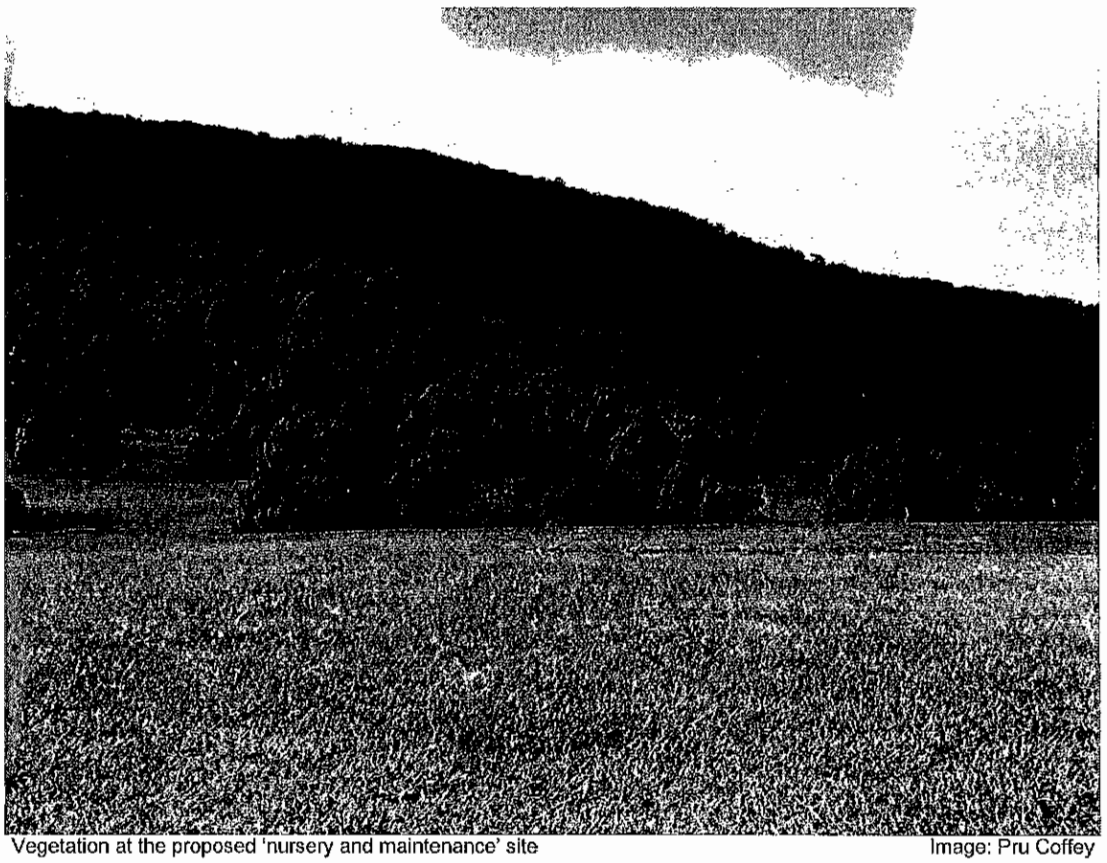
The site contains relatively few habitat features with no large boulders, hollowed trees or free water. Surrounding Forest Oak trees in the area suggest that the area may be utilised by various species of Black Cockatoos. Various trees species surrounding the area proposed for development are known Koala feed trees, such as Tallowwood and Forest Red Gum (Lunney et. al., 1999). An exotic species recorded at this site Narrow-leaved Cotton Bush *Gomphocarpus fruticosus* is a known food plant for species such as the Monarch and Lesser Wanderer butterflies *Danaus* spp.

### 6.2.4 Nursery and maintenance site

This site is located in a relatively flat area at the top of a gentle slope. An existing shed and associated machinery and fencing also exist at this location (Figure 3). The cleared area is routinely mowed/slashed.

**Vegetation**

This site is predominantly cleared and dominated by the introduced grass species Broadleaf Paspalum and the native Common Bracken. Remnant mature specimens of Forest Red Gum, Sydney Blue Gum and various planted trees such as Silky Oak *Grevillea robusta* and various horticultural species are scattered through the mowed lawns in this area. No remnant eucalypt specimens are proposed for removal, while selected planted Silky Oaks will be cleared (pers. comm., Tony Stodart, 2011).



Vegetation at the proposed 'nursery and maintenance' site Image: Pru Coffey

**Habitat features**

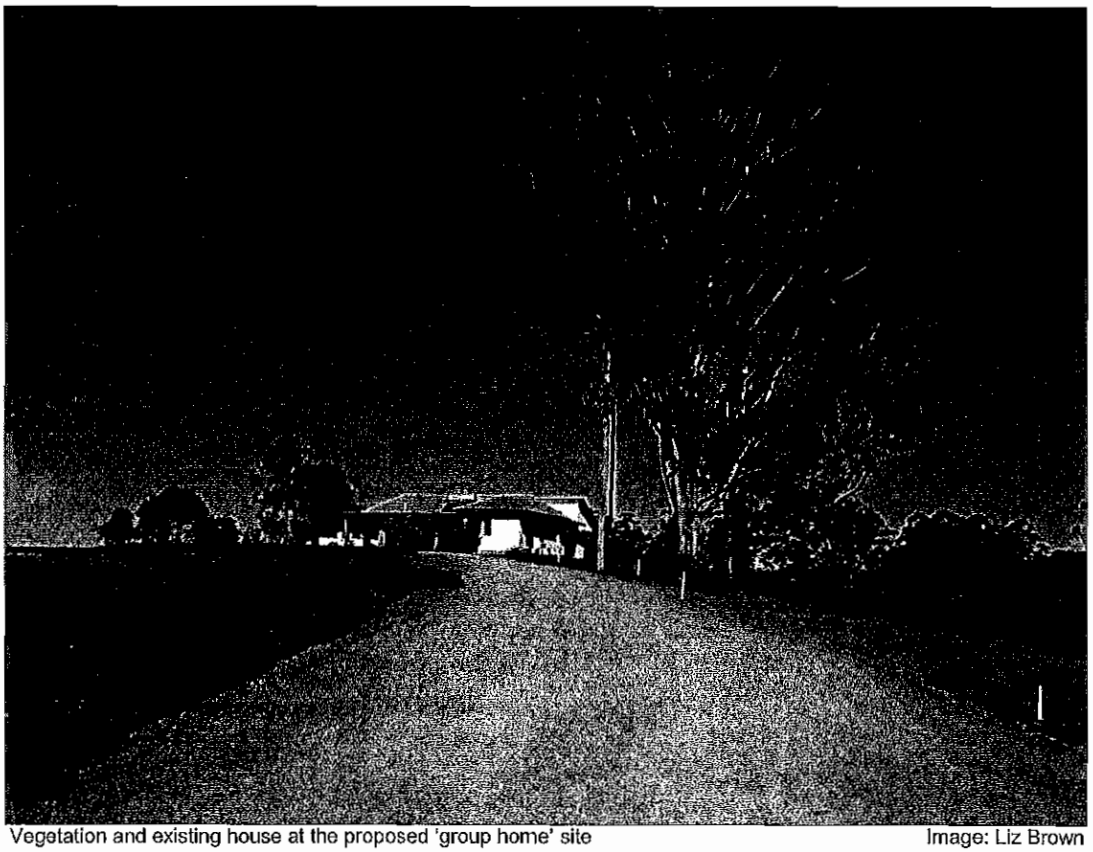
The remnant, mature specimens of Forest Red Gum and Sydney Blue Gum in this area were searched and no hollows were recorded in this area. Forest Red Gum is a very important Koala food species (Lunney et. al., 1999). The site contains relatively few habitat features with no large boulders, hollowed trees or free water. The running water in the drainage line to the north or north-east of the site supports fringing sedges and rushes and may be considered useful habitat for frogs or water birds.

### 6.2.5 Group home site

This site is located on a relatively flat site at the crest of a gentle slope. An existing house and associated sheds/garages also exist at this location (Figure 3). The cleared area is routinely mowed/slashed.

**Vegetation**

The vegetation in this area mainly comprises mowed areas of introduced lawn and planted horticultural specimens. Two mature Forest Red Gums in the vicinity of the proposed development at this site are not hollow-bearing and will be retained in the current development footprint (pers. comm., Tony Stodart, 2011).



Vegetation and existing house at the proposed 'group home' site Image: Liz Brown

**Habitat features**

The running water in the drainage line to the north or north-east of the site supports fringing sedges and rushes and may be considered useful habitat for frogs or water birds. The scattered Forest Red Gum in this locality is a very important Koala food species (Lunney et. al., 1999). The site contains relatively few habitat features with no large boulders, hollowed trees or free water.

### 6.2.6 Playing field and canteen site

This previously cleared site is located on a flat site at the base of a gentle slope. A small dam is located east of this site, and the riparian forest along Bucca Bucca Creek is north of the site (Figure 3). The cleared area is routinely mowed/slashed.

**Vegetation**

The vegetation in this area is dominated by mowed areas of introduced pasture. The pasture in this area is dominated by exotic species such as Whisky Grass and Broad-leaved Paspalum.

Nearby dam and adjoining riparian vegetation south to south-east of the proposed 'playing field / canteen' site
Image: Pru Coffey

**Habitat features**

The site proposed for development provides little or no habitat features. A small dam is located to the east of this site, which supports a fringe of native sedges and rushes and may provide habitat for various frog and water bird species. The running water in the riparian vegetation to the south and south-east of the site may also be considered useful habitat for frogs or water birds.

## 6.1 THREATENED FLORA

No threatened flora species were recorded during the current survey.

## 6.2 ENDANGERED ECOLOGICAL COMMUNITIES (EECS)

No Endangered Ecological Communities (EECs) were recorded during the current survey.

## 6.3 FAUNA HABITAT

A summary of habitat features within the study area which may provide useful fauna habitat are listed below, and are further detailed in Section 6.2.:

- Koala feed trees (e.g. Forest Red Gum and Tallowwood);
- Creeklines (e.g. potential habitat for frog and water bird species);
- *Allocasuarina* and *Banksia* trees (e.g. potential feed tree used by Black Cockatoo species);
- Hollow-bearing mature trees; and
- Fallen trees / logs.

Two tree species within the study site (Forest Red Gum and Tallowwood) are listed as known Koala Feed Tree species under State Environmental Planning Policy (SEPP) No 44 – Koala Habitat Protection. Neither of these tree species are proposed for clearing as part of the proposed development footprint.

Potential bat habitat may exist within the bridge structure south of the study area (Figure 3). This bridge was not surveyed as part of the current assessment.

## 6.4 DECLARED NOXIOUS WEEDS

Fireweed, Lantana and Small-leafed Privet are all declared Noxious in the control area of CHCC (Class 4).

Groundsel Bush is a declared Noxious weed in the control area of CHCC (Class 3).

For Class 4 weeds (Fireweed, Lantana and Small-leafed Privet) there is a legal requirement that 'the growth and spread of these plants must be controlled according to the measures specified in a management plan published by the local control authority' (CHCC).

For Class 3 weeds (Groundsel Bush) 'the plant must be fully and continuously suppressed and destroyed'.

Groundsel Bush was recorded at the proposed 'Staff accommodation' site (Figure 3) during the current assessment, and is likely to be present in other disturbed or cleared areas (such as pasture) within the property.

## 6.5 WILDLIFE CORRIDORS

The study area examined during the current assessment has conservation value as part of a fauna corridor network within a regional and subregional context and has been mapped by Scotts, 2003 (Figure 7).

The area surrounding the sites assessed is characterised by significant tracts of native forest. Relative to the study area these include Sherwood Nature Reserve and Conglomerate State Forest located adjacent to the north of the study area (Figure 7).


**Figure 7: Surrounding land tenure, regional corridor, proposed development footprint, Randalls Road, Bucca**

# 7 Recommendations

It is understood that no mature canopy trees will be cleared as part of the proposed works. Disturbance to the existing vegetation and habitat within the study area will be minimal.

Where installation of secure silt fence barriers is required alongside gullies and/or creeklines, erection of this fencing should follow best practice guidelines.

The following management strategies are recommended for the five sites assessed within the study area (Figure 3):

- Retain and protect all mature native eucalypt species within or near each development site, using secure temporary exclusion fencing to the drip-line of each tree canopy.
- Do not stockpile equipment or materials at the base or within the drip line of the canopy of any mature remnant eucalypt species (e.g. 'Nursery' and 'Group home' sites, Figure 3). Install secure temporary exclusion fencing around the drip line of the canopy of any trees in the vicinity of proposed construction works.
- Install secure silt fence barriers immediately down slope of the proposed construction sites prior to works commencing, to prevent excess silt from entering the drainage lines and/or dams (e.g. 'Chapel' and 'Nursery' sites, Figure 3).
- Potential bat habitat may exist within the bridge structure south of the study area (Figure 3). A targeted bat roost search of this structure is recommended prior to undertaking any removal / replacement works in this area.

# References

BioMetric Vegetation Types Database 2004. PVP Developer Tool. Department of Environment and Conservation.

Coffs Harbour City Council (CHCC) Draft LEP 2000. Coffs Harbour City Council

Department of Environment and Conservation, 2008. Atlas of NSW Wildlife locality records. http://www.environment.nsw.gov.au/wildlifeatlas/about.htm

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Scotts, D. 2003. *Key Habitats and Corridors for Forest Fauna: A Landscape Framework for Conservation in North-east New South Wales.* NSW NPWS Occasional Paper 32, NSW National Parks and Wildlife Service, Sydney.

Lunney, D., Moon, C., Matthews, A., and Turbill, J. 1999. *Coffs Harbour City Koala Plan of Management. Part A The Plan.* NSW National Parks and Wildlife Service, Hurstville.

Threatened Species Scientific Committee (TSSC), 2010. Commonwealth Listing Advice on *Pseudomys novaehollandiae* (New Holland Mouse) [Listing Advice].

# APPENDIX A: Results of EPBC and TSC Searches

**Bold text** represents subject species listed under the TSC Act or EPBC Act considered likely or with the potential to occur on, or to utilise, the study area.

*Five categories for likelihood of occurrence of species are used in this report and are defined below. Assessment of likelihood was based on species locality records, presence or absence of suitable habitat features within the study area, results of previous studies, on-site field surveys and professional judgement.

- yes - the species is known to occur within suitable habitat within the study area.
- likely - a medium to high probability that a species occupies or uses habitat within the study area.
- potential - suitable habitat for a species occurs within the study area, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur.
- unlikely - a very low to low probability that a species occupies or uses habitat within the study area.
- no - habitat within the study area and in the immediate vicinity is unsuitable for the species, or, in the case of plants, the species was not located during searches of the study area.

CE = Critically Endangered species, population or ecological community.
E = Endangered species, population or ecological community.
V = Vulnerable species, population or ecological community.

Sources of habitat information for species are as follows:

Birds (Morcombe 2000; Pizzey and Knight 1997), Mammals (Strahan 1995, Menkhorst and Knight 1998), Bats (Strahan 1995, Churchill 1998), Frogs (Barker *et al.* 1995), Reptiles (Cogger 2000) and Plants (Harden 1990-2002; PlantNet 2007); Threatened species of the New England Tablelands (NSW NPWS 2003); and DECCW Threatened Species profiles available online at http://www.threatenedspecies.environment.nsw.gov.au/index.aspx.

## FLORA SPECIES

| SCIENTIFIC NAME | COMMON NAME | TSC Act | EPBC Act | Likelihood of occurrence |
|---|---|---|---|---|
| *Allocasuarina defungens* | Dwarf Heath Casuarina | E | E | Unlikely |
| *Angophora robur* | Sandstone Rough-barked Apple | V | V | Unlikely |
| *Boronia hapalophylla* | Shannon Creek Boronia | E | | Unlikely |
| ***Boronia umbellata*** | **Orara Boronia** | **V** | **V** | **Potential** |
| *Hicksbeachia pinnatifolia* | Red Boppel Nut | V | V | Unlikely |
| *Cynanchum elegans* | White-flowered Wax Plant | E | E | Unlikely |
| ***Lindsaea incisa*** | **Slender Screw Fern** | **E** | | **Potential** |
| *Macadamia tetraphylla* | Rough-shelled Bush Nut | V | V | No |
| ***Marsdenia longiloba*** | **Slender Marsdenia** | **E** | V | **Potential** |
| ***Niemeyera whitei*** | **Rusty Plum, Plum Boxwood** | **V** | | **Potential** |
| *Melichrus hirsutus* | Hairy Melichrus | E | E | Unlikely |
| *Oberonia titania* | Red-flowered King of the Fairies | V | | Unlikely |
| ***Parsonsia dorrigoensis*** | **Milky Silkpod** | **V** | **E** | **Potential** |
| ***Pomaderris queenslandica*** | **Scant Pomaderris** | **E** | | **Potential** |
| ***Quassia* sp. Mooney Creek** | **Moonee Quassia** | **E** | **E** | **Potential** |
| *Sarcochilus fitzgeraldii* | Ravine Orchid | V | V | Unlikely |

| SCIENTIFIC NAME | COMMON NAME | TSC Act | EPBC Act | Likelihood of occurrence |
|---|---|---|---|---|
| *Sarcochilus hartmannii* | Hartman's Sarcochilus | V | V | Unlikely |
| ***Senna acclinis*** | **Rainforest Cassia** | **E** | | **Potential** |
| *Taeniophyllum muelleri* | Minute Orchid | | V | Unlikely |
| *Thesium australe* | Austral Toadflax | V | V | unlikely |
| ***Tylophora woollsii*** | | **E** | **E** | **Potential** |
| *Typhonium* sp. aff. *brownii* | Stinky Lily | E | | Unlikely |
| *Zieria prostrata* | Headland Zieria | E | E | No |

## ECOLOGICAL COMMUNITIES

| ECOLOGICAL COMMUNITY | Likelihood of occurrence |
|---|---|
| **Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions** | **Likely** |
| Sub-tropical Coastal Floodplain Forest of the NSW North Coast bioregion | Unlikely |

## FAUNA SPECIES

| Scientific Name | Common Name | Conservation Significance | | Habitat Associations | Likelihood of Occurrence |
|---|---|---|---|---|---|
| | | TSC Act | EPBC Act | | |
| **FROGS** | | | | | |
| *Litoria aurea* | Green and Golden Bell Frog | E | V | Green and Golden Bell Frog was formerly distributed from the NSW north coast near Brunswick Heads, southwards along the NSW coast to Victoria where it extends into east Gippsland. Records from west to Bathurst, Tumut and the ACT region. Since 1990 there have been approximately 50 recorded locations in NSW, most of which are small, coastal, or near coastal populations. These locations occur over the species' former range, however they are widely separated and isolated. Large populations in NSW are located around the metropolitan areas of Sydney, Shoalhaven and mid north coast (one an island population). There is only one known population on the NSW Southern Tablelands. Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (Gambusia holbrooki), have a grassy area nearby and diurnal sheltering sites available. Some sites, particularly in the Greater Sydney region, occurs in highly disturbed areas (DECC 2007). | no |

| Scientific Name | Common Name | Conservation Significance | | Habitat Associations | Likelihood of Occurrence |
|---|---|---|---|---|---|
| | | TSC Act | EPBC Act | | |
| *Litoria brevipalmata* | Green-thighed Frog | V | | Found in isolated localities along the coast and ranges from just north of Wollongong to south-east Queensland. Green-thighed Frogs occur in a range of habitats from rainforest and moist eucalypt forest to dry eucalypt forest and heath, typically in areas where surface water gathers after rain. Breeding occurs following heavy rainfall in late spring and summer, with frogs aggregating around grassy semi-permanent ponds and flood-prone grassy areas. The frogs are thought to forage in leaf-litter (DECC 2007). | potential |
| *Litoria olongburensis* | Wallum Sedge Frog | V | V | This species is found within coastal areas from Fraser Island in south-east Queensland to Woolgoolga in northern NSW. Paperbark swamps and sedge swamps of the coastal "wallum" country. Wallum is a Banksia dominated lowland heath ecosystem characterised by acidic waterbodies. Olongburra Frogs are usually found amongst sedges and rushes in coastal wetlands (DECC 2007). | no |

| Scientific Name | Common Name | Conservation Significance | | Habitat Associations | Likelihood of Occurrence |
|---|---|---|---|---|---|
| | | TSC Act | EPBC Act | | |
| *Mixophyes balbus* | Stuttering Frog | E | V | Stuttering Barred Frogs occur along the east coast of Australia from southern Queensland to north-eastern Victoria. Considered to have disappeared from Victoria and to have undergone considerable range contraction in NSW, particularly in south-east NSW. It is the only Mixophyes species that occurs in south-east NSW and in recent surveys it has only been recorded at three locations south of Sydney. The Dorrigo region, in north-east NSW, appears to be a stronghold for this species. Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Outside the breeding season adults live in deep leaf litter and thick understorey vegetation on the forest floor. Breed in streams during summer after heavy rain. Eggs are laid on rock shelves or shallow riffles in small, flowing streams (DECC 2007). | no |
| *Mixophyes iteratus* | Giant Barred Frog | E | E | Found on forested slopes of the escarpment and adjacent ranges in riparian vegetation, subtropical and dry rainforest, wet sclerophyll forests and swamp sclerophyll forest (DECC 2007; Ehmann 1997). This species is associated with flowing streams with high water quality, though habitats may contain weed species (Ehmann 1997). This species is not known from riparian vegetation disturbed by humans (NSW Scientific Committee 1999). During breeding eggs are kicked up onto an overhanging bank or the streams edge (DECC 2007). | unlikely |

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| **INSECT** | | | | | |
| *Petalura gigantea* | Giant Dragonfly | E | | The Giant Dragonfly is found along the east coast of NSW from the Victorian border to northern NSW. It is not found west of the Great Dividing Range. There are known occurrences in the Blue Mountains and Southern Highlands, in the Clarence River catchment, and on a few coastal swamps from north of Coffs Harbour to Nadgee in the south. This species lives in permanent swamps and bogs with some free water and open vegetation. Adults emerge from late October and are short-lived, surviving for one summer after emergence. Adults spend most of their time settled on low vegetation on or adjacent to the swamp. They hunt for flying insects over the swamp and along its margins. Females lay eggs into moss, under other soft ground layer vegetation, and into moist litter and humic soils, often associated with groundwater seepage areas within appropriate swamp and bog habitats. The species does not utilise areas of standing water wetland, although it may utilise suitable boggy areas adjacent to open water wetlands (DECC 2007). | unlikely |
| *Phyllodes imperialis* (southern subsp. - ANIC 3333) | Pink Underwing Moth | E | E | The southern subspecies of the Pink Underwing Moth is distributed from Nambour, south-eastern Queensland to near Dorrigo and Bellingen, in northern NSW, but is only known from 5 or 6 locations. Population sizes in NSW appear to be small. The Pink Underwing Moth is found in subtropical rainforest below about 600 m elevation. Potential breeding habitat is restricted to areas where the caterpillar's food plant, a native rainforest vine, Carronia multisepalea, occurs in subtropical rainforest. Adult Pink Underwing Moths require the darkness supplied by the vine and other rainforest vegetation in order to breed (DECC 2007). | unlikely |
| **REPTILES** | | | | | |

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| *Hoplocephalus bitorquatus* | Pale-headed Snake | V | | This species has a patchy distribution from north-east Queensland to north-east NSW. In NSW it occurs from the coast to the western side of the Great Divide as far south as Tuggerah. Found mainly in dry eucalypt forests and woodlands, cypress woodland and occasionally in rainforest or moist eucalypt forest. Favours streamside areas, particularly in drier habitats. Shelters during the day between loose bark and tree-trunks, or in hollow trunks and limbs of dead trees. The main prey is tree frogs although lizards and small mammals are also taken (DECC 2007). | unlikely |
| ***Hoplocephalus stephensii*** | **Stephen's Banded Snake** | V | | **Found in a variety of habitats from rainforest through wet and moist sclerophyll forests to dry sclerophyll forests (DECC 2007). However it is most commonly found in wet to moist forests with rocky outcrops, cliffs or ridges and tends to favour ecotones between wet and dry forests (DECC 2007). It most frequently uses gaps in the peeling bark of large senescent or dead trees for daytime shelter (DECC 2007). However it can use hollow trunks, limbs, epiphytes, vine thickets, rock crevices or rock slabs (DECC 2007).** | **potential** |
| *Coeranoscincus reticulatus* | Three-toed Snake-tooth Skink | V | V | The Three-toed Snake-tooth Skink occurs on the coast and ranges from the Macleay valley in NSW to south-eastern Queensland. It is very uncommon south of Grafton. Rainforest and occasionally moist eucalypt forest, on loamy or sandy soils. The Three-toed Snake-tooth Skink lives in loose soil, leaf litter and rotting logs, and feeds on earthworms and beetle grubs (DECC 2007). | unlikely |
| *Emydura macquarii signata* (Bellinger River, NSW) | Bellinger River Emydura | V | V | The Bellinger River Emydura is restricted to the Bellinger and Kalang catchments on the NSW north coast. Long, deep pools in broad reaches of the upper Bellinger River. Diet includes small crustaceans, insects, algae and aquatic weed. Clutches of eggs are laid in nests excavated in the river banks between October and January. Fallen timber (snags) in the river are used as basking sites (DECC 2007). | no |

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| *Underwoodisaurus sphyrurus* | Border Thick-tailed Gecko | V | V | Found only on the tablelands and slopes of northern NSW and southern Queensland, reaching south to Tamworth and west to Moree. Most common in the granite country of the New England Tablelands. Occurs at sites ranging from 500 to 1000 m elevation. Populations are apparently fragmented, with over 50 discrete sites currently known that are separated by at least 2 km. Often occurs on steep rocky or scree slopes, especially granite. Recent records from basalt and metasediment slopes and flats indicate its habitat selection is broader than formerly thought and may have extended into areas that were cleared for agriculture. Favours forest and woodland areas with boulders, rock slabs, fallen timber and deep leaf litter. Occupied sites often have a dense tree canopy that helps create a sparse understorey. These Geckos are active at night and shelter by day under rock slabs, in or under logs, and under the bark of standing trees (DECC 2007). | no |

| DIURNAL BIRDS | | | | | |
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| ***Calyptorhynchus lathami*** | **Glossy Black-Cockatoo** | **V** | | **Associated with a variety of forest types containing Allocasuarina species, usually reflecting the poor nutrient status of underlying soils (Environment Australia 2000; NPWS 1997; DECC 2007). Intact drier forest types with less rugged landscapes are preferred (DECC 2007). Nests in large trees with large hollows (Environment Australia 2000).** | **likely** |

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| **DIURNAL BIRDS** | | | | | |
| *Climacteris picumnus* | Brown Treecreeper | V | | The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (*Eucalyptus camaldulensis)* Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains. Hollows in standing dead or live trees and tree stumps are essential for nesting (DECC 2007). | unlikely |
| ***Coracina lineata*** | **Barred Cuckoo-shrike** | V | | **Associated with subtropical, dry and Littoral Rainforests and is restricted to below 500m elevation (DECC 2007).** | **potential** |
| ***Daphoenositta chrysoptera*** | **Varied Sittella** | V | | **The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years (DECC 2007).** | **potential** |

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| **DIURNAL BIRDS** | | | | | |
| *Ephippiorhynchus asiaticus* | Black-necked Stork | E | | Associated with tropical and warm temperate terrestrial wetlands, estuarine and littoral habitats, and occasionally woodlands and grasslands floodplains (Marchant & Higgins 1993). Forages in fresh or saline waters up to 0.5m deep, mainly in open fresh waters, extensive sheets of shallow water over grasslands or sedgeland, mangroves, mudflats, shallow swamps with short emergent vegetation and permanent billabongs and pools on floodplains (Marchant & Higgins 1993; DECC 2007). | no |
| ***Glossopsitta pusilla*** | **Little Lorikeet** | **V** | | **Mostly occur in dry, open eucalypt forests and woodlands. Little Lorikeets have been recorded from both old-growth and logged forests in the eastern part of their range, and in remnant woodland patches and roadside vegetation on the western slopes. On the western slopes and tablelands White Box *Eucalyptus albens* and Yellow Box *E. melliodora* are particularly important food sources for pollen and nectar respectively (Courtney & Debus 2006). They are also reported as feeding on nectar and pollen from species such as Melaleucas, and fruits, particularly those of mistletoes (Higgins 1999).** | **likely** |
| *Irediparra gallinacea* | Comb-crested Jacana | V | | Freshwater wetlands, such as lagoons, billabongs, swamps, lakes and reservoirs, generally with abundant floating aquatic vegetation (Marchant and Higgins 1999). | no |

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| **DIURNAL BIRDS** | | | | | |
| *Lathamus discolour* | Swift Parrot | E | E | Swift Parrot breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*. Commonly used lerp infested trees include Inland Grey Box *E. microcarpa*, Grey Box *E. moluccana* and Blackbutt *E. pilularis*. Return to some foraging sites on a cyclic basis depending on food availability. Following winter they return to Tasmania where they breed from September to January, nesting in old trees with hollows and feeding in forests dominated by Tasmanian Blue Gum *Eucalyptus globulus* (DECC 2007). | unlikely |
| ***Lophoictinia isura*** | **Square-tailed Kite** | **V** | | **In coastal areas associated tropical and temperate forests and woodlands on fertile soils with an abundance of passerine birds (Marchant & Higgins 1993, DECC 2007). May be recorded inland along timbered watercourses (DECC 2007). In NSW it is commonly associated with ridge or gully forests dominated by Woollybutt (Eucalyptus longifolia), Spotted Gum (E. maculata), or Peppermint Gum (E. elata, E. smithii) (DECC 2007).** | **likely** |

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| **DIURNAL BIRDS** | | | | | |
| *Pandion haliaetus* | Osprey | V | | Associated with waterbodies including coastal waters, inlets, lakes, estuaries, beaches, offshore islands and sometimes along inland rivers (Schodde and Tidemann 1986; Clancy 1991; Olsen 1995). Osprey may nest on the ground, on sea cliffs or in trees (Olsen 1995). Osprey generally prefer emergent trees, often dead or partly dead with a broken off crown (Olsen 1995). | unlikely |
| *Petroica boodang* | Scarlet Robin | V | | The Scarlet Robin is found from SE Queensland to SE South Australia and also in Tasmania and SW Western Australia. In NSW, it occurs from the coast to the inland slopes. The Scarlet Robin lives in dry eucalypt forests and woodlands. In autumn and winter many Scarlet Robins live in open grassy woodlands, and grasslands or grazed paddocks with scattered trees. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. This species' nest is an open cup made of plant fibres and cobwebs and is built in the fork of tree usually more than 2 metres above the ground; nests are often found in a dead branch in a live tree, or in a dead tree or shrub (DECC 2007). | unlikely |
| *Pomatostomus temporalis temporalis* | Grey-crowned Babbler (eastern subspecies) | V | | Open woodlands dominated by mature eucalypts with regenerating trees, tall shrubs, and an intact ground cover of grass and forbs (NSW Scientific Committee 2001). This species avoids very wet areas (Blakers et al. 1984). | unlikely |

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| DIURNAL BIRDS | | | | | |
| *Ptilinopus magnificus* | Wompoo Fruit-Dove | V | | Associated with large, undisturbed patches of tall tropical or subtropical rainforest, at all altitudes, preferably with a diversity of fruit (Marchant and Higgins 1999; DECC 2007). Occasionally located in patches of monsoon rainforest, closed gallery forest, wet sclerophyll forest, tall open forest, open woodland or vine thickets near rainforest (Marchant and Higgins 1999; DECC 2007). | likely |
| *Ptilinopus regina* | Rose-crowned Fruit-Dove | V | | Tall tropical and subtropical, evergreen or semi-deciduous rainforests, especially with a dense growth of vines trees (Marchant and Higgins 1999). Also located in closed wet sclerophyll forest, gallery forests or sclerophyll woodlands with abundant fruiting trees, near or next to rainforest (DECC 2007). Is thought to prefer large areas of vegetation, but has been located in patches and occasionally in parks and gardens with fruiting trees (Marchant and Higgins 1999). | likely |

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| **DIURNAL BIRDS** | | | | | |
| *Ptilinopus superbus* | Superb Fruit-Dove | V | | The Superb Fruit-dove occurs principally from north-eastern in Queensland to north-eastern NSW. It is much less common further south, where it is largely confined to pockets of suitable habitat as far south as Moruya. There are records of vagrants as far south as eastern Victoria and Tasmania. Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and palms. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees. Part of the population is migratory or nomadic. There are records of single birds flying into lighted windows and lighthouses, indicating that birds travel at night. At least some of the population, particularly young birds, moves south through Sydney, especially in autumn. Breeding takes place from September to January. The nest is a structure of fine interlocked forked twigs, giving a stronger structure than its flimsy appearance would suggest, and is usually 5-30 metres up in rainforest and rainforest edge tree and shrub species. The male incubates the single egg by day, the female incubates at night (DECC 2007). | unlikely |
| *Rostratula australis* | Australian Painted Snipe | E | V | In NSW, this species has been recorded at the Paroo wetlands, Lake Cowell, Macquarie Marshes and Hexham Swamp. Most common in the Murray-Darling Basin. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. The nest consists of a scrape in the ground, lined with grasses and leaves. Breeding is often in response to local conditions; generally occurs from September to December. Forages nocturnally on mud-flats and in shallow water (DECC 2007). | unlikely |

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| **DIURNAL BIRDS** | | | | | |
| *Turnix melanogaster* | Black-breasted Button-quail | CE | V | The Black-breasted Button-quail is endemic to south-eastern Queensland and far north-eastern NSW, at scattered sites from the Byfield region south to the Border Ranges and mainly on and east of the Great Divide but extending inland to the inner western slopes, up to 300 km from the coast. There have been few recent records in north-eastern NSW, with only , ten records, from six localities, in the 20 years to 2000, though there are many records directly adjacent to NSW across the Queensland border. Preferred habitat is drier low closed forests, including dry rainforests, vine forest and vine thickets, often in association with Hoop Pine, and Bottletree scrubs. The understorey may be dense or sparse, but a deep, moist leaf-litter layer, in which the birds forage, is an important component of habitat. Birds have been recorded using Lantana thickets at edges of rainforest or Lantana understorey of forest or rainforest. During droughts, birds may move into wetter rainforests bordering dry rainforests. In NSW, as well as drier rainforests, may occupy wetter subtropical rainforests, sometimes in association with moist eucalypt forest (DECC 2007). | no |
| *Xanthomyza phrygia* | Regent Honeyeater | E | E | Associated with temperate eucalypt woodland and open forest including forest edges, wooded farmland and urban areas with mature eucalypts, and riparian forests of River Oak (Casuarina cunninghamiana) (Garnett 1993). Areas containing Swamp Mahogany (Eucalyptus robusta) in coastal areas have been observed to be utilised (NPWS 1997). The Regent Honeyeater primarily feeds on nectar from box and ironbark eucalypts and occasionally from banksias and mistletoes (NPWS 1995). As such it is reliant on locally abundant nectar sources with different flowering times to provide reliable supply of nectar (Environment Australia 2000). | unlikely |

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| **NOCTURNAL BIRDS** | | | | | |
| *Burhinus grallarius* | Bush Stone-curlew | E | | The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. Nest on the ground in a scrape or small bare patch. (DECC 2007). | unlikely |
| *Ninox connivens* | Barking Owl | V | | Inhabits eucalypt woodland, open forest, swamp woodlands and, especially in inland areas, timber along watercourses. Denser vegetation is used occasionally for roosting. During the day they roost along creek lines, usually in tall understorey trees with dense foliage such as *Acacia* and *Casuarina* species, or the dense clumps of canopy leaves in large Eucalypts. Three eggs are laid in nests in hollows of large, old eucalypts including River Red Gum (*Eucalyptus camaldulensis*), White Box (*Eucalyptus albens*), Eucalyptus polyanthemos (*Red Box*) and Blakely's Red Gum (*Eucalyptus blakelyi*) (DECC 2007). | unlikely |
| ***Ninox strenua*** | **Powerful Owl** | V | | **Powerful Owls are associated with a wide range of wet and dry forest types with a high density of prey, such as arboreal mammals, large birds and flying foxes (Environment Australia 2000, Debus & Chafer 1994). Large trees with hollows at least 0.5m deep are required for shelter and breeding (Environment Australia 2000).** | **potential** |

| NOCTURNAL BIRDS | | | | | |
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| *Tyto capensis* | Grass Owl | V | | Reported habitats include tall grass, swampy, sometimes tidal areas, mangrove fringes, grassy plains, coastal heaths, grassy woodland, cane grass, lignum, sedges, cumbungi, cane fields and grain stubble (Pizzey and Knight, 1997). The Grass Owl nests on the ground within dense tall grass, sedges, reeds and even sugarcane plantations (Pizzey and Knight, 1997). The Grass Owl primarily feeds on rodents, hunting on the wing over heathland, grassland and sedgeland, as well as along the edge of sugar cane, crops and pastureland (Pizzey and Knight, 1997). | no |
| ***Tyto novaehollandiae*** | **Masked Owl** | **V** | **V** | **Associated with forest with sparse, open, understorey, typically dry sclerophyll forest and woodland (DECC 2007) and especially the ecotone between wet and dry forest, and non forest habitat (Environment Australia 2000). Known to utilise forest margins and isolated stands of trees within agricultural land (Hyem 1979) and heavily disturbed forest where its prey of small and medium sized mammals can be readily obtained (Kavanagh & Peake 1993).** | **potential** |
| ***Tyto tenebricosa*** | **Sooty Owl** | **V** | | **Sooty Owls are associated with tall wet old growth forest on fertile soil with a dense understorey and emergent tall Eucalyptus species (Environment Australia 2000, Debus 1994). Pairs roost in the daytime amongst dense vegetation, in tree hollows and sometimes in caves. The Sooty Owl is typically associated with an abundant and diverse supply of prey items and a selection of large tree hollows (Debus 1994, Garnett 1993, Hyem 1979).** | **potential** |

| MAMMALS (EXCLUDING BATS) | | | | | |
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| *Aepyprymnus rufescens* | Rufous Bettong | V | | The original range from Coen in north Queensland to central Victoria has been reduced to a patchy distribution from Cooktown, Queensland, to north-eastern NSW as far south as Mt Royal National Park. In NSW it has largely vanished from inland areas but there are sporadic, unconfirmed records from the Pilliga and Torrington districts. Rufous Bettongs inhabit a variety of forests from tall, moist eucalypt forest to open woodland, with a tussock grass understorey. A dense cover of tall native grasses is the preferred shelter. They sleep during the day in cone-shaped nests constructed of grass in a shallow depression at the base of a tussock or fallen log. At night they feed on grasses, herbs, seeds, flowers, roots, tubers, fungi and occasionally insects (DECC 2007). | unlikely |
| ***Dasyurus maculatus***<br><br>***Dasyurus maculatus maculatus*** | **Spotted-tailed Quoll**<br><br>**Spotted-tailed Quoll (SE Mainland Population)** | **V** | **E** | **The Spotted-tailed Quoll inhabits a range of forest communities including wet and dry sclerophyll forests, coastal heathlands and rainforests (Mansergh 1984; DECC 2007j), more frequently recorded near the ecotones of closed and open forest. This species requires habitat features such as maternal den sites, an abundance of food (birds and small mammals) and large areas of relatively intact vegetation to forage in (DECC 2007). Maternal den sites are logs with cryptic entrances; rock outcrops; windrows; burrows (Environment Australia 2000).** | **potential** |

| MAMMALS (EXCLUDING BATS) | | | | | |
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| *Petaurus australis* | Yellow-bellied Glider | V | | This species is restricted to tall mature forests, preferring productive tall open sclerophyll forests with a mosaic of tree species including some that flower in winter (Environment Australia 2000, Braithwaite 1984, Davey 1984, Kavanagh 1984; DECC 2007). Large hollows within mature trees are required for shelter, nesting and breeding (Henry and Craig 1984; DECC 2007). | unlikely |
| ***Petaurus norfolcensis*** | **Squirrel Glider** | **V** | | **Associated with dry hardwood forest and woodlands (Menkhorst et al. 1988; Quin 1995). Habitats typically include gum barked and high nectar producing species, including winter flower species (Menkhorst et al. 1988). The presence of hollow bearing eucalypts is a critical habitat value (Quin 1995).** | **potential** |
| *Petrogale penicillata* | Brush-tailed Rock-wallaby | E | V | The range of the Brush-tailed Rock-wallaby extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. In NSW they occur from the Queensland border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit. Occupies rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night (DECC 2007). | no |
| *Phascogale tapoatafa* | Brush-tailed Phascogale | V | | Preferred habitat is Dry Open forest with a sparse open understorey, however, has been located in heath, swamps and rainforest and wet sclerophyll forest (DECC 2007). | unlikely |

| MAMMALS (EXCLUDING BATS) | | | | | |
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| ***Phascolarctos cinereus*** | **Koala** | **V** | | **Associated with both wet and dry Eucalypt forest and woodland that contains a canopy cover of approximately 10 to 70% (Reed et al. 1990), with acceptable Eucalypt food trees. Some preferred** Eucalyptus species are: ***Eucalyptus tereticornis, E. punctata, E. cypellocarpa, E. viminalis*** | **potential** |
| ***Planigale maculata*** | **Common Planigale** | **V** | | **This species inhabits coastal north-eastern NSW, coastal east Queensland and Arnhem Land. The species reaches its confirmed southern distribution limit on the NSW lower north coast however there are reports of its occurrence as far south as the central NSW coast west of Sydney. Common Planigales inhabit rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas where there is surface cover, and usually close to water. They are active at night and during the day shelter in saucer-shaped nests built in crevices, hollow logs, beneath bark or under rocks. They are fierce carnivorous hunters and agile climbers. The female builds a nest lined with grass, eucalypt leaves or shredded bark (DECC 2007).** | **potential** |
| *Potorous tridactylus tridactylus* | Long-nosed Potoroo (SE mainland) | V | V | The Long-nosed Potoroo is found on the south-eastern coast of Australia, from Queensland to eastern Victoria and Tasmania, including some of the Bass Strait islands. There are geographically isolated populations in western Victoria. In NSW it is generally restricted to coastal heaths and forests east of the Great Dividing Range, with an annual rainfall exceeding 760 mm. Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature (DECC 2007). | unlikely |

| MAMMALS (EXCLUDING BATS) | | | | | |
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| ***Pseudomys novaehollandiae*** | **New Holland Mouse** | | **V** | **The New Holland Mouse currently has a disjunct, fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. The total number of mature individuals is unknown, however, it is estimated that there are fewer than 10,000 individuals. Across the species' range the New Holland Mouse is known to inhabit open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes (TSSC 2010).** | **potential** |
| *Pseudomys oralis* | Hastings River Mouse | E | E | Hastings River Mouse has a patchy distribution spanning the Great Dividing Rane from the Hunter Valley, south of Mt Royal, north to the Bunya Mountains near Kingaroy in south-east Queensland, at elevations between 300 m and 1100 m. A variety of dry open forest types with dense, low ground cover and a diverse mixture of ferns, grass, sedges and herbs. Access to seepage zones, creeks and gullies is important, as is permanent shelter such as rocky outcrops. Nests may be in either gully areas or ridges and slopes (DECC 2007). | no |
| *Thylogale stigmatica* | Red-legged Pademelon | V | | This species is patchily distributed along coastal and subcoastal eastern Australia from Cape York to the Hunter Valley in NSW. Southern range records are from the Watagan Mountains and the Wyong district. Inhabits forest with a dense understorey and ground cover, including rainforest, moist eucalypt forest and vine scrub. Wet gullies with dense, shrubby ground cover provide shelter from predators. In NSW, rarely found outside forested habitat (DECC 2007). | unlikely |

| MAMMALS (BATS) | | | | | |
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| ***Chalinolobus dwyeri*** | **Large-eared Pied Bat** | **V** | **V** | **Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Hirundo ariel), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves. They remain loyal to the same cave over many years.**<br><br>**Found in well-timbered areas containing gullies (DECC 2007).** | **potential** |
| *Chalinolobus nigrogriseus* | Hoary Wattled Bat | V | | This species is widely distributed across northern Australia although absent from the arid centre. In north east NSW it reaches the lower Clarence and Richmond River areas, extending from near Murwillumbah in the north, south to between Grafton and Coffs Harbour. In NSW the Hoary Wattled Bat occurs in dry open eucalypt forests, favouring forests dominated by Spotted Gum, boxes and ironbarks, and heathy coastal forests where Red Bloodwood and Scribbly Gum are common. Because it flies fast below the canopy level, forests with naturally sparse understorey layers may provide the best habitat (DECC 2007). | unlikely |
| ***Falsistrellus tasmaniensis*** | **Eastern False Pipistrelle** | **V** | | **Prefers moist habitats with trees taller than 20m (DECC 2007). Roosts in tree hollows but has also been found roosting in buildings or under loose bark (DECC 2007).** | **potential** |
| ***Kerivoula papuensis*** | **Golden-tipped Bat** | **V** | | **Found in rainforest and adjacent sclerophyll forest. Roost in abandoned hanging Yellow-throated Scrubwren and Brown Gerygone nests located in rainforest gullies on small first- and second-order streams. Will fly up to two km from roosts to forage in rainforest and sclerophyll forest on upper-slopes (DECC 2007).** | **potential** |

| MAMMALS (BATS) | | | | | |
|---|---|---|---|---|---|
| *Miniopterus australis* | Little Bent-wing Bat | V | | Prefers well-timbered areas including rainforest, wet and dry sclerophyll forests, Melaleuca swamps and coastal forests (Churchill 1998). This species shelter in a range of structures including culverts, drains, mines and caves (Environment Australia 2000). Relatively large areas of dense vegetation of either wet sclerophyll forest, rainforest or dense coastal banksia scrub are usually found adjacent to caves in which this species is found (DECC 2007). Breeding occurs in caves, usually in association with M. schreibersii (Environment Australia 2000, DECC 2007). | potential |
| *Miniopterus schreibersii oceanensis* | Eastern Bent-wing Bat | V | | Associated with a range of habitats such as rainforest, wet and dry sclerophyll forest, monsoon forest, open woodland, paperbark forests and open grassland (Churchill 1998). It forages above and below the tree canopy on small insects (AMBS 1995, Dwyer 1995, Dwyer 1981). Will utilise caves, old mines, and stormwater channels, under bridges and occasionally buildings for shelter (Environment Australia 2000, Dwyer 1995). | potential |
| *Mormopterus norfolkensis* | East Coast Freetail Bat | V | | Most records of this species are from dry eucalypt forest and woodland east of the Great Dividing Range (Churchill 1998). Individuals have, however, been recorded flying low over a rocky river in rainforest and wet sclerophyll forest and foraging in clearings at forest edges (Environment Australia 2000; Allison & Hoye 1998). Primarily roosts in hollows or behind loose bark in mature eucalypts, but have been observed roosting in the roof of a hut (Environment Australia 2000; Allison & Hoye 1998). | potential |

| MAMMALS (BATS) | | | | | |
|---|---|---|---|---|---|
| *Myotis macropus* | Southern Myotis | V | | The Large-footed Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface. In NSW females have one young each year usually in November or December (DECC 2007). | potential |
| *Pteropus poliocephalus* | Grey-headed Flying-Fox | V | V | Inhabits a wide range of habitats including rainforest, mangroves, paperbark forests, wet and dry sclerophyll forests and cultivated areas (Churchill 1998, Eby 1998). Camps are often located in gullies, typically close to water, in vegetation with a dense canopy (Churchill 1998). Feed on the nectar and pollen of native trees, in particular *Eucalyptus, Melaleuca* and *Banksia*, and fruits of rainforest trees and vines (DECC 2007). | potential |
| *Scoteanax rueppellii* | Greater Broad-nosed Bat | V | | Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for large, slow-flying insects (DECC 2007). | potential |
| *Syconycteris australis* | Common Blossom-bat | V | | Found in coastal areas of north-east NSW, Common Blossom-bats often roost in Littoral Rainforest and feed on flowers in adjacent heathland and paperbark swamps (DECC 2007). | unlikely |

| MAMMALS (BATS) | | | | | |
|---|---|---|---|---|---|
| *Vespadelus troughtoni* | Eastern Cave Bat | V | | The Eastern Cave Bat is found in a broad band on both sides of the Great Dividing Range from Cape York to Kempsey, with records from the New England Tablelands and the upper north coast of NSW. The western limit appears to be the Warrumbungle Range, and there is a single record from southern NSW, east of the ACT. Very little is known about the biology of this uncommon species. A cave-roosting species that is usually found in dry open forest and woodland, near cliffs or rocky overhangs; has been recorded roosting in disused mine workings, occasionally in colonies of up to 500 individuals. Occasionally found along cliff-lines in wet eucalypt forest and rainforest (DECC 2007). | potential |

# Appendix B: Protected Matters Search Tool – Additional EPBC Act Matters

**MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE (NES)**

**LISTED AND/OR MIGRATORY MARINE BIRDS**

*Anseranas semipalmata* Magpie Goose. Will not occur within the areas assessed

*Apus pacificus* Fork-tailed Swift. Unlikely to occur within the areas assessed

***Ardea alba* Great Egret. Potential to occur within the areas assessed**

***Ardea ibis* Cattle Egret. Likely to occur within the areas assessed**

*Gallinago hardwickii* Latham's Snipe. Unlikely to occur within the areas assessed

*Haliaeetus leucogaster* White-bellied Sea-Eagle. Unlikely to occur within the areas assessed

***Hirundapus caudacutus* White-throated Needletail. Potential to occur within the areas assessed**

***Merops ornatus* Rainbow Bee-eater. Potential to occur within the areas assessed**

***Monarcha melanopsis* Black-faced Monarch. Likely to occur within the areas assessed**

***Monarcha trivirgatus* Spectacled Monarch. Likely to occur within the areas assessed**

*Myiagra cyanoleuca* Satin Flycatcher. Unlikely to occur within the areas assessed

***Rhipidura rufifrons* Rufous Fantail. Likely to occur within the areas assessed**

*Rostratula benghalensis* s. lat. Painted Snipe. Unlikely to occur within the areas assessed

# Appendix C: Seven Part Tests

**CONSIDERATION UNDER SECTION 5A OF THE EP&A ACT 1979**

Considerations of the effects of the proposed development under the guidelines of Section 5A of the EP&A Act 1979 for the concerned threatened species/populations/ecological communities are given below.

The majority of information used for the assessment has been sourced from NSW NPWS Threatened Species Information and Environmental Impact Assessment Guidelines, NPWS Atlas of NSW Wildlife, and other published or widely available literature sources such as scientific journals and reports.

Nine threatened flora species, twenty-six threatened species and one endangered ecological communities have been identified as potential occurring on the site or as having at least a moderate probability of being affected by development of the site. As such, seven-part tests for these species and community have been undertaken under the guidelines of Section 5A of the *EP&A Act 1979*.

These species / community include:

**Threatened flora species:**

| **Scientific Name** | **Common Name** |
|---|---|
| *Boronia umbellata* | Orara Boronia |
| *Lindsaea incisa* | Slender Screw Fern |
| *Marsdenia longiloba* | Slender Marsdenia |
| *Niemeyera whitei* | Rusty Plum, |
| *Parsonsia dorrigoensis* | Milky Silkpod |
| *Pomaderris queenslandica* | Scant Pomaderris |
| *Quassia* sp. Mooney Creek | Moonee Quassia |
| *Senna acclinis* | Rainforest Cassia |
| *Tylophora woollsii* | |
| **Ecological Community** | |
| Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions | |

**Threatened fauna species:**

| **Scientific Name** | **Common Name** |
|---|---|
| *Litoria brevipalmata* | Green-thighed Frog |
| *Hoplocephalus stephensii* | Stephen's Banded Snake |
| *Calyptorhynchus lathami* | Glossy Black-Cockatoo |
| *Coracina lineata* | Barred Cuckoo-shrike |
| *Daphoenositta chrysoptera* | Varied Sittella |
| *Glossopsitta pusilla* | Little Lorikeet |
| *Lophoictinia isura* | Square-tailed Kite |
| *Ptilinopus magnificus* | Wompoo Fruit-Dove |
| *Ptilinopus regina* | Rose-crowned Fruit-Dove |

| | |
|---|---|
| *Ninox strenua* | Powerful Owl |
| *Tyto novaehollandiae* | Masked Owl |
| *Tyto tenebricosa* | Sooty Owl |
| *Dasyurus maculatus* | Spotted-tailed Quoll |
| *Petaurus norfolcensis* | Squirrel Glider |
| *Phascolarctos cinereus* | Koala |
| *Planigale maculata* | Common Planigale |
| *Chalinolobus dwyeri* | Large-eared Pied Bat |
| *Falsistrellus tasmaniensis* | Eastern False Pipistrelle |
| *Kerivoula papuensis* | Golden-tipped Bat |
| *Miniopterus australis* | Little Bent-wing Bat |
| *Miniopterus schreibersii oceanensis* | Eastern Bent-wing Bat |
| *Mormopterus norfolkensis* | East Coast Freetail Bat |
| *Myotis macropus* | Large-footed Myotis |
| *Pteropus poliocephalus* | Grey-headed Flying-Fox |
| *Scoteanax rueppellii* | Greater Broad-nosed Bat |
| *Vespadelus troughtoni* | Eastern Cave Bat |

**Seven Part Test assessments, as shown in the following pages, have concluded no significant impacts to threatened species or endangered ecological communities are expected as a consequence of the proposal.**

**Key Definitions**

The DECC (2007) guidelines provide definitions for key terms in the 7 Part Tests, with the most significant being that of the "local population" and "local occurrence" as follows:

"Local population: the population that occurs in the study area. The assessment of the local population may be extended to include individuals beyond the study area if it can be clearly demonstrated that contiguous or interconnecting parts of the population continue beyond the study area, according to the following definitions.

- The local population of a threatened plant species comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area.
- The local population of resident fauna species comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area.
- The local population of migratory or nomadic fauna species comprises those individuals that are likely to occur in the study area from time to time.

The local occurrence is the community that occurs within the study area."

**Subject site** means the area directly affected by the proposal.

**Study area** means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account.

**Assessment**

As per the DECC (2007) guidelines, all species listed in Appendix A as likely or potential occurrences in the study area are subject to the 7 Part Test assessment.

To minimise repetition and superfluous information, the responses to the 7 Part Tests are combined for the threatened species, with relevant sub-sections per entity:

***(a) 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 subject site constitutes approximately 3 Ha, the study area is bounded by the forested area to the north and the riparian vegetation to the south approximately 34 Ha of existing grazing land; the whole property totals 97 Ha.

All development to establish the residential dwellings, group home, chapel and associated structures (e.g. nursery), playing field and canteen, access roads, and services (the subject site) have been specifically placed to avoid the forested ecosystems and to use existing sites such as the current farm house and machinery shed locations. The Asset protection zones are to be located in currently cleared landscapes to minimise potential impacts to these forested landscapes also.

The existing derived grassland (34 Ha) where all the development activities have been focused are routinely mowed, slashed or grazed as part of the previous and on-going agricultural activities on the property. The forested areas of the property approximately 62 Ha have also been exposed to varying degrees of disturbance from past forestry and pastoral activities.

All remnant isolated trees identified at the chapel, resident accommodation, and group home sites are to be retained as features of the development and therefore not subject to any significant impact from the development. These trees have been found to contain no hollow-bearing features as they are in a young-mature growth phase. This is likely due to long history of pastoral and forestry activities on the property, within the Bucca Valley and North coast forests generally.

**Large range/seasonally nomadic species:**

**Grey Headed Flying Fox, Glossy Black Cockatoo, Little Lorikeet, Masked Owl, Powerful Owl, Spotted-Tail Quoll, Square-Tailed Kite. Rainforest birds (Barred Cuckoo Shrike, Wompoo Fruit-Dove, Rose-crowned Fruit-Dove), Microchiroptera bats (East Coast Free-tail Bat, Eastern Bent-Wing Bat, Eastern Cave Bat, Eastern False Pipistrelle, Greater Broad Nosed Bat, Golden-tipped Bat, Large-eared Pied bat, Large-footed Myotis, Little Bent-Wing Bat)**

All of the subject species are highly mobile, and require home ranges/territories or seasonably variable ranges that far exceed the subject site/study area/property routinely during foraging, or at least seasonally due to their ecology (e.g. following flowering incidences in the bioregion); and/or habitat requirements, which even the total property is not sufficient in extent to exclusively supply (e.g. Eby 2002, 2000a, 2000b, DECCW 2010b, ABS 2010, Clout 1989, Smith et al 1995, Belcher 2000, Claridge et al 2005, Kortner et al 2004, DECC 2006a, Hall and Richards 2000, Churchill 2000, Eby 1995, Barnes et al 1999, Debus and Czechura 1989, Debus 1994, 1995, Cameron 2006, Kavanagh 2000b, Gibbons and Lindenmayer 2002, Goldingay and Kavanagh 1991, NSWSC 2010a, 2010b, etc). Hence ecologically, while an individual/s of these species may use the site/study area for foraging, etc, at some time, any known/potentially occurring local population of these species would extend well beyond the site to meet their full lifecycle requirements (DECC 2007).

As mentioned above, the proposal will result in no direct loss/modification of any forested landscape and only loss of the approximately 3 Ha of grassland already subject to periodic disturbance. The forest more so than the grassland areas provides varying potential foraging habitat or contains some habitat components for some but not all of these species e.g. prey animals, nectar producing trees, etc. This modification to the already disturbed grassland could possibly be considered as an incremental and cumulative contribution to the primary causes of decline to some of these species i.e. habitat loss/fragmentation (DECCW 2010b, Smith et al 1995, etc). However, foraging habitat for these species is measured in terms of hundreds to thousands of hectares, hence the loss of no forested habitats and only a minimal modification of 3 Ha of already modified grassland, while a negative impact contributing to these threatening processes, is clearly not of sufficient order of magnitude to significantly impact the foraging capability of any of these species, and hence their ability to fulfill lifecycle needs, especially given the site is on the outer margins of a body of habitat >10 000ha in extent (see Figure 1).

All of the mammals (except the Grey-headed Flying Fox) and 3 of the birds are predominately hollow-obligates (DECCW 2010b). The mammals are also den-swapping species which require multiple hollows throughout their range depending on lifecycle stage, socio-ecology, predator avoidance, etc (Gibbons and Lindenmayer 2002). The survey noted that the remnant trees (of which none are to be removed) in the subject site contained no hollow-bearing features. It is likely that there are a range of hollow resources in the forested landscapes to the north and south of the site but as there is no activity planned for any forested area and no planned removal of any remnant vegetation there is to be no impact to hollow-obligate fauna within the subject site, study area and property.

Only one potential habitat feature had been identified in the report for further investigation. It was considered that if any maintenance or upgrade to the timber bridge over Bucca Bucca Creek was likely to occur than an investigation prior to works was required. This feature is not on the subject site but adjacent to the property and at this stage no requirements for upgrade have been flagged by the proponent or CHCC. As a precautionary action and at a cost to the proponent an assessment of the council bridge for potential microbat roosting potential has been conducted.

Of the bat species identified as likely to occur on the site, three are known to roost in this type of structure at some point in their lifecycle. Only one; the Large footed Myotis is likely to utilise these type

of structures for breeding purposes (Pers. Obs.). The two other species; the little and Eastern bent-wing bats are known not to breed at such locations but migrate to large known maternity caves (Churchill 2008) and to use bridges as intermittent roost sites.

The diurnal inspection of the bridge found that is of a high standard, in a good state of repair and relatively new, being constructed of CCA treated timber. It is unlikely any modification to this structure will be required in the short to medium term. No current or previous evidence of roosting microbats was noted and limited roosting potential due to few cracks and crevices are present.

It is therefore considered as there is no current roosting evidence and that there is no scheduled upgrade of this structure that there will be no impact at this site due to the development. It still stands that at any time in the future that CHCC decides to upgrade the bridge that they would be required to conduct a microbat assessment prior to works as the appropriate course of action.

As there are no remnant trees to be removed from the subject site direct mortality due to tree felling, is therefore not a potential risk.

While all the species have been recorded in rural to rural-residential areas, and almost all have been recorded in peri-urban areas and urbanised remnants (e.g. Law et al 2000, NSWSC 2010a, 2010b, Smith 2002, etc ), indirect impacts such as increased human, cat and dog presence may deter the Quoll from occurring within the rural-residential area. Hence the proposal may see a contraction of the outermost fringe of the potential home range of at least one Quoll. Given the extent of habitat within the larger body of habitat (>10 000ha), this is considered as an insignificant potential impact.

Overall, provided that no remnant trees and forested landscapes are to be removed or disturbed and that the development has been deliberately focused in the most disturbed locations and given that the subject species are also known to forage in rural areas and in retained habitat within or adjacent to rural-residential and urban areas (hence are likely to occur on the property post-development to an equivalent level to current probability); that critical lifecycle stages are not likely to be dependent on site or without alternatives within their range to maintain viability; and that the local populations would routinely extend well beyond the confines of the site/property to meet their lifecycle needs (DECC 2007): the order of magnitude of the proposal's sum negative effect is not considered likely to be sufficient to directly result in a decline (i.e. reduce viability) of the local population of any of the subject species.

**Squirrel Glider**

The Squirrel Glider may have individual home ranges which in some situations may be as large as the study area, but only in high quality habitat: which the site is not considered to be (DECCW 2010b, Menkhorst and Collier 1987, Menkhorst et al 1989, etc.).

The forested vegetation communities on the northern arc of the study area have the potential for providing habitat for the squirrel glider but as all available potential habitats are to be retained onsite including isolated paddock trees as part of the development there is no likelihood of fragmentation or a reduction in foraging resources. The riparian corridor along Bucca Bucca Creek contains no or sub-optimal habitat for the squirrel glider and therefore it is unlikely that animals would try to disperse through the site to this southern area. The distance is also considered too great for gliding opportunities to occur from the northern forested block to the southern riparian zone and therefore there is low likelihood of interactions with the proposed development actions.

The isolated paddock trees have been found to contain no hollow-bearing resources that could be utilized by hollow-obligate species such as the squirrel glider and therefore it is not expected to be impacted by the development which is focusing on the derived grassland areas.

While generic potential habitat exists in the northern forested areas of the property for the species, there is limited potential for it to actually occur in the remainder of the subject site area due to:

- Apparent rarity of hollow-bearing trees on site and in the study area.
- the distance to traverse the site
- and the sub-optimal habitat for the species along the southern boundary

However, the species has been recorded near the property (approximately 5km) (DECCW 2010a), and given the extent of habitat to the north of the site (>10 000ha) of which the property forms a small part of, it is possible that the species may occur in at least low density or localised parts of this larger area.

Given the habitat limitations of the subject site/study area, mobility of the species, and extent of similar habitat to the north with excellent direct connectivity, it is thus considered possible that the study area could form part of the home range of at least one colony, with other colonies in adjoining habitat likely to be routinely interacting with the site-associated colony as per the ecology of the species (Lindenmayer 2002, Menkhorst and Collier 1987, Menkhorst et al 1989). Hence the local population of the species would be likely to extend beyond the study area given the habitat limitations of the study area and adjacent section of the property (i.e. lack of hollows, etc), as required to meet their lifecycle needs (DECC 2007).

Regardless of whether the site is known or potential habitat, the development proposes no loss or disturbance of forest cover which will not reduce the current carrying capacity of the site due to loss of nectar and insect sources. The proposed development into a more intensive rural estate may prevent the isolated remnant trees potential for long term full recovery to viable habitat for the species (although this is currently significantly impaired by the current agricultural regime onsite), These retained trees within managed areas will eventually succumb to attrition most likely without replacement. Hence in the long term, any retained habitat within managed areas will probably gradually erode in time without sufficient replacement.

Nonetheless, retained trees and forest on the site may be used for some foraging, though if cats are kept, the Squirrel Glider may be placed at an incrementally increased risk of predation. Despite the latter, glider species have been recorded foraging near and within rural-residential to urban remnants (Smith and Murray 2003, Faulding and Smith 2009, Murray 2006, Dobson 2002, etc), hence human presence and artificial lighting is not considered likely to effectively deter use of any retained habitat via behavioural avoidance.

As there is no reduction in or increased fragmentation of forest cover there is no associated incrementally higher risk of predation on site by owls due to increased forest edge effects. Similarly there will be no contraction of the outermost edge of the relatively large body (>10 000ha) of habitat to the north which incorporates the site/study area/property and maintains a significant extent of generic potential habitat for a viable population of this species.

The Squirrel Glider normally prefers more optimum habitats i.e. an understorey dominated by Acacias and/or banksias (Smith and Murray 2003, Faulding and Smith 2009, Murray 2006, Dobson 2002, Goldingay et al 2006, Melton 2007). In terms of physical extent, the total site could potentially form a substantial part of at least one colony's home range, and also part of the home range of other

overlapping colonies, if it were high quality habitat. Due to aforementioned habitat limitations, it seems logical to deduce however those animals potentially using the site would need to use resources (such as hollow-bearing trees) throughout their lifecycle occurring beyond the study area to retain long term viability. Development of the site is unlikely to reduce the current habitability of the site for this species.

Connectivity north will be retained on the remainder of the 97 Ha property and on adjacent lands. Hence the ability of the species to disperse and/or forage over their wider home ranges will be retained post-development.

Overall, the proposal will not have a negative impact on the potential presence of the species in the study area, if they are present. It is therefore considered unlikely to directly undermine the viability of a local population to the extent required to place it at certain risk of extinction.

**Koala**

The koala is known to extend from the tropical north to the temperate south along either side of the Great Dividing Range in eastern Australia. The Coffs Harbor LGA has a well documented koala population and was the first LGA in NSW to complete a Comprehensive Koala Plan of Management (CKPoM) (CHCC 2012).

Numerous sightings for Koala have occurred within 10 Kms from within the National Park and State Forest estate to the north and south of the property. The property itself has Secondary and Tertiary habitat identified (Figure 5) as a result of effort from the CKPoM process.
The objectives of these categories of habitat class are to:

- minimise barriers to koala movement;
- reduce the risk of koala mortality by road kill by appropriate road design, lighting and traffic speed limits;
- minimise the removal of koala tree species listed above under Tertiary Koala Habitat; provide preferred Koala trees in landscaping where suitable;
- minimise threats to Koalas by dogs i.e. banning of dogs or confining of dogs to Koala proof yards; minimise removal or disturbance of Tertiary Koala Habitat in fire protection zones, including fuel reduced zones and radiation zones
- As the proposed development avoids forested habitats and retains all remnant isolated trees and focuses development on derived grassland it essentially upholds the objectives under the plan.

Survey effort within the subject site listed isolated tree species that align with primary koala feed trees namely:

- Tallowwood (*Eucalyptus microcorys*)
- Forest red gum (*E. tereticornis*)

Searches for koala activity were conducted at all sites specifically looking for faecal pellets or scats and scratch marks; no evidence within the subject site was found. Koalas can be extremely cryptic however, especially where populations are sparse. No habitat on the property has been listed as primary Koala habitat, to be considered for this category; evidence of an active breeding population must be documented. The eucalypt species found on the property no doubt contribute to habitat potential for the koala and it is likely that Koalas do utilise particularly the northern forested areas of the property as part of their foraging habitat periodically.

Koalas can also occupy areas of high urban and peri-urban development as is the Coffs Harbour experience. They have also been documented to traverse open grassland areas to access preferred habitat. The relatively small scale and rural context for the proposed development is unlikely to create barriers for movement between forested landscapes and koalas may in times of drought, or high fire conditions seek refuge in riparian and gully vegetation and these areas are considered important Koala conservations areas for this reason.

A forested corridor to the east of the property links the escarpment forests on the northern side with the riparian corridor (Bucca Bucca Creek) to the south and is considered a significant regional corridor (Scotts 2003).

The main threats to koalas are habitat loss, and direct mortality through dog attacks and vehicle strikes. Maintenance of habitat and connection of these core areas are the key issue for koala population conservation.

As the habitat of the subject site is limited to a few isolated trees it is unlikely the lifecycle of a single koala is dependent on these features, expanding this to the study area a sparsely distributed population is more likely the case. The habitat requirements are therefore not restricted to the site / study area or property and likely extend much beyond these boundaries to include the larger forest matrix to the north of the property. Given the habitat limitations within the study area, the lifecycle of an individual or small population of koalas is not dependant on the resources scattered throughout the property and therefore unlikely to undermine the viability of a local population.

**Stephen's Banded Snake**

This species has been recorded in the locality (DECCW 2010a), and more widely they have been recorded in the Coffs Harbour LGA (DECCW 2010a), mostly in State Forest Estate where intensive fauna assessment is conducted prior to logging events. This species is considered to have some generic potential to occur locally due to the extent of forest to the north and south of which the property forms a small fraction of, and more so due to the range of potential den sites provided by the sandstone / meta-sediment geology along the escarpment.

This species is normally associated with landscapes characterised by mosaics of rainforest, and wet and dry sclerophyll (DECCW 2010b, Smith et al 1995, Fitzgerald et al 2005). The forested areas on the property north of the study area are considered potential quality habitat but limited due to:

- Apparent rarity of hollows which are a key part of the Stephen's Banded Snake species' ecology (Gibbons and Lindenmayer 2002, DECCW 2010b,).
- Intensive disturbance history of the site and adjacent lands, due to previous logging and grazing practises, and has relegated the existing forest to relatively mature regrowth forest
- and generally more frequent fire history which has contributed to floristic and structural modification as well as loss of refugia and may have resulted in direct mortality.

Suitable hollows for the snake are limited and not contained in the remnant isolated trees within the subject site. Hollows also appear at best rare in the study area, and possibly on the wider property due to the long logging history and previous fire history. This significantly increases the likelihood that the species has long been displaced from the site/study area. The species also significantly rely on a range of hollows to den in for refuge and also to find prey (Gibbons and Lindenmayer 2002, DECCW 2010b). Hollow logs and rocky outcrops in the study area are also not abundant.

Conversely, the species is considered likely to have been displaced by pastoralism and logging which has occurred on the property and adjacent lands for decades, and given the types and extent of disturbance, and their limited capability for dispersal (Smith et al 1995, Fitzgerald et al 2005), the likelihood of dispersal to the site/study area from local refugia since recovery from these disturbances is considered low.

Retention of the forested landscapes is likely to contribute to potential habitat for the species and in the long term considered that disturbance regimes are reduced then recolonisation of these habitats is likely, particularly if a greater abundance of tree hollows are developed.
If present, the species is considered potential occurrence on the property only in low density (at most single animals) as per their ecology and the marginal habitat quality (Smith et al 1995, Fitzgerald et al 2005, DECCW 2010b). These animals are also considered likely to use habitat outside the study area as part of their periodic lifecycle requirements (e.g. to utilise other hollows, seek mates, etc) due to the low quality habitat in the study area. Given this information and the survey area's habitat constraints, it is readily apparent that the local population would be likely to extend beyond the study area to obtain sufficient resources to maintain its lifecycle.

As the proposal will see no modification of forest and most significantly, no loss of hollow-bearing trees, as well as establishment of an increased and permanent human presence: it is likely to see effective displacement of these species from the site if they were to currently or potentially occur. Potential to forage and den in fallen logs, leaf litter, vegetation and under rocks remains limited because of the past and ongoing pastoral disturbance regimes.

Connectivity to the north, the most likely area were habitat conditions and forest extent will remain will be maintained. The development will not interfere with current forest connectivity to existing habitats.

The potential increase of cats to the property is unlikely to affect the snake due to direct mortality as it is predominantly arboreal and as no hollows are found in the remnant isolated trees, interaction is unlikely within the subject site.

Overall thus, the proposal is considered unlikely to displace these species from the study area as the long term disturbance history (grazing, slashing, mowing, logging increase fire regimes) and lack of hollow-bearing trees and their arboreal nature have likely already done so.

Hence the proposal will have an overall very minor net negative impact, incrementally and cumulatively contributing to threatening processes due to increased human activity at the site, but unlikely be responsible for the decline of this species, and not considered likely to be significant to place a local viable population at risk of extinction.

**Common Planigale**

This species has broad generic potential to occur within the study area, most likely in the riparian zone along Bucca Bucca Creek and forested vegetation to the north where dense cover, fallen logs and rock crevices are dominant habitat features.

Due to its ecological preferences and possibly physiological dependence on dense vegetative cover, the Common Planigale is likely to be highly sensitive to any process that reduces vegetative cover e.g. grazing, fire, slashing, logging and clearing (Smith et al 1995, DECCW 2010b). The small home range and limited mobility also predisposes the species to a high vulnerability to direct mortality during

clearing or bushfire (Smith et al 1995, DECCW 2010b).

Given the disturbance history of the site, study area, property and adjacent lands, this strongly suggests the species is not likely to currently occur, and the study area only offers generic potential habitat (in a broad sense) should the species recover in the future.

The proposal will see modification of 3 Ha of derived grassland which offers little generic potential foraging and refugia for the species. The best potential habitats on site are the drainage line and forested landscapes which will remain effectively intact. The likely introduction of pet cats will incrementally and cumulatively add to the predation risk by native predators, and likely occurring foxes and potentially occurring feral cats.

The proposal thus will overall have a very minor net negative impact on the potential occurrence of this species on site. While this is an incremental and cumulative impact and contribution to the processes responsible for the decline of this species (DECCW 2010b), the order of magnitude of these impacts is not considered likely to place a local viable population at risk of extinction as:

- The periodically intensive and extensive disturbance history of the site and study area (and adjacent habitats) and lack of records in interconnected habitat strongly suggests this disturbance-sensitive species is not likely to occur in the study area. Consequently, the potential for a local population to occur in the remainder of the property will be retained.
- If present, the individuals on site would be likely to use habitat beyond the site depending on various lifecycle stages (e.g. mating), prey abundance, disturbance (e.g. bushfire) and climate conditions (e.g. drought), and interact with other individuals in adjacent habitats as part of their normal lifecycle. Hence the local population is not likely to be restricted to the site to meet its lifecycle requirements as other animals related to those potentially occurring on site would be likely to occur in the study area and beyond.
- A significant extent of potential habitat with excellent connectivity and relatively minimal threat (no potential for development or agriculture) occurs to the north and south on the property, and beyond. This area is considered capable of meeting all lifecycle requirements of a local population of this species if modification of the site renders it unsuitable for their needs.

**Varied Sittella**

This passerine bird has been recorded in forested habitats to the west of the locality, and as it prefers forest habitats, may potentially occur on the property, as well as throughout the large body of forest to the north; feeding, roosting and potentially nesting throughout the locally extensive and mostly intact forest. Its avoidance of open cleared areas (DECCW 2010b, NSWSC 2010e) and the extent of forest (>10 000ha) suggests the site would lie on the outermost fringe of a large and locally significant body of potential habitat for this species.

The bird is sedentary, living in family groups with territories of 13-20 Ha (Noske 1998), which it only weakly defends. The proximity of isolated remnant trees within the subject site thus has little generic potential to comprise territory for a family group. The limited extent of habitat on site, direct continuity with extensive forest to the north, and to some extent south suggests this family group would be likely to routinely use habitat outside the study area during its lifecycle and due to various habitat disturbances (e.g. bushfire, drought, etc) and prey abundance. In doing so, it would interact/overlap with other family groups in the study area and wider property. Hence the local population would extend beyond the study area and perhaps the property.

Due to limited forest cover in the subject site and no loss or modification of forest within the study area the proposal is unlikely to impact on any potential habitat for the species. The species is also unlikely to occupy any areas within the study area due to its avoidance of open areas. Consequently, the proposal will have no overall negative impact on the species.

**Green-thighed Frog**

The Green-thighed Frog occurs in isolated localities from the NSW Central coast to southeast Queensland. They occur in a range of habitats from rainforest and moist Eucalypt forest to dry Eucalypt forest and heath (NPWS 2000b).

Breeding occurs following heavy rainfall events in late spring and summer, with frogs congregating around large, temporary pools where males generally only call for one or two nights. Breeding may occur just once or twice per year or not at all and breeding success may be highly variable (Lemckert & Slayter 2002).How these frogs use forested environments during non-breeding times has not been documented (Lemckert & Slayter 2002), although it is suspected that they forage in leaf litter and dense groundcover vegetation. Although the species breeding sites have not been determined, it is considered likely that any creekline and/or low lying area capable of holding water for extended periods may provide potential habitat for this species.

Only one record was determined from the 10 km searched conducted for the current project 3.5 km to the west in forested landscape adjacent to the Orara River. The forested drainage lines including the Bucca Bucca Creek to the south of the property could be considered potential habitat for the species. The areas within the proposal are subject to grazing and routine slashing and are unlikely to be areas suitable for the species. All the potential habitats on the site are well away from the proposed development areas and are unlikely to affect important areas for the species.

**Threatened Rainforest and Wet Sclerophyll understory flora species**
**Milky Silkpod, Slender Marsdenia, *Tylophora Woollsii*, Moonee Quassia, Rainforest Senna, Rusty Plum, Orara Boronia, Slender Screw Fern**

The subject species listed are found in a range of moist habitat types from rainforest, rainforest margins to wet sclerophyll forest, they include the climbers (Milky Silkpod, Slender Marsdenia, *Tylophora Woollsii*), a fern (Slender Screw Fern), shrubs (Moonee Quassia, Orara Boronia, Rainforest Senna) to a mid size tree (Rusty Plum). Some can be highly restricted in range but locally common including the Orara Boronia and the Moonee Quassia, others have a much greater range but occur sparsely such as *Tylophora Woollsii*. One relatively common trait is that the Coffs Coast ranges and escarpment forests are the strong hold of most of these species distribution. Plants such as the Rusty Plum are relatively common in the coastal forests of Coffs Harbour but outside the area are extremely rare (Harden 200, Plantnet 2012).

These plants have been restricted in range due to habitat clearance, increased or inappropriate fire regimes, disturbance through logging and grazing and corresponding increase in weed growth. It is expected that the forested habitats of the property, north of the subject site provide habitat types that support these potential species (NPWS 2002).

Survey effort in the subject site and surrounding study area found no occurrence of any of the above species due likely to past and present disturbance regimes that the property has experienced through pastoral and forestry activities.

As the development proposal targets existing disturbed derived grassland sites no impact to the lifecycle of these plants is expected to occur. Records for a range of these species have been found in the larger surrounding State managed forests that of Sherwood Nature Reserve and Wedding bells and Bucca State Forests. Also individual plants that may occur on the property are not the sole location for these biota and are relatively widely spread in the local area including in many conservation reserves so no specific population is under threat.

As no individual threatened plant species were determined from any of the locations within the subject site and study area and due to the previous and ongoing disturbance regimes and the concentration of the proposed development in the preferred derived grassland and no forested landscapes are to be disturbed as part of any action of the proposed development it is considered that no impact on the viability of a local population of the subject species is likely.

***(b) 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 Populations are considered to occur in the study area; they are listed on Part 2 of Schedule 1 of the NSW TSC Act and none are affected by the proposal.

***(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***
***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,***

One EEC was identified as a possible occurrence that of Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions. No EECs were determined to occur in the study area; as no forested landscapes are to be modified or remnant isolated trees are to be removed or disturbed with the development is focused on disturbed grassland therefore not to be affected by the proposal.

***(d) 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,***
***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;***

The proposal will result in 3 Ha of already modified grassland being lost as part of the 97 Ha property. No forested landscapes will be disturbed or removed, including no removal of the isolated remnant trees within the subject site. The 3 Ha is regularly grazed and slashed as part of the current pastoral activities.

The subject site may form part of the foraging habitat of the large range highly mobile species such as the microbat group as outlined in part (a) of this report but this is such a minor component it is not considered to be a significant impact.

The main corridor in the locality occurs to the east of the property where there is contiguous forest cover from the northern escarpment forests to the Bucca Bucca Creek riparian zone; this is on an adjacent property and not impacted on by this proposal. There is limited likely movement through the study area from north to south on the property as there is no current forested connection, as distances and the current disturbance regime are considered too great to currently function. No forested landscapes are to be fragmented or isolated from other areas of habitat and current habitat connection and functionality will be maintained for example via the riparian corridor along Bucca Bucca Creek.

As noted in part (a), the property offers (in a broad, conservative sense) generic potential habitat for a number of forest dependant mammal, bird and reptile species. As these forest landscapes are to be maintained and remnant trees are not to be removed and as this habitat on the property forms part of a larger forest mosaic to the north (>10 000ha, including Sherwood Creek Nature Reserve) no long term impacts to species or populations and communities are considered likely.

***(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),***

No relevant areas of critical habitat have been declared, within the locality, under Part 3 of the NSW TSC Act, therefore no critical habitat will be affected.

***(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,***

Draft/final recovery plans have only been prepared for the Forest Owls, Koala and Quassia sp B (OEH 2012). Priority actions have been identified for all of the other species (DECCW 2010b).
For these and all other species, as the proposal will not remove forest habitat or isolated remnant trees; or hollow-bearing trees (in an area where this critical habitat component appears to be rare); reduce connectivity; and not contribute to secondary impacts, and hence overall not contribute to the primary processes responsible for the decline of these species: it would be considered consistent with objectives of a recovery plan(s), threat abatement plan or priority action now or in the future.

The retention of the overwhelming majority of habitat on the property will retain the potential for the local populations of these species to occur post-development.

***(g) 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 TSC Act 1995 defines a "threatening process" as "a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities". Loss and fragmentation of habitat due to urban, residential and rural development is a recognised threat to these species (Smith et al 1995, Lindenmayer and Fisher 2006, Johnson et al 2007, Smith et al 1995, Gibbons and Lindenmayer 2002, DECCW 2010b, NPWS 1999b, Gilmore and Parnaby 1994, etc) and could possibly be considered but as no forested vegetation and isolated remnant trees are to be removed and only already disturbed landscapes have been targeted and the existing disturbance regimes will be maintained i.e. slashing and mowing of these areas the proposal isn't considered likely to introduce any additional threatening processes that aren't currently there through the normal agricultural practices on the property.

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