Planning Proposal

Gulmarrad South

Lot 68,69 & 71 DP1156995 and Lot 1020 DP1108597 33 Major Mitchell Drive

Prepared for:
Jim Bricknell

Prepared by:
Chris Pratt, Planning Resolutions
Land Use Planner
PO Box 1133
Byron Bay NSW 2481

Phone / Fax (02) 66859957

Project: 11.0189

Date: 9 October 2012

Executive Summary

This planning proposal is for land at Gulmarrad. Gulmarrad is a rural residential locality that is located south of Maclean in the lower Clarence Valley.

The land is located on the northern side of Major Mitchell Drive, Gulmarrad. The land also as a frontage to Sheehans Lane and Brolga Drive. The land shares a boundary with nine rural residential lots. It also shares a boundary with a large development lot to the north which has recently been rezoned for residential development. There is agricultural land on the western side of Sheehans Lane.

The site has an area of 19.28 ha. The land is flat with scattered sections of remanent dry sclerophyll forest.

Development consent was granted in 2004 for a 43 Lot Rural Residential Subdivision. The consent included clearing of the road corridors and building areas. The consent has been commenced with creation of four lots and clearing of road corridors and some of the building areas.

The land is currently within *Zone R5 Large Lot Residential* under the provisions of *Clarence Valley Local Environmental Plan 2011.* It is intended to rezone the site to enable standard residential development.

The outcome is consistent with the vision and intent of the *Maclean Urban Catchment Local Growth Management Strategy 2011* which in broad terms seeks to meet the *Mid North Coast Regional Strategy's* dwelling targets in a more sustainable density and scale than has historically been the case in this locality. The planning proposal intends to zone sufficient land to accommodate that outcome and represents part implementation of the Local Growth Management Strategy. Residential development of the site represents a significantly improved efficiency of land use as compared to the existing rural residential zoning.

A conceptual urban layout has been prepared by urban design consultants RPS. The conceptual urban design is for an estimated 172 to 190 residential lots. A range of lot sizes and housing types is proposed.

The conceptual urban layout has been design to strategically retain at least the area of forest that would be retained under the approved rural residential development but in a consolidated area. Therefore the conceptual urban layout provides for 3.4 hectares of retained forest that includes key habitat trees in a central area and vegetation corridors/buffers to the west and north. A small neighbour park would be included in this central area, consisting of picnic tables, bbq and a children's playground.

It is requested that Council support the Planning Proposal for the Gulmarrad Residential Land (south) and forward the Planning Proposal to the Department of Planning and Infrastructure to seek a Gateway Determination.

It is requested that Council request in the Gateway submission to the Department:

a. a determination that no further studies are required prior to placing the Planning Proposal on public exhibition, and

b. an exhibition period for the Planning Proposal of 28 days.

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List of Plans

List of Appendices

Section 1 Preliminary

1.1 Background

This planning proposal has been drafted in accordance with Section 55 of the Environmental Planning and Assessment Act, 1979 and the Department of Planning's "A *guide to preparing planning proposals"* (July 2009). A gateway determination under Section 56 of the Act is requested.

1.2 The Land

The land is described in real property terms as Lot 68, 69 and part 71 DP1156995 and Lot 1020 DP1108597. The part of Lot 71 DP1156995 (0.74 ha) on which the landowner's dwelling house is located is excluded from the planning proposal.

The land is located on the northern side of Major Mitchell Drive, Gulmarrad. The land also as a frontage Sheehans Lane and Brolga Drive. The land shares a boundary with seven rural residential lots. It also shares a boundary with a large development lot to the north which was rezoned for residential development late last year. There is agricultural land on the western side of Sheehans Lane

The site, the subject of the Planning Proposal, has an area of 18.54 ha. The land is flat with a low north south ridge in the western third of the land. This broad low ridge has levels of in the vicinity of 17 to 19 metres AHD. The levels across the land range from a low point of 8 metres AHD in the north eastern corner of the land to a high of over 19 metres AHD along the northern boundary of the land. Major Mitchell Drive has a level of 11 metres at the western end rising to 17 metres AHD before dropping gradually to 16 metres AHD at the eastern end of the frontage of land. Brolga Drive has a level of approximately 11 metres AHD in the vicinity of the land.

A copy of the deposited plans and a survey of the land are included at **Appendix A.**

Development consent has been granted via DA 2004/0720 for a 43 Lot Rural Residential Subdivision. The consent included clearing of the road corridors and building areas. The consent has been commenced with creation of four lots and clearing of road corridors and some of the building areas. A copy of the approved subdivision plans is included in **Appendix B.**

Planning Resolutions

There is a single storey dwelling house on the 1.022 ha cut off area in the north east corner of the land, part of this land (0.74 ha) is excluded from this planning proposal. This land is accessed from Brolga Drive.

D & D Environmental Consultants describe the vegetation on the land in part as:

> *The site was originally dry sclerophyll forest that was partially cleared following approval for a rural residential subdivision.....Around 12 ha of continuous tree cover remains on the Site. This area has been underscrubbed and is now subject to regular slashing. The remaining 6 ha has been cleared except for some scattered trees.*

D & D Environmental Consultants noted that no threatened plant species were recorded or were likely to occur on the site.

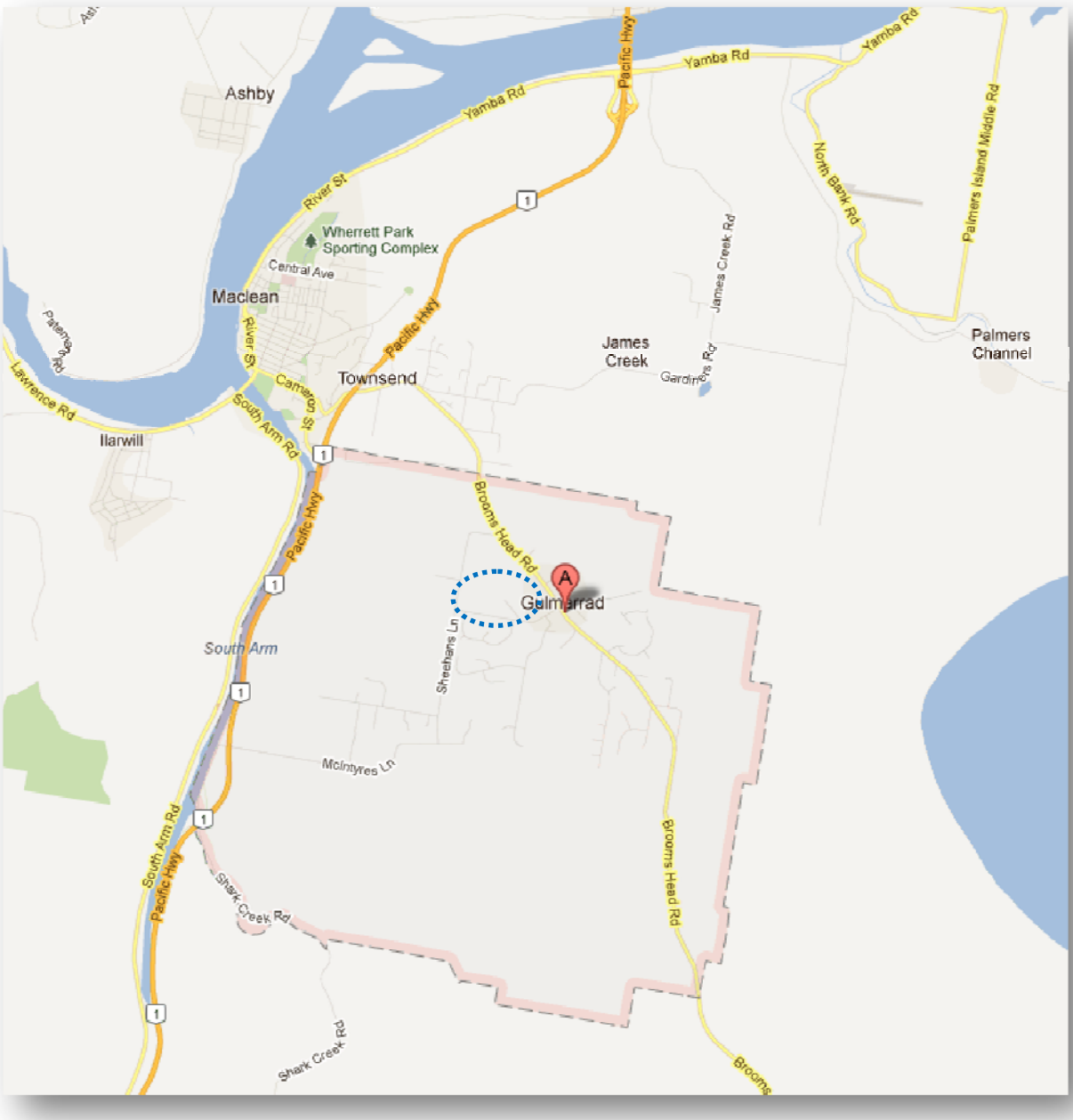
An ecological assessment by D & D Environmental Consultants is included in **Appendix D.**

Plan 1.1 is a site locality plan identifying the subject land (blue dotted circle).

Plan 1.2 is cadastral map which shows the land in the context of surrounding lots (orange borders).

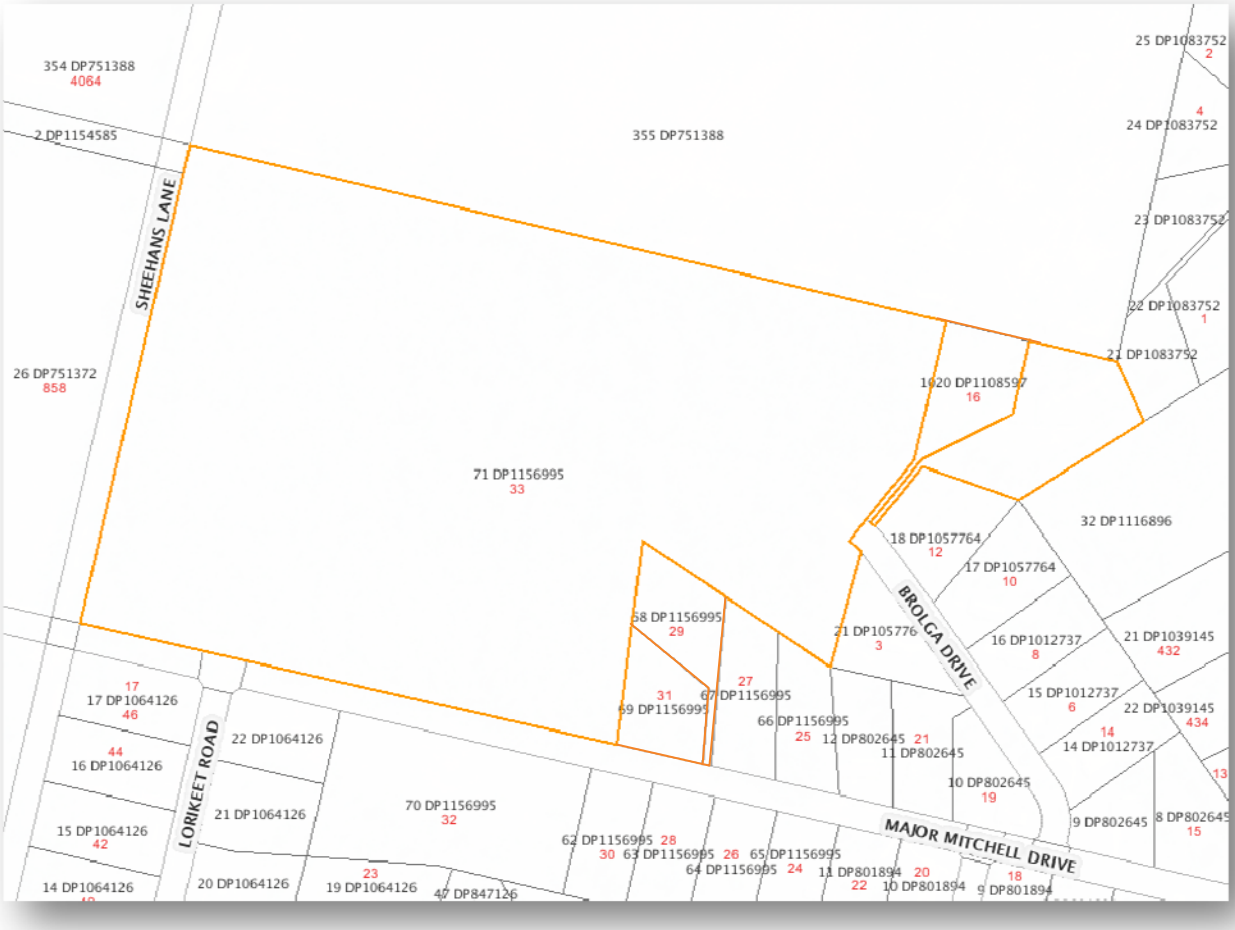
Plan 1.3 is an aerial photo showing the feature of the land (orange borders).

Plan 1.1 Site Locality Plan



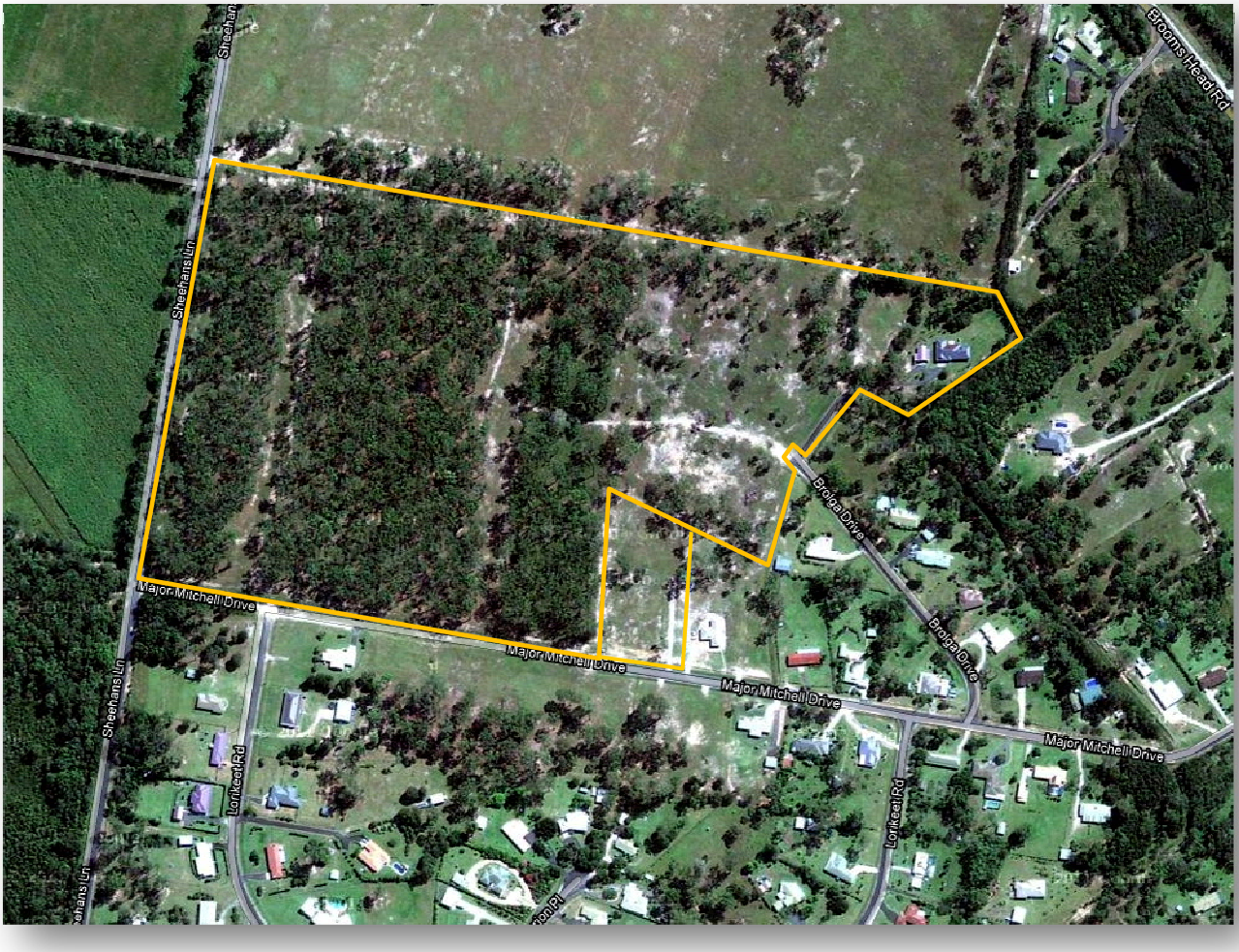
(source: http://maps.google.com.au/maps)

Plan 1.2 Cadastral Map



(source: http://imagery.maps.nsw.gov.au/ - 13 April 2012)

Plan 1.3 Site Aerial Photo

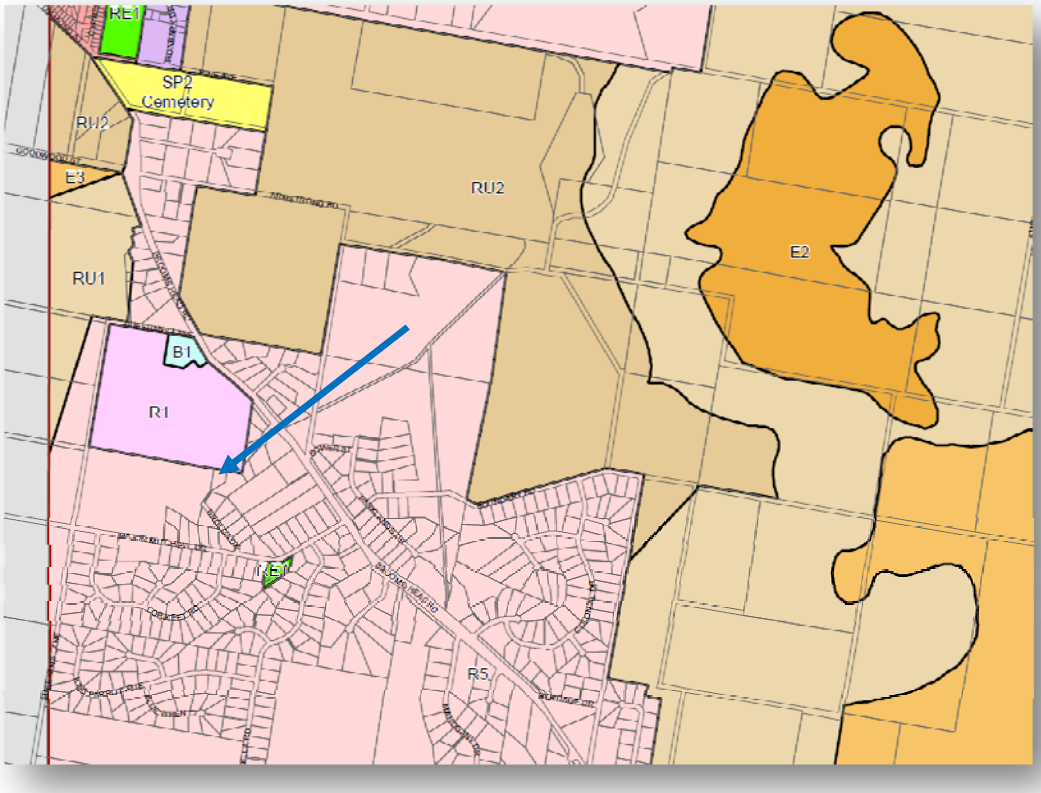


(source: http://maps.google.com.au/maps)

1.3 Current Zoning

The land is currently within Zone R5 Large Lot Residential under the provisions of *Clarence Valley Local Environmental Plan 2011* (*Clarence Valley LEP 2011)*. An extract of the zoning map is provided in Plan 1.4 below. The subject land is indicated by the blue arrow.

Plan 1.4 Current Zoning Map

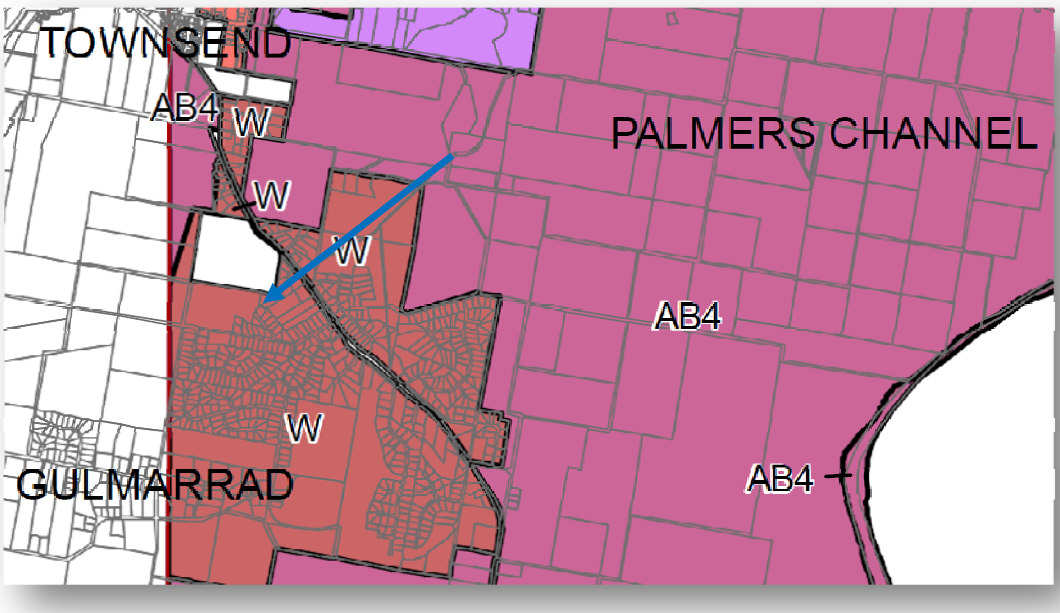


(Source www.legislation.nsw.gov.au 13 April 2012)

The land is currently within an area with a minimum lot size of 4000 sqm under the provisions of *Clarence Valley LEP 2011*. An extract of the lot size map is provided in Plan 1.5 below. The subject land is indicated by the blue arrow.

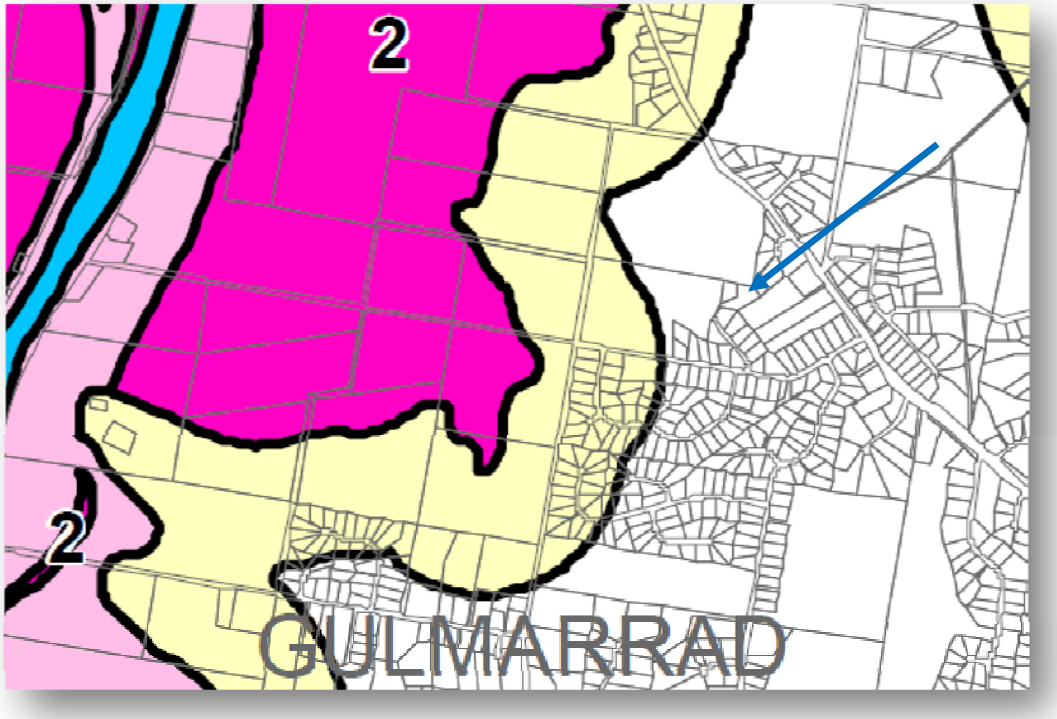
The land has been mapped as being in an area with Class 5 Acid sulfate soils. This is an area where works are restricted if *within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum*. It is noted that the lowest part of the land is eight metres AHD. An extract of the map from the *Clarence Valley LEP 2011* is provided in **Plan 1.6** over the page.

Plan 1.5 Current Lot Size Map



Note: "W" represents a 4000 sqm minimum Lot Size
(Source www.legislation.nsw.gov.au 13 April 2012)

Plan 1.6 Acid Sulphate Solis Map



Note: Yellow colouring represents areas of Class 5 potential acid sulphate soils
(Source www.legislation.nsw.gov.au 18 April 2012)

Section 2

Objectives or Intended Outcomes

It is intended to rezone the site to enable standard residential development. The outcome is consistent with the vision and intent of the *Maclean Urban Catchment Local Growth Management Strategy 2011* which in broad terms seeks to meet the *Mid North Coast Regional Strategy*'s dwelling targets in a more sustainable density and scale than has historically been the case in this locality. The planning proposal intends to zone sufficient land to accommodate that outcome and represents part implementation of the Local Growth Management Strategy.

A conceptual urban layout has been prepared by urban design consultants RPS. The preferred option is included on the following page. The conceptual urban design is for an estimated 172 to 190 residential lots. A range of lots sizes are proposed. Development statistics are included on the plan.

This conceptual urban design has been extensively informed by the ecological assessment for the site. Under the existing rural residential development it is estimated that approximately 2.82 ha of fragmented forest would be retained. This takes into account the approved clearing and exempt clearing permitted by future individual landowners (e.g. six metres from boundaries). The conceptual urban layout was design to strategically retain at least this area in a consolidated area. Therefore the conceptual urban layout provides for 3.42 hectares of retained forest that includes key habitat trees in a central area and vegetation corridors/buffers to the west and north. A small neighbour park would be included in this central area, consisting of picnic tables, bbq and a children's playground. This would be best located on the extreme southern end of the retained central area, away from key habitat trees. Though the neighbourhood park would integrate with the ecological values of this retained central area, which will be a park tucked amongst retained trees.

Other key features of conceptual urban layout include:

- Consistent with the adopted Gulmarrad Structure Plan,
- A permeable road layout with a logical street hierarchy that provides for a "slow movement environment",
- Opportunity to provide a diversity of dwelling types and settings,
- Incorporation of areas to permit water conservation re-use principles of Water Sensitive Urban Design (WSUD),
- Limited number of lots with frontage direct to retained vegetation areas so as to reduce edge effects, and
- A road layout that would allow future urban subdivision of existing adjoining rural residential lots.

Legend

- Site Boundary
- Net Saleable Area
- Stormwater Conveyance
- Active Park / Conservation Open Space
- Detention Area
- EMT for Stormwater

Streets

- Collector Road 7.5m Pavement
- Local Street 6.0m Pavement
- 3.5m Shared Driveway

Lot Types	% of Saleable Land Area	Estimated No. of Lots	% of Total Lots
Premium Villa 13 x 32m (416m²)	10%	24	13.2%
Courtyard 15 x 32m (480m²)	23%	49	26.9%
Traditional 18 x 32m (576m²)	32%	57	31.3%
PremiumTraditional 20 x 32m (640m²)	20%	32	17.6%
Large Lot 24 x 32m (768m²)	15%	20	11.0%
Total	**100%**	**182**	**100%**

Note: Yield including a +/- 5% margin of error : Total Estimated 173 - 191 lots

Collector road connection to adjoining development & proposed village centre

355 DP751388

21 DP1083752

1020 DP1108597

7420 m²
EXISTING PROPERTY TO REMAIN
pt 71 DP1156995

3600 m²

1800 m²

pt 71 DP1156995

13m Wide New Road

18m Wide New Road

20m Wide New Road

20m

SHEEHANS LANE

MAJOR MITCHELL DRIVE

LORIKEET ROAD

BROLGA

Development Statistics

	ha	%
Total Site Area	**19.28**	**100%**
Active Park / Conservation Open Space	3.42	17.7%
Stormwater Conveyance	0.09	0.5%
Detention Area	0.54	2.8%
Net Saleable Area	10.19	52.9%
(Stormwater easement within Lots 0.1ha)		
Existing Property to Remain	0.74	3.8%
Area of Road	4.30	22.3%
Total Length of Road (m)	**2465**	
20m Wide New Road	95	
18m Wide New Road	2055	
13m Wide New Road	315	
(includes pavement constructed on Major Mitchell Drive)		

Disclaimer

The contents of this plan are conceptual and for discussion purposes only. All areas and dimensions are approximate and subject to relevant studies, survey, engineering and Council approval.

The information used in this plan is drawn from the following sources:

Aerial: Google Earth Pro

Site Boundaries: DCDB

Conservation Buffer: D & D Environmental Consultants

33 Major Mitchell Drive, Gulmarrad
Concept Option 4

0 25 50 100

PRELIMINARY FOR DISCUSSION PURPOSES ONLY

RPS Australia East Pty Ltd
ACN 140 292 762
ABN 44 140 292 762
Urban Design
Brisbane Design Studio
455 Brunswick Street
Fortitude Valley QLD 4006
T +61 7 3124 9300
F +61 7 3124 9399
W rpsgroup.com.au

Scale 1:1000@A1 | **Date** 25 September 2012 | **Project No** 112307_05a

Section 3 Explanation of Provisions

3.1 Amendment of Clarence Valley LEP 2011

The objective of the proposal will be achieved by:

(a) Amending the Clarence Valley LEP 2011 Land Zoning Map - Sheet LZN_011J to show Lot 68, 69 and Part 71 DP1156995 and Lot 1020 DP1108597 coloured light pink with the letter R1 so as to include the land in the R1 General Residential.

(b) Amending the *Clarence Valley LEP 2011 Drinking Water Catchment Map/ Flood Planning Map/ Coastal Risk Planning Map/ Riverbank Erosion Planning Map/ Urban Release Area Map -Sheet CL1_011J* to show Lot 68, 69 and Part 71 DP1156995 and Lot 1020 DP1108597 coloured red so that it becomes part of the "Gulmarrad Urban Release Area", consistent with the adjoining land to the north.

(c) Amending the *Clarence Valley LEP 2011 Buildings Map - Sheet HOB_011J* to show Lot 68, 69 and Part 71 DP1156995 and Lot 1020 DP1108597 coloured dark green and indentified by the letter "J". Thereby specifying a maximum building height limit of 9 metres, consistent with the adjoining land to the north.

(d) Amending the *Clarence Valley LEP 2011 Minimum Lot Size Map - Sheet LSZ_011* to show Lot 68, 69 and Part 71 DP1156995 and Lot 1020 DP1108597 as uncoloured so that there is no minimum lot size specified under the provisions of the LEP.

Note that the minimum lot size for the Council's R1 General Residential is determined in accordance with the provisions of Council's *Residential Zones Development Control Plan 2011* (in force from 23 December 2011).

Section 4 Justification

Within this Section justification is provided for the planning proposal in accordance with a standard set of specific questions set out in the Department of Planning's "A *guide to preparing planning proposals".*

Section A - Need for the planning proposal.

1 Is the planning proposal a result of any strategic study or report?

A Local Growth Management Strategy has been prepared for the Maclean Urban Catchment (LGMS) consistent with the requirements of the *Mid North Coast Regional Strategy*. This LGMS has reviewed the Growth Areas identified in that Strategy and assessed them against a range of statutory and other relevant planning criteria, in particular the Sustainable Urban Settlement Guidelines for Regional New South Wales and against the dwelling targets of the Strategy. The LGMS establishes a framework including future population yields for development within the Maclean Urban Catchment consistent with the MNCRS. The Gulmarrad area, including this site, is recommended for urban development by the LGMS, and hence this Planning Proposal is a part implementation of those strategies.

2 Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

Yes. Rezoning of the land is required to implement the recommended Gulmarrad Structure Plan of the LGMS. The current zoning only permits development for large lot residential development.

3 Is there a net community benefit?

The *Maclean Urban Catchment Local Growth Management Strategy 2011* has been prepared to balance overall community benefit, recognising a variety of planning matters. The *Maclean Urban Catchment Local Growth Management Strategy 2011* will realize the dwelling target objectives of the *Mid North Coast Regional Strategy* in a way that is more sustainable than the current rural residential development. Approximately two thirds of development in the catchment is at very low, rural residential densities.

Promoting the development of a village centre at Gulmarrad is intended to create a “critical mass” of development to encourage the efficient and local provision of a range of commercial and social infrastructure that cannot be achieved with rural

residential development. Rezoning of this land is pivotal to the development of Gulmarrad as it represents a major part of the residential land supply to help deliver the LGMS's vision and goals.

Section B - Relationship to strategic planning framework.

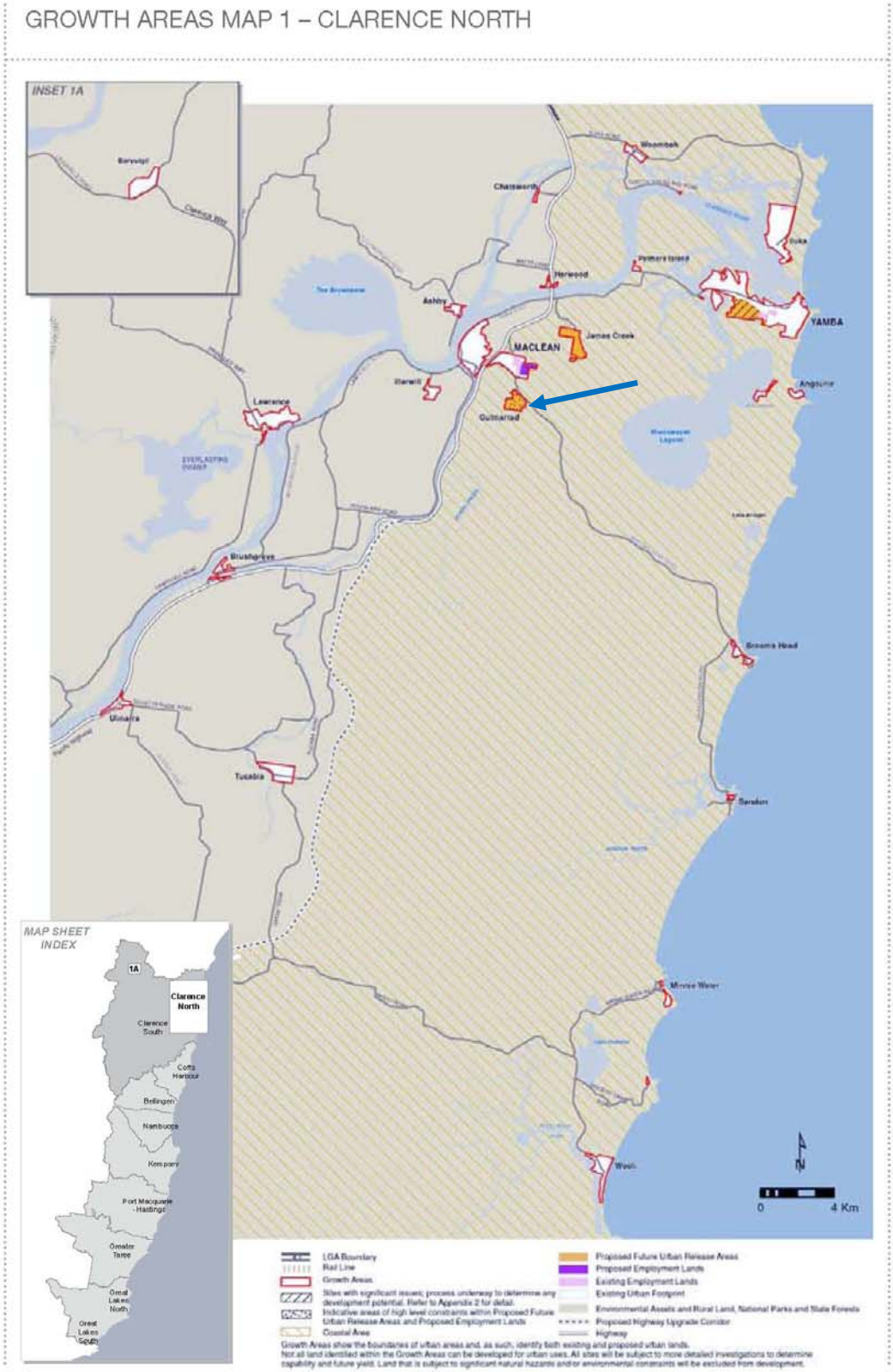
4 Is the planning proposal consistent with the objectives and actions contained within the applicable regional or sub-regional strategy?

The *Mid North Coast Regional Strategy* (MNCRS) was prepared in 2007-2009 and adopted by the Minister in March 2009. This site has been identified as being part of a Growth Area under the Strategy and is indicated on the Growth Areas Map in the MNCRS. A copy of that Growth Areas map for Clarence North is reproduced over the page in **Plan 4.1**. The subject rezoning is indicated by the blue arrow. Growth Areas under the Strategy identify land that has suitability for future urban expansion subject to further investigation and assessment of a range of relevant planning matters through a local growth management strategy.

5 Is the planning proposal consistent with the local council's Community Strategic Plan, or other local strategic plan?

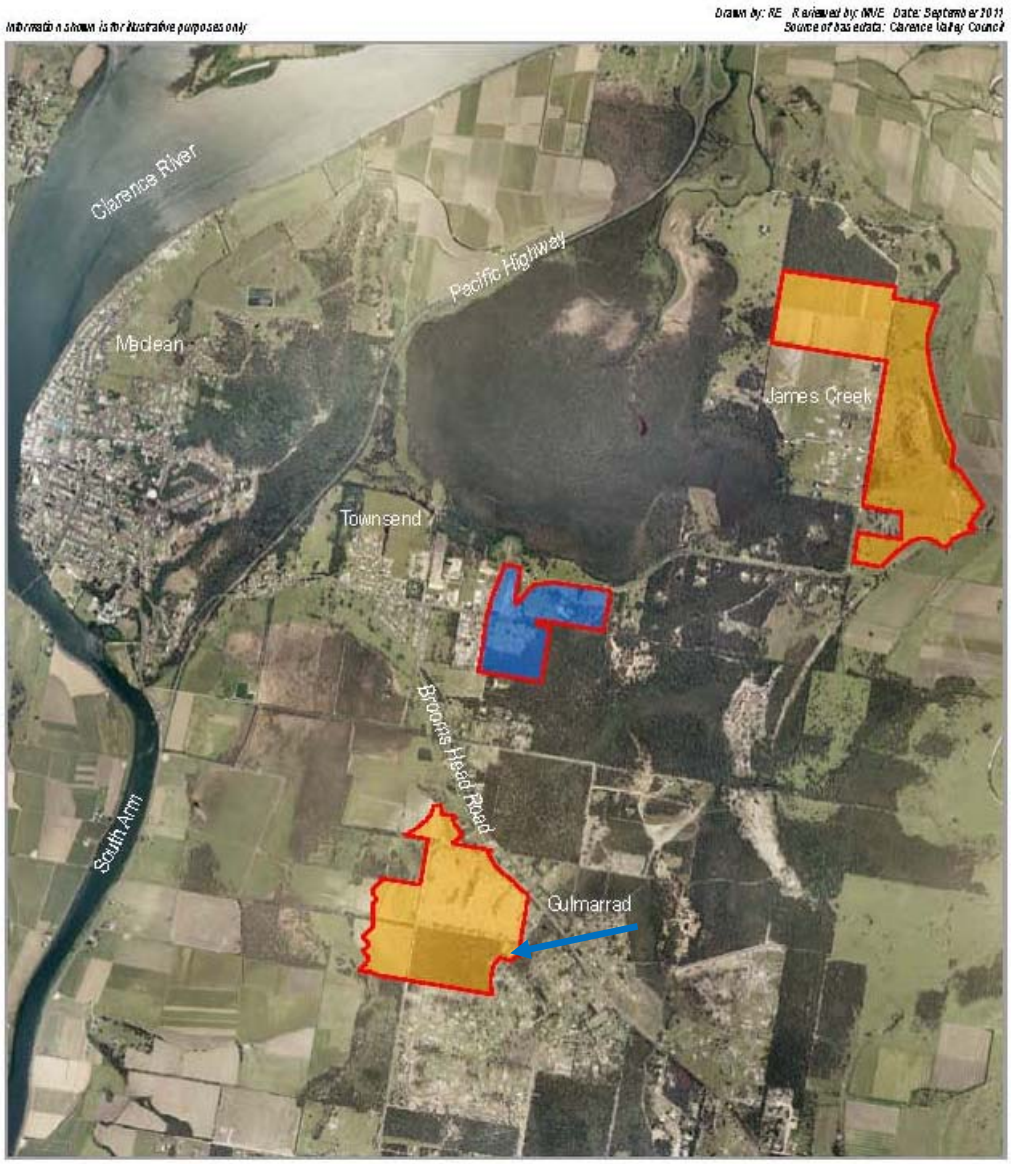
The *Maclean Urban Local Growth Management Strategy 2011* was adopted by Council on 16 August 2011. The NSW Department of Planning and Infrastructure endorsed the strategy in November 2011. **Plan 4.2** shows the Maclean Catchment Structure Plan adopted as part of the *Maclean Urban Local Growth Management Strategy 2011*. **Plan 4.3** shows the detailed structure plan adopted for Gulmarrad.

Plan 4.1 Mid North Coast Regional Strategy Growth Areas Map

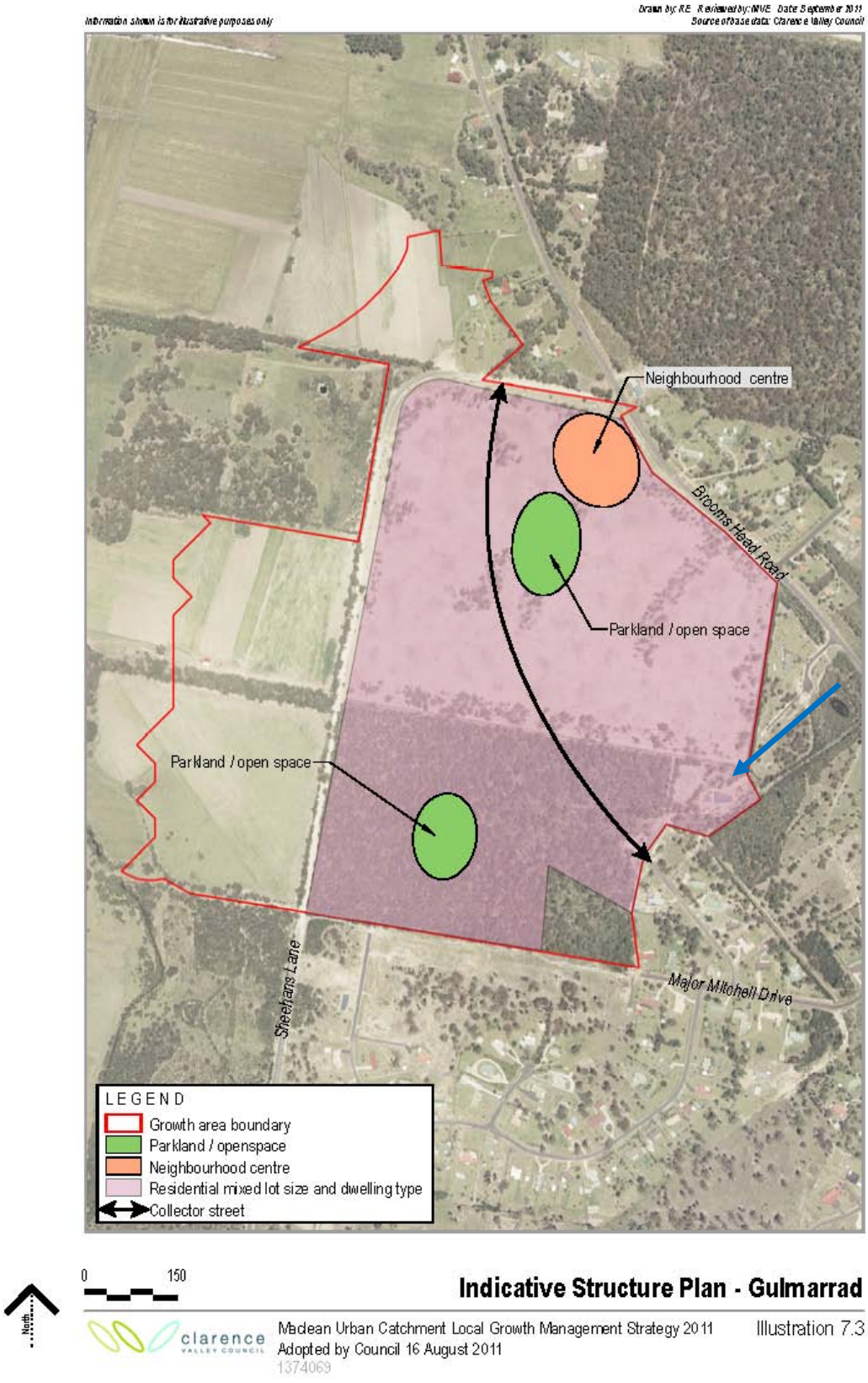


COAST REGIONAL STRATEGY — PAGE 50

Plan 4.2 Maclean Catchment Suggested Urban Structure Plan



Plan 4.3 Indicative Structure Plan - Gulmarrad



6 Is the planning proposal consistent with applicable state environmental planning policies?

The proposal is consistent with applicable state environmental planning policies. Refer to the checklist against these policies at **Appendix C**.

7 Is the planning proposal consistent with applicable Ministerial Directions (s.117 directions)?

The proposal is consistent with applicable Section 117 Directions – refer to the checklist against these Directions at **Appendix C**.

Section C - Environmental, social and economic impact.

8 Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

The ecological impacts of the proposal were assessed in part through the preparation of the LGMS. The ecological values of the land are specifically discussed in "Section 2.2.7 Overview of Constraints" as follows:

> *The vegetation at this site is relatively isolated and does not have significant connectivity.*
>
> *The limited biodiversity value of the vegetation needs to be balanced against the overall planning benefits associated with the ability to create a cohesive, viable community at this site.*

A detailed ecological assessment of the land has been carried out by D & D Environmental Consultants. Their assessment is included in **Appendix D.**

There assessment concluded in part:

> *The Site was thoroughly searched for flora and fauna habitat on March 27 2012. No threatened flora or fauna species listed under either the TSC Act or the EPBC Act were recorded on the Site. However, potential habitat for 16 threatened fauna species is present. To mitigate any impact on potential threatened species from using the site an area of 3 ha of significant vegetation will be retained and consolidated along the northern and western boundaries of the site to be used as a corridor.*
>
> *The proposal is unlikely to significantly impact on threatened or migratory species listed under the TSC Act and or EPBC Act. Therefore, a Species Impact Statement is not required under the TSC Act, nor does the proposal require referral to Commonwealth Department of Environment Water Heritage and the Arts prior to development consent.*

9 Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

No other environmental impacts are predicted. The planning proposal requires a balancing of a variety of competing planning issues. The LGMS provides a

detailed consideration of these issues. It is concluded that residential development in the Gulmarrad area is justified.

10 How has the planning proposal adequately addressed any social and economic effects?

Again the LGMS provides a detailed consideration of social and economic issues and concludes that residential development in the Gulmarrad area is justified.

Section D - State and Commonwealth interests.

11 Is there adequate public infrastructure for the planning proposal?

Upgrading of local services, in particular sewerage treatment capacity and transfer systems will need to be provide at the expense of the proponents. Again this issue has been extensively covered in the LGMS.

The environmental assessment of augmenting the Woodford Island sewage treatment plant capacity to accommodate urban development at Gulmarrad has been undertaken and has been approved. This ensures adequate treatment capacity to accommodate the population yields recommended by the LGMS. Some upgrading of critical intersections in the road network will also be required however the Pacific Highway upgrade and proposed Maclean interchange provides an opportunity for improved connectivity across the Highway corridor in the long term.

12 What are the views of State and Commonwealth public authorities consulted in accordance with the gateway determination?

Consultation with Agencies has been undertaken both by the Department of Planning and Infrastructure for the Growth Areas in the *Mid North Coast Regional Strategy* and by Council in the preparation of the *Maclean Urban Catchment Local Growth Management Strategy 2011*.

The adoption of the Growth Areas in the *Mid North Coast Regional Strategy* incorporates Agency views and reflects a Government position that urban development within those Growth Areas is justified subject to site specific assessment.

Agencies will be given another opportunity to comment through the exhibition process of this planning proposal.

Section 5

Community Consultation

5.1 Community Consultation

It is intended that the planning proposal be advertised for 28 days in accordance with Section 4.5 of "A guide to preparing local environmental plans". The proposal is not a "low impact planning proposal" under the guide as the proposal represents a significant change in local land use and character, even though this change is supported by the Maclean LGMS. The community consultation would include writing to adjoining landowners.

A public hearing is not considered necessary.

There is sufficient information with the Planning Proposal to permit the public exhibition of the Planning Proposal. Much of the background data that informs the proposal is contained in the *Maclean Urban Catchment Local Growth Management Strategy 2011*. Other detailed assessments are appropriately deferred until the development application stage.

For further information, or clarification of any matter raised by this Planning Proposal, Council is requested to consult with Chris Pratt on 02 66859957.

Chris Pratt
Land Use Planner

Appendix

A

Deposited Plans and Survey of the Land

PLAN FORM 2

Plan Drawing only to appear in this space.

SIGNATURES AND SEALS ONLY

AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED
A.C.N. 005 357 522
BY ITS ATTORNEY UNDER POWER OF ATTORNEY BOOK No. 4465 No. 246
LYNETTE BAILEY
ACTING MANAGER SECURITIES

Adward Lim
MORTGAGE OPERATIONS NSW
LEVEL 16, 1 MARKET ST, NSW SYDNEY

John Bredenell

Crown Lands Office Approval
PLAN APPROVED
Authorised Officer
Land District
Paper No.
Field Book pages

Subdivision Certificate

I certify that the provisions of s.109J of the Environmental Planning and Assessment Act, 1979 have been satisfied in relation to the proposed

SUBDIVISION set out herein
* (insert "subdivision" or "new road")

R.B. Donges
* Authorised Person / General Manager / Accredited Certifier

Consent Authority: CLARENCE VALLEY COUNCIL

Date of Endorsement: 8 SEPTEMBER 2006

Accreditation No.

Subdivision Certificate No. SUBCT 2006/0070

File No. D30654

Note:
When the plan is to be lodged electronically in the Land Titles Office, it should include a signature in an electronic or digital format approved by the Registrar-General.

SURVEYOR'S REFERENCE : MC053315-SV3A

SCHEDULE OF MGA COORDINATES

MARK	EASTING	NORTHING	CLASS	ORDER	ADJ No.
PM 67017	522177.179	6737838.979	B	U	223713
PM 67016	522449.622	6737895.527	B	U	223713
PM 71377	522087.733	6737872.858	B	U	226740

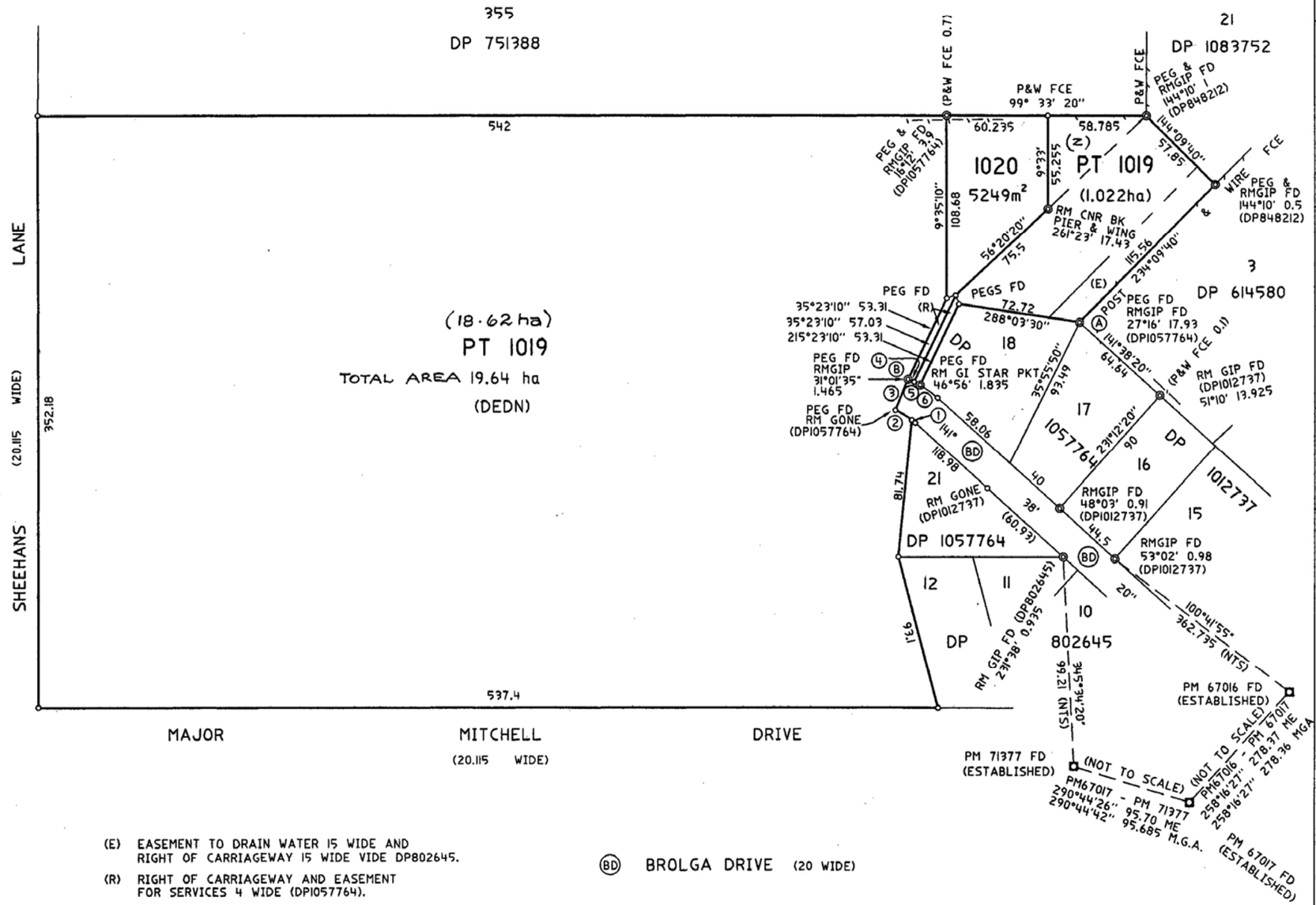
SOURCE : DEPARTMENT OF LANDS (8TH MARCH 2006)
COMBINED SCALE FACTOR : 0.999604
ZONE : 56

SCHEDULE OF SHORT LINES & ARCS

LINE	CHORD BEARING	CHORD DISTANCE	ARC	RADIUS
1	319°47'	2.55	2.55	40
2	309°47'	11.43	11.47	40
3	31°34'	20		
4	123°29'	4	4	60
5	127°18'	4	4	60
6	135°26'	12.995	13.02	60

SCHEDULE OF CONNECTIONS

CONNECTION	BEARING	DISTANCE
PM67017 - A	342°57'44"	278.07
PM71377 - B	335°27'04"	237.15



(E) EASEMENT TO DRAIN WATER 15 WIDE AND RIGHT OF CARRIAGEWAY 15 WIDE VIDE DP802645.

(R) RIGHT OF CARRIAGEWAY AND EASEMENT FOR SERVICES 4 WIDE (DP1057764).

(BD) BROLGA DRIVE (20 WIDE)

(Z) RESTRICTION ON THE USE OF LAND - VIDE D.P. 1057764.

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390

WARNING : CREASING OR FOLDING WILL LEAD TO REJECTION

DP1108597

Registered : HC 26.2.2007

C.A. : SEE CERTIFICATE

Title System : TORRENS

Purpose : SUBDIVISION

Ref. Map : PARISH

Last Plan : D.P. 1057764 (D.P. 802645 #)

PLAN OF SUBDIVISION OF LOTS 19 & 20 IN DP 1057764

Lengths are in metres. Reduction Ratio 1 : 2000

CLARENCE VALLEY

L. G. A. : ~~MACLEAN~~

Locality : GULMARRAD

Parish : GULMARRAD

County : CLARENCE

Surveyor's (Practice) Regulation 2001

I DESMOND SMITH

of LANDPARTNERS - GULAPTIS & SMITH

a surveyor registered under the Surveyors Act 1929, hereby certify that the survey represented in this plan is accurate, has been made in accordance with the Surveyors (Practice) Regulation 2001 and was completed on 28/3/2006.

The survey relates to LOT 1020 & PART LOT 1019

(here specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey)

Datum Line :

PM67016-PM67017 (MGA)

Zone : Urban / ~~Rural~~

(Signature)

(Surveyor registered under the Surveyors Act 1929)

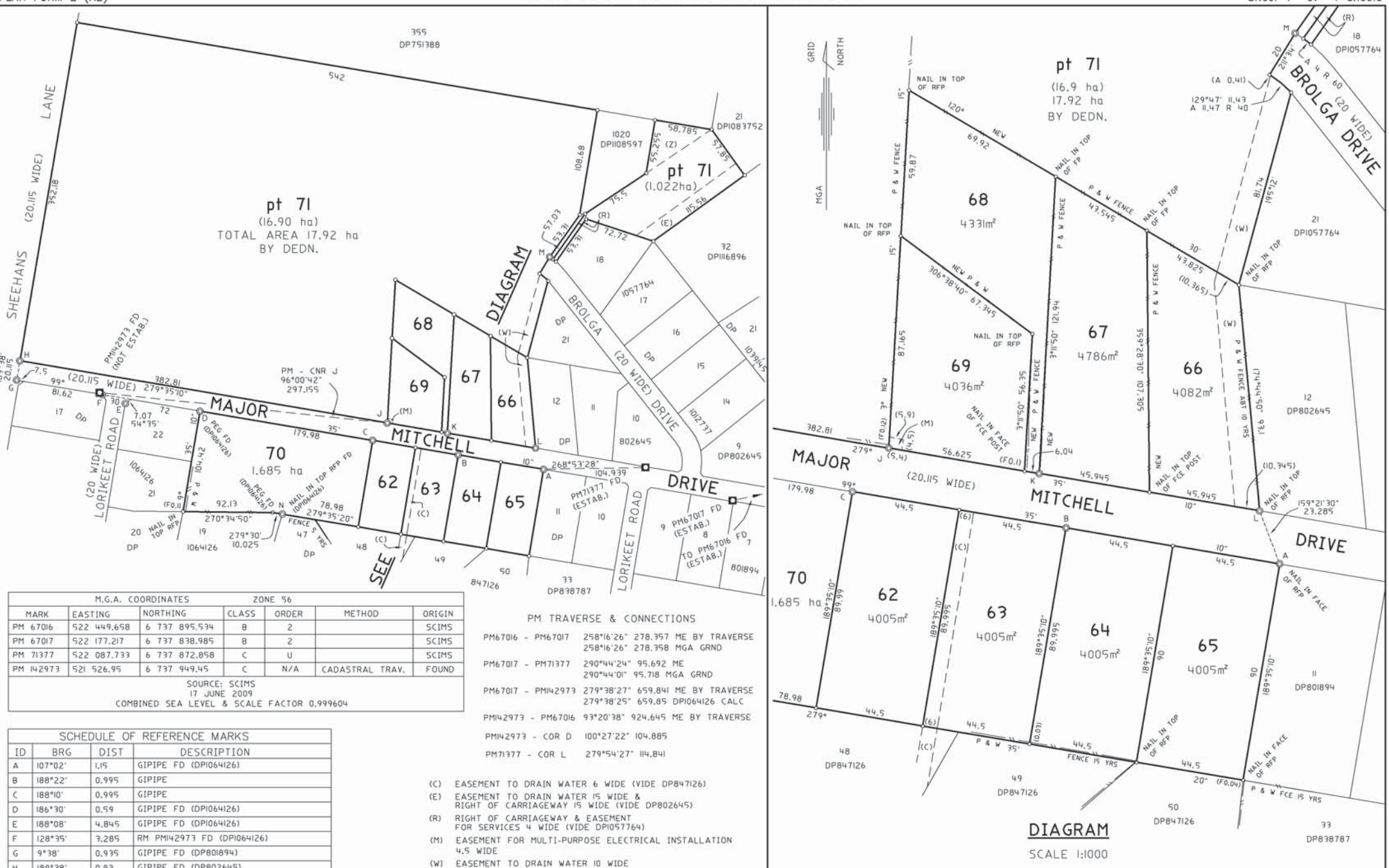
(DATE) 28/8/2006

Plans used in preparation of Survey / Compilation

DP802645	DP1048187
DP848212	C1834-1577
DP614580	DP801894
DP1012737	DP1057764
DP1039145	

PANEL FOR USE ONLY for statements of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

PLAN FORM 2 (A2) WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION ePlan Sheet 1 of 1 sheets



M.G.A. COORDINATES ZONE 56						
MARK	EASTING	NORTHING	CLASS	ORDER	METHOD	ORIGIN
PM 67016	522 449.658	6 737 895.534	B	2		SCIMS
PM 67017	522 177.217	6 737 838.985	B	2		SCIMS
PM 71377	522 087.733	6 737 872.858	C	U		SCIMS
PM 142973	521 526.95	6 737 949.45	C	N/A	CADASTRAL TRAV.	FOUND

SOURCE: SCIMS
17 JUNE 2009
COMBINED SEA LEVEL & SCALE FACTOR 0.999604

PM TRAVERSE & CONNECTIONS

PM67016 - PM67017 258°16'26" 278.357 ME BY TRAVERSE
258°16'26" 278.358 MGA GRND

PM67017 - PM71377 290°44'24" 95.692 ME
290°44'01" 95.718 MGA GRND

PM67017 - PM142973 279°38'27" 659.841 ME BY TRAVERSE
279°38'25" 659.85 DP1064126 CALC

PM142973 - PM67016 93°20'38" 924.645 ME BY TRAVERSE

PM142973 - COR D 100°27'22" 104.885

PM71377 - COR L 279°54'27" 114.841

SCHEDULE OF REFERENCE MARKS			
ID	BRG	DIST	DESCRIPTION
A	107°02'	1.15	GIPIPE FD (DP1064126)
B	188°22'	0.995	GIPIPE
C	188°10'	0.995	GIPIPE
D	186°30'	0.59	GIPIPE FD (DP1064126)
E	188°08'	4.845	GIPIPE FD (DP1064126)
F	128°35'	3.285	RM PM142973 FD (DP1064126)
G	9°38'	0.935	GIPIPE FD (DP801894)
H	189°38'	0.93	GIPIPE FD (DP802645)
J	2°18'	0.94	GIPIPE
K	9°45'	0.9	GIPIPE
L	9°35'	0.99	GIPIPE FD 06/08 (DP802645) NOW GONE
L	34°58'	1.66	GIPIPE
M	31°01'35"	1.465	GIPIPE FD (DP1108597)
N	16°11'	1.00	GIPIPE FD (DP847126)

(C) EASEMENT TO DRAIN WATER 6 WIDE (VIDE DP847126)
(E) EASEMENT TO DRAIN WATER 15 WIDE & RIGHT OF CARRIAGEWAY 15 WIDE (VIDE DP802645)
(R) RIGHT OF CARRIAGEWAY & EASEMENT FOR SERVICES 4 WIDE (VIDE DP1057764)
(M) EASEMENT FOR MULTI-PURPOSE ELECTRICAL INSTALLATION 4.5 WIDE
(W) EASEMENT TO DRAIN WATER 10 WIDE
(Z) RESTRICTION ON THE USE OF LAND (VIDE DP1057764)

SEE DIAGRAM

DIAGRAM
SCALE 1:1000

Surveyor: Steven Thomas Brailsford Date of Survey: 15/12/09 Surveyors Ref: 08076DP	PLAN OF SUBDIVISION OF LOT 23 IN DP1064126 AND LOT 1019 IN DP1108597	LGA: CLARENCE VALLEY Locality: GULMARRAD Subdivision No: SUBCT2010/0010 Lengths are in metres. Reduction Ratio 1:2500	Registered 30.9.2010	DP1156995

Req:R961471 /Doc:DP 1156995 P /Rev:01-Oct-2010 /Sts:SC.OK /Prt:26-Oct-2011 15:48 /Pgs:ALL /Seq:1 of 3 dp1156995
Ref: /Src:X

10 20 30 40 50 Table of mm 90 100 110 120 130 140

(C) - EASEMENT TO DRAIN WATER 6 WIDE (VIDE DP847126)

(E) - EASEMENT TO DRAIN WATER 15 WIDE & RIGHT OF CARRIAGEWAY 15 WIDE (VIDE DP802645)

(R) - RIGHT OF CARRIAGEWAY & EASEMENT FOR SERVICES 4 WIDE (VIDE DP1057764)

(M) - EASEMENT FOR MULTI-PURPOSE ELECTRICAL INSTALLATION 4.5 WIDE (DP1156995)

(W) - EASEMENT TO DRAIN WATER 10 WIDE (DP1156995)

(Z) - RESTRICTION ON THE USE OF LAND (VIDE DP1057764)

GRID NORTH

MGA

LANE

355
DP751388

542

pt 71
(16.90 ha)
TOTAL AREA 17.92 ha
BY DEDN.

pt 71
(1.022ha)

1020
DP1108597

21
DP1083752

32
DP1116896

18

ARC 4, RAD 60

ARC 11.47, RAD 40

1057764

17

16
DP

15
1027737

BROLGA DRIVE

68

69
DP

67

66
1156995

12

11

10
802645

DRIVE

MAJOR ROAD

MITCHELL DRIVE

LORIKEET ROAD

17
DP

22

70
DP

62

63

64

65
1156995

11

10

9
801894

16

1064126

21

SHEEHANS LANE

352.18

382.81

157.29

147.035

81.74

108.68

115.56

72.72

58.785

57.85

55.255

53.31

57.03

75.5

General Notes

1) Levels are on an AHD datum.
Source of Levels is PM71377, RL12.340 AHD

2) The boundaries shown hereon have been determined from plan dimensions only. No search has been undertaken for easements or other encumbrances on title.

3) Underground services were not investigated at the time of survey. Prior to any demolition, excavation or construction, the relevant authority should be contacted to locate such services.

4) These note form an integral part of this plan.

Project Details

CONTOUR SURVEY

of Lot 71

in DP1156995

Locality: GULMARRAD
LGA: CLARENCE VALLEY
Parish: GULMARRAD
County: CLARENCE
Scale: 1:1000@A1
Our ref: 08076
Date: 27/4/12
Drawn: STB
Checked: STB

Client Details

Client : J BRICKNELL

STEVE BRAILSFORD SURVEYING

Consulting Land & Engineering Surveyors

Ph 02 66468251
Fax 02 66468291
Mob. 0412 618168
Email:brailsford@iprimus.com.au
P.O. Box 471
Yamba, 2464

Steve Brailsford SURVEYING
Consulting Land & Engineering Surveyors
Ph: 02 6646 8251 Mob: 0412 618 168

REVISIONS

Rev.	Date	Decsription
A	2/05/12	First Issue

DWG No.: 08076DET.dwg
SHEET 1 OF 1

Appendix

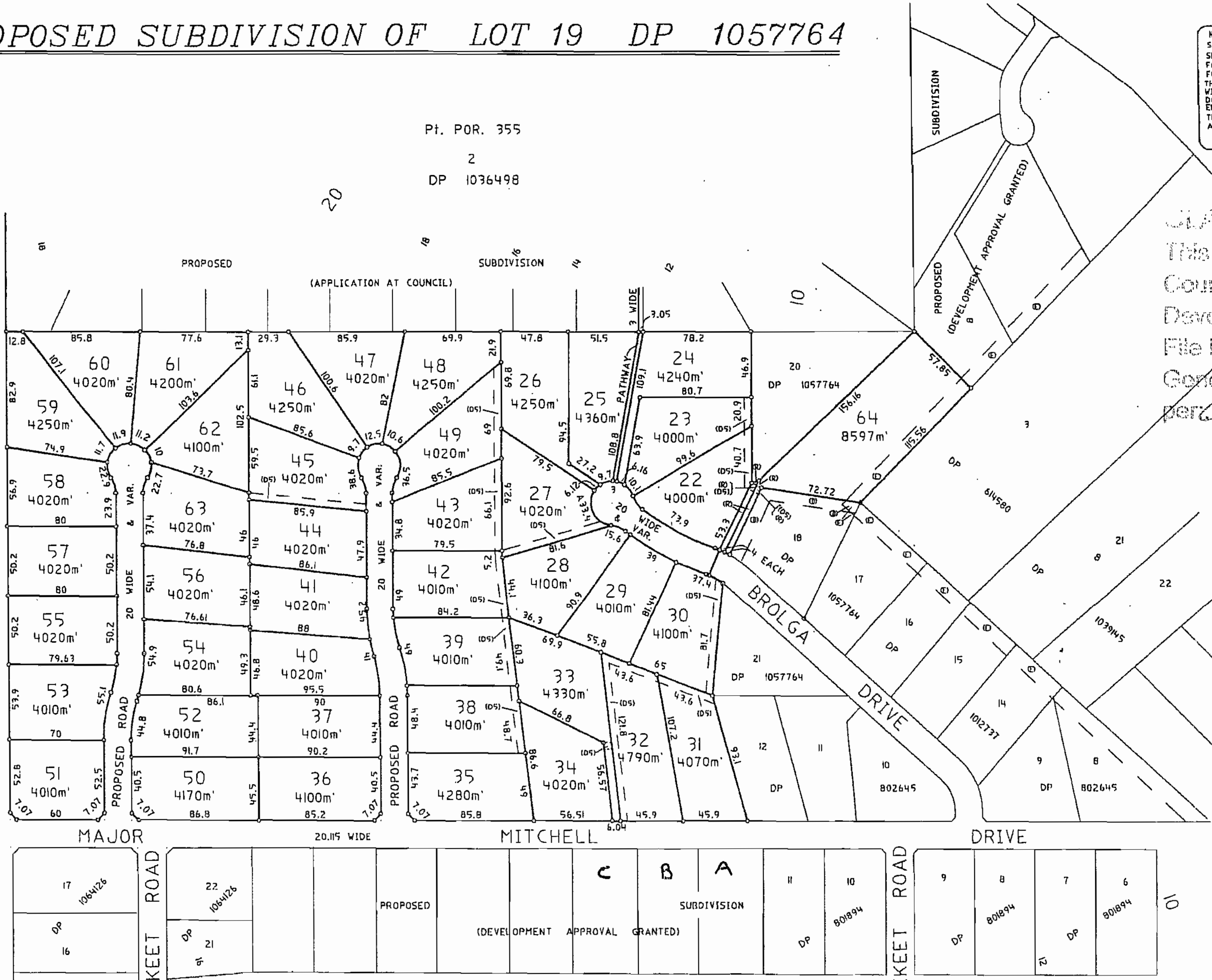
B

Approved Rural Residential Subdivision Plans

PROPOSED SUBDIVISION OF LOT 19 DP 1057764

NOTES : THE INFORMATION CONTAINED HEREON HAS BEEN DERIVED FOR A SPECIFIC PURPOSE AND SHOULD NOT BE USED FOR OTHER APPLICATIONS. SHOULD THERE BE ANY DOUBT AS TO THE SUITABILITY OF THE INFORMATION FOR AN APPLICATION PLEASE CONTACT GULAPTIS & SMITH PTY LTD FOR CLARIFICATION.
THIS DOCUMENT SHOULD NOT BE REPRODUCED IN PART. GULAPTIS & SMITH P/L WILL NOT BE RESPONSIBLE FOR THE INFORMATION SHOWN HEREON UNLESS THIS DOCUMENT (INCLUDING ANY ACCOMPANYING CORRESPONDENCE) IS USED IN ITS ENTIRETY.
THE POSITION OF ALL SERVICES SHOULD BE CHECKED WITH ALL AUTHORITIES AND LOCATED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORK.
CONTOUR INTERVAL : MAJOR : 10
MINOR : 2

CLARENCE VALLEY COUNCIL
This is the plan referred to in Council's Notice of Determination of Development Application No. 2004/[illegible]
File No. PC2143
General Manager
per [signature] Date 21.1.2005



CAUTION:

1. THIS SKETCH HAS BEEN PREPARED FOR DEVELOPMENT APPLICATION PURPOSES ONLY.
2. THE PROPOSAL SHOWN IS SUBJECT TO DEVELOPMENT APPROVAL, AND MAY CHANGE.
3. THE LOT NOS., DIMENSIONS & AREAS SHOWN ARE SUBJECT TO SURVEY, AND MAY CHANGE.
4. THE BASE DETAIL, CONTOURS & LEVELS SHOWN IS DERIVED FROM GHD SURVEYS P/L, DEC. 1990, REF. 241/055/13200

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(D) EASEMENT DRAIN WATER 10 WIDE. VIDE DP 1057764
(R) RIGHT OF CARRIAGEWAY AND EASEMENT FOR SERVICES 4 WIDE. VIDE DP 1057764
(DS) EASEMENT DRAIN WATER 5 WIDE.

PREPARED BY – GULAPTIS & SMITH PTY. LTD. CONSULTING SURVEYORS
PO Box 270 MACLEAN NSW 2463

REF. No. 3315/DA04/1	ISSUE 1
CLIENT Mr. J. BRICKNELL	DATE JUNE. 2004

LOCALITY
LOT 19 DP 1057764
MAJOR MITCHELL DRIVE
GULMARRAD

SCALE 1 : 3000 AT A3 SIZE
DATUM AUSTRALIAN HEIGHT DATUM

SHEET 1 OF 1 SHEET

PROPOSED SUBDIVISION

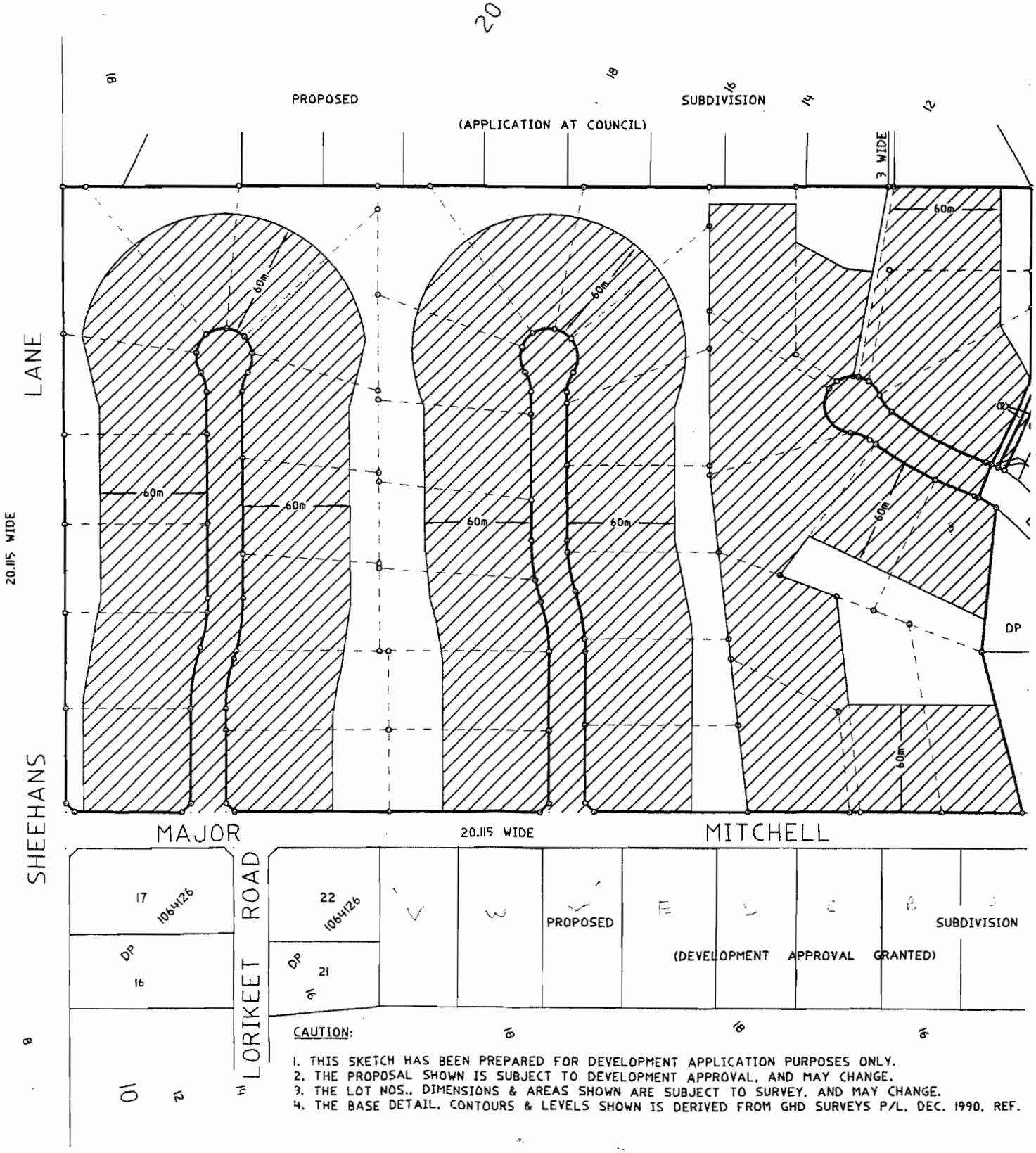
PROPOSED SUBDIVISION OF LOT 19 DP 10

AREA PROPOSED TO BE CLEARED

Pt. POR. 355

2

DP 1036498



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'057764

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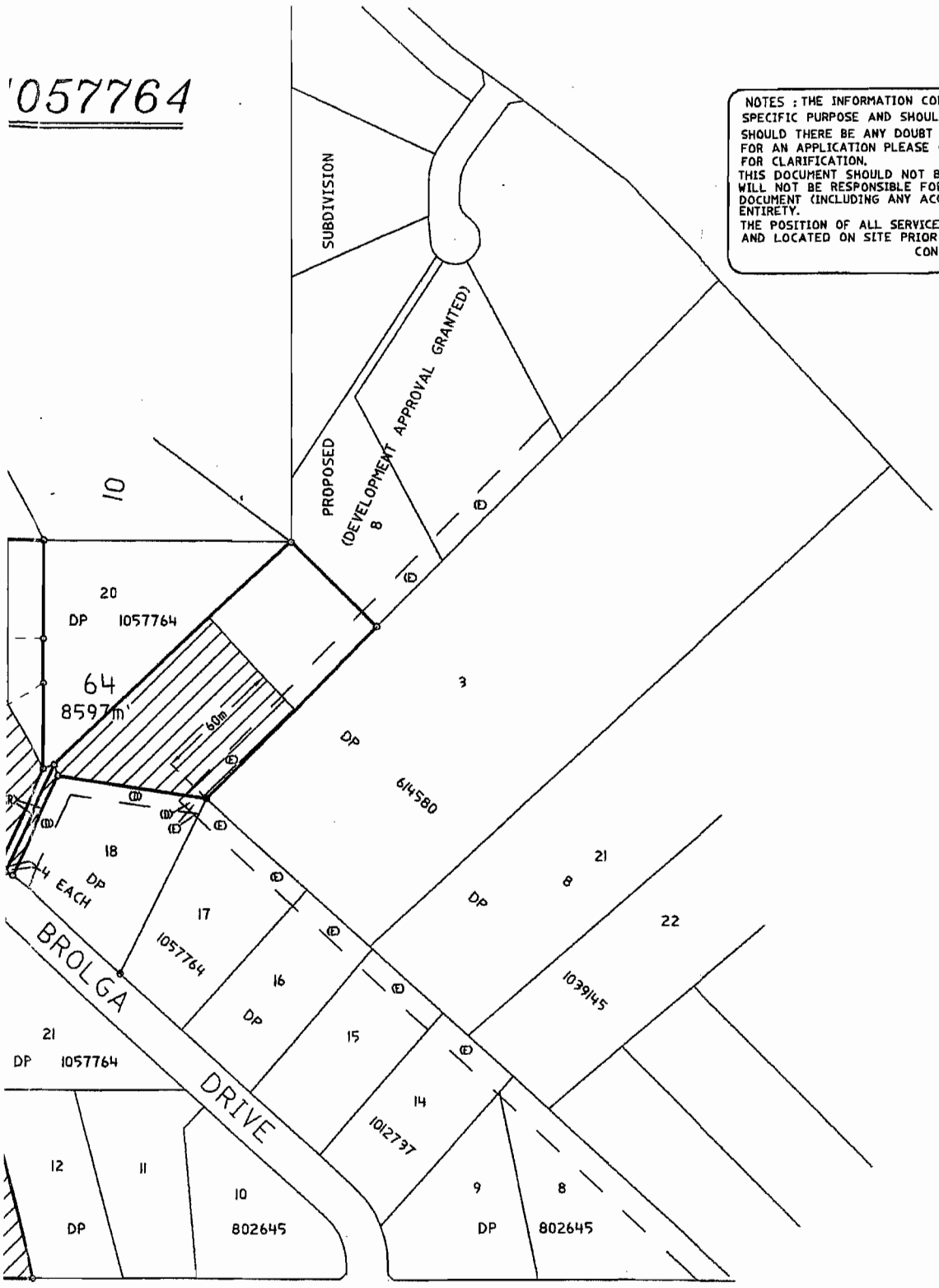
MINOR : 2



G N

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(R) RIGHT OF CARRIAGEWAY AND EASEMENT FOR SERVICES 4 WIDE. VIDE DP 1057764

REF. 241/055/13200

PREPARED BY -
GULAPTIS & SMITH PTY. LTD. A.C.N. 002 805 788
SURVEYING SERVICES
PO Box 278 MACLEAN NSW 2463
Ph 02 66 453074 Fax 02 66 45265

REF. No. 3315/DA04/1	ISSUE 1
CLIENT Mr. J. BRICKNELL	DATE JUNE. 2004

LOCALITY
LOT 19 DP 1057764
MAJOR MITCHELL DRIVE
GULMARRAD

SCALE 1 : 3000 AT A3 SIZE
DATUM AUSTRALIAN HEIGHT DATUM

SHEET 1 OF 1 SHEET

PROPOSED CLEARING

Appendix

C

State Environmental Planning Policy and Sec 117 Direction Checklists

Consideration of State Environmental Planning Policies

No.	SEPP Title	Applicable to Planning Proposal	Consistency
1	State Environmental Planning Policy – Development Standards	Not applicable.	Not applicable
4	State Environmental Planning Policy – Development without consent & Miscellaneous Exempt & Complying Development	Not applicable.	Not applicable
6	State Environmental Planning Policy – Number of Storeys in a Building	Not applicable	Not applicable
14	State Environmental Planning Policy – Coastal Wetlands	No coastal wetlands have been identified on the land	Not applicable
15	State Environmental Planning Policy – Rural Land sharing Communities	Not applicable	Not applicable
19	State Environmental Planning Policy – Bushland in Urban Areas	Not applicable	Not applicable
21	State Environmental Planning Policy – Caravan Parks	Not applicable	Not applicable
22	State Environmental Planning Policy – Shops & Commercial Premises	Not applicable	Not applicable
26	State Environmental Planning Policy – Littoral Rainforests	No littoral rainforest has been identified on the land	Not applicable
29	State Environmental Planning Policy – Western Sydney Recreation Area	Not applicable	Not applicable
30	State Environmental Planning Policy – Intensive Agriculture	Not applicable	Not applicable
32	State Environmental Planning Policy – Urban Consolidation (Redevelopment of Urban Land)	Not applicable	Not applicable
33	State Environmental Planning Policy – Hazardous & Offensive Industry	Not applicable	Not applicable
36	State Environmental Planning Policy – Manufactured Home Estate	Not applicable	Not applicable
39	State Environmental Planning Policy – Spit Island Bird Habitat	Not applicable	Not applicable
41	State Environmental Planning Policy – Casino Entertainment Complex	Not applicable	Not applicable
44	State Environmental Planning Policy – Koala Habitat Protection	The ecological assessment concluded that the land is not core Koala habitat. Therefore a Koala Plan of Management is not required.	Consistent
47	State Environmental Planning Policy – Moore Park Showground	Not applicable	Not applicable
50	State Environmental Planning Policy – Canal Estate Development	Not applicable	Not applicable
52	State Environmental Planning Policy – Farm Dams and Other Works in Land and Water Management Plan Areas	Not applicable	Not applicable
55	State Environmental Planning Policy – Remediation of Land	The history of the site suggests that contamination from past agricultural practises is unlikely as most of the site has only been recently cleared of remanent vegetation. Independent assessment can be carried out as part of preparation of the development application for residential development of the land.	Consistent
59	State Environmental Planning Policy – Central Western Sydney Regional Open Space and Residential	Not applicable	Not applicable
60	State Environmental Planning Policy – Exempt & Complying Development	Not applicable	Not applicable
62	State Environmental Planning Policy – Sustainable Aquaculture	Not applicable	Not applicable
64	State Environmental Planning Policy – Advertising & Signage	Not applicable	Not applicable
65	State Environmental Planning Policy – Design Quality of Residential Flat Development	Not applicable	Not applicable
70	State Environmental Planning Policy – Affordable Housing (Revised Schemes)	Not applicable	Not applicable
71	State Environmental Planning Policy – Coastal Protection	The land is not within the NSW Coastal Zone	Not applicable
	State Environmental Planning Policy (Affordable Rental Housing) 2009	Not applicable	Not applicable
	State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004	This policy will be applicable with future residential development on the	Consistent

No.	SEPP Title	Applicable to Planning Proposal	Consistency
		land	
	State Environmental Planning Policy (Exempt & Complying Development Codes) 2008	Not applicable	Not applicable
	State Environmental Planning Policy (Housing for Seniors & People with a Disability) 2004	Not applicable	Not applicable
	State Environmental Planning Policy (Infrastructure) 2007	The extension and augmentation of services for the land is consistent with the objectives of this policy.	Consistent
	State Environmental Planning Policy (Kosciuszko National Park – Alpine Resorts) 2007	Not applicable	Not applicable
	State Environmental Planning Policy (Major Development) 2005	Not applicable	Not applicable
	State Environmental Planning Policy (Mining, Petroleum Production & Extractive Industries) 2007	Not applicable	Not applicable
	State Environmental Planning Policy (Penrith Lakes Scheme) 1989		
	State Environmental Planning Policy (Rural Lands) 2008	In accordance with Planning Circular PS08-002 the SEPP requires that before granting consent the consent authority must consider any impacts the development will have on other uses in the locality including development of residential land adjoining rural lands. When considering an application to which this clause of the SEPP applies the council should have regard to current and emerging trends in agriculture, including current trends to transition from extensive agriculture to intensive agriculture such as horticulture and intensive livestock in some locations. The proposal includes a vegetated buffer and road to the adjoining agricultural land to the west. This land is in the identified Urban Growth Boundary (Plan 4.3) but is not identified as residential land at this time.	Consistent
	State Environmental Planning Policy (SEPP 53 Transitional Provisions) 2011	Not applicable	Not applicable
	State Environmental Planning Policy (State and Regional Development) 2011	Not applicable	Not applicable
	State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011	Not applicable	Not applicable
	State Environmental Planning Policy (Sydney Region Growth Centres) 2006	Not applicable	Not applicable
	State Environmental Planning Policy (Temporary Structures) 2007	Not applicable	Not applicable
	State Environmental Planning Policy (Urban Renewal) 2010	Not applicable	Not applicable
	State Environmental Planning Policy (Western Sydney Employment Area) 2009	Not applicable	Not applicable
	State Environmental Planning Policy (Western Sydney Parklands) 2009	Not applicable	Not applicable

Consideration of North Coast Regional Environmental Plan (Deemed SEPP)

North Coast Regional Environmental Plan (Deemed SEPP)	Consistent	Comment
Part 2 Rural Development		
Agricultural Resources		
Prime Crop or Pasture Land	Not applicable	The planning proposal relates to existing large lot residential land.
Minimum lot size	Not applicable	The planning proposal relates to existing large lot residential land.
Concessional lots	Not applicable	The planning proposal relates to existing large lot residential land.
Cluster farming	Not applicable	The planning proposal relates to existing large lot residential land.
Intensive animal industries	Not applicable	The planning proposal relates to existing large lot residential land.
Catchment Management		
Wetlands or fishery habitats	Yes	The land does not contain any land containing rivers, streams, wetlands or fishery habitats.
Geological Resources		
Extractive materials	Yes	The planning proposal relates to existing large lot residential land.
Rural Housing		
Rural Land Release Strategy	Not applicable	Not applicable
Dwellings on rural land	Not applicable	Not applicable
Dual occupancy	Not applicable.	Not applicable
Forestry		
State forests	Not applicable	Not applicable
Areas other than State Forests	Not applicable	Not applicable
Timber processing plants	Yes	The planning proposal does not rezone land adjoining or adjacent to timber processing plants for residential purposes.

North Coast Regional Environmental Plan (Deemed SEPP)	Consistent	Comment
Part 3 Conservation and the Environment		
The Natural Environment		
Natural areas and water catchments	Yes	The tree clearing provisions of the *Clarence Valley LEP 2011* will not be altered by the planning proposal. Important natural areas will be protected in a single consolidated conservation area.
Coastal Development		
Coastal hazard areas	Not applicable	Not applicable
Coastal foreshore areas	Not applicable	Not applicable
Coastal lands	Not applicable	Not applicable
Part 4 Urban Development		
Strategic Planning		
Urban Land Release Strategy	Yes	The land has been identified for urban development purposes in the *Maclean Urban Catchment Local Growth Management Strategy 2011*.
Retail, commercial or business activities	Yes	Commercial land has been identified in the Gulmarrad residential area to the north of the land.
Principles for urban zones	Yes	The draft LEP will retain the key principles for housing contained within the *Clarence Valley LEP 2011*
Urban Housing		
Principles for housing	Yes	The draft LEP allows a wide range of housing types and densities in the Residential zone
Environmental hazards		
Hazards	Generally	The *Clarence Valley LEP 2011* contains local provisions regulating development on land with significant hazards so as to prevent unsuitable areas of the site being developed for urban purposes.
Flood liable land	No	Not applicable.
Commercial and Industrial development		
Principles for commercial and industrial development	Yes	Commercial land has been identified in the Gulmarrad residential area to the north of the land.
Maintenance of industrial development zonings	Yes	The draft LEP does not reduce any existing industrial zoned land.
Tall Buildings		
Height Controls	Yes	The *Clarence Valley LEP 2011* contains local provisions regulating the heights of buildings.

North Coast Regional Environmental Plan (Deemed SEPP)	Consistent	Comment
Part 5 Regional Infrastructure		
Transport		
Primary arterial roads	Not applicable	Not applicable
Secondary arterial roads	Not applicable	Not applicable
Existing controls for main or arterial roads	Not applicable	Not applicable
Development of new airports	Yes	The draft LEP does not propose development for the purpose of a new airport.
Land in the vicinity of aerodromes	Not applicable	Not applicable
Bus services	Yes	There is an existing bus service between the local villages and Maclean. The additional population and population density resulting from this planning proposal will increase the viability of this bus service.
Utility services		
Servicing urban areas	Yes	Servicing provision has been fully considered as part of the *Maclean Urban Catchment Local Growth Management Strategy 2011*.
Health and Education		
Health and education facilities	Yes	Servicing provision has been fully considered as part of the *Maclean Urban Catchment Local Growth Management Strategy 2011*.
Community use of schools and other facilities	Not Required	Servicing provision has been fully considered as part of the *Maclean Urban Catchment Local Growth Management Strategy 2011*.
Community Services		
Provision of community, welfare and child care services	Generally	Servicing provision has been fully considered as part of the *Maclean Urban Catchment Local Growth Management Strategy 2011*.
Part 6 Tourism and Recreation		
Tourism		
Environmental features and hazards	Yes	The draft LEP does not zone land specifically for tourism development.
Principles for location of tourism development	Yes	The draft LEP does not zone land specifically for the purpose of tourist development.
Provision of services to tourism development	Yes	The draft LEP does not zone land specifically for the purpose of tourist development.
Large scale resort development	Yes	The draft LEP does not zone land specifically to allow large scale resort development.
Residential development and tourism	Yes	The draft LEP does not contain provisions to permit permanent residential accommodation in tourist developments.
Tourism development on farms	Yes	The draft LEP does not contain provisions to permit farm stay accommodation in rural zones.

Planning Resolutions

North Coast Regional Environmental Plan (Deemed SEPP)	Consistent	Comment
Recreation		
Public recreation areas	Yes	The planning proposal includes a significant local recreation area as per the *Maclean Urban Catchment Local Growth Management Strategy 2011*.
Recreation vehicle areas	Yes	The draft LEP does not contain provisions relating to recreation vehicle areas.
Existing zones for public open space	Yes	No existing open spaces zones are affected.
Part 7 Miscellaneous		
Plan preparation – miscellaneous provisions	Not applicable	Not applicable

Consideration of Ministerial Directions under Section 117

No.	Title	Applicable	Consistency
1. Employment and Resources (effective 1 July 2009)			
1.1	*Business and Industrial Zones* A planning proposal must: • give effect to the objectives of this direction • retain the areas and locations of existing business and industrial zones • not reduce the total potential floor space area for employment uses and related public services in business zones • not reduce the total potential floor space area for industrial uses in industrial zones, and • ensure that proposed new employment areas are in accordance with a strategy that is approved by the Director-General of the Department of Planning.	No	Not applicable
1.2	*Rural Zones* A planning proposal must: • not rezone land from a rural zone to a residential, business, industrial, village or tourist zone • not contain provisions that will increase the permissible density of land within a rural zone (other than land within an existing town or village).	No	R5 Large Lot Residential is now a residential zone.
1.3	*Mining Petroleum Production and Extractive Industries* This direction applies when a relevant planning authority prepares a planning proposal that would have the effect of: • prohibiting the mining of coal or other minerals, production of petroleum, or winning or obtaining of extractive materials, or • restricting the potential development of resources of coal, other minerals, petroleum or extractive materials which are of State or regional significance by permitting a land use that is likely to be incompatible with such development.	Yes	Consultation with DPI (Mineral Resources) will occur at Sect 62 stage.
1.4	*Oyster Aquaculture* This direction applies when a relevant planning authority prepares any planning proposal that proposes a change in land use which could result in: • adverse impacts on a Priority Oyster Aquaculture Area or a “current oyster aquaculture lease in the national parks estate”; or • incompatible use of land between oyster aquaculture in a Priority Oyster Aquaculture Area or a “current oyster aquaculture lease in the national parks estate” and other land uses.	Yes	The land is remote from any oyster growing area
1.5	*Rural Lands* This direction applies when: • a relevant planning authority prepares a planning proposal that will affect land within an existing or proposed rural or environment protection zone (including the alteration of any existing rural or environment protection zone boundary) or • a relevant planning authority prepares a planning proposal that changes the existing minimum lot size on land within a rural or environment protection zone.	No	Not applicable
2. Environment and Heritage (effective 1 July 2009)			
2.1	*Environment Protection Zones* • A planning proposal must include provisions that facilitate the protection and conservation of environmentally sensitive areas. • A planning proposal that applies to land within an environment protection zone or land otherwise identified for environment protection purposes in a LEP must not reduce the environmental protection standards that apply to the land (including by modifying development standards that apply to the land). This requirement does not apply to a change to a development standard for minimum lot size for a dwelling in accordance with clause (5) of Direction 1.5 “Rural Lands”.	Yes	Yes – the planning proposal facilitates the protection and conservation of environmentally sensitive areas. Given the limited area it is proposed that the reserved land be included in the residential zoning.

No.	Title	Applicable	Consistency
2.2	*Coastal Protection* A planning proposal must include provisions that give effect to and are consistent with: • the NSW Coastal Policy: A Sustainable Future for the New South Wales Coast 1997, and • the Coastal Design Guidelines 2003, and • the manual relating to the management of the coastline for the purposes of section 733 of the Local Government Act 1993 (the NSW Coastline Management Manual 1990).	No	Not applicable
2.3	*Heritage Conservation* A planning proposal must contain provisions that facilitate the conservation of: • items, places, buildings, works, relics, moveable objects or precincts of environmental heritage significance to an area, in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item, area, object or place, identified in a study of the environmental heritage of the area, • Aboriginal objects or Aboriginal places that are protected under the National Parks and Wildlife Act 1974, and • Aboriginal areas, Aboriginal objects, Aboriginal places or landscapes identified by an Aboriginal heritage survey prepared by or on behalf of an Aboriginal Land Council, Aboriginal body or public authority and provided to the relevant planning authority, which identifies the area, object, place or landscape as being of heritage significance to Aboriginal culture and people.	Yes	Yes – No known items of European Heritage have been identified by the Maclean LEP or the recent Maclean Heritage Study. The LGMS has addressed through consultation aboriginal heritage at a broad scale. No significant impacts are anticipated. A detailed aboriginal archaeological heritage assessment, in accordance with OEH guidelines, will be undertaken as part of development application.
2.4	*Recreation Vehicle Areas* A planning proposal must not enable land to be developed for the purpose of a recreation vehicle area (within the meaning of the Recreation Vehicles Act 1983): • where the land is within an environmental protection zone, • where the land comprises a beach or a dune adjacent to or adjoining a beach, • where the land is not within an area or zone referred to in paragraphs (4)(a) or (4)(b) unless the relevant planning authority has taken into consideration: (i) the provisions of the guidelines entitled Guidelines for Selection, Establishment and Maintenance of Recreation Vehicle Areas, Soil Conservation Service of New South Wales, September, 1985, and (ii) the provisions of the guidelines entitled Recreation Vehicles Act, 1983, Guidelines for Selection, Design, and Operation of Recreation Vehicle Areas, State Pollution Control Commission, September 1985.	No	Not applicable
3. Housing Infrastructure and Urban Development (effective 1 July 2009 - Except for new Direction 3.6 –effective 16 February 2011)			
3.1	*Residential Zones* This direction applies when a relevant planning authority prepares a planning proposal that will affect land within: • an existing or proposed residential zone (including the alteration of any existing residential zone boundary) • any other zone in which significant residential development is permitted or proposed to be permitted.	Yes	A range of lot sizes and housing types is proposed. Residential development of the site represents a significantly improved efficiency of land use as compared to the existing rural residential zoning.
3.2	*Caravan Parks and Manufactured Home Estates* This direction applies when a relevant planning authority prepares a planning proposal. In identifying suitable zones, locations and provisions for caravan parks in a planning proposal, the relevant planning authority must: • retain provisions that permit development for the purposes of a caravan park to be carried out on land, and • retain the zonings of existing caravan parks, or in the case of a new principal LEP zone the land in accordance with an appropriate zone under the Standard Instrument (Local Environmental Plans) Order 2006 that would facilitate the retention of the existing caravan park.	Yes	Permitted in the proposed residential zone.
3.3	*Home Occupations* This direction applies when a relevant planning authority prepares a planning proposal. Planning proposals must permit home occupations to be carried out in dwelling houses without the need for development consent.	Yes	Yes - The Planning proposal does not change the existing provisions for home occupations applying under the *Clarence Valley LEP 2011*.

No.	Title	Applicable	Consistency
3.4	*Integrating Land Use and Transport* This direction applies when a relevant planning authority prepares a planning proposal that will create, alter or remove a zone or a provision relating to urban land, including land zoned for residential, business, industrial, village or tourist purposes. A planning proposal must locate zones for urban purposes and include provisions that give effect to and are consistent with the aims, objectives and principles of: • Improving Transport Choice – Guidelines for planning and development (DUAP 2001), and • The Right Place for Business and Services – Planning Policy (DUAP 2001).	Yes	Yes – The viability of the local bus service will be enhanced. Reducing dependence on cars will also be achieved with the provision of the neighbourhood commercial centre for Gulmarrad for day to day shopping needs and connection to an area wide cycleway network.
3.5	*Development Near Licensed Aerodromes* This direction applies when a relevant planning authority prepares a planning proposal that will create, alter or remove a zone or a provision relating to land in the vicinity of a licensed aerodrome.	No	Not applicable
3.6	*Shooting Ranges* This direction applies when a relevant planning authority prepares a planning proposal that will affect, create, alter or remove a zone or a provision relating to land adjacent to and/ or adjoining an existing shooting range.	No	Not applicable
4. Hazard and Risk (effective 1 July 2009)			
4.1	*Acid Sulfate Soils* This direction applies when a relevant planning authority prepares a planning proposal that will apply to land having a probability of containing acid sulfate soils as shown on the Acid Sulfate Soils Planning Maps.	Yes	The western part of the land is mapped as having Class 5 - Acid Sulfate Soils. There are existing provisions in *Clarence Valley LEP 2011* to deal with this low level risk of potential Acid Sulfate Soils.
4.2	*Mine Subsidence and Unstable Land* This direction applies when a relevant planning authority prepares a planning proposal that permits development on land that: • is within a mine subsidence district, or • has been identified as unstable in a study, strategy or other assessment undertaken	No	Not applicable
4.3	*Flood Prone Land* This direction applies when a relevant planning authority prepares a planning proposal that creates, removes or alters a zone or a provision that affects flood prone land. A planning proposal must include provisions that give effect to and are consistent with the NSW Flood Prone Land Policy and the principles of the Floodplain Development Manual 2005 (including the Guideline on Development Controls on Low Flood Risk Areas). A planning proposal must not rezone land within the flood planning areas from Special Use, Special Purpose, Recreation, Rural or Environmental Protection Zones to a Residential, Business, Industrial, Special Use or Special Purpose Zone.	No	Not flood prone land.
4.4	*Planning for Bushfire Protection* This direction applies when a relevant planning authority prepares a planning proposal that will affect, or is in proximity to land mapped as bushfire prone land. In the preparation of a planning proposal the relevant planning authority must consult with the Commissioner of the NSW Rural Fire Service following receipt of a gateway determination under section 56 of the Act, and prior to undertaking community consultation in satisfaction of section 57 of the Act, and take into account any comments so made.	No	The land is not mapped as bushfire prone land.
5. Regional Planning (effective 1 July 2009 - Except for new Direction 5.4 effective 29 November 2009 & Direction 5.2 effective 3 March 2011)			
5.1	*Implementation of Regional Strategies* This direction applies to land to the *Mid North Coast Regional Strategy*.	Yes	Yes - The Planning Proposal is consistent with the *Mid North Coast Regional Strategy*.

No.	Title	Applicable	Consistency
5.2	*Sydney Drinking Water Catchments* This Direction applies to the Sydney drinking water catchment.	No	Not applicable
5.3	*Farmland of State and Regional Significance on the NSW Far North Coast* This direction applies to: • Ballina Shire Council, • Byron Shire Council, • Kyogle Shire Council, • Lismore City Council, • Richmond Valley Council, and • Tweed Shire Council	No	Not applicable
5.4	*Commercial and Retail Development along the Pacific Highway, North Coast* This Direction applies to those council areas on the North Coast that the Pacific Highway traverses, being those council areas between Port Stephens Shire Council and Tweed Shire Council, inclusive	No	Not applicable
5.5	*Development in the vicinity of Ellalong, Paxton and Millfield (Cessnock LGA)* *(Revoked 18 June 2010)*	No	Not applicable
5.6	*Sydney to Canberra Corridor (Revoked 10 July 2008. See amended Direction 5.1)*	No	Not applicable
5.7	*Central Coast (Revoked 10 July 2008. See amended Direction 5.1)*	No	Not applicable
5.8	*Second Sydney Airport: Badgerys Creek* This direction applies to land shown within the boundaries of the proposed airport site and within the 20 ANEF contour as shown on the map entitled "Badgerys Creek–Australian Noise Exposure Forecast–Proposed Alignment–Worst Case Assumptions'', this being found in Appendix U of the Second Sydney Airport Site Selection Program Draft Environmental Impact Statement within Fairfield City Council, Liverpool City Council, Penrith City Council and Wollondilly Shire Council local government areas.	No	Not applicable
6. Local Plan Making (effective 1 July 2009)			
6.1	*Approval and Referral Requirements* This direction applies when a relevant planning authority prepares a planning proposal. A planning proposal must: • minimise the inclusion of provisions that require the concurrence, consultation or referral of development applications to a Minister or public authority, and • not contain provisions requiring concurrence, consultation or referral of a Minister or public authority unless the relevant planning authority has obtained the approval of that Authority.	Yes	No concurrence provisions are proposed.
6.2	*Reserving Land for Public Purposes* This direction applies when a relevant planning authority prepares a planning proposal. A planning proposal must not create, alter or reduce existing zonings or reservations of land for public purposes without the approval of the relevant public authority and the Director-General of the Department of Planning (or an officer of the Department nominated by the Director-General).	No	Not applicable
6.3	*Site Specific Provisions* This direction applies when a relevant planning authority prepares a planning proposal that will allow a particular development to be	No	Not applicable

No.	Title	Applicable	Consistency
	carried out. A planning proposal that will amend another environmental planning instrument in order to allow a particular development proposal to be carried out must either: • allow that land use to be carried out in the zone the land is situated on, or • rezone the site to an existing zone already applying in the environmental planning instrument that allows that land use without imposing any development standards or requirements in addition to those already contained in that zone, or • allow that land use on the relevant land without imposing any development standards or requirements in addition to those already contained in the principal environmental planning instrument being amended. A planning proposal must not contain or refer to drawings that show details of the development proposal.		
7. Metropolitan Planning (effective 1 February 2010)			
7.1	*Implementation of the Metropolitan Plan for Sydney 2036*	No	Not applicable

Appendix

D

Ecological Assessment

FLORA and FAUNA ASSESSMENT

Lot 71 in DP 1156995
33 Major Mitchell Drive,
Gulmarrad

Prepared on behalf of:
Jim Bricknell

Dr DAVID SHARPE (BAppSci - Hons, PhD)
DEBORAH PERRY (BAppSci - Hons; Dip. Hort.)
D & D ENVIRONMENTAL CONSULTANTS
P.O. Box 6314, South Lismore NSW 2480
August 2012

Executive Summary

The Site is Lot 71 in DP1156995, 33 Major Mitchell Drive, Gulmarrad. The current Planning Proposal is for a rezoning of the land from 1 Rural (Residential) to General Residential. Accordingly, the Site was inspected to assess its potential to support threatened and migratory flora and fauna species listed under the NSW *Threatened Species Conservation Act 1995* (*TSC Act*) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*). An assessment of vegetation condition was made with respect to the NSW *Native Vegetation Act 2003* (*NV Act*) and a SEPP 44 Koala habitat assessment was also undertaken. A review of threatened species records in the locality and a field survey were conducted.

Historically, the Site was cleared and grazed. Many canopy trees were cleared under Council approval given in DA2004/0220 and modifications in DA MOD2010/0042. The current vegetation is open woodland that is regularly slashed.

The Site was thoroughly searched for flora and fauna habitat on March 27 2012. No threatened flora or fauna species listed under either the *TSC Act* or the *EPBC Act* were recorded on the Site. However, potential habitat for 16 threatened fauna species is present. To mitigate any impact on potential threatened species from using the site an area of 3 ha of significant vegetation will be retained and consolidated along the northern and western boundaries of the site to be used as a corridor.

The proposal is unlikely to significantly impact on threatened or migratory species listed under the *TSC Act* and or *EPBC Act*. Therefore, a Species Impact Statement is not required under the *TSC Act*, nor does the proposal require referral to Commonwealth Department of Environment Water Heritage and the Arts prior to development consent.

The current proposal to further clear native vegetation to accommodate the change of zoning from Rural Residential to Residential does not require consent by the Minister for Climate Change and the Environment under the *NV Act*.

Table of Contents

1. Introduction

D & D Environmental Consultants have been engaged by Jim Bricknell to conduct a flora and fauna assessment of Lot 71 in DP1156995, 33 Major Mitchell Drive, Gulmarrad (Figure 1[1]), with respect to a rezoning proposal. The Site is within the Clarence Valley Council (CVC) Local Government Area, NSW.

A commenced development consent (DA 2004/0720) exists over the Site. As the current proposal (see below) will require additional tree removal, this report assess the potential presence of threatened flora and fauna species or their likely habitat with the intention of identifying development constraints and assessing the impact of development on the Site.

The specific objectives of the flora and fauna survey and reporting are to:

- Review existing information in flora and fauna databases;
- Classify existing vegetation communities and describe their physical, structural and floristic site attributes;
- Discuss the significance of any threatened flora or fauna species that are likely to use the Site; and
- Recommend amelioration measures to minimize any potential impacts to threatened flora or fauna from the proposed development.

1.1 Relevant Legislation

The Planning Proposal to change the rezoning must consider the following legislation:

- The NSW *Environmental Planning and Assessment Act* 1979 (*EP&A* Act), including State Environmental Planning Policy No. 44 (SEPP 44) Koala Habitat Protection;
- The NSW *Threatened Species Conservation Act* 1995 (*TSC Act*);
- The Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (*EPBC Act*);

[1] Note, all Figures are given in Appendix 1.

- The NSW *Native Vegetation Act* 2003 (*NV* Act); and
- The NSW *Rural Fires* Act 1997, as amended by, most recently, the NSW - *Rural Fires and Environmental Assessment Legislation Amendment* Act 2002 (*RF&EALA* Act).

1.2 Description of Site

The Site covers a total of 18.1 ha and is about 10 - 20 m above sea level. Major Mitchell Drive is within the expanding urban area of Gulmarrad about 2 km south-west of the town of Maclean (Figures 1). The site was originally dry sclerophyll forest that was partially cleared following approval for a rural residential subdivision from the former Maclean Shire Council in DA2004/0220 and modifications under DA MOD2010/0042 in 2004. Around 12 ha of continuous tree cover remains on the Site. This area has been underscrubbed and is now subject to regular slashing. The remaining 6 ha has been cleared except for some scattered trees (Figure 2).

1.3 Proposed Activities

The current proposal is to rezone the land from 1 Rural (Residential) to Residential. The Site is outside the Gulmarrad Bushfire Hazard Zone, therefore a Bushfire Control Management Plan is not required for the proposed rezoning.

DA 2004/0720 required 2.8 ha (15%) of the existing vegetation to be retained on the Site. CVC (D. Morrison personal communication) require the equivalent area of vegetation to be retained under the planning proposal. The retained vegetation must be consolidated along the Site's northern boundary and be designed to retain ecological function. Thus, vegetation retention is an integral part of the project's design. The area outside this footprint can be used for residential development and associated infrastructure.

The rezoning of the Site is sought so that a residential development can occur. The development footprint would cover 15 ha (83% of the Site). Of this, 6 ha are largely cleared and 9 ha is disturbed forest. Three hectares of disturbed forest would remain undeveloped and allowed to naturally regenerate (Figure 3).

The retained forest would occur as a linear strip along the northern and western boundaries of the Site, with a central node along the northern boundary to provide a

more consolidated area of habitat (Figure 3). This node is situated in the area of greatest hollow-bearing tree density on the Site. This arrangement of habitat also allows the full floristic diversity currently available on the Site to remain post-development. The function of the retained habitat is to maintain north-south connectivity of wildlife across the Site. To help achieve this, the provision of foraging and shelter resources is also facilitated.

1.4 Context

The Site is within the Clarence Catchment, north-eastern NSW. It is bounded on the east and south by rural residential blocks with associated dwellings. To the west across Sheehans Lane is vacant grazing land. Land to the north is mostly cleared with scattered trees. This property is also subject to a current DA, seeking approval to rezone from Rural Residential to Residential land.

2. Methods

2.1 Review of Existing Threatened Species Records

The habitat available on the Site was assessed for its potential to support threatened flora and fauna species listed under the *TSC Act* and the *EPBC Act*. Migratory fauna listed under the *EPBC Act* were also considered. A list of threatened species previously recorded within 10 km of the Site was obtained from the NSW DECC Atlas of NSW Wildlife by interrogating the database centred on the map coordinates 521775E and 6738100N. The database on "Matters of National Environmental Significance" held by the Commonwealth Department of Environment, Water, Heritage and the Arts was also explored for the area 10 km around the Site. This database bases its search on the presumed availability of potential habitat, not actual records. These two information sources were used to compile a list of key habitat features and habitat types (e.g. rainforest, freshwater swamp, hollow-bearing trees) that could be used to include or exclude threatened and migratory fauna species based on the presence or absence of these key features (Table 1). However, the habitat assessment was not restricted to species that have been recorded within 10 km of the Site or species that are necessarily dependent on the key habitat features that were documented. Any threatened flora or fauna species that had the potential to use the habitat on the Site were considered. All tables are presented in Appendix 1.

2.2 Flora

The Site was thoroughly searched for five hours on 27 March 2012 for threatened flora species listed under the *TSC* Act or the *EPBC* Act. The DECC Atlas of NSW Wildlife and the Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA) "Matters of National Significance" database were used to target the survey effort. The survey method used was the random meander technique (Cropper 1993) whereby the surveyor walks randomly throughout the Site across all vegetation communities to search for threatened flora species to generate a list of species in each vegetation type. This effort was spread evenly across the Site and the time taken allowed for the entire site to be traversed thoroughly. Thus, the relatively small area and the extent of this survey is considered to constitute a substantial effort (average time spent per hectare) searching for threatened flora species relative to the area of the Site. In each vegetation type, the dominant species in the canopy, midstorey and groundcover layers in each community encountered was assessed. The vegetation structure was classified using a modified system of Walker and Hopkins (1990). In each community the height, percent foliage projective cover (FPC) of the vegetation and the maximum and average diameter at breast height (DBH) of the trees were estimated in each of the layers.

2.3 Fauna

The Site was thoroughly searched for five hours on 27 March 2012 to document the habitat available to threatened fauna species listed under the *TSC* Act or the *EPBC* Act. Both broad habitat types (e.g. rainforest, wetlands) and micro-habitat features (e.g. hollow-bearing trees, fallen logs, nectar-producing trees) were documented. The activity and/or feeding signs of curtained threatened species were also documented (e.g. Koala *Phascolarctos cinereus* pellets, chewed *Allocasuarina* cones indicating feeding activity by the Glossy Black-cockatoo *Calyptorhynchus lathami*). These are detailed in Table 1. The entire Site was inspected during the site visit.

3. Results and Discussion

3.1 Flora

3.1.1 Flora on the Site

Many of the mature trees at the Site had been cleared under a current approval. Likewise, there were few midstorey trees and the groundcover had been regularly and recently slashed. A total of 59 flora species, including nine (9) weeds, in 30 families were located on the Site (Table 3). All species found were common to the north coast region and were not at the limits of their distribution. No threatened flora species (see Table 3) or ROTAP (Rare or Threatened Australian Plant (Briggs & Leigh, 1996)) were located during the surveys of the Site. The potential for threatened species to occur but were undetected will be addressed in Section 4.1.2 of this report.

Using the remaining dominant species present at the Site, two forest types were identified on the Site (see Photos 1-6 in Appendix 2). These were classified using the Draft Clarence Regional Vegetation Management Plan (DLWC 2002 and mapped in Figure 2). The majority of the site was Type 65 'Heathy Scribbly Gum' dominated by 20 m high Northern Scribbly Gum *Eucalyptus signata* with some Red Mahogany *E. resinfera* and a few Pink Bloodwoods *C. intermedia* and Thin-leaved Stringybark *E. eugeniodes*. The canopy formed a open woodland with an FPC was around 15-18% and a DBH of 20-60 cm with occasional trees to 90 cm. As previously stated, the midstorey was absent in the whole but there some regrowth Black She-oaks *Allocasuraina littoralis* and *Banksia oblongifolia* at the base of canopy trees. These were around 8 m high with a DBH of 5-10 cm. The groundcover has been regularly slashed and is currently dominated by native and exotic grasses with remnant native shrubs with heights of up to 30cm.

The remaining vegetation consisted of a small area to the north of the previous vegetation. Because the trees in this area were so few and scattered this vegetation type could not be classified according to DLWC (2002). This area contained a few 18 m high *Melaleuca seiberi,* with scattered Red Mahogany, *Angophora woodsiana* and a few Paperbark *Melaleuca quinquenervia* and Scribbly Gum. The FPC was around 5% and the DBH was 25-60 cm. The cleared nature of the site meant that the few remaining midstorey trees were confined to the base of canopy trees. The

groundcover was mostly very short grass (<20 cm high) that is heavily grazed by Grey Kangaroos.

The desktop study showed fifteen (15) threatened species were listed as having the potential to occur within 10 km of the Site provided the habitat was suitable. Two (2) were listed under the *TSC Act* and thirteen (13) on the *EPBC Act* (Tables 3 & 4), however, one (1) of the latter was also listed under the *TSC Act*. Therefore, excluding overlaps between lists, there were fourteen (14) potential threatened flora species. Suitable habitat, such as littoral or subtropical rainforest, grassy headlands, twigs over water, creeks or cliffs, for 11 of the 14 targeted threatened species did not occur on the Site allowing them to be discounted (see Tables 3 & NPWS 2002, Bishop 1996). The habitat of the remaining three (3) species may occur on the Site and are considered further in Section 3.1.1.1.

3.1.2 Potential Threatened Flora

The potential for other threatened flora species to be present on the Site requires further assessment. The habitat of three (3) threatened species: the Lesser Swamp-orchid *Phaius australis*, Tall Knotweed *Persicaria elatior* and a Guinea Flower *Hibbertia marginata* had the potential to occur at the Site (Table 2). These three species will be considered further below.

The Swamp Orchid *P. australis* occurs in *M. quinquinervia* swamps and sclerophyll forest that is periodically inundated (Harden 1993; pers. obs. D. Perry). As it's name suggest, the Swamp Orchid is usually found in swampy habitats, none of which occur on the subject. There are currently six (6) records in the local area, four (4) of which were recorded by the author in 2000. It is in my opinion that while the Site does experience periods of localised surface water retention, it was not suitable habitat for the Swamp Orchid and was not located despite recent and prior targeted surveys.

The Tall Knotweed *P. elatior* occurs in damp or swampy places. As stated above, the Site experiences surface water retention during periods of heavy inundation it would not be classed as having swampy vegetation. Therefore, despite both recent and prior targeted surveys, together with unsuitable habitat, the Tall Knotweed was not considered to be present but undetected on the Site.

Hibbertia marginata is restricted to the southern Richmond Range between Casino and Grafton (NPWS 2002). It occurs on sandy soils in higher elevated areas among sandstone outcrops with dry heathy vegetation (D. Perry pers. obs.). Prior to recent clearing of the understory, the Site did contain some heathy elements to the vegetation. However, the site is at low elevation with heavy clay soils that at times retains surface water. Therefore, despite recent and prior targeted surveys in 2004 this species was not detected.

Despite targeted surveys, these species were not recorded on the Site. The Site is a relatively small area and was highly modified making it easy to traverse and, therefore, it is unlikely that the above three (3) species were present but undetected.

3.1.3 Noxious Weeds

Lantana *Lantana camara* is listed as s class 4 noxious weed under the *Noxious Weed Act* 1993 (DPI 2005). As such the growth and spread of Lantana must be controlled according to the measure specified in a management plan published by the local control authority and the plant may not be sold, propagated or knowingly distributed (DPI 2005). This weed will be removed during proposed vegetation clearing and any future appearances will be suppressed.

3.1.4 Relevance to the Native Vegetation Act 2003

Clearing was recently approved by the NSW Department of Infrastructure, Planning and Natural Resources to accommodate the construction of access roads for future building envelopes under DA 2004/0720. This involved the removal of many canopy trees and all of the midstorey vegetation. The site is regularly slashed thereby limiting the ground cover to herbs and grasses. The condition of the vegetation to the north of the site has been highly modified and currently supports few trees. The current proposal to rezone the land from Rural (Residential) to General Residential does not require additional approval from the Minister from Climate Change and the Environment under the *NV Act*.

3.2 Fauna

3.2.1 Database Search

The search of the DECC database revealed 41 threatened fauna species listed under the TSC Act have been recorded within 10 km of the Site (Table 3). The "Matters of National Significance" search suggested that another 19 threatened species listed under the EPBC Act are predicted to occur in the Locality of the Site (MNES search, Appendix 3). Thus, the desktop study suggests that a total of 60 threatened fauna species have the potential to occur on the Site provided the habitat is suitable.

3.2.2 Fauna Habitat Characteristics

The habitat on the Site consists of disturbed dry Eucalypt forest. The canopy has been largely removed from the eastern part of the Site, but some scattered trees remained. The canopy is largely intact on the western side of the Site, but some trees have been removed to permit the construction of internal roads under the approved DA 2004/0720. The remaining forest has a floristically diverse canopy (Table 3), including some winter/spring flowering trees. Numerous trees with hollows are scattered across the Site, but show some clustering toward the central northern border. The midstorey vegetation has been removed and the groundcover is disturbed by regular slashing. This lowers or impedes the value of the Site to fauna requiring understorey shrubs or a complex groundcover for shelter (e.g. logs) or foraging.

The Site is relatively small in area (~18 ha, but only 13 ha is covered by continuous tree cover), but it has a moderate degree of connectivity to habitat elsewhere in the Locality (Figure 2). This would enable fauna to maintain a presence on the Site by regular dispersal, enable the Site to be used as part of a home-range area or permit dispersal to occur across the Site (i.e sub-adult dispersal, seasonal movements) depending on the ecological requirements, behaviour and mobility of different fauna species.

3.2.3 Presence of Threatened Fauna

Broad Habitat Type Not Present

Of the 41 species listed in Table 4, the broad habitat required by 16 of these is clearly not available on the Site. There was no rainforest, wet Eucalypt forest, heath, coastal

wetlands, open-water, estuarine or inter-tidal habitat on the Site. This suggests that species including the Green and Gold Bell-frog (*Litoria aurea*), Giant Barred Frog (*Mixophyes iteratus*), Osprey (*Pandion haliaetus*), Black-necked Stork (*Ephippiorhynchus asiaticus*), Brolga (*Grus rubicunda*), migratory waders (Family Charadrii), Ground Parrot (*Pezoporus wallicus wallicus*), Eastern Grass Owl (*Tyto capensis*), Wompoo Fruit-dove (*Ptilinopus magnificus*), Barred Cuckoo-shrike (*Coracina lineata*), or the Large-footed Myotis (*Myotis adversus*) would not occur on the Site. Thus, 25 species listed under the TSC Act require further consideration (Table 4). Only one of these, the Grey-headed Flying-fox, is also listed under the EPBC Act. No further species listed under the EPBC Act (Appendix 3) require further consideration because the habitat on the Site is not suitable.

No Suitable Micro-habitat

The requisite micro-habitat for six species listed in Table 4 is not available on the Site (Table 1). Accordingly, it is unlikely that the following species would occur on the Site.

The White-crowned Snake (*Cacophis harriettae*) occurs in forests, where it requires deep litter for shelter and foraging on small lizards. Although the Site supports dry open forest, regularly slashing of the Site has simplified the groundcover and reduced the amount of leaf litter. Thus, there are no suitable micro-habitats for the White-crowned Snake on the Site.

The Diamond Firetail (*Stagonopleura guttata*) occurs in drier open forests and woodlands, where it feeds predominately on grass seeds. It occurs primarily on the western slopes and plains and is likely to be only an occasional visitor to north-east NSW. Regular slashing of the groundcovers would restrict the availability of seeds on the Site. This factor, in conjunction with its irregular visitation to the NSW north coast, suggests that the Site is not likely to be used by the Diamond Firetail.

The Masked Owl (*Tyto novaehollandiae*) feeds mainly on small to medium-sized terrestrial mammals. It has very large home-ranges of up to 1000 ha. While the Masked Owl is likely to occur in the Locality, it is unlikely to use the Site. Underscrubbing, regular slashing and the lack of fallen logs on the Site indicate that suitable micro-habitats for its prey are absent. Thus, the Site is unlikely to be

foraging habitat for the Masked Owl. The Masked Owl is unlikely to roost or nest on the Site because no white wash, owl pellets or prey remains, which is indicative of roosting and breeding sites, were observed.

The Common Planigale (*Planigale maculata*) occurs in a variety of habitats, including forests. Requisite conditions appear to be a complex groundcover and proximity to water. Regular slashing of the Site has simplified the groundcover. Moreover, the Site is not proximate to permanent water. While there were some paperbark trees on the Site (Table 3), they occurred in an area where the canopy has already been largely removed and the grass cover suggests that they are only filled during periods of heavy rain. It is unlikely that the Common Planigale occurs on the Site.

The Rufous Bettong (*Aepyprymnus rufescens*) occupies drier forests, frequenting areas with a sparse or grassy understorey. It feeds on for grass, herbs, roots, tubers and fungi, and requires grassy tussocks for shelter. The slashing of the Site has removed all grassy tussocks and probably restricted the abundance and diversity of food items. Although the Rufous Bettong is expected to have a presence in the Locality, it is unlikely that it would occur on the Site.

Little Bent-wing Bat (*Miniopterus australis*) occurs in a variety of moister habitat types, where is typically feeds between the canopy and well-developed midstorey or in dense coastal scrub. It roosts in caves and tunnels and occasionally tree hollows. The habitat on the Site consists of an open tree canopy and lacks any midstorey vegetation. Thus, the Site is not likely to be foraging habitat for this species. Moreover, there are no caves or tunnels on the Site. The Little Bent-wing Bat prefers these structures for roosting. While there is a small possibility that hollow-bearing trees on the Site may be used for roosting, there are areas of forest near the Site that have both hollow-bearing trees and a dense forest structure, suggesting that these areas would be preferred for roosting. On balance, it is unlikely that the Little Bent-wing Bat would use the Site for roosting.

The Eastern Cave Bat (*Vespadelus troughtoni*) occurs in drier forests and woodlands. Within these broad habitats, it appears to be restricted to area where cliffs and rock crevices are present. It is a cave roosting species, so rocky areas are clearly important

for daytime shelter, however, it also appears to spend most of its active time foraging in such areas. Therefore, the Eastern Cave Bat would not forage or roost on the Site.

The Southern Myotis (*Myotis macropus*) forages over water for aquatic insects and small fish. It roosts in a variety of structure, typically near water. There is no permanent water on the Site. Therefore, the Site is not foraging or roosting habitat for the Southern Myotis.

Reasonable Indications of Lack of Use of the Site

Three species present in the Locality leave reliable and persistent signs of activity. Thus, a failure to detect such signs indicates that these species are unlikely to occur on the Site.

The Glossy Black-cockatoo (*Calyptorhynchus lathami*) feeds exclusively on the seeds of she-oaks (*Allocasuarina* spp.). A very small number of Black She-oak (*Allocasuarina littoralis*) occurred on the Site, while some further individuals were present along the verge of Sheehans Lane along the fenceline. However, no trees displayed evidence of use (chewed fruiting cones) by the Glossy Black-cockatoo. Thus, the Site is not used for foraging by this species.

The presence of the Koala (*Phascolarctos cinereus*) is strongly influenced by the availability of primary food trees: Forest Red Gum (*Eucalyptus tereticornis*), Swamp Mahogay (*E. robusta*), Scribbly Gum (*E. racemosa*) and Tallowwood (*E. microcorys*). Two of these, Scribbly Gum and Tallowwood, are present on the Site. Koalas leave distinctive, persistent pellets beneath trees and scratches on smooth-barked trees such as Scribbly Gum. A number of Scribbly Gum and Tallowwood trees on the Site were assessed for signs of Koala activity, however, there was no evidence that any of these trees were used (Table 5). Thus, it is reasonable to conclude that the Site does not provide habitat for the Koala.

The habitat on the Site is broadly suitable for the Yellow-bellied Glider (*Petaurus australis*). This species feeds on nectar, honeydew, sap and insects. Sap is used at all known sites, leaving distinctive V-notches on incised trees (Mackowski 1988, Goldingay 2000). Tree hollows are required for daytime shelter and for breeding. Home-ranges are large, typically around 50-60 ha per group, which is much larger

than the area of the Site (18 ha). The Site is unlikely to be used by the Yellow-bellied Glider due to the extent of clearing in the Locality as it appears less tolerant of fragmented habitat than the smaller gliding possums. Moreover, no sap feeding trees were recorded on the Site, further suggesting that the Yellow-bellied Glider is unlikely to be present.

Species Likely to be Present

The remaining 16 species listed in Table are likely to use the Site either regularly, intermittently or seasonally.

The Emu (*Dromaius novaehollandiae*) is part of the North Coast Endangered Population. It occurs in Yuraygir NP and surrounds and across the Clarence River in Bundjalung NP. The Site is near the northern boundary of the Yuraygir sub-population. The Site itself does not provide food resources for the Emu population, but it is possible that individuals would sometimes move across it. The Emu may be vulnerable to vehicle strike and an increased human presence, due to residential development, may exacerbate this threat.

The Little Eagle (*Hieraaetus morphnoides*) and Square-tailed Kite (*Lophoictinia isura*) are raptors with large territories. The Little Eagles feeds mainly on reptiles, birds and mammals, while the Square-tailed Kite specialises on the nestlings of passerine birds. Both species build large stick nests for breeding. Both species may use the Site for foraging on occasion. However, the absence of large stick nests on the Site indicates that breeding does not occur there.

The Barking Owl (*Ninox connivens*) and Powerful Owl (*Ninox strenua*) have large territories. Both species require tree hollows for breeding, but roost in leafy trees. There is some prey partitioning between these species. The Powerful Owl primarily targets medium to large arboreal mammals. While the diet of the Barking Owl is a little broader, small to medium arboreal mammals form a large part of its diet. However, both species will also consume other prey, such as reptiles and birds. Territory sizes are invariably large, ranging from several hundred to a thousand or more hectares. Either of these owl species may use the Site at least occasionally for foraging. The presence of hollow-bearing trees suggests that arboreal mammal prey would be available. Neither of these species is likely to roost or nest on the Site

because no white wash, owl pellets or prey remains, which is indicative of roosting and breeding sites, were observed.

The Black-chinned Honeyeater (*Melithreptus gularis gularis*) is essentially a species of the western slopes of the divide. However, it is known from a few coastal localities, including the Clarence catchment. It has a home-range of around 5 ha, but it can be locally nomadic in response to food availability. The Black-chinned Honeyeater forages on the trunk and outer canopy, feeding mainly on insects and honeydew. Nectar is also used, but is of lesser importance. The Site may be used occasionally for foraging.

The Grey-crowned Babbler (*Pomatostomus temporalis temporalis*) inhabits drier forests and woodlands. Family groups occupy permanent territories and are noisy and conspicuous. It feeds on invertebrates, either by foraging on tree trunks and branches or on the ground, digging and probing amongst litter and tussock grasses edges. The Grey-crowned Babbler was not recorded during the Site inspection and regular slashing maintains a groundcover that is poorly suited to foraging by this species. However, the Site could form part of a territory and be occasionally used for foraging. It is unlikely that the Grey-crowned Babbler would breed on the Site.

The Varied Sittella (*Daphoenositta chrysoptera*) is a relatively sedentary species that occupies drier forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches. It feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy. Although not recorded during the Site inspection, it is likely that the Varied Sittella would use the Site occasionally for foraging.

The Spotted-tailed Quoll (*Dasyurus maculatus*) occurs in a variety of forest types. It has a very large territory that can be up to 7.5 km^2 for females and 35 km^2 for males. Thus, the Site would only be a small part of a territory. Medium-sized mammals are the major prey items, but small and large mammals, birds and reptiles are occasionally taken (Belcher 1995, Dawson *et al.* 2007). Hollow-bearing trees, fallen logs and rock crevices are used as den sites; only hollow-bearing trees occur on the Site. Features such as large logs and rock piles are used as latrine sites, which

function as territory markers. These features are not present on the Site. Given the large territory of the Spotted-tailed Quoll, it is possible that the Site is used occasionally for foraging and/or may be used to facilitate movement across the landscape.

The Brush-tailed Phascogale (*Phascogale tapoatafa*) is found in drier forests and woodlands. Home-ranges are up to 40 ha for females and 100 ha for males. The Brush-tailed Phascogale forages in trees for insects, but it may occasionally consume nectar. Tree hollows are required for daytime shelter and for breeding. The Site may be used by the Brush-tailed Phascogale, but it would only constitute part of a home-range. The Site may also be used as dispersal habitat. However, it is possible that hollow-bearing trees on the Site may be used for shelter and possibly for breeding.

The Squirrel Glider (*Petaurus norfolcensis*) feeds on nectar, honeydew, sap and insects. However, in relation to the Yellow-bellied Glider, sap is less important in the diet and it is more reliant on nectar. The Squirrel Glider generally requires access to winter and spring flowering trees, such as Tindales Stringbark (*Eucalyptus tindaliae*), Northern Grey Ironbark (*E. siderophloia*) and Narrow-leaved Red Gum (*E. seeana*), which are present on the Site. Moreover, home-ranges are relatively small, being around 7 ha per group. Tree hollows are required for daytime shelter and for breeding. It is likely that the Squirrel Glider occurs on the Site, but only one or two groups would be present.

The Grey-headed Flying-fox (*Pteropus poliocephalus*) feeds on nectar and fruit. It roosts in moist forest types near water. There are no fruiting trees on the Site. However, a range of flowering trees are present and seasonal use of the Site would be expected when nectar is available. The nearest known roost is in Maclean, about 3 km from the Site.

The Eastern Freetail Bat (*Mormopterus norfolkensis*) utilises dry forests, woodlands and swamp forests. It is a swift, high flying species that forages above the forest canopy. It is expected to forage in the Locality, including over the Site. It requires tree hollows for roosting and breeding. It is possible that the Eastern Freetail Bat uses the hollow-bearing trees on the Site.

The Hoary Wattled Bat (*Chalinolobus nigrogriseus*) occurs in drier forests. Forests dominated by Scribbly Gum (*Eucalytpus racemosa*) and Bloodwoods (*Corymbia* spp.), such as that found on the Site, are a preferred habitat type. Moreover, it flies fast below the forest canopy and, accordingly, seems to prefer sites with an open understorey. The understorey on the Site has been removed and, therefore, it may represent a favoured foraging site. The Hoary Wattled Bat roosts and breeds in hollow-bearing trees, suggesting it may use tree hollows on the Site.

The Greater Broad-nosed Bat (*Scoteanax rueppellii*) uses rainforest and wet and dry Eucalypt forest, but it is most commonly found in tall, wet Eucalypt forest. It usually forages along forest edges, frequently using rivers and creeks. It roosts and breeds in hollow-bearing trees. The Site probably represents marginal foraging habitat for this species, but some use of the forest edges cannot be discounted. While it requires tree hollows, it is more likely to roost and breed in more preferred habitat types.

Thus, a total of 29 threatened species can be excluded from further consideration because of the unavailability of suitable habitat (e.g. no rainforest present), because the habitat was structurally unsuitable (i.e. no suitable micro-habitat) or because it was possible to exclude them based on the lack of reliable feeding signs (Koala, Glossy Black-cockatoo, Yellow-bellied Glider). This leaves 16 species listed under the *TSC Act* that require assessment under Part 5a of the *EP&A Act*. Two of these species (Spotted-tailed Quoll, Grey-headed Flying-fox) are also listed under the *EPBC Act* (Table a). No remaining threatened species listed under the *EPBC Act* (Appendix 3) are likely to use the Site.

Consideration of the report on "Matters of National Significance" (Appendix 3) a further three species listed as migratory under the *EPBC Act* may occur or have potential habitat in the vicinity of the Site. Most of the migratory species listed in the MNES report require wetland or estuarine habitats and would, therefore, not occur on the Site (e.g. Common Sandpiper *Actitis hypoleucos*, Great Egret *Ardea alba*). Similarly, forest birds requiring a dense understorey (e.g. Black-faced Monarch *Monarcha melanopsis*, Satin Flycatcher *Myiagra cyanoleuca*) would not occur on the Site because the habitat structure is unsuitable. The Rainbow Bee-eater (*Merops ornatus*) requires habitats on sandy soils for breeding, but may forage in nearby forest type. The soil on the Site is a heavy clay, therefore, the Rainbow Bee-eater would not

breed there, but it may use it for foraging. The Fork-tailed Swift (*Apus pacificus*) and the White-throated Needletail (*Hirundapus caudacutus*) are nomadic species that forage for insects in open air space and do not tend to land while in Australia. These species are likely to forage over the Site. Thus, there are three migratory species listed under the *EPBC Act* that may occur on or over the Site.

3.2.4 SEPP 44 Koala Habitat Assessment

In accordance with SEPP 44, a Koala habitat assessment was undertaken on the Site. SEPP 44 applies to land greater than 1 ha in area; the Site is about 18 ha. If the land, or land under the same ownership, is greater than 1 ha, then the following steps must be followed:

Step 1 – Is the land potential Koala habitat?

SEPP 44 defines potential Koala habitat as "areas of native vegetation where the trees of the types listed in Schedule 2 [of SEPP 44] constitute at least 15% of the total number of trees in the upper or lower strata of the tree component". Trees listed in Schedule 2 that occur on the NSW north coast are: Forest Red Gum (*Eucalyptus tereticornis*), Tallowwood (*E. microcorys*), Scribbly Gum (*E. signata*) and Swamp Mahogany (*E. robusta*). If this is true, then Step 2 must be conducted prior to development consent.

Two tree species listed under Schedule 2 of SEPP 44, Scribbly Gum and Tallowwood, were found on the Site (Table 5). These two species constituted about 15% of all trees present on the Site. Therefore, the Site is potential Koala habitat.

Step 2 – Is the land core Koala habitat?

SEPP 44 defines core Koala habitat as "an area of land with a resident population of Koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings and historical records of a population". If this is true, then Step 3 must be conducted prior to development consent.

Scratches on trees (particularly smooth-barked trees, such as Scribbly Gum) and scats beneath any food trees can represent the first step in determining whether Koalas use an area of habitat. These signs can also help to determine which tree species are being selected and how many are used. Koala scratches on smooth-barked Eucalypts

would persist from at least the last annual bark shed, which is likely to have been at the beginning of the previous summer.

A total of 45 Tallowwood and Scribbly Gum trees from across the Site were searched for Koala scratches and/or scats. On this basis, no evidence was found that Koalas have used the site in the previous five months or so. Therefore, the Site does not appear to be core Koala habitat.

Step 3 – Can development consent be granted in relation to core Koala habitat?

Essentially, development consent cannot be issued on land that is core Koala habitat unless a plan of management is prepared for that land. There are two types of management plan that can be prepared under SEPP 44. Firstly, a plan of management can be developed for an entire local government area. Such a plan must be approved by the Minister for Planning. If this is done, then a further, site specific plan of management does not need to be developed. Secondly, a plan of management can be prepared for part of a local government area, including a plan that relates specifically to the land that is the subject of the development application. A plan of management that falls into this latter case must be approved by both the relevant council and the Minister for Planning.

In Step 2 (above) it was concluded that the Site is not core Koala habitat. Therefore, a Koala Plan of Management does not require preparation under SEPP 44 prior to development consent.

4. Impact Assessment

4.1 Potential Impacts

The potential impacts on threatened species arising from the current proposal are based on the current condition of the available habitat. However, it should be noted that the approval of DA 2004/0720 allows the removal of additional trees without further consent, which would lower the significance of the Site to threatened species. This would alter the following conclusion and the subsequent 7-part assessment of significance under Part 5a of the *EP&A Act*. However, this assessment is based on the current extent and condition of the habitat present. Accordingly, the impacts of the proposal are:

1. Habitat loss resulting from clearing. Habitat loss would result in the lowered availability of food (e.g. nectar-producing trees, insects) and shelter sites (see below).
2. Habitat alteration due to increased edge effects, sedimentation and the removal of older trees perceived to be a threat to life or property.
3. Habitat fragmentation, which may isolate remaining proximate habitat areas that are currently connected by the vegetation on the Site. This will mainly affect species with relatively limited mobility, such as gliding possums and some bird species.
4. Loss of hollow-bearing trees (living or dead), which are used as shelter and/or nesting sites, to permit the required works, for firewood collection and for safety reasons.
5. The introduction of domestic predators, such as Cats (*Felis catus*) and Dogs (*Canis familiaris*).
6. Death or injury to fauna due to crushing trauma during clearing activities.

4.2 Recommendations

To mitigate the potential impacts of the proposed development, the following measures are recommended:

1. Consistent with the existing approval (DA 2004/0720), an area of 3 ha (25%) of existing vegetation is to be retained on the Site. Following discussions with Clarence Valley Council (D. Morrison personal communication), this area must be consolidated along the Site's northern boundary and be designed to retain ecological function. Therefore, the retained vegetation must be configured to enable efficient habitat utilisation (i.e a core area), be connected to proximate vegetation so that fauna can move into and out of the area and capture the area of greatest resource availability. The most important habitat resources on the Site are flowering trees and hollow-bearing trees.
2. The 3 ha area selected (Figure 3) aims to balance the aforementioned criteria. This conservation area provides connectivity across the Site to areas of proximate

vegetation to the north-east and south-west (Figure 3). This area also has a node of vegetation in the central portion of the Site that is focused on the area of greatest hollow-bearing tree density. The selected area also contains representation of the full floristic diversity currently available on the Site.

3. The primary use of the area of retained vegetation is the conservation of native flora and fauna, particularly threatened species.
4. Slashing should immediately cease in the area to be conserved and a native understorey be allowed to regenerate. Regeneration of canopy vegetation should be allowed. The conservation area must be demarcated by permanent fencing prior to any construction activities.
5. The noxious weed Lantana must be controlled on the Site.
6. A Vegetation Management Plan will need to be developed to direct any necessary remedial work in the conservation area and to enable its long-term management.
7. The collection of firewood is not to be permitted in the conservation area.
8. Appropriate sedimentation controls are put in place prior to the commencement of any development activities.
9. To minimise fauna injury and death due to crushing, clearing should occur in a staged manner, commencing with non-hollow-bearing trees. At least three days should be allowed between the removal of non-hollow-bearing trees and commencing the removal of hollow-bearing trees to enable hollow-using fauna to escape.
10. During clearing, hollow-bearing trees should be tapped several times with an exactor before being gently lowered to the ground. Large hollow-bearing trees may require removal in sections. Hollow-bearing trees will require marking prior to clearing.
11. To ensure animals fleeing the clearing operations are not killed on the road, clearing should commence along the western boundary (Sheehans Lane) and proceed eastwards. This will direct startled fauna away from the road. To further ensure fauna welfare, temporary exclusion fencing should be erected along Sheehans Lane prior to clearing.

12. Nectar producing native trees and shrubs should be used on landscaping (residential blocks and street trees) and in parklands. Small trees/shrubs such as Broad-leaved Paperbark and Banksias are suited to such uses because they are not prone to shedding large limbs.

4.3 Impact on Matters of National Environmental Significance

Two threatened fauna species listed under the *EPBC Act* are likely to occur on or otherwise use the Site. These species are the Spotted-tailed Quoll and the Grey-headed Flying-fox.

The Spotted-tailed Quoll is a large, partly arboreal marsupial carnivore. It is largely dependent on medium-sized mammals (500 – 5000 g), although birds, insects and carrion may also be consumed. The species is known from a variety of habitat types; shelter sites include caves, rock crevices and hollow logs. Although the Spotted-tailed Quoll is in decline, it is known to persist in human-modified landscape where it is a well-known raider of poultry. Threats to the species include habitat loss and competition from introduced predators (e.g. Cats and Foxes).

The Spotted-tailed Quoll is a top-end predator that has large area requirements. In comparison, the Site is fairly small and the habitat is degraded, particularly ground level resources including shelter sites. As such, the Site would constitute only a portion of one or two home ranges. Therefore, it is unlikely that the Site is important to the persistence of the Spotted-tailed Quoll in the Locality. With reference to the Administrative Guidelines of Significance for the Spotted-tailed Quoll, the proposal is not likely to have a significant impact on this endangered species because only part of the home-ranges of one or two individuals would be affected.

The Grey-headed Flying-fox feeds on nectar and fruit in a variety of habitats, although moist habitats (e.g. rainforest, mangroves) only appear to be used for roosting. The Grey-headed Flying-fox would use to Site to obtain nectar. A variety of tree species are available on the Site (Table 3) that flower in different seasons, indicating that this species could potentially use the Site at almost any time of year provided sufficient food was available. However, the Site is relatively small (~18 ha), therefore, it does not provide a substantial food resource in relation to the availability

of similar habitat in the Locality. Moreover, 3 ha (25%) of foraging habitat would be retained on the Site post-development.

Habitat clearing is regarded as the major threat to the Grey-headed Flying-fox. However, the MNES Significant Impact Guidelines indicate that the context and intensity of an action are important when determining whether a significant impact is likely. The Site is 18 ha in area and occurs in a Locality where significant stands of bushland remain. While most vegetation would be removed from the Site by the Proposal, the area of clearing is relatively small. It is also possible to ameliorate some of this clearing by the inclusion of flowering trees, such as Banksias and Paperbarks, in landscaping (on residential blocks and as street trees) and parklands. However, nectar resources would remain widespread in the Locality. Therefore, the proposal is not likely to be of a sufficient intensity to affect a substantial proportion of foraging resources in the Locality.

Of the migratory species predicted to occur in the Locality by the MNES search, only three, the Rainbow Bee-eater, Fork-tailed Swift and White-throated Needletail are expected to occur on the Site. The latter two species are aerial insectivores that would forage over, not on, the Site. These species also forage over cleared farmland and urban areas and would not be affected by the proposal. The Rainbow Bee-eater may occasionally forage on the Site, but would not breed there. It may continue to forage in the conservation area post-development. Moreover, the conservation area would help to facilitate the local movements of this species. With respect to the Administrative Guidelines of Significance for a migratory species, the proposal is not likely to have a significant impact on migratory species because i) important habitat would not be affected, ii) an ecologically significant portion of the population(s) would not be affected and iii) their lifecycle would not be adversely impacted.

The proposal is not likely to have a significant impact on MNES, therefore, the proposal does not require referral for approval on behalf of the Federal Minister for the Environment.

4.4 Section 5A Assessment

An examination of the Wildlife Atlas revealed that 16 threatened species known to the local area have a moderate to high potential to use the Site. A Section 5a assessment (Seven-part Test of Significance) was conducted on these 16 species (Appendix 4).

5. Conclusions

No threatened plant species were recorded or were likely to occur on the Site despite targeted surveys. One plant found on the Site, Lantana is listed as a category 4 weed under the *Noxious Weeds Act* 1993. As such it must be controlled. This weed will be included in the currently proposed tree removal activities.

6. References

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Appendix 1: Tables and Figures

Table 1: Key habitat features and habitat types used by threatened fauna species.

These criteria were used to assist in the assessment of the potential for threatened fauna to use the Site. The presence (✓) or absence (×) of these features is indicated.

Habitat Feature	Importance	Examples of Species Considered	Common Name	Present
Hollow-bearing trees	Roosting and nesting sites	*Hoplocephalus bitorquatus* *Hoplocephalus stephensii* *Petaurus norfolcensis* *Phascogale tapoatafa* *Calyptorhynchus lathami* *Tyto* spp., *Ninox* spp. Microchiropteran bats	Pale-headed Snake Stephen's Banded Snake Squirrel Glider Brush-tailed Phascogale Glossy Black Cockatoo Forest Owls Insectivorous Bats	✓
Large living or dead trees	Roosting and nesting sites	*Pandion haliaetus* *Erythrotriorchis radiatus* *Lophoictinia isura* *Hieraaetus morphnoides*	Osprey Red Goshawk Square-tailed Kite Little Eagle	✓
Fallen logs / *Xanthorrhea* sp.	Shelter	*Planigale maculata*	Common Planigale	×
Deep leaf litter/fallen logs	Shelter	*Cacophis harriettae*	White-crowned Snake	×
Eucalyptus spp. listed under Schedule 2 of SEPP 44	Food source	*Phascolarctos cinereus*	Koala	✓
Allocasuarina spp.	Major food source	*Calyptorhynchus lathami*	Glossy Black Cockatoo	✓
Trees incised with V-notches for sap	Sap is an important food resource	*Petaurus australis*	Yellow-bellied Glider	×
Nectar-yielding trees and shrubs (e.g. *Banksia integrifolia*, *Melaleuca* spp., *Eucalyptus* spp.)	Food source	*Syconycteris australis* *Pteropus* spp. *Lichenostomus fasciogularis* *Petaurus norfolcensis* *Petaurus australis*	Common Blossom Bat Flying-foxes Mangrove Honeyeater Squirrel Glider Yellow-bellied Glider	✓
Fruiting trees and shrubs	Food source	*Ptilinopus* spp. *Coracina lineata*	Fruit-doves Barred Cuckoo-shrike	×
Conical diggings in ground and associated scats	Sign of feeding activity	*Aepyprymnus rufescens* *Potorous tridactylus*	Rufous Bettong Long-nosed Potoroo	×
Wallum heath	Habitat	*Crinia tinnula* *Litoria olongburensis*	Wallum Froglet Wallum Sedge Frog	×
Wetlands	Habitat	*Litoria brevipalmata* *Dupetor flavicollis* *Botaurus poicilopiilus* *Ephippiorhynchus asiaticus* *Grus rubicundus*	Green-thighed Frog Black Bittern Australasian Bittern Black-necked Stork Brolga	×
Estuarine water and	Habitat	*Pandion haliaetus*	Osprey	×

intertidal flats	*Ephippiorhynchus asiaticus* F. Charadrii *Sterna albifrons*	Black-necked Stork Migratory waders Little Tern

Table 2: Threatened flora species with the potential to occur within 10 km of the Site at Gulmarrad.

Threatened flora species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC) and the NSW *Threatened Species Conservation Act* 1995 (TSC) identified from the National Parks and Wildlife Service Atlas Database, as either Endangered Schedule 1 (E) or Vulnerable Schedule 2 (V). Habitat descriptions have been adopted from Harden (1991-1993; 2000), NPWS (2002), Bishop (1996) and threatened species recovery plans. (RF) denotes rainforest.

Species	Status		Habitat	Potential to Occur
	TSC	EPBC		
Allocasuarina defugens Dwarf Heath Casuarina		E	Tall heath on sand	N
Anthraxon hispidus Hairy Joint Grass		V	In or on edge of RF & wet eucalypt forest, often near creeks or swamps	N
Baloghia marmorata Marbled Balongia		V	Known only from Lismore district; subtropical RF on basalt soils	N
Cryptocarya foetida Stinking Laurel		V	Coastal, SE Qld to Iluka; littoral RF on sandy or basalt soils	N
Cryptstytis hunteriana Leafless Tongue Orchid		V	Scrubby swamp fringes to steep hillsides in tall eucalypt forest	N
Gossia fragrantissima Sweet Myrtle		V	From SE Qld to Richmond River on basalt soils; dry subtropical & riverine RF	N
Hibbertia marginata Guinea Flower		V	Restricted to southern Richmond Range between Casino and Grafton; grassy or shrubby dry open forest on sandstone	Y
Macadamia tetraphylla Rough Shelled Bush Nut	V	V	Subtropical RF north of Rous, near Lismore	N
Marsdenia longiloba Clear Milkvine		V	Subtropical & warm temperate RF, lowland moist eucalypt forest adjoining RF; north from Barrington Tops	N
Persicaria elatior Tall Knotweed		V	Damp or swampy places; on north coast; only found once in Gibberagee SF	Y
Phaius australis Lesser Swamp-orchid		E	*Melaleuca quinquenervia* swamps & sclerophyll forest	Y
Rutidosis heterogama	V	V	Moist soil on clay in open forest & sedgelands/heath	N
Taeniophyllum muelleri Minute Orchid		V	On twigs over water in humid habitats in RF	N

Species	Status TSC	Status EPBC	Habitat	Potential to Occur
Thesium australe Austral Toadflax		V	Grassland or grassy eucalypt woodland on headlands where Kangaroo Grass (*Themeda australis*) is a predominant ground cover.	N

Table 3: Plant species recorded within the Site at 33 Major Mitchell Drive, Gulmarrad. (*) Introduced weed species.

Family	Species	Common Name
Fabaceae	*Acacia disparima*	Long-leaved Wattle
Asteraceae	*Ageratina riparia**	Mist Weed
Asteraceae	*Ageratum houstonianum**	Purple Goat Weed
Casuarinaceae	*Allocasuarina littoralis*	Black She-oak
Myrtaceae	*Angophora woodsiana*	Smudgy Apple
Proteaceae	*Banksia oblongifolia*	
Asteraceae	*Bidens pilosa**	Farmer's Friends
Convolvulaceae	*Calystegia marginata*	Calystegia
Myrtaceae	*Corymbia intermedia*	Pink Bloodwood
Asteraceae	*Crassocephelam crepidioides**	Thickhead
Poaceae	*Cymbopogon refractus*	Barbed Wire Grass
Goodeniaceae	*Damperia sylvestris*	Damperia
Fabaceae	*Davesia ulicifolia*	Egg & Bacon Pea
Fabaceae	*Desmodium rhytidoplyllum*	Tick-trefoil
Phormiaceae	*Dianella caerulea*	Blue Flax Lily
Orchidaceae	*Dipodium variegatum*	Blotched Hyacinth Orchid
Poaceae	*Echinopogon ovatus*	Forest Hedgehog Grass
Epacridaceae	*Epacris microphylla* var. *microphylla*	Tiny Epacris
Epacridaceae	*Epacris pulchella*	Prickly Epacris
Myrtaceae	*Eucalyptus resinifera*	Red Mahogany
Myrtaceae	*Eucalyptus seeana*	Forest Red Gum
Myrtaceae	*Eucalyptus siderophloia*	Northern Grey Ironbark
Myrtaceae	*Eucalyptus signata*	Northern Scribbly Gum
Luzuriagaceae	*Eustrephus latifolius*	Wombat Berry
Fabaceae	*Gompholobium pinatum*	Pinnate Wedge Pea
Goodeniaceae	*Goodenia hederaceae* ssp. *hederaceae*	Goodenia
Fabaceae	*Hardenbergia violaceae*	False Sarsaparilla
Dilleniaceae	*Hibbertia obtusifolia*	Guinea Flower
Dilleniaceae	*Hibbertia vistita*	Guinea Flower
Violaceae	*Hybanthus enneaspermus*	Purple Spade Flower
Poaceae	*Imperata cylindrica* var. *major*	Bladey Grass
Juncaceae	*Juncus sp.*	a rush
Verbenaceae	*Lantana camara**	Lantana
Antheriaceae	*Laxmannia compacta*	Laxmannia
Epacridaceae	*Leucopogon lanceolatus* var. *gracilis*	Bearded Heath
Lomandraceae	*Lomandra filiformis* ssp. *filimormis*	Wattle Matt Rush
Lomandraceae	*Lomandra longifolia*	Matt Rush
Myrtaceae	*Melaleuca quinquenervia*	Broad-leaved Paperbark
Myrtaceae	*Melaleuca seiberi*	Prickly-leaved Paperbark
Oleaceae	*Notelaea ovata*	Smooth Mock Olive
Poaceae	*Oplismenus undulatifolius* var. mollis	A grass
Asteraceae	*Ozomanthus*	Dogwood
Apocynaceae	*Parsonsia stramena*	Common Silkpod
Poaceae	*Paspalum mandiocanum**	Broad-leaved Paspalum
Passifloraceae	*Passiflora subulatus**	White Passionfruit

Family	**Species**	**Common Name**
Iridaceae	*Pattersonia sericea*	Purple Lily
Polygonanaceae	*Persicaria octandra**	Inkweed
Thymelaeaceae	*Pimelea linifolia*	Rice Flower
Rubiaceae	*Pomax umbellata*	Pomax
Lobeliaceae	*Pratia purpurascens*	White Root
Dennestaedtiaceae	*Pteridium esculentum*	Bracken Fern
Fabaceae	*Pultenaea retusa*	Egg & Bacon Pea
Fabaceae	*Pultenea myrtoides*	Egg & Bacon Pea
Solanaceae	*Solanum maritianum**	Tobacco Bush
Poaceae	*Themeda australis*	Kangaroo Grass
Antheriaceae	*Tricoryne elatior*	Yellow Autumn Lily
Goodeniaceae	*Velleia parodoxa*	Velleia
Campanulaceae	*Wahlembergia*	Blue Bells
Xanthorrhoeaceae	*Xanthorrhoea latifolia*	Grass Tree

Table 4: Threatened fauna species known to occur within 10 km of the Site.

Family Name	Scientific Name	Common Name	Status NSW	Status EPBC	Nearest Record (km)	Habitat Requirements	Potential to Occur	Rationale
Amphibians								
Myobatrachidae	*Mixophyes iteratus*	Giant Barred Frog	E1	E	9.5	Amongst deep leaf litter in rainforest and wet eucalypt forest below 1000 m, usually in gullies near water; breeds around shallow, flowing rocky streams	×	Site distant from creeks, lacks deep leaf litter
Hylidae	*Litoria aurea*	Green and Golden Bell Frog	E1	E	1.8	Freshwater wetlands with bullrush (*Typha* sp.) with nearby grassy areas and diurnal sheltering sites	×	Freshwater swamp with bullrush absent
Reptiles								
Cheloniidae	*Caretta caretta*	Loggerhead Turtle	E1		9.7	Oceans; nests on beaches	×	No marine habitat
Elapidae	*Cacophis harriettae*	White-crowned Snake	V		8.1	Forests, but sometimes urban areas; frequents habitat with deep litter and fallen logs	×	Lack of deep litter and fallen logs due to regular slashing
Birds								
Casuariidae	*Dromaius novaehollandiae*	Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	E2		0.1	Forests, woodlands, coastal heath, grasslands; usually with a diverse understorey, including fruiting shrubs	✓	Site generally lacks food resources due to slashing, but occasional use possible

Family Name	Scientific Name	Common Name	Status NSW	Status EPBC	Nearest Record (km)	Habitat Requirements	Potential to Occur	Rationale
Columbidae	*Ptilinopus magnificus*	Wompoo Fruit-Dove	V		2.8	Rainforests and wet eucalypt forest, where it feeds in fruiting trees	×	Habitat not suitable; lack of food resources
Podargidae	*Podargus ocellatus*	Marbled Frogmouth	V		3.0	Sheltered gullies in sub-tropical rainforest	×	Habitat not suitable; lack of streamside vegetation
Ciconiidae	*Ephippiorhynchus asiaticus*	Black-necked Stork	E1		2.0	Permanent freshwater wetlands and floodplains, occasionally estuaries	×	No suitable wetland habitat
Accipitridae	*Hieraaetus morphnoides*	Little Eagle	V		6.8	Open forest and woodland; preys upon mammals and birds; builds a stick nest in a large tree	✓	Occasionally foraging habitat, but no large stick nests observed
Accipitridae	*Lophoictinia isura*	Square-tailed Kite	V		3.9	Forests & woodlands, particularly along edges; preys on passerine birds, mainly nestlings; builds a large stick nest	✓	Occasionally foraging habitat, but no large stick nests observed
Accipitridae	*Pandion cristatus*	Eastern Osprey	V		3.4	Estuaries, large rivers and lakes; feeds over open water; builds a stick nest in a large tree	×	Not foraging habitat; no large stick nests observed
Gruidae	*Grus rubicunda*	Brolga	V		5.0	Freshwater swamps, floodplains, flooded grassland, margins of lagoons	×	No suitable wetland habitat
Haematopodidae	*Haematopus longirostris*	Pied Oystercatcher	E1		7.3	Intertidal sandflats and	×	No suitable

Family Name	Scientific Name	Common Name	Status NSW	Status EPBC	Nearest Record (km)	Habitat Requirements	Potential to Occur	Rationale
						mudflats in estuaries, beaches		shoreline habitat
Jacanidae	*Irediparra gallinacea*	Comb-crested Jacana	V		10.0	Permanent wetlands with a good cover of floating vegetation, particularly water lilies	×	No suitable wetland habitat
Scolopacidae	*Calidris ferruginea*	Curlew Sandpiper	E1		7.7	Intertidal mudflats, saltmarsh, fresh, brackish or saline wetlands	×	No suitable intertidal or wetland habitat
Laridae	*Sternula albifrons*	Little Tern	E1		1.5	Primarily sheltered coastal waters such as bays, estuaries, coastal lagoons and large rivers; sometimes off ocean beaches. Nests on sandy beaches or in low dunes	×	No suitable estuarine or shoreline habitat
Cacatuidae	*Calyptorhynchus lathami*	Glossy Black-Cockatoo	V		3.7	Forest and woodlands with she-oaks (*Allocasuarina* spp.) ; nests in large tree hollow	×	She-oaks along roadside adjacent to Site, but no evidence of use; several large tree hollows but do not appear to be used
Psittacidae	*Pezoporus wallicus wallicus*	Eastern Ground Parrot	V		3.6	Heathlands, particularly wet heath	×	No heathland on Site
Strigidae	*Ninox connivens*	Barking Owl	V		6.4	Open forest and woodland, sometimes closed forest; can use fragmented remnants and partly cleared farmland; preferentially hunts small arboreal mammals, but also	✓	Possible occasional use of Site for foraging; several large tree hollows, but no evidence of use

Family Name	Scientific Name	Common Name	Status NSW	Status EPBC	Nearest Record (km)	Habitat Requirements	Potential to Occur	Rationale
						birds; roosts in a shady tree; nests in a tree hollow; large territory		(owl pellets, whitewash)
Strigidae	*Ninox strenua*	Powerful Owl	V		7.4	Woodland, open and wet eucalypt, and rainforest; can persist in fragmented landscapes; diet largely dependent on medium-large arboreal mammals; nests in a tree hollow; very large territory (up to 2000 ha per pair)	✓	Possible occasional use of Site for foraging; several large tree hollows, but no evidence of use (owl pellets, whitewash)
Tytonidae	*Tyto novaehollandiae*	Masked Owl	V		2.7	Dry forests and woodlands; feeds mainly on ground-dwelling mammals such as rodents; nests in moist, vegetated gullies in large tree hollow; home-range 500-1000 ha per pair	×	Lack of small mammal habitat indicates primary prey not present; several large tree hollows, but no evidence of use (owl pellets, whitewash)
Tytonidae	*Tyto longimembris*	Eastern Grass Owl	V		4.9	Wet heaths and tall grasses in swampy areas	×	No wet heath on Site; grassland present as understorey, but short due to regular slashing`

Family Name	Scientific Name	Common Name	Status NSW	Status EPBC	Nearest Record (km)	Habitat Requirements	Potential to Occur	Rationale
Meliphagidae	*Melithreptus gularis gularis*	Black-chinned Honeyeater (eastern subspecies)	V		7.7	Drier forests and woodlands; have a large territory, but may be seasonally nomadic; feeds mainly on honeydew and insects rather than nectar	✓	Occasional use of Site possible
Pomatostomidae	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	V		1.2	Open grassy dry forests and woodlands with a sparse shrub layer; flight laborious and has difficultly crossing open areas; territory generally 10-12 ha	✓	Occasional use of Site possible
Neosittidae	*Daphoenositta chrysoptera*	Varied Sittella	V		1.2	Open forests and woodland, avoids rainforest; prefers habitats with rough-barked trees	✓	Occasional use of Site possible
Campephagidae	*Coracina lineata*	Barred Cuckoo-shrike	V		2.8	Rainforest, eucalypt forest and swamp forest; feeds mainly on fruit	×	Lack of foraging resources
Estrildidae	*Stagonopleura guttata*	Diamond Firetail	V		2.2	Open Eucalypt forest and woodland, main area of distribution western slopes and plains; feeds on grass seeds	×	Rare on north coast; regular slashing of Site generally prevents grass seeding
Mammals								
Dasyuridae	*Dasyurus maculatus*	Spotted-tailed Quoll	V	E	1.2	Forests, woodlands, coastal heath; uses hollow-bearing trees, fallen logs and rock crevices as den sites;	✓	Habitat types broadly suitable, however, den sites lacking due to

Family Name	Scientific Name	Common Name	Status NSW	Status EPBC	Nearest Record (km)	Habitat Requirements	Potential to Occur	Rationale
						territories very large ~7.5 km^2 for females and 35 km^2 for males		immaturity of vegetation and lack of rocky substrate; however, site may be rarely used when individuals disperse
Dasyuridae	*Phascogale tapoatafa*	Brush-tailed Phascogale	V		4.0	Drier forests and woodland; shelters in tree hollow by day; territories up to 40 ha for females and 100 ha for males	✓	Occasional use of Site possible
Dasyuridae	*Planigale maculata*	Common Planigale	V		7.6	Forests, heathlands, swamps, grassland, rocky areas where there is surface cover– usually close to water	×	Site lacks appropriate surface cover and lacks permanent water
Phascolarctidae	*Phascolarctos cinereus*	Koala	V	V	1.1	Forests containing primary browse trees; on the NSW north coast primary browse species are forest red gum, swamp mahogany, tallowwood and scribbly gum	×	Although both Scribbly Gum and Tallowwood on the Site, there was no evidence of use

Family Name	Scientific Name	Common Name	Status NSW	Status EPBC	Nearest Record (km)	Habitat Requirements	Potential to Occur	Rationale
Petauridae	*Petaurus australis*	Yellow-bellied Glider	V		7.7	Mature Eucalypt forests; generally associated with species suitable as sap trees, also feeds on nectar; requires tree hollows for daytime shelter; large group territory of 30-60 ha	×	Broadly suit able habitat, but likely to be intolerant of existing level of habitat fragmentation in the Locality; lack of feeding signs (sap trees)
Petauridae	*Petaurus norfolcensis*	Squirrel Glider	V		0.7	Eucalypt forests and woodlands with hollow-bearing trees; usually associates with winter/spring flowering trees (e.g. red gums, ironbarks)	✓	Tree hollows and winter flowering trees present; reasonable connectivity to proximate habitat
Potoroidae	*Aepyprymnus rufescens*	Rufous Bettong	V		0.1	Drier forests; frequents areas with sparse or grassy understorey, but requires grassy tussocks for shelter	×	Regularly slashing would make shelter sites unavailable
Pteropodidae	*Pteropus poliocephalus*	Grey-headed Flying-fox	V	V	0.2	Forests with fruiting or flowering trees; roosts in forest near water (including mangroves)	✓	Nectar producing trees on Site; not a roost site
Molossidae	*Mormopterus norfolkensis*	Eastern Freetail-bat	V		0.4	Dry eucalypt forest and woodland, swamp forest,	✓	Suitable foraging habitat present

Family Name	Scientific Name	Common Name	Status NSW	Status EPBC	Nearest Record (km)	Habitat Requirements	Potential to Occur	Rationale
						mangroves – forages over canopy; roosts mainly in tree hollows, but also under loose bark and in artificial structures		(aerial space over tree canopy); possible roosts in hollow-bearing trees on Site
Vespertilionidae	*Vespadelus troughtoni*	Eastern Cave Bat	V		4.1	Drier Eucalypt forest and woodland, usually near cliffs or rocky overhangs; roosts in caves	×	No rocky areas on the Site; no caves for roosting
Vespertilionidae	*Miniopterus australis*	Little Bentwing-bat	V		2.2	Forages below the canopy in dense habitats such as rainforest, wet eucalypt forest, swamp forest and dense coastal scrub; roosts in caves and tunnels, occasionally tree hollows	×	Unlikely to forage on Site due to lack of midstorey structure; lack of preferred roost sites (caves, tunnels)
Vespertilionidae	*Chalinolobus nigrogriseus*	Hoary Wattled Bat	V		0.2	Forested areas with open midstorey; areas with tree hollows	✓	Midstorey sufficiently open; tree hollows available for roosting
Vespertilionidae	*Myotis macropus*	Southern Myotis	V		2.2	Forages over water, raking the	×	No surface water

Family Name	Scientific Name	Common Name	Status NSW	Status EPBC	Nearest Record (km)	Habitat Requirements	Potential to Occur	Rationale
						surface for insects and small fish; various roosts, including caves, mine shafts, stormwater channels, bridges and hollow-bearing trees; usually roosts near water		for foraging; unlikely to roost away from water
Vespertilionidae	*Scoteanax rueppellii*	Greater Broad-nosed Bat	V		7.9	Forests and woodland, including rainforest and wet and dry eucalypt forest; forages along forest edge, particularly along creeks and rivers; usually roosts in tree hollows	✓	May occasionally forage on the Site; hollow-bearing trees may be used for roosting

Table 5: Pellet assessment of primary Koala food trees.

		Pellets Present		Total
Species	**Common Name**	**Yes**	**No**	
Eucalyptus microcorys	Tallowwood	0	15	15
Eucalyptus racemosa	Scribbly Gum	0	30	30
Total		0	45	45

Figure 1. Locality of the Site, 33 Major Mitchell Drive, Gulmarrad.

Figure 2. Aerial photo showing the current state of the Site and the conservation area proposed for habitat retention.

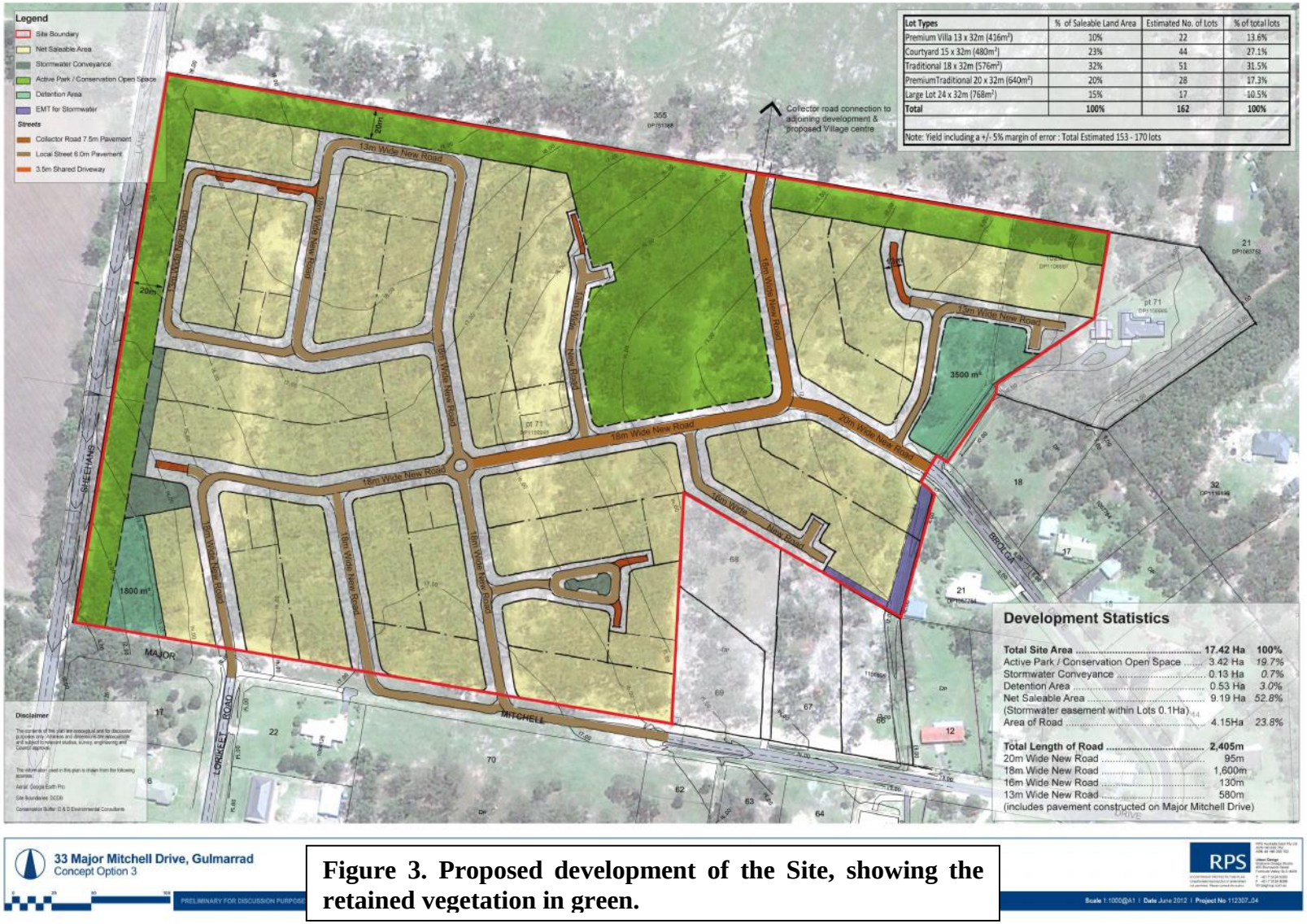

Figure 3. Proposed development of the Site, showing the retained vegetation in green.

Appendix 2. Photographs of the Site

Photo 1: The sparsely treed eastern third of the Site.

Photo 2: The node within the retained habitat showing a greater density of hollow-bearing trees. Note underscrubbing and recent slashing, which has removed habitat for ground-dwelling and shrub dependent fauna.

Photo 3: Another view of the retained habitat node where hollow-bearing trees are more frequent.

Photo 4: The southern area of the Site has a low density of hollow-bearing trees.

Photo 5: The southern part of the Site. Note the relatively young age of most trees.

Photo 6: A corridor of trees removed for road construction under the existing approval.

Appendix 3. Matters of National Environmental Significance Search

Australian Government
Department of Sustainability, Environment, Water, Population and Communities

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information about the EPBC Act including significance guidelines, forms and application process details can be found at http://www.environment.gov.au/epbc/assessmentsapprovals/index.html

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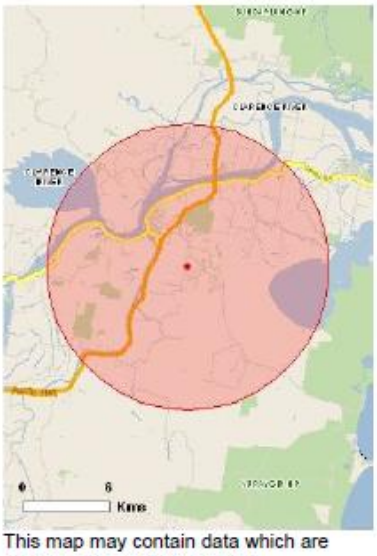

This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates
Buffer: 10.0Km

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communities:	None
Threatened Species:	36
Migratory Species:	43

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage/index.html

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at http://www.environment.gov.

Commonwealth Lands:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	47
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

Place on the RNE:	8
State and Territory Reserves:	4
Regional Forest Agreements:	1
Invasive Species:	14
Nationally Important Wetlands:	4

Details

Matters of National Environmental Significance

Threatened Species		[Resource Information]
Name	Status	Type of Presence
BIRDS		
Anthochaera phrygia Regent Honeyeater [82338]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
		area
Baloghia marmorata Marbled Balogia, Jointed Baloghia [8463]	Vulnerable	Species or species habitat may occur within area
Cryptocarya foetida Stinking Cryptocarya, Stinking Laurel [11976]	Vulnerable	Species or species habitat may occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Gossia fragrantissima Sweet Myrtle, Small-leaved Myrtle [78867]	Endangered	Species or species habitat likely to occur within area
Hibbertia marginata [21970]	Vulnerable	Species or species habitat likely to occur within area
Marsdenia longiloba Clear Milkvine [2794]	Vulnerable	Species or species habitat likely to occur within area
Persicaria elatior Knotweed [5831]	Vulnerable	Species or species habitat likely to occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat likely to occur within area
Rutidosis heterogama Heath Wrinklewort [13132]	Vulnerable	Species or species habitat likely to occur within area
Taeniophyllum muelleri Minute Orchid, Ribbon-root Orchid [10771]	Vulnerable	Species or species habitat may occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
REPTILES		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Coeranoscincus reticulatus Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to occur within area
Migratory Species		[Resource Information]

Name	Status	Type of Presence
Botaurus poiciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Dasyornis brachypterus		
Eastern Bristlebird [533]	Endangered	Species or species habitat likely to occur within area
Lathamus discolor		
Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Vulnerable	Species or species habitat likely to occur within area
Turnix melanogaster		
Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area
FROGS		
Litoria aurea		
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat may occur within area
Litoria olongburensis		
Wallum Sedge Frog [1821]	Vulnerable	Species or species habitat likely to occur within area
Mixophyes balbus		
Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to occur within area
Mixophyes iteratus		
Giant Barred Frog, Southern Barred Frog [1944]	Endangered	Species or species habitat likely to occur within area
MAMMALS		
Chalinolobus dwyeri		
Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population)		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area
Petrogale penicillata		
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
Potorous tridactylus tridactylus		
Long-nosed Potoroo (SE mainland) [66645]	Vulnerable	Species or species habitat may occur within area
Pseudomys novaehollandiae		
New Holland Mouse [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
Xeromys myoides		
Water Mouse, False Water Rat [66]	Vulnerable	Species or species habitat likely to occur within area
PLANTS		
Allocasuarina defungens		
Dwarf Heath Casuarina [21924]	Endangered	Species or species habitat may occur within area
Arthraxon hispidus		
Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Migratory Marine Species		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Breeding may occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Breeding likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Breeding may occur within area
Xanthomyza phrygia Regent Honeyeater [430]	Endangered*	Species or species habitat likely to occur within area
Migratory Wetlands Species		

Name	Threatened	Type of Presence
Actitis hypoleucos Common Sandpiper [59309]		Foraging, feeding or related behaviour known to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]		Foraging, feeding or related behaviour known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Foraging, feeding or related behaviour known to occur within area
Calidris canutus Red Knot, Knot [855]		Foraging, feeding or related behaviour known to occur within area
Calidris ferruginea Curlew Sandpiper [856]		Foraging, feeding or related behaviour known to occur within area
Calidris ruficollis Red-necked Stint [860]		Foraging, feeding or related behaviour known to occur within area
Calidris tenuirostris Great Knot [862]		Foraging, feeding or related behaviour known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]		Foraging, feeding or related behaviour known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]		Foraging, feeding or related behaviour known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Foraging, feeding or related behaviour known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Foraging, feeding or related behaviour known to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Foraging, feeding or related behaviour known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Foraging, feeding or related behaviour known to occur within area
Limosa limosa Black-tailed Godwit [845]		Foraging, feeding or related behaviour known to occur within area
Numenius madagascariensis Eastern Curlew [847]		Foraging, feeding or related behaviour known to occur within area

Name	Threatened	Type of Presence
Numenius minutus		
Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area
Numenius phaeopus		
Whimbrel [849]		Foraging, feeding or related behaviour known to occur within area
Pluvialis fulva		
Pacific Golden Plover [25545]		Foraging, feeding or related behaviour known to occur within area
Pluvialis squatarola		
Grey Plover [865]		Foraging, feeding or related behaviour known to occur within area
Rostratula benghalensis s. lat.		
Painted Snipe [889]	Vulnerable*	Species or species habitat likely to occur within area
Tringa stagnatilis		
Marsh Sandpiper, Little Greenshank [833]		Foraging, feeding or related behaviour known to occur within area
Xenus cinereus		
Terek Sandpiper [59300]		Foraging, feeding or related behaviour known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Australian Telecommunications Commission
Commonwealth Land - Australian Telecommunications Corporation

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Foraging, feeding or related behaviour known to occur within area
Anseranas semipalmata		
Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres		
Ruddy Turnstone [872]		Foraging, feeding or related behaviour known to occur within area

Name	Threatened	Type of Presence
Calidris acuminata Sharp-tailed Sandpiper [874]		Foraging, feeding or related behaviour known to occur within area
Calidris canutus Red Knot, Knot [855]		Foraging, feeding or related behaviour known to occur within area
Calidris ferruginea Curlew Sandpiper [856]		Foraging, feeding or related behaviour known to occur within area
Calidris ruficollis Red-necked Stint [860]		Foraging, feeding or related behaviour known to occur within area
Calidris tenuirostris Great Knot [862]		Foraging, feeding or related behaviour known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]		Foraging, feeding or related behaviour known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]		Foraging, feeding or related behaviour known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Foraging, feeding or related behaviour known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Foraging, feeding or related behaviour known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Foraging, feeding or related behaviour known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Foraging, feeding or related behaviour known to occur within area
Heteroscelus incanus Wandering Tattler [59547]		Foraging, feeding or related behaviour known to occur within area
Himantopus himantopus Black-winged Stilt [870]		Foraging, feeding or related behaviour known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [644]		Foraging, feeding or related behaviour known to occur within area
Limosa limosa Black-tailed Godwit [845]		Foraging, feeding or related behaviour known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Breeding may occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Breeding likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding likely to occur within area
Numenius madagascariensis Eastern Curlew [847]		Foraging, feeding or related behaviour known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area
Numenius phaeopus Whimbrel [849]		Foraging, feeding or related behaviour known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Foraging, feeding or related behaviour known to occur within area
Pluvialis squatarola Grey Plover [865]		Foraging, feeding or related behaviour known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Foraging, feeding or related behaviour known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Breeding may occur within area
Rostratula benghalensis s. lat. Painted Snipe [889]	Vulnerable*	Species or species habitat likely to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Foraging, feeding or related behaviour known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Foraging, feeding or related behaviour known to occur within area
Mammals		
Dugong dugon Dugong [28]		Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur

Name	Status	Type of Presence
Sus scrofa		
Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes		
Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides		
Alligator Weed [11620]		Species or species habitat likely to occur within area
Cabomba caroliniana		
Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera		
Bitou Bush, Boneseed [18983]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana		
Broom [67538]		Species or species habitat may occur within area
Lantana camara		
Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum		
African Boxthorn, Boxthorn [19235]		Species or species habitat may occur within area
Pinus radiata		
Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate		
Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S babylonica, S x calodendron & S x reichardtii		
Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta		
Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area

Nationally Important Wetlands	[Resource Information]
Name	State
Bundjalung National Park	NSW
Clarence River Estuary	NSW
The Broadwater	NSW
Wooloweyah Lagoon	NSW

Coordinates

-29.48612 153.22351

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Department of Environment, Climate Change and Water, New South Wales
-Department of Sustainability and Environment, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment and Natural Resources, South Australia
-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
-Environmental and Resource Management, Queensland
-Department of Environment and Conservation, Western Australia
-Department of the Environment, Climate Change, Energy and Water
-Birds Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-SA Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-State Forests of NSW
-Other groups and individuals

Name	Threatened	Type of Presence within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to occur within area

Extra Information

Places on the RNE [Resource Information]

Note that not all Indigenous sites may be listed.

Name	State	Status
Natural		
Lower Clarence River Area	NSW	Indicative Place
Wooloweyah Lagoon	NSW	Indicative Place
Yuraygir National Park and Adjacent Areas	NSW	Registered
Historic		
Maclean Courthouse	NSW	Registered
Maclean Courthouse Group	NSW	Registered
Maclean Post Office	NSW	Registered
Police Station and Lock Up	NSW	Registered
Public School	NSW	Registered

State and Territory Reserves [Resource Information]

Name	State
Clarence Estuary	NSW
Woodford Island	NSW
Yaegl	NSW
Yuraygir	NSW

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

Name	State
North East NSW RFA	New South Wales

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit,

Name	Status	Type of Presence
Frogs		
Bufo marinus Cane Toad [1772]		Species or species habitat likely to occur within area
Mammals		
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

Appendix 4. Section 5A Assessment: Seven-part Tests of Significance

Emu *Dromaius novaehollandiae* (Endangered Population)

The Emu is a large and distinctive species. On the NSW north coast, its distribution extends from Red Rock in the south, north to Evans Head and west into the Bungawalbyn catchment. However, there appears to be disjunctions within this range. Emus in the Bungawalbyn catchment appear to be a separate sub-population. The Clarence River also divides the coastal habitats into two separate areas, with sub-population centred on Bundjalung NP in the north and Yuraygir NP in the south. The north coast population occurs in a variety of habitats, including open forest, woodland, coastal heath, coastal dunes, wetland areas, tea tree plantations and open farmland.

The Emu is omnivorous, including insects, seeds and fruit in its diet and it appears to be an important seed disperser (Schodde and Tidemann 1988; McGarth and Bass 1999). The home-range area is not known, but is reported to be large (Pizzey and Knight 2001).

Threats to the Emu population on the NSW north coast include:

- Risk of local extinction due to small population size and isolation.
- Clearing and fragmentation of areas of habitat for agriculture and urban development.
- Burning of suitable habitat at too frequent intervals.
- Predation of young and eggs by foxes, feral and domestic dogs and feral pigs.
- Being hit by vehicles.
- Deliberate killing through poisoning or shooting.

A total of 250 records of the Emu occur within 10 km of the Site. Most of these records (235) are south of the Site. This suggests that the Site is at the northern limit of the Yuraygir sub-population, which extends south to Red Rock. As the records indicate, it is likely that the Emu may occasionally occur on and in the immediate vicinity of the Site. However, it is unlikely to use the Site to travel further north. Therefore, the Site is not an important movement corridor for the Emu and in any case other movement opportunities exist.

(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.

na

(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.

The Site is at the northern margin of Yuraygir sub-population. The total area covered by this population would be thousands of hectares, which includes a large area of coastal forest, heathland and farmland comprised of private land, State Forest and national park.

The Site covers 18 ha, of which 15 ha would be affected by the proposal. Nine hectares of the area subject to development is already underscrubbed, which has removed virtually all shrub and native groundcover plants, and the canopy has been partially removed. A further 6 ha has been cleared except for some scattered trees. This disturbance means that there are no sources of seeds and fruit on the Site and that insects are likely to be in low abundance. Thus, the Site is not likely to be an important food resource of the north coast Emu population. Because the Site is at the northern limit of the Yuraygir sub-population and because vehicular traffic generated by the proposal would mostly travel in a northerly direction (i.e. toward Maclean and the Pacific Hwy) it is unlikely that the Emu would be exposed to increased road mortality. Similarly, it is unlikely that domestic dogs would impact upon the local population due to the relative infrequency with which Emu's would travel to the population boundary.

The proposal is not likely to exacerbate the risk of local extinction of the Emu due to further reductions in population size and or an increase in the isolation of all or part of the population. Moreover, the proposal is not likely to result in increased Emu mortality due to vehicle strike and dog attack. Accordingly, the proposal is not likely to have an adverse effect on the life cycle of the Emu such that it would place a viable local population within the north coast endangered population at risk of extinction.

(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

na

(*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.*

na

(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, and

The proposal would affect 83% (15 ha) of the Site. Nine hectares of this habitat is already highly disturbed due to partial removal of the canopy and underscrubbing of the entire Site, while a further 6 ha has been cleared except for some scattered trees. Therefore, the Site is poor quality Emu habitat as food resources are virtually absent.

(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

The Site is at the northern limit of the movement area of the Yuraygir sub-population. Emu's rarely move further north and in any case alternative movement pathways exist. Thus, the proposal would not result in habitat fragmentation for the Emu.

(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.

Due to the lack of food resources, the Emu would rarely occur on the Site. Therefore, the habitat available on the Site would not be important to the Emu in the Locality.

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

There is no critical habitat for the Emu listed under the TSC Act.

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

There is no Recovery Plan for the Emu. No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-bearing trees would be retained post-development. A range of hollow sizes and orientations would remain.

In relation to the proposal, none of these KTPs would lead to adverse outcomes for the local Emu population.

A Species Impact Statement is not required for the Emu.

Little Eagle *Hieraaetus morphnoides* (Vulnerable)

The Little Eagle is found throughout the Australian mainland. However, it avoids the densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. The Little Eagle occurs in open eucalypt forest, woodland or open woodland. The She-oak and Acacia woodlands and riparian woodlands of inland NSW are also used. The Little Eagle preys on birds, reptiles and

mammals, occasionally adding large insects and carrion. It builds a large stick nest in a tall living tree within a remnant patch of forest. Mating occurs in winter and the eggs are laid in spring.

Threats to the Little Eagle include:

- Rural-residential subdivision and associated land uses (e.g. horse and goat grazing).
- Clearing and degradation of foraging and breeding habitat
- Urban expansion.
- Secondary poisoning from rabbit baiting.

Two-thirds (12 ha) of the Site has been underscrubbed and some of the canopy has been removed. The remaining 6 ha has been cleared except for some scattered trees. This disturbance would lower the density of potential prey, particularly mammals and large reptiles relative to more intact habitat. However, it is likely that the Site would be used occasionally for foraging and birds would be the primary prey taken. No large stick nests that could be attributed to a raptor were observed, indicating that the Site would not be breeding habitat for the Little Eagle.

(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,

Due to existing levels of disturbance, the Site is likely to be low quality foraging habitat for the Little Eagle and would only be used occasionally. The proposal would utilise the 6 ha of the Site already cleared and require a further 9 ha (66% of current tree cover) to be cleared of the remaining disturbed vegetation. Raptors generally have large home-ranges, suggesting that the removal of 9 ha of low quality habitat would not be sufficient to place a population of the Little Eagle at risk of extinction. There is a small chance of vehicular strike if the Little Eagle were to feed on road kill (i.e. carrion), but this would be a very uncommon occurrence.

(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,

There are no endangered populations of the Little eagle in the Study Area.

(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

na

(*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.*

na

(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, and

The proposal would affect 83% (15 ha) of the Site. Nine hectares of this habitat is already highly disturbed due to partial removal of the canopy and underscrubbing of the entire Site, while a further 6 ha is already cleared. Therefore, the Site is poor foraging habitat for the Little Eagle.

(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

The Little Eagle is highly mobile species and the clearing of 15 ha of disturbed habitat would not cause habitat fragmentation for this species.

(ii) 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 habitat on the Site is disturbed and of low quality for foraging. Moreover, the Site is not associated with breeding habitat. Therefore, the habitat to be removed is not likely to affect the long-term survival of the Little Eagle in the Locality.

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

There is no critical habitat for the Little Eagle listed under the TSC Act.

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

There is no Recovery Plan for the Little Eagle. No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-bearing trees would be retained post-development. A range of hollow sizes and orientations would remain.

In relation to the proposal, none of these KTPs would lead to adverse outcomes for the Little Eagle.

A Species Impact Statement is not required for the Little Eagle.

Square-tailed Kite *Lophoictinia isura*: Vulnerable

The Square-tailed Kite is a medium-sized raptor that occurs in a variety of timbered habitats, such as dry woodlands and open forests, showing a preference for timbered watercourses It preys upon passarine birds (particularly nestlings), reptiles and insects. It gathers most of its prey from the outer canopy of trees. The home-range of the Square-tailed Kite is very large, frequently greater than 100 km^2. The Square-

tailed Kite breeds from July to February. It builds a large stick nest in a fork or on a large horizontal limb, usually along or near a watercourse.

Threats to the Square-tailed Kite include:

- Clearing, logging, burning, and grazing of habitats resulting in a reduction in nesting and feeding resources.
- Disturbance to or removal of potential nest trees near watercourses.
- Illegal egg collection and shooting.

Six hectares of the Site has been cleared, except for some scattered trees. The remainder of the Site (12 ha) has been underscrubbed and some of the canopy has been removed. This would lower the density of potential prey, however, it is likely that the Site would be used occasionally for foraging. No large stick nests that could be attributed to a raptor were observed, indicating that the Site would not be breeding habitat for the Square-tailed Kite.

(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.

Due to existing levels of disturbance, the Site is likely to be low quality foraging habitat for the Square-tailed Kite and would only be used occasionally. The proposal would require 15 ha (83%) of the Site to be developed. Nine hectares of this area is covered by a tree canopy and a further 3 ha of similar habitat would be retained. The Square-tailed Kite has a large home-range, suggesting that the removal of 9 ha of low quality habitat would not be sufficient to place a population of this species at risk of extinction. Moreover, the Square-tailed Kite is known to persist in well-treed urban areas and is likely to use the 3 ha of habitat that would remain on the Site.

(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.

There are no endangered populations of the Square-tailed Kite listed under the *TSC* Act.

(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

na

(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.

na

(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, and

The proposal would affect 83% (15 ha) of the Site. This habitat is already highly disturbed due to clearing or to partial removal of the canopy and underscrubbing. Therefore, the Site is poor foraging habitat for the Square-tailed Kite.

(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

The Square-tailed Kite is a highly mobile raptor capable of crossing cleared areas to move through its territory. Accordingly, the proposal would not cause the habitat of the Square-tailed Kite to become fragmented or isolated from other areas of habitat.

(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 habitat on the Site is disturbed and of low quality for foraging. Moreover, the Site is not associated with breeding habitat. Therefore, the habitat to be removed is not likely to affect the long-term survival of the Square-tailed Kite in the Locality.

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

There is no critical habitat for the Square-tailed Kite listed under the *TSC* Act.

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

There is no Recovery Plan for the Square-tailed Kite. The clearing of native vegetation is listed as a KTP under the TSC Act. No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-bearing trees would be retained post-development. A range of hollow sizes and orientations would remain.

In relation to the proposal, none of these KTPs would lead to adverse outcomes for the Square-tailed Kite.

A Species Impact Statement is not required for the Square-tailed Kite.

Barking Owl *Ninox connivens*: Vulnerable

The Barking Owl inhabits drier forests and woodland, typically those dominated by red gums (e.g. Forest Red Gum, *Eucalyptus tereticornis*). It roosts in trees by day, but it is dependent upon hollow-bearing trees for nesting. Mainly hunts small to medium-sized arboreal mammals, but also takes terrestrial mammals and birds. Adult birds form permanent mating bonds, occupying territories of up to 2000 ha in area. This species is highly mobile and local

birds are likely to be connected with sub-populations in areas such as Bundjalung NP, the Bungawalbin catchment and Yuraygir NP.

Threats to the Barking Owl include:

- Clearing and degradation of habitat, mostly through cultivation, intense grazing and the establishment of exotic pastures.
- Inappropriate forest harvesting practices that remove old, hollow-bearing trees and change open forest structure to dense regrowth.
- Firewood harvesting resulting in the removal of fallen logs and felling of large dead trees.
- Too-frequent fire leading to degradation of understorey vegetation which provides shelter and foraging substrates for prey species.

The entire Site has been underscrubbed and some of the canopy has been removed. This would lower the density of potential Barking Owl prey, however, it is likely that the Site would be used occasionally for foraging. This, coupled with the large home-ranges of the Barking Owl, indicates that the Site would only be used for foraging on rare occasions. No owl roosts and breeding hollows (which are indicated by the presence of prey remains and owl pellets) were located on the Site.

(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.

Due to existing levels of disturbance, the Site is likely to be low quality foraging habitat for the Barking Owl and would only be used occasionally. The proposal would require 15 ha (83%) of the Site to be developed. However, only the 12 ha covered by a tree canopy would provide habitat for the Barking Owl. The Barking Owl has a large home-range, suggesting that the removal of 12 ha of low quality habitat would not be sufficient to place a population of this species at risk of extinction. Moreover, the Barking Owl is known to persist in well-treed urban areas and is likely to use the 3 ha of habitat that would remain on the Site for foraging.

(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.

There are no endangered populations of the Barking Owl listed under the *TSC* Act.

(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

na

(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.

na

(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, and

The proposal would affect 83% (15 ha) of the Site. This habitat is already highly disturbed due to partial removal of the canopy and underscrubbing (9 ha) or cleared except for some scattered trees (6 ha). Therefore, the Site is poor foraging habitat for the Barking Owl.

(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

The Barking Owl is a highly mobile species capable of crossing cleared areas to move through its territory. Accordingly, the proposal would not cause the habitat of the Barking Owl to become fragmented or isolated from other areas of habitat.

(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 habitat on the Site is disturbed and of low quality for foraging. Moreover, the Site is not associated with roosting or breeding habitat. Therefore, the habitat to be removed is not likely to affect the long-term survival of the Barking Owl in the Locality.

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

There is no critical habitat for the Barking Owl listed under the *TSC* Act.

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

There is a Recovery Plan for the Barking Owl. This plan describes habitat loss, degradation and fragmentation, loss of hollow-bearing trees and a reduction in prey availability as amongst the major threats to this species. Thus, recovery actions, such as the protection of breeding, roosting and feeding habitat are important recovery actions. The Site is not associated with breeding activity nor provides roosting sites for the Barking Owl. The Site is low quality foraging habitat due to existing levels of disturbance, which would substantially lower the availability of prey. While it is likely that the Barking Owl would occasionally forage on the Site, it is clear that the proposal would not affect important foraging habitat and 17% of this habitat would remain post-development. Therefore, the proposal can be considered to be consistent with the objectives and actions of the Recovery Plan for the Barking Owl.

No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-bearing trees would be retained post-development. A range of hollow sizes and

orientations would remain. None of the hollow-bearing trees that would be removed are used for breeding by the Barking Owl.

In relation to the proposal, none of these KTPs would lead to adverse outcomes for the Barking Owl.

A Species Impact Statement is not required for the Barking Owl.

Powerful Owl *Ninox strenua*: Vulnerable

The Powerful Owl inhabits wet and dry Eucalypt forests. It roosts in trees by day, but it is dependent upon hollow-bearing trees for nesting. Arboreal mammals are the main prey, though ground mammals and birds are also taken. Adult birds form permanent mating bonds, occupying territories of 800 to in excess of 1,000 ha in area. This species is highly mobile and local birds are likely to be connected with sub-populations in areas such as Bundjalung NP, the Bungawalbin catchment and Yuraygir NP. Powerful Owls have even been recorded living in urban areas.

Threats to the Powerful Owl include:

- Historical loss and fragmentation of suitable forest and woodland habitat from land clearing for residential and agricultural development. This loss also affects the populations of arboreal prey species, particularly the Greater Glider which reduces food availability for the Powerful Owl.
- Inappropriate forest harvesting practices that have changed forest structure and removed old growth hollow-bearing trees. Loss of hollow-bearing trees reduces the availability of suitable nest sites and prey habitat.
- Can be extremely sensitive to disturbance around the nest site, particularly during pre-laying, laying and downy chick stages. Disturbance during the breeding period may affect breeding success.
- High frequency hazard reduction burning may also reduce the longevity of individuals by affecting prey availability.
- Road kills.
- Secondary poisoning.
- Predation of fledglings by foxes, dogs and cats.

The entire Site has been underscrubbed and some of the canopy has been removed. This would lower the density of potential Powerful Owl prey, however, it is likely that the Site would be used occasionally for foraging. This, coupled with the large home-ranges of the Powerful Owl, indicates that the Site would only be used for foraging on rare occasions. No owl roosts and breeding hollows (which are indicated by the presence of prey remains and owl pellets) were located on the Site.

(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.

Due to existing levels of disturbance, the Site is likely to be low quality foraging habitat for the Powerful Owl and would only be used occasionally. The proposal would require 12 ha of the Site to be cleared of existing vegetation. The Powerful Owl has a large home-range, suggesting that the removal of 12 ha of low quality habitat would not be sufficient to place a population of this species at risk of extinction. Moreover, the Powerful Owl is known to persist in well-treed urban areas and is likely to use the 3 ha of habitat that would remain on the Site for foraging.

(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.

There are no endangered populations of the Powerful Owl listed under the *TSC* Act.

(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

na

(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.

na

(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, and

The proposal would affect 83% (15 ha) of the Site. This habitat is already highly disturbed due to partial removal of the canopy and underscrubbing (9 ha) or cleared except for some scattered trees (6 ha). Therefore, the Site is poor foraging habitat for the Powerful Owl.

(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

The Powerful Owl is a large, highly mobile species capable of crossing cleared areas to move through its territory. Accordingly, the proposal would not cause the habitat of the Powerful Owl to become fragmented or isolated from other areas of habitat.

(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 habitat on the Site is disturbed and of low quality for foraging. Moreover, the Site is not associated with roosting or breeding habitat. Therefore, the habitat to be removed is not likely to affect the long-term survival of the Powerful Owl in the Locality.

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

There is no critical habitat for the Powerful Owl listed under the *TSC* Act.

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

There is a Recovery Plan for the large forest owls, which includes the Powerful Owl. This plan describes habitat loss, degradation and fragmentation, loss of hollow-bearing trees and a reduction in prey availability as amongst the major threats to this species. Thus, recovery actions, such as the protection of breeding, roosting and feeding habitat are important recovery actions. The Site is not associated with breeding activity nor provides roosting sites for the Powerful Owl. The Site is low quality foraging habitat due to existing levels of disturbance, which would substantially lower the availability of prey. While it is likely that the Powerful Owl would occasionally forage on the Site, it is clear that the proposal would not affect

important foraging habitat and 25% (3 ha) of existing habitat would remain post-development. Therefore, the proposal can be considered to be consistent with the objectives and actions of the Recovery Plan for the Powerful Owl.

No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-bearing trees would be retained post-development. A range of hollow sizes and orientations would remain. None of the hollow-bearing trees that would be removed are used for breeding by the Powerful Owl.

In relation to the proposal, none of these KTPs would lead to adverse outcomes for the Powerful Owl.

A Species Impact Statement is not required for the Powerful Owl.

Black-chinned Honeyeater *Melithreptus gularis gularis* (Vulnerable)

The Black-chinned Honeyeater is mostly found inland of the Great Dividing Range. However, regular sightings are made in the drier forests of the Richmond and Clarence catchments. It is a gregarious species that is usually seen in pairs and small groups of up to 12 birds. It tends to occur in large bushland remnants

where home-ranges are typically around 5 ha in area. Its diet consists of insects, honeydew and nectar. The Black-chinned Honeyeater may breed solitarily or co-operatively, with up to five or six adults. The nest is placed high in the crown of a tree, in the uppermost lateral branches, hidden by foliage.

Threats to the Black-chinned Honeyeater include:

- Clearing of remnant open forest and woodland habitat.
- Poor regeneration of open forest and woodland habitats because of intense grazing.
- Exclusion from smaller remnants by aggressive species such as the Noisy Miner (*Manorina melanocephala*).

Only two Atlas database records of the Black-chinned Honeyeater are known to the Locality. This indicates that it does not have a strong presence in the area as it is outside is core distribution. Moreover, due to its small area, the Site is unlikely to provide foraging or breeding habitat for the Black-chinned Honeyeater. However, the Site may provide movement habitat for this species, facilitating seasonal movements as food availability changes during the year.

(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.

Due to its small area, the Black-chinned Honeyeater is unlikely to forage on the Site. However, the Site may be movement habitat for this species. The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This habitat would be sufficient to facilitate movement within the Locality by the Black-chinned Honeyeater. Therefore, the Proposal would not have an adverse effect on the life cycle of the Black-chinned Honeyeater such that it would place a viable local population at risk of extinction.

(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.

There are no endangered populations of the Black-chinned Honeyeater listed under the *TSC* Act.

(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

na

(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.

na

(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, and

The proposal would affect 83% (15 ha) of the Site. This habitat is already highly disturbed due to partial removal of the canopy and underscrubbing (9 ha) or cleared except for some scattered trees (6 ha). Therefore, the Site is poor foraging habitat for the Black-chinned Honeyeater.

(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

The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This habitat would be sufficient to facilitate movement within the Locality by the Black-chinned Honeyeater. Therefore, the Proposal would not cause the habitat of the Black-chinned Honeyeater to become fragmented or isolated.

(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 habitat on the Site is too small in area to support regular use by the Black-chinned Honeyeater. The ability of this species to move across the Site would remain post-development. Therefore, the Proposal would not have an adverse effect on the long-term survival of the Black-chinned Honeyeater in the Locality.

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

There is no critical habitat for the Black-chinned Honeyeater listed under the *TSC* Act.

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

There is no Recovery Plan for the Black-chinned Honeyeater. No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-bearing trees would be retained post-development. A range of hollow sizes and orientations would remain. However, the Black-chinned Honeyeater is not a hollow-using species.

In relation to the proposal, none of these KTPs would lead to adverse outcomes for the Black-chinned Honeyeater.

A Species Impact Statement is not required for the Black-chinned Honeyeater.

Grey-crowned Babbler *Pomatostomus temporalis temporalis* (Vulnerable)

The Grey-crowned Babbler occupies woodlands with mixed age and/or size classes of trees, tall shrubs and a cover of grasses and forbs. This species lives in family groups: a breeding pair plus siblings and offspring, which assist in reproductive activities. It is a noisy and conspicuous species that defends a collective territory of about 12 ha. Its flight is laboured and it has difficultly crossing large open areas, preferring the hop to the top or a tree and glide to the next. Their diet consists of insects, spiders and small lizards, which are taken from the ground and from trees and shrubs.

Threats to the Grey-crowned Babbler include:

- Clearing of woodland remnants.
- Heavy grazing and removal of coarse woody debris within woodland remnants.
- Nest predation by species such as ravens and butcherbirds may be an issue in some regions where populations are small and fragmented.

The Grey-crowned Babbler would have a low probability of foraging regularly on the Site due to regular slashing (which would have a similar effect to heavy grazing) and lack of coarse woody debris. However, the Site may provide movement habitat for this species, facilitating seasonal movements as food availability changes during the year and the dispersal of sub-adult birds.

(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 Grey-crowned Babbler is unlikely to forage on the Site due to the lack of ground layer complexity. However, the Site may be movement habitat for this species. The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This habitat would be

sufficient to facilitate movement within the Locality by the Grey-crowned Babbler. Therefore, the Proposal would not have an adverse effect on the life cycle of the Grey-crowned Babbler such that it would place a viable local population at risk of extinction.

(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.

There are no endangered populations of the Grey-crowned Babbler listed under the *TSC* Act.

(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

na

(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.

na

(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, and

The proposal would affect 83% (15 ha) of the Site. This habitat is already highly disturbed due to partial removal of the canopy and underscrubbing (9 ha) or cleared except for some scattered trees (6 ha). Therefore, the Site is poor foraging habitat for the Grey-crowned Babbler.

(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

The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This habitat would be sufficient to facilitate movement within the

Locality by the Grey-crowned Babbler. Therefore, the Proposal would not cause the habitat of the Grey-crowned Babbler to become fragmented or isolated.

(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 habitat on the Site is not of sufficient quality to support regular use by the Grey-crowned Babbler. The ability of this species to move across the Site would remain post-development. Therefore, the Proposal would not have an adverse effect on the long-term survival of the Grey-crowned Babbler in the Locality.

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

There is no critical habitat for the Grey-crowned Babbler listed under the *TSC* Act.

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

There is no Recovery Plan for the Grey-crowned Babbler. No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-

bearing trees would be retained post-development. A range of hollow sizes and orientations would remain. None of the hollow-bearing trees that would be removed are used for breeding by the Powerful Owl.

In relation to the proposal, none of these KTPs would lead to adverse outcomes for the Grey-crowned Babbler.

A Species Impact Statement is not required for the Grey-crowned Babbler.

Varied Sittella *Daphoenositta chrysoptera* (Vulnerable)

The Varied Sittella inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches. It is a sedentary, species with a large home-range occupied by up to 30 individuals. The Varied Sittella feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy. It builds a cup-shaped nest in an upright tree fork high in the canopy of a living tree.

Threats to the Varied Sittella include:

- Sensitivity to habitat isolation and simplification, including reductions in tree species diversity, tree canopy cover, shrub cover, ground cover, logs, fallen branches and litter.
- Population decline has been attributed to declining habitat. The sedentary nature of the Varied Sittella makes cleared land a potential barrier to movement.
- Adversely impacted by Noisy Miners in woodland patches
- Habitat degradation through small-scale clearing for fencelines and road verges, rural tree decline, loss of paddock trees and connectivity, 'tidying up' on farms, and firewood collection.

The Site may form part of the home-range of a group of Varied Sittellas. However, the simplification of habitat structure on the Site suggests that low quality foraging habitat is available. The Site is also likely to be important to this species by enabling movement between treed areas in the Locality, both at the home-range level and for sub-adult dispersal.

(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 Site may be low quality foraging habitat and movement habitat for the Varied Sittella. The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This habitat would continue to provide some foraging habitat and facilitate movement within the Locality by the Varied Sittella. Therefore, the Proposal is not likely to have an adverse effect on the life cycle of the Varied Sittella such that it would place a viable local population at risk of extinction.

(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.

There are no endangered populations of the Varied Sittella listed under the *TSC* Act.

(d) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(ii) 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

na

(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.

na

(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, and

The proposal would affect 83% (15 ha) of the Site. This habitat is already highly disturbed due to partial removal of the canopy and underscrubbing (9 ha) or cleared except for some scattered trees (6 ha). Therefore, the Site is poor foraging habitat for the Varied Sittella.

(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

The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This habitat would be sufficient to facilitate movement within the Locality by the Varied Sittella. Therefore, the Proposal would not cause the habitat of the Varied Sittellato become fragmented or isolated.

(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 Site provides low quality foraging habitat for the Varied Sittella due to existing levels of disturbance. The ability of this species to move across the Site would remain post-development. Therefore, the Proposal would not have an adverse effect on the long-term survival of Varied Sittella in the Locality.

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

There is no critical habitat for the Varied Sittellalisted under the *TSC* Act.

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

There is no Recovery Plan for the Varied Sittella. No relevant threat abatement plans apply to the proposal.

No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-bearing trees would be retained post-development. A range of hollow sizes and orientations would remain. None of the hollow-bearing trees that would be removed are used for breeding by the Powerful Owl.

In relation to the proposal, none of these KTPs would lead to adverse outcomes for the Varied Sittellawl.

A Species Impact Statement is not required for the Varied Sittella.

Brush-tailed Phascogale *Phascogale tapoatafa* (Vulnerable)

The Brush-tailed Phascogale is a small arboreal carnivorous marsupial that occupies dry Eucalypt forest and woodland with a sparse groundcover, which increases movement ability between the trees in which it forages. This species has very large spatial requirements for a mammal of its size. Home-ranges are generally in the order of 41 ha for females and 106 ha for males, although the home range can be much smaller in very high quality habitat. It is capable of persisting in linear habitat, such as treed roadside reserves. Female home ranges are exclusive of other females, but the home ranges of males overlap with both sexes. Females may live for two years, producing two litters of up to eight offspring (mean 6.6), but males die following their first breeding season. The diet of the Brush-tailed Phascogale consists mainly of arthropods (insects and spiders), but small vertebrates and nectar are also included. The Brush-tailed Phascogale is dependent on tree hollows for daily shelter and breeding.

Threats to the Brush-tailed Phascogale include:

- Loss and fragmentation of habitat.
- Loss of hollow-bearing trees.
- Predation by foxes and cats.
- Competition for nesting hollows with the introduced honeybee.

The Site (19 ha) is clearly smaller than the home-range the Brush-tailed Phascogale. However, the Site is reasonably well connected to proximate areas of habitat. This suggests that it is possible that the Site could be used occasionally for foraging. It is also possible that the may use the hollow-bearing trees that are on the Site. Importantly, the Site provides connecting habitat in the north-south direction. This may facilitate sub-adult dispersal between habitat patches in the Locality and also allow adult males to access mates during the breeding season.

(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 Brush-tailed Phascogale may use the Site as foraging and/or movement habitat. The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This node is location in the area with the highest density of hollow-bearing tress on the Site. This habitat would continue to provide some foraging habitat, provide shelter and/or breeding sites, and facilitate movement within the Locality for dispersal and breeding. The Brush-tailed Phascogale is known to use patchy and linear habitat elements for living and movement. Therefore, the Proposal is not likely to have an adverse effect on the life cycle of the Brush-tailed Phascogale such that it would place a viable local population at risk of extinction.

(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.

There are no endangered populations of the Brush-tailed Phascogale listed under the *TSC* Act.

(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

na

(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.

na

(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, and

The proposal would affect 83% (15 ha) of the Site. This habitat is already highly disturbed due to partial removal of the canopy and underscrubbing (9 ha) or cleared except for some scattered trees (6 ha). Therefore, the Site is moderate quality foraging habitat for the Brush-tailed Phascogale.

(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

The Brush-tailed Phascogale has a larger home-range than the area of the Site. To be able to use the Site, the Brush-tailed Phascogale would have to persist in a patchy and somewhat fragmented landscape, which it is capable of doing. The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This would maintain the current north-south connectivity across the Site post-development. Therefore, the Proposal would not cause the habitat of the Brush-tailed Phascogale to become fragmented or isolated.

(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 habitat on the Site is disturbed and of moderate quality for foraging. Moreover, the Site is smaller than the home-range of the Brush-tailed Phascogale. Much larger areas of habitat occur to the south of the Site. Therefore, the habitat to be removed is not likely to affect the long-term survival of the Brush-tailed Phascogalein the Locality.

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

There is no critical habitat for the Brush-tailed Phascogale listed under the *TSC* Act.

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

There is no Recovery Plan for the Brush-tailed Phascogale. No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-bearing trees would be retained post-development. A range of hollow sizes and orientations would remain. Therefore, it is likely that hollows suitable of the Brush-tailed Phascogale would remain post-development.

In relation to the proposal, none of these KTPs are likely to lead to adverse outcomes for the Brush-tailed Phascogale.

A Species Impact Statement is not required for the Brush-tailed Phascogale.

Spotted-tailed Quoll *Dasyurus maculatus* (Vulnerable)

The Spotted-tailed Quoll occurs in a variety of forest types. It has a very large territory that can be up to 7.5 km^2 for females and 35 km^2 for males. Thus, the Site would only be a small part of a territory. Medium-sized mammals are the major prey

items, but small and large mammals, birds and reptiles are occasionally taken (Belcher 1995, Dawson *et al.* 2007). Hollow-bearing trees, fallen logs and rock crevices are used as den sites; only hollow-bearing trees occur on the Site. Features such as large logs and rock piles are used as latrine sites, which function as territory markers.

Threats to the Spotted-tailed Quoll include:

- Loss, fragmentation and degradation of habitat.
- Accidental poisoning during wild dog and fox control programs. Deliberate poisoning, shooting and trapping may also be an issue.
- Competition with introduced predators such as cats and foxes.

The Site (19 ha) is clearly smaller than the home-range the Spotted-tailed Quoll. However, the Site is reasonably well connected to proximate areas of habitat. This suggests that it is possible that the Site could be used occasionally for foraging. It is also possible that the may use the hollow-bearing trees that are on the Site, but there are no suitable fallen logs or rock crevices. Importantly, the Site provides connecting habitat in the north-south direction. This may facilitate sub-adult dispersal between habitat patches in the Locality and also allow adult males to access mates during the breeding season.

(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 Spotted-tailed Quoll may use the Site as foraging and/or movement habitat. The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This node is location in the area with the highest density of hollow-bearing tress on the Site. This habitat would continue to provide some foraging habitat, provide shelter and/or breeding sites, and facilitate movement within the Locality for dispersal and breeding. The Spotted-tailed Quoll is known to use patchy and linear habitat elements for living and movement. Therefore, the Proposal is not likely to have an adverse effect on the life

cycle of the Spotted-tailed Quoll such that it would place a viable local population at risk of extinction.

(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.

There are no endangered populations of the Spotted-tailed Quoll listed under the *TSC* Act.

(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

na

(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.

na

(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, and

The proposal would affect 83% (15 ha) of the Site. This habitat is already highly disturbed due to partial removal of the canopy and underscrubbing (9 ha) or cleared except for some scattered trees (6 ha). Therefore, the Site is moderate quality foraging habitat for the Spotted-tailed Quoll.

(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

The Spotted-tailed Quoll has a much larger home-range than the area of the Site. To be able to use the Site, the Spotted-tailed Quoll would have to persist in a patchy and somewhat fragmented landscape, which it is capable of doing. The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western

boundary. This would maintain the current north-south connectivity across the Site post-development. Therefore, the Proposal would not cause the habitat of the Spotted-tailed Quoll to become fragmented or isolated.

(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 habitat on the Site is disturbed and of moderate quality for foraging. Moreover, the Site is smaller than the home-range of the Spotted-tailed Quoll. Much larger areas of habitat occur to the south of the Site. Therefore, the habitat to be removed is not likely to affect the long-term survival of the Spotted-tailed Quoll in the Locality.

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

There is no critical habitat for the Spotted-tailed Quoll listed under the *TSC* Act.

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

There is no Recovery Plan for the Spotted-tailed Quoll. No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-

bearing trees would be retained post-development. A range of hollow sizes and orientations would remain. Therefore, it is likely that hollows suitable of the Spotted-tailed Quoll would remain post-development.

In relation to the proposal, none of these KTPs are likely to lead to adverse outcomes for the Spotted-tailed Quoll.

A Species Impact Statement is not required for the Spotted-tailed Quoll.

Squirrel Glider *Petaurus norfolcensis*: Vulnerable

The Squirrel Glider feeds upon exudates (i.e. nectar, honeydew, sap, Acacia gum) and arthropods (insects and spiders). Of particular importance is a sequence of at least three tree species that have staggered, but overlapping, flowering periods extending from winter to late spring. Hollow-bearing trees are required for daytime shelter. The home-range of a Squirrel Glider social group averages about 7 ha, but can be greater where tree cover is reduced. A Squirrel Glider group typically consists of an adult male, one or two adult females and their offspring.

Threats to the Squirrel Glider include:

- Loss, fragmentation and degradation of habitat.
- Loss of hollow-bearing trees.
- Loss of flowering understorey and midstorey shrubs in forests.
- Individuals can get caught in barbed wire fences while gliding.
- Loss of hollow availability due to takeover by feral honey bees and exotic birds.

The removal of the understorey and partial canopy removal on the Site suggests that habitat quality for the Squirrel Glider has been lowered. Accordingly, the Site may be capable of supporting one or two Squirrel Glider groups because both foraging resources and hollow-bearing trees are available. The Site also provides north-south connectivity for the Squirrel Glider. The Squirrel Glider's movement ability enables it to exploit linear and patchy habitats provides tree spacing does not exceed gliding ability, which is about 50 m. Thus, the Squirrel Glider is likely to occupy proximate areas of habitat, which collectively form a local population.

(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 Squirrel Glider may use the Site as foraging denning and/or movement habitat. The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This node is location in the area with the highest density of hollow-bearing tress on the Site. This habitat would continue to provide some foraging habitat, provide shelter and/or breeding sites, and facilitate movement within the Locality for dispersal and breeding. The Squirrel Glider is known to use patchy and linear habitat elements for living and movement. Therefore, the Proposal is not likely to have an adverse effect on the life cycle of the Squirrel Glider such that it would place a viable local population at risk of extinction.

(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.

There are no endangered populations of the Squirrel Glider in the Locality listed under the *TSC* Act.

(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

na

(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.

na

(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, and

The proposal would affect 83% (15 ha) of the Site. This habitat is already highly disturbed due to partial removal of the canopy and underscrubbing (9 ha) or cleared except for some scattered trees (6 ha). Therefore, the Site is moderate quality foraging habitat for the Squirrel Glider.

(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

The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This would maintain the current north-south connectivity across the Site post-development. Therefore, the Proposal would not cause the habitat of the Squirrel Glider to become fragmented or isolated.

(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 habitat on the Site is disturbed and of moderate quality for foraging and capable of support one or two Squirrel Glider groups. Therefore, population viability in the Locality will depend on the maintenance of connectivity with glider groups occurring off the Site. The proposal will retain adequate movement and living habitat to ensure that connectivity will be maintained. Accordingly, the habitat to be removed is not likely to affect the long-term survival of the Squirrel Glider in the Locality.

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

There is no critical habitat for the Squirrel Glider listed under the *TSC* Act.

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

There is no Recovery Plan for the Squirrel Glider. No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-bearing trees would be retained post-development. A range of hollow sizes and orientations would remain. Therefore, it is likely that hollows suitable of the Squirrel Glider would remain post-development.

In relation to the proposal, none of these KTPs are likely to lead to adverse outcomes for the Squirrel Glider.

A Species Impact Statement is not required for the Squirrel Glider.

Grey-headed Flying-fox *Pteropus poliocephalus*: Vulnerable

The Grey-headed Flying-fox occurs in a range of forest habitats, including rainforest, Eucalypt forest, swamp forest and heathland. It feeds upon nectar and fruit, including commercial fruits. It roosts in large numbers, called camps, in dense forest close to water, including mangroves. Roost camps are generally within 20 km of a reliable food source.

Threats to the Grey-headed Flying-fox include:

- Loss of foraging habitat.
- Loss and disturbance of roosting sites.
- Unregulated shooting.
- Electrocution on powerlines, entanglement in netting and on barbed-wire.
- Competition with Black Flying-foxes.

- Negative public attitudes and conflict with humans.
- Impacts from climate change.
- Disease.

The Grey-headed Flying-fox is likely to use the Site to obtain nectar when seasonal blossom is available. There are no fruiting trees available. The nearest roost camp is in Maclean, about 2.7 km north-west of the Site.

(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 Grey-headed Flying-fox would use the Site to obtain nectar when seasonal blossom is available. As such, its use of the Site would be variable within and between years depending on the flowering patterns of the available trees. The Grey-headed Flying-fox would not roost on the Site and the nearest known camp is 2.7 km to the north-west, in Maclean.

The proposed development would affect 15 ha (83%) of the Site. However, only 12 ha is covered by a tree canopy, 3 ha (25%) of which would remain post-development. The retained habitat would contain representation of the current floristic diversity on the Site. The loss of 9 ha of foraging habitat is not likely to place a viable local population of the Grey-headed Flying-fox at risk of extinction.

(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.

There are no endangered populations of the Grey-headed Flying-fox listed under the *TSC* Act.

(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

na

(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.

na

(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, and

The proposal would affect 83% (15 ha) of the Site. This habitat is already highly disturbed due to partial removal of the canopy and underscrubbing (9 ha) or cleared except for some scattered trees (6 ha).

(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

The Grey-headed Flying-fox is a highly mobile species capable of travelling many kilometres across cleared land to reach feeding areas. Therefore, the proposed development would not cause the habitat of the Grey-headed Flying-fox to become fragmented or isolated.

(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 extent of clearing is not sufficient to affect the long-term viability of the Grey-headed Flying-fox in the Locality.

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

There is no critical habitat for the Grey-headed Flying-fox listed under the *TSC* Act.

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

There is no Recovery Plan for the Grey-headed Flying-fox. No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-bearing trees would be retained post-development. A range of hollow sizes and orientations would remain.

In relation to the proposal, none of these KTPs are likely to lead to adverse outcomes for the Grey-headed Flying-fox.

A Species Impact Statement is not required for the Grey-headed Flying-fox.

Eastern freetail-bat *Mormopterus norfolkensis* (Vulnerable)

The Eastern freetail-bat occurs along the east coast from southern Queensland to southern NSW. It occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. It typically roosts in tree hollows but will also roost under bark or in artificial structures. Nothing is known of its diet, though it would be insectivorous. Like other Mormopterus species, they are likely to forage in more open areas, such as above the tree canopy, along forest edges and in between well-spaced trees.

Threats to the Eastern Freetail-bat include:

- Loss of hollow-bearing trees.
- Loss of foraging habitat.
- Application of pesticides in or adjacent to foraging areas.

The Eastern freetail-bat is likely to forage on or over the Site. It is also possible that it roosts, at least occasionally, in hollow-bearing trees on the Site. Individual bats are also likely to include areas proximate to the Site within their foraging ranges.

(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 Eastern freetail-bat may use the Site as foraging, roosting and/or movement habitat. The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This node is location in the area with the highest density of hollow-bearing tress on the Site. This habitat would continue to provide some foraging habitat, provide shelter and/or breeding sites, and facilitate movement within the Locality for dispersal and breeding. The Eastern freetail-bat is likely to use patchy and linear habitat elements for living and movement. Therefore, the Proposal is not likely to have an adverse effect on the life cycle of the Eastern freetail-bat such that it would place a viable local population at risk of extinction.

(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.

There are no endangered populations of the Eastern freetail-bat in the Locality listed under the *TSC* Act.

(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

na

(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.

na

(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, and

The proposal would affect 83% (15 ha) of the Site. This habitat is already highly disturbed due to partial removal of the canopy and underscrubbing (9 ha) or cleared except for some scattered trees (6 ha). However, this represents good foraging habitat for the Eastern freetail-bat.

(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

The Eastern freetail-bat is a flying mammal capable of crossing substantial gaps between vegetation. However, the Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This would maintain the current north-south connectivity across the Site post-development. Therefore, the Proposal would not cause the habitat of the Eastern freetail-bat to become fragmented or isolated.

(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 capacity for flight makes the Eastern freetail-bat highly mobile, enabling a high degree of connectivity within a population and access to widely dispersed foraging and roosting sites. It is unlikely to the loss of 9 ha of tree habitat would affect the Eastern freetail-bat, particularly as it is likely that it would continue to forage over the Site post-development. The proposal would retain adequate movement and living habitat to ensure that population connectivity will be maintained. Approximately 25% of hollow-bearing trees would be retained on the Site post-development. It is likely that suitable roost locations would be retained because a range of hollow-bearing trees sizes and trees with multiple hollows would be conserved. This suggests that a variety of hollow sizes and types would be available post-development, some of which are likely to be suitable for the Eastern freetail-bat. Accordingly, the habitat to be

removed is not likely to affect the long-term survival of the Eastern freetail-bat in the Locality.

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

There is no critical habitat for the Eastern freetail-bat listed under the *TSC* Act.

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

There is no Recovery Plan for the Eastern freetail-bat. No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-bearing trees would be retained post-development. A range of hollow sizes and orientations would remain. Therefore, it is likely that hollows suitable of the Eastern freetail-bat would remain post-development.

In relation to the proposal, none of these KTPs are likely to lead to adverse outcomes for the Eastern freetail-bat.

A Species Impact Statement is not required for the Eastern freetail-bat.

Hoary Wattled Bat *Chalinolobus nigrogriseus* (Vulnerable)

The Hoary Wattled Bat occurs in dry open eucalypt forests. It prefers forests dominated by Spotted Gum, boxes and ironbarks, and heathy forests with an overstorey dominated by Red Bloodwood and Scribbly Gum. The Hoary Wattled Bat flies fast below the forest canopy, therefore, it favours areas where the understorey is open.

Threats to the Hoary Wattled Bat include:

- Clearing and fragmentation of dry forest and woodland habitat through clearing for agriculture and development.
- Loss of hollow-bearing trees used for roosting and maternity sites, usually as a result of too-frequent burning and forest management favouring younger stands.
- Use of pesticides.

The Hoary Wattled Bat is likely to forage on the Site. It is also possible that it roosts, at least occasionally, in hollow-bearing trees on the Site. Individual bats are also likely to include areas proximate to the Site within their foraging ranges.

(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 Hoary Wattled Bat may use the Site as foraging, roosting and/or movement habitat. The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This node is location in the area with the highest density of hollow-bearing tress on the Site. This habitat would continue to provide some foraging habitat, provide shelter and/or breeding sites, and facilitate movement within the Locality for dispersal and breeding. The Hoary Wattled Bat is likely to use patchy and linear habitat elements for living and movement. Therefore, the Proposal is not likely to have an adverse effect on the life cycle of the Hoary Wattled Bat such that it would place a viable local population at risk of extinction.

(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.

There are no endangered populations of the Hoary Wattled Bat in the Locality listed under the *TSC* Act.

(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

na

(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.

na

(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, and

The proposal would affect 83% (15 ha) of the Site. This habitat is already highly disturbed due to partial removal of the canopy and underscrubbing (9 ha) or cleared except for some scattered trees (6 ha). However, this represents good foraging habitat for the Hoary Wattled Bat.

(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

The Hoary Wattled Bat is a flying mammal capable of crossing substantial gaps between vegetation. However, the Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This would maintain the current north-south connectivity across the Site post-development. Therefore, the Proposal would not cause the habitat of the Hoary Wattled Bat to become fragmented or isolated.

(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 capacity for flight makes the Hoary Wattled Bat highly mobile, enabling a high degree of connectivity within a population and access to widely dispersed foraging and roosting sites. It is unlikely to the loss of 9 ha of tree habitat would affect the Hoary Wattled Bat, particularly as it is likely that it would continue to forage on the Site post-development. The proposal would retain adequate movement and living habitat to ensure that population connectivity will be maintained. Approximately 25% of hollow-bearing trees would be retained on the Site post-development. It is likely that suitable roost locations would be retained because a range of hollow-bearing trees sizes and trees with multiple hollows would be conserved. This suggests that a variety of hollow sizes and types would be available post-development, some of which are likely to be suitable for the Hoary Wattled Bat. Accordingly, the habitat to be removed is not likely to affect the long-term survival of the Hoary Wattled Bat in the Locality.

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

There is no critical habitat for the Hoary Wattled Bat listed under the *TSC* Act.

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

There is no Recovery Plan for the Hoary Wattled Bat. No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-bearing trees would be retained post-development. A range of hollow sizes and orientations would remain. Therefore, it is likely that hollows suitable of the Hoary Wattled Bat would remain post-development.

In relation to the proposal, none of these KTPs are likely to lead to adverse outcomes for the Hoary Wattled Bat.

A Species Impact Statement is not required for the Hoary Wattled Bat.

Greater Broad-nosed Bat *Scoteanax rueppellii* (Vulnerable)

The Greater Broad-nosed Bat occurs in a variety of habitats, including woodland, moist and dry eucalypt forest, and rainforest. However, it is most commonly found in tall wet forest. It typically roosts in tree hollows, but it is known to use buildings. The Greater Broad-nosed Bat forages along habitat edges, most typically along creek and river corridors at an altitude of 3 - 6 m. It feeds on beetles and other large, slow-flying insects, even other bat species.

Threats to the Greater Broad-nosed Bat include:

- Disturbance to roosting and summer breeding sites.
- Foraging habitats are being cleared for residential and agricultural developments, including clearing by residents within rural subdivisions.
- Loss of hollow-bearing trees.
- Pesticides and herbicides may reduce the availability of insects, or result in the accumulation of toxic residues in individuals' fat stores.
- Changes to water regimes are likely to impact food resources, as is the use of pesticides and herbicides near waterways.

The Greater Broad-nosed Bat is likely to forage on or over the Site due to the presence of edge habitat. However, because the Site is not near water, it is likely to be low quality foraging habitat used only occasionally. It is also possible that it roosts, at least occasionally, in hollow-bearing trees on the Site.

(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 Greater Broad-nosed Bat may use the Site as foraging, roosting and/or movement habitat. However, the Site is likely to be low quality foraging habitat due to lack of creek or river corridors. The Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This node is location in the area with the highest density of hollow-bearing tress on the Site. This habitat would has substantial edge available, so it would continue to provide some foraging habitat, provide shelter and/or breeding sites, and facilitate movement within the Locality for dispersal and breeding. Therefore, the Proposal is not likely to have an adverse effect on the life cycle of the Greater Broad-nosed Bat such that it would place a viable local population at risk of extinction.

(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.

There are no endangered populations of the Greater Broad-nosed Bat in the Locality listed under the *TSC* Act.

(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

na

(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.

na

(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, and

The proposal would affect 83% (15 ha) of the Site. This habitat is already highly disturbed due to partial removal of the canopy and underscrubbing (9 ha) or cleared except for some scattered trees (6 ha). This represents low quality foraging habitat for the Greater Broad-nosed Bat because it is not proximate to water.

(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

The Greater Broad-nosed Bat is a flying mammal capable of crossing substantial gaps between vegetation. However, the Proposal would enable 3 ha of habitat to be retained on the Site post-development. This habitat would occur as a linear strip along the Site's southern and western boundaries, with a central node along the western boundary. This would maintain the current north-south connectivity across the Site post-development. Therefore, the Proposal would not cause the habitat of the Greater Broad-nosed Bat to become fragmented or isolated.

(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 capacity for flight makes the Greater Broad-nosed Bat highly mobile, enabling a high degree of connectivity within a population and access to widely dispersed foraging and roosting sites. It is unlikely to the loss of 9 ha of low quality foraging habitat would affect the Greater Broad-nosed Bat, particularly as it is likely that it would continue to forage on the Site post-development due to the maintenance of edge habitat. The proposal would retain adequate movement and living habitat to ensure that population connectivity will be maintained. Approximately 25% of hollow-bearing trees would be retained on the Site post-development. It is likely that suitable roost locations would be retained because a range of hollow-bearing trees sizes and trees with multiple hollows would be conserved. This suggests that a variety of hollow sizes and

types would be available post-development, some of which are likely to be suitable for the Greater Broad-nosed Bat. Accordingly, the habitat to be removed is not likely to affect the long-term survival of the Greater Broad-nosed Bat in the Locality.

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

There is no critical habitat for the Greater Broad-nosed Bat listed under the *TSC* Act.

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

There is no Recovery Plan for the Greater Broad-nosed Bat. No relevant threat abatement plans apply to the proposal.

(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 following key threatening processes (KTP) are relevant to the proposal.

KTP: clearing of native vegetation. The native vegetation on the Site is already highly disturbed and consists largely of canopy trees. The proposal would make a minor contribution to this threatening process.

KTP: the removal of dead wood and dead trees. The proposal would entail the removal of a small number of dead trees.

KTP: Loss of hollow-bearing trees. The proposal would require a moderate number of hollow-bearing trees to be removed. However, 3 ha of canopy vegetation would be retained on the Site. The retained area coincides with the area of highest hollow-bearing tree density on the Site. Therefore, it is estimated that >25% of the hollow-bearing trees would be retained post-development. A range of hollow sizes and orientations would remain. Therefore, it is likely that hollows suitable of the Greater Broad-nosed Bat would remain post-development.

In relation to the proposal, none of these KTPs are likely to lead to adverse outcomes for the Greater Broad-nosed Bat.

A Species Impact Statement is not required for the Greater Broad-nosed Bat.