

Bushfire Hazard Assessment

(Revised)

Lot 3 DP 270533

Bushfire Hazard Assessment



December 2012

Contents

1.	Introduction	1
1.1	Scope & Purpose	1
1.2	Legislative Framework	1
2.	Background	3
2.1	Location & Description	3
2.2	Zoning & Landuse	3
2.3	Significant Environmental Features	4
2.4	Threatened Species, Populations or Endangered Ecological Communities	4
2.5	Proposed Rezoning	4
3.	Bushfire Protection Assessment	6
3.1	Bushfire Assessment	6
3.1.1	Vegetation	6
3.1.2	Slope Analysis	6
3.1.3	Asset Protection Zones	6
3.1.4	General APZ Management	6
3.1.5	APZ Maintenance & Establishment	7
3.2	Standards for Bushfire Protection Measures – Residential Subdivision	7
3.3	Special Considerations	7
4.	Summary	8

List of Figures

- Figure 1 Bushfire Prone Land Map
- Figure 2 Existing Zoning Plan CHLEP 2000
- Figure 3 Aerial Photo and 2m Contours
- Figure 4 Proposed Zoning Plan

Annexure List

- Annexure A Bushfire Behaviour Analysis

Prepared by Holiday Coast Bushfire Solutions

1. Introduction

1.1 Scope & Purpose

Resource Design and Management Pty Ltd (RDM) has been engaged by The Village Building Company (TVBC) to prepare a Bushfire Hazard Assessment for Lot 3 DP 270533 (The Site). The assessment is to form part of a Planning Proposal seeking to rezone a portion of the lot from its current zoning 1A Rural Agriculture to 2E Residential Tourist under the Coffs Harbour LEP 2000. A Draft LEP 2012 is currently on exhibition, under this plan the propose zone will be R1 General Residential.

This Bushfire Hazard Assessment has been prepared with regards to:

- Planning for Bushfire Protection 2006,
- Bush Fire Prone Land Mapping Guideline 2006,
- Environmental Planning & Assessment Act 1979, and
- Rural Fire Act 1997.

From the information received and analysis undertaken this assessment:

- Identifies the site,
- Reviews the existing bushfire mapping and proposes revised mapping,
- Determines a bushfire threat,
- Makes recommendation with regards to Asset Protection Zones and Constructions Standards as prescribed in *Planning for Bushfire Protection 2006*,
- Supports a change in zoning of a portion of the subject site.

1.2 Legislative Framework

The Rural Fires Act 1997 and the Environmental Planning and Assessment Act 1979 institute a framework for environmental planning and assessment to consider bushfire hazard issues.

The existing Coffs Harbour City Council's bushfire prone land mapping indicates that Bush Fire Vegetation Category 1 occur on the subject site along with 100 and 30 m buffers see **Figure 1 – Bushfire Prone Land Map**.

Council's bushfire prone land mapping has been prepared as a requirement of Section 146 of the Environmental Planning and Assessment Act 1979 and in accordance with the NSW Rural Fire Services Guideline to Bushfire Prone Land Mapping.

Planning for Bushfire Protection 2006 has been adopted through the Environmental Planning and Assessment Amendment (Planning for Bushfire Protection) Regulation 2007 and the Rural Fires Amendment Regulation 2007.

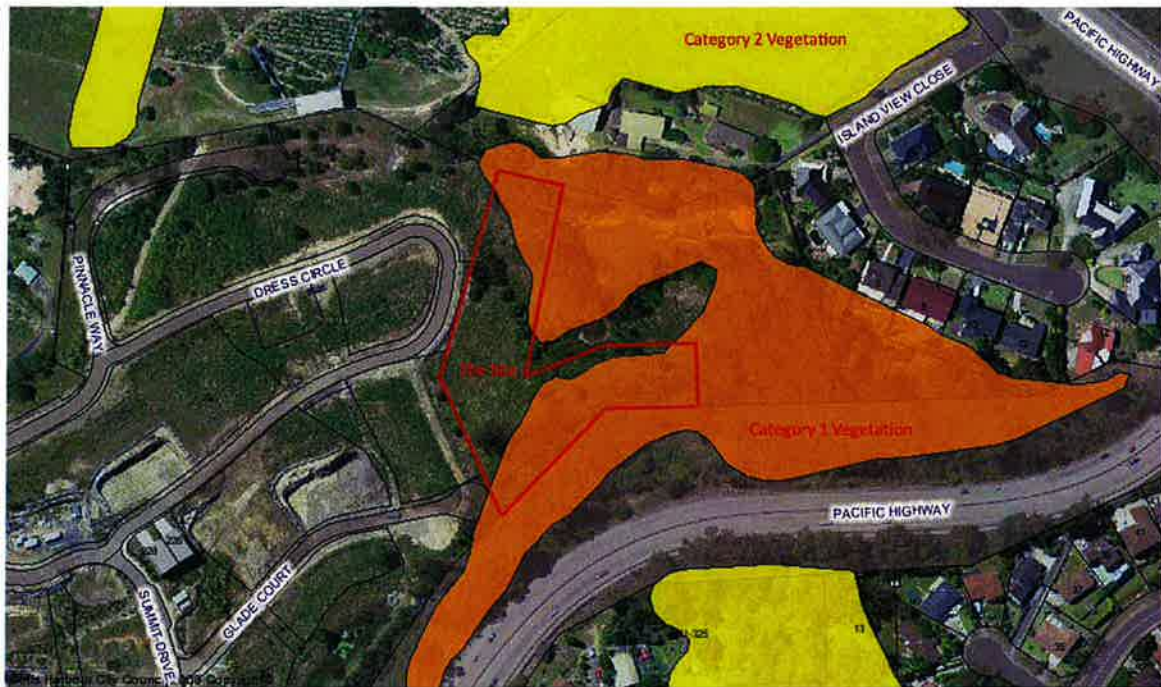


Figure 1 – Bushfire Prone Land Map

(Source: CHCC)

2. Background

2.1 Location & Description

The site is located east of the low to medium density residential development known as 'The Summit' in Coffs Harbour. The site is an L shaped allotment which has a southern boundary to the Pacific Highway and road frontage to the Dress Circle. All other boundaries abut neighbouring properties.

Vehicle access to the site is through The Summit development via the Dress Circle. There is no vehicle access to the Pacific Highway.

Parts of the site have significant slope, cross fall from north to south is 41m, most of this slope is concentrated to the south. **Figure 3 – Aerial Photo** which includes 2m contours detailing the topography of the site.

2.2 Zoning & Landuse

The subject site consists of three different zonings, 1A Rural Agriculture, 7A Environmental Protection Habitat and Catchment and 2E Residential Tourist under LEP 2000 refer to **Figure 2 – Existing Zoning Plan CHLEP 2000**.

Zonings surrounding the site include the 2A Residential, 6A Open Space Public Recreation, 5a Classified Road, 1A Rural Agriculture, 7A Environmental Protection Habitat and Catchment and 2E Residential Tourist refer to **Figure 2 – Existing Zoning Plan CHLEP 2000**.

The subject site is currently vacant with portions of cleared and managed land and some taller trees and vegetation.

Landuse surrounding the site include the low to medium density residential development known as "The Summit" to the west. North of the lot are banana farming and cropping uses. The lot to the immediate east is a large residential lot with a dwelling and extensive managed gardens and some bushland, to the south is the Pacific Highway refer **Figure 3 – Aerial Photo**.

A dwelling house is currently under construction on Lot 12 DP1080763 which is not shown in the Air Photos.

2.3 Significant Environmental Features

Approximately 3600m² of the site is identified as Primary Koala Habitat and has a high conservation value. This land is also zoned 7A Environmental Protection Habitat and Catchment. The remaining portions of the site consist of managed clear land and some modified bushland.

2.4 Threatened Species, Populations or Endangered Ecological Communities

As outlined in the Biodiversity Assessment, no threatened flora or threatened communities were detected in the study area.

Of the *TSC Act* listed fauna recorded in the locality, there is a very small quantity of potential foraging habitat for Glossy Black Cockatoo, Spotted-tail Quoll and Grey-headed Flying-fox.

2.5 Proposed Rezoning

The proposed rezoning application is to allow the opportunity for future residential and tourist development on a portion of the lot.

The planning proposal is seeking to rezone the 1A Rural Agriculture portion of the site to 2E Residential Tourist under LEP 2000 or R1 General Residential under the Draft LEP 2012. Refer to **Figure 4 – Proposed Zoning Plan**.

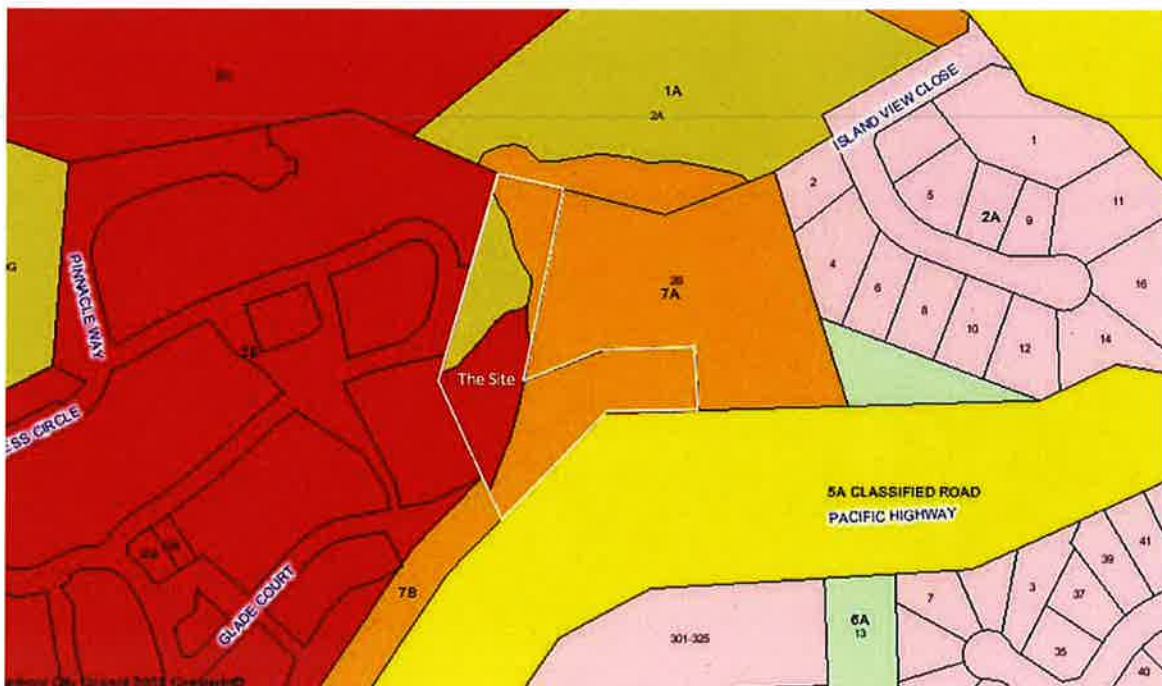


Figure 2 – Existing Zoning Plan CHLEP 2000

(Source: CHCC)



Figure 3 – Aerial Photo and 2m Contours

(Source: CHCC)

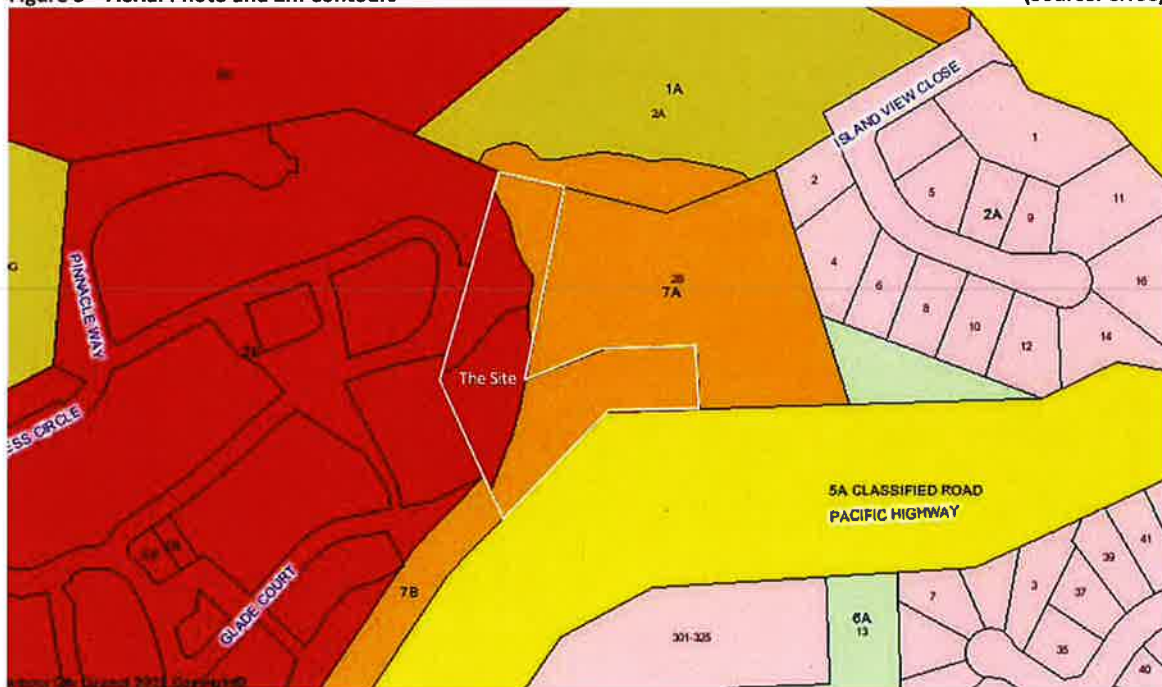


Figure 4 – Proposed Zoning Plan

(Source: CHCC & RDM)

3. Bushfire Protection Assessment

3.1 Bushfire Assessment

An inspection of the site was undertaken on 19 September 2012 and again in December 2012 by Steve Ellies. The central and northern portions of the site are clear of any significant vegetation except for isolated trees. The cleared land is managed (slashed and weed management) regularly. The eastern and southern portions of the site are heavily vegetated with both Category 1 Vegetation and invasive weed species.

3.1.1 Vegetation

This Section has been replaced by Section 3.1.1 Vegetation in the Attached Bushfire Behaviour Analysis (**Annexure A**).

3.1.2 Slope Analysis

This Section has been replaced by Section 3.1.2 Slope Analysis in the Attached Bushfire Behaviour Analysis (**Annexure A**).

3.1.3 Asset Protection Zones

This Section has been replaced by Section 3.1.3 Asset Protection Zones in the Attached Bushfire Behaviour Analysis (**Annexure A**).

3.1.4 General APZ Management

APZs are to be maintained as open areas with minimal fuel at ground level. Some trees and shrubs are appropriate within the APZ, provided that they do not provide a path for fire to transfer to the development. In addition, no combustible materials (e.g. wood piles, flammable building materials) should be kept in the APZ. To enhance the APZs, weed management activities should be undertaken regularly to control regenerating weeds.

Where an APZ is to be created and maintained on land that has a slope of 18° or steeper, measures are to be instigated to address concerns regarding land-slip and erosion control. The Northern Rivers Catchment Management Authority produces a guideline that addresses soil stability issues ("Saving Soil - a landholder's guide to preventing and repairing soil erosion"). The principles contained in this guide should be adopted where APZs are to be created and maintained on steep land. It is also noted that the slope of the subject property is similar to the slopes over the entire "The Summit" precinct. Whatever measures have been previously adopted to help prevent soil erosion should be sufficient to address the same concerns for this proposal.

3.1.5 APZ Maintenance & Establishment

Within the APZs the following measures should be undertaken:

- Any trees and shrubs planted are to be fire retardant and not form a continuous canopy,
- Understorey below any large trees are to be maintained,
- Ensure trees and shrubs do not touch or overhang buildings.

3.2 Standards for Bushfire Protection Measures – Residential Subdivision

As required in Section 4.1.3 of PBP 2006, the following outlines how future residential development of the site meets the deemed-to-satisfy criteria.

APZ's	The APZ's have been calculated in accordance with Appendix 2 of PBP 2006 as outlined in Section 3.1.3 of this report. The required APZ are to be achieved wholly within the boundaries of the site.
Access (1) - Public Road	Any public roads proposed as part of any future development of the site are to meet the acceptable solutions of PBP 2006.
Access (2) – Property Access	Any property access arrangements proposed as part of any future development of the site are to meet the acceptable solutions of PBP 2006.
Access (3) – Fire Trails	It is unlikely that fire trails will be required on the subject site.
Services – Water, Electricity & Gas	Water is to be supplied to the site as outlined in the h design pty ltd report provided with the Planning Proposal. Proposed is a Water Storage and pumps system which will provide water at a maximum flow rate of 20 liters per second. Fire Hydrants and Stop Valves will also be provided. This Provision of services to the site complies with acceptable solutions of PBP 2006.

3.3 Special Considerations

No adverse impacts to any items of environmental or cultural significance are expected as a result of the implementation and maintenance of APZs.

4. Summary

Resource Design and Management Pty Ltd has been engaged by The Village Building Company to prepare a Bushfire Hazard Assessment for Lot 3 DP 270533.

This assessment is to form part of a Planning Proposal seeking to rezone a portion of the lot from its current zoning 1A Rural Agriculture to 2E Residential Tourist under the Coffs Harbour LEP 2000. A Draft LEP 2012 is currently on exhibition, under this plan the propose zone will be R1 General Residential.

Based on consideration of the vegetation, effective slope, fire danger index and remnant concession allowable under Planning for Bushfire Protection 2006 for the vegetation along the southern boundary of the property, this assessment in conjunction with the Bushfire Behaviour Analysis prepared by Holiday Coast Bushfire Solutions (**Annexure A**) has identified that adequate and appropriate bushfire hazard protection measures are available, and can be implemented onsite.

It's Steve Ellis's (Bushfire Risk Assessor) opinion that the *remnant* vegetation is not commensurate with the structure of an indicative forest classification, therefore, even when granted the concession of a remnant under the provisions, the deemed-to-satisfy outcome is viewed as being conservative.

The proposed rezoning conforms with the deemed-to-satisfy requirements, standards, specific objectives and performance criteria set out in Planning for Bushfire Protection 2006.

Annexure A – Bushfire Behaviour Analysis



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19th December 2012

Mr Joseph Kane
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Dear Sir

BUSHFIRE BEHAVIOUR ANALYSIS LOT 3 DP 270533, THE SUMMIT, COFFS HARBOUR

I have been engaged by yourself to carry out a bushfire behaviour analysis of the site based on the **PBP-2006** methodology. The analysis is to be provided as a supporting document to your "Bushfire Hazard Assessment" (dated September 2012). This analysis is provided as additional to your sections 3.1.1 Vegetation, 3.1.2 Slope Analysis, and 3.1.3 Asset Protection Zones. It provides an analysis of the vegetation impacting the site from the south and south-east. It does not re-assess the other exposures of the property.

It does not address the other bushfire protection measures such as access, construction, utility services.

Overview of Proposal

It is my understanding that your original Bushfire Hazard Assessment report was prepared in support of a rezoning application for part of the lot, from 1A Rural Agriculture to 2E Residential Tourist.

The portion of the site subject to the rezoning is identified in the following Figure.

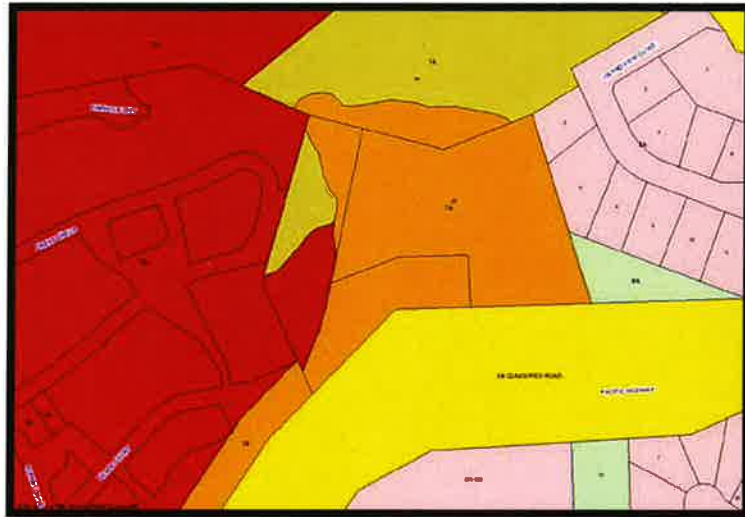


Figure 1: zone map (CHCC LEP maps, 2012)

3.1.1 Vegetation

The vegetation impacting on the site from the south and south-east is a strip of forest remnant that separates the site from the Pacific Highway. The remnant is a weed-infested dry sclerophyll remnant that has been modified by rudimentary maintenance. The canopy of the remnant is open, and with regular slashing the area could quite comfortably be managed as APZ.

The remnant has a width that varies along the southern boundary of the site, ranging from 25m (narrowest width) to 45m (widest area). The portion of woody vegetation at the widest area is less dense than the woody vegetation at the south-western corner of the property.

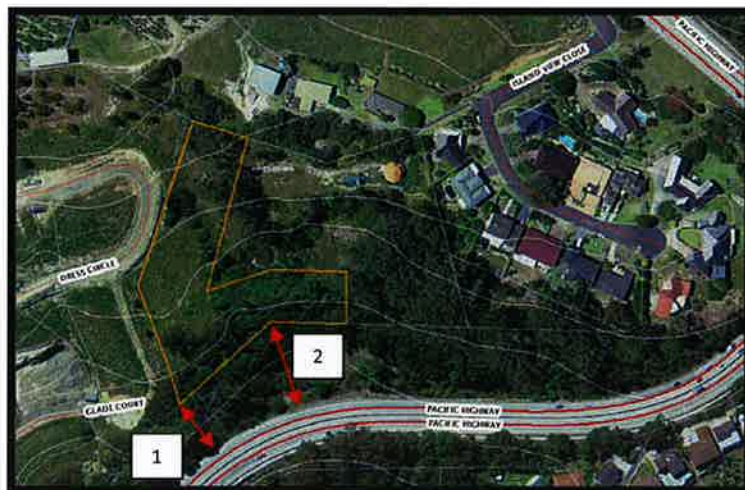


Figure 2: aerial image showing vegetation and contours (@NSW Lands, 2012)

Note 1

25m wide remnant with scattered canopy and mown understorey. Refer to Figures 3 and 4 below.

Note 2

45m wide remnant with open scattered canopy and weed-dominant understorey.



Figure 3: looking south-west from the south-western corner of the site



Figure 4: looking south-east from the south-western corner of the site

Further east along the southern boundary the remnant widens to a maximum width of 45m before narrowing down to 40m at the south-eastern corner of the site.



Figure 5: looking east along the edge of the remnant

PBP-2006 provides a concession for remnant vegetation which states:



Remnant vegetation is a parcel of vegetation with a size of less than 1 Ha or a shape that provides a potential fire run directly toward buildings not exceeding 50m. These remnants are considered a low hazard and APZ setbacks and building construction standards for these will be the same as for rainforests. The effective slope is to be determined over the length of the remnant.

Therefore, given the **PBP-2006** remnant concession for the strip of vegetation along the southern boundary of the property, the strip of vegetation will be classes as *rainforest* for the purpose of this analysis.

It is my opinion that the *remnant* vegetation is not commensurate with the structure of an indicative forest classification. Therefore, even when granted the concession of a remnant under the **PBP-2006** provisions, the deemed-to-satisfy (D-t-S) outcome should be viewed as being conservative.

3.1.2 Slope Analysis

The slope to the south through the remnant at the south-western corner of the site is approximately 16° downslope to the top of the embankment adjoining the Pacific Highway pavement. The steep embankment has a gradient of approximately 30° downslope. The slope readings taken over the remnant were taken using a clinometer.

Further east along the remnant, the gradient to the south across the remnant flattens out to a gentle downslope towards the Pacific Highway.

However, as covered by the **PBP-2006** remnant concession quoted above, the effective slope is to be determined over the length of the remnant. Therefore, to the east from the south-western corner of the site, the slope is generally across slope for a portion of the length of the boundary, and then the predominant slope further east is upslope (refer to the photo as Figure 5). Therefore the effective slope determined for the remnant to the south of the site is 0° and upslope.

3.1.3 Asset Protection Zones

As the proposal is for the rezoning of a portion of the site to accommodate tourist-type development, the minimum setbacks / APZs should be determined using the Special Fire Protection Purpose (SFPP) provisions of **PBP-2006**. The following table is an extract from Appendix 2 of **PBP-2006** which is used to determine the D-t-S setbacks for SFPP developments.

Table A2.6 Minimum Specifications for Asset Protection Zones (m) for Special Fire Protection Purposes in bush fire prone areas ($\leq 10\text{KW/m}^2$)					
Vegetation Formation	Upslope/Flat	Effective Slopes			
		>0°-5°	>5°-10°	>10°-15°	>15°-18°
Rainforests	30	40	50	60	65
Parcuses	30	70	85	100	100
Woodland (Grassy)	40	50	60	70	75
Plantations (Pine)	50	60	70	85	85
Tall Heath (Scrub)	45	50	55	60	65
Short Heath (Open Scrub)	35	35	40	45	45
Freshwater Wetlands	35	35	40	45	45
Forested Wetlands	50	60	75	80	85
Semi-Arid (Woodland)	30	35	40	45	50
Arid Shrubland	30	35	40	45	45
Alpine Resorts		(see page 31 and Table A3.5 on page 68)			

Figure 6: Table A2.6 of Appendix 2 of **PBP-2006**

Appendix 2 determines that the minimum separation, for *SFPP* developments from a remnant on flat ground or upslopes, is to be not less than **30m**. The portion of the site subject to the rezoning proposal is located approximately **68m** from the site's southern boundary.

The required setbacks for *SFPP* developments are wider than those APZs required for residential developments (such as urban subdivisions). The following table is an extract from Appendix 2 of **PBP-2006** which is used to determine the D-t-S setbacks for residential developments.

Vegetation Formation	Upslope/Flat	Effective Slopes			
		>0°-5°	>5°-10°	>10°-15°	>15°-18°
Rainforests	10	10	15	15	20
Woodland	10	15	15	20	25
Plantations (Pine)	15	20	25	35	40
Tall Heath (Scrub)	15	15	20	20	20
Short Heath (Open Scrub)	10	10	10	15	15
Freshwater Wetlands	10	10	10	15	15
Forested Wetlands	15	20	20	30	35
Semi-Arid (Woodland)	10	10	10	10	15
Arid Shrubland	10	10	10	15	15

Figure 7: Table A2.5 of Appendix 2 of **PBP-2006**

Appendix 2 determines that the minimum separation, for residential developments from a remnant on flat ground or upslopes, is to be not less than **10m**. The portion of the site subject to the rezoning proposal is located approximately **68m** from the site's southern boundary.

It is therefore demonstrated that the portion of the site subject to the rezoning proposal is located further away from the remnant vegetation than the minimum separation required by **PBP-2006** for residential developments.

Limitations and Assumptions

As advised during our telephone conversation, some of the land within the subject site, located between the remnant and the portion proposed to be rezoned, is zoned as 7A Environmental Protection Habitat and Catchment. It may be the case that some of this 7A-zoned land will (need to) be managed as APZ to ensure continued separation of the remnant from the subject land.

Where APZ is to be created and maintained on land that has a slope of 18° or steeper, measures are to be instigated to address concerns regarding land-slip and erosion control. The Northern Rivers Catchment Management Authority produces a guideline that addresses soil stability issues ("Saving Soil - a landholder's guide to preventing and repairing soil erosion"). The principles contained in this guide should be adopted where APZs are to be created and maintained on steep land. It is also noted that the slope of the subject property is similar to the slopes over the entire "The Summit" precinct. Whatever measures have been previously adopted to help prevent soil erosion should be sufficient to address the same concerns for this proposal.

Although the remnant vegetation extends to the west of the site, in some form, it has been assessed as a non-hazard for the purpose of this analysis. The basis of this assumption is:

- the vegetation further west along the highway does not reflect forest-type vegetation (refer to Figure 7 and 8 below), and
- development has been permitted to occur adjacent to this strip of vegetation with no apparent separation between the vegetation and developed land (refer to Figure 7 and 8 below).



Figure 8: "street view" image of adjacent development and remnant vegetation (©Google maps)



Figure 9: aerial image of adjacent development and remnant vegetation (CHCC LEP maps, 2012)

If I can provide any further assistance please don't hesitate to contact me.



J Ellis

- ✓ Graduate Diploma In Design For Bushfire Prone Areas
- ✓ BPAD-A Certified Business and Practitioner – Fire Protection Association Australia **"Bushfire Planning and Design"** Certification Program