

Bushfire Assessment

Bushfire Hazard Assessment

Pacific Pines Estate, Lennox Head

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Table of Contents

<i>Section</i>	<i>Page</i>
1. Introduction	
1.1 Scope and Purpose.....	1
1.2 Legislative Framework	1
2. Background	
2.1 Location and Description	5
2.2 Zoning and Land Use.....	5
2.3 Significant Environmental Features	6
2.4 Proposed Development	7
3. Planning for Bushfire Protection Assessment	
3.1 Bushfire Assessment	19
3.2 Bushfire Protection Measures	28
3.3 Special Considerations	30
3.4 Construction Standards	30
4. Summary	

Illustrations

Illustration 1.1	Bushfire Prone Land	3
Illustration 2.1	Site Locality Plan	9
Illustration 2.2	Zoning	11
Illustration 2.3	Significant Features.....	13
Illustration 2.4	Concept Plan	15
Illustration 2.5	Development Staging.....	17
Illustration 3.1	Vegetation Communities.....	23
Illustration 3.2	Topography.....	25

Plates

Plate 3.1	Typical site vegetation.....	19
Plate 3.2	Isolated fig amongst grassland.....	20

Tables

Table 3.1	Effective Slope for Subdivision	21
Table 3.2	Effective Slope for SFPP	21
Table 3.3	APZ Requirements for Subdivision	27
Table 3.4	APZ Requirements for SFPP	27
Table 3.5	Demonstration of Compliance Subdivision	28
Table 3.6	Demonstration of Compliance SFPP	29

Introduction

1.1 Scope and Purpose

GeoLINK has been engaged by Petrac Pty Ltd to prepare a bushfire hazard assessment for land described as Lot 234 DP 1104071 Hutley Drive, Lennox Head. This assessment accompanies an application under Part 3A of the *Environmental Planning and Assessment Act 1979* for the urban development of the land. As part of the environmental assessment requirements issued by Director-General of the Department of Planning, the assessment must be undertaken in accordance with *Planning for Bushfire Protection 2006*.

The proposed development of the site includes the creation of approximately 500 residential lots, the provision of a neighbourhood retail / community centre, around 165 retirement lots, and associated services and infrastructure.

Section 2 of this assessment describes the site and **Section 3** provides an assessment with regard to asset protection zones, access, design and water requirements. **Section 4** sets out the proposed building construction standards and **Section 5** provides a summary of the issues addressed.

The assessment contained in this report has been prepared with regard to:

- *Planning for Bushfire Protection 2006*;
- *Environmental Planning and Assessment Act 1979*;
- *Rural Fires Act 1997*; and
- Australian Standard 3959-1999 Construction of Buildings in Bushfire Prone Areas.

We have reviewed background data and completed a detailed inspection of the site. This report serves to:

- identify the site and proposed development;
- determine the bushfire threat; and
- identify precautions required to improve the chances of building survival in the event of a bushfire.

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.

Section 100B of the *Rural Fires Act 1997* establishes that a 'Bushfire Safety Authority' is required for:

- a subdivision of bushfire prone land that could be lawfully used for residential or rural residential purpose; or
- development of bushfire prone land for a 'special fire protection purpose' (includes uses such as schools, child care centres, tourism development, retirement homes etc).

The proposed development involves both subdivision of land and future development including a child care centre and a seniors housing community, both of which regarded as 'special fire protection purpose'. A 'Bushfire Safety Authority' is therefore required.

Ballina Shire Council's Bushfire Prone Land mapping indicates that:

- a small area in the south-western portion of the site is located within a 100m buffer of a category 1 area of bushfire risk; and
- a small area in the north-western corner is located within a 30m buffer of a category 2 area of bushfire risk and is also located within vegetation category 2 (refer to **Illustration 1.1**).

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'. The site is therefore classified as bushfire prone land and an assessment has been undertaken (in accordance with the procedure set out in Appendix 2 *Planning for Bushfire Protection 2006*) to determine appropriate bushfire hazard protection measures for the proposed development.

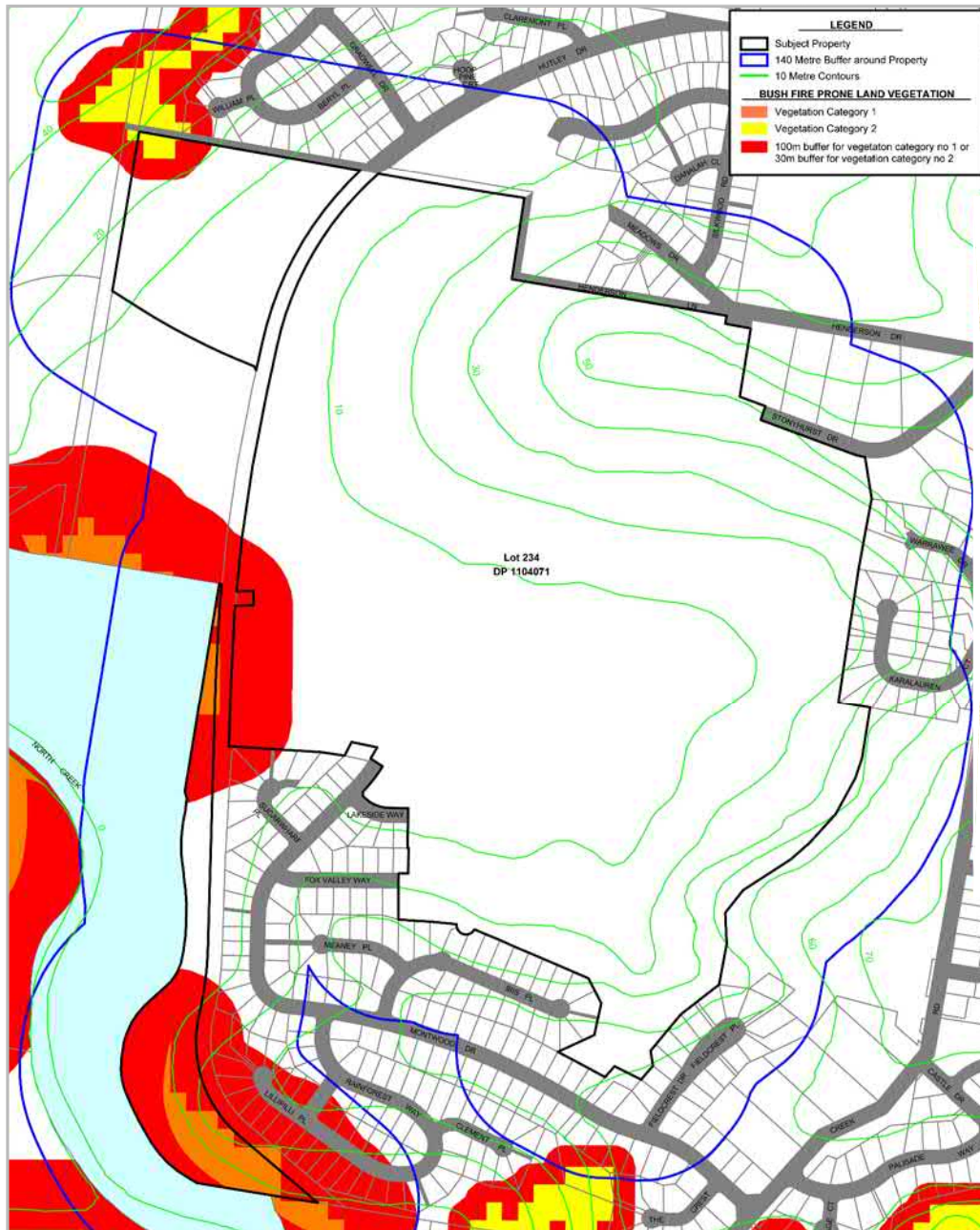
The site has been zoned for urban purposes since around 1989. The development constitutes the remaining stages of the Pacific Pines Estate, with four previous stages approved and constructed. Previous subdivision layouts have been approved for the site, in conjunction with the original urban zoning and in 2006 associated with a Master Plan adopted by the Minister for Planning under the provisions of *State Environmental Planning Policy No. 71 – Coastal Development*.

The land is surrounded by existing residential development to the north, east and south. The majority of the site is cleared pasture land and, as indicated above, Council's bushfire mapping affects only the western and north-western margins of the site.

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*. This new version replaces *Planning for Bushfire Protection 2001*. The changes were gazetted on 28 February 2007 and took effect on 1 March 2007.

Australian Standard 3959-1999 Construction of Buildings in Bushfire Prone Areas also sets out requirements to be considered when building in bushfire prone areas.

Illustration 1.1 Bushfire Prone Land



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Background

2.1 Location and Description

The site is described in Real Property terms as Lot 234 DP 1104071, Hutley Drive, Lennox Head (refer to **Illustration 2.1**). It is known as Pacific Pines estate and is situated in Lennox Head in the Northern Rivers region of NSW. The site is located within Ballina Shire Council Local Government Area, approximately 1 km west of the coastal village of Lennox Head; 7km north of Ballina and 18km south of Byron Bay.

Lot 234 has an area of approximately 80.5 ha. The Pacific Pines Estate was originally zoned for urban purposes in 1989, with a Development Control Plan adopted, showing a proposed subdivision layout for the whole of the land. Staged approval was sought to implement that subdivision and, to date, four stages have been approved and constructed. Lot 234 constitutes the residue of the estate.

The site currently does not accommodate any dwellings. The only existing structures on the site are fences and a set of cattle yards. A Water Quality Control Pond has been constructed in the south-western portion to accommodate the future subdivision. The site is characterised by low lying land in the western portions with elevations of approximately RL 2 m AHD and hillsides in the eastern portion site, which rise to approximately RL 40 m AHD. The highest part of the site is RL 50.5 m AHD and is located in the central northern portion.

The site currently has frontage to Hutley Drive and Stoneyhurst Drive in the north and Montwood Drive, Lakeside Way and Fox Valley Way in the south. Within Ballina Shire Council's strategy road network planning, Hutley Drive is intended to provide a future connection to between Lennox Head and Ballina. A road reserve has been dedicated to Council by the previous owners of the land, providing for the extension of Hutley Drive through the Pacific Pines land. This reserve runs through the western fringe of the site, to the west of the existing pond. Council is currently undertaking preliminary planning with a view to obtaining the relevant approvals for the construction of this road.

2.2 Zoning and Land Use

The site and the existing residential development to the south is zoned 2(b) Residential - Village Area under the *Ballina Local Environmental Plan 1987* (refer to **Illustration 2.2**). The area to the west of the site is zoned 7(a) Environmental Protection (Wetlands) and 8(a) National Parks and Nature Reserves. The area to the north-east and north-west of the site is zoned 1 (d) Rural - Urban Investigation, the area directly north and east is zoned 2(a) Residential - Living Area.

The site is currently used for low scale cattle grazing. It is located immediately to the north of existing stages of the Pacific Pines Estate and the majority of vegetation has been cleared in past years.

This site is bounded to the north, south and east by residential lots and to the south-west by State Environmental Planning Policy No. 14 Coastal Wetland No. 88, which is part of the Ballina Nature Reserve. Council owned sporting fields border the site to the west and beyond this is pasture for cattle grazing.

2.3 Significant Environmental Features

2.3.1 SEPP 26 Littoral Rainforest

State Environmental Planning Policy No. 26 Littoral Rainforest No. 39 exists to the north-west of the site (refer to **Illustration 2.3**). A 100 m buffer from the edge of this littoral rainforest will be incorporated into the proposed subdivision design. Proposed bushfire protection measures will therefore not impact this significant environmental feature.

2.3.2 SEPP 14 Coastal Wetlands

State Environmental Planning Policy No. 14 Coastal Wetland No. 88 exists to the west and south-west of the site (refer to **Illustration 2.3**). A significant buffer will be incorporated into the proposed subdivision design. It is therefore not expected that the proposed Bushfire Protection Measures will impact this significant environmental feature.

2.3.3 Threatened Species

A number of threatened flora species have been recorded within the site. These include:

- Rough-shelled Bush Nut (*Macadamia tetraphylla*);
- Hairy Joint Grass (*Arthraxon hispidus*);
- White Laceflower (*Archidendron hendersonii*);
- Arrow-head Vine (*Tinospora tinosporoides*); and
- Red Lilly Pilly (*Syzygium hodgkinsoniae*).

Most of these species are located within small scattered rainforest remnants within the site (refer to **Illustration 2.3**). Further details of threatened species are contained within a separate Ecological Assessment report prepared by GeoLINK (2007). It is not expected that the proposed Bushfire Protection Measures will impact these threatened species.

2.3.4 Endangered Ecological Communities

A number of Endangered Ecological Communities have been recorded within the site (refer to **Illustration 2.3**). A very small section of Swamp Oak Forest covering approximately 0.1ha is located approximately 100 m east of the Water Quality Control Pond and a small section of Swamp Sclerophyll Forest covering approximately 0.3 ha is located within the site. Two small linear patches of littoral rainforest are also located in the eastern section of the site. These cover approximately 0.5 ha and 1.4 ha.

These endangered ecological communities have been listed in Part 3 of Schedule 1 of the *Threatened Species Conservation Act 1995*. It is not expected that the proposed Bushfire Protection Measures will impact these endangered ecological communities.

2.3.5 Aboriginal Heritage

A cultural heritage assessment has been prepared by EVERICK Heritage Consultants Pty Ltd for the proposed development. Jali Local Aboriginal Land Council (LALC) provided assistance with the report. This report did not record any archaeological sites however it was recommended that native flora including varieties known as food sources and what appeared to be a natural spring source be preserved. The location of the natural spring is shown in **Illustration 2.3**.

2.4 Proposed Development

The future development of the Pacific Pines Estate will include:

- standard residential housing;
- areas of medium density housing;
- retail facilities;
- seniors living housing;
- areas of open space;
- community facilities;
- road, services and drainage infrastructure; and
- other associated infrastructure.

A Concept Plan outlining the proposed development is indicated in **Illustration 2.4**. The Part 3A application involves an application for Concept Plan approval for the whole of the site, together with a concurrent Project approval for Stage 1 of the proposed development. The staging is indicated within **Illustration 2.5**.

2.4.1 Concept Plan

The key elements of proposal shown in **Illustration 2.4** include:

- The creation of a 'super lot', to be developed in the future to provide a Neighbourhood Centre. This centre will include a local-scale shopping centre and associated retail, small businesses, a tavern, a medical centre, and recreational, leisure and community facilities all clustered around a vibrant public domain that includes the existing pond as its main visual feature;
- The creation of a second 'super lot', to be developed for an Integrated Retirement Community. This lot is located immediately to the east of the existing pond, and will include a variety of retirement options, including assisted and independent living. It will also include on-site leisure, open space and recreational facilities;
- Residential areas containing approximately 500 lots of varying sizes to provide for a variety of housing densities and types, catering for a wide variety of needs within the community;
- Medium density housing precincts located in close proximity to facilities and services;
- Parks, footpath / cycleways and protected conservation areas, all provided to a high quality standard for use of existing and future residents in the locality;
- A long term management strategy to protect and enhance threatened species habitat on-site and in the local area, particularly concentrating on habitat for Hairy Joint Grass (*Arthraxon hispidus*); and
- A highly connected and permeable street network, accessed by a number of existing streets, including Hutley Drive, Montwood Drive, Stoneyhurst Drive and the future connection to Henderson Farm, located to the west.

The Neighbourhood Centre is designed as a main street, and will have shopping, small business, an arts/enterprise centre, medical centre, childcare centre, leisure, and community facilities clustered around the pond. The centre will be within walking distance for most future residents.

The retirement community is proposed on relatively flat ground at the base of the natural amphitheatre and contains highly walkable slow-speed streets, which integrate with the rest of the development. The retirement community facilities, apartments and assisted living centre directly front the pond.

The sports fields, which are currently under construction, will be completed and enhanced. Existing natural habitats are protected and an existing drainage line will be enhanced to create a new brook flowing through the retirement community. The brook will also link existing lines of remnant native vegetation in the east, and a natural spring, to the pond and the Ballina Nature Reserve to the west.

The majority of the remainder of the site will be subdivided to create a mix of residential lot sizes, with smaller lots located closer to the proposed neighbourhood centre, detached housing lots of around 600-800 m² throughout much of the site and larger lots of up to 1,500 m² located on steeper slopes.

2.4.2 Project Application

Project Approval is concurrently sought for Stage 1 of the project. This first stage involves the creation of a total of 59 lots. These include six 'super lots', which will be later developed for a Neighbourhood Centre, an Integrated Retirement Community and a medium density development lot; 49 conventional residential allotments, and three open space lots.

The lots will be serviced by a full range of water, sewer, electricity and telecommunication services. Stage 1 will also include the construction of a number of roads, parks and pedestrian links.

Approval will be pursued separately for the future development of the 'super lots'. The intended use of these lots is:

- Super lot 1 – neighbourhood shopping centre;
- Super lot 2 – tavern;
- Super lot 3 – child care;
- Super lot 4 – community centre / hall;
- Super lot 5 – retirement community; and
- Super lot 6 – medium density residential.

The seniors living housing and child care are classified as Special Fire Protection Purposes (SFPP) and will therefore be assessed separately within this report. The section of the proposed subdivision within which this seniors living area is contained is shown in **Illustration 2.4**.

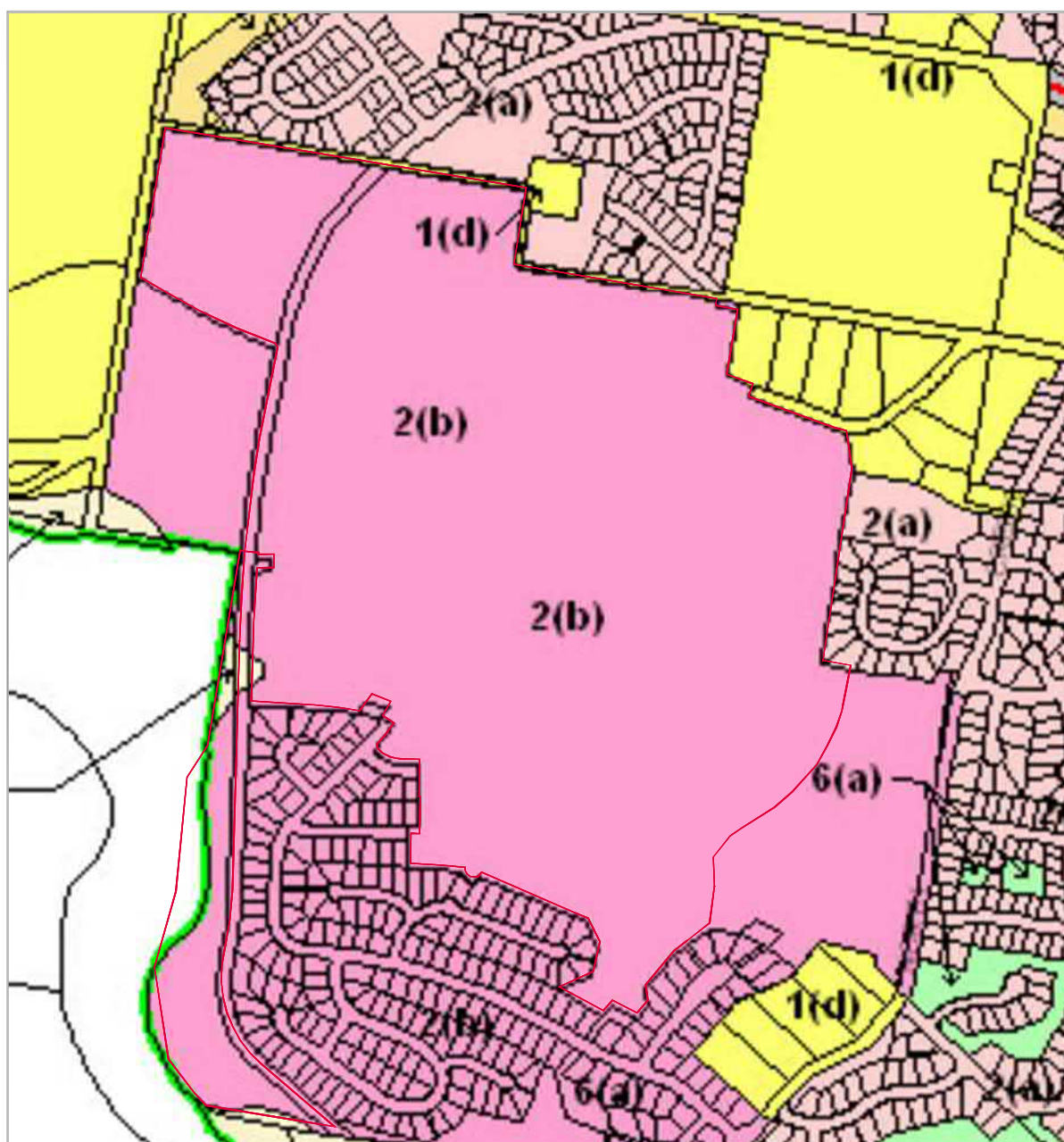
Illustration 2.1 Site Locality Plan



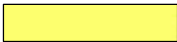



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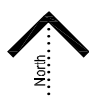
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Illustration 2.2 Zoning



LEGEND

-  1(d) RURAL - URBAN INVESTIGATION
-  2(a) LIVING AREA
-  2(b) VILLAGE AREA
-  6(a) OPEN SPACE



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Illustration 2.3 Significant Features



LEGEND

- SEPP 14 Coastal Wetland No. 88
- SEPP 26 Littoral Rainforest No. 39
- 100m SEPP 26 buffer
- Site boundary
- Hairy Joint Grass records

- MT - Rough-shelled Bush Nut (*Macadamia tetraphylla*)
- LACE - White Laceflower (*Archidendron hendersonii*)
- SH - Red Lilly Pilly (*Syzygium hodgekinsoniae*)
- FIG - Moreton Bay Fig (*Ficus macrophylla*)
- AH - Arrow head Vine (*Tinospora tinosporoides*)
- EEC1 - Swamp oak floodplain forest
- EEC2 - Swamp sclerophyll forest on coastal floodplain
- EEC3 - Littoral rainforest in the NSW North Coast bioregion

Significant Features

Illustration 2.4 Concept Plan



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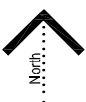
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Concept Plan

Illustration 2.4

Illustration 2.5 Development Staging



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Planning for Bushfire Protection Assessment

For the purposes of this report, the site is assessed in two sections; one containing the proposed seniors living area, which is classified as a Special Fire Protection Purpose (SFPP), and the remainder of the site which will contain the proposed subdivision.

3.1 Bushfire Assessment

As stated within **Section 1.2**, two small sections in the western portion of the site are classified as bushfire prone land and an assessment has therefore been undertaken in accordance with the procedure set out in *Appendix 2 Planning for Bushfire Protection 2006* to determine appropriate bushfire hazard protection measures for the proposed development.

3.1.1 Vegetation

The vegetation within the site and surrounds currently consists of several communities (refer to **Illustration 3.1**). The majority of the vegetation within Lot 234 has been cleared for cattle grazing (refer to **Plate 3.1**). Low-lying areas are dominated by grassland / forested wetland with one small pocket of Swamp Sclerophyll Forest dominated by Broad-leaved Paperbark (*Melaleuca quinquenervia*) covering approximately 0.1ha and one small pocket of Swamp Oak Forest dominated by Swamp Oak (*Casuarina glauca*) covering approximately 0.3ha. The area of Swamp Sclerophyll Forest will be removed as a result of the proposed development and has therefore not been considered in the following assessment. The slopes are also largely cleared but contain several mature figs and linear small stands of Littoral Rainforest. The fuel load within the narrow sections of littoral rainforest is quite low due to the closed canopy, trampling by cattle and the allopathic nature of Camphor Laurels.



Plate 3.1 Typical site vegetation

Ballina Nature Reserve, located to the west and south-west of the site, contains extensive stands of Swamp Sclerophyll Forest and Broad-leaved Paperbark. This is one of the areas that are mapped as bushfire prone land. The other area mapped as bushfire prone land contains the adjoining SEPP 26 Littoral Rainforest, the buffer of which extends into the site. These two forested areas provide the only tangible bushfire hazard for the site.

Vegetation has been assessed in terms of potential fire hazard over a distance of 140m, using the formation classes provided within Table A2.1 of PBP 2006. Dominant vegetation formations in each relevant direction are:

- North Managed Land;
- East Managed Land;
- South Managed Land;
- West Managed Land;
- South-east Grassland;
- North-west Rainforest;
- North-east Managed Land; and
- South-west Forested Wetland.

Several isolated pockets of rainforest vegetation are also located within the site. These remnants will be maintained as open space within the proposed subdivision and each of these pockets have their own buffer of approximately 20 m (refer to **Plate 3.2**).



Plate 3.2 Isolated fig amongst grassland

In relation to the proposed SFPP development, dominant vegetation formations in each relevant direction are:

- North Grassland;
- East Grassland;
- South Freshwater Wetland – however as indicated within **Illustration 2.5**, the first stage of development will involve development of the SFPP area and residential development to the south of the SFPP. The area to the south will therefore be classified as Managed Land;
- West Managed Land (water quality control pond); and
- South-east Forested Wetland - however, as this vegetation only is approximately 0.3 ha, it is classified as remnant vegetation (<1 ha) and is considered a low hazard therefore it can be treated as rainforest.

3.1.2 Slope

The site is characterised by low lying land in the western portions, with an elevation of approximately RL 2m AHD, and hillsides in the eastern portion site, which rise to approximately RL 40 m AHD. The highest part of the site is RL 50.5 m AHD, which is located in the central northern portion (refer to **Illustration 3.2**). The effective slope however, is that part of the overall slope under the vegetation assessed as being a hazard that will have the greatest influence on the bushfire behaviour in relation to the development. The effective slope for the proposed subdivision is summarised in **Table 3.1** and the effective slope for the proposed SFPP development in **Table 3.2**.

Table 3.1 Effective Slope for Subdivision

<i>Direction</i>	<i>Effective Slope</i>	<i>Effective Slope Category</i>
North	6° Upslope	>5-10°
East	11° Upslope	>10-15°
South	9° Upslope	>5-10°
West	Flat	Upslope/ Flat
South-east	9° Upslope	>5-10°
North-west	11° Upslope	>10-15°
North-east	Downslope	Upslope/ Flat
South-west	Flat	Upslope/ Flat

As the section containing the SFPP is located in the lowest part of the site, the effective slope for each direction is “upslope/flat”, except for to the west, which is 0-5° downslope (refer to **Table 3.2**).

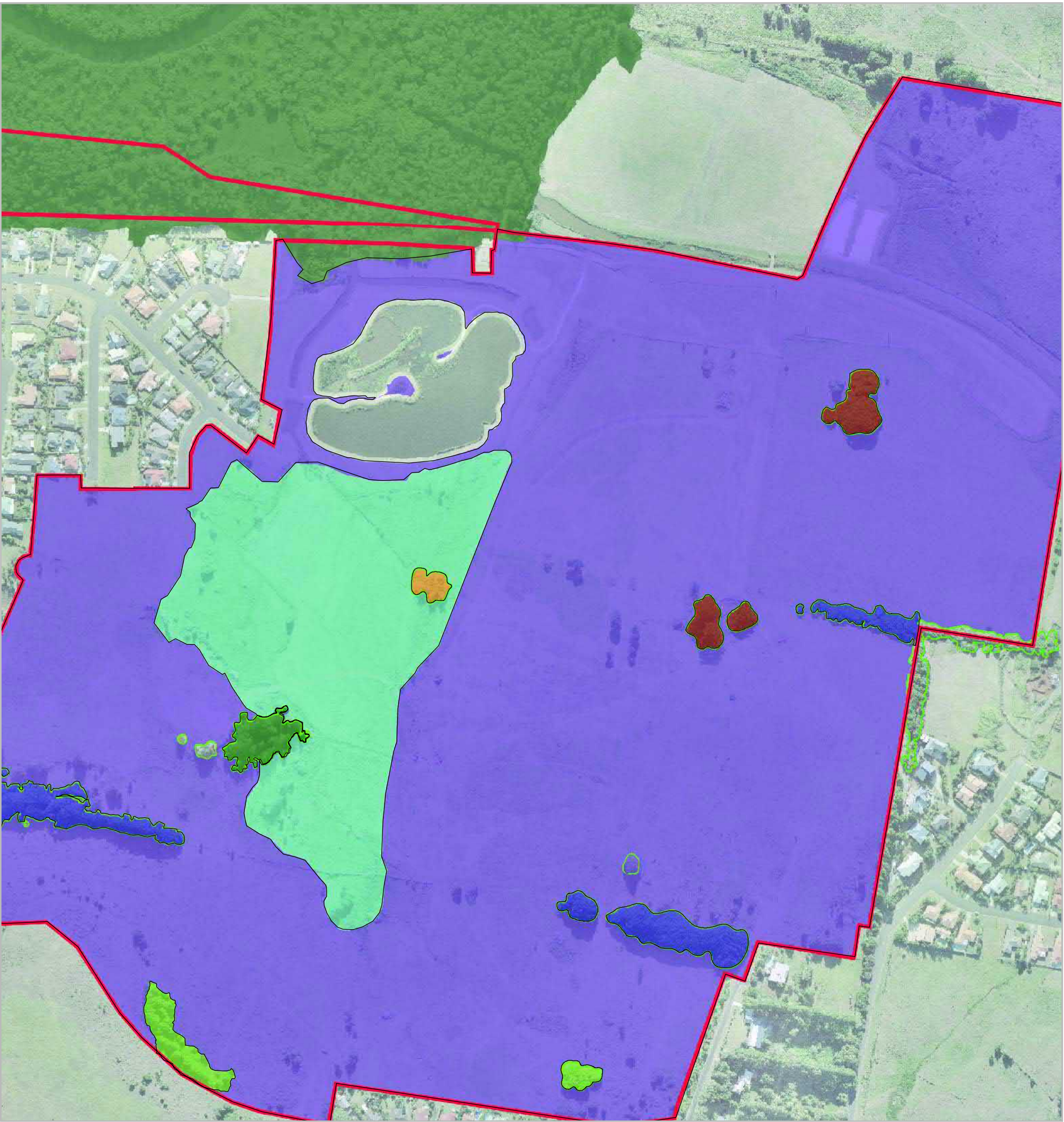
Table 3.2 Effective Slope for SFPP

<i>Direction</i>	<i>Effective Slope</i>	<i>Effective Slope Category</i>
North	10° Upslope	Upslope/ Flat
East	7.5° Upslope	Upslope/ Flat
South	3° Upslope	Upslope/ Flat
West	<3° Downslope	>0-5°
South-east	<3° Upslope	Upslope/ Flat

Illustration 3.1 Vegetation Communities

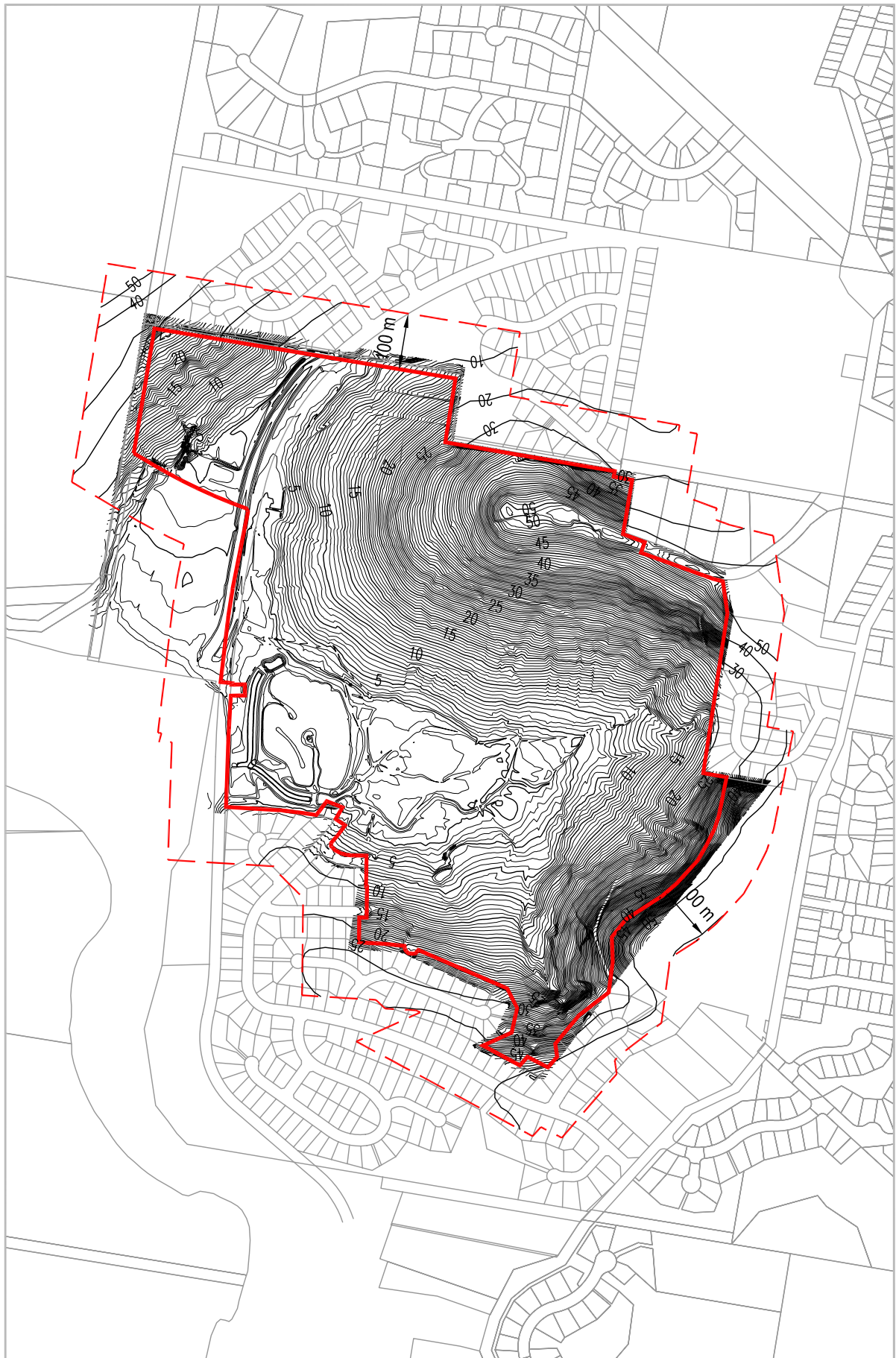
LEGEND

- Moreton Bay Fig
(*Ficus macrophylla*)
- Swamp oak floodplain forest
- Swamp sclerophyll forest on coastal floodplain
- Littoral rainforest in the NSW North Coast bioregion
- Regrowth rainforest / Camphor Laurel
- Freshwater wetland
- Low closed grassland
- Site boundary



Vegetation Communities

Illustration 3.2 Topography



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Topography

Illustration 3.2

3.1.3 Fire (Weather Area)

Ballina Shire is located within the 'far north coast' fire area, with a Fire Danger Index (FDI) rating of 80.

3.1.4 Asset Protection Zones

Based on the effective slope, FDI rating and vegetation formations on the site, **Tables 3.3** and **3.4** show the Asset Protection Zones (APZs) required for compliance with PBP 2006. (Note that APZs are calculated based on a building construction level 3)

Table 3.3 APZ Requirements for Subdivision

<i>Direction</i>	<i>Dominant Vegetation Formation</i>	<i>Effective Slope Category</i>	<i>Total Asset Protection Zone (m)</i>
North	Managed Land	>5-10°	-
East	Managed Land	>10-15°	-
South	Managed Land	>5-10°	-
West	Managed Land	Upslope/ Flat	-
South-east	Grassland	>5-10°	10
North-west	Rainforest	>10-15°	15
North-east	Managed Land	Upslope/ Flat	-
South-west	Forested Wetland	Upslope/ Flat	15

Table 3.4 APZ Requirements for SFPP

<i>Direction</i>	<i>Dominant Vegetation Formation</i>	<i>Slope Category</i>	<i>Total Asset Protection Zone (m)</i>
North	Grassland	Upslope	10
South	Managed Land	Upslope	-
East	Grassland	Upslope	10
West	Managed Land	>0° – 5°	-
South-east	Rainforest	Upslope	30

3.1.5 General APZ Management

APZs should be maintained to consist of open areas where there is minimal fuel at ground level that could be set alight by bushfire. Some trees and shrubs are appropriate within the APZ, provided that they do not provide a path for fire to transfer to the development (i.e. tree canopies must be discontinuous and not overhang the house). 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.

3.1.6 APZ Maintenance and Establishment

Within the APZs the following measures should be undertaken:

- plant trees and shrubs that are fire retardant and do not form a continuous canopy;
- maintain the understorey in a mown state;
- trim dead branches from any existing trees and maintain the understorey with minimal leaf litter and combustible material; and
- trim limbs of trees and shrubs to ensure they do not touch or overhang buildings.

3.2 Bushfire Protection Measures

In accordance with Section 4.1.3 of PBP 2006, **Table 3.5** demonstrates that the proposed development meets the *deemed-to-satisfy criteria*.

Table 3.5 Demonstration of Compliance Subdivision

<i>Criteria</i>	<i>Application</i>
Asset Protection Zones	<p>An APZ of 15 m is required along the south-western boundary for protection from the forested wetland. The distance between the forested wetland and the closest proposed dwelling is approximately 200 m. Therefore, the APZ of 15 m can be achieved within the property.</p> <p>An APZ of 15 m is required along the north-western boundary for protection against the rainforest vegetation. This APZ will also be achieved within the property as it will co-incide with the 100 m buffer required between the SEPP 26 Littoral Rainforest to the north-west and the proposed development.</p> <p>An APZ of 10 m is required along the south eastern boundary to protect against grass fires. The lots within the south eastern section are approximately 65 m long therefore the 10 m APZ can be achieved within each lot.</p> <p>APZs calculated in accordance with relevant tables/ figures in Appendix 2 of PBP 2006 and stated within Table 3.3 of this assessment can be achieved wholly within the boundaries of the development site. All APZs are located on slopes less than 18 degrees.</p>
Public Roads	<p>The eastern section of the site is not expected to pose a significant bushfire risk as it distant from any bushfire threat. The proposed internal roads within this part of the subdivision therefore do not meet PBP 2006 requirements.</p> <p>Bushfire access may be required along Hutley Drive, which is a major link road that is located in close proximity to the potential fire hazard of the wetland vegetation. This road will be constructed as a local distributor road carrying traffic between Lennox Head and Ballina, and will therefore be suitable for use by fire fighting vehicles.</p>
Property Access	<p>The majority of the individual lots proposed within the subdivision will gain access directly from a public urban road. Whilst most of the proposed roads do not meet the requirements of PBP 2006, they will all be constructed as contemporary urban roads, and will be able to be used by fire fighting vehicles.</p>
Fire Trails	<p>Fire trails are not considered necessary for this urban subdivision.</p>
Services – Water, Electricity and Gas	<p>Reticulated water and electricity services will be provided. All electricity will be underground. No reticulated gas services are proposed.</p>

In accordance with Section 4.2.7 of PBP 2006, **Table 3.6** demonstrates that the proposed development generally meets the *deemed-to-satisfy criteria* for SFPP developments.

Table 3.6 Demonstration of Compliance SFPP

<i>Criteria</i>	<i>Application</i>
Asset Protection Zones	<p>The seniors living area will be surrounded to the north, east and south by residential development.</p> <p>APZs calculated in accordance with relevant tables/ figures in Appendix 2 of PBP 2006 and stated within Table 3.4 of this assessment can be achieved wholly within the boundaries of the development site. All APZs are located on slopes less than 18 degrees. The slope under the hazard to the west of the seniors living area is flat.</p> <p>Exits will be located away from the hazard which is to the west.</p> <p>The APZ will be maintained for the life of the development by the owners of the seniors living area.</p> <p>The seniors living area is currently separated from the forested wetland by a water quality control pond and a distance of 200 m. The vegetation surrounding the water quality control pond consists of mown grassland. Vegetation will be managed to prevent flame contact and reduce radiant heat to buildings.</p>
Access – Internal Roads	<p>The proposed internal roads do not meet PBP 2006 requirements. Carriageway widths range from 5.5 – 8.8 m plus on street parking and footpaths which may include landscaping. Hutley Drive is a major link road with a width of 8.8 m. It is located in close proximity to the potential fire hazard of the wetland vegetation. This road will be constructed as a local distributor road carrying traffic between Lennox Head and Ballina, and will therefore be suitable for use by fire fighting vehicles.</p> <p>The majority of proposed lots will gain access directly from a public urban road. All roads will be constructed as contemporary urban roads, and will be able to be used by fire fighting vehicles.</p> <p>All roads are two-wheel drive, sealed all weather roads. All roads within the seniors living area are through roads.</p> <p>Traffic management devices will be constructed to facilitate access by emergency vehicles. Maximum grades do not exceed 15 degrees and average grades are not more than 10 degrees. One bridge will be located on Hutley Drive which will indicate the load rating which will have a 15 tonne capacity.</p>

<i>Criteria</i>	<i>Application</i>
Services – Water, Gas and Electricity	<p>Reticulated water and electricity services will be provided. All electricity will be underground. No reticulated gas services are proposed.</p> <p>The access points will incorporate a ring main system for all internal roads within the seniors living area.</p> <p>Fire hydrant spacing, sizing and pressures will comply with AS 2419.1 – 2005.</p>
Emergency and Evacuation Planning	<p>An Emergency/ evacuation plan will be prepared in accordance with RFS <i>Guidelines for the Preparation of Emergency/ Evacuation Plan</i> prior to occupation of the seniors living area.</p> <p>The seniors living area will comply with AS 3745-2002 "Emergency control organisation and procedures for buildings, structures and workplaces" for residential accommodation.</p> <p>An Emergency Planning Committee will be established to consult with residents and staff in developing and implementing an Emergency Procedures Manual.</p> <p>Detailed plans of all Emergency Assembly Areas including "onsite" and offsite" arrangements as stated in AS 3745-2002 will be clearly displayed, and an annual trial emergency evacuation will be conducted.</p>

3.3 Special Considerations

No items of Aboriginal heritage significance were recorded on the site. However, as stated within **Section 2.3.5**, it was recommended that native flora including varieties known as food sources and what appeared to be a natural spring source be preserved. Several threatened flora species and endangered ecological communities were recorded on the site. It is not expected however that there will be any adverse impacts to any items of environmental or cultural significance as a result of the implementation and/or maintenance of APZs.

3.4 Construction Standards

No bushfire construction requirements apply to any proposed building located more than 100 m away from a bushfire hazard. **Illustration 2.4** indicates that the majority of proposed buildings within the site will be located more than 100 m from the bushfire hazard and therefore do not require any construction standards. The two sources of bushfire hazard are the SEPP 26 littoral rainforest to the north-west of the site and the forested wetland to the west of the site within Ballina Nature Reserve.

The levels of bushfire attack have been calculated in accordance with Table A3.3 of Appendix 3 in PBP 2006 for the areas in closest proximity to these two hazards. The buildings within the north-western corner are located approximately 80 m from the bushfire hazard and will therefore not require any construction standards (rainforest, upslope >50 m from vegetation = no requirement). Buildings within the "Neighbourhood Centre," which is located near the western boundary, north of the water quality control pond, are located between approximately 30 – 200 m from the forested wetland. Buildings located between 23-<32 m from the forested wetland will need to be constructed to Level 2 and buildings located between 32-50 m will require Level 1 construction standards. Buildings >50 m from the hazard will not require any construction standard.

Summary

GeoLINK has been engaged by Petrac Pty Ltd to prepare a bushfire hazard assessment for land described as Lot 234 DP 1104071 Hutley Drive, Lennox Head. The proposed development of the site includes the creation of approximately 500 residential lots, the provision of a neighbourhood retail / community centre, around 165 retirement lots, and associated services and infrastructure. Ballina Shire Council's Bushfire Prone Land mapping indicates that the site is bushfire prone. The proposed development involves both subdivision of land and future development including a child care centre and a seniors housing community, both of which regarded as 'special fire protection purpose'. A 'Bushfire Safety Authority' is therefore required.

Based on consideration of the vegetation, average slope in the vicinity of the proposed subdivision of the development and fire danger index, the assessment has identified that an Asset Protection Zone of 15 m in width is required to the north-west between the rainforest and south-west between the swamp forest within Ballina Nature Reserve. An APZ of 10 m is also required to the south-east. These APZs can all be achieved within the site.

Based on consideration of the vegetation, average slope in the vicinity of the proposed seniors living component of the development and fire danger index, the assessment has identified that an Asset Protection Zone of 30 m in width is required to the south-east between the rainforest.

The only non-complying component of the proposed development are the internal road widths. The areas serviced by non-complying roads are distant from the bushfire prone areas. The main distributor road however confirms with the requirements of PBP which is in close proximity to the area of bushfire prone land. Water supplies to the site are excellent.

Given the above, adequate and appropriate bushfire hazard protection measures are available, and can be implemented on the site, to facilitate the proposed development of Lot 234 DP 1104071, Pacific Pines Estate, Lennox Head.



Veronica Monkley
Ecologist/ Planner



References

NSW Rural Fire Service and Department of Planning (2006). *Planning for Bushfire Protection*. NSW Rural Fire Service: Sydney.

Standards Australia (1999) AS3959-1999 *Construction of Buildings in Bushfire Prone Areas*. Standards Australia International Ltd: Sydney.



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