



BUSHFIRE THREAT ASSESSMENT

FOR

A SENIORS HOUSING DEVELOPMENT

AT

BOUNDARY ROAD,

MEDOWIE

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Disclaimer

Notwithstanding the precautions adopted within this report, it should always be remembered that bushfires burn under a wide range of conditions. An element of risk, no matter how small always remains, and although the standard is designed to improve the performance of such buildings, there can be no guarantee, because of the variable nature of bushfires, that any one building will withstand bushfire attack on every occasion.



Executive Summary

A Bushfire Threat Assessment Report (BTA) has been prepared by Firebird ecoSultants Pty Ltd at the request of McCloy Development Management Pty Ltd for a senior's housing development at Boundary Road, Medowie (within Lot 300 DP 1237758) ('the site').

The report forms part of the supporting documentation for a Development Application (DA) to be submitted to Port Stephens Council (PSC). The proposed development is classified as Integrated Development under the provisions of Planning for Bushfire Protection (RFS, 2006), and is therefore required under the legislation to be referred to the commissioner of the NSW Rural Fire Service for the issue of a Bushfire Safety Authority.

The report demonstrates compliance with Planning for Bushfire Protection 2006 (NSW RFS, 2006) PBP (RFS, 2006), the addendum to Appendix 3 of PBP 2006 and AS3959-2009 Construction of Buildings in Bush Fire Prone Areas.

This assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to the proposal. Recommendations are provided with regard to fuel management, access, provision of emergency services, building protection and construction standards to facilitate an acceptable level of bushfire protection. In summary, the following is recommended:

- An APZ of 60m is required between the Open Forest to the west of the site and the proposed development. This 60m setback is comprised of residential allotments and Western Road that will be managed as an IPA until future development occurs. This is in accordance with the BFSA issued for DA 16-2015-336-3.
- Assessment in accordance with AS3959- 2009 (section 5 of this report) has shown that some of the proposed SFPP buildings have been assessed as BAL-12.5 if located 60-<100m from retained open forest vegetation. BAL-LOW applies if the buildings are located greater than 100m from retained vegetation that is considered a bushfire hazard.
- The site is connected to reticulated water. The development will be linked to the water pressure mains and the proposed internal fire hydrant spacing, sizing and pressures are to comply with AS 2419.1-2005 Fire Hydrant Installations – System design, installation and commissioning (2005).
- An Emergency Response and Evacuation Plan is to be prepared for the site. This plan is to be consistent with the RFS document "A guide to Developing Bushfire Evacuation Plan" (2004).



Provided the recommendations stated above are implemented in full Firebird ecoSultants Pty Ltd is of the opinion that the proposed development will meet the aims and objectives of PBP (RFS, 2006).



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Terms & Abbreviations

Abbreviation	Meaning
APZ	Asset Protection Zone
AS2419 -2005	Australian Standard – Fire Hydrant Installations
AS3959-2009	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BCA	Building Code of Australia
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BFPL Map	Bush Fire Prone Land Map
BPMs	Bush Fire Protection Measures
BFSA	Bush Fire Safety Authority
<i>EPA Act</i>	<i>NSW Environmental Planning and Assessment Act 1979</i>
FDI	Fire Danger Index
FMP	Fuel Management Plan
ha	Hectare
IPA	Inner Protection Area
LGA	Local Government Area
NCC	Newcastle City Council
OPA	Outer Protection Area
PBP	Planning for Bushfire Protection 2006
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation



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I INTRODUCTION

Firebird ecoSultants Pty Ltd has been engaged by McCloy Development Management Pty Ltd to undertake a Bushfire Threat Assessment (BTA) at Boundary Road, Medowie (within Lot 300 DP 1237758) hereafter referred to as the “site” (refer to Figure 1-1 for site locality). The proposal is for Senior’s Housing Development. Refer to Appendix A for the proposed Concept Plan of the Site.

This BTA is suitable for submission with a Development Application (DA) and provides information on measures that will enable the development to comply with ‘Planning for Bushfire Protection’ (NSW RFS, 2006), hereafter referred to as PBP (RFS, 2006).

This assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to such a proposal, and to outline the minimum mitigative measures which would be required in accordance with the provisions of the Environmental Planning and Assessment Amendment (Planning for Bushfire Protection) Regulation 2007 and the Rural Fires Amendment Regulation 2007 (RF Amendment Regulation 2007).

I.1 Site Particulars

Locality:	Boundary Road, Medowie (Lot 2 DP 1145348)
LGA:	Port Stephens Council (PSC)
Lot / DP:	Lot 300 DP 1237758
Zoning:	R2 Low Density Residential under the Port Stephens Local Environmental Plan (LEP) 2013
Current Land Use:	Land managed as an APZ until such time that development occurs



I.2 Description of the Proposal

The proposal is for a senior's housing development. Refer to Appendix A – Concept Plan

I.3 Legislative Requirements

The site has been identified as bush fire prone land on the Port Stephens Council (PSC) Bush Fire Prone Land Map (BFPLM) and the proposed development being for seniors housing is classified as 'Special Fire Protection Purpose' (SFPP) developments under PBP (RFS, 2006). SFPP developments within BFPL require a Bush Fire Safety Authority (BFSA) from the NSW Rural Fire Service (RFS) under Section 100B of the Rural Fires Act (RFS) 1997. Such developments are also 'integrated developments' under Section 91 of the EP&A Act 1979.

This BTA has been prepared using current legislative requirements and associated guidelines for assessment of bushfire protection, these being

- Section 100b of the RFS Act 1997;
- PBP (RRS, 2006); and
- AS3959-2009 Construction of Buildings in Bushfire Prone Areas.

I.4 Objectives of Assessment

This report has been prepared to address the requirements of clause 44 of the Rural Fires Regulation for an application for a BFSA. This BTA also addresses the six key Bush Fire Protection Measures (BFRMs) in a development assessment context being:

- The provision of clear separation of buildings and bush fire hazards, in the form of fuel-reduced APZ (and their components being Inner Protection Areas (IPA's) and Outer Protection Areas (OPA's);
- Sitting and design of the proposal;
- Construction standards;
- Appropriate access standards for residents, fire-fighters, emergency workers and those involved in evacuation;
- Adequate water supply and pressure, and utility services; and
- Suitable landscaping, to limit fire spreading to a building.



2 BUSHFIRE THREAT ASSESSMENT

2.1 Methodology

2.1.1 Vegetation Assessment

Vegetation surveys and vegetation mapping carried out on the site has been undertaken as follows:

- Aerial Photograph Interpretation to map vegetation cover and extent.
- Confirmation of the vegetation assemblage typology present.

2.1.2 Slope Assessment

Slope assessment has been undertaken as follows:

- Aerial Photograph Interpretation in conjunction with analysis of electronic contour maps with a contour interval of 10m.



3 SITE ASSESSMENT

The following assessment has been undertaken in accordance with the requirements of PBP (RFS, 2006).

3.1 Vegetation and Slope Assessment

In accordance with PBP (RFS, 2006), an assessment of the vegetation that may be considered a bushfire hazard over a distance of 140m in all directions from the proposed buildings was undertaken. This assessment is depicted in Table 3-1 and Figure 3-1.

In accordance with PBP (RFS, 2006), an assessment of the slope affecting the bushfire behaviour was undertaken for a distance of 100m from the edge of the bushfire hazard. The slopes leading away from the site have been evaluated to identify both the average slope and by identifying the maximum slope present. These values help determine the level of gradient which will most significantly influence the fire behaviour of the site and the results are presented in Table 3-1 and Figure 4-1 below.

Table 3-1: Vegetation & Slope Classification for Site

Direction from Proposed Buildings	Vegetation Type	Slope
North	Land managed as an APZ until such time that development occurs	N/A
East	Land managed as an APZ until such time that development occurs	N/A
South	Land managed as an APZ until such time that development occurs	N/A
West	Open forest	Flat



4 BUSHFIRE PROTECTION ASSESSMENT

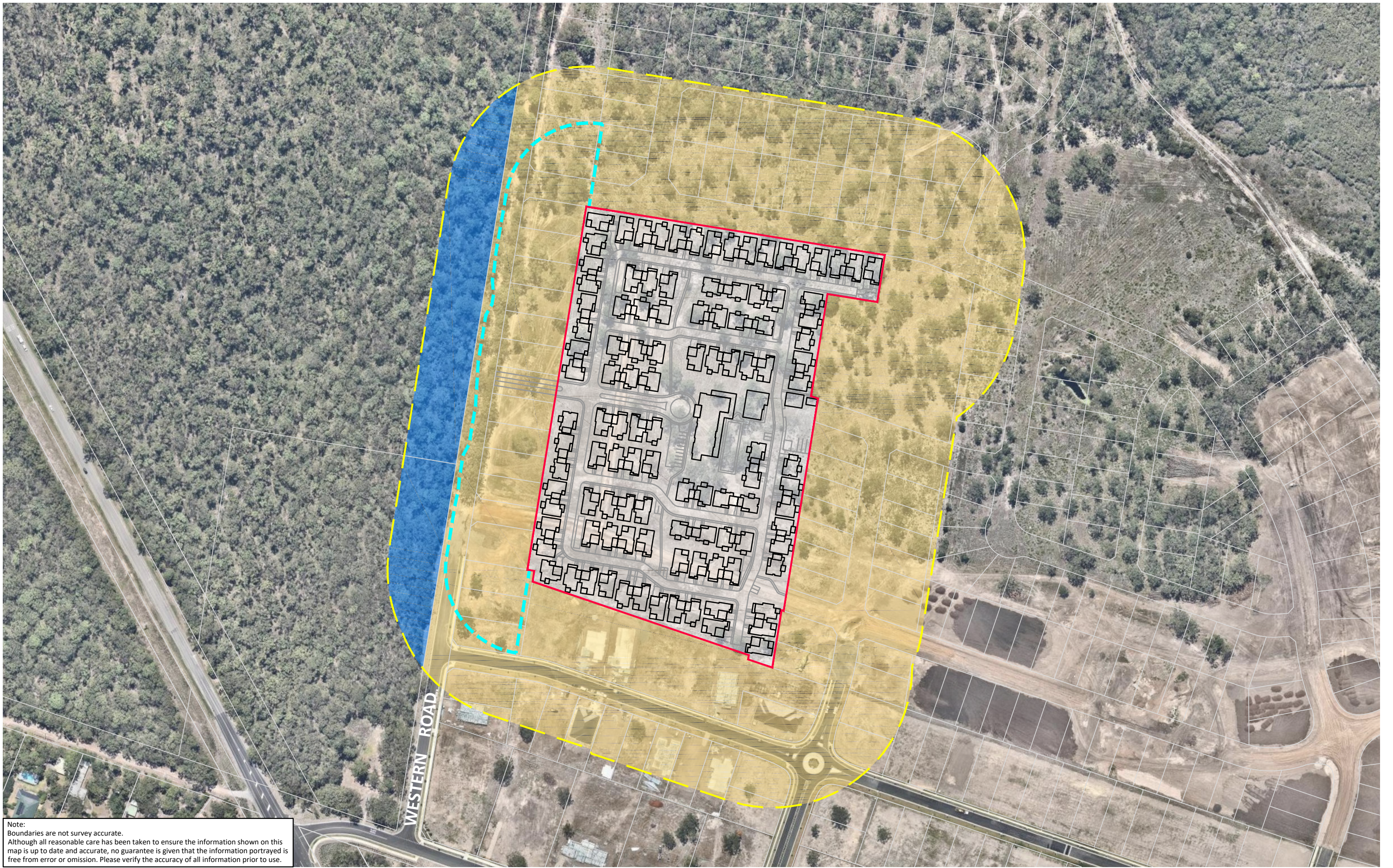
4.1 Asset Protection Zones (APZ)

The PBP (RFS, 2006) guidelines has been used to determine the widths of the APZs required for habitable buildings within the site using the vegetation and slope data identified in Section 3-1 of this report.

The site lies within Port Stephens Local Government Area and therefore is assessed under a FDI rating of 100. Using the results from the Site Assessment (section 3-1 of this report) the deemed to satisfy APZ requirements for the proposed buildings within the site was determined using Table A2.6 APZs for SFPP in PBP (RFS, 2006). Refer to Table 4-1 and Figure 4-1 for required APZs for the proposed habitable buildings.

Table 4-1: Recommended APZs for Proposed habitable buildings

Direction from Building Envelope	Vegetation Classification within 140m	Effective Slope (within 100m)	APZ to be Provided
North	Land managed as an APZ until such time that development occurs	N/A	N/A
East	Land managed as an APZ until such time that development occurs	N/A	N/A
South	Land managed as an APZ until such time that development occurs	N/A	N/A
West	Open forest	Flat	>60m



Note:
Boundaries are not survey accurate.
Although all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

FIGURE 4-1: ASSET PROTECTION ZONES MAP

CLIENT
SITE DETAILS
DATE

Client
Seniors Living Boundary Road Medowie
1 August 2018

Legend

- Subject Site
- 100m Buffer
- 60m APZ
- Open Forest
- Managed Land



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5 FUEL MANAGEMENT PLAN

The APZs for the proposed development will be created by the extension and amendment of the existing golf course. No bushfire hazards will occur within 100m of the proposed buildings. The following information is a summary for the creation and maintenance of the APZ and future landscaping. Refer to Appendix B for further details.

Fuel Management within the APZ as follows:

- No tree or tree canopy is to occur within 2m of the new buildings rooflines;
- The presence of a few shrubs or trees in the APZ is acceptable provided that:
 - o are well spaces out and do not form a continuous canopy
 - o are not species that retain dead material or deposit excessive quantities of ground fuel in a short period or in a danger period; and
 - o are located far enough away from the building so that they will ignite the building by direct flame contact or heat emission.

It is recommended that a Fuel Management Plan is prepared to ensure that all vegetation within the required APZs is maintained for the life of the development.



6 BUSHFIRE ATTACK ASSESSMENT

6.1 Dwelling Design & Construction

On 6 March 2009, Council of Standards approved the revised Australian Standard AS3959-2009 *Construction of buildings in bushfire prone areas* (AS3959-2009). This standard was published by Standards of Australia on 10 March 2009 and replaces the 1999 version of the document.

AS3959-2009 was formally adopted by the BCA as the national standard on 1 May 2010. The BCA 2010 references AS3959-2009 as the deemed-to-satisfy (DTS) solution for construction requirements in bush fire prone areas for NSW. In order to clarify the NSW development approval process, the RFS has prepared an addendum to *Planning for Bush Fire Protection* 2006 (PBP (RFS, 2006)) which replaces the existing Appendix C. The addendum aligns PBP (RFS, 2006) Appendix C with the BCA DTS separation distance requirements for the Bushfire Attack Levels (BAL) of AS3959-2009. It also maintains ember protection consistent with current requirements.

Building design and the materials used for construction of future dwellings should be chosen based on the information contained within AS3959-2009, and accordingly the designer / architect should be made aware of this recommendation. It may be necessary to have dwelling plans checked by the architect involved to ensure that the proposed dwellings meet the relevant Bushfire Attack Level (BAL) as detailed in AS3959-2009.

The determinations of the appropriate BAL are based upon parameters such as weather modelling, fire-line intensity, flame length calculations, as well as vegetation and fuel load analysis. The determination of the construction level is derived by assessing the:

- Relevant FDI = 100
- Flame temperature
- Slope
- Vegetation classification; and
- Building location.

The following BAL, based on heat flux exposure thresholds, are used in the standard:

(a) **BAL – LOW** The risk is considered to be **VERY LOW**

There is insufficient risk to warrant any specific construction requirements but there are still some risks.

(b) **BAL – 12.5** The risk is considered to be **LOW**



There is a risk of ember attack.

The construction elements are expected to be exposed to a heat flux not greater than 12.5 kW/m².

(c) **BAL – 19** The risk is considered to be **MODERATE**

There is a risk of ember attack and burning debris ignited by wind borne embers and a likelihood of exposure to radiant heat.

The construction elements are expected to be exposed to a heat flux not greater than 19 kW/m².

(d) **BAL-29** The risk is considered to be **HIGH**

There is an increased risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to an increased level of radiant heat.

The construction elements are expected to be exposed to a heat flux no greater than 29 kW/m².

(e) **BAL-40** The risk is considered to be **VERY HIGH**

There is much increased risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to a high level of radiant heat and some likelihood of direct exposure to flames from the fire front.

The construction elements are expected to be exposed to a heat flux no greater than 40 kW/m².

(f) **BAL-FZ** The risk is considered to be **EXTREME**

There is an extremely high risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to an extreme level of radiant heat and direct exposure to flames from the fire front.

The construction elements are expected to be exposed to a heat flux greater than 40 kW/m².



6.2 Determination of Bushfire Attack Levels

Using a FDI of 100, the information relating to vegetation, slope and according to Table 2.4.2 of AS3959-2009 and Addendum: Appendix 3 of PBP (RFS, 2006), Table 5-1 and Figure 5-1 illustrates the required BALs for the proposed buildings.

Table 6-1: Determination of BALs for the proposed buildings

Vegetation Type & Direction	Average Slope of Land (degrees)	Separation Distance	Bushfire Attack Level (BAL)	Construction Section
Open Forest	Flat	60-<100m	BAL-12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP (RFS, 2006) Addendum Appendix C
		>100m	BAL-LOW	No Requirements

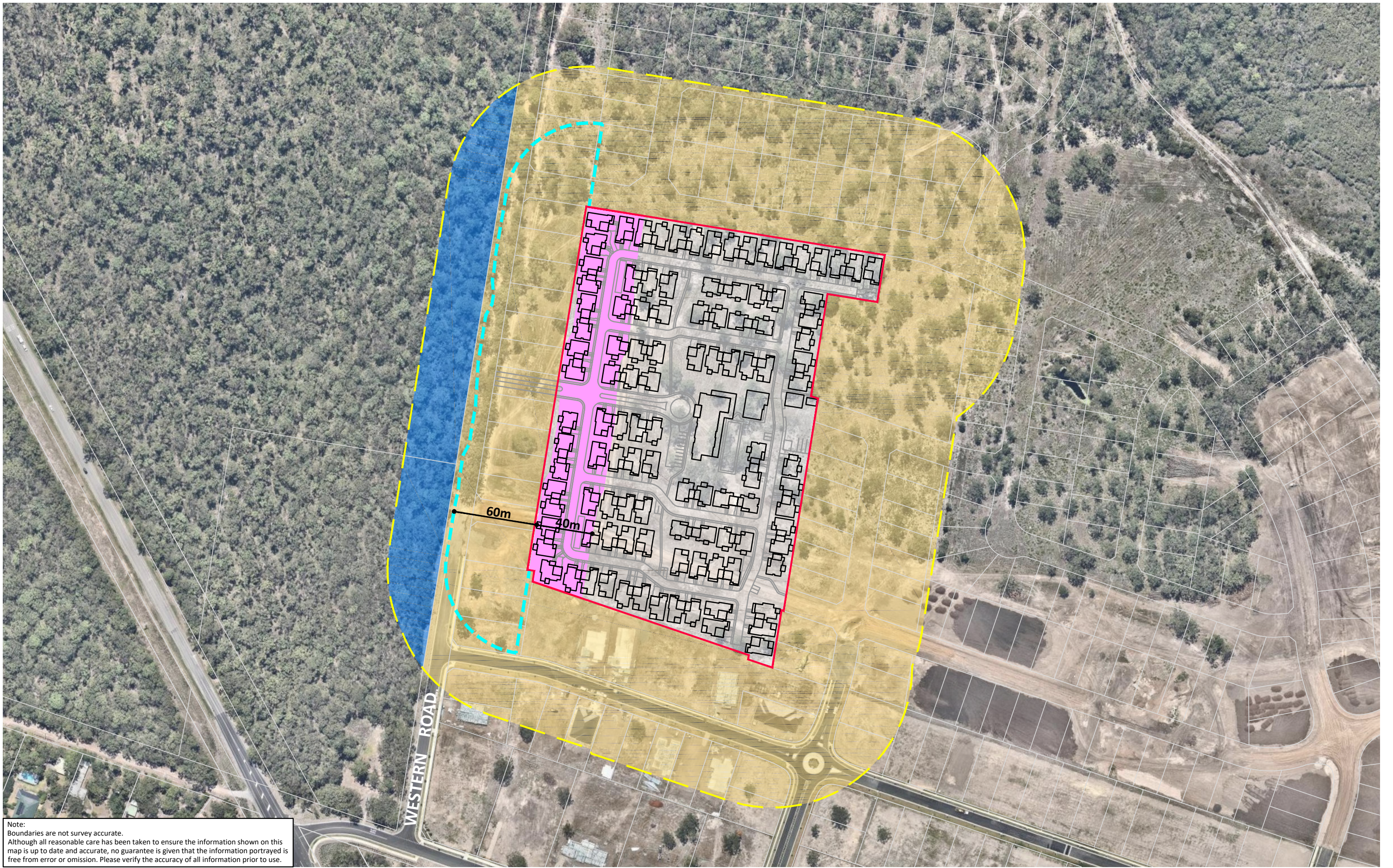


FIGURE 5-1: BUSHFIRE ATTACK LEVELS MAP

CLIENT
SITE DETAILS
DATE

Client
Seniors Living Boundary Road Medowie
1 August 2018

Legend

- Subject Site
- 100m Buffer
- 60m APZ
- Open Forest
- Managed Land
- BAL 12.5



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7 PROPERTY ACCESS / EGRESS & PUBLIC ROADS

7.1 Capacity of Public Roads

In the event of a bush fire emergency the public road servicing the subject land has the capacity to handle the increased volume of traffic associated with the development.

All vehicle access to the site is provided via an access on to Western Road directly onto Boundary Road that allows for connection with the greater road network.

Table 7-1: Internal Roads Compliance with PBP (RFS, 2006)

Performance Criteria	Acceptable solutions	Compliance with PBP (RFS, 2006)
The intent may be achieved where:		
internal road widths and design enable safe access for emergency services and allow crews to work with equipment about the vehicle	Internal roads are two-wheel drive, sealed, all-weather roads;	The proposed internal road will meet the acceptable solution.
	Internal perimeter roads are provided with at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb) and shoulders on each side, allowing traffic to pass in opposite directions;	There is an approved perimeter road as part of the subdivision that allows for two traffic Lane widths (carriageway 8 metres minimum kerb to kerb) and shoulders on each side, allowing traffic to pass in opposite directions.
	Roads are through roads. Dead end roads are not more than 100 metres in length from a through road, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end;	No dead-end roads occur.
	Traffic management devices are constructed to facilitate access by emergency services vehicles	Traffic management devices will be constructed to facilitate access by emergency services vehicles
	A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches, is	A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches, will



Performance Criteria	Acceptable solutions	Compliance with PBP (RFS, 2006)
	provided	be provided
	Curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress	Curves will have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress
	The minimum distance between inner and outer curves is six metres	The minimum distance between inner and outer curves will be six metres
	Maximum grades do not exceed 15 degrees and average grades are not more than 10 degrees	Maximum grades will not exceed 15 degrees and average grades are not more than 10 degrees
	Crossfall of the pavement is not more than 10 degrees	Crossfall of the pavement will not more than 10 degrees
	Roads do not traverse through a wetland or other land potentially subject to periodic inundation (other than flood or storm surge)	The proposed road does not traverse through a wetland or other land potentially subject to periodic inundation (other than flood or storm surge).
	Roads are clearly sign-posted and bridges clearly indicate load ratings	Roads will be clearly sign-posted and bridges clearly indicate load ratings
	The internal road surfaces and bridges have a capacity to carry fully-loaded fire fighting vehicles (15 tonnes).	The internal road surfaces will have a capacity to carry fully-loaded fire fighting vehicles (15 tonnes).

Given the information in the above table it is considered that the site is able to provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area.



8 SERVICES

8.1 Water Supply & Pressure

The subject land is serviced by reticulated water and will extend into the development area. The proposed internal fire hydrant spacing, sizing and pressures are to comply with AS 2419.1-2005 Fire Hydrant Installations – System design, installation and commissioning (2005).

8.2 Gas & Electricity Supply

Any gas services are to be installed and maintained in accordance with AS 1586. The relief valves of any gas cylinder located near the dwelling will be directed away from the buildings and away from combustible materials.



9 EMERGENCY & EVACUATION MANAGEMENT PLAN

The assessment does not provide an Emergency Response or an Evacuation Plan. These will be submitted for approval prior to the occupation of buildings and will be prepared consistent with the RFS document *A Guide to Developing a Bushfire Evacuation Plan* (2004).

I0 AIMS & OBJECTIVES OF PLANNING FOR BUSHFIRE PROTECTION

The aim of PBP (RFS, 2006) is to use the NSW development assessment system to provide for the protection of human life and to minimize impacts on property from the threat of bushfire, while having due regard to development potential, on site amenity and protection of the environment.

More specifically the objectives are to:

- Afford occupants of any building adequate protection from exposure to bush fire;
- Provide for a defendable space to be located around buildings;
- Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;
- Ensure that safe operational access and egress for emergency personnel and residents is available
- Provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the APZ; and
- Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bush fire-fighting).

The following comments are provided in relation to satisfying the objectives of PBP (RFS, 2006).

10.1 Objective 1

- (i) *Afford occupants of any building adequate protection from exposure to bush fire*

Measures that have been identified within the proposed development in regard to providing a separation distance of 60m between future SFPP buildings and retained Open Forest vegetation to the west. This 60m setback being provided by the approved residential allotments within Stage 11 of the approved subdivision and Western Road.

10.2 Objective 2

- (ii) *Provide for a defendable space to be located around buildings*

Permanent APZ of minimum widths as shown in Table 4-1 and displayed on Figure 4-1 are to be implemented.



10.3 Objective 3

- (iii) *Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition*

The recommended APZs, combined with other BFPs such as, landscaping of the site and water supply will prevent flame contact and material ignition.

10.4 Objective 4

- (iv) *Ensure that safe operational access and egress for emergency personnel and residents is available*

It is considered that the proposed access will provide safe operational ingress for emergency services and also provide safe egress for residents during an emergency.

10.5 Objective 5

- (v) *Provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the APZ*

The 60m setback between the proposed Seniors Living and the Open Forest to the west is provided by approved residential allotments (that will be maintained as an IPA until development occurs) within Stage 11 of the approved subdivision and Western Road.

10.6 Objective 6

- (vi) *Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bush fire-fighting)*

It is expected that water mains will be extended into the site. To facilitate quick and efficient action by the Fire Brigade / Rural Fire Service upon arrival, it is recommended that all necessary connections / pumps etc be clearly marked and visible, and in good working order.



II SUMMARY OF BUSHFIRE PROTECTION MEASURES

The following table summaries the BFPM proposed and compliance with PBP (RFS, 2006) and AS3959-2009.

Table 11-1: Bush Fire Protection Measures & Compliance with PBP (RFS, 2006) & AS3959-2009

Bushfire Protection Measures	Proposed	Compliance with PBP (RFS, 2006)
Asset Protection Zones	A setback of 60m is established between the proposed Seniors living and the Open Forest to the west. This 60m setback being provided by the approved residential allotments within Stage 11 of the approved subdivision and Western Road.	Complies – minimum setback of 60m between the habitable SFPP building and Open Forest vegetation to the west.
Bushfire Attack Levels (BALs)	Any proposed SFPP building located between 60-100m are to be built to BAL-12.5 to provide protection from ember attack. Any building located greater than 100m from any bushfire hazard have been assessed as BAL—LOW.	Complies – Any proposed SFPP building located between 60-100m are to be built to BAL-12.5 to provide protection from ember attack. Any building located greater than 100m from any bushfire hazard, have been assessed as BAL—LOW.
Access	An internal road will service the buildings and link directly to the approved subdivision road network.	Complies – An internal Road link directly to the approved subdivision road network
Water Supply	Reticulated water exists that is to be extended into the development area of the site.	Complies - The subject land is serviced by reticulated water and proposed internal fire hydrant spacing, sizing and pressures are to comply with AS 2419.1-2005 Fire Hydrant Installations – System design, installation and commissioning (2005).

12 CONCLUSION & RECOMMENDATIONS

In summary, the following is recommended to enable the proposal to meet the relevant legislative requirements:

- An APZ of 60m is required between the Open Forest to the west of the site and the proposed development. This 60m setback is comprised of residential allotments and Western Road that will be managed as an IPA until future development occurs. This is in accordance with the BFSAs issued for DA 16-2015-336-3.
- Assessment in accordance with AS3959- 2009 (section 5 of this report) has shown that the proposed buildings have been assessed as BAL-12.5 if located 60-100m from retained Open Forest vegetation. BAL-LOW applies if the buildings are located greater than 100m from retained vegetation that is considered a bushfire hazard.
- The site is connected to reticulated water. The development will be linked to the water pressure mains and the proposed internal fire hydrant spacing, sizing and pressures are to comply with AS 2419.1-2005 Fire Hydrant Installations – System design, installation and commissioning (2005).
- An Emergency Response and Evacuation Plan is to be prepared for the site. This plan is to be consistent with the RFS document “A guide to Developing Bushfire Evacuation Plan” (2004).

Provided the recommendations stated above are implemented in full Firebird ecoSultants Pty Ltd is of the opinion that the proposed will meet the aims and objectives of PBP (RFS, 2006).



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Standards Australia (2009). *AS 3959 – 2009: Construction of Buildings in Bushfire-prone Areas*.



APPENDIX A CONCEPT PLAN



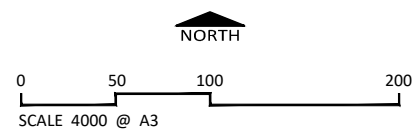
FIGURE 1-1: VEGETATION MAP

CLIENT
SITE DETAILS
DATE

Client
Anderson Avenue Paxton
20 August 2018

Legend

- Subject Site
- Forest Redgum
- Stringy Bark
- Paperbark
- Grey Box



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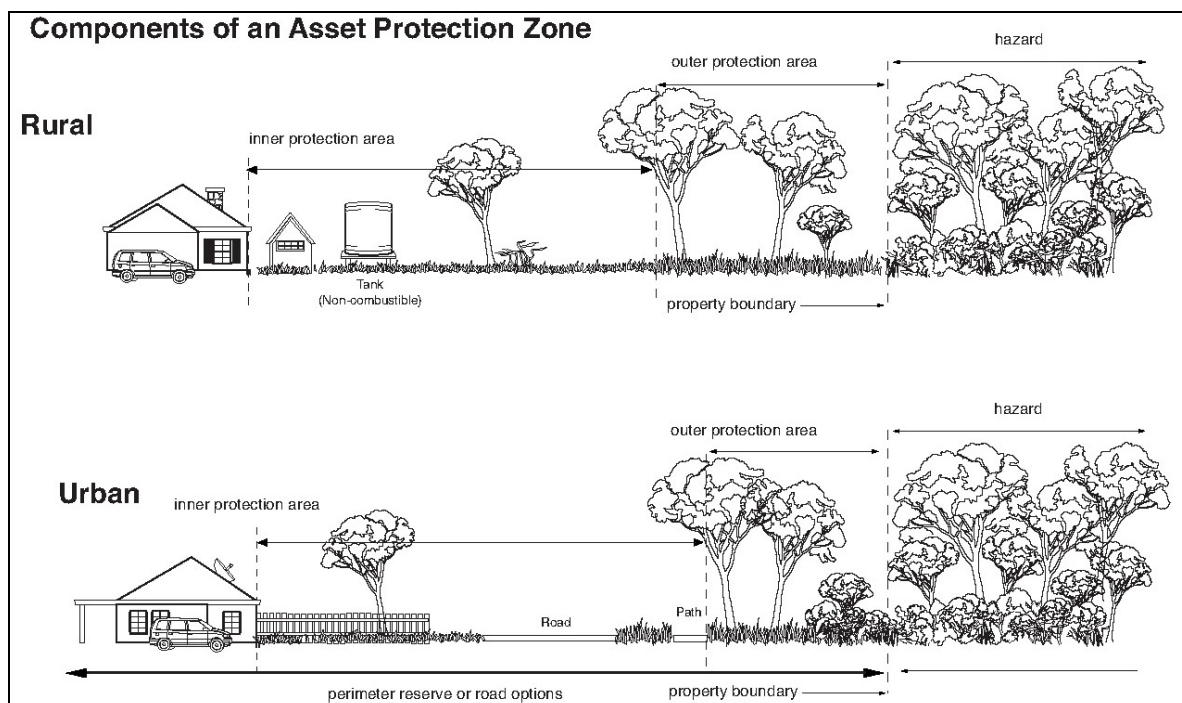
APPENDIX B ASSET PROTECTION ZONES

ASSET PROTECTION ZONES

An Asset Protection Zone (APZ) is an area surrounding a development that is managed to reduce the bushfire hazard to an acceptable level to mitigate the risk to life and property (refer to Figure B-1 below). The required width of the APZ varies with slope and the type of hazard. An APZ can consist of both an Inner Protection Area (IPA) and an Outer Protection Area (OPA). The respective IPA and OPA widths for the required APZs are as detailed in Table 5-1. An APZ can include the following:

- Lawns;
- Discontinuous gardens;
- Swimming pools;
- Driveways;
- Unattached non-combustible garages with suitable separation from the dwelling;
- Open space / parkland
- Golf courses; and
- Car parking.

Figure B-1: Components of an APZ (PBO 2006)





INNER PROTECTION AREA

The Inner Protection Area (IPA) extends from the edge of the OPA to the development. The IPA aims to ensure that the presence of fuels which could contribute to a fire event / intensity, are minimised close to the development. The performance of the IPA must be such that:

- There is minimal fine fuel at ground level which could be set alight by a bushfire; and
- Any vegetation in the IPA does not provide a path for the transfer of fire to the development – that is, the fuels are discontinuous.

The presence of a few shrubs or trees in the IPA is acceptable provided that they:

- Do not touch or overhang any buildings;
- Are well spread out and do not form a continuous canopy;
- Are not species that retain dead material or deposit excessive quantities of ground fuel in a short period or in a danger period; and
- Are located far enough away from any dwelling so that they will not ignite the dwelling by direct flame contact or radiant heat emission.

Woodpiles, wooden sheds, combustible material storage areas, large areas / quantities of garden mulch, stacked flammable building materials etc are not permitted in the IPA

OUTER PROTECTION AREA

The Outer Protection Area (OPA) is located adjacent to the hazard. Within the OPA any trees and shrubs should be maintained in a manner such that the vegetation is not continuous. Fine fuel loadings should be kept to a level where the fire intensity expected will not impact on adjacent developments.