



# BUSHFIRE RISK ASSESSMENT

FOR  
A PROPOSED INDUSTRIAL  
SUBDIVISION AT  
91 GARDINER STREET,  
RUTHERFORD NSW 2320

Prepared by:

**Firebird ecoSultants Pty Ltd**

ABN – 16 105 985 993

PO Box 354

Newcastle NSW 2300

Mob: 0414 465 990

Ph: 02 4910 3939

Fax: 02 4929 2727

Email: [sarah@firebirdeco.com.au](mailto:sarah@firebirdeco.com.au)



|                                    |   |
|------------------------------------|---|
| <b>Site Details:</b>               | 91 Gardiner Street, Rutherford NSW 2320   |
| <b>Prepared by:</b>                | <b><i>Sarah Jones B.Env.Sc.,G.Dip.DBPA (Design in Bushfire Prone Areas)</i></b><br><b><i>Firebird ecoSultants Pty Ltd</i></b><br>ABN – 16 105 985 993<br>PO Box 354, Newcastle NSW 2300<br>M: 0414 465 990 Email: <a href="mailto:sarah@firebirdeco.com.au">sarah@firebirdeco.com.au</a><br>T: 02 4910 3939 Fax: 02 4929 2727 |
| <b>Prepared for:</b>               | Machil Pty Ltd  |
| <b>Reference No.</b>               | Rutherford – Machil Pty Ltd – November 2021   |
| <b>Document Status &amp; Date:</b> | 25/11/21  |

### **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 has been prepared by Firebird ecoSultants Pty Ltd at the request of Machil Pty Ltd for a proposed subdivision at 91 Gardiner Street, Rutherford MSW 2320.

This type of development is classified as Industrial development. Industrial development is not captured under Section 4.14 of the Environmental Planning and Assessment Act 1979 (EP&A Act) or Section 100B of the Rural Fires Acts 1997 (RFS Act 1997).

In accordance with section 8.3.10 of PBP 2019, where no residential component is included, commercial and industrial development is addressed through the aim and objectives of PBP. The aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.

The objectives are to:

- › afford buildings and their occupants protection from exposure to a bush fire;
- › provide for a defensible space to be located around buildings;
- › provide appropriate separation between a hazard and buildings which, in combination with other measures, minimises material ignition;
- › ensure that appropriate operational access and egress for emergency service personnel and residents is available;
- › provide for ongoing management and maintenance of BPMs; and
- › ensure that utility services are adequate to meet the needs of firefighters.

PBP states that a suitable package of Bushfire Protection Measures (BPMs) should be proposed commensurate with the assessed level of risk to the development. The scale of the development and numbers of people likely to be occupying the future buildings will be directly relevant to the BPMs proposed. The provisions within Chapter 7 should be used as a base for the development of a package of measures.



---

The following recommendations are provided in relation to meeting the provisions within chapter 7 of PBP (RFS, 2019):

- The proposed future buildings are to comply with the BCA; and
- Any landscaping within the site is to meet the requirements of an Inner Protection Area (IPA)



Sarah Jones  
B.Env.Sc., G.DIP.DBPA (Design for Bushfire Prone Areas)  
**BPAD-A Certified Practitioner (BPD-PA-26512)**  
Ecologist / Bushfire Planner



## Terms & Abbreviations

| <b>Abbreviation</b> | <b>Meaning</b>   |
|---------------------|--|
| APZ                 | Asset Protection Zone  |
| AS2419 -2005        | Australian Standard – Fire Hydrant Installations                         |
| AS3959-2018         | 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   |
| CC                  | Construction Certificate   |
| <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  |
| MCC                 | Maitland City Council  |
| OPA                 | Outer Protection Area  |
| PBP                 | Planning for Bushfire Protection 2019                                    |
| PoM                 | Plan of Management   |
| RF Act              | Rural Fires Act 1997   |
| RF Regulation       | Rural Fires Regulation   |



---

## CONTENTS

|          |  |            |
|----------|--|------------|
| <b>1</b> | <b>INTRODUCTION</b>                      | <b>1</b>   |
| 1.1      | Site Particulars                         | 1          |
| 1.2      | Description of Proposal                  | 1          |
| <b>2</b> | <b>METHODOLOGY</b>                       | <b>3</b>   |
| 2.1      | Vegetation Assessment                    | 3          |
| 2.2      | Slope Assessment                         | 3          |
| <b>3</b> | <b>SITE ASSESSMENT</b>                   | <b>4</b>   |
| 3.1      | Vegetation Assessment                    | 4          |
| <b>4</b> | <b>COMPLIANCE WITH AS3959</b>            | <b>6</b>   |
| <b>5</b> | <b>COMPLIANCE</b>                        | <b>7</b>   |
| <b>6</b> | <b>CONCLUSION AND RECOMMENDATIONS</b>    | <b>11</b>  |
| <b>7</b> | <b>BIBLIOGRAPHY</b>                      | <b>12</b>  |
|          | <b>APPENDIX A PROPOSED PLANS</b>         | <b>A-1</b> |
|          | <b>APPENDIX B ASSET PROTECTION ZONES</b> | <b>B-1</b> |

## TABLES

|  |   |
|--|---|
| Table 3-1: Vegetation Classification                               | 4 |
| Table 5-1: Proposed Building Compliance with Development Standards | 7 |

## FIGURES

|                            |   |
|----------------------------|---|
| Figure 1-1: Site Location  | 2 |
| Figure 3-1: Vegetation Map | 5 |



---

# I INTRODUCTION

Firebird ecoSultants Pty Ltd was engaged by Machil Pty Ltd to undertake a Bushfire Threat Assessment (BTA) for a proposed subdivision at 91 Gardiner Street, Rutherford NSW 2320, hereafter referred to in this report as 'the site' (Refer to Figure 1-1).

A suitable package of BPMs should be proposed commensurate with the assessed level of risk to the development. The scale of the development and numbers of people likely to be occupying the building will be directly relevant to the BPMs proposed. The provisions within Chapter 7 of this document should be used as a base for the development of a package of measures.

The intent of the BPMs is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.

This assessment has been based on the hazards within the site and surrounds in April 2021.

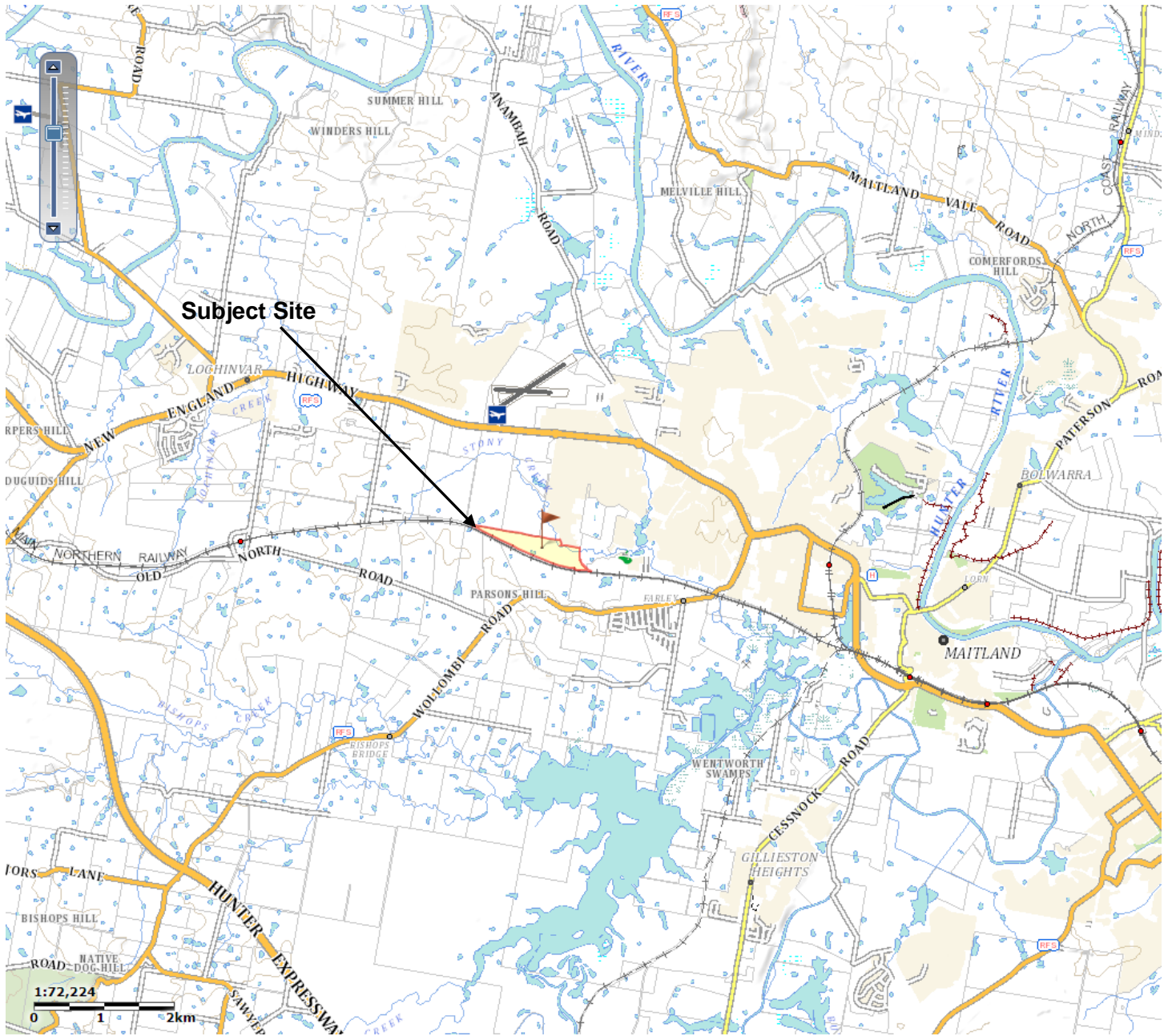
## I.1 Site Particulars

|                          |  |
|--------------------------|--|
| <b>Locality:</b>         | 91 Gardiner Street, Rutherford, NSW 2320 |
| <b>LGA:</b>              | Maitland City Council                    |
| <b>Lot / DP:</b>         | Lot 2/-/ DP 1197299                      |
| <b>Current Land Use:</b> | Vacant Land                              |

## I.2 Description of Proposal

The proposal is for a proposed subdivision at 91 Gardiner Street, Rutherford NSW 2320. Refer to Appendix 1 – Site Layout and Plans.

Figure 1-1: Site Location







---

## 2 METHODOLOGY

### 2.1 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.

### 2.2 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 2m using Spatial Map Viewer.



### 3 SITE ASSESSMENT

The following assessment has been undertaken in accordance with the requirements of PBP (RFS, 2019).

#### 3.1 Vegetation Assessment

In accordance with PBP (RFS 2019), an assessment of the vegetation and slope over a distance of 140m in all directions from the site was undertaken. Vegetation that may be considered a bushfire hazard was identified in all directions from the site. Refer to Table 3-1 for Vegetation and Slope Assessment and Figure 3-1 Vegetation Map.

**Table 3-1: Vegetation Classification**

| Proposed Dwelling |                 |                |
|-------------------|-----------------|----------------|
| Direction         | Vegetation Type | Slope          |
| North             | Forest          | Downslope 0-5° |
|                   | Woodland        | Downslope 0-5° |
| East              | Woodland        | Downslope 0-5° |
| South             | Forest          | Upslope        |
|                   | Woodland        | Upslope        |
| West              | Woodland        | Upslope        |



---

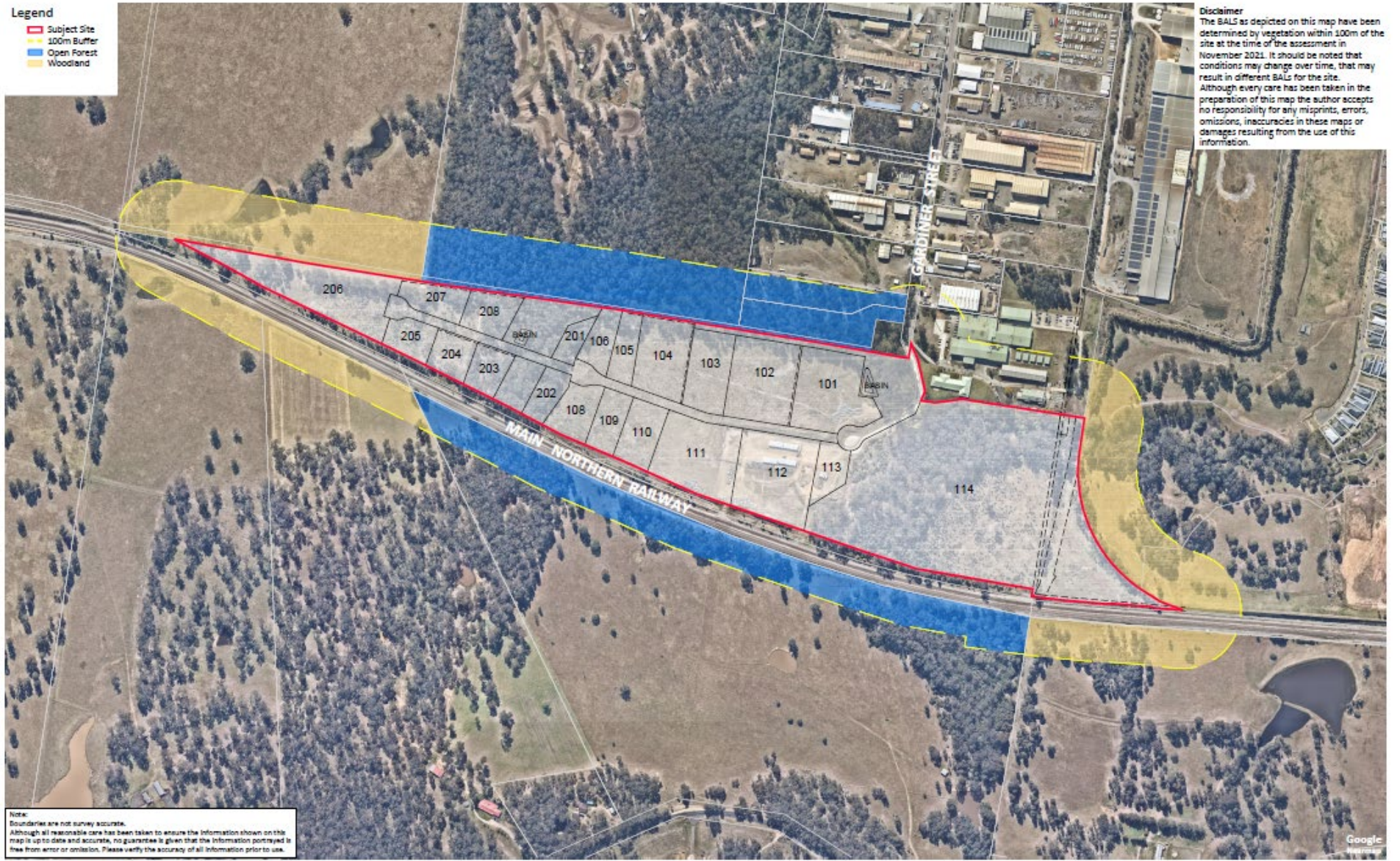
**Figure 3-1: Vegetation Map**



**Legend**

- Subject Site
- 100m Buffer
- Open Forest
- Woodland

**Disclaimer**  
 The BALS as depicted on this map have been determined by vegetation within 100m of the site at the time of the assessment in November 2021. It should be noted that conditions may change over time, that may result in different BALS for the site. Although every care has been taken in the preparation of this map the author accepts no responsibility for any misprints, errors, omissions, inaccuracies in these maps or damages resulting from the use of this information.

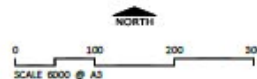


**Note:**  
 Boundaries are not survey accurate. Although all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior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

Google  
 Earth imagery

**FIGURE 5-1: BUSHFIRE ATTACK LEVELS**

**CLIENT** Client  
**SITE DETAILS** Lot 2 Gardiner Street Rutherford  
**DATE** 26 November 2021



Firebird ecoSultants Pty Ltd  
 ABN - 16 105 985 993  
 Level 1, 146 Hunter Street, Newcastle NSW 2300  
 P O Box 354 Newcastle NSW 2300



**DISCLAIMER**  
 This document and the information therein shall remain the property of Firebird ecoSultants Pty Ltd. The document may not be used for any purpose for which it was prepared and is accurate only to the extent of engagement for the consultation. Unauthorised use of this document in any way is prohibited.

Ref No: 3005



## 4 COMPLIANCE WITH AS3959

The Building Code of Australia (BCA) does not provide for any bush fire specific performance requirements and as such AS 3959 does not apply as a set of 'deemed to satisfy' provisions. The general fire safety construction provisions are taken as acceptable solutions, but the aim and objectives of PBP apply in relation to other matters such as access, water and services, emergency planning and landscaping/vegetation management. These matters are addressed in Section 5 of this report.





## 5 COMPLIANCE

The proposal is for an industrial development and therefore development standards apply. Table 4-1 details the proposed developments compliance with development standards for infill development.

**Table 5-1: Proposed Building Compliance with Development Standards**

| Acceptable Solution  | Performance Criteria  | Compliance  |
|--|---|---|
| <b>APZs</b>  |   |   |
| An APZ is provided in accordance with Table A1.12.2 or A1.12.3 in Appendix 1.  | APZs are provided commensurate with the construction of the building; and a defensible space is provided.   | <b>N/A</b> – The proposal is for an industrial development. A defensible space is provided for firefighters and any unmanaged vegetation.   |
| APZs are managed in accordance with requirements of Appendix 4 of PBP.   | APZs are managed and maintained to prevent fire to the building.  | <b>N/A</b>  |
| APZs are wholly within the boundaries of the development site.<br><br>APZs are located on lands with a slope less than 18 degrees.                               | The APZ is provided in perpetuity.<br><br>APZ maintenance is practical, soil stability is not comprised and the potential for crown fires is minimised. | <b>N/A</b>  |
| <b>Construction Standards</b>  |   |   |
| BAL is determined in accordance with A1.12.5 to A1.12.7; and<br><br>Construction provided in accordance with the NCC and as modified by section 7.5 of PBP 2019. | The proposed building can withstand bush fire attack in the form of embers, radiant heat and flame contact.   | <b>N/A</b> – The Building Code of Australia (BCA) does not provide for any bush fire specific performance requirements for this type of development and as such AS 3959 does not apply as a set of ‘deemed to satisfy’ provisions. The general fire safety construction provisions are taken as acceptable solutions. |



| Acceptable Solution  | Performance Criteria  | Compliance  |
|--|---|---|
| Fencing and gates are constructed in accordance with section 7.6 of PBP 2019.  | Proposed fences and gates are designed to minimise the spread of bush fire.                           | Can comply  |
| Class 10a buildings are constructed in accordance with section 8.3.2.  | Proposed Class 10a buildings are designed to minimise the spread of bush fire.                        | N/A   |
| <b>ACCESS</b>  |   |   |
| Property access roads are two-wheel drive, all-weather roads.  | Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation. | <b>Complies with Acceptable Solution</b> – Gardiner Street allows adequate access.                                  |
| The capacity of road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes), bridges and causeways are to clearly indicate load rating.  | The capacity of access roads is adequate for firefighting vehicles.                                   | <b>Complies with Acceptable Solution</b> – Gardiner Street allows adequate access.                                  |
| Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005;<br>There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.   | There is appropriate access to water supply.  | <b>Complies with Acceptable Solution</b> – Hydrants are appropriately located. Refer to Appendix A of this report.  |
| At least one alternative property access road is provided for individual dwellings or groups of dwellings that are located more than 200 metres from a public through road;<br>There are no specific access requirements in an urban area where an unobstructed path (no | Firefighting vehicles can access the dwelling and exit the property safely.                           | <b>Complies with Acceptable Solution</b> – An unobstructed path <70m occurs between the building and Venture Close. |



| Acceptable Solution  | Performance Criteria   | Compliance  |
|--|--|---|
| <p>greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.</p> |  |   |
| <b>WATER SUPPLIES</b>  |  |   |
| <p>Reticulated water is to be provided to the development, where available; and<br/>A static water supply is provided where no reticulated water is available.</p>   | <p>An adequate water supply is provided for firefighting purposes.</p>   | <p><b>Complies with Acceptable Solution</b> – the site is connected to reticulated water. Refer to Appendix A of this report.</p> |
| <p>Fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005;<br/>Hydrants are not located within any road carriageway; and<br/>Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.</p>      | <p>Water supplies are located at regular intervals; and<br/>The water supply is accessible and reliable for firefighting operations.</p> | <p><b>Complies with Acceptable Solution</b> – Hydrants are to be appropriately located. Refer to Appendix A of this report.</p>   |
| <p>Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.</p>  | <p>Flows and pressure are appropriate.</p>   | <p><b>Complies with Acceptable Solution</b> – Pressure and flow assumed.</p>  |
| <p>All above-ground water service pipes external to the building are metal, including and up to any taps.</p>  | <p>The integrity of the water supply is maintained.</p>  | <p><b>Complies with Acceptable Solution</b> – Above ground pipes meet the requirements of the acceptable solution.</p>            |





---

| Acceptable Solution  | Performance Criteria   | Compliance |
|--|--|------------|
| Where no reticulated water supply is available, water for firefighting purposes is provided in accordance with Table 5.3d; | A static water supply is provided for firefighting purposes in areas where reticulated water is not available. | N/A        |



---

## 6 CONCLUSION AND RECOMMENDATIONS

In conclusion, the proposed development is able to meet the aims and objectives of PBP 2019. The aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.

The objectives are to:

- Afford buildings and their occupants protection from exposure to a bush fire;
- Provide for a defensible space to be located around buildings;
- Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent likely spread to buildings;
- Ensure that appropriate operations access for emergency service personnel and occupant is available;
- Provide for ongoing management and maintenance of BPMs;
- Ensure that utility services are adequate to meet the needs of firefighters.

The following recommendations are provided in relation to meeting the aims and objectives of PBP (RFS, 2019):

- The proposed future buildings are to comply with the BCA; and
- Any landscaping within the site is to meet the requirements of an Inner Protection Area (IPA)



---

## 7 BIBLIOGRAPHY

Department of Bush Fire Services (undated). *Bush Fire Readiness Checklist*.

NSWFB (1988). *Hazard Reduction for the Protection of Buildings in Bushland Areas*. New South Wales Fire Brigades.

NSW Rural Fire Service (1997). *Bush Fire Protection for New and Existing Rural Properties*. September 1997, NSW Government.

NSW Rural Fire Service (2019). *Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners*.

NSW Rural Fire Service (2005). Standards for Asset Protection Zones. NSW Rural Fire Service.

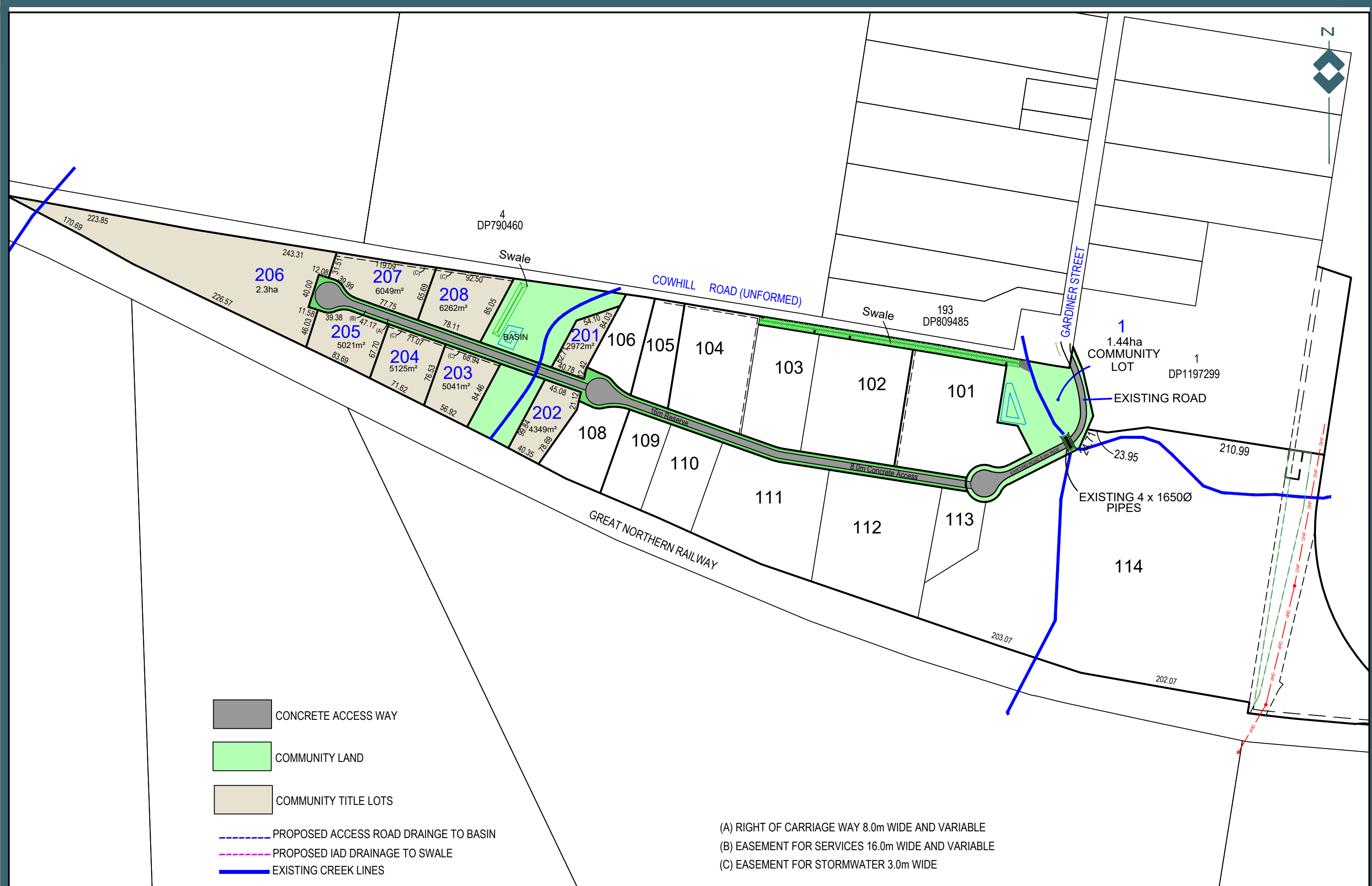
NSW Rural Fire Service (2002). *Circular 16/2002: Amendments to the Rural Fires Act 1997 – hazard reduction and planning requirements*.

Planning NSW & NSW Rural Fire Service (2001). *Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners*.

Ramsay, GC and Dawkins, D (1993). *Building in Bushfire-prone Areas – Information and Advice*. CSIRO and Standards Australia.

*Rural Fires and Environmental Assessment Legislation Amendment Act 2002*.

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



- CONCRETE ACCESS WAY
- COMMUNITY LAND
- COMMUNITY TITLE LOTS

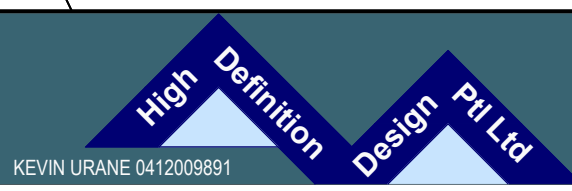
- PROPOSED ACCESS ROAD DRAINAGE TO BASIN
- PROPOSED IAD DRAINAGE TO SWALE
- EXISTING CREEK LINES

- (A) RIGHT OF CARRIAGE WAY 8.0m WIDE AND VARIABLE
- (B) EASEMENT FOR SERVICES 16.0m WIDE AND VARIABLE
- (C) EASEMENT FOR STORMWATER 3.0m WIDE

TITLE: PROPOSED SUBDIVISION OF LOT 105, 106 AND 107 DP (UNREGISTERED)  
 GARDINER STREET, RUTHERFORD

DA 2

TITLE: MACHIL PTY LTD



KEVIN URANE 0412009891

|          |               |            |           |           |          |             |       |
|----------|---------------|------------|-----------|-----------|----------|-------------|-------|
| Date:    | 08.07.19      | Scale:     | 1:4000 A3 | Designed: | KU       | Project No: | HD209 |
| Cad Ref: | HD209 r23 DA2 |            |           |           |          | Drawing No: | DA2   |
| No       | 20            | AMEND LOTS |           | KU        | 4.08.21  | Revision    | 22    |
|          | 22            | DA2 PLANS  |           | KU        | 30.09.21 |             |       |
|          | 21            | DA PLANS   |           | KU        | 09.08.21 |             |       |
| No       |               | Amendment  |           | Drawn     | Date     |             |       |

# APPENDIX 4

## ASSET PROTECTION ZONE REQUIREMENTS

In combination with other BPMS, a bush fire hazard can be reduced by implementing simple steps to reduce vegetation levels. This can be done by designing and managing landscaping to implement an APZ around the property.

Careful attention should be paid to species selection, their location relative to their flammability, minimising continuity of vegetation (horizontally and vertically), and ongoing maintenance to remove flammable fuels (leaf litter, twigs and debris).

This Appendix sets the standards which need to be met within an APZ.

### A4.1 Asset Protection Zones

An APZ is a fuel-reduced area surrounding a building or structure. It is located between the building or structure and the bush fire hazard.

For a complete guide to APZs and landscaping, download the NSW RFS document *Standards for Asset Protection Zones* at the NSW RFS Website [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au).

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Bush fire fuels should be minimised within an APZ. This is so that the vegetation within the zone does not provide a path for the spread of fire to the building, either from the ground level or through the tree canopy.

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

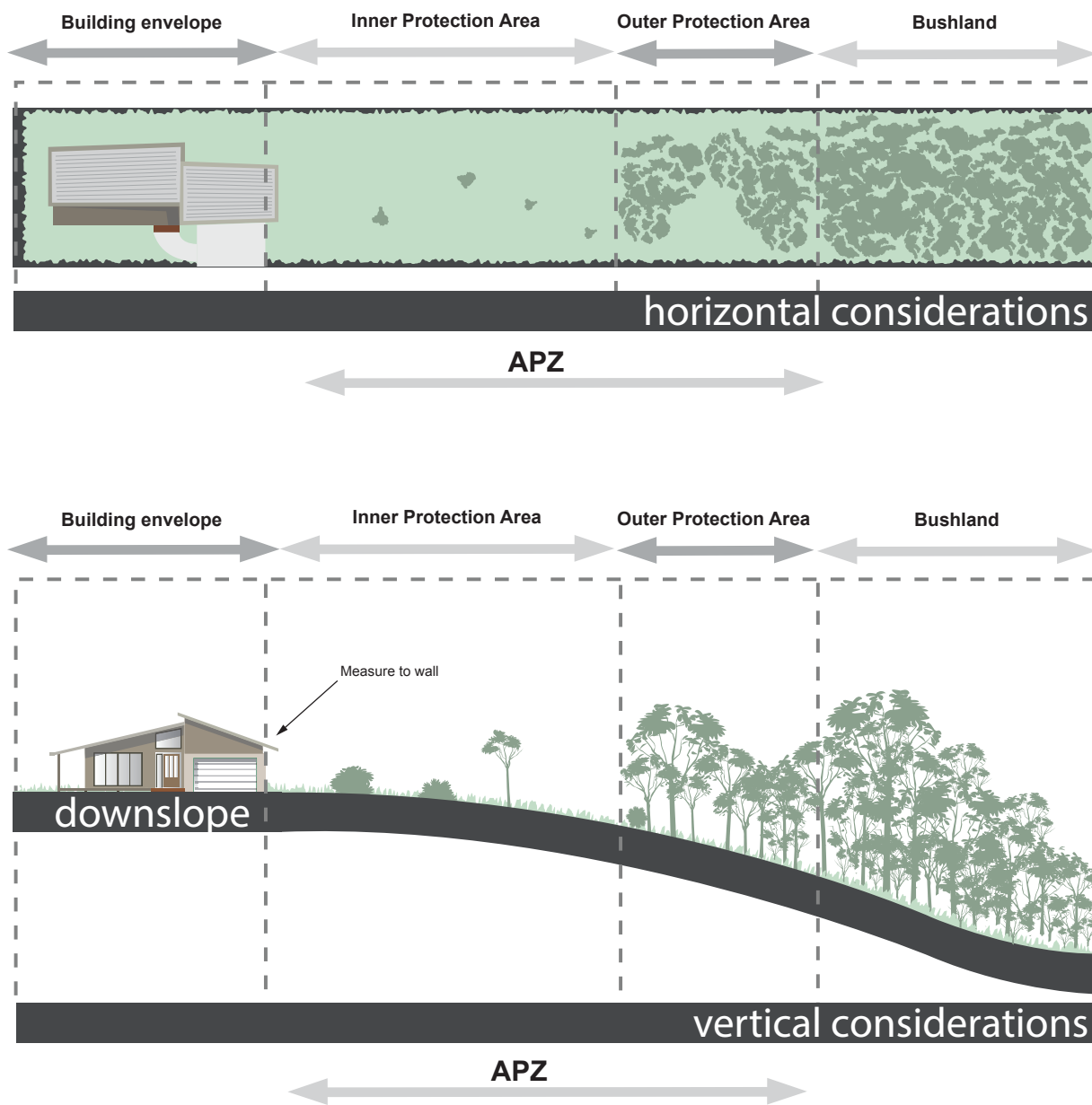
- direct flame contact on the building;
- damage to the building asset from intense radiant heat; and
- ember attack.

The methodology for calculating the required APZ distance is contained within Appendix 1. The width of the APZ required will depend upon the development type and bush fire threat. APZs for new development are set out within Chapters 5, 6 and 7 of this document.

In forest vegetation, the APZ can be made up of an Inner Protection Area (IPA) and an Outer Protection Area (OPA).

**Figure A4.1**

Typical Inner and Outer Protection Areas.



#### A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defensible space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

##### Trees

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

##### Shrubs

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

##### Grass

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.

#### A4.1.2 Outer Protection Areas (OPAs)

An OPA is located between the IPA and the unmanaged vegetation. It is an area where there is maintenance of the understorey and some separation in the canopy. The reduction of fuel in this area aims to decrease the intensity of an approaching fire and restricts the potential for fire spread from crowns; reducing the level of direct flame, radiant heat and ember attack on the IPA.

Because of the nature of an OPA, they are only applicable in forest vegetation.

When establishing and maintaining an OPA the following requirements apply:

##### Trees

- tree canopy cover should be less than 30%; and
- canopies should be separated by 2 to 5m.

##### Shrubs

- shrubs should not form a continuous canopy; and
- shrubs should form no more than 20% of ground cover.

##### Grass

- grass should be kept mown to a height of less than 100mm; and
- leaf and other debris should be removed.

An APZ should be maintained in perpetuity to ensure ongoing protection from the impact of bush fires. Maintenance of the IPA and OPA as described above should be undertaken regularly, particularly in advance of the bush fire season.