

**BUSHFIRE PROTECTION ASSESSMENT
FOR THE REVISIONS TO THE
MAJOR PROJECT APPLICATION,
PROPOSED RESIDENTIAL DEVELOPMENT**



ON

**LOT 1 & 2 in DP 583803; LOTS 1 & 2 in DP 205504;
LOT 1 in DP 403072 and LOT 3 in DP 403072**

**No. 1, 1A, 3 and 5 AVON ROAD and No. 4 & No. 8
BEECHWORTH ROAD,**

PYMBLE

**PREPARED FOR AUSBAO MANAGEMENT PTY LTDJW
NEALE PTY LTD
ON BEHALF OF
AUSBAO PYMBLE PTY LTD**

Australian Bushfire Protection Planners Pty Limited

Bushfire Mitigation Consultants

32 Old Dog Trap Road

SOMERSBY 2250 NSW

Phone: (02) 43622112 Fax: (02) 43622204

Email: abpp@bigpond.net.au

BUSHFIRE PROTECTION ASSESSMENT

FOR THE REVISIONS TO THE

MAJOR PROJECT APPLICATION,

PROPOSED RESIDENTIAL DEVELOPMENT

ON

**LOT 1 & 2 in DP 583803; LOTS 1 & 2 in DP 205504;
LOT 1 in DP 403072 and LOT 3 in DP 403072**

**No. 1, 1A, 3 and 5 AVON ROAD and No. 4 & No. 8
BEECHWORTH ROAD,**

PYMBLE

PREPARED FOR

AUSBAO MANAGEMENT PTY LTD

JW NEALE PTY LTD

ON BEHALF OF

AUSBAO PYMBLE PTY LTD

Report Number	Document	Preparation Date	Issue Date	Directors Approval
B152438 - 5	Final	8.05.2015	15.12.2015	<i>G.L.Swain</i>

2

EXECUTIVE SUMMARY

This report has been prepared on behalf of Ausbao NSW Management Pty Ltd (The Applicant), on behalf of Ausbao Pymble Pty Ltd.

The Report forms part of the Land and Environment Court of NSW (L&E Court) Proceedings No.10834 of 2013.

The proceedings relate to the refusal by the Planning Assessment Commission (PAC), as delegate of the Minister for Planning (Minister), of the Major Project Application (MP 10_0219) for a multi-unit residential development at 1, 1A & 5 Avon Road and 4 & 8 Beechworth Road, Pymble (Site).

On 5 December 2014, the Land and Environment Court ordered that a Concept Plan approval be issued in respect of the development of the Site, and the PAC issued the Concept Plan Approval on 19 December 2014. The proceedings No.10834 of 2013 relating to the Major Project Application were stood over following the Court's order regarding the Concept Plan and the PAC's subsequent issue of the Concept Plan Approval.

This report addresses the revisions to the Major Project Application as a consequence of the terms of the Concept Plan Approval.

The development site consists of Lot 1 & 2 in DP 583803; Lots 1 & 2 in DP 205504; Lot 1 in DP 403072 and Lot 3 in DP 403072 and is bound by the North Shore Railway Line to the northeast, Avon Road to the east, Mayfield Avenue and Beechworth Road to the west and northwest and 1 Arilla Road to the south.

A review of the Ku-ring-gai Council Bushfire Prone Land Map has confirmed that the site is not mapped as containing bushfire prone vegetation however the south-eastern portion, or the Avon Road frontage of the site is mapped as containing part of the 100 metre wide buffer zone to the Category 1 Bushfire Prone Vegetation mapped within the north-western corner of Pymble Ladies College [PLC].

The development, being the construction of a multi-apartment residential complex, part of which is located within the buffer zone to a bushfire prone area, is required to comply with the provisions of Section 79BA of the *Environmental Planning & Assessment Act 1979* and provide bushfire protection measures in accordance with *Planning for Bushfire Protection 2006*. However, the residential apartment buildings will be subdivided into Strata Title Apartments once completed and for the purpose of this report is deemed to be Integrated Development as defined by Section 91 of the *Environmental Planning & Assessment Act 1979*.

The proposed four [4] lot residential subdivision occurs on land within Lot 1 and Lot 3 in DP 403072, No. 4 and No. 8 Beechworth Road. This land is not affected by the Ku-ring-gai Bushfire Prone Land Map however is included in the assessment for clarity as the land forms part of the overall development site.

The provisions of Section 100B of the *Rural Fires Act 1997* apply to Integrated Development and the residential apartment development and the four lot residential subdivision is required to comply with the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2006*.

This report examines the proposed development against the requirements of *Planning for Bushfire Protection 2006* and provides advice on the suitability of the development in addressing the availability of separation of the proposed residential apartment buildings and future residential dwelling houses from the retained vegetation, access and water supplies for fire-fighting operations and the requisite level of bushfire construction standards to the buildings.



Graham Swain
Managing Director,
Australian Bushfire Protection Planners Pty Limited.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	3
TABLE OF CONTENTS.....	5
SECTION 1.....	7
INTRODUCTION.....	7
1.1 AIM OF THIS ASSESSMENT.....	7
1.2 DEVELOPMENT PROPOSAL.....	7
1.3 STATUTORY REQUIREMENTS.....	9
1.3.1 LEGISLATION.....	9
1.3.2 PLANNING POLICIES.....	11
1.4 DOCUMENTATION REVIEWED IN THIS ASSESSMENT.....	11
1.5 SITE INSPECTION.....	12
1.6 NSW RURAL FIRE SERVICE'S RESPONSE TO ENVIRONMENTAL ASSESSMENT FOR THE ORIGINAL PROPOSED DEVELOPMENT.....	12
SECTION 2.....	13
DESCRIPTION OF DEVELOPMENT SITE.....	13
2.1 LOCATION & DESCRIPTION.....	13
2.2 ADJOINING LAND USE.....	17
2.3 TOPOGRAPHY.....	17
2.4 VEGETATION.....	18
2.4.1 VEGETATION WITHIN THE DEVELOPMENT SITE.....	19
2.4.2 VEGETATION WITHIN 140 METRES OF THE DEVELOPMENT SITE.....	19
2.5 SITE PHOTOGRAPHS.....	21
2.6 SIGNIFICANT ENVIRONMENTAL FEATURES WITHIN THE DEVELOPMENT SITE.....	22
2.7 KNOWN THREATENED SPECIES, POPULATION OR ECOLOGICAL COMMUNITY WITHIN THE DEVELOPMENT SITE.....	22
2.8 DETAILS AND LOCATION OF ABORIGINAL RELICS OR ABORIGINAL PLACE.....	22
SECTION 3.....	24
PRECINCT LEVEL ASSESSMENT.....	24
3.1 INTRODUCTION.....	24
SECTION 4.....	25
BUSH FIRE PROTECTION ASSESSMENT.....	25
4.1 INTRODUCTION.....	25
4.2 DETERMINATION OF ASSET PROTECTION ZONES – PROPOSED RESIDENTIAL APARTMENT DEVELOPMENT.....	26
4.3 ASSET PROTECTION ZONES TO THE PROPOSED RESIDENTIAL LOTS OFF BEECHWORTH ROAD.....	27
4.4 ASSESSMENT OF BUSHFIRE RISK ASSOCIATED WITH THE PROXIMITY OF THE CONSERVATION AREA TO THE DWELLING AT NO. 1 ARILLA ROAD.....	28
4.5 ASSESSMENT OF BUSHFIRE ATTACK (CONSTRUCTION STANDARDS)..	29
4.6 ACCESS STANDARDS FOR FIREFIGHTING OPERATIONS.....	31

4.6.1	ADEQUACY OF PUBLIC ROADS.....	31
4.6.2	FIRE TRAIL ACCESS TO TWO-WAY PUBLIC ROADS.....	31
4.6.3	EMERGENCY RESPONSE ACCESS / EGRESS.....	31
4.7	WATER SUPPLIES FOR FIREFIGHTING OPERATIONS.....	34
4.8	UTILITY SERVICES – ELECTRICITY & GAS SUPPLIES.....	34
4.9	BUSHFIRE HAZARD MANAGEMENT.....	34
4.10	EMERGENCY MANAGEMENT FOR FIRE PROTECTION.....	35
4.11	ADEQUACY OF SPRINKLER SYSTEMS & OTHER FIRE PROTECTION MEASURES.....	35
4.12	EVACUATION.....	35
SECTION 5	36
	BUSHFIRE MANAGEMENT STRATEGIES.....	36
	STRATEGY 1 – LANDSCAPE MANAGEMENT:.....	36
	STRATEGY 2 – BUSHFIRE CONSTRUCTION STANDARDS TO APARTMENT BUILDING NO. 1.....	36
	STRATEGY 3 – BUSHFIRE CONSTRUCTION STANDARDS TO APARTMENT BUILDINGS NO. 3 & NO. 4.....	36
	STRATEGY 4 – WATER SUPPLIES FOR FIREFIGHTING OPERATIONS:.....	36
	STRATEGY 5 – EVACUATION PLAN:.....	37
SECTION 6	38
	CONCLUSION.....	38
SECTION 7 – PLAN OF ASSET PROTECTION ZONES/DEFENDABLE SPACE TO THE PROPOSED BUILDINGS	40
REFERENCES:	41

SECTION 1

INTRODUCTION

1.1 Aim of this Assessment.

The aim of this amended Bushfire Protection Assessment Report is to examine the revisions to the Major Project Application and to determine compliance with the requirements of the NSW Rural Fire Service and the aim and objectives of *Planning for Bushfire Protection 2006*.

1.2 Development Proposal.

The revised Major Project Application includes residential development comprising:

- Construction of three [3] residential flat buildings containing 174 dwellings and incorporating basement level parking for up to 229 parking spaces;
- Demolition of the existing dwelling on Lots 1 & 2 in DP 205504;
- Demolition of the existing dwelling on Lot 3 in DP 403072;
- Retention and restoration of the existing dwelling on Lot 1 in DP 583803 for common use of future residents;
- Provision of access roads and internal pedestrian links;
- Site Landscaping;
- Rehabilitation of retained vegetation;
- A four [4] lot residential subdivision of land within Lot 1 and Lot 3 in DP 403072, being the land having access to Beechworth Road and subdivision of associated vehicular access lot.

Refer to Figure 1 – Site Plan of proposed Residential Apartment Complex and four [4] lot residential subdivision.

Figure 1 – Site Plan of proposed Residential Apartment Complex and four [4] lot residential subdivision.



1.3 Statutory Requirements.

This report has been prepared having regard to the following legislative and planning requirements:

1.3.1 Legislation.

(a) Environmental Planning and Assessment Act (EPA Act)

Planning and development within NSW is regulated by the *Environmental Planning & Assessment Act, 1979* (EPA Act). This Act was amended in August 2002 by the *Rural Fires & Environmental Assessment Legislation Amendment Act, 2002*. In relation to bushfire planning for new residential, rural residential and special fire protection developments in bushfire prone areas in NSW, the following sections of the Act apply:

(i) Section 79BA states:

Development consent cannot be granted for any purpose (other than a subdivision of land that could lawfully be used for residential or rural residential purposes or development for a special fire protection purpose) on bushfire prone land unless the consent authority:

- *Is satisfied that the development conforms to the specifications and requirements of Planning for Bushfire Protection 2006 or:*
- *Has been provided with a certificate by a person who is recognised by the NSW Rural Fire Service as a qualified consultant in bushfire risk assessment stating that the development conforms to the relevant specifications and requirements.*

(ii) Section 79C(1) states:

In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application:

- *The likely impacts of the development (e.g. natural hazards such as bushfire threat);*
- *The suitability of a site for development (e.g. bushfires).*

(ii) Section 91(1):

Defines the subdivision of bushfire prone land, for residential rural; residential subdivision and the construction of special fire protection purpose development, as integrated development which requires authorization under Section 100B of the *Rural Fires Act 1997*.

(b) Rural Fires Act 1997

The objectives of the *Rural Fires Act* are to provide:

- The prevention, mitigation and suppression of fires;
- Coordination of bushfire fighting and prevention;
- Protection of people and property from fires; and
- Protection of the environment.

In relation to bushfire planning for residential and rural residential subdivision and special fire protection purpose developments in bushfire prone areas in NSW, Section 100B of the Act applies. Section 100B provides for the issue, by the Commissioner of the NSW Rural Fire Service, of a Bushfire Safety Authority for development which creates the subdivision of bushfire prone land for residential and rural residential development and construction of special fire protection purpose developments located within a Bushfire Prone Area.

An application for a Bushfire Safety Authority must be lodged as part of the development application process and must demonstrate compliance with *Planning for Bushfire Protection 2006* and other matters which are considered necessary, by the Commissioner, to protect persons, property and the environment from the impact of bushfire.

In relation to the management of bushfire fuels on public and private lands within NSW, Sections 63(1) and 63(2) require public authorities and owners / occupiers of land to take all practicable steps to prevent the occurrence of bushfires on, and to minimize the danger of, the spread of bushfires.

(c) Rural Fires Regulation 2013.

Section 44 of the *Rural Fires Regulation 2013* relates to planning for new residential, rural residential and special fire protection purpose developments in bushfire prone areas in NSW and provides details of the matters that are required to be addressed for the issue of a *Bushfire Safety Authority* under Section 100B of the *Rural Fires Act*.

(d) Threatened Species Conservation Act 1995 (TSC Act).

The TSC Act aims to protect and encourage the recovery of threatened species, populations and communities as listed under the Act.

The TSC Act is integrated with the EP&A Act and requires consideration of whether a development or an activity (such as the implementation of hazard reduction and asset protection) is likely to significantly affect threatened species, populations and ecological communities or their habitat.

1.3.2 Planning Policies.

Planning for Bushfire Protection – 2006 (Rural Fire Service).

This document provides guidance on the planning and development control processes in relation to bushfire protection measures for development in bushfire prone areas.

In addition to the provisions of the *Planning for Bushfire Protection 2006* document, the Commissioner may determine, under Section 100B of the *Rural Fires Act*, additional measures for rural residential and residential subdivisions and ‘*Special Fire Protection Purpose*’ development that are considered necessary to protect the development against the impact of bushfire.

1.4 Documentation reviewed in this Assessment.

The following documents were reviewed in the preparation of this report:

- Revised Architectural Plans and Elevations of the proposed residential complex and dwellings prepared by Marchese Partners – dated 11.12.2015;
- Revised Vegetation Management Plan prepared by Anne Clements & Associates Pty Ltd;
- Stormwater Management and Riparian Aspects report prepared by NPC;
- Site Survey prepared by Higgins Surveyors;
- Landscape Plans prepared by Taylor Brammer – Landscape Architects;
- Aerial Photograph of the development site and adjoining land;
- *Planning for Bushfire Protection 2006* prepared by the NSW Rural Fire Service;
- Australian Standard AS3959 – 2009 - “*Construction of Buildings in Bushfire Prone Areas*”;

- *Rural Fires Act 1997*;
- *Rural Fires Regulation 2013*;
- Ku-ring-gai Council Certified Bushfire Prone Land Map;
- Concept Approval dated 19.12.2014

1.5 Site Inspection.

Graham Swain of *Australian Bushfire Protection Planners Pty Limited* inspected the site on the 24th September 2012 to assess the topography, slopes and vegetation classification within and adjoining the development site.

The inspection also examined the management of the vegetation on the adjoining properties to determine the actual extent of any vegetation within 100 metres of the development site which could lawfully be mapped as being bushfire prone vegetation.

1.6 NSW Rural Fire Service's Response to Environmental Assessment for the original proposed development.

In response to the submission of the Environmental Assessment prepared for the original proposed development the NSW Rural Fire Service provided the following advice on bushfire protection matters:

Asset Protection Zones:

At the commencement of the building works and in perpetuity the property around the buildings to a distance of 10 metres to the southwest and the southeast should be maintained as an Inner Protection Area [IPA];

Water and Utilities:

Water electricity and gas are to comply with section 4.1.3 of *Planning for Bushfire Protection 2006*.

Access:

Property access roads to community title developments should comply with section 4.2.7 of *Planning for Bushfire Protection 2006*.

- ❖ Further advice was received from the NSW Rural Fire Service that the required setback to Building No. 1 was to be 10 metres from the Avon Road boundary.

SECTION 2

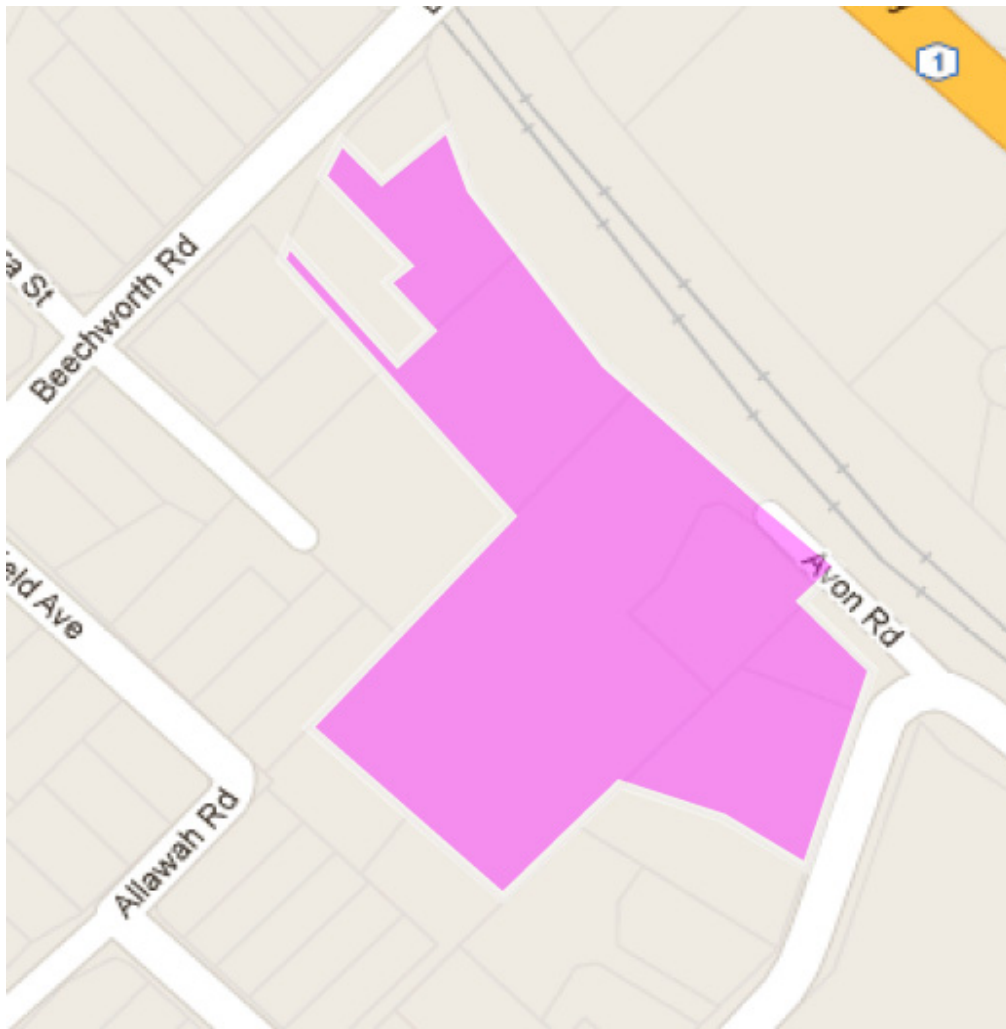
DESCRIPTION OF DEVELOPMENT SITE

2.1 Location & Description.

The site is known as No. 1, No. 1A, No 3 and No.5 Avon Road and No. 4 & No. 8 Beechworth Road Pymble, within the Ku-ring-gai Local Government Area.

The site is bounded by the North Shore Railway Line to the north east, Avon Road to the east, Mayfield Avenue and Beechworth Road to the west and northwest and No. 1 Arilla Road to the south. Figure 2 shows the boundaries of the site.

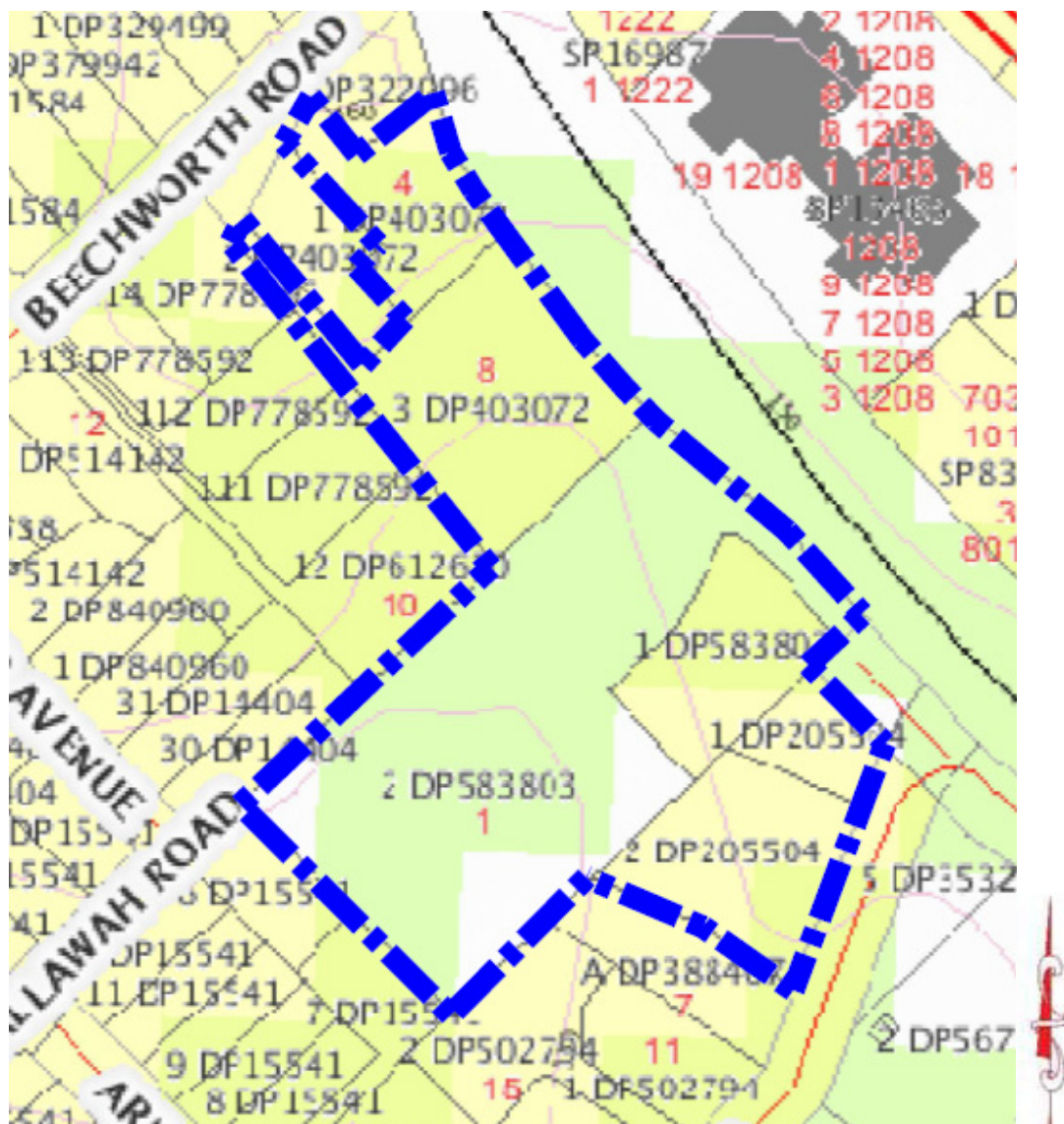
Figure 2 – Location of the Development Site.



The site contains the following lots – refer to Figure 3 – Cadastre Plan:

Lot/DP	Address
Lot 1 in DP 583803	1 Avon Road
Lot 2 in DP 583803	1A Avon Road
Lots 1 & 2 in DP 205504	3 & 5 Avon Road
Lot 1 in DP 403072	4 Beechworth Road
Lot 3 in DP 403072	8 Beechworth Road

Figure 3 – Cadastre Plan.



The site is currently occupied by four single or two storey residential dwellings located at No. 1, No. 3 and No. 5 Avon Road and No. 8 Beechworth Road. The site has a varying topography and the remainder of the site is heavily vegetated with dense weed infestation. In summary, the site has a number of key attributes as follows:

- The site has variable topography with the centre of the site being the steepest, falling to the east and west. There is also a gradual fall in the topography generally to the south, towards Arilla Road;
- A vegetation corridor exists through the centre of the site which is heavily vegetated and contains a number of noxious weeds including Wandering Jew, Lantana and Japanese Honeysuckle. The site also includes the ecologically endangered community of Sydney Blue Gum High Forest which is proposed to be rehabilitated and retained in a Conservation Zone;
- The site is bisected through the central portion by a drainage line that runs in a north-south direction which originates from the residential area to the north of the North Shore Railway Line;
- The site is located near the top end of the catchment. The catchment which encompasses the site extends to the ridge line which is the Pacific Highway just to the north of the site. The catchment above the site has a small area of approximately 5 ha;
- The site contains two local heritage items located at No. 1 and No. 5 Avon Road.

No. 1 Avon Road is also identified as a heritage item under the Ku-ring-gai Local Environmental Plan (Local Centres) 2012. The existing dwelling on No. 1 Avon Road is to be retained and rehabilitated for common use of future residents whilst the dwelling located on No. 5 will be demolished.

- The site has access to Beechworth Road via a driveway to the existing dwelling on No. 8 and the previous dwelling on No. 4 Beechworth Road.

Refer to Figure 4 – Aerial Photograph below.

Figure 4 – Aerial Photograph showing the location of Development Site in the local context.



2.2 Adjoining Land Use.

The landuse to the southeast of the development site consists of residential dwellings on single lots with the land to the southeast of Avon Road forming part of the Pymble Ladies College campus. The land adjoining the north-eastern boundary of the development site forms the North Shore Railway corridor with high rise medium density residential development located beyond the Rail corridor.

The remaining aspects of the site are adjoined by residential development – refer to Figure 4 – Aerial Photograph above.

2.3 Topography.

Appendix 2 of *Planning for Bushfire Protection 2006* states that slopes should be assessed, over a distance of at least 100m from a development site and that the gradient of the land should be determined which will most significantly influence the fire behaviour to the site.

a) Within the Development Site.

The land within the development site forms the head of a valley which falls to the south through the central portion of the development site. The landform from Avon Road and Beechworth Road falls into the floor of the valley at varying gradients.

b) Within 100 metres of the Development Site.

The land to the north rises to the north at < 5 degrees, beyond the Rail corridor.

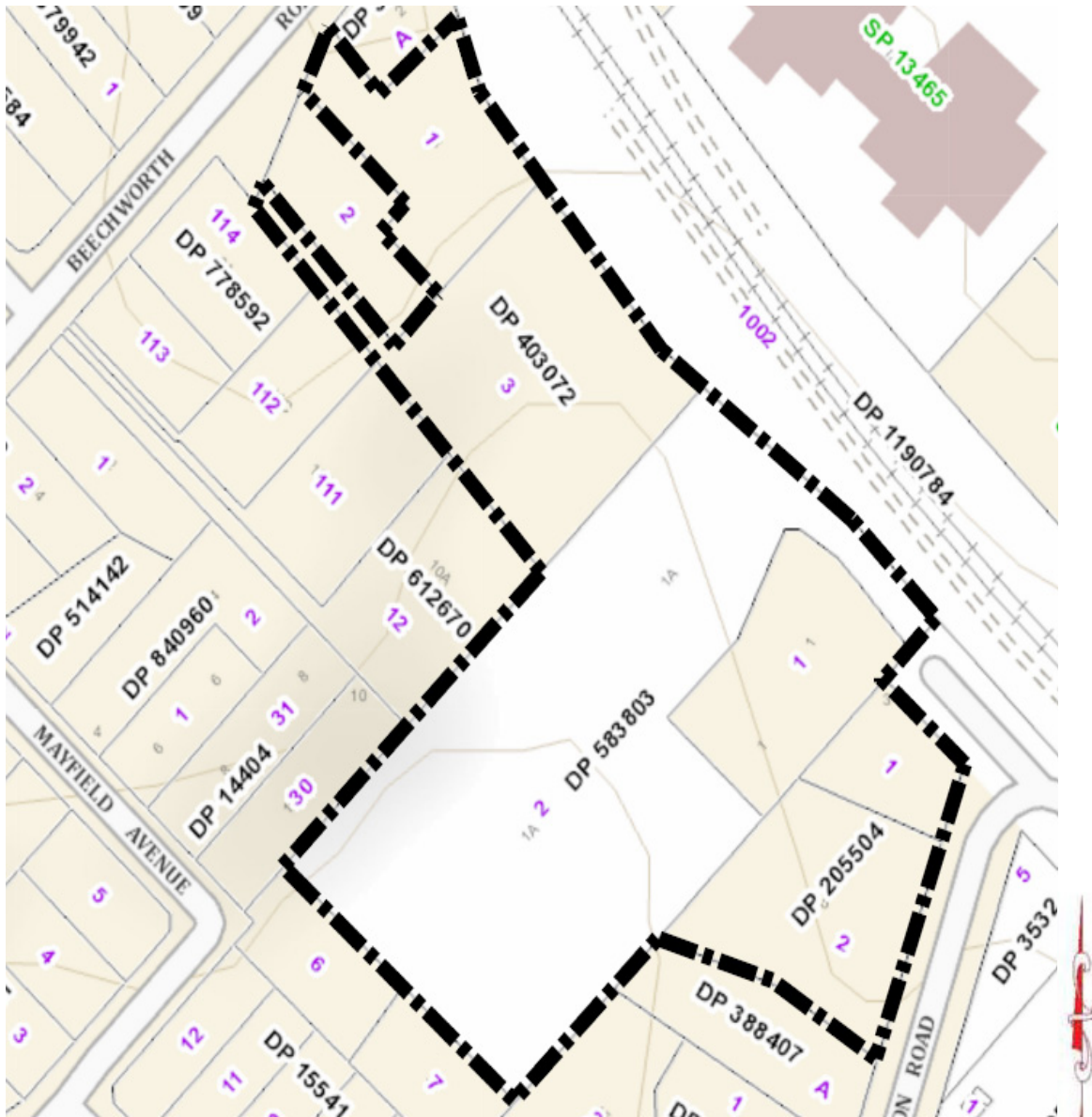
The land to the southeast of the site falls into a gully which extends to the south through the western portion of the Pymble Ladies College Campus. The gully has steep sided narrow banks with the landform leveling to provide a gradient of 5 – 6 degrees across the adjoining land.

The land to the west of the development sites rises across Beechworth Road before falling into the valley to the west.

The land to the south of the development site generally falls to the south whilst following the contours to each side of the valley formation.

Refer to Figure 5 – Contour Plan on Page 18.

Figure 5 – Contour Plan showing contours.



2.4 Vegetation.

Appendix A2.3 of *Planning for Bushfire Protection 2006* provides a methodology for determining the predominant bushfire prone vegetation for at least 140 metres in all directions from the future development on the site. Vegetation is classified using Table A2.1 of *Planning for Bushfire Protection 2006*, which classifies vegetation types into the following groups:

- (a) *Forests [wet & dry sclerophyll forests];*
- (b) *Woodlands;*
- (c) *Plantations – being pine plantations not native plantations;*
- (d) *Forested Wetlands;*
- (e) *Tall Heaths;*
- (f) *Freshwater Heaths;*
- (g) *Short Heaths;*
- (h) *Alpine Complex;*
- (i) *Semi – arid Woodlands;*
- (j) *Arid Woodlands; and*
- (k) *Rainforests.*

2.4.1 Vegetation within the Development Site.

The development site contains former landscaped gardens located beneath a tree canopy of exotic and native trees.

The vegetation within the former landscape gardens consists of dense weeds including Wandering Jew, Lantana and Japanese Honeysuckle. The tree canopy consists of the ecologically endangered community of Sydney Blue Gum High Forest which is to be retained and rehabilitated within the floor of the valley portion of the site, to the west of Building No. 3 and Building No. 4.

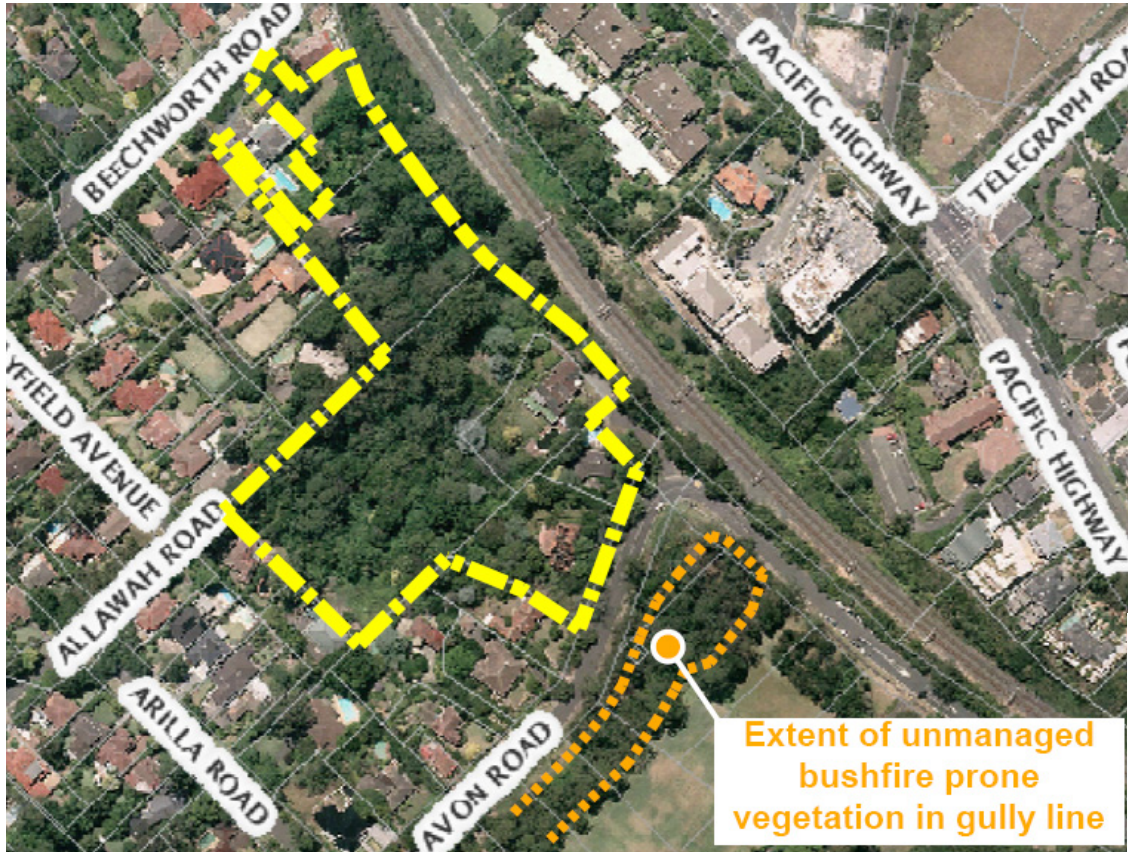
2.4.2 Vegetation within 140 metres of the Development Site.

The existing residential development adjoining the development site and the medium density flat development on the land to the north of the rail corridor contains managed landscaped gardens. The Pymble Ladies College to the east of Avon Road contains landscaped gardens and mown playing fields with the exception of a narrow corridor of remnant vegetation within a watercourse/gully which is located adjacent to the Avon Road carriageway.

The Ku-ring-gai Bushfire Prone Land Map records this vegetation, located within the northwestern corner of the Pymble Ladies College, as Category 1 [Forest/Woodland] Bushfire Prone Vegetation.

The site inspection identified that the gully line within the School grounds contains remnant forest vegetation with some parts of the vegetation having a managed understorey. The width of the unmanaged vegetation is less than 50 metres and therefore presents a low level of bushfire risk to the adjoining development – Refer to Figure 6 – Aerial Photograph showing extent of Bushfire Prone Vegetation and Site Photographs below.

Figure 6 – Aerial Photograph showing the extent of Bushfire Prone Vegetation within the Pymble Ladies College, the south east of the Development Site.



2.5 Site Photographs



Photograph No. 1 – Taken from Avon Road looking across the top of the gully within the Pymble Ladies College showing managed vegetation.



Photograph No. 2 – Taken from Avon Road looking southeast across the top of the gully within the Pymble Ladies College showing the unmanaged vegetation.



Photograph No. 3 – Taken from Avon Road looking south showing vegetation in the gully within the Pymble Ladies College.

2.6 Significant Environmental Features within the Development Site.

The land within the development site does not contain significant environmental features such as SEPP 14 Wetlands, SEPP 44 Koala Habitat, SEPP 26 Littoral Rainforests; land slip areas or National Parks Estate; areas of geological interest; steep lands [>18 degrees] or riparian corridors [refer to Stormwater Management & Riparian Aspects Report prepared by NPC].

2.7 Known Threatened Species, population or ecological community within the Development Site.

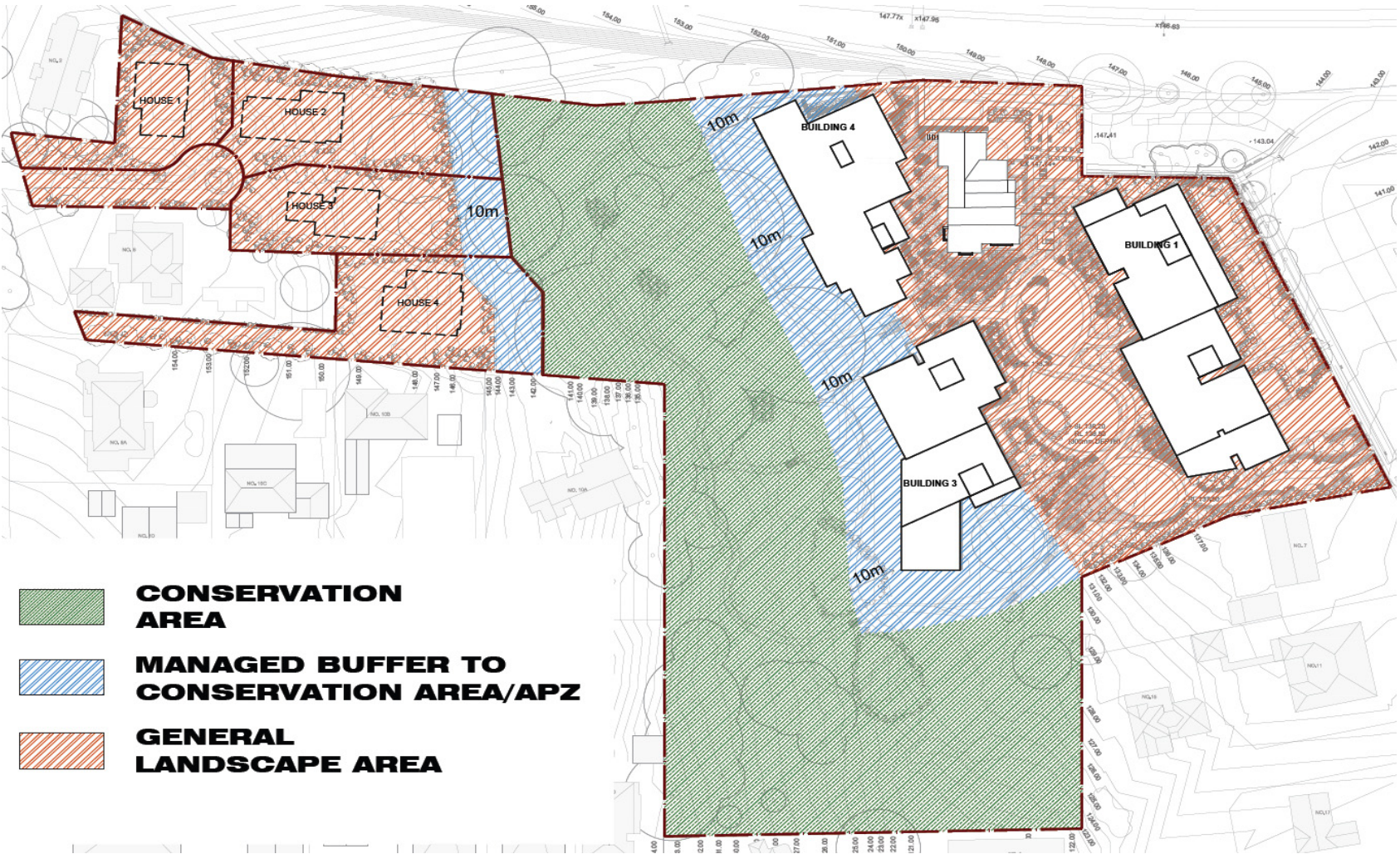
The site contains a small area of remnant Sydney Blue Gum High Forest, located mainly in the floor of the valley. This vegetation community is proposed to be retained and rehabilitated in a Conservation Area – Refer to Revised Vegetation Management Plan prepared by Anne Clements & Associates Pty Ltd and Figure 7 – Planting Protection Zone Plan on Page 23.

The rehabilitation process will limit an increase in the hazardous bushfire fuels within the site with the re-introduction of ‘wet’ species such as ferns and low ground covers/shrubs in the understory layer.

2.8 Details and location of Aboriginal relics or Aboriginal place.

There are no sites of Aboriginal heritage significance within the proposed development site.

Figure 7 – Planting Protection Zone Plan.



SECTION 3

PRECINCT LEVEL ASSESSMENT

3.1 Introduction.

The Ku-ring-gai Bushfire Prone Land Map records that the south-eastern section of the development site contains the buffer zone to the Category 1 Bushfire Prone Vegetation located on the land within the Pymble Ladies College which occupies the land to the southeast of Avon Road. Figure 8 below is an extract from the Ku-ring-gai Bushfire Prone Land Map that shows the Category 1 Bushfire Prone Vegetation and Buffer Zone.

Figure 8 – Extract of the Ku-ring-gai Bushfire Prone Land Map.



Legend: Orange – Category 1 Bushfire Prone Vegetation; Red – 100m wide Buffer Zone to the Category 1 Bushfire Prone Vegetation

The inspection of the development site and adjoining lands confirmed that Category 1 Bushfire Prone Vegetation does exist in the gully located within the Pymble Ladies College, to the extent as shown on the Certified Bushfire Prone Land Map.

SECTION 4

BUSH FIRE PROTECTION ASSESSMENT

4.1 Introduction.

Section 44 of the *Rural Fires Regulation 2013* requires that an application for a *Bushfire Safety Authority* must include a bushfire assessment for the proposed development (including the methodology used in the assessment) that addresses the extent to which the development provides:

- *Asset protection zones;*
- *The siting and adequacy of water supplies for firefighting operations;*
- *Capacity of public roads to handle increased volumes of traffic during a bushfire emergency;*
- *Whether or not public roads link with the fire trail network and have two way access;*
- *The adequacy of access and egress for the purposes of emergency response;*
- *The adequacy of bushfire maintenance plans and fire emergency procedures and;*
- *The construction standards to be used for building elements.*

Planning for Bushfire Protection 2006 provides a methodology to determine the Asset Protection Zones required for habitable buildings in development for residential purposes that are designated as bushfire prone.

Section 4.2 of this report uses the methodology provided by *Planning for Bushfire Protection 2006* to determine the Asset Protection Zones required for the proposed medium density apartments. Section 4.3 examines the Asset Protection Zones to the future dwellings erected on the proposed lots created in the residential subdivision of Lot 1 and Lot 3 in DP 403072.

The remaining items identified by Section 44 of the *Rural Fires Regulation 2013* are examined in Sections 4.4 – 4.11 of this report.

4.2 Determination of Asset Protection Zones – Proposed Residential Apartment Development.

Appendix 2 of *Planning for Bushfire Protection 2006* provides the following procedure for determining setback distances (Asset Protection Zones):

- (a) *Determine vegetation formations as follows:*
- Identify all vegetation in all directions from the site for a distance of 140 metres;
 - Consult Table A2.1 to determine the predominant vegetation type; and
 - Select the predominant vegetation formation as described in Table A2.1.
- (b) *Determine the effective slope of the land under the predominant vegetation Class.*
- (c) *Determine the appropriate fire [weather] area in Table A2.2.*
- (d) *Consult Table A2.4 and determine the appropriate setback [Asset Protection Zone] for the assessed land use, vegetation formation and slope range.*

Table 1 provides a summary of this assessment and the resultant widths of the Asset Protection Zones for the construction of the proposed residential development on the site.

Table 1. Determination of Asset Protection Zones – Residential Development. Fire Danger Index [FDI] for the site is 100

Aspect	Vegetation within 140m of development	Predominant Vegetation Formation Class [Table A2.1 Planning for Bushfire Protection 2006]	Effective Slope of Land	Width of Asset Protection Zone required by Table A2.4 of Planning for Bushfire Protection 2006	Width of Asset Protection Zone provided to proposed medium density building
<i>Southeast of proposed residential apartment Building No.1</i>	Dry Sclerophyll Low Open Forest in narrow corridor along watercourse within the Pymble Ladies College to the southeast of Avon Road	Forest reclassified to 'rainforest' due to vegetation being less than 50 metres in width and low fire hazard	10 – 15 degrees downslope within gully	20 metres	Minimum 30 which includes a 10m building setback plus 20m width across Avon Road

Assessment Results:

The Revised Major Project Application seeks approval to erect a complex of three multi-storey buildings housing a total of 174 residential apartments on a site which is shown, on the Ku-ring-gai Bushfire Prone Land Map, to be affected by the 100 metre wide buffer zone to the Category 1 Bushfire Prone Vegetation located in the Pymble Ladies College [PLC].

Building No. 1 is the closest building to the mapped bushfire prone vegetation and is setback 10 – 15.0 metres from the Avon Street boundary of the development site. This provides, including the width of Avon Road, a total setback width of minimum 30 – 35 metres.

The 10 metre setback to Building No. 1 from the Avon Road boundary satisfies the NSW Rural Fire Service's requirement that a 10 metre front boundary setback be provided to this building.

The vegetation within the development site is not recorded as a bushfire hazard on the Bushfire Prone Land Map. However, the development proposal includes the rehabilitation of the existing Blue Gum High Forest on the site and the establishment of a Conservation Zone. This rehabilitation will include weed removal and replanting of species common to the Blue Gum High Forest community, including ferns and low shrubs.

This retained and rehabilitated pocket of vegetation is not connected to adjoining vegetation which is mapped as bushfire prone vegetation and therefore will remain a low hazard pocket of vegetation.

As a precaution, the proposed apartment buildings [No. 3 & No. 4] have been located so as to provide a 10.0 metre wide landscaped buffer zone between the buildings and the rehabilitated Blue Gum High Forest vegetation, satisfying the requirement of the NSW Rural Fire Service for the provision of a 10 metre buffer zone [Defendable Space] to the future apartment buildings [Buildings No. 3 & No. 4].

4.3 Asset Protection Zones to the proposed residential lots off Beechworth Road.

The residential subdivision of Lots 1 & 3 in DP 403072, No. 4 & No. 8 Beechworth Road is not legally deemed to be Integrated Development pursuant to Section 91 of the *Environmental Planning and Assessment Act 1979* as the land does not contain vegetation which is bushfire prone and is not recorded, on the Ku-ring-gai Bushfire Prone Land Map, as containing bushfire prone vegetation or the buffer zone to bushfire prone vegetation.

However, the development proposal includes the rehabilitation of the existing Blue Gum High Forest on the site. This rehabilitation will include weed removal and replanting of species common to the Blue Gum High Forest community, including ferns and low shrubs.

This retained and rehabilitated pocket of vegetation is not connected to adjoining vegetation which is mapped as bushfire prone vegetation and therefore will remain a low hazard pocket of vegetation.

As a precaution, the future dwelling erected on proposed Lot 2, Lot 3 & Lot 4 will be setback from the proposed eastern lot boundary to provide a 10.0 metre wide landscaped buffer zone [Defendable Space] to the east of the dwellings, satisfying the requirement of the NSW Rural Fire Service for the provision of a 10 metre buffer zone [Defendable Space] to the future buildings.

4.4 Assessment of bushfire risk associated with the proximity of the Conservation Area to the dwelling at No. 1 Arilla Road.

The Concept Approval requires that future Development Applications or Project Applications address the bushfire risk associated with the proximity of the conservation area to the dwelling at No. 1 Arilla Road – refer to Figure 9 below.

Figure 9 – Aerial Photograph of No. 1 Arilla Road, Pymble.



As a precaution a 10.0 metre wide landscaped buffer zone [Defendable Space] shall be provided to the north of the existing dwelling on No. 1 and also No. 12 Arilla Road, Pymble – refer to Figure 10 below.

Figure 10 – Aerial Photograph of No. 1 Arilla Road, Pymble showing 10m wide managed Landscaped Buffer Zone.



4.5 Assessment of Bushfire Attack (Construction Standards).

The 2010 amendment of Appendix 3 of *Planning for Bushfire Protection 2006* provides the following procedure for determining bushfire attack on a building within a designated bushfire prone area:

- (a) Determine vegetation formation types and sub-formations around the building as follows:

- (i) Identify all vegetation types within 140 metres of the site using Keith [2004];
 - (ii) Classify the vegetation formations as set out in Tables A2.1 in Appendix 2; and
 - (iii) Convert Keith to Specht classifications using Table A3.5 of Appendix 3 [2010].
- (b) Determine the separation distance between each vegetation formation and the structure;
- (c) Determine the effective slope of the ground for each vegetation group;
- (d) Determine the relevant Fire Danger Index [FDI] for the Council area from Table A2.3 in Appendix 2;
- (e) Match the relevant FDI, appropriate vegetation, distance and effective slope to determine the bushfire attack levels using Table A2.4.2 of A.S. 3959 – 2009

Proposed Building No. 1 has a separation of 30 – 35 metres separation to the bushfire prone vegetation mapped within the Pymble Ladies College. This vegetation is deemed to be low risk due to the width of the corridor.

The effective slope of the land within the watercourse that contains the bushfire prone vegetation has been determined to be 10 – 15 degrees.

From Table 2.4.2 of Australian Standard A.S. 3959 – 2009 – '*Construction of Buildings in Bushfire Prone Areas*' this separation width reduces the level of radiant heat exposure on Building No. 1 to less than 19kW/m². Therefore it is recommended that the south-eastern elevation of this building shall be constructed to comply with BAL 19 and that all remaining elevations of this building shall comply with BAL 12.5, pursuant to the specifications provided by A.S. 3959 – 2009.

The existing Heritage Building is located within the bushfire buffer zone however it will be completely shielded by Building No. 1 and therefore does not require protection, pursuant to A.S. 3959 – 2009.

All remaining buildings within the proposed development are located beyond the 100 metre wide buffer zone to the mapped bushfire prone vegetation and therefore outside the requirements of Part 2.3.4 of the Building Code of Australia and A.S. 3959 – 2009 – '*Construction of Buildings in Bushfire Prone Areas*'.

The rehabilitation of the vegetation within the Conservation Zone will be undertaken so as to replace the weed species with low growing ferns and shrubs. The aim of this rehabilitation is to replicate a low overall fuel hazard and therefore remove the risk of ignition of the ground fuels.

As this Conservation Zone forms a small landlocked pocket of vegetation which will not be exposed to ember attack it is considered that application of bushfire construction standards to apartment buildings No. 3 & 4, pursuant to A.S. 3959 – 2009 is not warranted.

The location of the future dwellings erected on proposed Lots 1 – 4, off Beechworth Road, places them outside the influence of the mapped bushfire prone vegetation and therefore do not require the application of construction standards pursuant to A.S. 3959 – 2009.

4.6 Access Standards for Firefighting Operations.

4.6.1 Adequacy of Public Roads.

The proposed development has vehicular and pedestrian access onto Avon Road and Beechworth Road which are local roads maintained by Ku-ring-gai Council. These roads are capable of catering for additional traffic during bushfire emergencies in the local area.

4.6.2 Fire Trail Access to two-way Public Roads.

The proposed development does not require the provision of fire fighting access trails. However, a pedestrian path has been provided to gain access to the Defendable Space to the west of Apartment Building No. 3 and No. 4.

4.6.3 Emergency Response Access / Egress.

Emergency access and egress to the proposed residential apartment buildings is provided off Avon Road – refer to the Revised Concept Plan and Architectural Plans.

The proposed residential Lots 1, 2 & 3 have access to Beechworth Road via a new cul-de-sac whilst access to proposed residential Lot 4 is via the existing access handle off Beechworth Road.

The NSW Rural Fire Service's advice is that the internal road network should comply with Section 4.2.7 of *Planning for Bushfire Protection 2006*.

The deemed to satisfy provisions of Section 4.2.7 state:

1. Internal Roads are two wheel drive, sealed all-weather roads:

Comment:

The proposed vehicular access to the apartment building complex is provided off Avon Road to a basement carpark. This access is not suitable for fire-fighting appliances, however under the Building Code of Australia fire appliance access to apartment building No. 3 & 4 is not required, provided that the fire-fighting water supply complies with A.S.2419.1 – 2005.

The performance requirement for fire-fighting access for external fires in the conservation zone has been addressed with the provision of external fire hydrants to Apartment Building No. 3 & No. 4 plus a pedestrian footpath which provides access to the conservation zone to the west of buildings No. 3 & No. 4.

Vehicular access to the proposed residential allotments is provided off Beechworth Road. Lots 1 – 3 are accessed via a short length [approximately 40m] cul-de-sac whilst Lot 4 has a private driveway access which utilises the existing access driveway/crossover.

Planning for Bushfire Protection states no specific access requirements apply in a urban area where a 70 metre unobstructed path can be demonstrated between the most distant external part of the proposed dwelling and the nearest part of the public access road. Proposed Lots 1 – 3 satisfy this performance prescription.

Proposed Lot 4 dwelling is located beyond the 70 metre performance requirement with an 'alternate solution' provided by way of the provision of a water supply hydrant at the end of the private access driveway.

2. Internal perimeter roads are provide with at least two traffic lane widths:

Comment:

There are no internal perimeter roads proposed.

3. Roads are through roads. Dead ends roads are not more than 100 metres in length from a through road, incorporate a minimum 12m outer radius turning circle and are clearly sign posted as a dead end:

Comment:

There are no internal roads – refer to Item 1 Comment, above.

4. Traffic management devices are constructed to facilitate access by emergency services vehicles.

Comment:

This requirement is not relevant to this application.

5. **A minimum vertical clearance of four metres to any overhanging obstructions, including trees branches, is provided:**

Comment:

This requirement is not relevant to this application.

6. **Curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress:**

Comment:

This requirement is not relevant to this application.

7. **The inner distance between the inner and outer curves is six metres:**

Comment:

This requirement is not relevant to this application.

8. **Maximum grades do not exceed 15 degrees and average grades are not more than 10 degrees; Cross fall of the pavement is not more than 10 degrees:**

Comment:

This requirement is not relevant to this application.

9. **Roads do not traverse through wetlands or other land potentially subject to periodic inundation:**

Comment:

This requirement is not relevant to this application.

10. **Roads are clearly sign-posted and bridges clearly indicate load ratings:**

Comment:

This requirement is not relevant to this application.

11. **The internal road surfaces and bridges have a carrying capacity to carry fully-loaded fire-fighting vehicles [15 tonnes]”:**

Comment:

This requirement is not relevant to this application.

4.7 Water Supplies for Firefighting Operations.

A reticulated water supply is available to the site from a Sydney Water main located in Avon Road and Beechworth Road.

The proposed apartment building complex will extend this service into the development site in order to provide a fire-fighting water service to each floor of the building to address the provisions of A.S. 2419.1 – 2005.

A hydrant booster assembly is provided inside the boundary and adjacent to the entry driveway off Avon Road.

Additional external hydrants to Building No. 3 & No. 4 have been recommended to address a fire-fighting water supply should a fire occur within the Conservation Zone.

A domestic water supply will be provided to the future dwellings on proposed Lots 1 – 3. These buildings are located within the maximum hose line length from the Hydrant supply in Beechworth Road and therefore do not require any additional fire-fighting water supply arrangements.

The future dwelling erected on proposed Lot 4 is located more than 70 metres from the hydrant located in Beechworth Road. A fire hydrant is therefore required to be located at the end of the access handle.

4.8 Utility Services – Electricity & Gas Supplies.

Electricity and gas services to the development site will be supplied from mains in Avon Road and Beechworth Road. Internal provision of these utility services will be underground.

4.9 Bushfire Hazard Management.

The design and maintenance of the landscaped gardens, including the prescribed ten [10.00] metre wide landscaped buffer zone [Defendable Space] to the west of Apartment Buildings No. 3 & No. 4 and to east of the future dwellings erected on proposed Lots 1 – 4 shall comply with the prescriptions of an Inner Protection Area [IPA] pursuant to the specifications of Appendix 5 of *Planning for Bushfire Protection 2006* and the NSW Rural Fire Services document '*Specifications for Asset Protection Zones*'.

The management of the defendable space to the existing dwelling on No. 1 Arilla Road shall also be maintained as an Inner Protection Area [IPA] pursuant to the specifications of Appendix 5 of *Planning for Bushfire Protection 2006* and the NSW Rural Fire Services document '*Specifications for Asset Protection Zones*'.

4.10 Emergency Management for Fire Protection.

Due to the low bushfire risk to the proposed development there is no requirement for the preparation of a Bushfire Emergency Management Plan.

4.11 Adequacy of Sprinkler Systems & other Fire Protection Measures.

There are no bushfire sprinkler systems required or recommended.

4.12 Evacuation.

The residential apartment complex has been designed to provide vehicular access to the basement carpark with access from Avon Road and pedestrian access to the buildings via internal lifts and walkways.

The vehicular access/egress provisions combined with internal pedestrian access via lifts and walkways to the public road network address the provision of safe egress from the site.

However, there shall be prepared and incorporated into the Community Management Plan, an Evacuation Plan which includes protocols that address evacuation of the apartment buildings during defined emergencies.

The Evacuation Plan shall be prepared in accordance with Australian Standard A.S. 3745-2002 "*Emergency Control Organisation and Procedures for dwellings, structures and workplaces*" and will remain in draft format until completed by the Management Committee.

SECTION 5

BUSHFIRE MANAGEMENT STRATEGIES

Strategies to address the aim and objectives of *Planning for Bushfire Protection 2006* are as follows:

Strategy 1 – Landscape Management:

The design and maintenance of the landscaped gardens to the complex, including the 10.00 metre wide landscaped buffer zone [Defendable Space] to the west of Apartment Buildings No. 3 & No. 4, to the east of the future dwelling erected on proposed Lots 2, 3 & 4 and the defendable space to the north of the dwelling on No. 1 Arilla Road shall comply with the prescriptions of an Inner Protection Area [IPA] pursuant to the specifications of Appendix 5 of *Planning for Bushfire Protection 2006* and the NSW Rural Fire Services document '*Specifications for Asset Protection Zones*'.

Strategy 2 – Bushfire Construction standards to Apartment Building No. 1:

The south-eastern elevation to proposed Apartment Building No. 1 shall be constructed to comply with BAL 19 specifications pursuant to A.S. 3959 – 2009 – '*Construction of Buildings in Bushfire Prone Areas*'.

All remaining elevations to this building shall be constructed to comply with BAL 12.5 specifications pursuant to A.S. 3959 – 2009 – '*Construction of Buildings in Bushfire Prone Areas*'.

Strategy 3 – Bushfire Construction Standards to Apartment Building No. 3 & No. 4 and the Heritage Building:

There is no requirement for the application of bushfire construction measures to Apartment Building No. 3 & No. 4, the Heritage Building and the future dwellings erected on proposed Lots 1 - 4.

Strategy 4 – Water Supplies for Firefighting Operations:

The existing Sydney Water reticulated service shall be extended into the Residential Apartment development site with hydrants installed in accordance with A.S. 2419.1 – 2005. External hydrants shall be installed to the western aspect of Building No. 3 & No. 4.

A hydrant booster assembly shall be provided inside the boundary and adjacent to the entry driveway off Avon Road.

Strategy 5 – Evacuation Plan:

There shall be prepared and incorporated into the Community Management Plan, an Evacuation Plan which incorporates protocols for the evacuation of the apartment buildings during defined emergencies.

The Evacuation Plan shall be prepared in accordance with Australian Standard A.S. 3745-2002 “*Emergency Control Organisation and Procedures for dwellings, structures and workplaces*” and will remain in draft format until completed by the management committee.

SECTION 6

CONCLUSION

This report has examined the revisions to the Major Project Application in reference to those matters raised in Clause 11, 12 & 13 of the Concept Approval issued on the 19th December 2014 and the NSW Rural Fire Service and has identified the following:

1. The proposed buildings have been located to provide a 10.0 metre wide Asset Protection Zone between the nominated Conservation Area and the Apartment Buildings No. 3 & No. 4 and the future dwellings erected on proposed Lots 2, 3 & 4. This satisfies the requirements of the NSW Rural Fire Service;
2. The management of the Asset Protection Zone will not extend into the Conservation Area and BGHF;
3. The NSW Rural Fire Service's requirement that Apartment Building No. 1 be setback a minimum of 10.0 metres from the Avon Road boundary has been addressed and the width of the Asset Protection Zone to the east of this building is 30 – 35 metres and includes the width of Avon Road and the 10 - 15 metre wide building setback to Building No. 1;
4. The requirement to address the bushfire risk associated with the proximity of the conservation area to the dwelling on No. 1 Arilla Road has been examined and a 10 metre wide managed defendable space [landscape buffer] provided to the north of the dwelling.
5. The internal fire-fighting access provisions comply with Section 4.2.7 of *Planning for Bushfire Protection 2006*; and
6. Water electricity and gas comply with section 4.1.3 of *Planning for Bushfire Protection 2006*;

This amended report has also examined the bushfire risk to the development from the mapped Category 1 Bushfire Prone Vegetation, shown on the Ku-ring-gai Bushfire Prone Land Map to be located within the adjacent Pymble Ladies College, and has made recommendations on the bushfire construction standards to be applied to Residential Apartment Building No. 1 & 2.

The amended report identifies that Residential Apartment Building No. 3 & No. 4, the Heritage Building and the future dwellings erected on proposed Lots 1 – 4 do not require the application of bushfire construction standards as they are located more than 100 metres from the mapped Category 1 Bushfire Prone Vegetation.

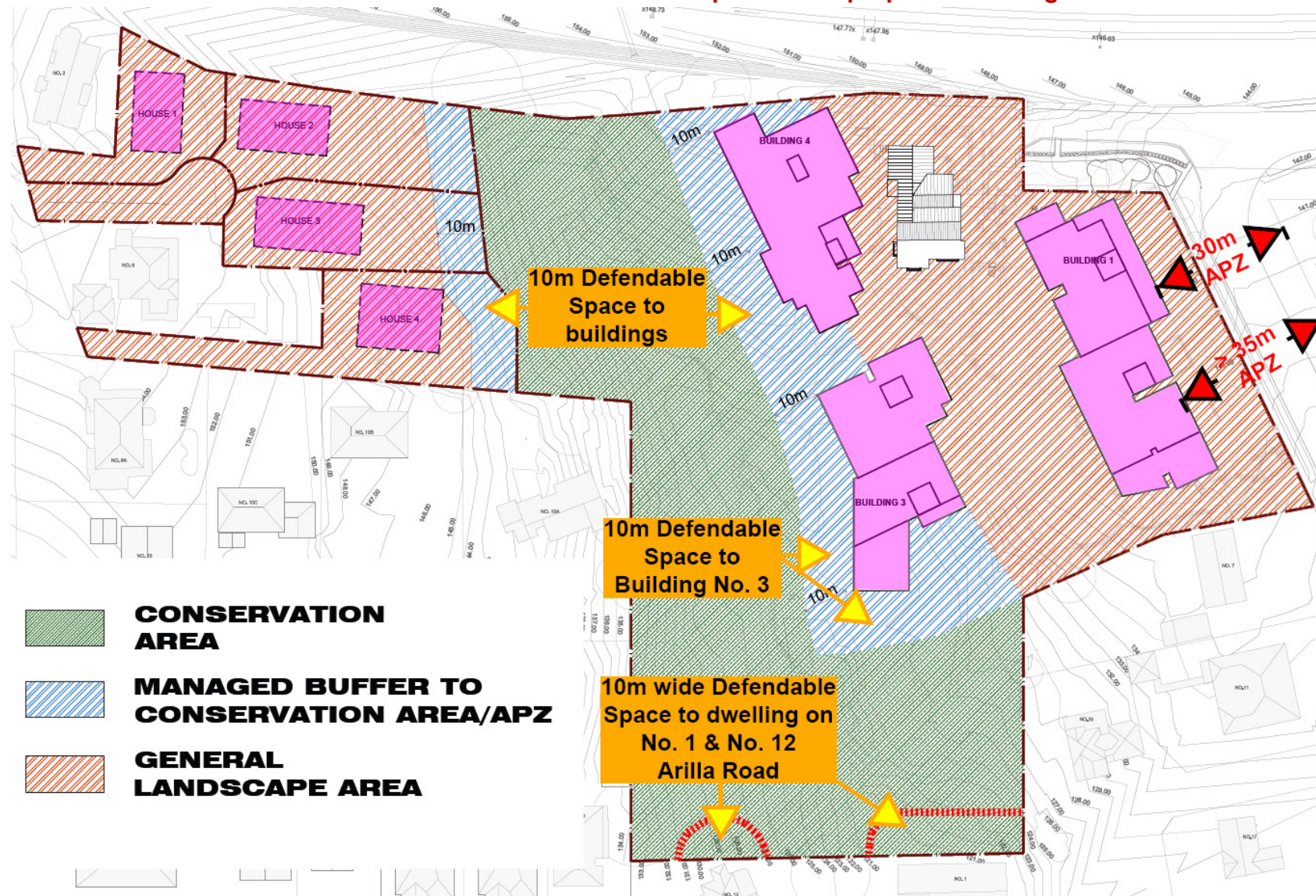
I have reviewed the Landscape Plans prepared by Taylor Brammer and confirm that the layout and species selection satisfies the prescriptions of an Inner Protection Area [IPA] as defined by *Planning for Bushfire Protection 2006* and the NSW Rural Fire Services document '*Specifications for Asset Protection Zones*'.



Graham Swain

Managing Director – Australian Bushfire Protection Planners Pty Limited

SECTION 7 – Plan of Asset Protection Zones/Defendable Space to the proposed buildings.



REFERENCES:

- N.S.W Rural Fire Service – *Planning for Bushfire Protection 2006*;
- N.S.W Rural Fire Service – Threatened Species Hazard Reduction List for the Bushfire Environmental Code (2006);
- *Environmental Planning & Assessment Act – 1979*;
- *Rural Fires Act – 1997*;
- *Rural Fires and Environmental Assessment Legislation Amendment Act 2002*;
- *Rural Fires Regulation 2013*;
- NSW Rural Fire Service – *Guideline for Bushfire Prone Land Mapping 2006*;
- *Threatened Species Conservation Act 1995*;
- *Native Vegetation Act 2003*;
- *Bushfire Environmental Assessment Code 2006*;
- Building Code of Australia;
- Australian Standard A.S 3959-2009 “*Construction of Buildings in Bushfire Prone Areas*”;
- *Ku-ring-gai Bushfire Prone Land Map*.