



Appendix B

Bushfire Assessment



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**Baulkham Hills Shire
Council**

**Report for Development
Concept - Hill Road Reserve,
West Pennant Hills**

**Constraints Analysis -
Bushfire Report**

April 2008



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1. Introduction

1.1 Purpose

This is a bushfire assessment report regarding the capability of the Hill Road Reserve and adjoining lots to support residential development. The study area (hereafter referred to as the 'subject land') consists of Nos. 1 & 3 Hill Road, and the Hill Road Reserve.

This report has been prepared in accordance with Clause 46 of the *Rural Fires Regulation 2002* and Appendix 4.2 of *Planning for Bushfire Protection 2006* (NSWRFS 2006). As specific building design details are yet to be determined and lot layout finalised this report does not constitute a Bush Fire Assessment Report for submission as part of a development application.

Any recommendations made in this report relating to the clearing or modification of vegetation to meet Asset Protection Zone setback requirements does not constitute an approval or authority to modify or remove vegetation.

1.2 Description of the property

1.2.1 Location and Property Details

The subject land is located at the corner of Hill Road and Colbarra Place, West Pennant Hills, within Baulkham Hills local government area. The subject land is approximately 1.8 km west of West Pennant Hills Shopping Centre and 3 km south east of Castle Hill (Appendix A – Figure 1).

The subject land is 4.55 hectares of council and privately owned land (refer to Table 1.2) zoned Residential 2 (b) and Open Space 6 (a) under the Baulkham Hills Local Environment Plan (2005) (BHLEP) (Appendix A – Figure 2).

Table 1.2 – Subject Land Description

Hill Road Reserve (Lot 32 DP 1004057)	Council owned reserve (1.89 ha) – partially cleared.
No. 3 Hill Road (Lot 4 DP 16095)	Privately owned land (1.13 ha) – includes a single dwelling residence, pool, tennis court, sheds and garden.
No. 1 Hill Road (Lot 3 DP 16095)	Council owned (1.53 ha) – includes a single dwelling residence.

The subject land is bound to the west, north and east by sealed road/access ways (Appendix A - Figure 3), with access to the allotments via Hill Road and Colbarra Place (sealed two-way access road) and informally (ie. for emergency access only) utilising a sealed access way servicing the subdivision adjoining the eastern boundary.

The study site is primarily surrounded by residential development (single dwelling) with the exception of Moore Reserve, a bushland reserve located to the north east corner, and a vacant bushland block, approved as a eight-lot subdivision, adjoining the south-east corner.

An aerial photograph of the site and surrounding lands is provided in Appendix A (Figure 3). Site photographs are provided as Appendix B.



1.2.2 Hazard Assessment

The majority of the subject land is classified as bushfire prone land (Category 2) and bushfire prone land buffer (30m)(Appendix A – Figure 4) as the vegetation type constitutes a potential threat to the existing residential development within and adjoining the site. The exception to this is the cleared western end of Hill Road Reserve that is not classified as bushfire prone.

1.2.3 Environmental Features

The vegetation community across the subject area consists of cleared exotic grassland, residential garden, and forest. The forest vegetation was found to have species consistent with Sydney Turpentine Ironbark Forest (GHD 2008), an Endangered Ecological Community under the NSW *Threatened Species Conservation Act 1995* and a critically endangered ecological community under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Vegetation in the southern section of the subject land and along the drainage feature was found to have species consistent with Blue Gum High Forest (GHD 2008, Abel Ecology 2005), a critically endangered ecological community under both the NSW *Threatened Species Conservation Act 1995* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Forest composition and condition varies across the subject area varying from tall mature trees (~20m height) to areas of young regenerating eucalypts. Whilst weed species (narrow-leaf privet (*Ligustrum sinense*) and lantana (*Lantana camara*)) dominate the understorey in parts of the site, the ground, mid and canopy layers were found to contain diverse range of indicative species of the previously identified ecological communities (GHD 2008). Overstorey species include Sydney blue gum (*Eucalyptus saligna*), grey ironbark (*E.paniculata*), red mahogany (*E.resinifera*) and northern grey ironbark (*Eucalyptus siderophloia*).

Consistent with the use of the surrounding area, the subject land historically may have been utilised for timber cutting, grazing and farming purposes. Historic aerial photographs of the site indicate that the subject land was largely cleared and farmed at one stage, with the only pre-1943 vegetation confined to the north-east corner, the centre of Hill Road Reserve, and along the drainage feature (Appendix C).

A number of threatened species are recorded throughout the subject land (GHD 2008). The presence of threatened species and the potential impacts from the construction of a residence and required vegetation setbacks may limit opportunities for development of the subject land.

1.3 Predominant Vegetation Class

Survey transects, 140 m in length, were utilised to determine the "Predominant Vegetation Class Formation, consistent with A2.3 of *Planning for Bushfire Protection*. Sydney Turpentine Ironbark vegetation corresponds with Northern Hinterland Wet Sclerophyll Forest (Keith 2004), and *Wet Sclerophyll Forest – grassy sub formation* (NSWRFS 2006). The Blue Gum High Forest is classed as the North Coast Wet Sclerophyll Forest type (Keith 2004) corresponding to the description of *Wet Sclerophyll Forest – shrubby sub formation* (NSWRFS 2006).

For the purposes of this assessment the predominant vegetation class across the site used is *Wet Sclerophyll Forest – shrubby sub formation* as:

There is a high open tree canopy dominated by tall straight trunked eucalypt species;



Whilst a component of the understorey is comprised of predominantly of exotic weeds, native elements include soft leaved shrubs and small trees in the understorey;

Found on moderately fertile soils in areas of high (>900 mm) rainfall.

Photographs of the vegetation are provided within Appendix B.

1.4 Effective Slope

"Effective Slope" in accordance with A2.3 of *Planning for Bushfire Protection* was confirmed during survey transects and traverses across the site. Across the subject land the overall slope falls from north to south. Within the subject land slope falls inward to a drainage line running across the centre of the subject land from north-west to south-east. The slope is less than 5 degrees across the majority of southern part of the subject land, increasing to 5-10 degrees across the northern part of the site, with small pockets of 10-15 degrees adjacent to the creek line (Figure 5 Appendix A). As most of the potential development would be upslope from the bushfire hazard, the effective slope most likely to significantly influence fire behaviour, as confirmed in the field and used as the basis for this assessment, is 5-10 degrees.

1.5 Fire Weather

Baulkham Hills Council is within the 'Greater Sydney Region' and has a corresponding FDI rating of 100 (NSWRFS 2006).

1.6 Liaison with the NSW Rural Fire Service

Consultation with NSW Rural Fire Service (Homebush) was undertaken however, as this assessment is not formal Bush Fire Assessment Report (based on a specific design and lot layout to accompany a development application), and as agreed with the RFS, consultation specific to this site at this stage is only possible in a general context with these requirements incorporated in this report.



2. Bushfire Protection Measures

The following proposed bushfire protection measures are developed from the bushfire assessment undertaken to assess the feasibility of developing the subject land for residential development. PBP (RFS 2006) identifies that bushfire protection measures should be contained within an overall development and not on adjoining lands unless exceptional circumstances apply.

2.1 Asset Protection Zones

An Asset Protection Zone (APZ) is an area surrounding a development or asset managed to reduce overall fuel levels to decrease bushfire hazard to an acceptable level. The width of an APZ varies with the type of development proposed, its layout, the vegetation, and slope. The APZ must be contained within the development and is not permitted on adjoining lands unless exceptional circumstances apply and lands are to be maintained to APZ standards. An 'exceptional circumstance' in this instance is if the area adjoining a development is maintained as council parkland, then this area may be included as part of the APZ.

Based on the vegetation formation, effective slope and fire area the APZ required in developing the subject land is:

- 35 metres for areas upslope of the hazard in the south-east corner, comprising a 20 metre inner protection area and 15m outer protection area; and

- 20 metres for areas downslope of the hazard where an APZ is required in the north east corner of the site¹ comprising a 10 m inner protection area and 10m outer protection area.

The location and extent of APZ required for the subject land is based on the vegetation to be retained (bushfire hazard). As the extent of vegetation to be retained is likely to be determined by ecological constraints (the high priority canopy/conservation area of the endangered ecological communities (Figure 6) any development will be limited to the north-west of the site (Table 2.1).

Table 2.1– Asset Protection Zone Area

Vegetation Retained	Area	APZ Area	Fig.
High priority canopy /conservation area (GHD 2008)	2.47 ha	1.74 ha	6

APZs are measured from the boundary of the apron of residential dwellings, and the size of the building footprint should be taken into consideration in determining the size of area to be cleared.

2.1.1 Inner Protection Area (IPA)

The IPA is established from the building line to the outer protection area within the APZ. The IPA within the 35m APZ is 20m and 10m within the 20 m APZ. The IPA shall be contained within the residential allotments and be maintained in accordance with *Planning for Bushfire Protection 2006* (NSWRFS 2006):

¹ Note: Parts of the APZ on the north-eastern corner are 20m width, however as this APZ overlaps the 35m APZ to the west and south it is not shown separately.



An IPA should provide a tree canopy cover of less than 15% and should be located greater than 2 m from any part of the roofline of a dwelling. Garden beds of flammable shrubs are not to be located under trees and should be no closer than 10 m from an exposed window or door. Trees should have lower limbs removed up to a height of 2 metres above ground.

Individual property owners are responsible for the maintenance of the IPA.

2.1.2 Outer Protection Area (OPA)

The OPA extends from the IPA, and is 15m for the 35m APZ and 10m for the 20m APZ. Part of the OPA may need to comprise a perimeter fire trail or access route depending upon the development layout (see section 2.3.1).

The OPA within the residential allotments is to be maintained in accordance with *Planning for Bushfire Protection 2006* (NSWRFS 2006):

An OPA should provide a tree canopy cover of less than 30% and should have understorey managed (mowed) to treat all shrubs and grasses on an annual basis in advance of the fire season (usually September).

These specifications are considered minimum requirements.

2.1.3 Maintenance of bushfire fuel

Within the IPA and OPA fuels are to be managed in accordance with the *Planning for Bush Fire Protection* over the life of the development, and require;

1. Raking or manual removal of fine fuels:

Ground fuels such as fallen leaves, twigs (less than 6 mm in diameter), and bark should be removed on a regular basis.

2. Mowing of grass:

Grass needs to be kept short and where possible, green.

3. Removal or pruning of trees, shrubs and understorey:

Prune or remove trees so that there is not a continuous canopy leading from the hazard to the asset. Separate tree crowns by at least two to five metres. A canopy should not overhang within two to five metres of any building.

Native shrubs and trees should be retained as clumps or islands and should maintain a covering of no more than 20% of the area.

2.2 Services

2.2.1 Water supply

Reticulated town water supply will be provided to the development.

Fire hydrants are located along Colbarra Place and Hill Road. Based on the type of development, additional fire hydrants may be required in order to comply with the Rural Fires Regulation, with sizing and pressures to comply with AS2419.1 – 2005.



Hydrants are to be located outside parking areas.

2.2.2 Electricity

All new electricity lines within the subject land and servicing the proposed development should be underground.

2.2.3 Gas

In order to comply with the Rural Fires Regulation, all gas supplies are to be installed and maintained in accordance with AS 1596 – 2002.

2.3 Access

2.3.1 Public Roads

The subject land is accessible from Hill Road and Colbarra Place, both of which are sealed up to the boundary. Access to residences in a development will be either directly from the public road or potentially using an internal road less than 200m in length depending on the lot layout. A sealed access driveway runs along most of the eastern boundary to provide access to an adjacent subdivision. Whilst this driveway does not provide formal access to the subject land, it can provide informal access for Category 1 fire tankers in the event of an emergency.

Access to the subject land complies with the requirements of *Planning for Bushfire Protection 2006*. Traffic management devices are not required and curves, road grades and capacity is sufficient to carry a Category 1 fire-fighting appliance (15 tonnes).

2.3.2 Perimeter Access

As any development is likely to be confined to the north-western corner of the site owing to ecological constraints perimeter access along the boundary of the APZ is not required as specific access requirements do not apply where there is a 70m unobstructed path between a dwelling and public road access, as is likely in any development of this part of the site.



3. Compliance Requirements

The bushfire protection measures may be required for the development of the subject land to achieve compliance with the "acceptable solutions" for each "performance measure" within Chapter 4.1 of *Planning for Bushfire Protection 2006*. The bushfire protection measures outlined in Table 3 will be required for the issuance of a bush fire safety authority at the time of subdivision.

Table 3 Performance Measures

Measure	Assessment of Compliance
Asset Protection Zones	A development can achieve the performance criteria by complying with the acceptable solutions, i.e. · An APZ is provided in accordance with Appendix 2 of <i>Planning for Bushfire Protection 2006</i> (refer to Section 2.1) · The APZ is wholly within the boundaries of the subject land unless exceptional circumstances apply (refer to Section 2.1) · The APZ will be managed in accordance with the requirements of <i>Standards for Asset Protection Zones (RFS 2005)</i> (refer to Section 2.1.3) · The APZ is located on lands with slopes less than 18 degrees (refer to Section 1.4)
Public Roads	The proposed development can achieved the performance criteria by complying with the acceptable solutions, i.e.; · Public roads are two-wheel drive (refer to Section 2.3.1) · Traffic calming devices are not proposed (Section 2.3.1). · Public roads do not have a crossfall not exceeding 3 degrees and grades not exceeding 10 degrees (Section 2.3.1). · Access from the sealed public road does not exceed 200 m and turning circles of sufficient dimensions. · Curves are minimal and have the required dimensions. · The capacity of the road is greater than 15 tonnes · Hydrants will be located outside of parking areas (refer to Section 2.2.1)
Property Access Roads	· Fire suppression vehicles will operate from the perimeter public roads and driveways.
Fire Trails	· Perimeter fire trail is not required due to unobstructed access from the potential development area to the public road system (refer to section 2.3.2)
Services – Water, electricity and gas	The proposed development will achieve the performance criteria by complying with the following acceptable solutions. · Reticulated water and hydrants will be provided within the



Measure	Assessment of Compliance
	required specifications (refer to Section 2.2.1). - Hydrants will not be located within the road carriageway. - Electricity will be underground (refer to Section 2.2.2). - Gas supplies will be installed in accordance with AS 1596.