



BUSHFIRE PROTECTION ASSESSMENT

FOR THE

**PROPOSED MINTO URBAN
RENEWAL PROJECT**

**JUNE 2005
(REF: 5140)**

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EXECUTIVE SUMMARY

A Bushfire Protection Assessment Report has been prepared by *Conacher Travers Pty Ltd* at the request of *Landcom* for the proposed Minto Urban Renewal Project.

The proposal seeks to combine existing residential development, government housing precincts and vacant residual allotments within an infrastructure masterplan for the urban renewal of a large section of Minto. Based on our site investigations and assessment, the vast majority of the site does not require specific bushfire protection measures to be incorporated within the redevelopment. However the existing vegetation stands that are contained within Stage 3(b) will require bushfire protection measures for the protection of future residents.

The development is classified as Integrated Development within a bushfire prone area. This requires the Commissioner of the NSW Rural Fire Service to consider the issue of a Bushfire Safety Authority provided that the proposed development conforms with the requirements of '*Planning for Bushfire Protection 2001*'.

This report provides an assessment of the bushfire protection requirements required for the development to guard against the potential impact of bushfires. Recommendations have been made in respect of fuel management, construction standards / building protection, access, bushfire education and land ownership responsibility.

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TABLE OF CONTENTS

BUSHFIRE PROTECTION ASSESSMENT		
SECTION 1	INTRODUCTION	1
	1.1 Aims of the Assessment	1
	1.2 Planning Relationships	1
	1.3 Information Collation	2
	1.4 Project Synopsis	2
	1.5 Site Description	2
SECTION 2	BUSHFIRE THREAT	4
	2.1 Hazardous Fuels	4
SECTION 3	BUSHFIRE PROTECTION ASSESSMENT	6
	3.1 Bushfire Protection Assessment	6
	3.2 Bushfire Protection Assessment Methodology	6
	3.3 Bushfire Attack Assessment	7
SECTION 4	ISSUES ARISING FROM THE THREAT ASSESSMENT IN RELATION TO THE PROPOSED DEVELOPMENT	8
	4.1 Bushfire Protection Measures	8
	4.2 Building Protection	8
	4.3 Ability to Manage the Asset Protection Zone	8
	4.4 Evacuation Safety	8
	4.5 Availability of Fire Fighting Services	9
	4.6 Access for Fire Fighting Operations	9
	4.7 Water Supplies	9
	4.8 Communications	9
SECTION 5	CONCLUSION AND RECOMMENDATIONS	10
	5.1 Conclusion	10
	5.2 Recommendations	10
	REFERENCES	12
SCHEDULE 1	Plan of Bushfire Protection Measures	
APPENDIX 1	Details of Asset (Fire) Protection Zones	
APPENDIX 2	Summary of Australian Standard AS3959-1999 (amended) Construction of Buildings in Bushfire Prone Areas	

SECTION 1

INTRODUCTION

Conacher Travers Pty Ltd has been requested by *Landcom* to prepare a Bushfire protection Assessment report for the proposed Minto Urban Renewal Project.

1.1 AIMS OF THE ASSESSMENT

The aims of the bushfire protection assessment are to:

- Review the bushfire threat to the property;
- Review the capability of the property to provide a safe development;
- Review the potential to carry out hazard management over the landscape;
- Provide advice on mitigation measures including the provision of Asset Protection Zones and Construction Standards;
- Advise on specific fire management issues.

1.2 PLANNING RELATIONSHIPS

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

1.2.1 Legislation

Environmental Planning and Assessment Act

- Section 79BA – requires Councils to be satisfied that developments in bushfire prone areas comply with *Planning for Bushfire Protection, 2001* before granting development consent.

Rural Fires Act 1997

- Section 100B provides for the issue by the Commissioner of the NSW Rural Fire Service of bushfire safety authorities for subdivision of bushfire prone land that could lawfully be used for residential or rural residential purposes or for development of bushfire prone land for a special protection purpose (eg. SEPP Seniors Living, Hospital, Nursing Home, Schools, etc).
- Sections 63 (2) requires owners/occupiers of land to take all practicable steps to prevent the occurrence of bushfires on, and to minimise the danger of the spread of bushfires.

1.2.2 Planning Policies

- *Planning for Bushfire Protection - 2001 Rural Fire Service/Planning NSW* - This document was prepared by the Rural Fire Service and Planning NSW.

1.3 INFORMATION COLLATION

To achieve the aims of this report, a review of the information relevant to the property was undertaken prior to the initiation of field surveys.

Information sources reviewed include the following:

- Aerial Survey Plans, Dwg No.03S864-M02, supplied by *Hughes Trueman*.
- Wollongong Aerial Photograph DLPI, (15-03-02); Run 1. Frame 98.
- Campbelltown Topographical map DLPI of NSW 1:25,000 9029-IN;
- Australian Standard 3959 'Construction of Buildings in Bush Fire Prone Areas';

Mark Hawkins of *Conacher Travers Pty Ltd* visited the site in May, 2005.

An inspection of the proposed development site and surrounds was undertaken to assess the topography, slopes, aspect, drainage, vegetation, and adjoining land use. The identification of existing bush fire protection advantages and a visual appraisal of bush fire hazard and risk were also undertaken. (Bush fire protection advantages are those landscape features which act to suppress or mitigate a fire eg. escarpments, creeks, road and fire breaks etc.)

1.4 PROJECT SYNOPSIS

The Minto Urban Renewal Project seeks to redesign a large section of the residential precinct of Minto through a combination of several initiatives. Large residual land holdings within and around the suburb will be developed which are currently maintained as open space. This activity will be combined with the redevelopment of existing outdated government housing buildings. Sections of existing residential allotments will be retained and incorporated into the Infrastructure Masterplan.

The development will be conducted in eight stages with a network of internal roads, utilities and services incorporating existing facilities. The greater majority of the development adjoins either existing residential or rural residential development and as such has a minimal threat from bushfire.

Stage 3(b) to the north-west of the main body of the site incorporates the development of Piggott Bushland Park and adjoins bushland classified as open forest to the east beyond Eagleview Road within private allotments. Protection measures will be required from this adjoining vegetation and shall be designed to retain as much of the remnant bushland within this area as possible within Rural Fire Service guidelines.

1.5 SITE DESCRIPTION

Location and Surrounding Landuse

The properties involved in the project are bounded by Benham Road and Ashmead Road to the north and Eagleview Road to the east. The southern boundary is represented by Federation Park and the existing allotments which adjoin the southern side of Pendergast Avenue in Stages 6a and 6b. To the west, the properties are bounded by Guernsey Avenue, Longhurst Road and Townson Avenue.

The property contains existing residential dwellings, government housing buildings and open space which will be configured within the Infrastructure Masterplan. The development property is within the Campbelltown Local Government Area.

Topography

The land involved with the Urban Renewal Project encompasses low undulating hills and as such has varied topography.

The land beyond the northern boundary is level on an irregular cross-slope and to the east of Eagleview Road has a downhill slope. To the south the land rises beyond the southern boundary and has a downhill slope to the west.

The land to the north of Stage 3(b) has a 5^o uphill slope and a 5^o downhill slope to the east. To the south of Stage 3(b) the land rises to the reservoir at approximately 5^o and slopes down to the west at approximately 5^o.

Vegetation

The majority of the development property contains a mix of cleared land, and mown lawns surrounding the existing dwellings and woodland vegetation of varying densities. Vegetation within Stage 3(b) consists of the remnant bushland of Piggott Bushland Reserve.

The land to the north of Stage 3(b) comprises mown lawns with established trees and to the east comprises unmanaged open forest graduating into woodland vegetation. To the south of Stage 3(b) are the managed lawns of the Minto Water Reservoir and to the west is the managed curtilage of existing residential dwellings.

Surrounding land to the remaining stages of the proposal comprises the mown lawns and grazed grasslands of existing urban and rural residential development and managed open space. A heavily vegetated corridor associated with the rural residential allotments of Minto Heights exists several hundred metres to the east.

SECTION 2

BUSHFIRE THREAT

Developing in bushfire prone areas requires consideration of the overall threat upon a site and the way occupants of a site / dwelling(s) are able to cope in the event of a bushfire.

To assess the bushfire threat that is likely to occur and affect this property, and the eventual dwelling occupiers, a review of the elements that comprise the overall threat needs to be completed.

These elements include the presence of hazardous fuels on site, the extent of the bushfire risk and the expected level of vulnerability of any proposed dwellings and other infrastructure.

2.1 HAZARDOUS FUELS

The bushfire hazard is defined as the potential severity of a fire. It is usually measured in terms of the potential intensity of the fire ie. $k/w m^2$ (Kilowatts per square metre of fire front). The factors that influence bushfire hazard are primarily the nature of the vegetation (fuel) and the slope. Factors such as wind and fuel dryness also contribute to the hazard achieving maximum intensity levels.

The Rural Fire Service require that a Development Application that is submitted for their assessment must include an assessment of the effective slope for up to 100 metres and vegetation for up to 140 metres external to the proposed development area when such an area is located within a designated bushfire prone area (Tables 1 and 2).

**Table 1 - Vegetation and Slope Information
Stages 1- 3(a), 4-8**

Aspect	Vegetation within 140m of Development	Predominant Vegetation Class (Fig A2.2 and Table A2.1)	Average Slope of Land
North	Managed Private Lands / Managed Open Space	None	Level ^C
East	Managed Private Lands/ Grazed Grasslands Rural Residential Development	Group 3 (Grasslands)	5 ^{0 D}
South	Managed Private Lands / Managed Open Space	None	5 ^{0 U}
West	Managed Private Lands / Managed Open Space	None	5 ^{0 D}

^U – denotes upslope
^D – denotes down slope
^C – denotes cross slope

**Table 2 - Vegetation and Slope Information
Stage 3(b)**

Aspect	Vegetation within 140m of Development	Predominant Vegetation Class (Fig A2.2 and Table A2.1)	Average Slope of Land
North	Managed Private Lands Residential Development	None	Level ^c
East	Open Forest/Woodland Rural Residential Development	Group 1	5 ^o ^d
South	Managed Private Lands Water Reservoir	None	5 ^o ^u
West	Managed Private Lands / Managed Open Space	None	5 ^o ^d

2.1.1 Potential Bushfire Risk

The risk is defined as the chance of a bushfire igniting, spreading and causing damage.

Type of Risk - Stages 1-3(a), 4-8 of the development property adjoin managed private lands and managed open space to all aspects. Further to the east is the open forest vegetation of Minto Heights which could provide embers, under extreme fire event conditions. Direct impact by flame contact would be unlikely due to the separation distances provided by existing cleared and managed rural residential development.

Stage 3(b) adjoins open forest and woodland vegetation which maintains continuity with larger areas of open forest within Minto Heights. This vegetation could provide direct flame and radiant heat to this part of the development.

Fire History - There is visual evidence to suggest that small fires have impacted upon the site quite recently, most likely from accidental ignition or arson.

2.1.2 Level of Development Vulnerability

Vulnerability is the likely exposure of the intended development site to the expected fire behaviour that could impact life and / or property. In respect of the development area the level of vulnerability is defined by several key variables such as:

Potential Impact Direction - Fire is most likely to affect proposed Stage 3(b) of the development from the eastern aspect where unmanaged vegetation maintains the greatest continuity.

The remaining stages could be exposed to ember attack from open forest vegetation located further to the east under severe conditions.

Nature of Potential Impact - A bushfire event could manifest in the form of radiant heat and flame attack due to the proximity of remnant vegetation surrounding Stage 3(b). The remaining stages could possibly be affected by ember attack.

Nature of Vulnerability - It would be expected that fire burning within the vegetation surrounding proposed Stage 3(b) could develop significant intensities due to the total area and level of continuity. The remaining stages would have little vulnerability to bushfire.

SECTION 3

BUSHFIRE PROTECTION ASSESSMENT

3.1 BUSHFIRE PROTECTION ASSESSMENT

'Planning for Bushfire Protection' (Rural Fire Service, 2001) provides concepts for building in bushfire prone areas and guidance on the planning and development control processes in relation to bushfire protection measures.

3.2 BUSHFIRE PROTECTION ASSESSMENT METHODOLOGY

Section A2.3.1 of 'Planning for Bushfire Protection 2001' provides a methodology for determining setback distances (Asset Protection Zones). Tables 3 and 4 provide summaries of this assessment.

**Table 3 - Bushfire Protection Assessment
Stages 1- 3(a), 4-8**

Aspect	Vegetation within 140m of Development	Predominant Vegetation Class	Average Slope of Land	Recommended Width of Asset Protection Zone	Width of Asset Protection Zone Provided
North	Managed Private Lands / Managed Open Space	None	Level ^C	None required	None required
East	Managed Private Lands / Grazed Grasslands Rural Residential Development	Group 3 (Grasslands)	5 ^D	20 metres	20 metres
South	Managed Private Lands / Managed Open Space	None	5 ^U	None required	None required
West	Managed Private Lands / Managed Open Space	None	5 ^D	None required	None required

**Table 4 - Bushfire Protection Assessment
Stage 3(b)**

Aspect	Vegetation within 140m of Development	Predominant Vegetation Class	Average Slope of Land	Recommended Width of Asset Protection Zone	Width of Asset Protection Zone Provided
North	Managed Private Lands Residential Development	None	Level ^C	None required	None required
East	Open Forest/Woodland Rural Residential Development	Group 1	5 ^D	40 metres	40 metres
South	Managed Private Lands Water Reservoir	None	5 ^U	None required	None required
West	Managed Private Lands Residential Development	None	5 ^D	None required	None required

3.3 BUSHFIRE ATTACK ASSESSMENT

Section A3.3 of 'Planning for Bushfire Protection 2001' provides a methodology for assessing bushfire attack at construction stage for a building within a designated bushfire prone area.

Tables 5 and 6 provide a summary of Bushfire Attack and the construction standards required for this development.

**Table 5 - Bushfire Attack Assessment
Stages 1- 3(a), 4-8**

Aspect	Predominant Vegetation Class	Average Slope of Land	Min. Separation Distance Provided	Level of Bushfire Attack	Construction Standard
North	None	Level ^C	None required	Low	None required
East	Group 3 (Grasslands)	5 ^{0 D}	20 metres	Low	None required
South	None	5 ^{0 U}	None required	Low	None required
West	None	5 ^{0 D}	None required	Low	None required

**Table 6 - Bushfire Attack Assessment
Stage 3(b)**

Aspect	Predominant Vegetation Class	Average Slope of Land	Min. Separation Distance Provided	Level of Bushfire Attack	Construction Standard
North	None	Level ^C	None required	Low	None required
East	Group 1	5 ^{0 D}	40 metres	High	Level 2
South	None	5 ^{0 U}	None required	Low	None required
West	None	5 ^{0 D}	None required	Low	None required

SECTION 4

ISSUES ARISING FROM THE THREAT ASSESSMENT IN RELATION TO THE PROPOSED DEVELOPMENT

4.1 BUSHFIRE PROTECTION MEASURES

'*Planning for Bushfire Protection 2001*' provides a methodology for determining the Asset Protection Zones and construction standards for habitable buildings in residential developments that are located within a designated bushfire prone area.

'*Planning for Bushfire Protection 2001*' requires that Class 1, 2 & 3 buildings constructed within a bushfire prone area should be provided with asset protection zones in accordance with Table A2.2 of '*Planning for Bushfire Protection 2001*'.

The application of an asset protection zone, 20 metres in width, provided to the eastern aspect will provide adequate setback to the future dwellings of proposed Stages 1-3(a), 4-8.

The application of an asset protection zone, 40 metres in width, provided to the eastern aspect will provide adequate setback to the future dwellings of proposed Stage 3(b).

4.2 BUILDING PROTECTION

The Bushfire Attack Assessment (Table 5) has found that the eastern aspect to proposed Stages 1-3(a), 4-8 presents a theoretical Low level of bushfire attack.

The Bushfire Attack Assessment (Table 6) has found that the eastern aspect to proposed Stage 3(b) presents a theoretical High level of bushfire attack.

4.3 ABILITY TO MANAGE THE ASSET PROTECTION ZONE

Hazard management is a very important part of the protection of life and property in a bushfire prone area, therefore the managers/owners of the lot/s will have an ongoing liability to ensure the management of the lands within the property to prevent the build up of combustible fuel.

Section 63(2) of the *Rural Fires Act* requires that '*it is the duty of the owner or occupier (including Councils) of land to take the notified steps (if any) and any other practicable steps to prevent the occurrence of fires on, and to minimise the danger of the spread of fires on or from that land*'.

There is no physical reason that could constrain hazard management in any potential Asset Protection Zone from being successfully carried out by normal means e.g. mowing/landscaping.

4.4 EVACUATION SAFETY

Evacuation from all stages of the proposed development is possible during a bushfire event via direct access to several egress points located around the suburb. Ben Lomond Drive is located centrally to the development and provides safe egress in a westerly direction to the major arterioles of Pembroke and Campbelltown Roads whereby existing development and the associated clearing provides adequate separation from the surrounding bushfire threats.

4.5 AVAILABILITY OF FIRE FIGHTING SERVICES

There is a Rural Fire Service Brigade located on Townson Avenue approximately 40 metres to the south-west. The Rural Fire Brigade would have a response time of approximately 5 minutes to service the development were they not assisting elsewhere.

There is a Rural Fire Service Brigade located on Ben Lomond Road approximately 1.6 kilometres to the east. The Rural Fire Brigade would have a response time of approximately 5-15 minutes to service the development were they not assisting elsewhere.

There is a NSW Fire Brigade located on Ben Lomond Road approximately 1.5 kilometres to the west. The NSW Fire Brigade would have a response time of approximately 5-15 minutes to service the development were they not assisting elsewhere.

4.6 ACCESS FOR FIRE FIGHTING OPERATIONS

The primary access point to the development will be directly off Ben Lomond Road which centrally dissects the development in a west-east direction with an internal road network. The combination of existing and proposed road networks will provide safe access/egress for emergency vehicles due to surrounding clearing associated with existing residential development.

Access within the lot boundaries should adhere to the requirements of *'Planning for Bushfire Protection 2001'* in respect of access corridors, manoeuvring areas and road gradients.

4.7 WATER SUPPLIES

Town reticulated water supply is available to the proposed development, therefore a supplementary form of water supply will not be necessary for fire fighting purposes.

4.8 COMMUNICATIONS

Telephone communications can be provided for this development.

SECTION 5

CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSION

The proposed development is classified as residential development within a bushfire prone area and the requirements of 'Planning for Bushfire Protection 2001' apply.

The following recommendations provide compliance with the proposed development protection requirements of 'Planning for Bushfire Protection 2001'.

5.2 RECOMMENDATIONS

Recommendation 1 - The future development should be sited as indicated on the site concept proposal and as depicted in Schedule 1.

Recommendation 2 - The entire development area should be maintained by regular maintenance of the landscaped areas/mowing of lawns in accordance with the guidelines provided in Appendix 1. Asset Protection Zones should be provided to the proposed development. They shall take the form of Inner Protection Areas, measured from the extremities of the buildings. The Asset Protection Zones shall be as nominated in Table 4 and also as depicted in Schedule 1.

**Table 7 - Asset Protection Zones
Stages 1- 3(a), 4-8**

Aspect	Inner Protection area (fuel free)	Outer protection area (fuel reduced)	Total asset protection zone
North	Nil	Nil	Nil
East	20 metres	Nil	20 metres
South	Nil	Nil	Nil
West	Nil	Nil	Nil

**Table 8 - Asset Protection Zones
Stage 3(b)**

Aspect	Inner Protection area (fuel free)	Outer protection area (fuel reduced)	Total asset protection zone
North	Nil	Nil	Nil
East	30 metres	10 metres	40 metres
South	Nil	Nil	Nil
West	Nil	Nil	Nil

Recommendation 3 - The application of Level 2 construction standards of the Australian Standard AS3959 'Construction of Buildings in Bush Fire Prone Areas', in accordance with Part 2.3.4 of the 'Building Code of Australia', should apply to the eastern elevations of any future dwellings within proposed Stage 3(b).

Recommendation 4 - Access should be in accordance with 'Planning for Bushfire Protection 2001'.

Recommendation 5 - Roof gutters and valleys to all proposed dwellings should be leaf proofed by the installation of an external gutter protection shroud or a gutter system that denies all leaves from entering the gutter and building up on that gutter. Any material used in such a system should have a flammability index of no greater than 5 (as measured against AS 1530.2).

Recommendation 6 - The landowner / Manager should be made aware of their liability to manage their development lands for the ongoing protection of themselves and their neighbours (refer Section 63(2) Rural Fires Act).

Recommendation 7 - The landowner / Manager should be provided with publications such as *'Bush Fire Protection for New and Existing Rural Properties'* relating to living in a bush fire prone area and available through the Rural Fire Service or Council.

REFERENCES

1. NSW Rural Fire Service (2001) - *Planning for Bush Fire Protection - A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners*. NSW Rural Fire Service
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6. Councils of Standards Australia AS1530.2 (1993) – *Methods of Fire Test on Building Materials'*.