

## **Annexure 5 – Bushfire Reports**

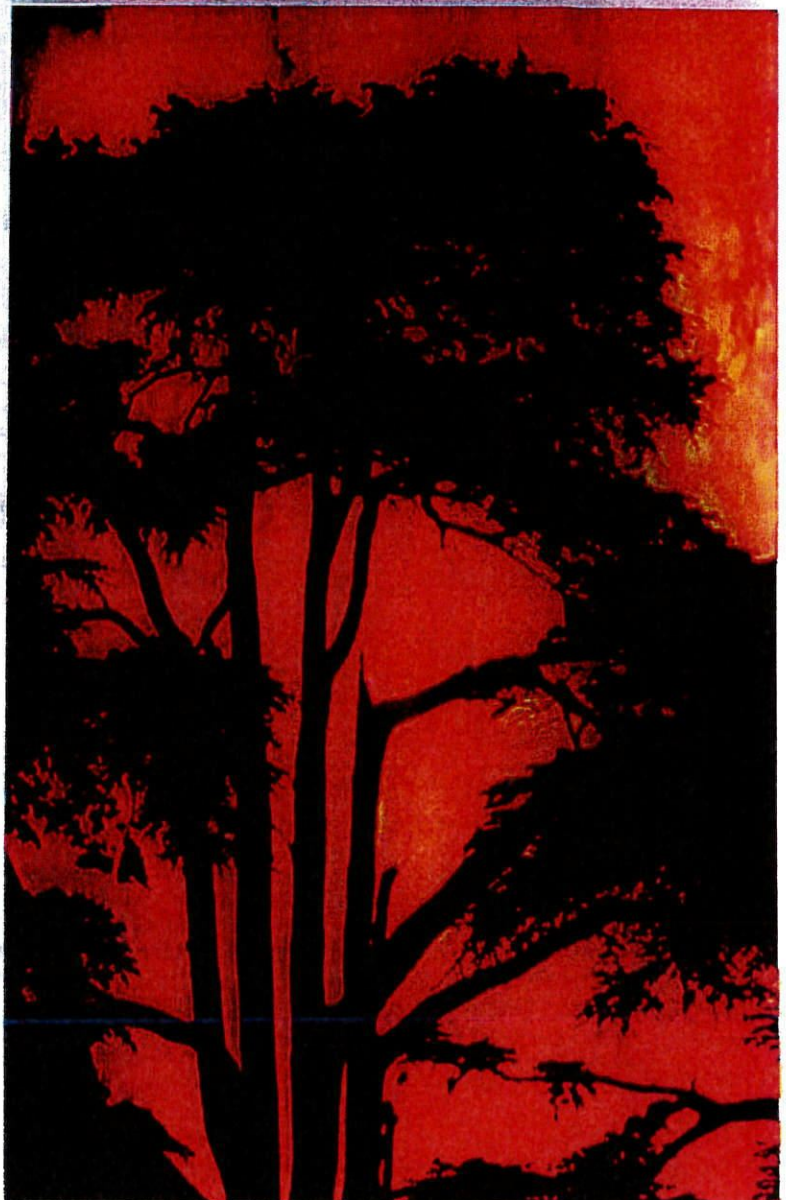
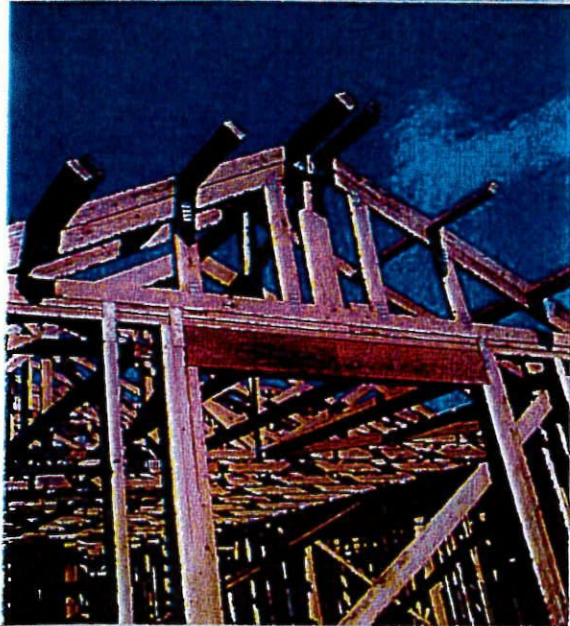


## Bushfire Protection Assessment (Amended)

Proposed Subdivision: Bradley Heights Stage 2B, Bradley Street,  
Glenmore Park

Prepared for  
CCL Development Pty Ltd / Mint Holdings Pty Ltd

30 May 2016





## DOCUMENT TRACKING

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## ACKNOWLEDGEMENTS

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# 1 Property and proposal

<b>Name:</b>	CCL Development / Mint Holdings	
<b>Street or property Name:</b>	Bradley Heights Stage 2B	
<b>Suburb, town or locality:</b>	Glenmore Park	<b>Postcode:</b> 2745
<b>Local Government Area:</b>	Penrith City Council	
<b>Type of development:</b>	Residential subdivision	

## 1.1 Introduction

CCL Development, on behalf of Mint Holdings, commissioned Eco Logical Australia Pty Ltd (ELA) to prepare a bushfire protection assessment (BPA) for a proposed residential subdivision within their Bradley Heights site known as Stage 2B, within Precinct F of the Glenmore Park Stage 2 release area (hereafter referred to as the subject land).

Stage 2B forms the next stage of the Bradley Heights subdivision by Mint Holdings. Stage 2A extends the subdivision to the south from the approved Stage 1, with Stage 2B situated further to the east.

This assessment has been prepared by the ELA Senior Bushfire Consultant Daniel Copland (FPAA BPAD Level 3 Certified Practitioner No. BPAD28853-L3). Daniel is recognised by the NSW Rural Fire Service as a suitably qualified consultant in bushfire risk assessment.

This report is an amended version revised and issued in response to changes within NSW Rural Fire Service (RFS) policy with regards to the classification of grazing lands as a 'Grassland' hazard; and also to support a section 96 modification application to council with regards to the type of fencing to be utilised along the eastern subdivision boundary (refer to section 2.3).

## 1.2 Location and description of subject land

The subject land is located at the southern side of Bradley Street, to the west of The Northern Road, and to the north east of the Surveyors Creek riparian corridor that is currently being re-established within the Glenmore Park land release, as shown in **Figure 1**.

The current legal lot description for the site is Lot 71 DP 1191661 and Lot 7 DP 4832, the subject land being largely previously utilized as agricultural land consisting of scattered trees and pasture grasses.

## 1.3 Proposed Development

The proposed development incorporates the subdivision of Lots 142 and 154 approved under Development Consent 14/0941 to create a total of 24 dwelling allotments and 2 rural superlots.

The proposed Stage 2B subdivision layout is shown in **Figure 2**.

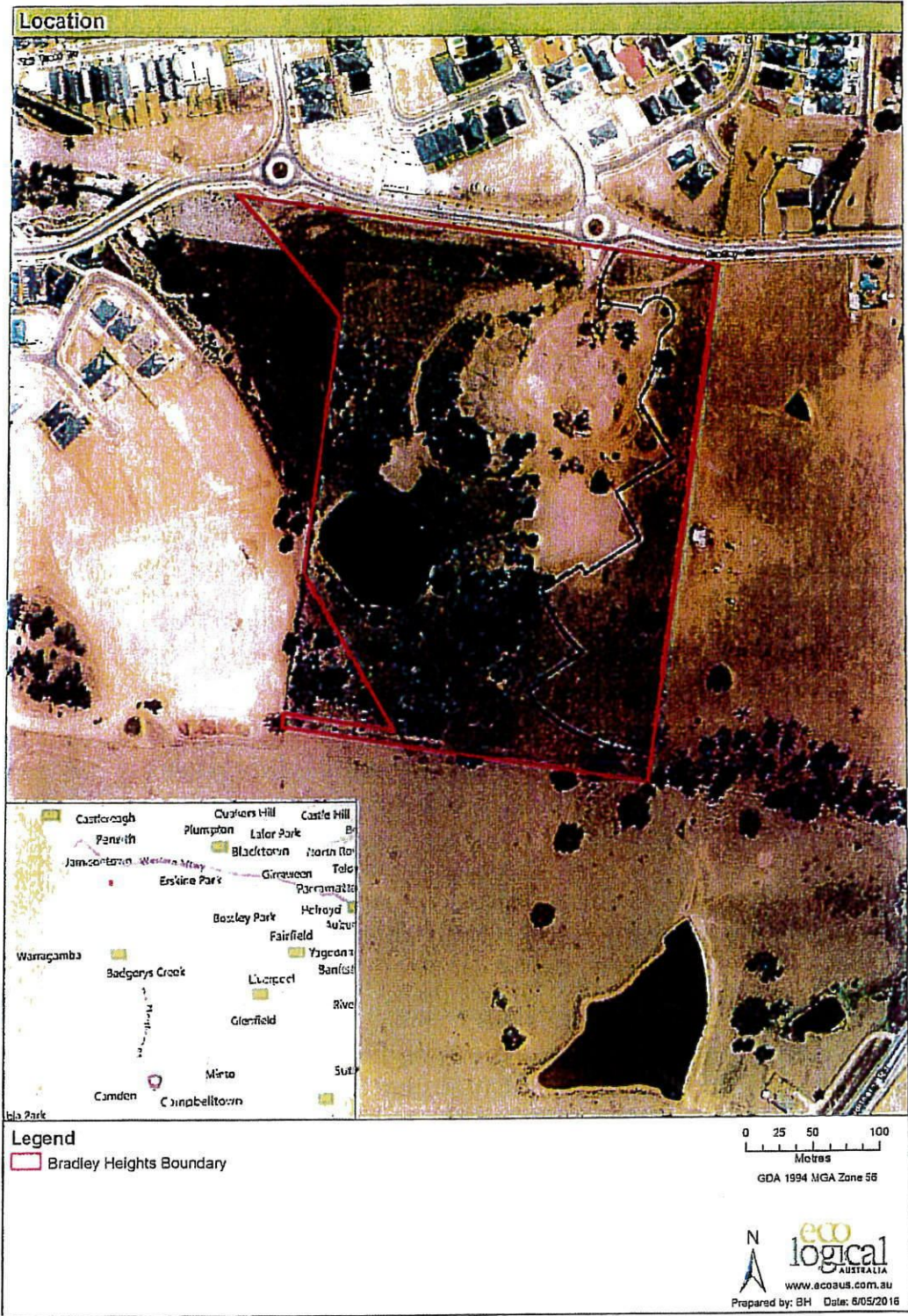


Figure 1: Location of Bradley Heights Stage 2B

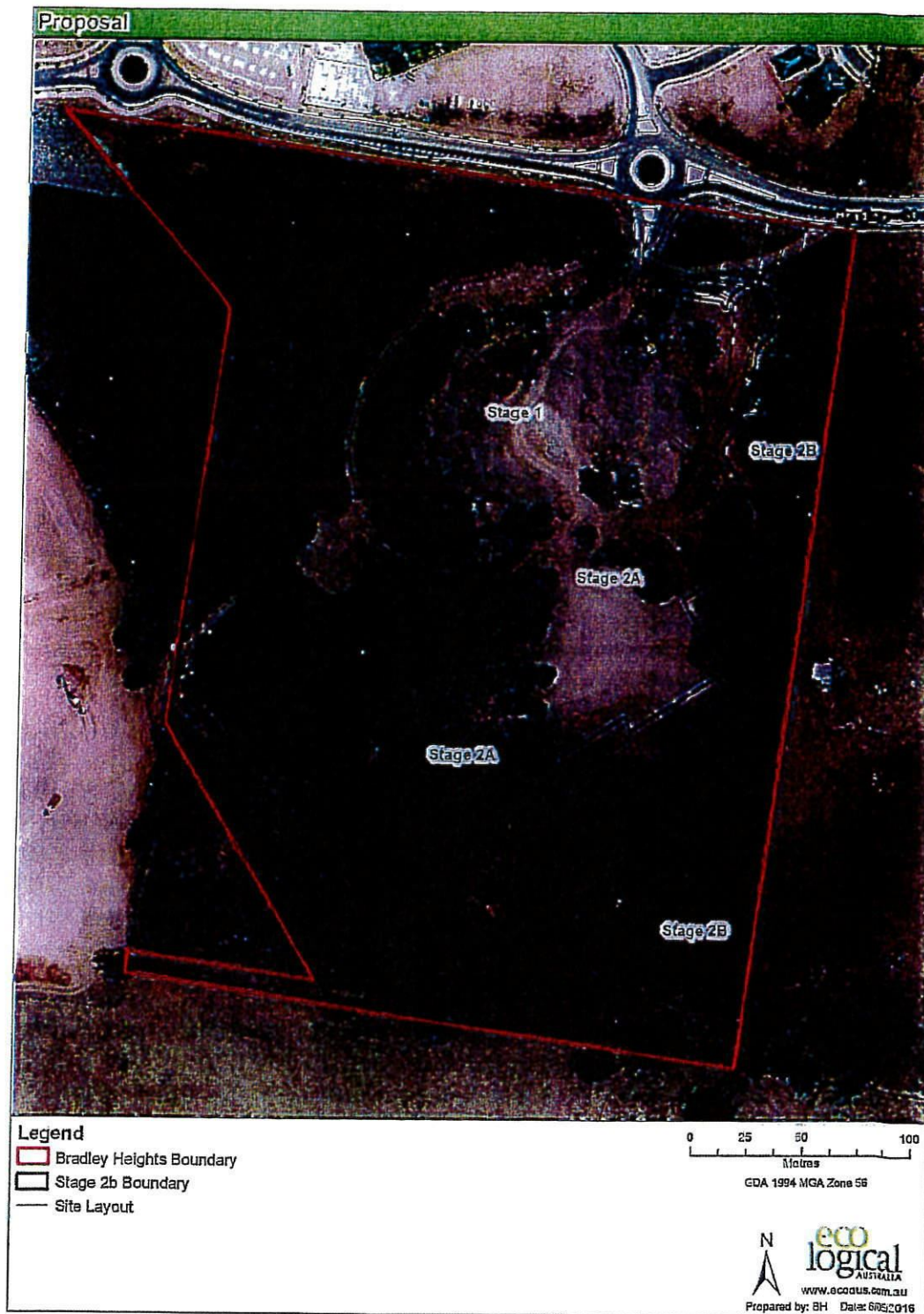


Figure 2: Bradley Heights Stage 2B subdivision layout plan



## 2 Bushfire threat assessment

### 2.1 Assessment requirements

The existing allotment within which the subdivision is proposed contains bushfire prone vegetation as identified by Penrith City Council's bushfire prone land mapping. Stage 2B is also identified as bushfire prone land due to the restoration and regeneration of the Surveyors Creek riparian corridor, to the south west and south of the site.

The following assessment is therefore prepared in accordance with Section 100B of the *Rural Fires Act 1997*, Clause 44 of the *Rural Fires Regulation 2008*, and 'Planning for Bush Fire Protection 2006' (RFS 2006) herein referred to as PBP.

### 2.2 Vegetation types and slopes

The vegetation and slope have been assessed outwards from the boundary of the proposed subdivision in the direction of the bushfire hazard. In accordance with PBP the predominant vegetation class has been calculated for a distance of at least 140 m out from the boundary of the subject land and the slope class most significantly affecting fire behaviour was determined for a distance of at least 100 m. The predominant vegetation and effective slope assessments are shown in **Figure 4** and summarised in **Table 1** within the following Section 3 – Asset Protection Zones.

The bushfire hazard within 140 m of the subdivision perimeter consists of a riparian corridor associated with Surveyors Creek, to the south west and south of the site. The corridor ranges from 50-100m in width and is being purposefully restored and regenerated as park of the Glenmore Park land release development. Some areas of the corridor are yet to have the revegetation works completed, and the vegetation community and structure will not be mature for many years. However, the intent is for the corridor to be restored to a Woodland structure, in accordance with Vegetation Management Plan documentation prepared by ELA, and as approved by council. For the purpose of assessment by PBP, the vegetation to the south and south east is classified as Woodland.

Council has mapped an area of Grassland to the immediate east of the site on the Penrith Bush Fire Prone Land Map, which if in an unmanaged state, would present a potential bushfire hazard to the proposed subdivision. Investigation was undertaken onsite which found the Grassland to the east to be currently managed as grazing land, and therefore, specific compliance with Grassland setbacks is not considered necessary, however, some redundancy has been proposed within this report to offset any minor risks. This is further discussed within section 2.3. It is noted that this lot has been in its current ownership since 1994 with a long history of farming uses resulting in dams, ancillary farm buildings and access tracks further fragmenting the managed grassland areas. As the land has an RU2 zoning the existing farming practices are expected to continue to occur.

The vegetation to all other aspects of the subject site is predominantly managed, developed or both.

Both the Woodland riparian corridor areas to the south, and the managed grassland areas to the east are situated on an effective slope within the PBP slope class of 'Downslope >0-5 degrees' as illustrated in **Figure 4**.

### 2.3 Grassland / Fencing Alternative Assessment

In November 2015, the NSW RFS published a revised set of guidelines for assessment and determination of what constitutes a bushfire hazard, for the purposes of the NSW planning system. The document, known as "Guide for Bush Fire Prone Land Mapping" (guidelines) provide the parameters for the preparation of the Bushfire Prone Land (BFPL) maps for local government areas within NSW. These maps provide a planning 'trigger' for future development as to whether the potential impacts of bushfire needs to be assessed in further detail and mitigated against.

Section 7.1.2 of the guidelines defines a collection of vegetation areas and arrangements that are considered to be of a total area and/or arrangements that warrant an insignificant bushfire risk and have therefore been 'excluded' from being classified as bushfire prone. These include, but are not limited to:

- iv. *Areas of 'Managed grassland' including grassland on, but not limited to, recreational areas, commercial/industrial land, residential land, airports / airstrips, maintained public reserves and parklands, commercial nurseries and the like.*

Further investigation of the Grassland areas to the east of the proposed subdivision found evidence of significant ongoing management through the grazing of animals within the extent of these lands. This was also able to be contrasted with the current condition of the subject site itself which has been left unmanaged for some time and the grassland has developed into a grassland hazard, although still relatively short in length.

Photographic evidence has been provided below to show both the current grazing practices and the contrast between the subject site and adjoining managed / grazing lands.

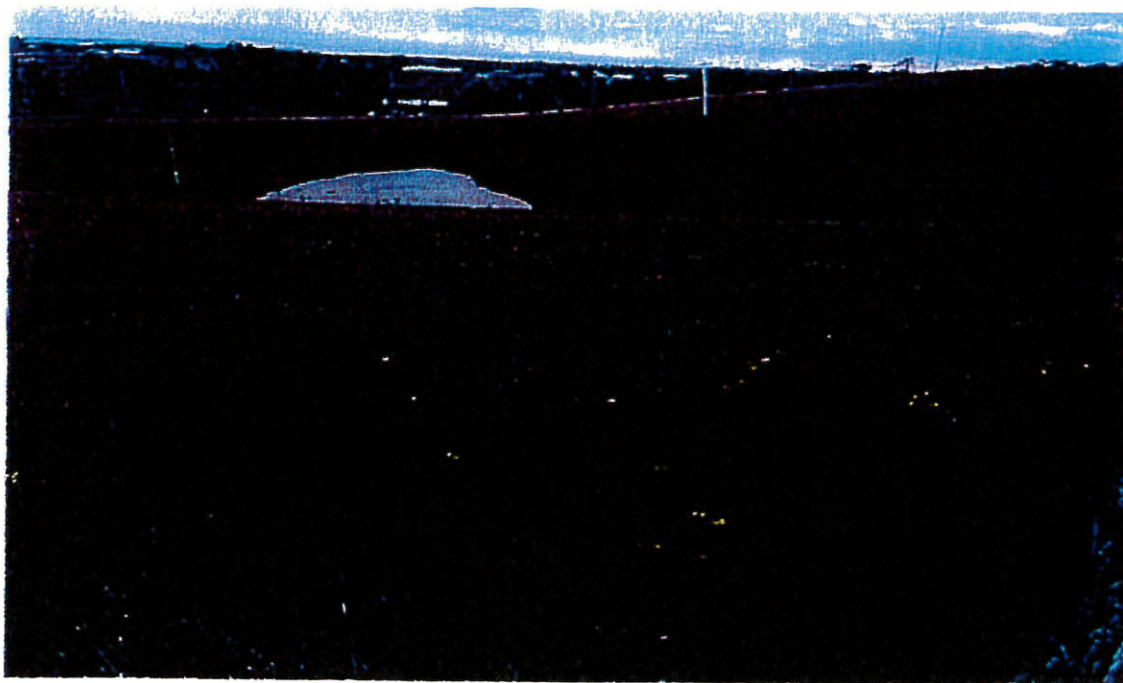


Photo 1 - Current grazing practices within adjoining land to the east. Managed state is clearly shown.



**Photo 2 – Property to the left shows the grazing practices within adjoining land, contrasted by the grassland within the subject site, shown to the right.**

Based on the current managed state of the adjoining areas to the east of the site, the grassland is considered as 'managed land', as evidenced by the on ground inspection and supporting site photos.

Due to the managed nature of the adjoining land, an alternative solution to that required by PBP and AS3959 is proposed. In the interest of providing a suitable bushfire protection outcome that is conservative in relation to the hazard that exists to the east of the site, it is recommended that a number of protection measures be implemented in order to provide mitigation and redundancies against what is currently a minimal or negligible risk scenario.

Furthermore, it is critical to note that the measures outlined below are intended for consideration as part of the subdivision approval process only. Variation from these requirements, however, will need to be addressed on the merits of the individual circumstances for each particular dwelling in question - as part the future 79BA Development Application stage.

The measures recommended for the subdivision are consistent with pre-DA discussions with council and the RFS and include implementation of:

- a) A minimum 6m setback / defendable space / APZ from the eastern boundary within the proposed residential lots;
- b) Fencing as required by Penrith City Council. (If radiant heat shields are implemented they may consist entirely or in part of proposed retaining walls, however, this is to be assessed on the merits of each case at 79BA single dwelling stage);
- c) As agreed with council – considering the managed and temporary nature of the adjoining grassland areas - construction of future dwellings along eastern boundary are to be in accordance with maximum of BAL-29 (where situated within 50m of the eastern property

boundary) This is to be assessed on the merits of each case at 79BA single dwelling stage. It is also critical to note, that should council and/or the RFS decide to implement full compliance with AS3959, the 6m setback for some dwellings would result in a potential BAL-40 or BAL-FZ outcome.

Dwellings within 100m of the Woodland corridor to the south will comply as per the requirements of AS3959.

### 3 Asset Protection Zones (APZ)

PBP has been used to determine the width of Asset Protection Zones (APZ) for the proposed subdivision. Table 1 below shows the APZ calculation and the location of APZ's are shown in Figure 4.

**Table 1: Asset Protection Zone assessment**

Location	Slope	Vegetation	PBP APZ	Proposed APZ	Comment
North	Managed Land / Existing Development				
East	Managed Grassland (Grazing) Refer to section 2.3 for further discussion – future dwellings are recommended to accommodate a minimum 6m defensible space, and compliance up to BAL 29.				
South / South-west	Downslope >0-5°	Woodland (riparian corridor)	15 m	15 m	APZ will consist of dwelling setbacks from rear boundary of lots.
West	Managed Land / Existing Development – earlier stages of development				

The proposed APZs will require vegetation maintenance to achieve the performance objectives of an Inner Protection Area (IPA) as described by PBP. The following fuel management guide should be used to satisfy the performance requirements:

- No tree or tree canopy is to occur within 2 m of future dwelling rooflines;
- The presence of a few trees in the APZ is acceptable provided that they are well spread out and do not form a continuous canopy whereby single trees, or clumps of trees forming one canopy are separated by 2 to 5 m depending on the canopy size;
- Shrubs are to be limited to select and well managed garden beds that are located far enough away from future buildings so that they will not ignite the buildings by direct flame contact or radiant heat emission;
- A minimal ground fuel is to be maintained to include less than 4 tonnes per hectare of fine fuel (fine fuel means ANY dead or living vegetation of <6 mm in diameter e.g. twigs less than a pencil in thickness. 4 t/ha is equivalent to a 1 cm thick layer of leaf litter).

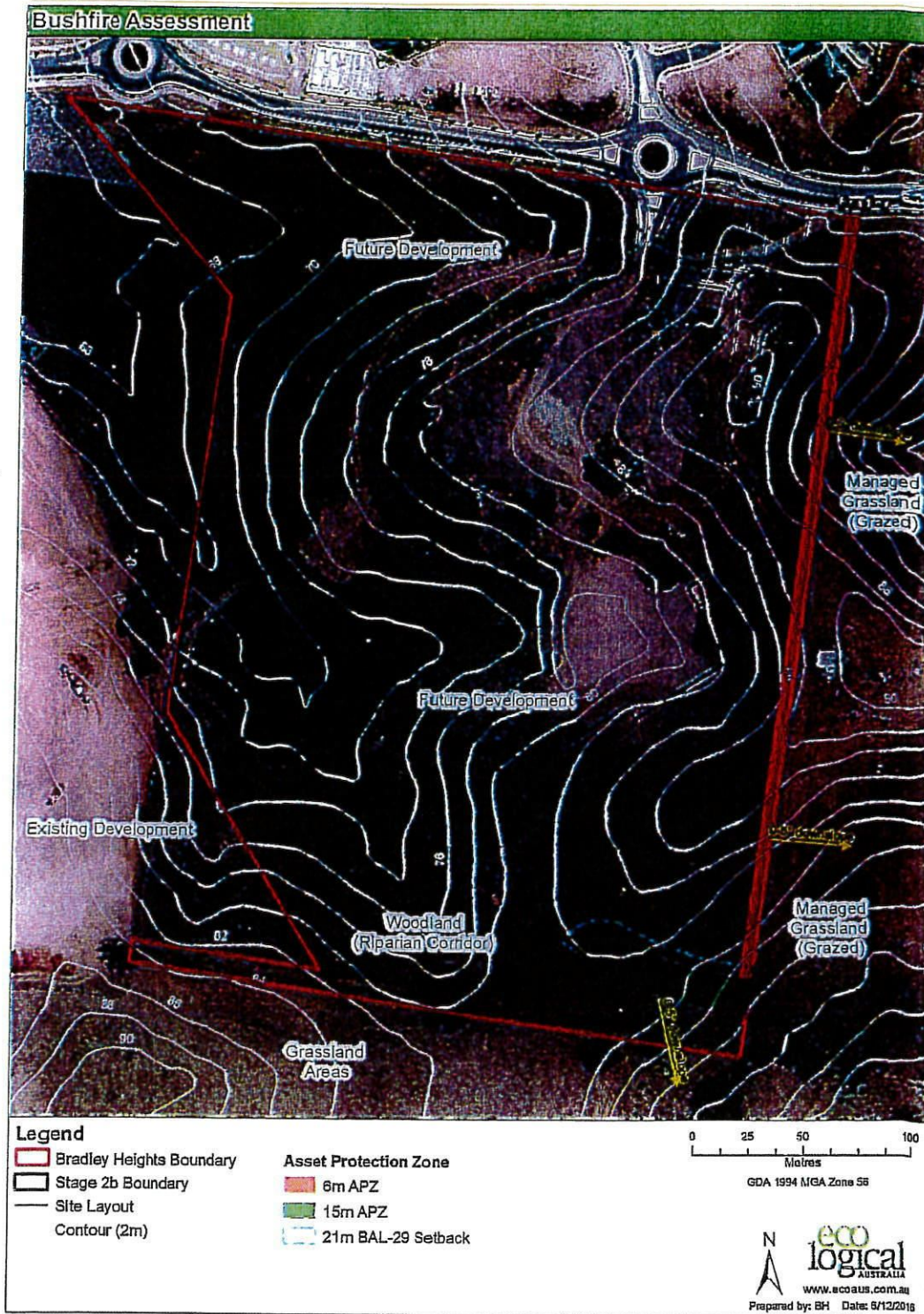


Figure 3: Bradley Heights Stage 2B bushfire hazard analysis and Asset Protection Zones

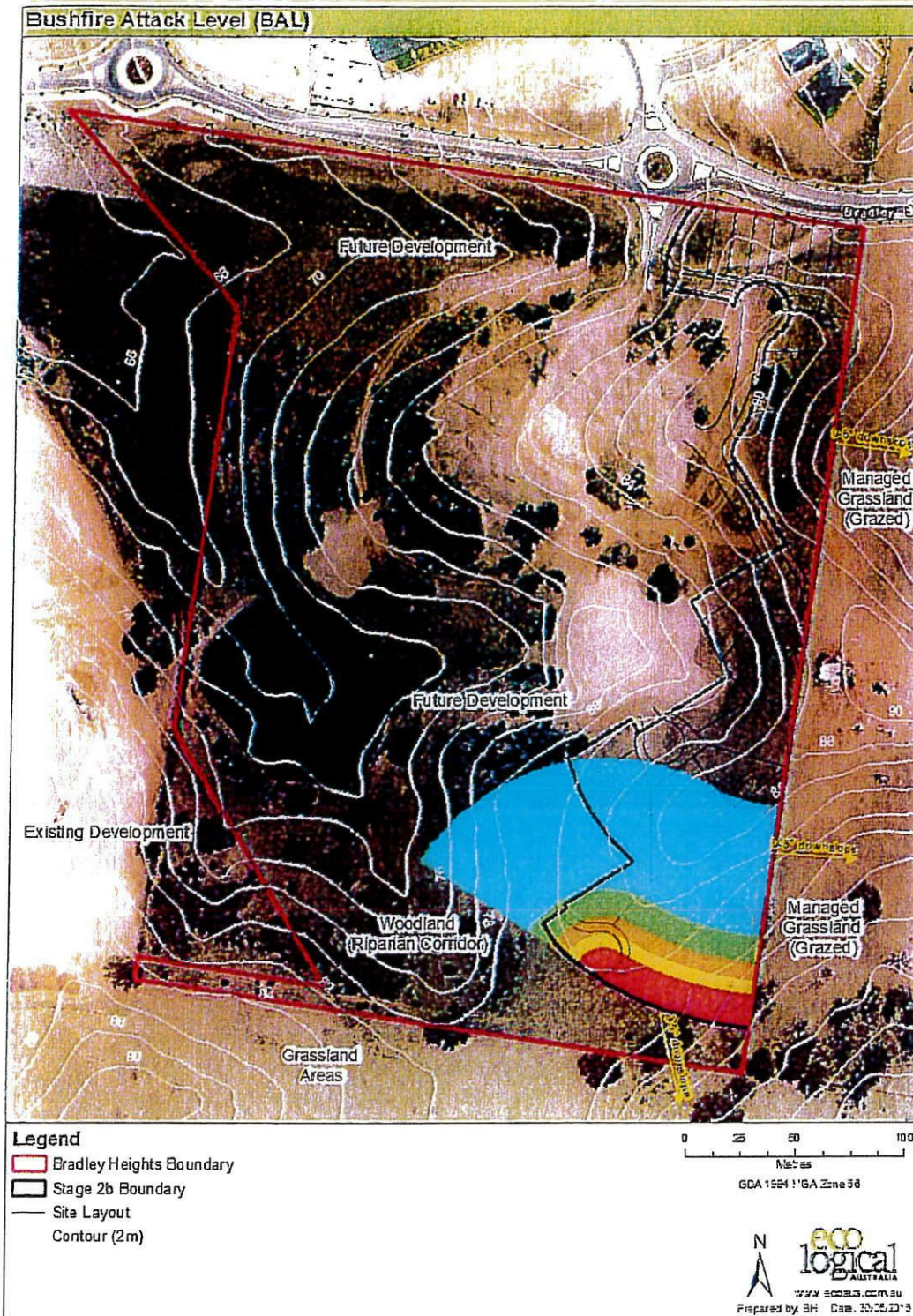


Figure 4: Bradley Heights Stage 2B Bushfire Attack Level (BAL) map

## 4 Construction standards

Method 1 of the AS 3959-2009 'Construction of buildings in bushfire-prone areas' has been used to determine the bushfire construction levels required for the subdivision (Standards Australia 2009).

The Bushfire Attack Level (BAL) as per AS 3959 Table 2.4.2 varies dependant on the separation distances as in **Table 2** below and mapped in **Figure 4**.

As noted within section 2.3 of this report, it is intended for the future dwellings within 50m of the eastern interface to comply with a conservative alternate solution bushfire mitigation approach against the adjoining managed grasslands to the east – requiring a maximum of BAL-29.

**Table 2: BAL separation distances in relation to the proposed subdivision**

Subject land area and Vegetation and Slope	BAL-FZ Distance	BAL-40 Distance	BAL-29 Distance	BAL-19 Distance	BAL-12.5 Distance
South west and South Woodland / 0-5° downslope	<15 m	15<-21 m	21<-29 m	29<-41 m	41<-100 m
East Managed Grassland (grazed)			6<-16 m	16<-22 m	22<-50 m
<i>All other aspects adjoining managed lands or existing development and are therefore rated as BAL-LOW.</i>					

Information according to AS3959-2009 'Construction of buildings in bushfire-prone areas' Table 2.4.2 pg. 29.

## 5 Access and egress

The primary access point for the subdivision will be from the existing Bradley Street which runs east/west to the immediate north of the subdivision. Multiple access points are provided off the existing, earlier stages of development within the Bradley Heights land release - within Stages 1 and 2A - feeding to an internal road network that provides direct access to all residential allotments. The proposed public road layout within the subdivision and its linkages to existing roads complies with PBP (refer to **Figure 2**).

**Table 3** on the following page lists the PBP acceptable solutions and performance criteria for public roads in bushfire prone areas. The design and construction of the roads are to comply with the provisions listed within **Table 3**. The proposed road layout is shown in **Figure 2**. A public perimeter road to the west is not required due to Stage 2B adjoining other subdivision stages (i.e. Stage 1 and Stage 2A). A public perimeter road is not required along the eastern boundary due to the areas of managed land and future development that exists in this direction.



## 6 Utilities

### 6.1 Water supply

The subject land is to be serviced by reticulated water. The furthest point from any future dwellings to a hydrant is to be less than 90 m. The reticulated water supply is to comply with the following acceptable solutions within Section 4.1.3 of PBP:

- Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads;
- Fire hydrant spacing, sizing and pressures comply with AS 2419.1 – 2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles;
- Hydrants are not located within any road carriageway;
- All above ground water and gas service pipes external to the building are metal, including and up to any taps; and
- The [PBP] provisions of parking on public roads are met.

### 6.2 Gas and electrical supplies

In accordance with PBP, electricity should be underground wherever practicable. Where overhead electrical transmission lines are installed:

- Lines are to be installed with short pole spacing, unless crossing gullies, and
- No part of a tree should be closer to a powerline than the distance specified in "Vegetation Safety Clearances" issued by Ausgrid (NS179, December 2010).

Any gas services are to be installed and maintained in accordance with AS/NZS 1596:2008 *The storage and handling of LP Gas* (Standards Australia 2008).

**Table 3: Performance criteria for proposed public roads\*1**

Performance Criteria	Acceptable Solutions
<p><b>The intent may be achieved where:</b></p> <ul style="list-style-type: none"> <li>• firefighters are provided with safe all weather access to structures (thus allowing more efficient use of firefighting resources)</li> </ul>	<ul style="list-style-type: none"> <li>• public roads are two-wheel drive, all weather roads</li> </ul>
<ul style="list-style-type: none"> <li>• public road widths and design that allows safe access for firefighters while residents are evacuating an area</li> </ul>	<ul style="list-style-type: none"> <li>• urban perimeter roads are two-way, that is, at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb), allowing traffic to pass in opposite directions. Non perimeter roads comply with Table 4.1 – Road widths for Category 1 Tanker (Medium Rigid Vehicle) requiring a minimum 6.5 m trafficable width</li> <li>• the perimeter road is linked to the internal road system at an interval of no greater than 500 metres in urban areas</li> <li>• traffic management devices are constructed to facilitate access by emergency services vehicles</li> <li>• public roads have a cross fall not exceeding 3 degrees</li> <li>• public roads are through roads. Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end and direct traffic away from the hazard</li> <li>• curves of roads (other than perimeter roads) are a minimum inner radius of six metres and minimal in number to allow for rapid access and egress</li> <li>• the minimum distance between inner and outer curves is six metres</li> <li>• maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient</li> <li>• there is a minimum vertical clearance to a height of four metres above the road at all times</li> </ul>
<ul style="list-style-type: none"> <li>• the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles (approximately 15 tonnes for areas with reticulated water, 28 tonnes or 9 tonnes per axle for all other areas). Bridges clearly indicated load rating</li> </ul>
<ul style="list-style-type: none"> <li>• roads that are clearly sign posted (with easy distinguishable names) and buildings / properties that are clearly numbered</li> </ul>	<ul style="list-style-type: none"> <li>• public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression</li> <li>• public roads between 6.5 metres and 8 metres wide are No Parking on one side with the services (hydrants) located on this side to ensure accessibility to reticulated water for fire suppression</li> </ul>

Performance Criteria	Acceptable Solutions
<ul style="list-style-type: none"> <li>• there is clear access to reticulated water supply</li> </ul>	<ul style="list-style-type: none"> <li>• public roads up to 6.5 metres wide provide parking within parking bays and located services outside of the parking bays to ensure accessibility to reticulated water for fire suppression</li> <li>• one way only public access roads are no less than 3.5 metres wide and provide parking within parking bays and located services outside of the parking bays to ensure accessibility to reticulated water for fire suppression</li> </ul>
<ul style="list-style-type: none"> <li>• parking does not obstruct the minimum paved width</li> </ul>	<ul style="list-style-type: none"> <li>• parking bays are a minimum of 2.6 metres wide from kerb to kerb edge to road pavement. No services or hydrants are located within the parking bays</li> <li>• public roads directly interfacing the bush fire hazard vegetation provide roll top kerbing to the hazard side of the road</li> </ul>

\*1 PBP page 21

## 7 Recommendations and conclusion

### 7.1 Recommendations

The following recommendations have been made within this report to ensure the proposed subdivision is compliant with Section 100B of the *Rural Fires Act 1997*, Clause 44 of the *Rural Fires Regulation 2008*, and '*Planning for Bush Fire Protection 2006*' (RFS 2006):

Recommendation 1- Asset Protection Zones are to be provided as listed in **Table 1**;

Recommendation 2- Asset Protection Zone maintenance is to comply with the NSW Rural Fire Service document '*Planning for Bush Fire Protection 2006*' Inner Protection Area (IPA) performance requirements as listed in Appendix 2 Section A2.2 of PBP and guided by the fuel management principles listed in Section 3 of this report;

Recommendation 3- The design and construction of public roads is to comply with the acceptable solutions listed in **Table 3** of this report;

Recommendation 4 - A hydrant water supply is to be installed in accordance with Australian Standard AS 2419.1 and Section 6.1 of this report;

Recommendation 5 - Electrical services should be underground and if overhead lines are used, overhanging branches should be trimmed according to "Vegetation Safety Clearances" issued by Ausgrid (NS179, December 2010);

Recommendation 6 - Gas services are to be installed and maintained in accordance with AS/NZS 1596:2008 (Standards Australia 2008).

### 7.2 Conclusion

In the author's professional opinion the bushfire protection requirements listed in this assessment provide an adequate standard of bushfire protection for the proposed development. As such, the proposed subdivision is consistent with the aim and objectives of '*Planning for Bush Fire Protection*' (RFS 2006) and appropriate for the issue of a Bush Fire Safety Authority.



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## References

Ausgrid. 2010. *Network Standard NS 179 Vegetation Safety Clearances* (updated from Energy Australia. 2002. *Network Standard NS 179 (Vegetation Safety Clearances)*, Sydney.)

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Standards Australia. 2009. *Construction of buildings in bushfire-prone areas*, AS 3959-2009, Standards Australia International Ltd, Sydney

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## BUSHFIRE ASSESSMENT REPORT

PROPOSED RESIDENTIAL SUBDIVISION  
LOT 2 DP 541090  
BRADLEY STREET  
GLENMORE PARK

MARCH 2013  
(REF: 3022B)

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**BUSHFIRE ASSESSMENT REPORT**

**PROPOSED RESIDENTIAL SUBDIVISION  
LOT 2 DP 541090  
BRADLEY STREET  
GLENMORE PARK**

**MARCH 2013**

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## PREFACE

This document provides an assessment of the bushfire attack potential and the necessary bushfire protection strategies for a proposed subdivision of the subject land. Aspects considered in relation to the Bushfire Hazard Assessment include; vegetation type, slopes, water supplies, entry and egress access, provision of defensible space, asset protection zones and construction standards for the existing and future dwelling. This Report has been prepared in accordance with the requirements of Planning for Bushfire Protection (RFS 2006).

Report and Assessment Completed by:

PHILLIP ANTHONY CONACHER B.Sc. (Hons), Dip.Urb Reg Planning, M.Nat.Res.  
Director  
**Conacher Environmental Group**

# SECTION 1

## BACKGROUND DETAILS

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### 1.1 INTRODUCTION

This Bushfire Assessment Report has been prepared by *Conacher Environmental Group* for a proposed residential development of land at Lot DP 541090 Bradley Street, Glenmore Park.

The objectives of this Report are to:

- i) Address the relevant requirements of Planning for Bushfire Protection (Rural Fire Service, 2006);
- ii) Identify if the development complies with the aims and objectives of Planning for Bushfire Protection (RFS, 2006);
- iii) Identify the Asset Protection Zone requirements and Bushfire Attack Levels for any future dwellings within the lots;
- iv) Prepare a Report that supplies the relevant information for the Rural Fire Service and Council to assess for the granting a Bushfire Safety Authority (RFS) or development approval.

### 1.2 PROPOSED DEVELOPMENT

The development being assessed in this report is a proposed residential subdivision of approximately 106 residential lots and two residual rural sized lots. The development will require the removal of vegetation, and the possible regrading of land, for the development of residential lots, roads and services. An area of land to the west of the site is proposed to be managed as a riparian corridor to Surveyors Creek.

### 1.3 SITE DETAILS

#### *Property Location*

The site is located within the Glenmore Park Stage 2 residential development area.

The subject site is located on Bradley Street (southern side) and covers approximately 10.5 hectares. The site comprises a residual parcel of land located to the south of the adjoining residential lots fronting Bradley Street. A drainage line (Surveyors Creek) is located to the west of the site which is proposed to be retained and managed as a riparian corridor.

#### *Topography and Drainage*

The site is located on the rolling hills of the Cumberland Plain with gently sloping land, generally with a westerly aspect and a slope of approximately four degrees.

### 1.4 PREVIOUS BUSHFIRE HAZARD ASSESSMENT

A previous Bushfire Management Strategy (Conacher Travers 2003) was prepared as part of the Local Environmental Study for the rezoning of the then Glenmore Park (Southern Expansion) Release Area. The previous bushfire study addressed the requirements of Planning for Bushfire Protection (RFS 2001) which were applicable in 2003 for the broadscale land rezoning process. This current Bushfire Assessment Report provides details required by the revised and updated version of Planning for Bushfire Protection (RFS 2006) which are applicable for site specific development applications.

A Bushfire Protection Assessment Report (Ecological Australia 2010) has been prepared for the residential subdivision to the west (ie to the west of the Surveyors Creek riparian corridor). This assessment identifies that the vegetation within the Surveyors Creek riparian corridor is to be revegetated to a woodland structure with the outer 10 metres managed as an asset protection zone.

## SECTION 2

### BUSHFIRE ATTACK ASSESSMENT

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#### 2.1 BUSHFIRE ASSESSMENT CRITERIA

##### ***Bushfire Prone Land Map***

The south-east and south-west corners of the subject site are mapped as Buffer to Category 1 vegetation, within Council's Bushfire Prone Land Map as shown in Figure 1. The proposed riparian corridor is not mapped as bushfire prone land. Vegetation mapped as comprising a bushfire hazard (Category 1 or Category 2 vegetation) is not mapped within the site.

##### ***Forest Fire Danger Index***

The subject site is located within the Penrith City Council Local Government Area in the Greater Sydney Region. The Forest Fire Danger Index for the Greater Sydney Region is rated at 100 for use in determining asset protection zone requirements and categories for bushfire attack.

##### ***Vegetation Classification***

The vegetation present within the site and adjoining areas is outlined below:

- Site: Grassland with patches of native trees.  
(To be removed by proposed development).
- North: Cleared vegetation in road reserve (Bradley Street) and residential lots.
- South: Grassland – rural grazing land.
- East: Grassland – rural grazing land.
- West/South-west: Scattered trees and grassland.  
To be managed to woodland structure as part of the Surveyors Creek biodiversity corridor. Existing dam to be retained.

##### ***Development Category***

The proposed development is classified as a 'residential subdivision' under Chapter 4 of Planning for Bushfire Protection (RFS, 2006). Development consent is required from the council for subdivision and a Bushfire Safety Authority is required from the Rural Fire Service. The proposed development is classified as an "integrated development" under the provisions of the EP&A Act.

##### ***Planning for Bushfire Protection (RFS, 2006)***

Due to parts of the site being mapped within a buffer area on the Bushfire Prone Land Map the development application is required to include a Bushfire Assessment Report prepared in accordance with the requirements of *Planning for Bushfire Protection* (RFS, 2006).

##### ***Adjoining and Surrounding Land Use***

Rural grazing land is located to the east and south. Existing residential development is located to the north and west. The lots to the west are separated from the subject site by the biodiversity corridor.

## 2.2 ASSET PROTECTION ZONES

Bushfire asset protection zones are required to be assessed in relation to existing bushfire hazard and the proposed lots for areas mapped as bushfire prone land.

For subdivision purposes the width of an asset protection zone is determined from Table A2.4 of RFS (2006). An assessment of the APZ requirements for the proposed lots in relation to the adjoining lands, vegetation types and slope gradients is provided in Table 2.1 and illustrated in Figure 2.

<b>TABLE 2.1 ASSET PROTECTION ZONE AND BUSHFIRE ATTACK LEVEL ASSESSMENT (as per Table A2.4 RFS 2006)</b>			
<b>Direction</b>	<b>Vegetation Classification (greatest threat within 140m)</b>	<b>Effective Slope (within 100m)</b>	<b>Recommended Distance from Bushfire Hazard (metres) (From Table A2.4 RFS 2006)</b>
			<b>Asset Protection Zone</b>
<b>North</b>	Managed Land (Reduced Vegetation)	Upslope	No Requirement
<b>South</b>	Grassland	0-5° downslope	10 metres
<b>East</b>	Grassland	5-10° downslope	10 metres
<b>West/ South-west</b>	Woodland	0-5° downslope	15 metres

## SECTION 3

### BUSHFIRE PROTECTION MATTERS

#### 3.1 BUILDING CONSTRUCTION REQUIREMENTS AND ASSET PROTECTION ZONES

For subdivision purposes an asset protection zone of 10 metres is required from the grassland vegetation to the south and east. This area of APZ is to be managed to the condition of an inner protection zone. The land to the west and south-west, within the Surveyors Creek biodiversity corridor is to be revegetated and managed to a woodland structure as per the Glenmore Park Stage 2 Development Contributions Plan and Planning Agreement for the Glenmore Park Stage 2. A 15 metre APZ is proposed in this area.

Following subdivision, any future dwellings may be subject to specific construction requirements to meet the Bushfire Attack Levels (BAL) identified in AS 3959-2009 Construction of Building in Bushfire Prone Areas (Standards Australia 2009). The building construction standard in relation to the distance of future dwellings to the bushfire hazard is identified in Table 3.1 and shown in Figure 3.

Direction	Vegetation within 140m	Slope	Distances for Bushfire Attack Levels Dwelling Construction (metres)			
			BAL 40	BAL 29	BAL 19	BAL 12.5
North	Managed Land	Upslope	-	-	-	-
South	Grassland	0-5° Downslope	-	-	-	-
East	Grassland	5-10° Downslope	-	-	-	-
West/ South-west	Woodland	0-5° Downslope	15-21	21-29	29-41	41-100

The creation of the APZ of 15 metres to the west/south-west includes the perimeter road and will provide bushfire hazard protection for future dwellings located on lots fronting this road. This requirement is based on the consideration that Council may determine that the managed riparian biodiversity corridor would be a future bushfire hazard to future dwellings. With the provision of a 15 metre APZ and minimal building line setback of 6 metres from lot front boundaries the future construction standards to a maximum of BAL 29 (21 metres to 29 metres setback from future bushfire hazard) would apply.

### **3.2 ACCESS**

All lots will be provided with direct access/egress to the proposed subdivision roads. These roads will be sealed two way public roads which will ultimately link to the existing developed urban area. No roads are proposed within areas mapped as bushfire prone land. There is no restriction to emergency vehicles using these roads.

### **3.3 WATER SERVICES**

The existing residential development in the local area has reticulated water mains. The proposed development will extend the existing water reticulation from the surrounding infrastructure therefore a supplementary form of water supply will not be necessary for fire fighting purposes. This water supply arrangement is in compliance with '*Planning for Bushfire Protection, 2006*' in respect of water supply.

The reticulated water supply, fire hydrant spacing, sizing and pressure is to comply with the requirements of AS2419.1-2005. A certification or test report from the Water Supply Authority is to be provided to demonstrate that the requirements of AS2419.1-2005 can be achieved during a bushfire event.

### **3.4 ENVIRONMENT AND HERITAGE ISSUES**

No European or Aboriginal Heritage Matters or items have been identified within the subject site. The subject site has no known geological features or characteristics of significance.

A detailed Flora and Fauna Assessment Report (CEG 2013) has identified that the proposed subdivision development is not likely to result in a significant effect on threatened species, endangered ecological communities or their habitats.



## SECTION 4

### CONCLUSIONS AND RECOMMENDATIONS

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#### 4.1 AIM AND OBJECTIVES OF PLANNING FOR BUSHFIRE PROTECTION

*"The aim of Planning for Bushfire Protection is to use the NSW development assessment system to provide for the protection of human life and to minimise impacts on property from the threat of bushfire, while having due regard to development potential, on site amenity and protection of the environment" (PBP pg 1).*

The preparation of this Bushfire Assessment Report and subsequent assessment by Council and the Rural Fire Service ensures compliance with the aim of Planning for Bushfire Protection.

The following comments are provided in relation to satisfying the objectives of PBP.

##### *Objective 1*

*(i) afford occupants of any building adequate protection from exposure to a bush fire;*

The APZ (15m) and building construction levels to comply with BAL 29, 19 or 12.5 Construction Standards of AS3959-2009 (AS2009) will provide occupants of any future dwellings protection from exposure to bushfire.

##### *Objective 2*

*(ii) provide for a defensible space to be located around buildings;*

An APZ of minimum 15 metres width to the west of the residential lots facing the riparian biodiversity corridor will provide an area for defensible space. This APZ is expected to be managed as an Inner Protection Area (IPA) in accordance with PBP (RFS, 2006). All lots are to be managed as an IPA.

##### *Objective 3*

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

The APZ is a minimum of 15 metres in width. The construction standard for a dwelling of BAL 29, 19 or 12.5 depending on the distance of future dwellings from the bushfire hazard would apply. These factors combined will provide appropriate separation between the hazard and buildings which will prevent direct flame contact and material ignition.

##### *Objective 4*

*(iv) ensure that safe operational access and egress for emergency service personnel and residents is available;*

Multiple ingress / egress routes to the existing through roads are incorporated into the existing urban road layout. This will ensure multi-path safe operational ingress for emergency services and also simultaneous safe egress for residents during an emergency.

##### *Objective 5*

*(v) provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ);*

The owners of the future lots are to undertake regular inspections and management of the Asset Protection Zone. This will include maintenance of the vegetation and fuel loads within the APZ as an Inner Protection Area (IPA) in accordance with PBP (RFS, 2006).

*Objective 6*

(vi) ensure that utility services are adequate to meet the needs of fire fighters (and others assisting in bush fire fighting)

All lots are to be provided with urban services which will provide adequate requirements for fire fighters.

#### 4.2 CONCLUDING COMMENTS

With the implementation of the measures recommended, and outlined in Section 3 of this Report, the overall aims and objectives of Planning for Bushfire Protection (RFS, 2006) can be achieved for the proposed development.

#### 4.3 RECOMMENDATIONS

The following recommendations are provided in relation to reducing the potential for loss of life and property by the impact of bushfire:

- i. Establish and maintain an Asset Protection Zone (15 metres wide) in the western parts of the development as shown in Figure 2. This APZ is to be maintained as an Inner Protection Area as described in PBP (RFS, 2006);
- ii. Any future dwelling within 100 metres of the biodiversity corridor to the west to be constructed to BAL 29, 19 or 12.5 depending on the distance of these dwellings from the woodland vegetation to the west.

#### REFERENCES

- Conacher Environmental Group (2013) Flora and Fauna Assessment Report Bradley Street, Glenmore Park.
- Conacher Travers (2003) Bushfire Management Study – Glenmore Park Southern Expansion Release Area. (Appendix Report in Local Environment Study – Penrith).
- Ecological Australia (2010) Bushfire Protection Assessment, Bradley Ridge. Report prepared for Norwest Pty Ltd.
- Penrith City Council (2007) Glenmore Park Stage 2 Development Contribution Plan.
- Rural Fire Service (2001) Planning for Bushfire Protection. 2001 Version
- Rural Fire Service (2006) Planning for Bushfire Protection. 2006 Version.
- Standards Australia (2009) Australian Standard (AS3959-2009) Construction of Buildings in Bushfire Prone Areas.
- Standards Australia (2005) Australian Standard (AS2419.1 2005) Fire hydrant installations – System Design, Installation and Commissioning.