ASSESSMENT | PLANNING | MANAGEMENT

Menangle Park Rezoning

Bushfire Risk Management Study for the Menangle Park Site

FINAL

(Project No. 29-04)

Report prepared for:
Landcom

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ABN 87 096 512 088 | address Suite 4 2-4 Merton Street Sutherland NSW 2232
postal PO Box 12 Sutherland NSW 1499 | phone 02 8536 8600 | fax 02 9542 5622
web www.ecoaus.com.au

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Fax - (02) 9542 5622

Executive Summary

This report is a revision to the Bushfire Assessment (scoping study) carried out for the Menangle Park Site in 2004 (ELA), due to the Planning for Bushfire Protection Guidelines released by the RFS in 2006. This project concerns a bushfire risk management study for the proposed rezoning of the Menangle Park Site.

The existing site conditions and bush fire hazard levels remain unchanged; "*The majority of the study area is flat to moderately sloping. The dominant vegetation type is woodland and the remnants are generally scattered. This combination of conditions results in a low to moderate hazard rating for Menangle Park." (ELA 2004)*

Asset Protections Zones (APZ) are a key component of bushfire planning and the issue which often has the greatest impact on development yields. Residential APZs have been addressed, according to the specifications contained within *Planning for Bushfire Protection 2006* (NSW RFS 2006).

APZ's of 10 to 25 metres are likely to be required adjacent to bushfire prone vegetation across the majority of the site. For a variety of reasons, the provision of a perimeter road is deemed essential and it is anticipated that in most situations such APZs can be wholly contained within the perimeter road easement and standard setbacks (6 metres). It is likely that provision of an adequate perimeter road system (as shown in the structure plan) will meet setback, access and egress requirements. Perimeter road specifications (according to NSW RFS 2006) are shown in appendix 1.

Water supply is to be via a ring main system, engineered to the requirements of *AS 2419.1-1994 Fire Hydrant Installations (SAI Global, 1994)*.

With regards to construction, later stages of site development will need to consider the requirements of Appendix 3 of PBP 2006.

Specifications for management of ecological bushfire regimes have also been provided, emphasising the need to implement regimes consistent with the *Bushfire Environmental Assessment Code (RFS 2006a)*.

Finally, Council should undertake consultation with the NSW Rural Fire Service (RFS) and NSW Fire Brigades (NSW FB). The purpose of this consultation is to advise the RFS and NSW FB of the proposed land use changes, to discuss any operational changes required due to this change in land use (including additional emergency resources that may be required) and to discuss how the site can meet the requirements of *Planning for Bushfire Protection* (NSW RFS 2006). In addition, Council will need to review its bushfire prone land mapping (NSW RFS 2003) with regard to land use changes and also incorporating "riparian corridors" or other areas that may pose a threat into the future (if not already).

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Ph - (02) 8536 8600
Fax - (02) 9542 5622

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Fax - (02) 9542 5622

1. Introduction

1.1 Background

The Menangle Park development site is listed on the NSW Metropolitan Development Plan (MDP). Landcom in conjunction with Campbelltown City Council (CCC) is in the process of preparing a Local Environmental Study (LES) for the rezoning of the Menangle Park development area.

Preparation of the LES requires that a bushfire risk management study be undertaken in order to assess the proposed Structure plan for bushfire safety.

Eco Logical Australia Pty Ltd has been commissioned by Landcom and Campbelltown City Council to amend the 2004 Bushfire Assessment Report (ELA 2004) according to the new RFS guidelines, Planning for Bushfire Protection (NSW RFS 2006).

1.2 Aims and Structure of Report

This report aims to identify potential bushfire constraints to the current draft structure plan for the site.

The objectives of the report are to:

1. Ensure statutory requirements for bushfire protection are met; and
2. Achieve innovative management frameworks across bushfire and vegetation issues which enable long term conservation and management of these issues while facilitating development outcomes for the site.

The report assesses the potential bushfire hazard across the site according to the proposed structure plan layout, in the context of existing remnant vegetation as well as the potential for revegetation. It then identifies planning requirements as per *Planning for Bushfire Protection 2006* (NSW RFS 2006).

Management of Asset Protection Zones (APZ) and environmental areas are considered. The location of emergency response facilities is mapped and the potential for future emergency response resources is discussed. Potential planning controls that integrate with *Planning for Bushfire Protection 2006* are also presented as are requirements for staged development.

1.3 Study Area

The site is bounded by the Nepean River to the west and south, Menangle Road to the east and the Mount Annan Botanic Gardens and Jacks Gully Waste Depot to the north.

Current landuse at the site is a mixture or rural, recreation (e.g. harness racing) and industrial (e.g. mining and waste depot).

The topography of the site is gently undulating with drainage flowing outwards to the north, south and west from a highpoint in the south eastern section of the site.

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A number of drainage lines traverse the site with one significant riparian corridor spanning the site from east to west and feeding directly into the Nepean River. A small area of freshwater wetland exists in the middle of the site with native vegetation concentrated along the riparian corridors (Alluvial Woodland and Shale Plains Woodland).

1.4 Legislative Requirements

1.4.1 Environmental Planning and Assessment Act 1979

The NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) is the principal planning legislation for the state, providing a framework for the overall environmental planning and assessment of development proposals. Various legislation and instruments, such as the NSW *Threatened Species Conservation Act 1995* (TSC Act), are integrated with the EP&A Act.

1.4.2 Threatened Species Conservation Act 1995

The *Threatened Species Conservation Act* 1995 (TSC Act) aims to protect and encourage the recovery of threatened species, populations and communities listed under the Act. The TSC Act is integrated with the EP&A Act and requires consideration of whether a development (Part 4 of the EP&A Act 1974) is likely to significantly affect threatened species, populations and ecological communities or their habitat.

In relation to bushfire, the TSC Act also identifies high frequency fire regimes as a key threatening process.

1.4.3 Rural Fires Act, 1997

Bushfire issues are regulated by the *Rural Fires Act, 1997* (RF Act). Both the EP&A Act and the RF Act were modified by the Rural Fires and Environmental Assessment Legislation Amendment Act, 2002.

LEP requirements in relation to bushfire are identified through Direction 19, under Section 117 of the RF Act. This direction effectively points to the need to satisfy the requirements of *Planning for Bushfire Protection* (NSW RFS, 2001).

The document *Planning for Bushfire Protection* (NSW RFS, 2006) identifies the key criteria that need to be addressed in bushfire planning. These are also the key criteria upon which the RFS determine if a Bushfire Safety Authority will be issued.

1.4.4 Campbelltown Bush Fire Risk Management Plan

Bush Fire Risk Management Plans and Operational Plans were introduced under the *Rural Fires Act* 1997. Together they form the basis for strategic management of bush fire risk and bush fire fuel management for a Local Government Area.

The 2002 changes to the *Environmental Planning and Assessment Act* and *Rural Fires Act* move the focus for bushfire planning towards *Planning for Bushfire Protection* (NSW RFS, 2001).

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Discussions with staff in the Macarthur Rural Fire Service office indicated that there were only minor bush fire risk issues on the study area. The riparian vegetation along the Nepean River was identified as part of the 2004 study as being a fire exclusion zone because of its significant conservation values.

Correspondence with council has indicted that this plan as well as the current bushfire prone land mapping is currently under review for the entire LGA, therefore further consideration of the application of this plan will be required.

1.4.5 Draft Campbelltown (Sustainable City) Development Control Plan

The *Draft Campbelltown (Sustainable City) Development Control Plan* was displayed in 2003 and contains a section addressing Bush Fire Risk Management (Section 15.3). The section requires new developments to be built in accordance with the Bush Fire Risk Management Plan, Bush Fire Prone Maps and to be compliant with *Planning for Bushfire Protection* (NSW RFS, 2001).

As well as referring to the existing statutory framework for bush fire planning, the DCP includes several additional controls;

- All Asset Protection Zones must be provided within the boundary of the development property. National Parks, Crown Reserves, Water Catchment Special Areas and Council managed native vegetation reserves are not to be considered for Asset Protection Zones.
- Where possible, the frequency, time of year and intensity of hazard reduction burning in native vegetation is to approximate the natural regime. This will ensure that species diversity and vegetation structure are maintained in a condition similar to that of pre-European settlement.
- Different species have varying sensitivity to fire and may require varying fire frequencies and intensities for survival. These requirements are to be considered in undertaking any management activities involving the use of fire.

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2. Bushfire Hazard Assessment

The bushfire hazard was assessed for at least a distance of 140m from the subject site (in line with PBP, NSW RFS 2006) in order to address the potential bushfire threat from both within and outside of the site and allow for a prediction of required asset protection zones to hazards located off the subject site.

Following the slope and hazard assessment of existing conditions completed as part of the 2004 report (refer to chapter 4 in ELA 2004), the approach taken with this hazard assessment was to undertake a preliminary asset protection zone assessment on the structure plan as shown in figure 1. The results of the APZ assessment can be found in figure 2.

Remnant vegetation will be retained within marked riparian corridors and offset areas. Vegetation will also be rehabilitated/revegetated in these same areas according to the relevant vegetation communities. Most vegetation outside these areas will either be removed for development, managed for recreation or of a size and proximity not considered to be bushfire prone. As such, the riparian corridors and offset areas were used to define the bushfire prone vegetation, rather than just the current extent of vegetation occurring on site.

The bushfire hazard and APZ determination methodology according to PBP 2006 was conducted by using a combination of vegetation formations, slope classes and relative topographic position of bushland and development.

The vegetation formations within the riparian corridors and offset areas were determined based on the existing remnant vegetation communities and included;

- Forested Wetlands (River-Flat Forest)
- Woodland (Grassy) (Cumberland Plain Woodland)
- Freshwater Wetlands (Sydney Freshwater Wetland)

The following slope categories were used across the site;

- Flat or Upslope
- >0˚ – 5˚
- >5˚ – 10˚
- >10˚ – 15˚
- >15˚ – 18˚
- >18˚

The APZ assessment was carried out according to Appendix 2 of PBP 2006. The resulting APZ widths were overlain on the structure plan layout as shown in figure 2. It was found that the structure plan layout generally has an adequate perimeter road network to allow for the full width of the APZ, therefore removing APZ setback requirements from most residential lots.

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Two areas of minor constraint where observed in the structure plan and are discussed below:

1. A small amount of incursion of the APZ into lots to the north of the main riparian corridor. Depending on the actual lot orientation in this area, this APZ incursion may be able to be accommodated with appropriate sighting of the building footprints outside the APZ area. As such, no specific recommendations are warranted at this stage; and
2. Incursion of an APZ into a number of lots adjoining proposed offset lands. These offset lands are currently unvegetated although their proposed future landuse is specified as revegetated lands. As such, they have been identified as an area of future hazard and thus likely to require an APZ. Recommendations for this area of constraint are to negotiate sighting the small area of required APZ (15m) within the Offset lands. Using conservation sensitive APZ management techniques.

2.1 Special Fire Protection Purposes Development

The above assessment is based on the requirements specified in PBP (NSW RFS 2006) for residential development. If development types considered Special Fire Protection Purposes (SFPP) are proposed on bushfire prone property (none shown in the current structure plan) then additional protection measures may be required. SFPP developments require greater emphasis to be placed on setbacks, emergency access/egress and bushfire emergency management procedures.

PBP classifies SFPP developments as those where the occupants may be more vulnerable to bushfire attack. Generally this includes:

- schools;
- child care centres;
- hospitals (including hospitals for the mentally ill or mentally disordered;
- hotels, motels or other tourist accommodation;
- housing (homes) for mentally incapacitated persons;
- housing for older people or people with disabilities within the meaning of State Environmental Planning Policy No 5 - Housing for Older People or People with a Disability (now State Environmental Planning Policy (Seniors Living));
- group homes within the meaning of State Environmental Planning Policy No 9 - Group Homes; and
- retirement villages.

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Figure 1. Structure plan

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Figure 2. APZ Assessment

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3. Planning for Bushfire Protection (2006) Assessment

The proposal will need to satisfy the aims and objectives of PBP and will need to incorporate these considerations along with an adequate combination of relevant bushfire protection measures (BPM). The aim and objectives of PBP (NSW RFS 2006) are as follows:

Aim of PBP

to use the NSW development assessment system to provide for the protection of human life (including fire fighters) and to minimise impacts on property from the threat of bush fire, while having due regard to development potential, on-site amenity and protection of the environment.

Objectives of PBP

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

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

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

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

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

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

The following bushfire protection measures of PBP (NSW RFS 2006) are required to be addressed in bushfire assessments:

Bushfire Protection Measures

1. Asset Protection Zones (APZs) and defendable space;
2. Construction standards and design;
3. Access/egress standards;
4. Water supply and utility supply;
5. Emergency management arrangements; and
6. Landscaping.

3.1 Asset Protection Zones (APZs)

APZs are areas located between bushfire hazards and development to provide a defensible space in which to undertake emergency operations and to provide a buffer from direct flame contact, radiant heat, smoke and embers.

The width of APZs is based on a combination of;

- Vegetation structure
- Slope
- Topographic position (i.e. if the asset is above, or below the hazard)
- Fire Danger Index (FDI) (the FDI for Campbelltown is 100)

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As the vegetation on the site will likely be a combination of remnant and reconstructed vegetation communities, vegetation of 'Woodland', 'Forested Wetland' and 'Freshwater Wetland' structure is considered. APZs meeting 'acceptable solution' requirements are identified in Figure 2.

Under PBP 2006, APZs only comprise Inner Protection Areas (IPA). If the minimum APZs identified below are implemented, the majority of buildings immediately adjacent to the APZ will require construction to Level 3 of AS3959-1999. If lower construction standards are desirable, APZ widths should be increased beyond those shown in figure 2.

3.2 Construction Standards

Construction of new dwellings (residential) must comply with Appendix 3 of PBP 2006 and *AS3959-2009 Construction of Building in Bushfire Prone Areas (SAI Global, 1999)*. Consideration of construction standards is not required at the rezoning stage as the proposal is assessed on the basis of the provision of minimum APZs.

3.3 Emergency Access/Egress

Broadly speaking, emergency access/egress relates to the provision of a perimeter road or perimeter trail with direct access to the internal road system. Adjacent to bushfire hazards, the internal road system should be kept simple to allow for rapid access/egress in the case of a bushfire emergency and provide a system that radiates away from the bushfire hazard.

Perimeter road/trail requirements are identified below and full specifications are included in Appendix 1;

(i) Location:
The perimeter road or fire trail often lies between (or within) the Asset Protection Zone and the boundary of the allotments. A perimeter road should be the preferred option where possible.

(ii) Purpose:

- provide fire fighters with easier access to structures, allowing more efficient use of fire fighting resources;
- provide a safe retreat for fire fighters; and
- provide a clear control line from which to conduct hazard reduction or back burning operations.

(iii) Specifications:

- The perimeter road should preferably provide 2 way access (carriageway 8 metres kerb to kerb).
- Comply with the design specifications relating to slope, capacity etc identified in PBP 2006 (reproduced in Appendix 1 of this report)
- If a perimeter fire trail is preferred to a perimeter road, the fire trail should:
    - be located within a perimeter reserve a minimum of 6m wide (4m wide trail & 1m wide cleared area each side of the trail), with the reserve

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maintained in accordance with the specifications for an Inner Protection Area;
- the trail should be constructed in accordance with the design criteria established in Planning for Bushfire Protection.
- the fire trail must be trafficable by fire fighting vehicles under all weather conditions;
- the fire trail should link into the street network (if applicable) at regular intervals via an access track constructed in accordance with the design criteria established in Planning for Bushfire Protection.
- the fire trail should be maintained and in a serviceable and accessible condition at all times by the owner of the land.

Should a narrower perimeter road be preferred, this may be possible subject to the provision of parking bays and placement of no stopping signs along narrower stretches, this would be considered an 'alternative solution' by the RFS.

3.4 Water Supply

It is recommended that water supply to the site is provided via a ring main system.

The ring main system must be of sufficient pressure and fire hydrants located to comply with *AS 2419.1-1994 Fire Hydrant Installations (SAI Global, 1994)*.

There may be potential for the use of reticulated recycled water to be used for fire fighting purposes, however further consultation with the RFS will be required if reticulated recycled water becomes available within the site. The RFS do not currently have a formal policy relating to the use of recycled water for fire fighting activities.

If water supply is non-reticulated then a dedicated static water supply reserve must be created and maintained. The quantity of water required is determined on the basis of lot size and density and is shown below.

Development Type	Water Requirements
Residential Lots (<1,000m^2)	5,000 l/lot
Rural-residential Lots (1,000m^2 - 10,000 m^2)	10,000 l/lot
Large Rural/Lifestyle Lots (>10,000m^2)	20,000 l/lot

3.5 Utility Services

This primarily relates to the provision of electricity and gas to the development. These should be located underground to avoid damage by bushfire. Where possible, permanent large lines and temporary 11kv lines should be placed underground. Where overhead electricity services are proposed the following guidelines should be adhered too:
- Short pole spacing (<30m);
- Vegetation clearance/setbacks in accordance to Vegetation Safety Clearances (Energy Australia 2002).

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3.6 Emergency Management Arrangements

Well thought out emergency management arrangements are an important part of any development. For residential developments the onus for emergency management planning generally falls on the landholder. Property fire plans, RFS Fire Wise programs and personal preparedness are the usual strategies implemented.

For SFPP developments (see section 2.1) a coordinated approach is generally required given that often users of these facilities may be more prone to impact from the risks from bushfire attack and may also place a greater load on emergency services personnel. Strategies for these types of development (in addition to increased APZs and improved access/egress systems) include bushfire emergency management plans, evacuation plans, consideration and procedures for using refuge areas, communication and training/routine establishment.

3.7 Landscaping and Site Management

Site management of bushfire prone properties particularly with regard to vegetation management and landscaping is an important element of bushfire protection. Broadly speaking, site management should ensure that all on site vegetation is managed in accordance with APZ specifications for the purposes of limiting the travel of a fire, reducing the likelihood of direct flame contact and removing additional hazards or ignition sources. The following outlines some general vegetation management principles for APZs:

- Tree canopy separation (by at least 2 metres where possible);
- Discontinuous shrub layer (clumps or islands of shrubs not rows);
- Vertical separation between vegetation stratums;
- Tree canopies not overhanging structures;
- Management and trimming of trees and other vegetation in the vicinity of power lines and tower lines in accordance with the specifications in "Vegetation Safety Clearances" issued by Energy Australia (NS179, April 2002);
- Maintain low ground covers:
    - Mowing / whipper snipper / slashing; and
    - Non combustible mulch e.g. stones and removing stores of combustible materials.

With regard to plantings the following is recommended:

- Plantings should be restricted to fire retardant/ less flammable species;
- Plantings should consist of native, local provenance stock; and
- Strategically locating landscape plantings can play a role in reducing attack from embers (i.e. as ember traps when in small clumps and short wind breaks).

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Fax - (02) 9542 5622

4. Management

4.1 Asset Protection Zones

The management regime of areas designated as APZs are detailed in the following table for those located in road reserves, allotments and neighbourhood parks.

Location	Management Regime
Road Reserve	Roadways are to be maintained as paved areas including adjacent footpaths and cycleways. Where they are adjacent to retained vegetation, street trees are to have a minimum 2 metre gap between the canopies when fully grown. Shrubs are not to be planted directly under trees, but may be planted in gaps between trees. Groundcover should be either mown grass, woodchip or plant species that do not grow more than 10cm in height or are subject to a management regime that keeps them under 10cm height. Where native tussock grasses are used these should be in clumps.
Allotments	APZs located within allotments are to be identified through a Section 88b instrument. Management is to comprise primarily of mown lawns and landscaped areas. No trees are permitted to overhang dwellings and shrubs must be located a minimum of 2 metres from dwellings. Landscape clumps should not be more than 10m² in size, a minimum separation distance of 2m should occur between clumps.
Neighbourhood Parks	Neighbourhood parks are to be managed in a manner consistent with an Outer Protection Area (OPA) where they are adjacent to residential areas. Where they are adjacent to schools or other Special Protection Developments they are to be managed as an Inner Protection Area (IPA). It is recognised than many of these areas are located in a manner that provides for retention of remnant trees, management emphasis has therefore been placed upon how the understorey is to be landscaped. Generally, no more than 30% of each neighbourhood park should be subject to landscaping, the remainder of the park is to be grassed and subject to regular mowing. It is recommended that native landscape areas are not placed on the boundary of lots, unless it is where they border a road.

4.2 Protected Vegetation

Vegetation that is retained or regenerating is to be managed for biodiversity protection, and as such APZs are not permitted within these areas. Fire is an important ecological process, and as such must be integrated with long term environmental management.

The main factors contributing to environmental management relate to;

- Fire frequency
- Fire seasonality
- Fire intensity

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It is important to ensure that fire regimes are varied spatially across the site, and temporally at any one point, the objectives being;

1. Ensuring a variety of interfire periods are present across the site
2. Ensuring that the season, intensity and frequency of burns are varied at any one area

This is referred to as mosaic management and is aimed at ensuring a diversity of life cycles are present across the site and that a homogenous fire regime is avoided that may benefit certain species at the expense of others.

4.2.1 *Fire Frequency*

Fire frequency is usually presented as interfire periods. The minimum interfire period is the minimum amount of time between fires that will enable sufficient recruitment and recharge of seed banks. Maximum interfire period refers to the maximum amount of time between fires before senescence may begin.

Short interfire periods encourage species that have short lifecycles (e.g. annuals and grasses) over species that take longer to reach reproductive stages (trees and many shrubs). Short interfire periods are therefore preferable where a predominantly grassy/herbaceous understorey is desirable.

Table 1 Minimum Interfire Periods

Source	Type	Minimum Fire Interval
Bushfire Environmental Assessment Code (RFS, 2006)	Grassy Woodland	5-8 years
	Forested Wetland	7-10 years
	Freshwater Wetland	7-10 years

4.2.2 Fire Seasonality

Fire seasonality needs to integrate with the lifecycles of native species, and preferably be counter to the requirements of exotic species. As such ecological burns are recommended between the periods of August and January to coincide with native plant life cycles (DEC 2005). However, due to bushfire danger periods it may not be practical to burn over the summer months, hence the window of opportunity narrows to August – November. Occasional autumn burns may also be implemented.

Burning may also be complemented with slashing of grasses, preferably immediately prior to flowering of exotic annual grasses.

4.2.3 Fire Intensity

Hotter burns are preferable as they may encourage native species over exotic species. However, this will be significantly limited by the amount of fuel available for burning and constraints on burning during the hotter months. More moderate burns are recommended for steeper slopes to reduce the potential for exposure of mineral earth and subsequent erosion.

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5. Emergency Response

An assessment of the RFS and NSW Fire Brigade stations surrounding the site was completed (see table below) in order to determine proximity to the subject site.

Type	Location	Distance*
NSW Fire Brigade	66-68 Broughton Street, **Campbelltown**	9.2km
NSW Fire Brigade	1 Thomas Rose Drive, **Rosemeadow**	9.2km
NSW Fire Brigade	129 Macarthur Rd, **Elderslie**	14.9km

*Approximate distance from the station location, via the current road network, to the closest point of the site.

The location of fire stations in relation to the study site is indicated in figure 3.

Consultation with the RFS and NSW Fire Brigade is required to confirm whether existing stations can adequately service the proposed development site (or otherwise) as well as the need for additional resources at these existing stations (and a section 94 – developer contributions plan).

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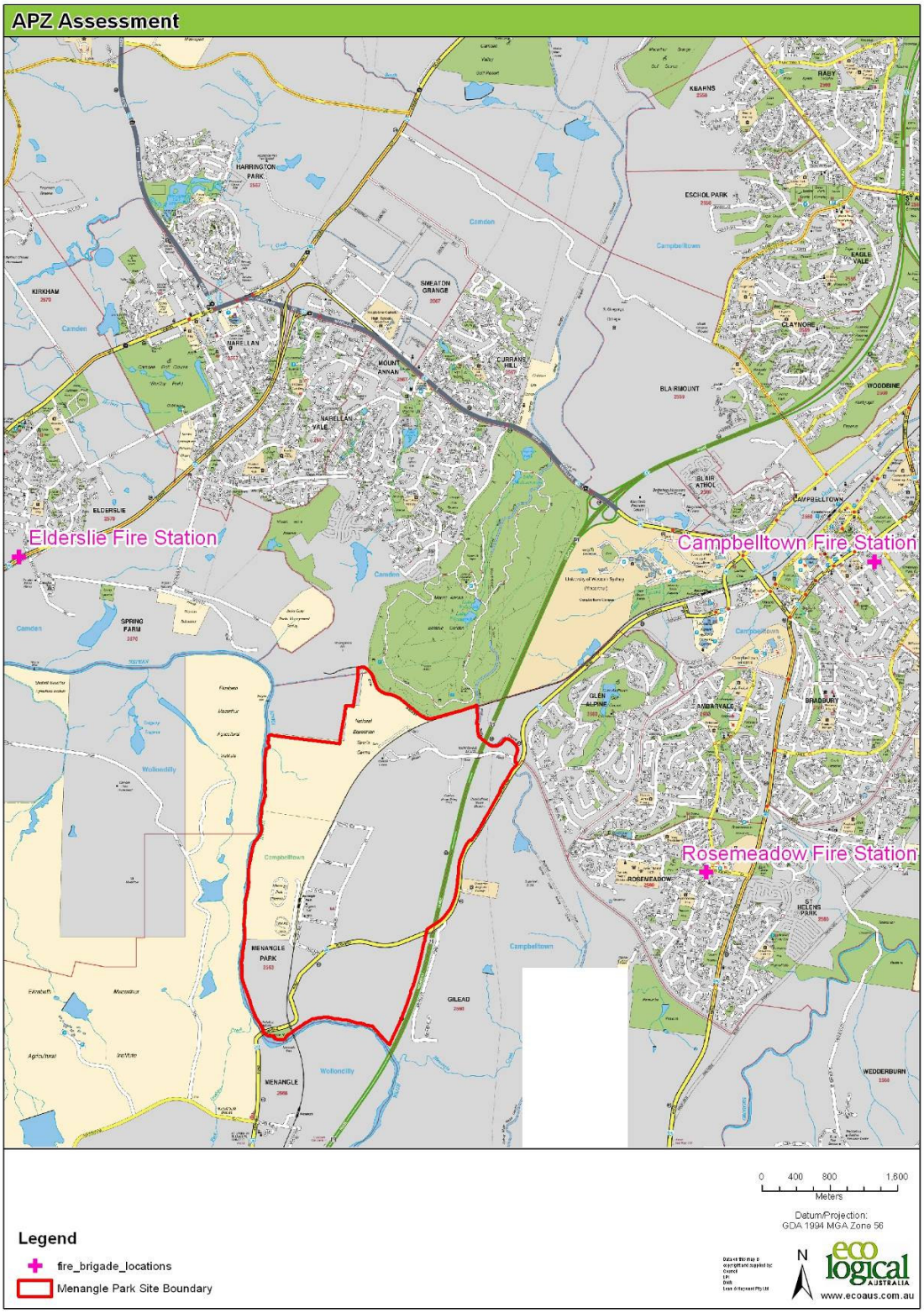

Figure 3. Emergency Resource Locations

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6. Planning Controls

The 2004 assessment addressed the general planning controls for the site and recommended that "*all the issues are addressed and incorporated into the urban design at master plan stage. This ensures that individual development applications made at later times can easily comply with all requirements. A "whole-of-development" approach to bushfire issues will also ensure better bushfire safety through provision of the access and services that individual lots cannot supply." (ELA 2004)*

This assessment therefore has focused on investigating and addressing bushfire and urban design issues specifically in light of the draft structure plan currently being developed for the site.

Based on the recommendations contained within PBP 2006 the following planning principles are recommended for rezoning to residential land;

1. Provision of a perimeter road with two way access which delineates the extent of the intended development;
2. Provision, at the interface, for the establishment of adequate asset protection zones for future housing;
3. Specifying minimum residential lot depths to accommodate asset protection zones for lots on perimeter roads;
4. Minimising the perimeter of the area of land, interfacing the hazard which may be developed;
5. Introduce controls which avoid placing inappropriate developments in hazardous areas; and
6. Introduce controls on the placement of combustible materials in asset protection zones.

PBP 2001 identifies a series of recommended clauses for inclusion in LEPs, these clauses are suitable for consideration for this study;

Objectives

• To prevent loss of life and property due to bushfires, by discouraging the establishment of incompatible uses in bushfire-prone areas

• To encourage sound management of bushfire-prone areas

When these principles apply

These principles will apply when a council is required to prepare an amending LEP that permits land which is bushfire-prone to be developed.

What a council should do if these principles apply

A council should not prepare the amending LEP unless it is justified by an environmental study. When preparing an environmental study, the council should consider *Planning for Bushfire Protection*.

If an amending LEP proposes to permit development of land which, has been found to be bushfire-prone, the plan should, as appropriate:

• provide an Asset Protection Zone (APZ) incorporating at a minimum:

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– an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development, and has a building line consistent with the incorporation of an APZ within the property
– an Outer Protection Area managed for hazard reduction, and located on the bushland side of the perimeter road

- contain provisions for two way access which links to the road or fire trail network
- minimise the perimeter of the area of land, interfacing the hazard, which may be developed
- introduce controls which avoid placing inappropriate developments in hazardous areas
- introduce controls on the placement of combustible materials within the Inner Protection Area

The NSW Rural Fire Service should be consulted in the preparation of the LEP which affects a bushfire-prone area.

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7. Development Staging

The staging of the development should be considered from a bushfire perspective such as to minimise the risks to the development during construction. Ideally, lots fronting the bushland interface would be developed first and APZs established upfront.

Notwithstanding the above, temporary APZs should be established around each stage of the development and identified in a section 88b instrument, which would then cease once the adjacent stage of the development is undertaken. APZ widths could be identified on a site basis, based on the APZ categories identified in Figure 2. Where bushland is located upslope from developments, an APZ of 10 metres should be applied.

As the bushfire hazard will change during various stages of development, due to the creation of new vegetation, removal of old vegetation and creation of new lots, 'Bushfire Prone Area' mapping (BPA mapping), the trigger for assessment under the EP&A Act and the RF Act will also change. It is recommended that Council review BPA mapping following development stages.

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8. Conclusions

The bushfire hazard has been assessed across the site and found to be low to moderate, based on the gentle slopes and low fuel accumulation of the bushfire prone vegetation present.

A number of strategies have been provided such that the risk from bushfire can be minimised and the approvals process can be streamlined. Further, it has been found that development is indeed possible as proposed in the structure plan from a bushfire planning perspective.

The main strategies suggested include:

1. Ensure adequate setback from bushfire prone vegetation (APZ provision – section 3.2);
2. Integrate non combustible infrastructure within APZs such as roads, easements and parking areas. As identified in Chapter 3 the majority of APZs will be able to be contained within perimeter roads and front yard setbacks;
3. Ensure adequate access and egress from the site and that road specifications are met according to Appendix 1;
4. Consider the adequacy of water supply and the delivery of other services (gas and electricity);
5. Provide temporary APZs during any staged development;
6. Consider the requirements of ongoing APZ maintenance (where relevant); &
7. Consult with the RFS and NSW Fire Brigade with regard to adequacy of existing resources for the proposed development.

Generally, in the context of the subject site, the aim and objectives of PBP can primarily be met through smart design and incorporation of appropriate setbacks into the plans. As such, much of the threat from bushfire can be minimised through the sighting of non-combustible infrastructure such as roads, carparks and easements within (or having them form) the required APZ area.

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Appendix 1 – PBP 2006 Perimeter Road Specifications

Performance Criteria	Acceptable solutions
The intent may be achieved where:	
• firefighters are provided with safe all weather access to structures (thus allowing more efficient use of firefighting resources)	• public roads are two-wheel drive, all weather roads.
• public road widths and design that allow safe access for firefighters while residents are evacuating an area	• 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). • the perimeter road is linked to the internal road system at an interval of no greater than 500 metres in urban areas. • traffic management devices are constructed to facilitate access by emergency services vehicles. • public roads have a cross fall not exceeding 3 degrees. • all 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. • 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. • the minimum distance between inner and outer curves is six metres. • 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. • there is a minimum vertical clearance to a height of four metres above the road at all times.
• the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles.	• 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 indicate load rating.
• roads that are clearly sign- posted (with easily distinguishable names) and buildings/properties that are clearly numbered.	• public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression. • 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.

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Performance Criteria	Acceptable solutions
• there is clear access to reticulated water supply	• public roads up to 6.5 metres wide provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression. • one way only public access roads are no less than 3.5 metres wide and provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression.
• parking does not obstruct the minimum paved width	• parking bays are a minimum of 2.6 metres wide from kerb edge to road pavement. No services or hydrants are located within the parking bays. • public roads directly interfacing the bush fire hazard vegetation provide roll top kerbing to the hazard side of the road.

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