that should be kept free of vegetation and other combustible vegetation that is likely to catch alight from flames, heat or a spark. The inner protection zone may contain a few shrubs and trees as long as they do not form a continuous canopy, overhang the building or are located far enough away from the building so as not to ignite the building by way of direct flame contact or radiant heat emission.

The Asset Protection zone is calculated using the following equation, APZ = IPZ + OPZ

Note: For SFPP Development:

- Exits should be located away from the hazard side of the building.
- The APZ is located wholly within the boundaries of the development site. Exceptional circumstances may apply.
- APZ given by 'Minimum Specifications for Asset Protection Zones for Special Fire Protection Purposes in bush fire prone areas' are adhered to.

Performance Criteria- SFPP	Acceptable Solutions for this SFPP
• **Radiant heat levels of greater than 10 kW/m^2 will not be experienced by occupants or emergency services workers entering or exiting a building**	• APZ located wholly within the boundaries of the development • Exits are located away from the hazard side of the building
• **APZs are managed and maintained to prevent the spread of fire towards the building**	• Subject land to be maintained in accordance with the requirements of Standards for Asset Protection Zones (RFS 2005) • It is recommended that a Monitoring and Fuel Management program be created
• **Vegetation is managed to prevent flame contact and reduce radiant heat to buildings, minimize the potential for wind driven**	• Compliance with Appendix 5 PBP 2006

embers to cause ignition and reduce the effect of smoke on residents and fire-fighters

- **APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is negated**
- Slope in APZ is <18°

Reference pbp2006

It is recommended that the developed area should be managed to reduce the risk of fire attack and that future landscaping within this area, should aim to achieve

- A vegetative cover that has a low fuel load and is relatively inflammable.
- Maximum tree cover must not be allowed to cover more than 30%.
- Max shrub cover must not be allowed to cover more than 20%
- Avoid planting trees or shrubs that will touch the walls, overhang the building or be planted closer to the building than their full height.
- Incorporation of non flammable structures e.g., paths, within the area adjacent to the building.
- The regular removal of leaves and litter.
- The maintenance of grassed areas at less than 10cm.
- Avoidance of woodchips or other flammable material within this zone.

Specific building constructions

Although the Building Code of Australia AS 3959 does not apply to the Class 9b building, the building will have a high protection from fire as the walls are to be constructed of masonry, with a roof of steel construction.

D Water Supply

The proposed development must have access to an adequate supply of water with which to protect property and lives.

The study site has a reticulated town water supply.

Performance Criteria- SFPP	Acceptable Solutions for this SFPP
• **A water supply reserve dedicated to firefighting purposes is installed and maintained**	• The site is connected to reticulated water services. Fire hydrants and equipment are to be maintained in compliance with RFS guidelines
• **water supplies are easily accessible and located at regular intervals.**	• 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, once development has been completed. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles.

E. Electricity and Gas

Electricity and other services are sited below ground.

Performance Criteria- SFPP	Acceptable Solutions for this SFPP
• **Location of electricity services will not lead to ignition of surrounding bushland or the fabric of the buildings or risk to life from damaged electrical infrastructure** • **Location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings**	• It is recommended new power be underground if possible or is in keeping with the standards and requirements of the LGA and/or local Electricity supplier if above ground • Recommended bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities. Metal piping is to be used • All fixed LPG tanks are kept clear of all flammable materials and located on the non hazard side of the development • If gas cylinders need to be kept close to the building, the release valves must be directed

	away from the building and away from any combustible material, so that they do not act as catalysts to combustion

F. Public and Property Access Roads

The subject site is bounded to the south and west by, a tarred two way carriageway.

Performance Criteria- SFPP	Acceptable Solutions for this SFPP
• **Internal road widths and design enable safe access for emergency services and allow crews to work with equipment about the vehicle**	• Internal roads are two-wheel, sealed all weather roads • A minimum clearance of 4m to any overhanging obstruction including tree branches • Curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress • The minimum distance between inner and outer roads is 6m • Roads are clearly signposted • The internal road surfaces have the capacity to carry fully-loaded firefighting vehicles (15 tonnes)

G. Special Considerations. There are no known aboriginal relics or sites or threatened species on the study site.

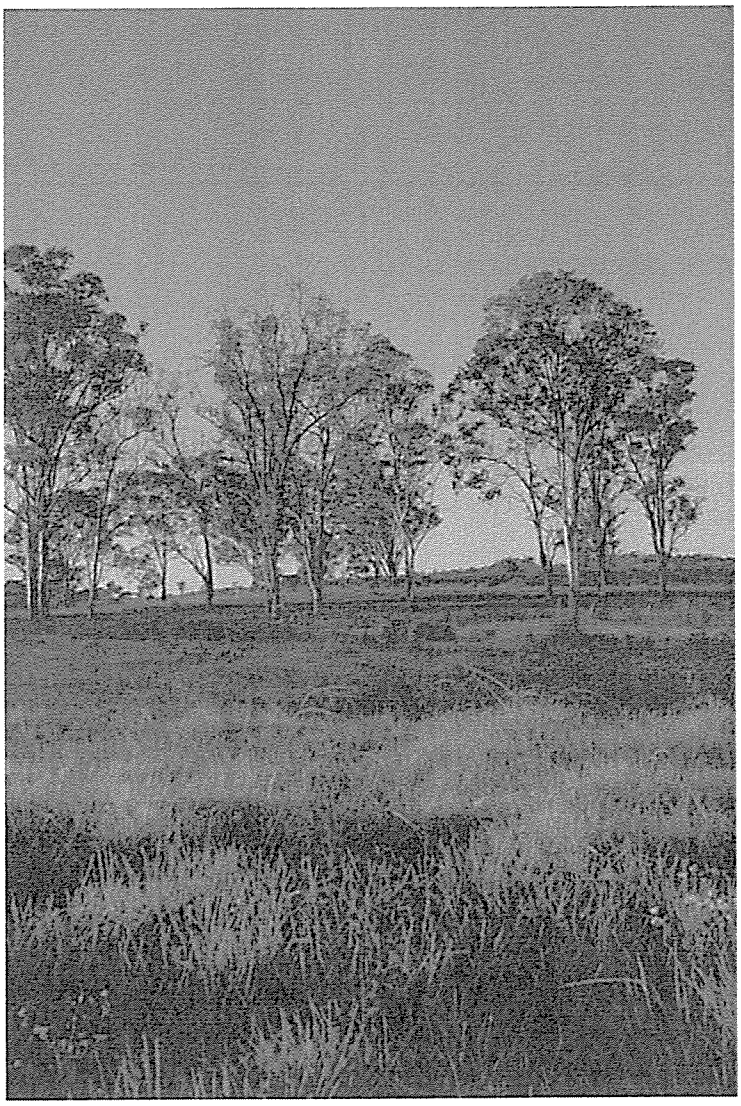
H. Emergency and Evacuation Planning

Performance Criteria- SFPP	Acceptable Solutions for this SFPP
• **An emergency and Evacuation Management Plan is approved by the**	• Recommend an emergency/evacuation plan be prepared consistent with the

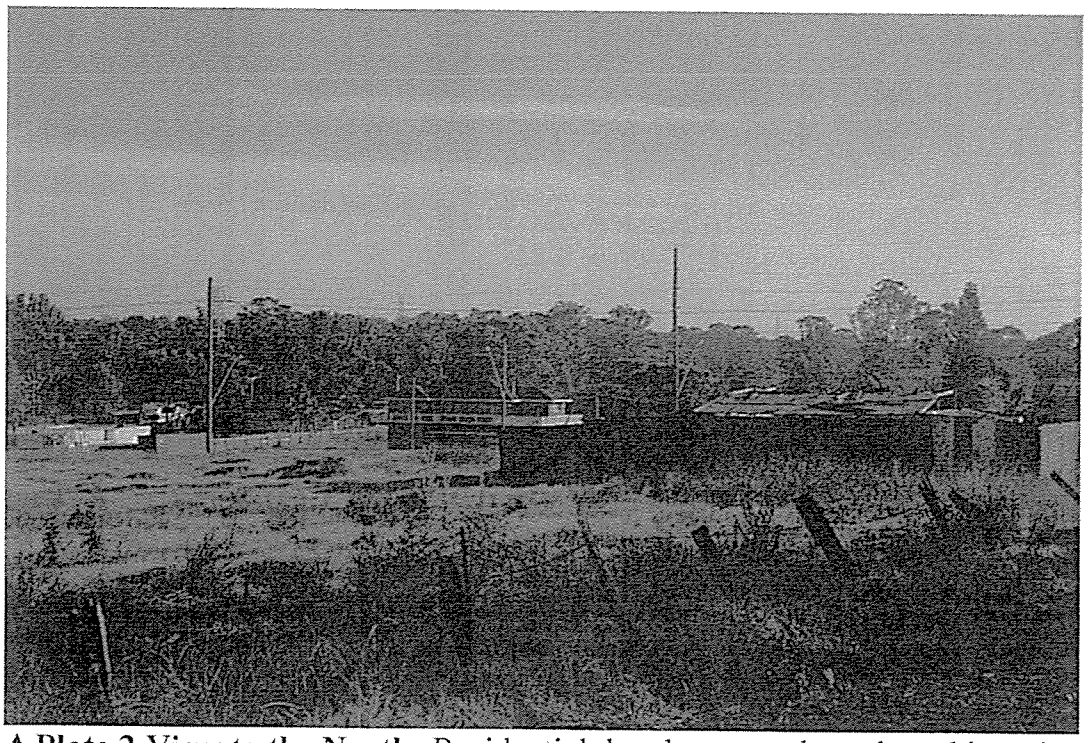
relevant fire authority for the area	RFS Guidelines for the Preparation of Emergency/Evacuation Plan • Compliance with AS 3745-2002 'Emergency control organization and procedure for buildings, structures and workplaces' • Detailed plans of all emergency assembly Areas including 'onsite' and 'offsite' arrangements as stated in AS 3745-2992 are clearly displayed, and an annual trial emergency evacuation is conducted
• **Suitable Management Arrangement are established for consultation and implementation of the emergency and evacuation plan**	• An Emergency Planning Committee is established to consult with residents and staff in developing and implementing an Emergency Procedures Manual • Detailed plans of all Emergency Assembly Areas including 'onsite' and 'offsite; arrangements as stated in AS3745-2992 are clearly displayed , and an annual (as a minimum) trial emergency evacuation is conducted.

I. Photographs

Photographs below provide views of the vegetation and features on the site.



▲ **Plate 1 View to the East:** Managed land surrounds the site to the east



▲ **Plate 2 View to the North:** Residential development abuts the subject site to the north.

▲ **Plate 3 View to the West:** Managed Land consistent with Residential development adjoins the site to the west with bushland to the south west

▲**Plate 4 View to the South:** Managed Land occurs to the south

J. Deemed to Satisfy Provisions Compliance Check (PBP 2006)

Intent of Measures	Performance Criteria- Intent may be achieved where:	Acceptable Solutions	Compliance Issues
Asset Protection Zones			
to provide sufficient space and maintain reduced fuel loads, so as to ensure radiant heat levels at buildings are below critical limits and to prevent direct flame contact with a building	*Radiant heat levels at any point on a proposed building will not exceed 29KW/m²	*an APZ is provided in accordance with the relevant tables / figures in Appendix 2 of this document *the APZ is wholly within the boundaries of the development site. Exceptional circumstances may apply (see section 3.3)	APZ on the hazard side of vegetation is able to be met within the boundary of the property. A defendable space on managed land is able to be met

	*APZ are managed and maintained to prevent the spread of a fire towards the building	*in accordance with the requirements of Standards for Asset Protection Zones (RFS 2005) Note:A Monitoring and Fuel Management Program may be required as a condition of development consent.	Existing development and managed land is located between the fire hazard and proposed development.
	*APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is negated	*the APZ is located on lands with a slope less than 18°	Managed land between the hazard and the development is located on land with a slope < 18°.

Intent of Measures	**Performance Criteria- Intent may be achieved where:**	**Acceptable Solutions**	**Compliance Issues**
Public Roads			
To provide safe operational structures and water supply for emergency service, while residents are seeking to evacuate from an area.	*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 access is bitumen sealed in the vicinity of the site
	*Public road widths and design that allow safe access for firefighters while residents are evacuating the area.	*Urban perimeter roads are two-way, ie at least two traffic lane widths (carriageway 8m 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 500m in urban areas. *Traffic management devices are constructed to facilitate access by emergency service vehicles.	Road construction meets performance criteria.

		*Public roads have a cross fall not exceeding 3° *All roads are through roads. Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200m in length, incorporate a minimum 12 m outer radius turning circle, and are clearly sign posted as dead end and direct traffic away from the hazard. *Curves of roads (other than perimeter roads) are a minimum inner radius of six m and minimum in number, to allow for rapid access and egress. * The maximum grades for sealed roads do not exceed 15° and an average grade of not more than 10° or other gradient specified by road design standards, whichever is the lesser gradient. *There is a minimum vertical clearance to a height of 4m 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 15tonnes for areas with reticulated water, 28tonnes or 9tonnes per axle for all other areas). Bridges clearly indicate loading.	There are no bridges within the road reserves or property.
	*Roads that are clearly signposted (with easily distinguishable names) and buildings/properties that are clearly numbered.	* Public roads greater than 6.5m wide to locate fire hydrants outside the parking reserves to ensure accessibility to reticulated water for fire suppression. *Public roads between 6.5m and 8m wide are No Parking on one side with the services	Access to hydrants is clear

		(hydrant) located on this side to ensure accessibility to reticulated water for fire suppression.	
	*There is clear access to reticulated water supply.	*Public roads up to 6.5m 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 3.5m wide and provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression.	The site is]serviced by reticulated water. Access to firefighting water is clear.
	*Parking does not obstruct the minimum paved width	*Parking bays are a minimum of 2.6m wide from kerb edge to road pavement. No services or hydrants are located within the parking bays.	No parking bays are provided or required in this development proposal.

Intent of Measures	**Performance Criteria- Intent may be achieved where:**	**Acceptable Solutions**	**Compliance Issues**
Services- Water, electricity, gas			
To provide adequate services of water for the protection of buildings during and after the passage of fire and to locate gas and electricity so as not to contribute to the risk of fire to a building	*Reticulated water supplies-* Water supplies are easily accessible and located at regular intervals	Reticulated water supply to urban subdivisions uses a 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.	The site supports a reticulated water supply. The site being 90m within a reticulated water supply does not require an additional water supply.

		*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.The provision of parking on public roads is met.	
	Electricity Services Location of the electricity service limits the ignition of surrounding bushland or the fabric of the buildings *Regular inspection of lines is undertaken to ensure they are not fouled by branches.	* Where practicable, electricity transmission lines are underground. *Where overhead electrical transmission lines are proposed -lines are installed with short pole spacing (30m) unless crossing gullies, gorges or riparian areas. -no part of a tree is closer to a power line than the distance set out in accordance with the specifications in "Vegetation Safety Clearance" issued by Energy Australia (NS179, April 2002)	Transmission lines to service the building is provided below ground.
	Gas Services * Location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	* Reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relative authorities. Metal piping is to be used. * All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side of the installation. * If gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2m away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal. * Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used.	There is sufficient separation space from the gas services to the bushfire hazard

Recommendations and Conclusion:

It is considered that any protection measured employed will only be effective if the property is managed in an appropriate way eg., regular maintenance and inspection prior to commencement of the fire season.

It is considered that the determination of category of bush fire attack on the proposed building has a BAL 12.5 and as a Class 9b building AS 3959 building construction standards are not applicable.

It is recommended that Planning for Bushfire Protection (RFS 2006) landscaping measures be followed. While such measures will not guarantee that a building will not burn, they will increase the probability that it will survive a fire attack and that the safety to residents and fire fighters will experience a lower level of risk.

The proposed development accords with legislative guidelines as outlined in PBP2006 and addendum to Appendix 3.

Appendix 1 References

Australian Standards 3959. 1999 Construction of Buildings in Bushfire Prone Areas, Standards Australia, Sydney.

Gill.A.M.et al 1981, Fire and the Australian Biota, Academy of Science, Canberra

NSW Rural Fire Service 2006, Planning for Bushfire Protection: a Guide for Councils, Planners, Fire Authorities, Developers and Home Owners, NSW Rural Fire Services, Sydney

Fairfield City Council Bushfire Maps