



Memorandum

27 June 2013

To	Stephanie Barker ae - design partnership		
Copy to	Paul Cubelic Dan Williams		
From	Dominic Adshead	Tel	02 9329 7185
Subject	Bushfire Risks and Mitigation Measures	Job no.	22/16709

This memo describes the bushfire risks and mitigation factors in relation to the proposed developments within the Eastern, Central and Western Precincts of Fernhill, Mulgoa Road, Mulgoa. The following provides a an overview of the project, existing environment, bushfire risk factors and bushfire mitigation measures in relation to these proposed developments.

1 Project Description

The project is comprised of three development precincts ('Eastern', 'Central' and 'Western' - see Figure 1) which are subject to development application under Clause 5.10 Heritage Conservation (10) Conservation incentives of *Penrith Local Environmental Plan 2010*. This clause allows the consent authority to grant consent to development for any purpose of a building that is a heritage item or of the land on which such a building is erected, or for any purpose on an Aboriginal place of heritage significance, even though development for that purpose would otherwise not be allowed by this Plan, if the consent authority is satisfied that:

- a) the conservation of the heritage item or Aboriginal place of heritage significance is facilitated by the granting of consent, and
- b) the proposed development is in accordance with a heritage management document that has been approved by the consent authority, and
- c) the consent to the proposed development would require that all necessary conservation work identified in the heritage management document is carried out, and
- d) the proposed development would not adversely affect the heritage significance of the heritage item, including its setting, or the heritage significance of the Aboriginal place of heritage significance, and
- e) the proposed development would not have any significant adverse effect on the amenity of the surrounding area.

The proposed heritage conservation is described in the Fernhill Working Heritage Masterplan

The three development precincts are described below.

Eastern Precinct

This precinct is a proposed 54 lot Torrens title residential subdivision accessed from two points on Mulgoa Road that incorporates the construction of road, fire trails and infrastructure services associated in accordance with relevant standards associated to service the allotments.

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The proposed residential lots range in size between 900m² to 27,600m² (averaging over 1,000sqm) and suitable for detached dwelling houses.

Western Precinct

This precinct is a proposed 38 lot Torrens title rural residential subdivision, with access from Nepean Gorge Drive and Fairlight Road. The proposal will incorporate construction of road, fire trail and infrastructure services associated in accordance with relevant standards associated to service the allotments.

The proposed lots range in size and shape between two and three hectares with on-site sewer disposal and storm water management.

Central Precinct;

Within the Central Precinct the following development is proposed:

- Use of land, existing structures and temporary structures for the use of Events, Functions (Function Centre land use under Penrith LEP 2010);
- Use of land, existing structures and temporary structures for the use an Equestrian Centre comprising adjstment, riding training and riding events (an equestrian Centre forms part of Recreation Centre (outdoor) under Penrith LEP 2010);
- Use of land and temporary structures for sporting activities (permanent use of land for this activity forms part of Recreation Centre (outdoor) under Penrith LEP 2010);
- Temporary use of land, existing structures for the purpose of outdoor entertainment;
- Use of land existing structures and temporary structures for the purpose of a camping ground ancillary to the above uses; and
- Use of land, existing structure and temporary structures for the purpose of a market ancillary to the above uses

Events within the Central precinct and broader property have been divided into the following size classes for analysis.

Table 1 Event class types

Event class	Persons	Frequency
small	regular ≤ 300	1 - 2 a week
medium	occasional ≤ 2500	1 - 2 month
medium	occasional 2500 ≤ 10,000 (conditioned)	1 - 2 month
large	10,000 +	≤ 6 per year

2 Existing Environment

The proposed development traverses a range of landscape types ranging from former grazing areas with native and exotic regeneration within the eastern and western precincts, relatively intact native vegetation, to active commercial agriculture, residential and horticultural areas within the central precinct. While bushfire is possible within most of these areas, it is the parts of property that adjoin forest, woodland and unmanaged grassland vegetation that are **most** susceptible to large, high intensity bushfires (that occur approximately once per decade).

3 Bushfire Risk Factors

Both the western and central precincts adjoin near-contiguous forest or woodland vegetation cover in which there is the potential for large, high intensity bushfires to develop and impact on the precincts. While vegetation cover adjoining the eastern precinct is less continuous than that adjoining the other precincts, it still may carry a surface fire and generate ember and spotting bushfire impacts. Under hot dry north-westerly to westerly wind, a fire developing from an ignition within the Blue Mountains National Park would spread in a south-east to easterly run across the Nepean River to impact upon, and potentially move through, the property. However fire behaviour will drop considerably in rate of spread and intensity once it enters each of the precincts where there is a lower overall fuel hazard, discontinuous crown cover and managed fuels (grazed or slashed).

Historically such forest fires are intense enough to kill or severely injure people and livestock, cause cars in the open to catch fire, set fire to vulnerable buildings, damage residential or commercial assets, impact on catchments including water supply, and result in the loss of heritage or environmental values. A high intensity fire can be fast moving, and there potentially may be little opportunity for fire authorities to issue an official warning prior to impacts occurring. As reflected in the categorisation of parts of the property as bushfire prone, parts of each precinct and persons on site may be at risk under such conditions unless appropriate mitigation actions are in place.

4 Bushfire Mitigation Measures

Construction of Eastern and Western Subdivisions

During construction potential ignition sources may include:

- Accidental ignitions (such as cigarettes or campfires);
- Hot works such as welding or angle grinders on days of elevated fire danger;
- Sparks generated from plant/ vehicle contact with rock or metal with grass and fine fuels within the precincts; and
- Ignition of woodchip and refuse heaps.

Risk to construction personnel and equipment may result from fires also developing in the surrounding landscape and impacting on the works through:

- Construction occurring on days of elevated fire danger;
- Work continuing when an official bushfire warning has been issued;

- Poor situational awareness (ie response to visible smoke or embers);
- Lack of or poorly executed pre-planned response procedures to bushfire warnings or escalating fire danger; or
- Inability to communicate bushfire warnings to field personnel (through radio, phone or access to media (ABC local radio).

Mitigation measures once established

In the event of a fire developing within the continuous vegetated areas adjoining or within the property under severe or higher fire danger there is the potential that external fire authorities and rural volunteers may not be available to assist in suppression operations, particularly if large landscape fires are impacting community residential areas elsewhere. Therefore measures to improve bushfire resilience and the safety of residents should be incorporated in the development of the western and eastern precincts through incorporating:

- The aims, objectives and requirements of *Planning for Bushfire Protection* (NSWRFS 2006) in the prudent design and layout of each subdivision; and
- The application of *AS3959:2009: Construction of Buildings in Bushfire Prone Areas* in the construction of residences within 100 metres of designated bushfire hazard

These measures will significantly improve the bushfire resilience of assets within each sub-division including mitigating the risks to life and property. The bushfire resilience measures incorporated into each subdivision will significantly exceed that of the surrounding legacy residential subdivisions. The development of each precinct according to these current mitigation standards will, once developed, afford adjoining existing properties a greater degree of protection from bushfires than existed prior to the development, where legacy developments previously adjoined bushfire hazard.

In the hosting and managing events the following mitigation measures can be applied to mitigate the risk to personnel, visitors and adjoining communities:

- Adherence to prudent design and layout precautions in managing and staging events;
- Implementation of appropriate and effective bushfire mitigation preparedness actions (such as routine fuel management (slashing, prescribed burning, grazing), vegetation management adjacent to structures, maintenance of access and egress trails, regular powerline maintenance)
- Advising persons on site of the potential fire risks and their responsibilities (both mitigation measures and response) and pre-planned actions;
- Pre-planned actions to take in response to escalation in forecast fire weather (such as Severe, Extreme or Catastrophic Fire Danger, and a Total Fire Ban); and
- Pre-planned response actions to a fire starting on or near the site or an official emergency fire warning being issued by fire authorities for the site (*Advice, Watch and Act, or Emergency Warning*)

The proposed mitigation measures for bushfire are summarised in Table 2.

Table 2 Proposed mitigation actions

Element	Mitigation action
Sub-division design and residential construction – Western and Eastern Precincts	<p>The subdivisions will be developed in accordance with the aims, objectives and requirements of Planning for Bushfire Protection (NSWRFS 2006) in the prudent design and layout of each subdivision.</p> <p>Mandatory construction standards, as per AS3959:2009: <i>Construction of Buildings in Bushfire Prone Areas</i>, will apply to residences within 100 metres of designated bushfire hazard.</p> <p><i>Formal bushfire assessment reports have been prepared for the Eastern and Western Precincts identifying mitigation requirements.</i></p>
Sub-division construction	<p>Appropriate vegetation clearance zones from transmission lines will be adopted.</p> <p>Consideration will be given to the establishment of temporary asset protection zones around temporary susceptible structures. Hot works permits will be required for all activities likely to generate sparks. Restrictions contained within these permits would be based on the forecast fire danger.</p> <p>Pre-planned fire response action plans will be prepared in accordance with the nationally endorsed 'Prepare, Act, Survive' format. The action plans will be issued as part of the site induction for all site personnel.</p> <p>Limitations on relevant construction procedures will be developed which would be applied during the fire season based on specific fire danger ratings. An example of such restrictions would include the halting of all construction works during extreme or catastrophic fire danger days.</p> <p><i>Detailed requirements will be identified in the Construction Environmental Management Plan for each subdivision, reflecting the requirements of the Bushfire Management Plan for the site</i></p>
Events planning and operation (all classes)	<p>During the bushfire season parts property will be managed to maintain a low overall fuel hazard in areas in which sensitive assets exist or persons assemble in large numbers, to reduce the intensity and rate of spread of potential bushfires. Measures to achieve this would include a combination of herbicide application (applied according to relevant product label standards), slashing/ trittrering, low intensity prescribed burning, grazing and hand removal.</p> <p>Transmission corridors are to be maintained in accordance with appropriate clearances and relevant standards. Routine checks of the corridor will be undertaken to ensure that minimum vegetation clearances to power lines are maintained. Regardless of any routine inspections and maintenance conducted, a pre-fire season inspection will be completed annually.</p> <p>Fire emergency access and egress tracks will be clearly identified and signposted and maintained in accordance with NSWRFS standards, prior to the commencement and for the duration of the fire season.</p> <p>Regular consultation with adjacent land owners and local bush fire will</p>

be undertaken to discuss regular prescribed burning of vegetation within the property to reduce fire spread and intensity.

Operational restrictions and actions will be developed which will apply during the fire season based on specific fire danger ratings, and corresponding to a particular event size (Table 1) and area. An example of such actions could be a person assigned to monitor site weather conditions and the media to maintain bushfire awareness, or the exclusion of visitors to heavily vegetated parts of the property during severe, extreme or catastrophic fire danger days.

Pre-planned actions, corresponding to the specific event size (Table 1), to undertake when a bushfire is detected on or near the property or when an official bushfire warning is issued by fire authorities for the site. Details of evacuation routes and the nearest neighbourhood safer place or a refuge of last resort to seek shelter should also be included.

Advising site staff, contractors and visitors of the specific bushfire risks they may be exposed to and how to mitigate these risks, in accordance with the Prepare Act Survive format. This information can be prepared in as a simple Prepare, Act, Survive preparedness guide, a sub-plan to the Bushfire Management Plan, and used as a site induction and information tool for persons new employed, contracted, or visiting the sites as part of events. These guides can be tailored by event size as necessary.

A Bushfire Management Plan will be prepared for the site identifying bushfire risks, mitigation works, bushfire awareness actions, and preparedness and response actions for the organisation and delivery of events. This plan will include simple Prepare Act Survive Plan subplan(s) based on event type.

Recommendations

It is recommended that a further analysis of bushfire risks is undertaken, including identifying specific mitigation and response actions for the range of event types planned for the site. This information could be incorporated into a bushfire management plan for the site, which includes simple Prepare Act Survive preparedness plans tailored for a range of site users.

For your information and please feel free to contact me if you have any questions.

Regards



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