Building Code & Bushfire Hazard Solutions

(Pty. Limited) ABN 19 057 337 774
PO Box 124, Berowra NSW 2081
Telephone: (02) 9457 6530 Facsimile: (02) 9457 6532
www.bushfirehazardsolutions.com.au

FPA AUSTRALIA
Certified Business
Bushfire Planning & Design
BPD-BA-02354

Waterbrook Bayview
C/- Planix Projects
PO Box R405
ROYAL EXCHANGE NSW 1225

27th June 2014
Our Ref. 140962B

Attention: Kitty Wai

Re: PROPOSED SENIORS RESIDENTIAL LIVING RESORT
BAYVIEW GOLF COURSE
BUSHFIRE SITE COMPATABILITY ASSESSMENT

Dear Kitty,

We thank you for engaging us to provide a statement on bushfire mitigation matters applicable for the above site and the draft proposals capacity to comply with these requirements.

The purpose of this comment is to outline the requirements for bushfire mitigation measures that would be applicable for the proposed development of new senior's living units within an area on the northern side of Cabbage Tree Road on the Bayview Golf Course site at Bayview (the subject site).

It is understood that the proposed works will include construction of several multiple occupancy unit style buildings, underground car parking and a new facilities building inclusive of a dining area and bar.

As the proposal relates to the construction of a seniors living apartments it will be assessed as Special Fire Protection Purpose (SFPP) development under section 100B of the Rural Fires Act – 1997.

Properties considered to be affected by possible bushfire impact are determined from the local Bushfire Prone Land Map as prepared by Council and / or the Rural Fire Service. All property development within affected areas is subject to the conditions detailed in the document '*Planning for Bush Fire Protection* 2006' (PBP).

Set back distances for the purpose of creating Asset Protection Zones (APZ) and building provisions under Australian Standard 3959 'Construction of buildings in bushfire-prone areas' 2009 must be applied to development within bushfire prone areas. The approving body for integrated development is the NSW Rural Fire Service, Glendenning Office.

Bushfire prone areas are defined as those areas;

- Containing or being within 100 metres of designated Category 1 Vegetation; or
- Containing or being within 30 metres of designated Category 2 Vegetation.

In this instance the subject site is depicted on Pittwater Council's Bushfire Prone Land Map as containing Category 1 Vegetation and the 100 metre buffer zone from designated Category 1 Vegetation. The application of *Planning for Bush Fire Protection* 2006 and Australian Standard 3959 – 2009 is therefore triggered. As the subject site is considered 'bushfire prone' referral to the NSW Rural Fire Service is triggered for the issuing of a Bushfire Safety Authority.

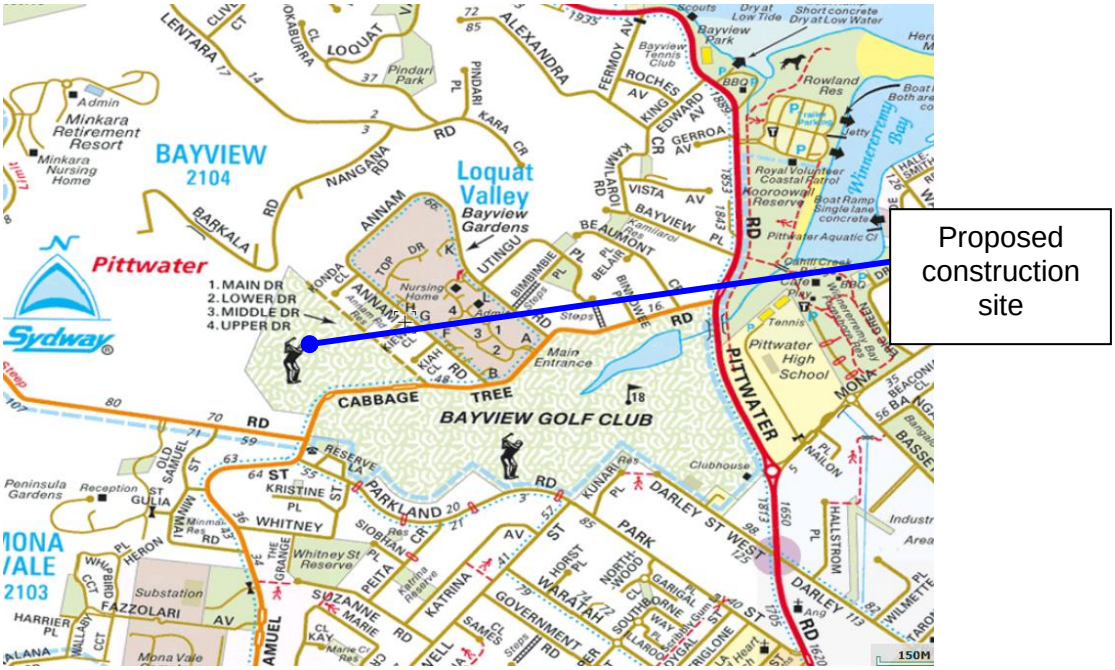


Image 01: Extract from street-directory.com.au

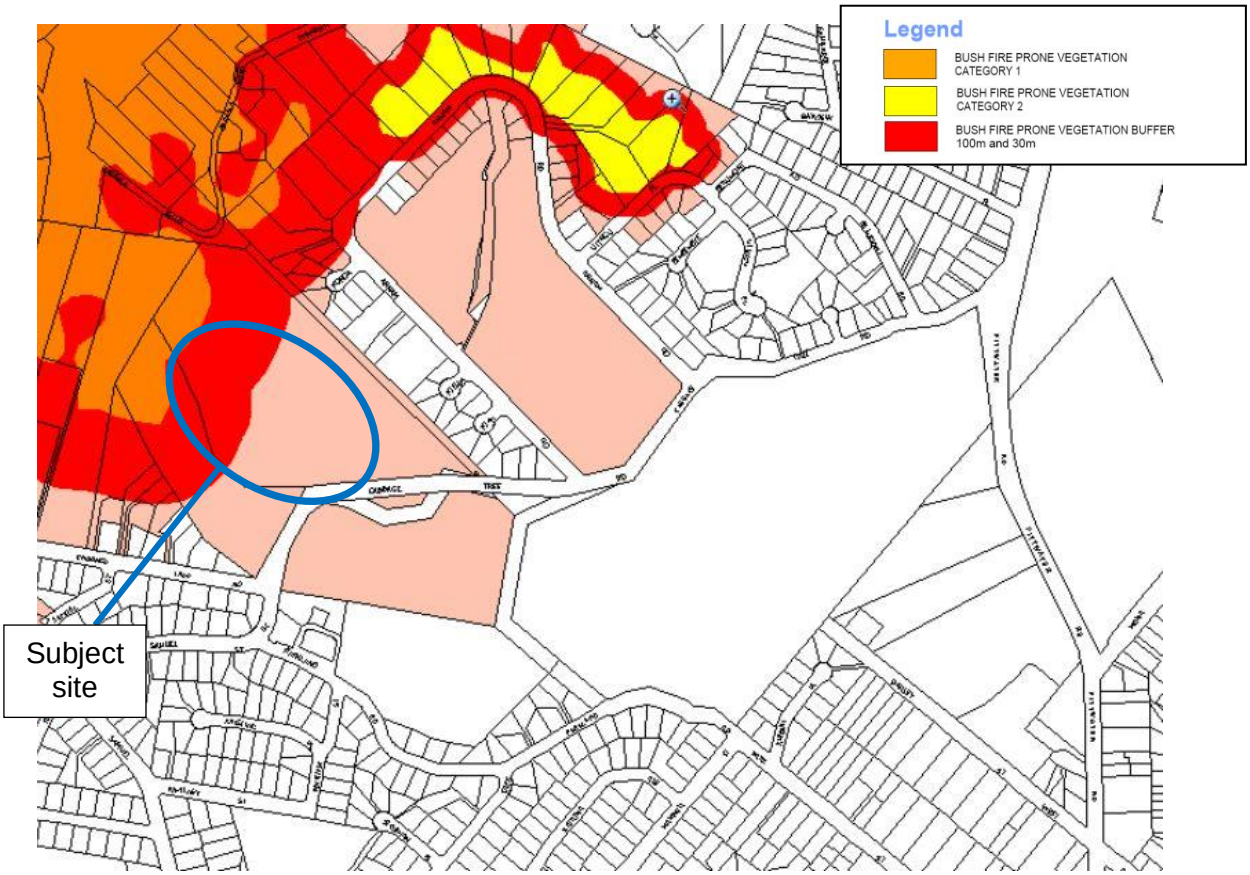


Image 02: Excerpt from Pittwater Council's Bushfire Prone Land Map

We provide the following assessment against Planning for Bush Fire Protection 2006 and Australian Standard 3959 'Construction of buildings in bushfire-prone areas' 2009 to highlight the relevant bushfire protection measures applicable to the future development.

Vegetation:

The vegetation posing a hazard to the proposed development was found to be located to the northwest within Bayview Golf Course grounds, further northwest associated with Barkala Estate and west within nearby private residential allotments. The area contains an existing watercourse.

The vegetation posing a hazard to the northwest was found to consist of trees 10-20 metres in height with a >70% canopy foliage cover and an understorey of low trees, shrubs ferns and vines, with a predominance of broad leaved species although ground cover was minimal. The area was generally covered with rainforest species with a slight edge effect of weeds and forest like structure. The area to the west of the creekline has a more easterly aspect and contained a slightly denser shrubby understorey.

In reviewing Sixview online vegetation mapping database it was found that the vegetation to the northwest is identified as being Coastal Warm Temperate Rainforest along the gully and either side of the water course and Central Coast Escarpment Moist Forest to the northwest on the upslope within the subject site and into Barkala Estate and Pittwater Spotted Gum Forest to the west on the upslope within the subject site and neighbouring private allotments.

Ecological assessment concludes that under a Keith classification the area is best described as a Forest. For the purpose of assessment against Planning for Bush Fire Protection 2006 and Australian Standard 3959 'Construction of buildings in bushfire-prone areas' 2009 the vegetation posing a hazard to the northwest and west is determined to be a Forest structure.

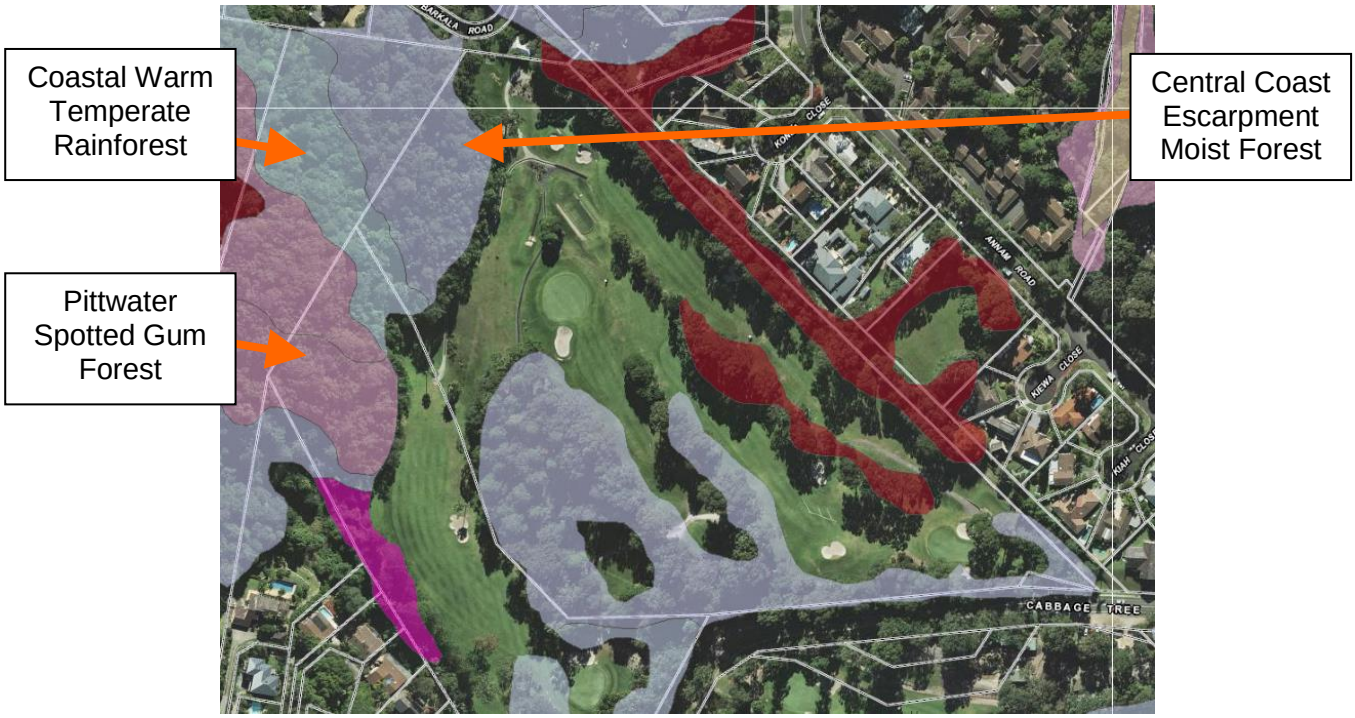


Image 03: Extract from Dept Lands SixMaps online mapping database 2014

The proposal will rely on management of the area to the west and northwest immediately adjacent the development as an Asset Protection Zone. This can include retention of the Endangered Ecological Community area identified by Footprint Green, however management is to ensure that the EEC area is maintained as a 20 metre wide strip of vegetation which is located greater than 20 metres from any future building.

An easement under s88B of the Conveyancing Act 1919 will be required on the surrounding land to ensure that either the Golf Course or Waterbrook are responsible for Asset Protection Zone management. The easement may not be necessary over future golf course fairways but will be required where management relies on the verges being maintained.

Slope:

The slope that would most significantly affect bushfire behaviour must be assessed for at least 100 metres from the proposed building footprints.

The most significant bushfire impact from within the hazard to the northwest and west is expected to be a bushfire burning downslope slope towards the subject site. The steep embankment upwards to the 7th Tee isn't impacting towards the site and will not be reported on further.

The slope that would **most significantly** influence bushfire impact will be reported to be:

- 0 - 5 degrees up slope within the hazard to the northwest
- >10 degrees up slope within the hazard to the west

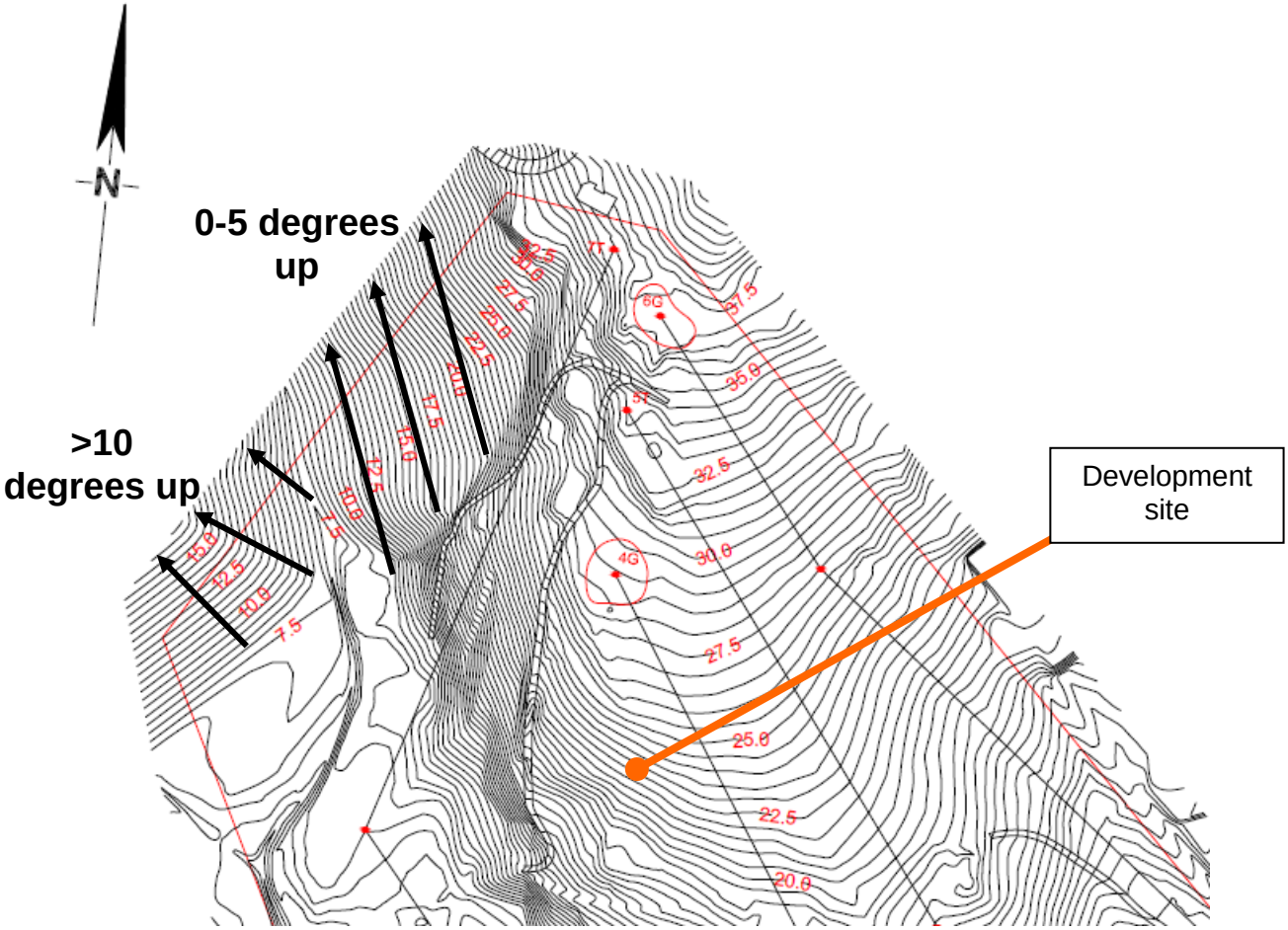


Image 04: Topographic image of the subject area

Asset Protection Zone:

Asset Protection Zones for new Special Fire Protection Purpose (SFPP) development are determined from Table A2.6 of PBP or bushfire design modelling achieving a radiant heat impact of no more than 10kW/m^2 at the closest point of the available building footprint.

The minimum required Asset Protection Zones (APZs) for the proposal were determined to be 60 metres to the northwest and 60 metres to the west.

The location of the subject site is such that the minimum required APZs will be achieved completely within the subject site including the 7th Fairway to the northwest. The proposed footprints shown on the plans within the "indicative development area" can be supported. If necessary there is opportunity to extend the other components of the development (non habitable buildings such as offices, administration and detached class 10 structures) within these minimum required APZs.

Image 05: Indicative APZ overlay

Grounds Management Plan:

An easement and a fuel management plan for the Asset Protection Zones could be required as part of any future Development Consent conditions. This plan will be required to address

- Contact person / department and details
- Schedule and description of works for establishing and continued maintenance of the Asset Protection Zones
- Management strategies and description of works for landscaped areas within the site

This detail can be accepted as a future consent condition however as part of the DA application the willingness of the Golf Course to accept and enter into an 88B agreement must be demonstrated

Water Supply:

The subject development will be connected to the existing reticulated water mains along Cabbage Tree Road. The water supply requirements under section 4.2.7 of Planning for Bush Fire Protection 2006 can be achieved in two ways, being:

- The installation of a fire hydrants system with the sizing, spacing and pressures complying with AS2419.1-2005
  or
- The provision of a 10,000 litre static water supply (e.g. tank) per occupied building.

It is understood that the proposal will require a hydrant system to meet BCA requirements and this should include hydrants located around the perimeter of the buildings complying with AS2419.1-2005.

Electricity:

The location of electricity services should not lead to ignition of surrounding bushland or the fabric of buildings or risk to life from damaged electrical infrastructure. Where practical electrical transmission supply lines should be underground, where overhead electrical transmission lines are proposed:

- lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and
- no part of a tree is closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002).

Gas:

The location of gas services should not lead to ignition of surrounding bush land or the fabric of buildings.

- reticulated or bottled gas is installed and maintained in accordance with AS 1596 - 2002 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.
- polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

Bushfire Evacuation Plan:

In recognition of the type of development an emergency/evacuation plan is recommended to be prepared to accompany the development application. This plan must be prepared consistent with the NSW Rural Fire Service document Guidelines for the Preparation of Emergency/Evacuation Plan which should include the following:

1) under what circumstances will the development be evacuated, if at all necessary;
2) where will occupants be evacuated to, possibly onsite into safer refuges (facility building);
3) roles and responsibilities of persons co-ordinating the evacuation;
4) roles and responsibilities of persons remaining with the development after evacuation; and
5) a procedure to contact the NSW Rural Fire Service District Office / Fire & Rescue NSW and inform them of the evacuation or fire activity

Access:

The subject site has street access directly from Cabbage Tree Road. Future access within the development site shall comply with section 4.2.7 of PBP 2006, in particular;

- Internal roads are two-wheel drive, sealed, all-weather roads;
- Internal roads are provided with at least two traffic lane widths (carriageway 6.5 metres minimum kerb to kerb) allowing traffic to pass in opposite directions;
- Dead end roads and driveways are not more than 100 metres in length from a through road.
- The layout should incorporate a minimum 12 metres outer radius turning circle to enable fir appliances the ability to turn onsite, in some circumstances T turning provisions may be accepted.
- Traffic management devices are constructed to facilitate access by emergency services vehicles.
- A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches, is provided.
- Curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress.
- The minimum distance between inner and outer curves is six metres.
- Maximum grades do not exceed 15 degrees and average grades are not more than 10 degrees.
- Crossfall of the pavement is not more than 10 degrees.
- The internal road surfaces and bridges have a capacity to carry fully-loaded firefighting vehicles (15 tonnes).

Pedestrian access to the perimeter of the development site shall be maintained at all times. Direct access to the hazard interface hazard interface will be maintained by the golf course and is achieved by providing emergency vehicle access into the fairways around this development. I do note that there is a steep portion of the 7th fairway where fire appliances cannot easily traverse however access above the slope (i.e. the 7th tee area) and below the slope (on the fairway) is only restricted to less than 110 metres separation, an area easily covered by two fire appliances and two lengths of hoses from each.

Construction:

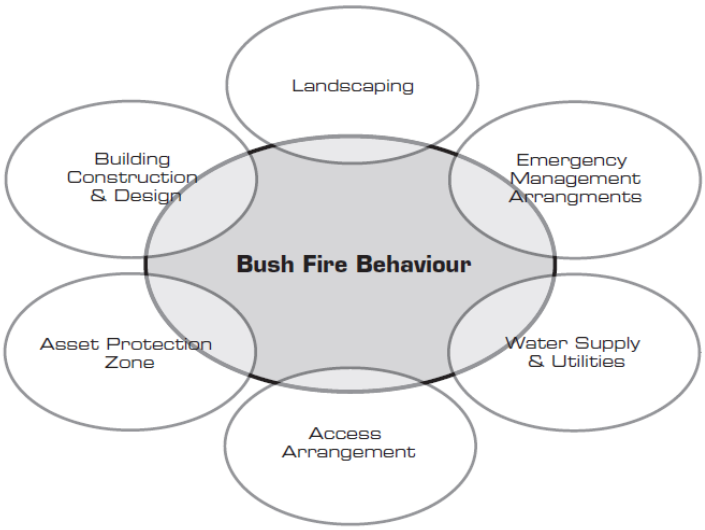
The minimum Asset Protection Zones ensure that the highest Bushfire Attack Level to the proposed works does not exceed BAL 12.5 construction under AS3959–2009. The type of construction that is commonly associated with this type of building will ensure the bushfire construction provisions have a relatively minor impact on the design and building costs.

The BAL 12.5 requirements only apply to development within or partly within 100 metres from the hazard interface. At this juncture this applies only to proposed buildings D and E.

A detailed construction specifications list is attached to this comment however the main matters to note are:

- Steel, bronze or aluminium mesh flyscreen with a maximum aperture of 2 mm over openable windows.
- Grade A safety glass requirement in windows and doors where the glass is less than 400 mm from the ground level or a near flat surface (18 degrees or less) such as decks, patios etc.
- Nominated hardwood timbers for cladding less than 400 mm from the ground level or a near flat surface (18 degrees or less) such as decks, patios etc.

- Sarking having a flammability index of less than 5
- Steel, bronze or aluminium mesh screens with a maximum aperture of 2 mm over all vents weepholes, roof ventilators and ducted air-conditioning intakes.
- 3 mm tolerance on any door seals
- Fire isolation between the main building and underground of car parks.



Conclusion:

The proposed development known as Waterbrook at Bayview Golf Course requires Asset Protection Zones (APZ) to provide a minimum separation from the vegetation to the northwest and west under *Planning for Bush Fire Protection* 2006.

The minimum required Asset Protection Zone (APZ) between seniors living development and the hazard interface are determined by slope and vegetation classification and in this instance were determined to be 60 metres to the northwest and 60 metres to the west. These APZs can be provided within the Golf Course and covered by an easement ensuring the maintenance of the APZs for the life of the development.

Recommendations on construction requirements (for units within 100 metres of the hazard interface), service supply (water, gas and electricity) and emergency management planning have been detailed herein and should be included in detailed plans for final construction certification and occupancy of the development.

Internal access shall comply with section 4.2.7 of PBP 2006. Direct access to the hazard interface hazard interface will be maintained by the golf course and is achieved by providing emergency vehicle access into the fairways around this development.

The proposed development as shown on the “Bayview golf course – Cabbage Tree Road Site Masterplan 25.06.2014” is compatible with the requirements of Planning for Bush Fire Protection 2006 and AS3959 – 2009 *Construction of buildings in bushfire prone areas*.

Comments provided are based on advice received from the NSW Rural Fire Service and the requirements of the *Environmental Planning and Assessment Act* 1979, the *Rural Fires Act* 1997, the *Rural Fires Regulations* 2013, the RFS document known as ‘*Planning for Bush Fire Protection* 2006’ for the purposes of bushfire hazard determination and Australian Standard 3959 ‘Construction of buildings in bushfire-prone areas’ 2009 as amended for building/structural provisions.

Should you have any further questions please do not hesitate in contacting myself.

Prepared by
Building Code & Bushfire Hazard Solutions

Wayne Tucker
G. D. Design in Bushfire Prone Areas.
Certificate IV Fire Technology
Fire Protection Association of Australia BPAD – A Certified Practitioner
Certification number – BPD – PA-09399
Ass Dip Applied Science

Reviewed by
Building Code & Bushfire Hazard Solutions P/L

Stuart McMonnies
G. D. Design in Bushfire Prone Areas.
Certificate IV Fire Technology
Fire Protection Association of Australia BPAD – A Certified Practitioner
Certification number – BPD – PA-09400

Disclaimer:

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Similarly the interpretations and opinions provided by Building Code and Bushfire Hazard Solutions in regard to bushfire protection are also given in the same good faith.