

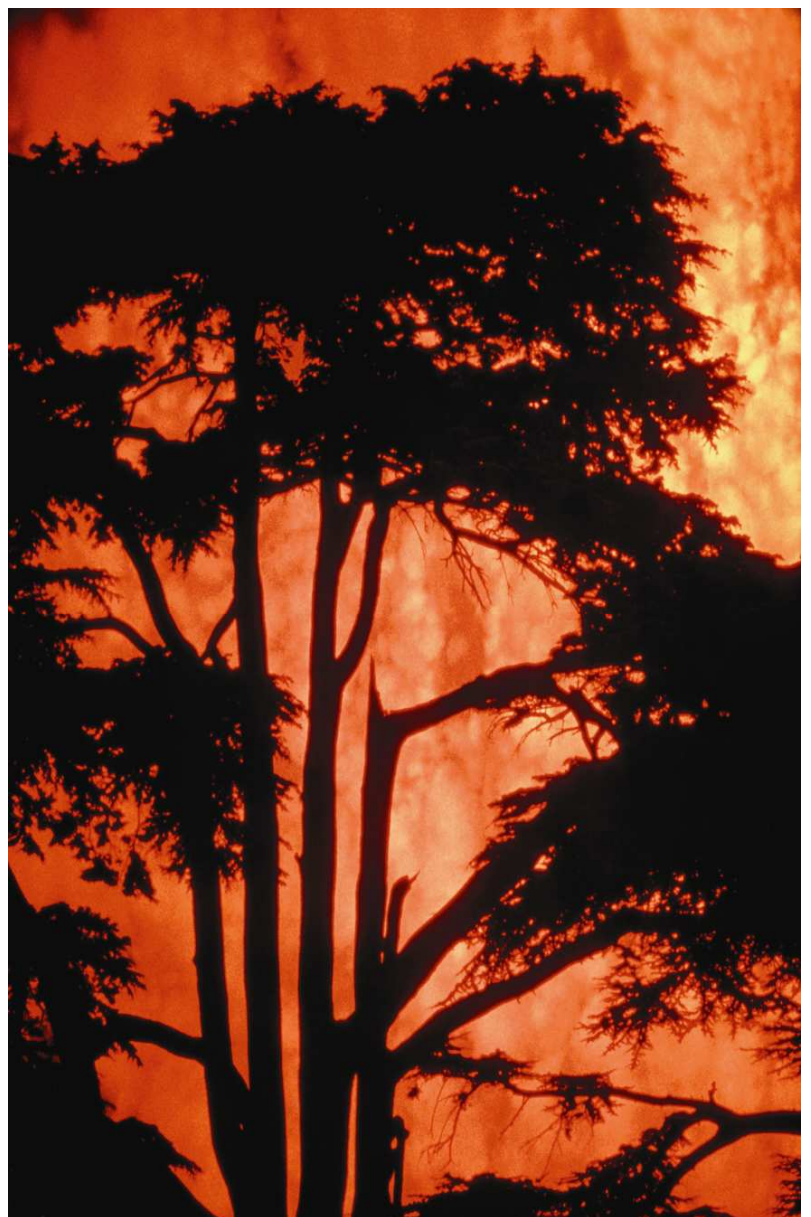


## Bushfire Protection Assessment

Life City Holistic Medical Centre, Warwick Street, Berkeley

Prepared for  
**Delbest Pty Ltd**

29 November 2012



## DOCUMENT TRACKING

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This document has been prepared by Eco Logical Australia Pty Ltd.

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# 1 Property and proposal

<b>Name:</b>	Delbest Pty Limited		
<b>Street or property name:</b>	Life City Holistic Medical Centre, Warwick Street		
<b>Suburb, town or locality:</b>	Berkeley	<b>Postcode:</b>	2506
<b>Lot/DP no:</b>	Lot 4 DP258635, Lot 2 DP534116, Lot 2 DP249814		
<b>Local Government Area:</b>	Wollongong City Council		
<b>Type of development:</b>	Integrated - Special Fire Protection Purpose		

## 1.1 INTRODUCTION AND PROPOSAL

Delbest Pty Limited, commissioned Eco Logical Australia Pty Ltd (ELA) to prepare a bushfire protection assessment (BPA) for the proposed 8-stage Life City Holistic Medical Centre, situated at the south western end of Warwick Street, Berkeley (hereafter referred to as the subject land).

The proposed staging for the development proposal will be as follows:

- Stage 1: Medical Centre, Day Surgery, Child Care Centre and Respite Care Centre
- Stage 2: Holistic Health Care Course
- Stage 3: Serviced Apartments
- Stage 4: Ancillary Accommodation and Research Library, Lecture Theatre and Auditorium Complex
- Stage 5: Hi-tech Holistic Cancer and Medical Hospital
- Stage 6: Self-care Seniors Housing
- Stage 7: Residential Care Facility and Hostel; and
- Stage 8: Healthcare Technical High School

The subject will primarily be accessed via the Warwick Street site entrance; however a secondary access has also been implemented as part of the proposal extending out to the east of the subject site. The details of the proposal can be appreciated from the Landscape Master Plan included as **Figure 3** (below).

## 1.2 DESCRIPTION OF SUBJECT LAND

The subject land is located within the northern portion of the suburb of Berkeley, and to the south-west of Warwick Street and to the south of the F6 Southern Freeway (**Figure 1**).

The site is further bound by existing residential properties to the south west, south, south-east, east and north-east and a high voltage electricity easement which wraps around the perimeter of the site from the south-west and south to the eastern corner of the site. The easement is situated between the proposed development area and neighbouring residential development. Wollongong CBD being approximately 6kms to the north-east.

Whilst the site is generally surrounded by extensive areas of existing residential development or infrastructure there are areas of notable vegetation both within the subject site itself – particularly in the south eastern and south western portions of the site.

An inspection of the development site and bushfire hazard occurred on the 13<sup>th</sup> September 2012 and this report was prepared by ELA Senior Bushfire Consultant, Daniel Copland. The report has been reviewed by ELA Principal Bushfire Consultant David Peterson (FPAA BPAD-A Certified Practitioner No. BPD-PA-18882). David is recognised by the NSW Rural Fire Service as a qualified bushfire consultant in bushfire risk assessment.



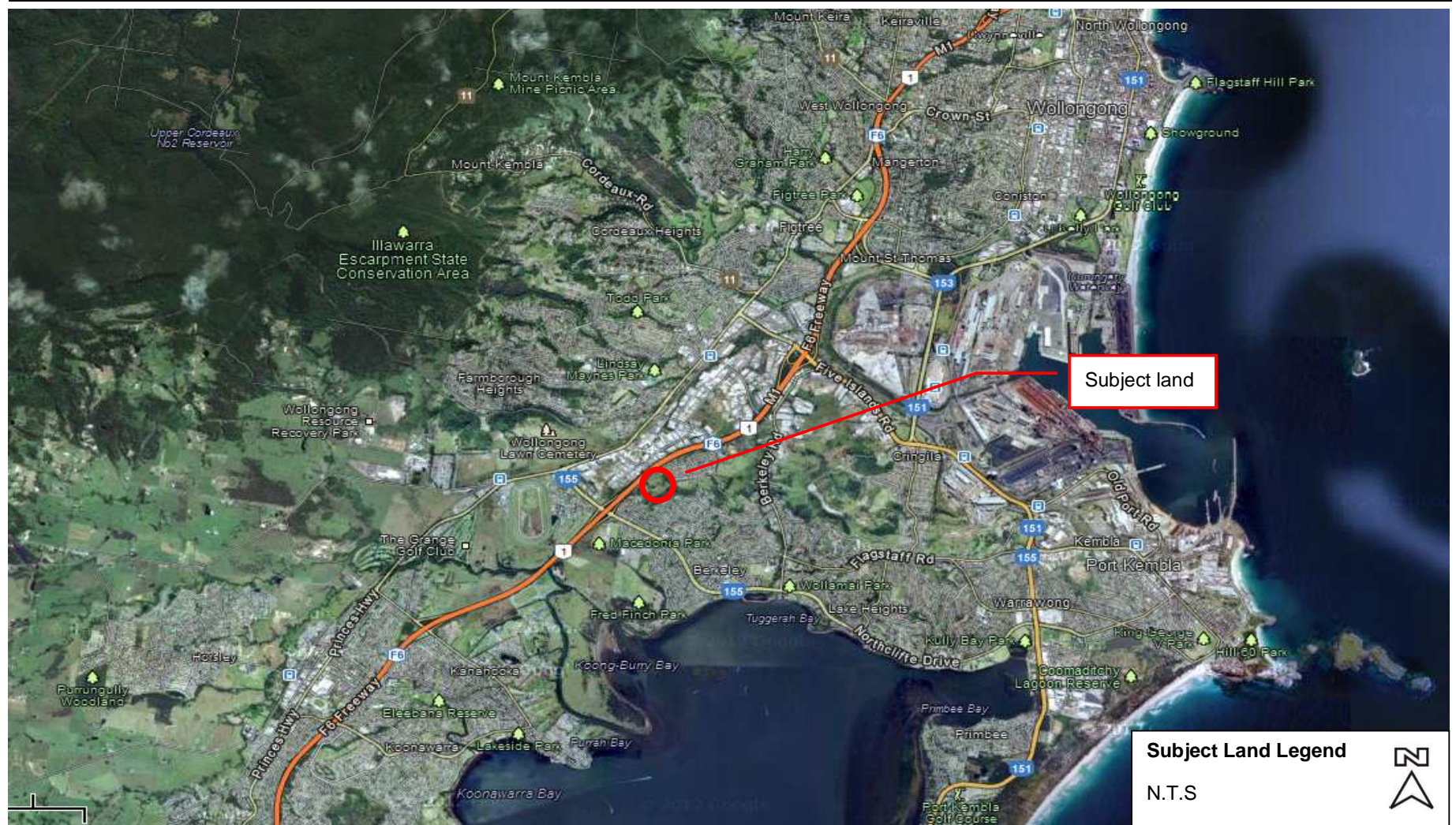


Figure 1: Location of subject land



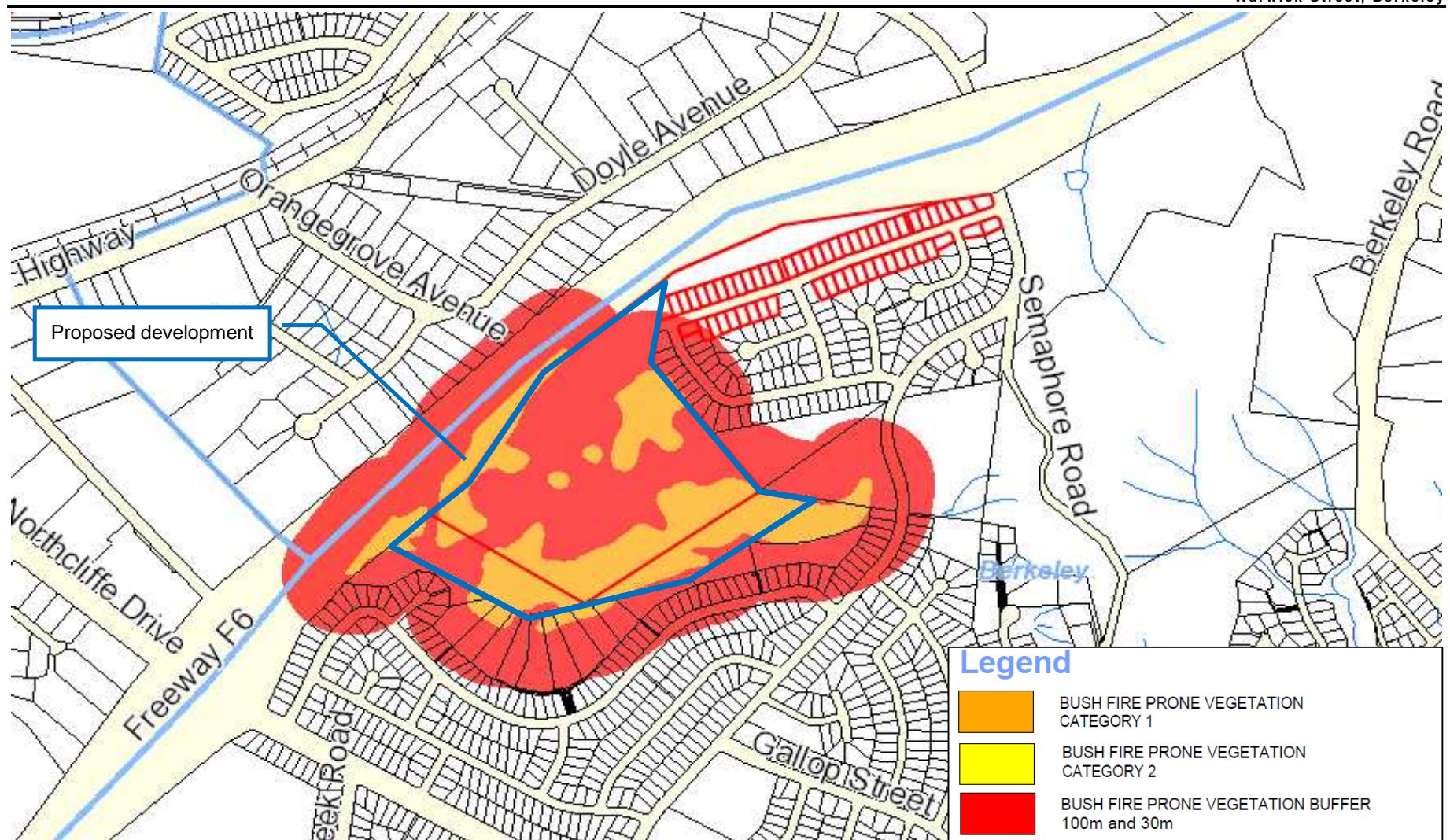


Figure 2: Wollongong City Council Bush Fire Prone Land Map





**Figure 3: Proposed Life City Holistic Medical Centre development concept**





Figure 4: Proposed development area with vegetation types and slope classification

## 2 Bushfire threat assessment

### 2.1 BUSHFIRE PROTECTION ASSESSMENT REQUIREMENTS

The subject land is identified as Bush Fire Prone Land by Wollongong City Council (Refer to **Figure 2**). The following assessment is 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.

The proposal constitutes Special Fire Protection Purpose (SFPP) development. SFPP developments are treated and assessed differently to other developments, and they require a higher standard of bushfire protection due to one or more of the following reasons:

- Occupants may not originate from the area and therefore may be less educated in relation to bushfire impacts
- They may have a reduced capacity to evaluate risk and respond adequately to the bushfire threat
- They may be more vulnerable to stress arising from bushfire threat; and
- They may present logistical difficulties for evacuation, due to reduced mobility, larger numbers of people, communication barriers and the requirement for increased supervision

The PBP specific objectives for SFPP development are to:

- *Provide for the special characteristics and needs of occupants. Unlike residential subdivisions, which can be built to withstand the fire event, enabling occupants and firefighters to provide property protection after the passage of fire, occupants of SFPP developments may not be able to assist in property protection. They are more likely to be adversely affected by smoke or heat while being evacuated*
- *Provide for safe emergency evacuation procedures. SFPP developments are highly dependent on suitable emergency evacuation arrangements, which require greater separation from bushfire threats. During emergencies, the risk to firefighters and other emergency services personnel can be high through prolonged exposure, where door-to-door warnings are being given and exposure to the bushfire is imminent*

### 2.2 VEGETATION TYPES AND SLOPES

The vegetation and slope have been assessed in all directions for the proposed Life City Holistic Medical Centre. In accord 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 having regard for vegetation found [on it]" determined for a distance of at least 100 m in all directions. The predominant vegetation and effective slope assessments are shown in **Table 1**.

The areas of significant hazard within proximity of the proposed development are a mixture of both Tall Heath (Scrub) vegetation and 'Low-hazard' being remnants of Tall Heath (Scrub) and Dry Rainforest vegetation.

The proposed development area is generally surrounded from the south west and south around to the south east and east of the site by a large area of a mixture of Tall Heath (Scrub) and Low Dry Rainforest. Significant portions of the vegetation are situated within the subject site and will subject to becoming managed and landscaped as part of the development proposal.

The primary area where vegetation will be retained – due to the ecological significance of the vegetation – is within the eastern-most portion of the site. In this location the Scrub-like vegetation runs up on a moderate slope (10-15 degrees downslope) from the residential areas below towards the development and is adjacent to proposed development Stages 1, 2 and 3.

The main other hazard influences upon the subject site are presented by remnant areas (<1 ha) of Tall Heath (Scrub) and Low Dry Rainforest that are scattered in various locations around the south western boundary (adjacent to the residential areas). These vegetated areas are very small in total area and in potential fire run and are generally situated on short but moderately steep slopes (10-15 degrees downslope).

The freeway road reserve that adjoins the western boundary contains grass and weeds and is not considered to be a significant hazard, and is treated as grassland for this assessment.

All other areas surrounding the subject site, including residential properties further to the north, south and east, have all been inspected and constitute managed lands.



### 3 Asset Protection Zones (APZ)

PBP has been used to determine the width of Asset Protection Zones (APZ) for the proposed Special Fire Protection Purpose (SFPP) development. **Table 1** below shows the APZ calculation, which is also depicted within **Figure 4**.

**Table 1: Threat assessment, APZ and bushfire attack level**

Direction	Slope <sup>1</sup>	Vegetation <sup>2</sup>	PBP required APZ <sup>3</sup>	Proposed APZ <sup>3</sup>	AS3959 BAL <sup>4</sup>
East (adjacent to Tall Heath / Scrub / Low Dry Rainforest vegetation)	Downslope >10-15 degrees	Tall Heath (Scrub)	60m	>60m (provided via managed land + building setback within property)	BAL-12.5* and additional ember proofing measures as outlined in PBP, 2010 Appendix 3 Addendum
South / South west (adjacent to remnant pockets of Tall Heath / Scrub / Low Dry Rainforest vegetation)	Downslope >10-15 degrees	Low-hazard  Tall Heath (Scrub) & Rainforest remnant pockets)	60m	>60m (provided via managed land + building setback within property)	BAL-12.5* and additional ember proofing measures as outlined in PBP, 2010 Appendix 3 Addendum
West / North west (adjacent freeway corridor)	Downslope >0-5 degrees	Not a significant hazard. Treated as grassland.	20m	>20m (provided via managed land + building setback within property)	BAL-12.5* and additional ember proofing measures as outlined in PBP, 2010 Appendix 3 Addendum
All other directions are considered to be managed lands and consist primarily of existing portions of the Life City Holistic Medical Facility or neighbouring managed lands.					

<sup>1</sup> Slope most significantly influencing the fire behaviour according to PBP.

<sup>2</sup> Predominant vegetation is identified according to PBP.

<sup>3</sup> Assessment according to PBP.

<sup>4</sup> Assessment according to AS 3959-2009.

## 4 APZ maintenance plan

The proposed APZs will require substantial vegetation clearance and tree removal within the subject site to support the proposed development. Fuel management within the APZ is to be as follows:

- No tree or tree canopy is to occur within 2 m of future dwelling rooflines
- The presence of a few shrubs or trees in the APZ is acceptable provided that they:
  - are well spread out and do not form a continuous canopy
  - are not species that retain dead material or deposit excessive quantities of ground fuel in a short period or in a danger period; and
  - are located far enough away from future buildings so that they will not ignite the buildings by direct flame contact or radiant heat emission
- Any landscaping or plantings should preferably be local endemic mesic species or other low flammability species
- 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); and
- Any structures storing combustible materials such as firewood (e.g. sheds) must be sealed to prevent entry of burning debris

## 5 Construction standard

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 SFPP development (Standards Australia 2009). In response to the predicted bushfire attack as indicated within **Table 1** above, portions of the proposed development will be required to be constructed to BAL-12.5 under Australian Standard AS 3959-2009 '*Construction of buildings in bushfire-prone areas*' (Standards Australia 2009).

In addition to the requirements of AS 3959-2009, NSW has a variation to the Standard (as outlined within the PBP Appendix 3 Addendum 2010) and requires some additional measures to be implemented when BAL-12.5 or BAL-19 are applied.

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

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

Subject land area and Vegetation and Slope	BAL-FZ Distance	BAL-40 Distance	BAL-29 Distance	BAL-19 Distance	BAL-12.5 Distance	BAL-LOW Distance
East (adjacent to Tall Heath / Scrub / Low Dry Rainforest vegetation) 10-15 degree downslope	<14 m	14-<19 m	19-<28 m	28-<39 m	39-<100 m*	>100 m*
South / South west Low-hazard (adjacent to remnant pockets of Tall Heath / Scrub / Low Dry Rainforest vegetation) 10-15 degree downslope	<17 m	17-<23 m	23-<33 m	33-<45 m	45-<100 m*	>100 m*
All other Directions Managed lands	BAL Low (separation distance exceeds 100 metres due to existing management or development)					

## 6 Water supply

Reticulated water and hydrants are available along the nearby residential access roads of Warwick Street, Hopman Crescent and Nolan Street, situated to the north east and east of the subject site. It is currently proposed to establish a reticulated network throughout the proposed Life City Holistic Medical Centre.

The reticulated water supply is to comply with the following acceptable solutions within Section 4.2.7 of PBP:

- Access points for reticulated water supply to SFPP developments incorporate a ring main system for all internal 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; and
- The [PBP] provisions for parking on public roads (as contained within section 4.1.3) are met. For road widths of 8 m this includes, but is not limited to, having no parking permitted on the side of the road where services (i.e. hydrants) are located

## 7 Gas and electrical supplies

In accordance with PBP, electricity lines are required to be installed underground.

Any gas services are to be installed and maintained in accordance with AS/NZS 1596:2008 (Standards Australia 2008). Metal piping shall be used.



## 8 Access

The subject will primarily be accessed via the Warwick Street site entrance; however a secondary access has also been implemented as part of the proposal extending out to the east of the subject site towards Nolan Street. The details of the proposal are shown in **Figure 3** of this report.

The proposed internal road network will consist of fully sealed access roads with sufficient widths for the access and egress of the site by occupants and fire fighters. The proposed internal access roads are to comply with standards contained within section 4.2.7 of PBP for the design and construction of roads within SFPP developments, as listed in **Table 3**.

**Table 3: Performance criteria for Internal Access Roads\*<sup>1</sup>**

Performance Criteria	Acceptable Solutions	Complies
<b>The intent may be achieved where:</b>		
<ul style="list-style-type: none"> <li>internal road widths and design enable safe access for emergency services and allow crews to work with equipment about the vehicle.</li> </ul>	<ul style="list-style-type: none"> <li>internal roads are two-wheel drive, sealed, all-weather roads;</li> </ul>	Complies
	<ul style="list-style-type: none"> <li>internal perimeter roads are provided with at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb) and shoulders on each side, allowing traffic to pass in opposite directions;</li> </ul>	Complies
	<ul style="list-style-type: none"> <li>roads are through roads. Dead end roads are not more than 100 metres in length from a through road, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end;</li> </ul>	Complies
	<ul style="list-style-type: none"> <li>traffic management devices are constructed to facilitate access by emergency services vehicles.</li> </ul>	Complies
	<ul style="list-style-type: none"> <li>a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches, is provided.</li> </ul>	Complies
	<ul style="list-style-type: none"> <li>curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress.</li> </ul>	Complies
	<ul style="list-style-type: none"> <li>the minimum distance between inner and outer curves is six metres.</li> </ul>	Complies
	<ul style="list-style-type: none"> <li>maximum grades do not exceed 15 degrees and average grades are not more than 10 degrees.</li> </ul>	Complies
	<ul style="list-style-type: none"> <li>crossfall of the pavement is not more than 10 degrees.</li> </ul>	Complies
	<ul style="list-style-type: none"> <li>roads do not traverse through a wetland or other land potentially subject to periodic inundation (other than flood or storm surge).</li> </ul>	Complies
	<ul style="list-style-type: none"> <li>roads are clearly sign-posted and bridges clearly indicate load ratings.</li> </ul>	Complies
	<ul style="list-style-type: none"> <li>the internal road surfaces and bridges have a capacity to</li> </ul>	Complies
	<ul style="list-style-type: none"> <li>carry fully-loaded firefighting vehicles (15 tonnes).</li> </ul>	Complies

\*<sup>1</sup> PBP page 35

## 9 Bushfire maintenance plans and fire emergency procedures

The APZs will be managed by either the development owners or management. In these instances, the role of the responsible party is to manage not only the APZs around the proposed retirement living buildings, but also the other landscaped areas throughout the facility.

Furthermore, the preparation of both bushfire emergency/evacuation procedures and vegetation maintenance plans is the responsibility of the abovementioned parties, and is recommended as part of this assessment. Where an emergency/evacuation management plan already exists for earlier stages of the development, it shall be updated to include the new areas within future stages as they are completed.

## 10 Assessment of environmental issues

At the time of assessment, there were no known significant environmental features, threatened species or Aboriginal relics identified under the *Threatened Species Conservation Act 1995* or the *National Parks Act 1974* that will affect or be affected by the bushfire protection proposals in this report.

The Wollongong City Council is the determining authority for this SFPP integrated development and they will assess more thoroughly any potential environmental and heritage issues.

# 11 Recommendations & conclusion

The proposed Asset Protection Zones (APZs) are consistent with the minimum requirements for Special Fire Protection Purpose (SFPP) development according to '*Planning for Bush Fire Protection*', however; the establishment of these APZs will require significant further works in order to achieve an appropriate standard of vegetation clearing and management. A portion of the proposed Life City Holistic Medical Centre buildings, situated within 100 m bushfire hazard areas, will require the implementation of BAL-12.5 construction standards in accordance with AS 3959-2009 with additional ember proofing requirements set by the NSW Rural Fire Service where noted.

## 11.1 RECOMMENDATIONS

The following recommendations have been made within this report to ensure the proposed SFPP development 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 to the proposed Special Fire Protection Purpose development as listed in **Table 1**;

Recommendation 2- Asset protection zone management is to comply with the NSW Rural Fire Service document '*Planning for Bush Fire Protection 2006*' inner protection area requirements as listed in Appendix 2 Section A2.2 of PBP and guided by the fuel management principles listed in Section 4 of this report;

Recommendation 3- Future landscaping across the development is to comply with the principles listed in Appendix 5 of PBP;

Recommendation 4- Construction standards of future proposed buildings shall comply with the requirements as listed within **Table 2**, in accordance with AS3959-2009 – '*Construction of Buildings in Bushfire prone areas*';

Recommendation 5- A reticulated hydrant water supply should be installed throughout the proposed development in accordance with Australian Standard AS 2419.1;

Recommendation 6- Internal access roads are to comply with the NSW Rural Fire Service document '*Planning for Bush Fire Protection 2006*' as listed in Section 8 of this report;

Recommendation 7- Electrical services should be installed underground;

Recommendation 8 Gas services are to be installed and maintained in accordance with AS/NZS 1596:2008 (Standards Australia 2008);

Recommendation 9- Adequate bushfire evacuation / emergency procedures and vegetation management plans should be prepared by the parties responsible for the ongoing management and maintenance of the proposed development. These plans should be prepared prior to the occupation on the Life City Holistic Medical Centre buildings.

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, a standard that is consistent with 'Planning for Bush Fire Protection' (RFS 2006) and appropriate for the issue of a Bush Fire Safety Authority.



Daniel Copland

**Senior Bushfire Consultant**



*Eco Logical Australia (ELA) is recognised by the NSW Rural Fire Service and the NSW Department of Planning as a suitably qualified consultant as the company is listed as a Certified Business (BPD-BA-18882) under the Fire Protection Association of Australia's BPAD program.*



## 12 References

NSW Rural Fire Service (RFS). 2006. *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners*. Australian Government Publishing Service, Canberra.

Standards Australia. 2005. *Fire hydrant installations - System design, installation and commissioning*, AS2419.1, Fourth edition 2005, Standards Australia International Ltd, Sydney.

Standards Australia. 2008. *The storage and handling of LP Gas*, AS/NZS 1596-2008, Fourth edition 2005, Standards Australia International Ltd, Sydney.

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

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