



Natural Area  
CONSULTING MANAGEMENT SERVICES

## Peet Alkimos Pty Ltd

# BAL-Assessment Report – Shorehaven Stage 5, Alkimos

11 October 2017

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<b>Document Title</b>	2017 09 26 NAC PEET REPT - Alkimos Central Stage 5 BAL Assessment Report.docx				
<b>Location</b>	\\10.0.0.210\DropBox\Drop Box\Client Folders - NAC\Peet Ltd\Shorehaven\Shorehaven - Stage 5 Update BMP\Report\				
<b>Version No.</b>	<b>Date</b>	<b>Changes</b>	<b>Prepared by</b>	<b>Approved by</b>	<b>Status</b>
D1	11 October 2017	New document	SB	LS	Draft for client comment

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## 1.0 Introduction

Natural Area Consulting Management Services prepared a fire management plan (FMP) in 2015 for the Stage 5 of the Shorehaven site being developed by Peet Alkimos Pty Ltd to support the structure planning process. The FMP broadly indicated urban areas within proximity to vegetation where Lots would require a BAL-rating. This document updates the information contained in the original FMP, taking into consideration current site characteristics. It applies to unsold Lots only and should be read in conjunction with the original fire management plan (Natural Area Consulting Management Services, 2015).

This report details the following:

- site details and location
- vegetation classification
- site slope
- separation distance between proposed Lots and classified vegetation
- access/egress from the site
- fire danger index
- potential bushfire impacts
- Bushfire Attack Levels (BAL) for each Lot
- application of shielding provisions.



**Figure 1: Location,  
 Stage 5 Shorehaven, Alkimos**



Client: Peet Alkimos Ltd  
 Project: Stage 5 BAL-assessment  
 Image Source: NearMap August 2017  
 Prepared by: Sue Brand  
 Datum: GDA 94, Zone 50





## 2.0 Location

Shorehaven Central Stage 5 is a portion of the broader Lot 9006 development in Alkimos. The site is located approximately 43 km north of the Perth Central Business District and covers 11 ha. Maroon Road and a railway reserve bound the Shorehaven Stage 5 site to the west, and private property to the north, east and south; Stage 5 is bounded by the railway reserve to the west, Stage 7 to north, Stage 6 to the south and Stage 8 to the east (Figure 1). The site is partially vegetated, with offsite vegetation present on private property to the north, east and south. Since preparation of the original FMP, some Lots have been developed.

### 2.1 Contours and Slope

Central Stage 5 is flat land at 30 m AHD, with a rise to 35 m AHD to the south associated with coastal dune topography. Accordingly, for the purposes of the BAL-assessment, the land is flat or upslope.

### 2.2 Access

Acceptable solutions for vehicular access outlined in the *Guidelines for Planning in Bushfire Prone Areas* (V1.2, Department of Planning, Lands and Heritage, Western Australian Planning Commission, and Department of Fire and Emergency Services) require subdivisions have at least two access and egress routes. At present, access to the site is available from Marmion Ave via Bluewater Drive, Maroon Ave across the railway reserve to Bainbridge Ave in Central Stage 5 (Figure 2). An additional access/egress route is being constructed between Leeway Loop near Gangway Park to Marmion Ave. As development occurs in and around Central Stage 5, additional access/egress options will become available.

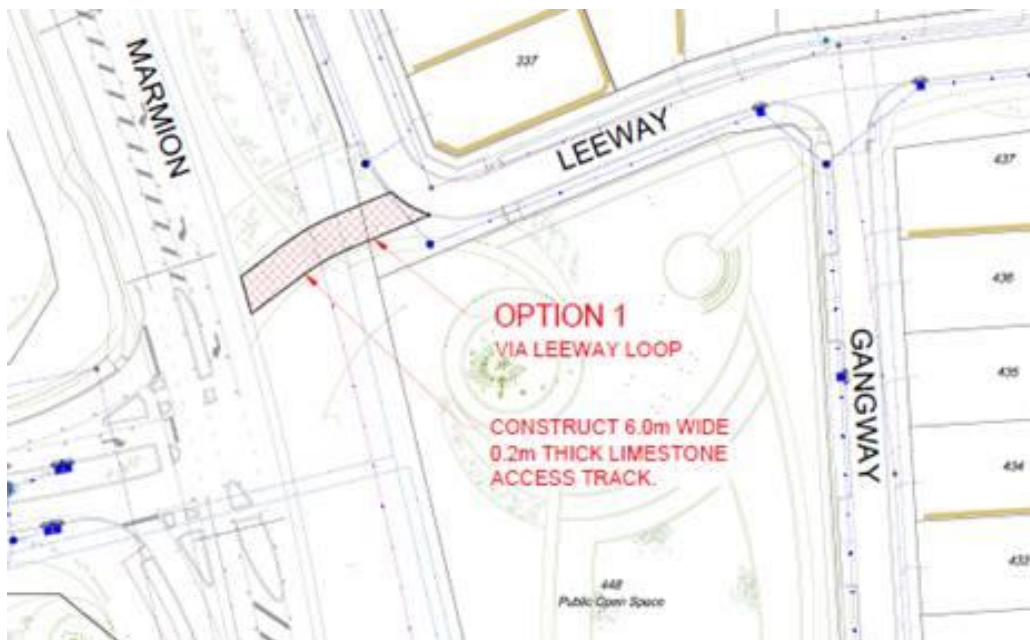


Figure 2: Second access/egress option to Marmion Ave (Source: Peet Ltd)

### 3.0 Vegetation Classification

#### 3.1 Vegetation Classification

All vegetation within 100 m of the proposed Lots was classified in accordance with Clause 2.2.3 of AS 3959 – 2009 *Construction of Buildings in Bushfire-prone Areas*. Each distinguishable area of vegetation with the potential to determine the bushfire attack level (BAL) is discussed and shown in Figure 7.

##### 3.1.1 Area 1: Class C Shrubland

Class C Shrubland is present to the south of Stage 5, and is characterised by shrubs typical of coastal dunes that are less than 2 m. Vegetation in this location will be retained in the short term, but will be cleared at some future point in time when it is developed by others for urban residential areas.



**Figure 3:** Class C Shrubland, south of Stage 5

##### 3.1.2 Area 2: Class D Scrub

Class D Scrub is present behind a line of planted Eucalypts along the northern border of the Lot 9006, and is characterised by shrubs 2 – 4 m that provide a continuous canopy from the ground to the over storey (Figure 4). This vegetation will be retained in the short term but will be cleared at some future point in time when the owners of the property develop the Lot for urban residential purposes.

This vegetation class is also present in the reserve to the west of Maroon Road, and which will be retained into the future for conservation.



Area 2 Classification or Exclusion Clause Class D Scrub



Photo ID: 2

**Figure 4:** Type D Scrub

### 3.1.3 Area 3: Low-threat Vegetation

Low-threat vegetation is present in the school site to the east in the form of the turfed oval and play areas, and in the rail reserve to the west (Figure 5). Vegetation in the rail reserve currently forms a nature strip that will be cleared when the Public Transport Authority extends the northern railway line to Alkimos, which is expected to commence and be completed by 2021.



**Area 3 Classification or Exclusion Clause**



Photo ID: 3

**Figure 5:** Low-threat vegetation

**3.1.4 Area 4: Non-vegetated Areas**

Non-vegetated areas are present within Stage 5 in the form of cleared areas that have undergone civil engineering works ahead of building, roads and footpaths installed within the subdivision, and existing houses (Figure 6). A school has been constructed in the eastern portion of the site and will extend further north at some future stage.

**Area 4 Classification or Exclusion Clause Non-vegetated areas – exclusion clause 2.2.3.2. (e)**



Photo ID: 4

**Figure 6:** Non-vegetated areas





**Figure 7: Vegetation Classification as per AS 3959—2009, Stage 5 Shorehaven, Alkimos**



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### 3.2 Relevant Fire Danger Index

The fire danger index for this site is FDI 80, as documented in Table 2.4.3 of AS 3959 and which is the nominated FDI for Western Australia.

### 3.3 Bushfire Hazard

With the clearing that has occurred at the site, the bushfire hazard has changed. Scrub areas are shown as having an extreme bushfire hazard, with shrubland vegetation as a moderate hazard and grassland as a low hazard. All locations within 100 m of vegetation rated as having a moderate or extreme hazard are also shown as moderate to reflect the increased risk in these areas, thus Stage 5 will have a moderate bushfire risk.

### 3.4 Potential Fire Impacts

The potential fire impacts to the Lots in Stage 5 from each of the vegetated areas are summarised in Table 1.

**Table 1:** BAL-analysis

Area	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	C - Shrubland	Upslope or flat land	> 60	12.5
2	D - Scrub	Upslope or flat land	> 19 > 30	19 12.5
3	Low-threat vegetation	Upslope or flat land	Minimum 30 m	Low

### 3.5 Bushfire Attack Level

The bushfire attack level for each Lot within 100 m of the classified vegetation has been determined. Lots that are sold and subject to current building approvals have not been assigned a BAL-rating as part of this assessment process. Table 2 provides the BAL-details on a lot-by-lot basis for the site, noting that for the purposes of this BAL-assessment, all Lots are flat land or upslope from classified vegetation. BAL-contours and ratings for each Lot are shown in Figure 8.

### 3.6 Shielding

Shielding provisions outlined in AS 3959 – 2009 allow for an elevation not directly exposed to the source of the bushfire attack to be constructed to the next lower BAL-rating. Four Lots are rated BAL-19, so shielding can apply. All other Lots assigned a BAL-rating are BAL-12.5, so shielding provisions will not be applicable.

### 3.7 Staging of Development

Central Stage 5 at Shorehaven is a discrete stage in the broader subdivision currently being progressed. Stages 6 and 7 (north and south of Stage 5) will be constructed at some future point in time, and have been cleared to provide maximum separation distances to classified vegetation north and south of the site (Figure 1).



**Table 2:** BAL-ratings by Lot

Lot	Address	Vegetation Class	Distance to classified vegetation (m)	BAL-rating	Symbol
1579	Magellan Road	D-Scrub	N/A	Lot sold, subject to separate assessment process	
1580	Cushing Road	C-Shrubland	> 60	12.5	★
1581	Cushing Road	C-Shrubland	> 60	12.5	★
1582	Cushing Road	C-Shrubland	N/A	Lot sold, subject to building approval	
1583	Cushing Road	C-Shrubland	N/A	Lot sold, subject to building approval	
1584	Cushing Road	C-Shrubland	N/A	Lot sold, subject to building approval	
1585	Cushing Road	C-Shrubland	N/A	Lot sold, subject to building approval	
1586	Cushing Road	C-Shrubland	> 60	12.5	★
1587	Buchanan Avenue	D-Scrub	N/A	House built	
1588	Buchanan Avenue	D-Scrub	> 100	Low	
1589	Buchanan Avenue	D-Scrub	> 80	12.5	★
1590	Buchanan Avenue	D-Scrub	> 80	12.5	★
1591	Buchanan Avenue	D-Scrub	> 80	12.5	★
1592	Buchanan Avenue	D-Scrub	> 80	12.5	★
1593	Buchanan Avenue	D-Scrub	> 80	12.5	★
1594	Buchanan Avenue	D-Scrub	> 80	12.5	★
1595	Buchanan Avenue	D-Scrub	> 80	12.5	★
1596	McGiffen Avenue	D-Scrub	> 100	Low	
1597	McGiffen Avenue	D-Scrub	> 100	Low	

Lot	Address	Vegetation Class	Distance to classified vegetation (m)	BAL-rating	Symbol
1598	Coram Street	D-Scrub	> 100	Low	
1599	Coram Street	D-Scrub	N/A	House built	
1600	Coram Street	D-Scrub	N/A	House built	
1601	Coram Street	D-Scrub	> 100	Low	
1602	Coram Street	D-Scrub	N/A	House Built	
1603	Coram Street	D-Scrub	> 100	Low	
1604	Coram Street	D-Scrub	> 100	Low	
1605	Coram Street	D-Scrub	> 100	Low	
1606	Coram Street	D-Scrub	~ 100	Approx. 5 m at rear of Lot is located within 100 m of classified vegetation; if this area is avoided during building then BAL-Low will apply, otherwise BAL-12.5 will apply	★
1607	Coram Street	D-Scrub	> 60	12.5	★
1608	Coram Street	D-Scrub	> 60	12.5	★
1609	Coram Street	D-Scrub	> 60	12.5	★
1610	Coram Street	D-Scrub	> 60	12.5	★
1611	McGiffen Avenue	D-Scrub	> 60	12.5	★
1612	McGiffen Avenue	D-Scrub	> 60	12.5	★
1613	McGiffen Avenue	D-Scrub	> 30	12.5	★
1614	McGiffen Avenue	D-Scrub	> 30	12.5	★
1615	Decatur Street	D-Scrub	N/A	Lot sold, subject to building approval	●

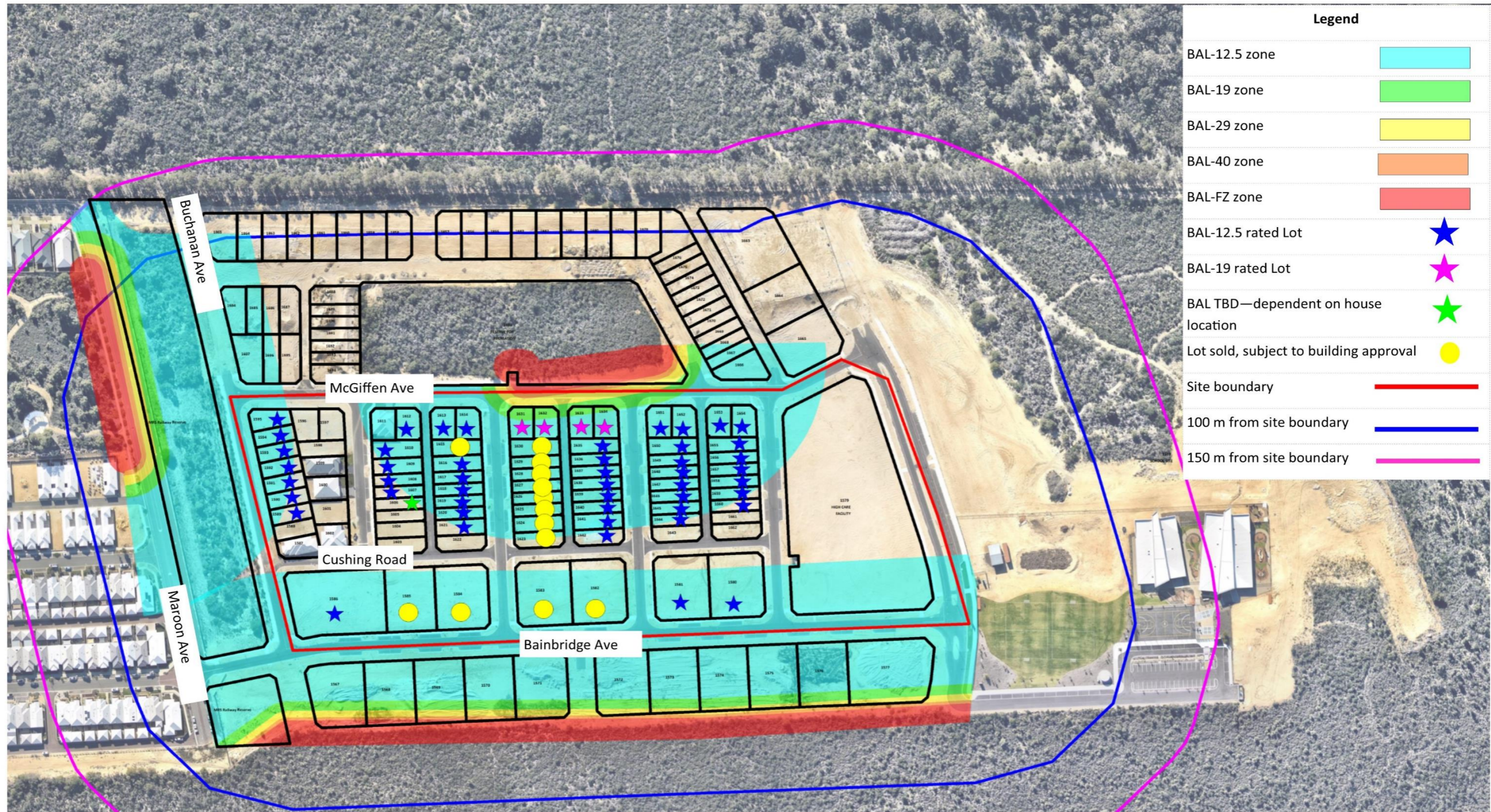
Lot	Address	Vegetation Class	Distance to classified vegetation (m)	BAL-rating	Symbol
1616	Decatur Street	D-Scrub	> 60	12.5	★
1617	Decatur Street	D-Scrub	> 60	12.5	★
1618	Decatur Street	D-Scrub	> 60	12.5	★
1619	Decatur Street	D-Scrub	> 60	12.5	★
1620	Decatur Street	D-Scrub	> 60	12.5	★
1621	Decatur Street	D-Scrub	> 60	12.5	★
1622	Decatur Street	D-Scrub	> 100	Low	
1623	Decatur Street	D-Scrub	N/A	Lot sold, subject to building approval	●
1624	Decatur Street	D-Scrub	N/A	Lot sold, subject to building approval	●
1625	Decatur Street	D-Scrub	N/A	Lot sold, subject to building approval	●
1626	Decatur Street	D-Scrub	N/A	Lot sold, subject to building approval	●
1627	Decatur Street	D-Scrub	N/A	Lot sold, subject to building approval	●
1628	Decatur Street	D-Scrub	N/A	Lot sold, subject to building approval	●
1629	Decatur Street	D-Scrub	N/A	Lot sold, subject to building approval	●
1630	Decatur Street	D-Scrub	N/A	Lot sold, subject to building approval	●
1631	McGiffen Avenue	D-Scrub	> 19 & < 27	BAL-19	★
1632	McGiffen Avenue	D-Scrub	> 19 & < 27	BAL-19	★
1633	McGiffen Avenue	D-Scrub	> 19 & < 27	BAL-19	★
1634	McGiffen Avenue	D-Scrub	> 19 & < 27	BAL-19	★
1635	Barney Road	D-Scrub	> 40	12.5	★
1636	Barney Road	D-Scrub	> 40	12.5	★
1637	Barney Road	D-Scrub	> 40	12.5	★



Lot	Address	Vegetation Class	Distance to classified vegetation (m)	BAL-rating	Symbol
1638	Barney Road	D-Scrub	> 60	12.5	★
1639	Barney Road	D-Scrub	> 60	12.5	★
1640	Barney Road	D-Scrub	> 60	12.5	★
1641	Barney Road	D-Scrub	> 60	12.5	★
1642	Barney Road	D-Scrub	> 60	12.5	★
1643	Barney Road	D-Scrub	> 100	Low	
1644	Barney Road	D-Scrub	> 60	12.5	★
1645	Barney Road	D-Scrub	> 60	12.5	★
1646	Barney Road	D-Scrub	> 60	12.5	★
1647	Barney Road	D-Scrub	> 60	12.5	★
1648	Barney Road	D-Scrub	> 40	12.5	★
1649	Barney Road	D-Scrub	> 40	12.5	★
1650	Barney Road	D-Scrub	> 40	12.5	★
1651	McGiffen Avenue	D-Scrub	> 40	12.5	★
1652	McGiffen Avenue	D-Scrub	> 40	12.5	★
1653	McGiffen Avenue	D-Scrub	> 40	12.5	★
1654	McGiffen Avenue	D-Scrub	> 40	12.5	★
1655	Magellan Road	D-Scrub	> 40	12.5	★
1656	Magellan Road	D-Scrub	> 60	12.5	★
1657	Magellan Road	D-Scrub	> 60	12.5	★
1658	Magellan Road	D-Scrub	> 60	12.5	★
1659	Magellan Road	D-Scrub	> 60	12.5	★

Lot	Address	Vegetation Class	Distance to classified vegetation (m)	BAL-rating	Symbol
1660	Magellan Road	D-Scrub	> 60	12.5	★
1661	Magellan Road	D-Scrub	> 100	Low	
1662	Magellan Road	D-Scrub	> 100	Low	

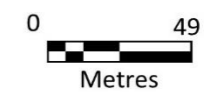




**Figure 8: BAL-zones and BAL-rated Lots,  
 Stage 5 Shorehaven, Alkimos**



**Client:** Peet Alkimos Ltd  
**Project:** Stage 5 BAL-assessment  
**Image Source:** NearMap August 2017  
**Prepared by:** Sue Brand  
**Datum:** GDA 94, Zone 50





## 4.0 Compliance and Justifications

### 4.1 SPP 3.7 Objectives and Application of Policy Measures

The intent of *State Planning Policy (SPP) 3.7 Planning in Bushfire Prone Areas* (Department of Planning and Western Australian Planning Commission, 2015) is to ensure that bushfire risks are considered in a timely manner and that planning documents demonstrate the appropriate application of the various policy measures. Table 3 summarises the intent and objectives of SPP 3.7 and provides evidence of how the subdivision of Stages 5 Shorehaven at Alkimos complies.

**Table 3:** Evidence of compliance with SPP 3.7 intent and objectives

SPP Reference	Description	Evidence of Compliance
Intent	<ul style="list-style-type: none"> <li>Ensure that risks associated with bushfires are planned using a risk-based approach</li> </ul>	<ul style="list-style-type: none"> <li>Preparation of a bushfire management plan in accordance with SPP 3.7</li> <li>Hazard assessment indicates risks associated with bushland are manageable</li> </ul>
Objective 1	<ul style="list-style-type: none"> <li>Avoid any increase in the threat of bushfire to people, property and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Hazard assessment indicates risks associated with bushland are manageable</li> <li>Lots within 100 m of vegetation assigned BAL-rating as per AS-3959 - 2009</li> </ul>
Objective 2	<ul style="list-style-type: none"> <li>Reduce vulnerability to bushfire</li> </ul>	<ul style="list-style-type: none"> <li>Hazard assessment indicates risks associated with bushland are manageable</li> <li>Lots within 100 m of vegetation assigned BAL-rating as per AS-3959 - 2009</li> </ul>
Objective 3	<ul style="list-style-type: none"> <li>Ensure that higher order strategic planning documents and proposals consider bushfire protection requirements at an early stage</li> </ul>	<ul style="list-style-type: none"> <li>Planning at the site is well advanced, with bushfire management considered in the early stages</li> <li>This BAL-assessment report documents the risks</li> </ul>
Objective 4	<ul style="list-style-type: none"> <li>Achieve an appropriate balance between bushfire risk management and biodiversity conservation</li> </ul>	<ul style="list-style-type: none"> <li>Site environmental values have been considered during the planning approvals process</li> </ul>

### 4.2 Bushfire Protection Criteria

Table 4 demonstrates the Site's Compliance with Bushfire Protection Criteria; Figure 8 provides the subdivision design and projected BAL-zones according to vegetation types currently present.

**Table 4:** Compliance with bushfire protection criteria

<b>Intent</b>	<b>Performance Principle</b>	<b>Midvale Solution</b>
<b>Element 1: Location</b>		
Ensure subdivision and development applications are located in areas with the least possible risk of bushfire	<ul style="list-style-type: none"> <li>▪ Bushfire hazard assessment is or will on completion be moderate or low</li> <li>▪ BAL-rating is BAL-29 or lower</li> </ul>	<ul style="list-style-type: none"> <li>▪ The subdivision is located in an area where the bushfire hazard level is manageable</li> <li>▪ Some lots will have a BAL-rating, with none higher than BAL-19</li> </ul>
<b>Element 2: Siting and Design of Development</b>		
Siting and design of development minimises the level of bushfire impact	<ul style="list-style-type: none"> <li>▪ Siting and design of development is appropriate to the level of bushfire threat and minimises risk to people, property and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>▪ Bushfire hazard assessment indicates manageable bushfire risk</li> <li>▪ Some lots will have a BAL-rating, with none higher than BAL-19</li> </ul>
<b>Element 3: Vehicular Access</b>		
Vehicular access servicing a subdivision is available and safe during a bushfire event	<ul style="list-style-type: none"> <li>▪ Internal layout, design and construction of public and private vehicular access and egress in the subdivision allow emergency and other vehicles to move easily and safely at all times</li> </ul>	<ul style="list-style-type: none"> <li>▪ Subdivision design will include two roads that will connect to the road network</li> <li>▪ Public roads will be constructed in accordance with technical requirements</li> <li>▪ Emergency access will be via the internal road network</li> <li>▪ No permanent cul-de-sacs, battle-axe blocks or private driveways are planned</li> <li>▪ There is no requirement for emergency access ways, fire service access routes or firebreaks</li> <li>▪ The provision of a second access/egress to Marmion Ave (Fig 2)</li> </ul>
<b>Element 4: Water</b>		
Water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire	<ul style="list-style-type: none"> <li>▪ Subdivision is provided with a permanent and secure water supply that is sufficient for firefighting purposes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Subdivision is connected to scheme water; i.e., located within a reticulated area</li> </ul>

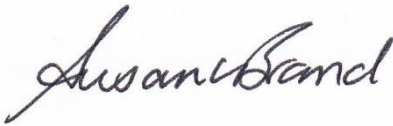
### 4.3 Compliance with Relevant Documents

Sections 4.1 and 4.2 demonstrate how that Shorehaven site complies with *State Planning Policy 3.7* (Department of Planning and WA Planning Commission, 2015) and *Guidelines for Planning in Bushfire Prone Areas* (Department of Planning, Heritage and Lands, the WA Planning Commission and the Department of Fire and Emergency Services, V1.2, 2017).

The subdivision has created residential Lots of varying sizes, and owners must comply with relevant sections of the annual firebreak notice and bushfire information prepared by the City of Wanneroo, such as total fire ban and hazard reduction programs.

### 4.4 Compliance Statement

This Bushfire Management Plan has been prepared in accordance with the requirements of *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (Department of Planning and Western Australian Planning Commission, 2015) and *Guidelines for Planning in Bushfire Prone Areas* (Department of Planning, Heritage and Lands, the WA Planning Commission and the Department of Fire and Emergency Services, V1.2, 2017).



Signed:

Date: 11 October 2017

Accreditation Number: BPAD36638

Expiry Date: 30 April 2018



## 5.0 References

AS 3959 – 2009 *Construction of Buildings in Bushfire-Prone Areas* (Incorporating Amendment 3 – November 2011). Standards Australia. NSW.

*Bushfires Act 1954* (WA)

Department of Planning, Heritage and Lands, the WA Planning Commission and the Department of Fire and Emergency Services, (V1.2, 2017), *Guidelines for Planning in Bushfire Prone Areas*, Western Australian Planning Commission, Perth, Western Australia.

Department of Planning and Western Australian Planning Commission, (2015), *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Western Australian Planning Commission, Perth, Western Australia.

Natural Area Consulting Management Services, (2015), *Fire Management Plan – Stage 5 Shorehaven*, unpublished report prepared for Peet Alkimos Ltd.