BASIC BMP & BAL ASSESSMENT

CLIENT: Kath Lymon et al, A Buterac, LR & RL Cant

SITE LOCATION: 6676 South Coast Highway, WA 6333

DATE: 8th June 2016

SHIRE/CITY: Shire of Denmark

FIRE CONSULTANT: Peter Bidwell
1. Introduction

This report has been prepared by Mr Peter Bidwell who has 43 years of fire management experience, predominantly in the Southern Forests and South Coast areas of Western Australia. For the past 6 years he has been a fire consultant doing BAL assessments and Bushfire Management Planning on the South Coast.

2. Report Background

The owners of Lot 150, Mrs Kath Lymon, Anne Buterac, Lenord & Rosemary Cant are seeking approval to subdivide the subject area into 2 separate lots. Lot 1 (2715 Square Metres) has access to the South Coast Highway and has an existing residence. The proposed Lot 2 (4487 Square Metres) is vacant land and will be accessed from MacPherson Drive.

Working on Fire consultant Peter Bidwell attended the site on Monday the 6th of June to conduct the necessary field work required to prepare this report.

3. Field Observations

The site of this proposed sub division is adjacent to the South Coast Highway in the Nornalup Townsite within the Shire of Denmark. Proposed Lot 1 has an existing residence with associated water tanks and outbuildings. No further works are planned for this Lot.

All of proposed Lot 2 has been cleared and pastured. It has a small 60,00 litre dam onsite that is fed by runoff water from MacPherson Drive. The photos below show the extent of clearing on Lot 2 and the dam.

4. BAL Rating and SPP 3.7 Bushfire Protection Criteria Assessment

BAL Rating:-

The resulting BAL Assessment shows that the site has a rating of BAL LOW. Attached is the BAL assessment for Lot 2 that can be utilised for any future development application for a period of up to 2 years. After that period, the site will need to be re-assessed.

Element 1. Location

The location of this site meets the acceptable solution on location as it is rated as BAL LOW.
Element 2. Siting and Design

The site is almost totally cleared and pastured. There are several large peppermint trees on site however an Asset Protection Zone and further Hazard Protection Zone (if required) will be easily established once a dwelling is established on site. The only requirement will be for the residents to maintain the established pasture below 100 mm during the fire season. This is currently being achieved by sheep grazing the site.

The vegetation to the south of MacPherson Drive is an exclusion under AS 3959 – 2009 as it is less than 0.25 hectares and not within 20 metres of where any future asset may be constructed.

Element 3. Vehicular Access:-

Should the sub division be approved, both lots will have excellent access onto South Coast Highway. Lot 1 will continue to be accessed from the Highway whilst Lot 2 will be accessed from MacPherson Drive onto South Coast Highway. This will ensure that there are two vehicular access routes on a public road network namely to the east and to the west.

Element 4. Water:-

Lot 1 has an established house with 2 water tanks. A cam lock fitting should be installed on the second tank to allow fire trucks to refill in an emergency. This would be a secondary source of water as the Frankland River is only 120 metres away and adjacent to the Nornalup Fire Station.

Proposed Lot 2 would require a rainwater tank to be installed with a minimum capacity of 92,000 litres. It is recommended that the outlet be located 300 millimetres from the bottom of the tank to ensure that there is always a quantity of water available for firefighting purposes.

A further outlet shall be provided at the bottom of the tank with a cam lock coupling and a full flow valve to allow fire trucks access to this water supply.

Attached is a current BAL Assessment for Lot 2.

Peter Bidwell

Fire Consultant
# BUSHFIRE ATTACK LEVEL ASSESSMENT – 20160811

**FPAA Accreditation No. - BPAD 37765**

**PRODUCED FOR:** Kath Lymon et al  
**OF:** A Buterac, LR & RL Cant

**ON BEHALF OF:**  
**DATE:** 8/06/2016

**FOR THE PROPERTY:** 6676 South Coast Highway, WA 6333  
**IN:** Shire of Denmark

**WOF CONSULTANT:** Peter Bidwell  
**PHONE:** 08 9840 8295

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## BAL RATINGS

**“See page 3 for comments / achievable rating”**

<table>
<thead>
<tr>
<th>BAL RATING</th>
<th>LOW</th>
</tr>
</thead>
</table>

## ENDORSEMENT

<table>
<thead>
<tr>
<th>CONSULTANT</th>
<th>SIGNED</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peter Bidwell</td>
<td>![Signature]</td>
<td>8/06/2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ASSESSOR</th>
<th>SIGNED</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brian O’Hehir</td>
<td>![Signature]</td>
<td>11/8/2016</td>
</tr>
</tbody>
</table>

## DISCLAIMER

The recommendations and measures contained in this assessment report are based on the requirements of the Australian Standards 3959 – Construction of Buildings in Bushfire prone Areas, Guidelines for Planning in Bushfire Prone Areas (State Planning Policy 3.7) and CSIRO’s research into Bushfire behaviour. These are considered the minimum standards required to balance the protection of the proposed land/building and occupants with the aesthetic and environmental conditions required by local, state and federal government authorities. They DO NOT guarantee that a building will not be destroyed or damaged by a bushfire. All surveys and forecasts, projections and recommendations made in this assessment report and associated with this proposed land/building are made in good faith on the basis of the information available to the fire protection consultant at the time of assessment. The achievement of the level of implementation of fire precautions will depend amongst other things on actions of the landowner or occupiers of the land, over which the fire consultant has no control. Notwithstanding anything contained within, the fire consultant/s or local government authority will not, except as the law may require, be liable for any loss or other consequences (whether or not due to negligence of the fire consultant/s and the local government authority, their servants or agents) arising out of the services rendered by the fire consultant/s or local government authority.

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**Version No.** 3.6  
**Revision No.**
1. SITE INFORMATION

SITE ADDRESS: 6676 South Coast Highway, WA 6333

SHIRE PROPERTY FILE #:

LOCAL GOVERNMENT HAZARD MAPPING ASSESSMENT:
- NON-BUSHFIRE PRONE
- BUSHFIRE PRONE
- BUSHFIRE PRONE (URBAN)

IS THERE A CURRENT FIRE MANAGEMENT PLAN IN PLACE?
- YES
- NO
- UNKNOWN

TYPE OF DEVELOPMENT PROPOSED:
- PROPERTY TYPE: Residential
- BUILDING TYPE: N/A

2. BUSHFIRE ATTACK LEVEL (BAL) RATINGS

Determined using AS3959-2009 Australian Standard*: Construction of Buildings in Bushfire-prone Areas (Table 2.4.3)

<table>
<thead>
<tr>
<th>SAMPLE POINT</th>
<th>ASPECT</th>
<th>VEGETATION CLASSIFICATION</th>
<th>CURRENT DISTANCE, DWELLING TO CLASSIFIED VEGETATION</th>
<th>EFFECTIVE SLOPE</th>
<th>BAL RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N</td>
<td>Exclusion 2.2.3.2 e</td>
<td>Up_slope/Flat</td>
<td>BAL-LOW</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>E</td>
<td>Exclusion 2.2.3.2 c</td>
<td>Up_slope/Flat</td>
<td>BAL-LOW</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>S</td>
<td>Exclusion 2.2.3.2 c</td>
<td>Up_slope/Flat</td>
<td>BAL-LOW</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>W</td>
<td>Exclusion 2.2.3.2 e</td>
<td>0° to &lt;5°</td>
<td>BAL-LOW</td>
<td></td>
</tr>
</tbody>
</table>

* Please see 3.1 Page 3 for thinning recommendations and achievable BAL.

IMPORTANT NOTES FOR THE CLIENT/OWNER

- The owner should confirm if the local authority requires the BAL rating of the construction to be identified or recorded, either on the building or other documents; for example, a Notification of Section 70a of the Transfer of Land Act 1893.
- Note that if building does not commence within 12 months of this report being prepared, another assessment is required.
- Refer to Appendix 4.1 for the appropriate Construction Section in AS3959-2009 - Construction of Buildings in Bushfire Prone Areas to determine construction requirements.
- The property owner or occupier must maintain the vegetation and fuels in accordance with the Local Authority’s Annual Firebreak notice (or equivalent relevant document), an approved Bushfire Management Plan, and the recommendations made in this report. Refer to local authority’s Firebreak Notice for levels of fuels allowable in the Asset Protection Zone (APZ) and/or Hazard Separation Zone (HSZ) if these zones are required. See diagram below.
- Even in full compliance of any recommendations made in this document, total protection of buildings cannot be guaranteed from bushfires. Regardless of building standards and hazard mitigation measures taken in the areas immediately surrounding these buildings, the buildings may be subject to long distance (>500 metres) ember attacks during a bushfire. These may ignite combustible material onsite (such as outdoor furniture, leaves in gutters, etc), therefore threatening any buildings and infrastructure.
3. ASSESSOR’S COMMENTS ON BAL CALCULATIONS AND RECOMMENDATIONS

This report has been based on information provided by the client/designer. A dwelling can be located anywhere on this site subject to the normal Shire of Denmark setback requirements. An assessment has also been made on site to determine vegetation type, proposed vegetation clearances and ground slope in accordance with AS 3959-2009 (Assessment Method 1) and calculations based on a Fire Danger Index (FDI) of 80.

The owners are advised that they must comply with the requirements of the Shire of Denmark Annual Fuel Hazard Reduction and Firebreak Notice. This may include a requirement for an Asset Protection Zone (APZ) and a Hazard Separation Zone (HSZ).

Sample Point 1  Vegetation Type - Exclusion 2.2.3.2 e

Sample Point 2  Vegetation Type - Exclusion 2.2.3.2 c

Sample Point 3  Vegetation Type - Exclusion 2.2.3.2 c

Sample Point 4  Vegetation Type - Exclusion 2.2.3.2 e

a. THINNING RECOMMENDATIONS

There may be an opportunity for the client to conduct vegetation thinning to achieve a lower BAL rating. Thinning is the modification of vegetation by minimising or removing ground fuels, understory species and trees; the intention is to maintain the aesthetic values and natural habitats whilst minimising fire risk. Approval for vegetation modification must be sought from the local authority, and can only be conducted within the boundary of the property.

Another BAL Assessment will be required if the option of vegetation management is exercised and completed by the client, prior to construction commencing.

The following table indicates the vegetation modification distances required from the edge of the proposed building to achieve the specified BAL:

<table>
<thead>
<tr>
<th>ASPECT</th>
<th>THINNING DISTANCE</th>
<th>ACHIEVABLE BAL RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In some instances, vegetation modification may not be able to achieve a lower BAL rating, and engineering solutions such as shielding may be the only options.

Additional Recommendations – **No additional thinning is required on this site.**

Note: The vegetation on the opposite side of MacPherson Drive is an exclusion as it is less than 0.25 hectares and not within 20 metres of where any future asset may be constructed.
4. SITE IMAGERY

AERIAL REFERENCE 1

Photo 1

Photo 2

Photo 3

Photo 4

Lot 1

Lot 2
5. APPENDICES

5.1. AS3959-2009 - SECTION 3.1 - GENERAL

This Section specifies general requirements for the construction of buildings for all Bushfire Attack Levels (BALs). The BALs and the corresponding Sections for specific construction requirements are listed in Table 3.1.

<table>
<thead>
<tr>
<th>Bushfire Attack Level (BAL)</th>
<th>Classified vegetation within 100 m of the site and heat flux exposure thresholds</th>
<th>Description of predicted bushfire attack and levels of exposure</th>
<th>Construction Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAL-LOW</td>
<td>See Clause 2.2.3.2</td>
<td>There is insufficient risk to warrant any specific construction requirements</td>
<td>4</td>
</tr>
<tr>
<td>BAL-12.5</td>
<td>≤12.5 kW/m²</td>
<td>Ember attack.</td>
<td>3 &amp; 5</td>
</tr>
<tr>
<td>BAL-19</td>
<td>&gt;12.5 kW/m² ≤19 kW/m²</td>
<td>Increasing levels of ember attack and burning debris ignited by wind-borne embers together with increasing heat flux</td>
<td>3 &amp; 6</td>
</tr>
<tr>
<td>BAL-29</td>
<td>&gt;19 kW/m² ≤29 kW/m²</td>
<td>Increasing levels of ember attack and burning debris ignited by wind-borne embers together with increasing heat flux</td>
<td>3 &amp; 7</td>
</tr>
<tr>
<td>BAL-40</td>
<td>&gt;29 kW/m² ≤40 kW/m²</td>
<td>Increasing levels of ember attack and burning debris ignited by wind-borne embers together with increasing heat flux with the increased likelihood of exposure to flames</td>
<td>3 &amp; 8</td>
</tr>
<tr>
<td>BAL-FZ</td>
<td>&gt;40 kW/m²</td>
<td>Direct exposure to flames from fire front in addition to heat flux and ember attack</td>
<td>3 &amp; 9</td>
</tr>
</tbody>
</table>

5.2. AS3959-2009 - SECTION G3 - RADIANT HEAT THRESHOLDS OF PAIN AND IGNITION

In a bushfire, radiant heat levels may be unsafe for humans and could also ignite combustible materials in the vicinity. Table G1 provides an indication of the potential effects of radiant heat levels on both humans and selected materials to assist the reader in understanding the implications of the different BALs.

<table>
<thead>
<tr>
<th>PHENOMENA</th>
<th>KW/M²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain to humans after 10 s to 20 s</td>
<td>4</td>
</tr>
<tr>
<td>Pain to humans after 3 s</td>
<td>10</td>
</tr>
<tr>
<td>Ignition of cotton fabric after a long time (piloted) (see Note 2)</td>
<td>13</td>
</tr>
<tr>
<td>Ignition of timber after a long time 13 (piloted) (see Note 2)</td>
<td>13</td>
</tr>
<tr>
<td>Ignition of cotton fabric after a long time (non-piloted) (see Note 3)</td>
<td>25</td>
</tr>
<tr>
<td>Ignition of timber after a long time (non-piloted) (see Note 3)</td>
<td>25</td>
</tr>
<tr>
<td>Ignition of gaberdine fabric after a long time (non-piloted) (see Note 3)</td>
<td>27</td>
</tr>
<tr>
<td>Ignition of black drill fabric after a long time (non-piloted) (see Note 3)</td>
<td>38</td>
</tr>
<tr>
<td>Ignition of cotton fabric after 5 s (non-piloted) (see Note 3)</td>
<td>42</td>
</tr>
<tr>
<td>Ignition of timber in 20 s (non-piloted) (see Note 3)</td>
<td>45</td>
</tr>
<tr>
<td>Ignition of timber in 10 s (non-piloted) (see Note 3)</td>
<td>55</td>
</tr>
</tbody>
</table>

NOTES:
2. Introduction of a small flame to initiate ignition.
3. Flame not introduced to initiate ignition.