



PO Box 685  
DUNSBOROUGH WA 6281  
Ph: +61 8 9759 1960  
Fax: +61 8 9759 1920  
Mobile: 0427 591 960  
[info@ecosystemsolutions.com.au](mailto:info@ecosystemsolutions.com.au)  
[www.ecosystemsolutions.com.au](http://www.ecosystemsolutions.com.au)

# Bushfire Hazard Level Assessment

## Dunsborough Activity Centre

21 December 2020

Prepared for:  
City of Busselton  
Att: Joanna Wilkinson



# Limitations Statement

This report has been prepared in accordance with the Agreement between Ecosystem Solutions Pty Ltd and The City of Busselton (“**Client**”). It has been solely prepared for a Bushfire Hazard Level Assessment for the Dunsborough Activity Centre (“**Site**”).

## Information

In undertaking this work the authors have made every effort to ensure the accuracy of the information used. Unless otherwise stated in the report, Ecosystem Solutions Pty Ltd has not independently verified such information and cannot guarantee its accuracy or completeness.

## Conclusions

Within the limitations imposed by the scope of work, preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable bushfire consultants under similar circumstances. No other warranty, expressed or implied, is made.

## Reliance

This report is solely for the use of the Client and any reliance on this report by third parties will be at such party’s sole risk. This report must only be presented in full and may not be used to support any other purpose than those set out in the report and the Agreement, except where prior written approval with comments are provided by Ecosystem Solutions Pty Ltd. All intellectual property rights in documents created by Ecosystem Solutions Pty Ltd remain the property of Ecosystem Solutions Pty Ltd.

Other parties should not rely on the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters. Ecosystem Solutions Pty Ltd accepts no Liability, or responsibility whatsoever for or in respect of any use or reliance upon this report and its supporting material subsequently used by others. Please note that the contents of this report may not be directly applicable towards another organisation’s needs and may not contain sufficient information for purposes of other parties or for other uses.

Ecosystem Solutions Pty Ltd will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of this report.

## Other limitations

The measures contained in this report cannot guarantee that a structure or building will not be damaged or would survive a bushfire event on every occasion. This is due to the degree of vegetation management,

the unpredictable nature of fire behaviour (knowledge in this field continues to develop) and the unpredictable nature of extreme weather conditions.

The growth, planting or removal of vegetation, poor maintenance of any fire prevention/mitigation measures, addition of structures not included in this report, or other activity can and will change the bushfire threat to all properties detailed in this report. The implementation of fire precautions will depend on the actions of the landowner or occupiers of the land, over which Ecosystem Solutions Pty Ltd has no control. Should changes be made to the Site, a new Bushfire Management Plan is required. Ecosystem Solutions Pty Ltd accepts no Liability, including Liability for any Loss in connection with:

- a Claim, damage, or injury to property, or persons caused by fire;
- further growth, planting or removal of vegetation on the Site;
- poor maintenance of any fire protection measures;
- additional structures not included in this assessment; or
- any other activity that may change the bushfire threat level.

The Client and owner of the Site each acknowledge that they have been made aware of the exclusions above and that such exclusion of Liability is reasonable in all the circumstances.

This report is valid for a period of two years only from the date of its issue. All BAL ratings identified in this report are indicative and are required to be verified at the time of construction of individual buildings to ensure appropriate setbacks identified in the Site/building have been achieved.

#### STATEMENT OF CONFORMITY - PLANNING AND DEVELOPMENT ACT 2005



**Gary McMahon**

**B.Sc. M. Env Mgmt. PG Dip Bushfire Protection. C.EnvP, BPAD Level 3 (35078)**

The signatory declares that this Bushfire Management Plan meets the requirements of State Planning Policy 3.7 and the Guidelines for Planning in Bushfire Prone Areas V1.3.

### **DISCLAIMER**

*\*All capitalised terms used in the Limitations Statement above that are not defined are defined in the Agreement between Ecosystem Solutions Pty Ltd and the Client.*

*\*\* The limitations above are subject to any relevant rights or remedies that the Client may be entitled to under legislation, including Schedule 2 of the Competition and Consumer Act 2010 (Cth).*

# Document Control

Client - City of Busselton

Site - Dunsborough Activity Centre

Version	Revision	Purpose	Author	Reviewer	Submitted	
					Form	Date
Report	Rev A	Initial Report	DP (BPAD Level 1 46554)	GM (BPAD Level 3 35078)	Electronic (email)	4/12/2020
Report	Rev B	Address comments from CoB	DP (BPAD Level 1 46554)	GM (BPAD Level 3 35078)	Electronic (email)	21/12/2020

Filename: Z:\PROJECTS\20942 Dunsborough Activity Centre Area BHL BAL Contour\Reports\Dunsborough Activity Centre BHL Assessment Rev B.docx

# Contents

<b>Document Control</b>	<b>4</b>
<b>1 Proposal Details</b>	<b>6</b>
<b>2 Environmental Considerations</b>	<b>10</b>
<b>3 Bushfire Hazard Level Assessment</b>	<b>13</b>
3.1 Assessment Inputs	13
3.2 Assessment Outputs	20
<b>4 Bushfire Protection Elements</b>	<b>23</b>
4.1 Element 1: Location	23
4.2 Element 2: Siting and design of development	24
4.3 Element 3: Vehicular access	25
4.4 Element 4: Water	27
<b>5 Responsibilities and Bushfire Measures</b>	<b>29</b>
<b>6 Conclusion</b>	<b>30</b>

# Appendices

Appendix A	City of Busselton Firebreak and Fuel Hazard Reduction Notice 2020/2021
Appendix B	Asset Protection Zone Standards
Appendix C	Vehicle Access Technical Requirements

# List of Figures

Figure 1	Location Plan for Dunsborough Activity Centre	8
Figure 2	Extract Map of Bushfire Prone Area indicated by pink with the Dunsborough Activity Centre with a red boundary	9
Figure 3	Vegetation Classification	19
Figure 4	Bushfire Hazard Level Assessment Map	21
Figure 5	BAL Contour Map	22

# 1 Proposal Details

This Bushfire Hazard Level Assessment has been prepared by Ecosystem Solutions Pty Ltd for the Dunsborough Activity Centre, located within Clark Street, Cyrillea Way, Dunn Bay Road, Leslie Pearce Court, Dunsborough Place, Chieftain Place, Seymour Boulevard with part Naturaliste Terrace, part Geographe Bay Road and part Caves Road (hereafter referred to as the 'Site'). This area is shown in Figure 1. This report has been prepared by Danae Plowman (B.Sc P.G.Dip Engy & Env, BPAD Level 1 46554) with review provided by Gary McMahon (B.Sc M. Env Mgmt. Grad Dip Bushfire Protection, BPAD Level 3 35078).

This Bushfire Hazard Level Assessment has been prepared to inform a Local Structure Plan for an Activity Centre at the Site and to demonstrate compliance with SPP 3.7 and the associated Guidelines for Planning in Bushfire Prone Areas (V1.3, Dec 2017). The purpose of an Activity Centre Plan is to guide the types of land uses and the overall development that is intended to occur within the Site.

The Site is located within Dunsborough town centre (Figure 1), within the City of Busselton. The combined area is approximately 35.6 ha and has a range of zones under Local Planning Scheme 21 including Centre (mixed use that can include residential and commercial), Residential and Tourism. The commercial use that is currently located in the Site includes a medical centre, shops, offices, restaurants/cafes and a petrol station. The reserves located within the Site for the purpose of Recreation and Public Purpose.

The vegetation within the Site includes remnant native vegetation along Dugalup Brook and predominately managed vegetation in parks and along streets.

The Site sits at approximately 20 m AHD (Australian Height Datum) to the west and slopes east to approximately 0 m AHD where it borders Geographe Bay. Minor undulations occur within the Site down to Dugalup Brook.

A portion of the Site is within a bushfire prone area (Figure 2), as declared by State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7). Currently only 17 of the 163 lots are classified as bushfire prone. For some lots only a small portion of the overall lot is bushfire prone, however for these lots the assessment against SPP 3.7 is still required against the entire lot.

Remnant vegetation along Dugalup Brook that is not currently classified as a bushfire prone area has been classified according to AS3959-2018 in this report and results in this vegetation being a bushfire hazard. This establishes that only eight lots are within a Low Bushfire Hazard Level (Figure 4) or BAL-Low (Figure 5) with the remaining 155 lots located within a moderate or extreme Bushfire Hazard Level or BAL-121.5 or above.

The broader landscape contains large areas of remnant vegetation including Meelup Regional Park to the north, Leeuwin-Naturaliste National Park to the west and the surrounding rural residential lots representing an extreme bushfire hazard.

The Site is situated on the corner of Cape Naturaliste Road and Caves Road. Cape Naturaliste Terrace leads north to Cape Naturaliste and serves as the only evacuation route for people located north of Meelup Regional Park including residents in Eagle Bay and tourists at Bunker Bay. Anyone evacuating from these areas will rely on the evacuation route via Cape Naturaliste Road through Dunsborough town centre to a safe place in relation to the bushfire.

Caves Road will also be relied upon as an evacuation route for people located within Yallingup and within many rural residential lots located between Dunsborough and Yallingup. Evacuation from these areas will rely upon Caves Road and travelling through Dunsborough town centre to a safe place in relation to the bushfire.

The Site therefore represents a safer place in relation to the surrounding areas with consideration to:

- the Site being an urban centre with reticulated parks and gardens;
- the urban road network with two way access to the majority of sites;
- there is reticulated water available to all sites;
- close proximity to emergency services;
- close proximity to existing places that can function as emergency evacuation centres (likely to be used when a bushfire is at a great distance away and not threatening the Site); and
- contextually, located within a surrounding urban area which serves to augment all of the above.

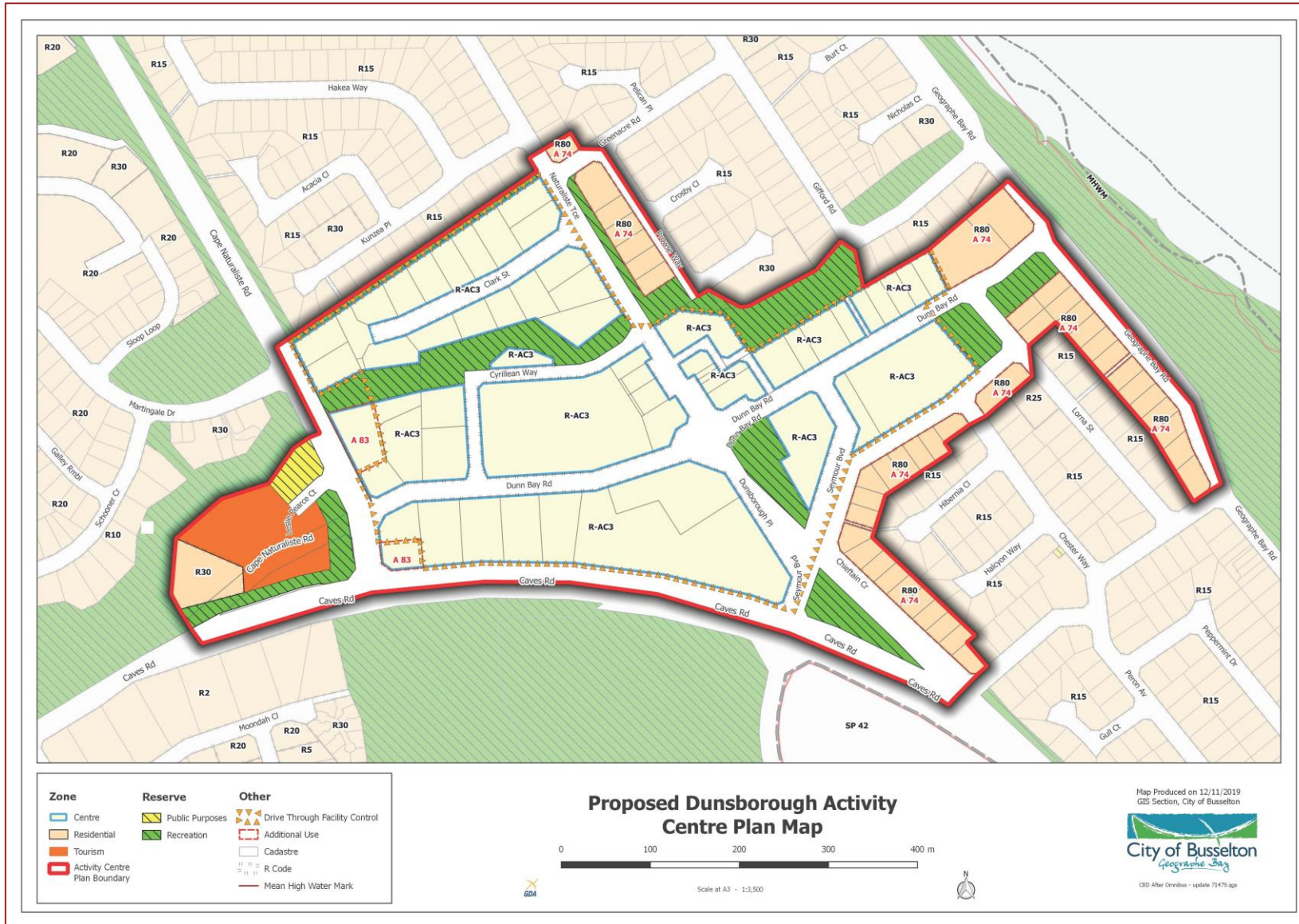


Figure 1 Location Plan for Dunsborough Activity Centre





Figure 2 Extract Map of Bushfire Prone Area indicated by pink with the Dunsborough Activity Centre with a red boundary

## 2 Environmental Considerations

### 2.1 Native Vegetation - modification and clearing

The Site includes areas of remnant native vegetation with the majority of the Site containing existing development or cleared lots with non-native grasses managed in a low fuel state. There is no proposed vegetation clearing as a result of this proposal.

It is anticipated that any impacts to ecological values will be determined and assessed at future planning stages where detailed development design is known. Future planning should avoid, where possible, clearing of native vegetation, with any clearing of native vegetation subject to a clearing permit under the *Biodiversity Conservation Act* (WA) and potentially under the *Environment Conservation and Biodiversity Act 1999* (Cmth).

The Site and the surrounding 1 km buffer have been assessed for environmental values using a simple desktop review (Table 1). A Protected Matters Search Tool (*Environment Conservation and Biodiversity Act 1999* (Cmth) and Nature Map (*Biodiversity Conservation Act 2016* (WA)) report identified a number of threatened flora species or species habitat that are likely to occur within the area.

*Table 1 Environmental valued areas within and adjacent to the Site identified through publicly available data*

Environmental Value	Present within the Site (Yes or No)	Description
Conservation Covenants	No	Not applicable
Bushfire Forever Sites	No	Not applicable
Waterways	Yes	Dugalup Brook is located within the Site which flows from west to east.
Threatened Ecological Communities (TECs)	Yes	The following TECs may occur within the area: <ul style="list-style-type: none"> <li>Banksia Woodlands of the Swan Coastal Plain ecological community (Endangered)</li> <li>Clay Pans of the Swan Coastal Plain (Critically Endangered); and</li> <li>Tuart Woodlands and Forests of the Swan Coastal Plain ecological communities (Critically Endangered)</li> </ul>
Threatened or Priority flora species	Yes	Many threatened flora species were identified as likely to occur within the area including <i>Caladenia viridescens</i> (Threatened).

Environmental Value	Present within the Site (Yes or No)	Description
Threatened Fauna	Yes	<p>The following fauna are likely to utilise the vegetation within the Site and are protected under <i>Environment Conservation and Biodiversity Act 1999</i> (Cmth) and <i>Biodiversity Conservation Act</i> (WA):</p> <ul style="list-style-type: none"> <li>• Black Cockatoo species including Baudin's and Carnaby's (Endangered/Threatened) and Forest Red-tailed (Vulnerable) which have multiple roosting Sites within 6 m of the Site;</li> <li>• Western Ringtail Possum (Critically Endangered/Threatened)</li> <li>• Dunsborough Burrowing Crayfish (Critically Endangered)</li> <li>• Peregrine Falcon (S)</li> <li>• Coastal Plains Skink (P3)</li> <li>• Quenda (P4)</li> </ul>
Significant through Local Planning or Biodiversity Strategy	No	Not applicable
Vegetation associations of complexes with <30% of Pre-European extent remaining outside of constrained areas	Yes	<p>The following vegetation complexes are located within the Site which have native vegetation within them:</p> <ul style="list-style-type: none"> <li>• Karrakatta Complex-Central and South (23% remaining with 3.9% protected)</li> <li>• Cokelup Complex (10.5% remaining with 2.6% protected)</li> </ul> <p>The Quindalup Dune Complex is located within the Site however there is no native vegetation in the Site located on this complex.</p>

Environmental Value	Present within the Site (Yes or No)	Description
Ecological Linkages	Yes	<p>Guiding principles for South West Regional Ecological Linkages Technical Report (WALGA &amp; DEC, 2009) state vegetation &lt;100 m wide should be avoided where it is practical to do so, which the remnant vegetation adjacent to Dugalup Brook represents.</p> <p>The number of linkages connecting to any given patch should be maximised as this improves the overall connectivity across the landscape and long term viability of individual patches. There are several gaps between patches within the Site, due to the location of roads and buildings.</p> <p>High priority for inclusion in the linkage, (which applies to the Site) includes;</p> <ul style="list-style-type: none"> <li>• Ecological Linkages selected whose directions facilitate normal migration, and aid in the adaptation of species and assemblages to climate change;</li> <li>• Riparian vegetation along waterways including an appropriate buffer of non-riparian vegetation</li> <li>• Patches that enhance the viability of significant biodiversity conservation assets and initiatives through conserving both species and structural heterogeneity and therefore habitat values.</li> </ul> <p>Dugalup Brook and the riparian vegetation supports Western Ringtail Possums, listed as Critically Endangered, and this location would likely support the adaption to climate change, being near a water source, and the Site can represent a significant biodiversity asset due to the listing of the Western Ringtail Possum.</p>

## 2.2 Re-vegetation / Landscape Plans

No revegetation is proposed as part of this proposal.

The final Local Structure Plan includes recreation reserves with managed vegetation for use as public open space. These areas will require management to Asset Protection Zone standards or classification to the appropriate vegetation class based on the mature state of any plantings and taking into the account potential regeneration.

# 3 Bushfire Hazard Level Assessment

## 3.1 Assessment Inputs

The on-ground assessment of the Site was undertaken on 26 November 2020 by BPAD Accredited Practitioners for the purpose of classifying vegetation in accordance with AS 3959 - 2018 Simplified Procedure (Method 1).

Vegetation has been classified based on the mature state of any plantings and by taking into account the potential for future revegetation and regeneration. The Site contains many structures with a range of slopes assessed within the Site. A worst case scenario has applied to the slope under the vegetation to consider the different aspects the bushfire threat applies to for the different structures.

All vegetation within 150m of the Site was classified in accordance with Clause 2.2.3 of AS 3959-2018, shown in the photos below with map provided in Figure 3.

**Plot 1**      **Vegetation Classification or Exclusion Clause**      **A Forest Downslope >0 to 5 degrees**



*Photo ID: 1*



*Photo ID: 2*



*Photo ID: 3*



*Photo ID: 4*

**Description / Justification for Classification**

Trees with canopy cover of 30 - 70%, includes areas of remnant native vegetation as well as planted species. Vegetation has been classified taking into account the mature state of all plantings.

**Plot 2**      **Vegetation Classification or Exclusion Clause**      **A Forest Upslope / Flat**



*Photo ID: 5*



*Photo ID: 6*



*Photo ID: 7*



*Photo ID: 8*

**Description / Justification for Classification**

Trees with canopy cover of 30 - 70%, includes areas of remnant native vegetation as well as planted species. Vegetation has been classified taking into account the mature state of all plantings and the potential for regeneration once grazing is excluded.

**Plot 3**      **Vegetation Classification or Exclusion Clause**      **B Woodland Downslope >0 to 5 degrees**



*Photo ID: 9*



*Photo ID: 10*

**Description / Justification for Classification**

Trees with canopy cover of 10 - 30%, over a predominately cleared understory. This classification is considered conservative due to the lack of understory however a worst case scenario has applied.

**Plot 4**      **Vegetation Classification or Exclusion Clause**      **D Scrub Upslope / Flat**



*Photo ID: 11*



*Photo ID: 12*

**Description / Justification for Classification**

Vegetation with maximum height of 6m. This classification is considered conservative due to predominate vegetation under 2 m which is compliant with Class C Shrubland however a worst case scenario has applied.



**Plot 5**      **Vegetation Classification or Exclusion Clause**      **Excluded Section 2.2.3.2 (a), (e) & (f)**



**Photo ID: 13**



**Photo ID: 14**



**Photo ID: 15**



**Photo ID: 16**



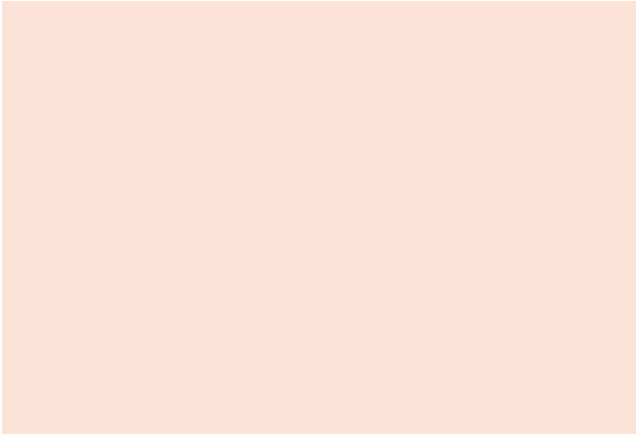
**Photo ID: 17**



**Photo ID: 18**

**Description / Justification for Classification**

Areas greater than 100m from the Site have been excluded from classification under S. 2.2.3.2 (a). Non-vegetated areas including existing roads, buildings and permanent water bodies have been excluded under S 2.2.3.2 (e). Low threat vegetation has been excluded under S. 2.2.3.2 (f) and includes single line of trees and reticulated lawns and gardens on urban lots that



require management under the City of Busselton's Firebreak and Fuel Hazard Reduction Notice (*which may be subject to review from time to time*), including managing grasses at under 10cm in height. Grasses within the remainder of the Site have also been excluded, as any lot will be required to manage all grasses at under 10cm in height under the City's Firebreak and Fuel Hazard Reduction Notice. Recreation reserves and a nature playground which are currently managed gardens and lawn in a low fuel state have been excluded under S. 2.2.3.2 (f). These areas are used by the public and being within the centre of the town will be managed in perpetuity.



Location details: Dunsborough Activity Centre

Project: 20942

Assessment date: 26/11/2020

Prepared by: D Plowman, Accreditation level: Level 1

Accreditation number: 46554, Accreditation expiry date: Aug 2020

Date aerial photo: Nov 2020

### Vegetation Classification Map



### Legend

- 150 m Assessment
- 100 m Assessment
- Dunsborough Activity Centre
- Cadastre
- Waterways
- Elevation (m AHD)

Photos

### Veg Classification

- Class A Forest Downslope >0 to 5 degrees
- Class A Forest Upslope / Flat

Class B Woodland Downslope >0 to 5 degrees

Class D Scrub Upslope / Flat

Ex. S. 2.2.3.2 (a)

Ex. S. 2.2.3.2 (e) & (f)



www.ecosystemsolutions.com.au  
(08) 9759 1960

Figure 3 Vegetation Classification

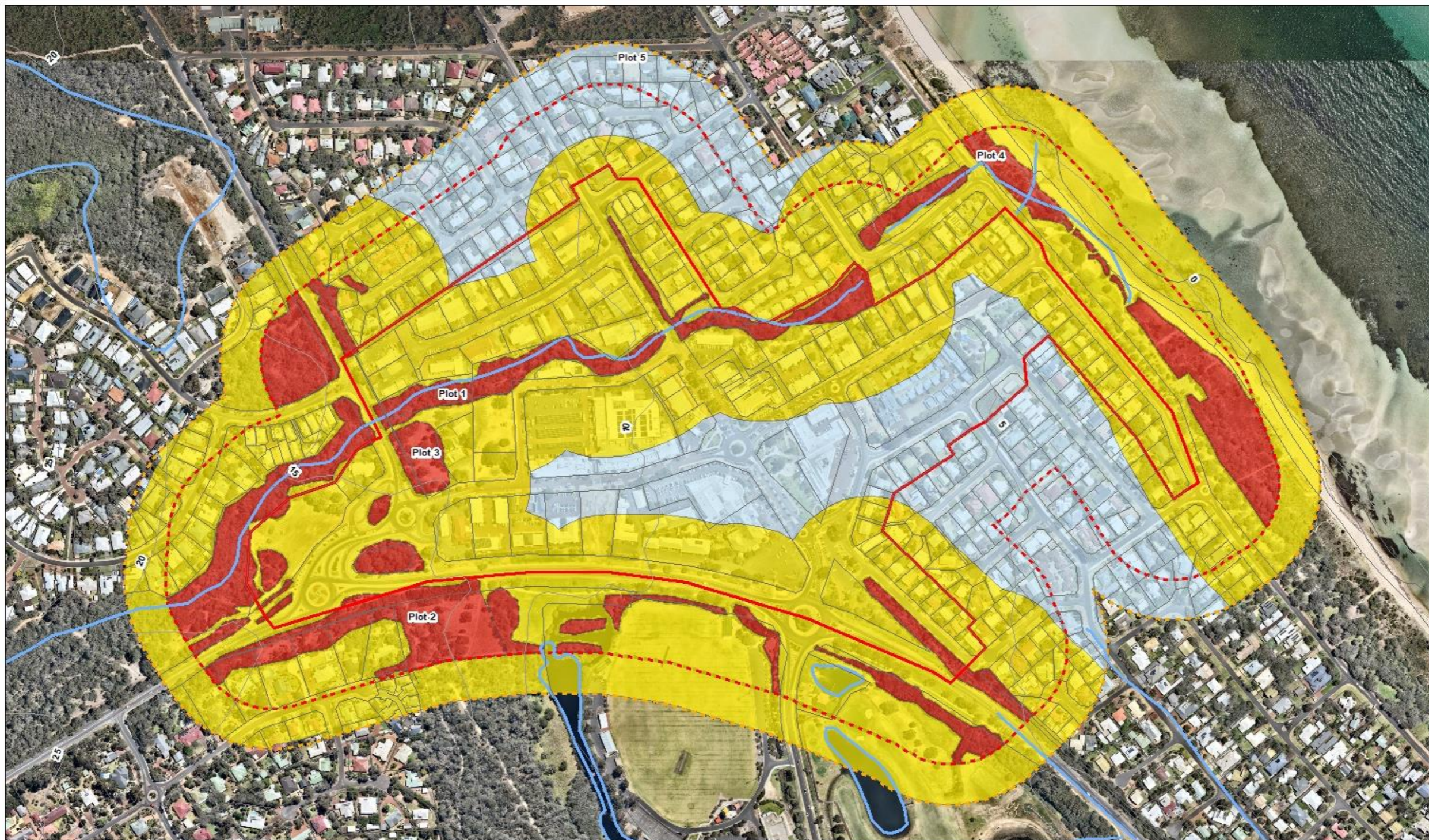
## 3.2 Assessment Outputs

The results from the Site assessment are provided in Table 2. The Bushfire Hazard Level for the Site has been determined in accordance with Appendix Two of the *Guidelines for Planning in Bushfire Prone Areas, Version 1.1, Feb 2017*, with associated map provided in Figure 4. The Bushfire Attack Level Contour has been determined in accordance with Appendix Three of the *Guidelines for Planning in Bushfire Prone Areas, Version 1.1, Feb 2017*, with associated map provided in Figure 5.

**Table 2 Site Assessment Results**

Method 1 BAL Determination					
Fire Danger Index - 80 (AS3959-2018 Table 2.1)					
Plot	Vegetation Classification	Effective Slope Under the Classified Vegetation	Bushfire Hazard Level (Figure 4)	Separation Distance to the Classification Vegetation (metres)	Bushfire Attack Level based on separation distance (Figure 5)
1	Class A Forest	Downslope >0 to 5 degrees	Extreme	0 m	BAL-FZ
2	Class A Forest	Upslope / Flat	Extreme	0 m	BAL-FZ
3	Class B Woodland	Downslope >0 to 5 degrees	Extreme	0 m	BAL-FZ
4	Class D Scrub	Upslope / Flat	Extreme	Min 13 m	BAL-29
5	Excluded Section 2.2.3.2 (a), (e) & (f)	Not Applicable	Moderate within 100 m of Extreme hazard, if greater than 100 m than Low	Not Applicable	BAL-LOW
<b>Determined Bushfire Attack Level</b>					<b>BAL-FZ*</b>

\* Separation distance from the Site to the classified vegetation is 0 m for plots which are located within the Site resulting in a BAL rating of BAL-FZ. A lower BAL rating may be achieved based on assessment of a single structure or lot within the Site.



Location details: Dunsborough Activity Centre  
 Project: 20942  
 Assessment date: 26/11/2020  
 Prepared by: D Plowman, Accreditation level: Level 1  
 Accreditation number: 46554, Accreditation expiry date: Aug 2020  
 Date aerial photo: Nov 2020

### Bushfire Hazard Level Assessment Map



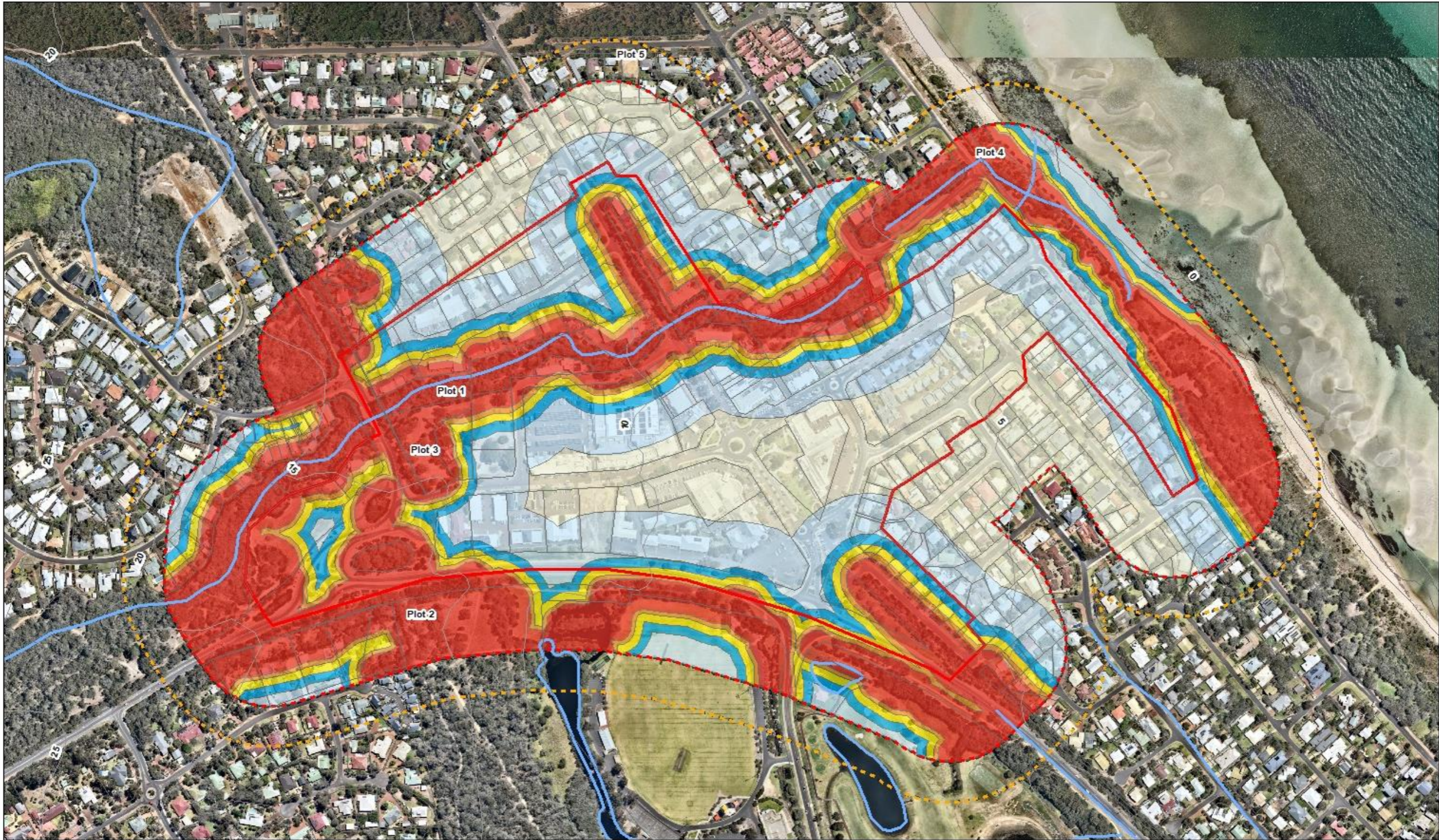
### Legend

- 150 m Assessment
  - 100 m Assessment
  - Dunsborough Activity
  - Cadastre
  - Waterways
  - Elevation (m)
  - Veg Classification
- Bushfire Hazard Level**
- Extreme
  - Moderate
  - Low



www.ecosystemsolutions.com.au  
 (08) 9759 1960

Figure 4 Bushfire Hazard Level Assessment Map



Location details: Dunsborough Activity Centre  
 Project: 20942  
 Assessment date: 26/11/2020  
 Prepared by: D Plowman, Accreditation level: Level 1  
 Accreditation number: 46554, Accreditation expiry date: Aug 2020  
 Date aerial photo: Nov 2020

### Bushfire Attack Level (BAL) Contour Map



#### Legend

- 150 m Assessment
- 100 m Assessment
- Dunsborough Activity
- Cadastre
- Waterways
- Elevation (m)
- Veg Classification
- BAL-LOW
- BAL-12.5
- BAL-19
- BAL-29
- BAL-40
- BAL-FZ

#### Indicative BAL rating:

 ecosystem solutions  
[www.ecosystemsolutions.com.au](http://www.ecosystemsolutions.com.au)  
 (08) 9759 1960

Figure 5 BAL Contour Map

# 4 Bushfire Protection Elements

## 4.1 Element 1: Location

### ELEMENT 1: LOCATION

**Intent:** To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure

#### Acceptable Solution

##### A1.1 Development location

The strategic planning proposal, subdivision and development application is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL-29 or below.

#### Compliance

Majority of the lots within the Site have not been located in a bushfire prone area due to the current map (Figure 2) and therefore established development would not have had to comply with the provisions of SPP 3.7. In the case that this map changes future redevelopment proposals will trigger assessment against SPP 3.7.

Under the classification shown in Figure 3, areas of the Site are within BAL-40 and BAL-FZ, however there are sufficient areas with a Moderate or Low Hazard Rating (Figure 4) or a BAL-29 or lower rating (Figure 5) to allow for development.

Land is most suitable for land use intensification where hazard levels are low or moderate. Where there is an extreme bushfire hazard or requirement for use of BAL-40 or BAL-FZ construction standards, the land is not considered suitable for development unless it meets the definition of minor or unavoidable development. The Site is classified within a residential built out area, as shown in Local Planning Policy 4.2 Bushfire. Development within the Site may be considered minor development with assessment against SPP 3.7 clause 6.7.1, required if any development occurs in areas of BAL-40 or BAL-FZ.

It is recommended for any new structure or additions to existing structures that a hazard separation occurs between classified vegetation and proposed development to achieve BAL-29. A hazard separation could contain perimeter roads, carparking, footpaths or low threat vegetation. This will help to ensure appropriate setbacks between classified vegetation and any new structure or additions to existing structures.

Prior to subdivision of lots or development of new habitable dwellings, a BMP or BAL assessment will be undertaken to ensure that proposed buildings are able to accommodate appropriate setbacks and have the capacity to achieve BAL-29 or lower.

## 4.2 Element 2: Siting and design of development

### ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

**Intent:** To ensure that the siting and design of development minimises the level of bushfire impact.

#### Acceptable Solution

##### A2.1 Asset Protection Zone

Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements:

- **Width:** Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m<sup>2</sup> (BAL-29) in all circumstances.
- **Location:** the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity.
- **Management:** the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones'.

#### Compliance

Any new habitable dwelling within a bushfire prone area, and any other structure at the discretion of the Local Government, must have an Asset Protection Zone to achieve a BAL-29 or lower rating in perpetuity, managed to the standard in the Guidelines for Planning in Bushfire Prone Areas (Appendix B).

Compliance with the City of Busselton's Firebreak and Fuel Hazard Reduction Notice (which may be subject to review from time to time) will ensure that existing urban lots and recreation reserves used for public open space will be maintained in a low fuel state in perpetuity.



## 4.3 Element 3: Vehicular access

ELEMENT 3: VEHICULAR ACCESS	
<b>Intent:</b> To ensure that the vehicular access serving a subdivision/development is available and safe during a bushfire event.	
Acceptable Solution	Compliance
<p><b>A3.1 Two access routes</b></p> <p>Two different vehicular access routes are provided, both of which connect to the public road network, provide safe access and egress to two different destinations and are available to all residents/the public at all times and under all weather conditions.</p>	<p>The public road network can be used to access two different destinations from individual lots. Caves Road can be taken east to access Busselton town centre. Alternatively, Caves Road can be taken west to access Margaret River town centre via Wallcliffe Road.</p>
<p><b>A3.2 Public road</b></p> <p>A public road is to meet the requirements in Table 6, Column 1 (Appendix C).</p>	<p>Existing public roads meet the requirements of the Guidelines.</p> <p>All new public roads proposed within the Site must be constructed to the standards in the Guidelines (Appendix C).</p>
<p><b>A3.3 Cul-de-sac (summarised below)</b></p> <p>Maximum length (where no alternative exists -ie. lot layout already established): it should otherwise be 200m (but can be increased to 600 if an emergency access is provided between heads)</p> <ul style="list-style-type: none"> <li>• Requirements/dimensions: Table 6, Column 2 (Appendix C);</li> <li>• Maximum length: 200 metres (if public emergency access is provided between cul-de-sac heads maximum length can be increased to 600 metres provided no more than eight lots are serviced and the emergency access way is no more than 600 metres); and</li> <li>• Turn around including minimum 17.5m diameter head (Appendix C).</li> </ul>	<p>Cul-de-sacs are to be avoided in bushfire prone areas unless unavoidable.</p> <p>The Site contains two existing cul-de-sacs, Clarke Street and Chieftain Crescent, which do not comply with the requirements of the Guidelines as the length exceeds 200 m with no Emergency Access Way provided between cul-de-sac heads and with more than eight lots serviced. These cul-de-sacs have adequate horizontal and vertical clearances. It is recommended that any future development considers connecting these cul-de-sacs to a public road to allow through access for evacuation during a bushfire event. This is supported with a connection from Clark Street to Cape Naturaliste Terrace shown in the 2014 Dunsborough Town Centre Conceptual Plan.</p> <p>It is unlikely that any new cul-de-sacs will be required within the Site, however any unavoidable cul-de-sacs will meet the requirements of the Guidelines (Appendix C).</p>
<p><b>A3.4 Battle-axe (summarised below)</b></p> <ul style="list-style-type: none"> <li>• Requirements in Table 6, Column 3 of the Guidelines (Appendix C);</li> <li>• Maximum length 600m; and</li> <li>• Minimum width six metres.</li> </ul>	<p>Battle-axe legs should be avoided in bushfire prone areas. It is unlikely that any battle-axe legs will be required within the Site as the intent of the Activity Centre is that there is a focus on mixed use development with an active street interface and, around the periphery, medium density housing.</p> <p>In the case that there is no alternative to a battle-axe leg, the requirements of the Guidelines will be met (Appendix C) with a maximum length of 600 m.</p>

## ELEMENT 3: VEHICULAR ACCESS

### A3.5 Private driveway >50m (summarised)

- Requirements in Table 6, Column 3 (Appendix C);
- Required where a house site is more than 50 metres from a public road;
- Passing bays: every 200 metres with a minimum length of 20 metres and a minimum width of two metres (i.e. the combined width of the passing bay and constructed private driveway to be a minimum six metres);
- Turn-around areas designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres) and within 50 metres of a house (Appendix C); and
- Any bridges or culverts are able to support a minimum weight capacity of 15 tonnes.
- All-weather surface (i.e. compacted gravel, limestone or sealed).

Any proposed driveway that exceeds 50 m will meet the criteria set out in the Guidelines (A3.5 and Appendix C).

### A3.6 Emergency access way

Where no alternative exists, an Emergency Access Way (EAW) is to be provided as an alternative link to a public road and meet the following requirements:

- Requirements in Table 6, Column 4 (Appendix C);
- No further than 600 m from a public road;
- Provided as a right of way or public access easement in gross to ensure accessibility to the public and fire services during an emergency; and
- Must be signposted.

The Site achieves two access routes with existing public roads, however any Emergency Access Ways (EAW) proposed within the Site will be required to meet the requirements of the Guidelines (Appendix C) and be no longer than 600 m with a signpost. Any EAW will be provided as a right of way OR public access easement in gross to ensure accessibility to the public.

Ongoing management of any EAW will be required by each respective landowner where it occurs on their land OR following establishment will be maintained by the City of Busselton if agreed.

## ELEMENT 3: VEHICULAR ACCESS

### A3.7 Fire service access routes

- Requirements Table 6, Column 5 (Appendix C);
- Provided as right of ways or public access easements in gross to ensure accessibility to the public and fire services during an emergency;
- Surface: all-weather (i.e. compacted gravel, limestone or sealed)
- Dead end roads are not permitted;
- Turn-around areas designed to accommodate type 3.4 appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres) (Appendix C);
- No further than 600 metres from a public road; Allow for two-way traffic and;
- Must be signposted.

The Site achieves two access routes with existing public roads. It is unlikely Fire Service Access Routes will be required however if utilised compliance with the Guidelines would be required (A3.7 and Appendix C).

### A3.8 Firebreaks

Lots greater than 0.5 ha must have an internal permitter firebreak of a minimum width of 3 m or to the level prescribed in the local fire break notice issued by the local government.

Compliance with the City of Busselton's Firebreak and Fuel Hazard Reduction Notice (Appendix A - which may be subject to review from time to time) is required, with Category 2 lots, Urban residential & Industrial Commercial. exceeding 2,024 m<sup>2</sup> requiring 3 m wide mineral earth breaks.

## 4.4 Element 4: Water

### ELEMENT 4: WATER

**Intent:** To ensure that water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire.

#### Acceptable Solution

##### A4.1 Reticulated Areas

The subdivision, development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority and Department of Fire and Emergency Services.

#### Compliance

The Site is connected to reticulated water and complies with the Water Corporation's No. 63 Water Reticulation Standard.  
Any future development will need to be connected to a reticulated water supply in compliance with the Water Corporation's No. 63 Water Reticulation Standard.

## ELEMENT 4: WATER

### A4.2 Non-reticulated Areas

Not applicable to this Site.

Water tanks for fire fighting purposes with a hydrant or standpipe are provided:

- Volume: minimum 50,000 L per tank;
- Ratio of tanks to lots: minimum one tank per 25 lots (or part thereof);
- Tank location: no more than 2 km to the further most house site within the residential development to allow a 2.4 fire appliance to achieve a 20 minute turnaround time at legal road speeds;
- Hardstand and turn-around areas suitable for a type 3.4 fire appliance (i.e. kerb to kerb 17.5 m) are provided within 3 m of each water tank; and

Water tanks and associated facilities are vested in the relevant local government.

### A4.3 Individual lots within non-reticulated areas

Not applicable to this Site.

Single lots above 500 m<sup>2</sup> need a dedicated static water supply on the lot that has the effective capacity of 10,000 L.

## 5 Responsibilities and Bushfire Measures

Development within the Site may occur over an extended period of time with responsibilities determined with the creation of any bushfire management plan.

While this Activity Centre Plan does not propose any subdivision, any subdivision application is to be accompanied by the following information in accordance with the Guidelines and in accordance with Section 6.4 of SPP 3.7 in the form of a Bushfire Management Plan or an amendment to an existing Plan where one has previously been endorsed:

- BAL Contour Map to determine the indicative acceptable BAL rating;
- Identification of any bushfire hazard issues arising from the BAL Contour map; and
- An assessment against the bushfire protection criteria requirements contained within the Guidelines demonstrating compliance within the boundary of the subdivision site.

Any development application is to be accompanied by the following information in accordance with the Guidelines and in accordance with Section 6.5 of SPP 3.7 in the form of a Bushfire management Plan or an amendment to an existing Plan where one has previously been endorsed:

- BAL Assessment OR BAL Contour Map to determine the indicative acceptable BAL rating;
- Identification of any bushfire hazard issues arising from the BAL Contour map; and
- An assessment against the bushfire protection criteria requirements contained within the Guidelines demonstrating compliance within the boundary of the subdivision site.

Vulnerable or high risk land uses require a Bushfire Management Plan and Bushfire Emergency Evacuation Plan. Assessment against the Position Statement - Tourism in bushfire prone areas (WAPC, Nov 2019) is also recommended.

A building permit issued by the Local Government is required for the construction of a structure with an accompanied BAL Assessment, or a BAL Contour map from a previous approved proposal, for structures in a bushfire prone area. If the BAL Assessment or BAL Contour Map identifies the structure to be within BAL-40 or BAL-FZ, a development application and planning approval is required. It is recommended to apply these requirements on lots less than 1,100 m<sup>2</sup> and greater.

Building construction standards are mandatory for Class 1a, Class 1b, Class 2 or Class 3 residential buildings and associated Class 10a buildings in bushfire prone areas to meet the requirements of AS3959-2018. It is recommended that this building standard applies to all new structures in bushfire prone areas where

planning approval is required, which is at the discretion of the Local Government for building classes that are not mandatory.

A BMP compliance report may be required at the discretion of the Local Government following the completion of work required in an approved Bushfire Management Plan, to allow the issue of a building permit or sale of lots.

## 6 Conclusion

This report provides a Bushfire Hazard Level assessment and BAL Contour Assessment, for the Dunsborough Activity Centre, addressing the four bushfire protection criteria detailed in the Guidelines for Planning in Bushfire Prone Areas (Version 1.3, Dec 2017). The information contained within this Bushfire Hazard Level Assessment will inform future proposals for development within the Site.

The Site represents a lower bushfire risk compared to the surrounding landscape due to the surrounding area containing a number of extreme bushfire sources and the Site being a town centre with services such as reticulated water, two access ways and close proximity to emergency services. The Site will be relied upon for any evacuation from the surrounding area as Cape Naturaliste Road and Caves Road are either the only evacuation route, or the main road, for people within the surrounding areas.

Bushfire safety is a shared responsibility between governments, fire agencies, communities and landowners. This BHL addresses how this Site can achieve compliance with Bushfire Protection Criteria, as detailed in the Guidelines for Planning in Bushfire Prone Areas, in subsequent stages in the planning process. Compliance with the criteria within the Guidelines will not remove all risk. The way in which people prepare and maintain their properties, buildings and assets and the actions they take (e.g. evacuate early or stay and defend) greatly influence their personal safety. Anyone within the Site during a bushfire event need to maintain self-reliance and not wait or expect warnings or assistance from emergency services.

# Appendix A City of Busselton Firebreak and Fuel Hazard Reduction Notice 2020/2021

#### PERMITS TO BURN

Permits to Burn are required for the whole of the Restricted Burning Times and can only be obtained from the Fire Control Officer for your area

A list of Fire Control Officers is available on the City's website on the Fire and Emergency Services Information page

Most of our Fire Control Officers are volunteers, make sure you plan ahead if you intend to apply for a permit

A permit must be obtained before any burning takes place and the permit holder must be in possession of the permit throughout the duration of the burn.

The Fire Control Officer will require the following information prior to issuing a permit:

- The address of the property where it is proposed to conduct the burn
- Details of three able bodied persons who will be in attendance at the fire at all times whilst it is alight, including a contact phone number
- What fire-fighting equipment will be on-hand during the burn and confirmation it is in good working order
- Are there firebreaks installed at the property and can a fire appliance get access to the site of the burn
- What are the materials to be burned, are they dry, and what is the size of the proposed burn

The permit holder shall ensure all conditions of the permit, as shown on the permit, are fully complied with

Failure to obtain a permit or failure to fully comply with the conditions of a permit may result in a fine or prosecution

*The hardest aspect of fire prevention is explaining to your family why you didn't undertake any!*



*Actions speak louder than words and actions save lives*

#### GENERAL INFORMATION

**Burning of Garden Refuse:** pursuant to Section 24G(2) of the *Bush Fires Act 1954*, the burning of garden refuse is prohibited throughout the District during Prohibited Burning Times, and prohibited in Urban areas of the District during Restricted Burning Times

During Restricted Burning Times, a Permit to Burn is required for the burning of garden refuse in Rural Residential or Rural areas

**Camping and/or Cooking Fires:** pursuant to Section 25(1a) of the *Bush Fires Act 1954*, the lighting of fires in the open for the purpose of camping and/or cooking is prohibited throughout the District during Prohibited Burning Times

Pursuant to Section 25(1)(a) of the *Bush Fires Act 1954*, the lighting of fires in the open for the purpose of camping and/or cooking is prohibited when the Fire Danger Rating for the District is Very High or above without the written approval of the City

**Fire Pits, Chimineas, and/or Braziers:** pursuant to Section 25 of the *Bush Fires Act 1954*, the lighting of fire pits, Chimineas and/or braziers is prohibited during Prohibited Burning Times, and otherwise prohibited if the Fire Danger Rating for the District is Very High or above

**Conditions for the Lighting and Extinguishing of Fires in the Open:** when burning garden refuse; or lighting camping and/or cooking fires; or when lighting fire pits, Chimineas and/or braziers the space of ground around the site of the fire, having a radius of at least 3 metres from the site at the centre, is clear of all vegetation and other flammable materials

The person who lit the fire, or a person left in attendance at the fire as the case may be, shall completely extinguish the fire by the application of water and/or earth before that person leaves the site unattended

**Further Information:** for further fire safety information and resources, including current Fire Danger Ratings visit the Department of Fire and Emergency Services website [www.dfes.wa.gov.au](http://www.dfes.wa.gov.au)

#### KEY DATES

Dates may change due to seasonal fire conditions in which case details will be published in local newspapers and on the City's website

##### PROHIBITED BURNING TIME

**1 December 2020 to 28 February 2021**  
(BURNING IN THE OPEN PROHIBITED)

##### RESTRICTED BURNING TIMES

**15 October 2020 to 30 November 2020 inclusive and 1 March 2021 to 31 May 2021 inclusive**  
(BURNING PERMITS REQUIRED)  
(Burning on Public Holidays Prohibited)

##### COMPLIANCE DATES

**Rural Residential / Urban / Industrial Land**  
Compliance with this Notice must be achieved no later than **15 November 2020** and maintained until **12 May 2021**

**Rural Land**  
Compliance with this Notice must be achieved no later than **15 December 2020** and maintained until **12 May 2021**

##### FIREBREAK INSPECTIONS AND RIGHT OF ENTRY

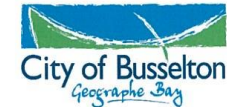
The City will commence its annual firebreak inspection program on **16 November 2020**

Rangers are appointed as Bush Fire Control Officers under the provisions of the *Bush Fires Act 1954* (the Act) and carry out annual inspections.

Under the provisions of the Act, Bush Fire Control Officers may in the performance of their duties, enter any land or building including private property

##### FIREBREAK VARIATIONS

Where there are valid environmental and/or on-ground considerations which prevent full compliance with this Notice, landowners may apply to the City for a variation. A variation must be lodged in writing on a Firebreak and Fuel Hazard Reduction Variation Form which is available on the City's website. Applications for a variation must be submitted by **31 October 2020**



## FIREBREAK AND FUEL HAZARD REDUCTION NOTICE

### 2020/2021 BUSH FIRE SEASON

#### FIRST AND FINAL NOTICE

##### *Bush Fires Act 1954*

Take notice that pursuant to Part 3 Division 6 Section 33 of the *Bush Fires Act 1954*, landowner(s) or occupier(s) of land shall construct firebreaks and carry out fire prevention work in accordance with this Notice

Failure to comply with this Notice may result in a fine of up to

**\$5,000**

Should you require assistance or clarification of the requirements of this Notice, please contact the City's Ranger and Emergency Services on **9781 0444**



CATEGORY	FIREBREAK CATEGORY CODE AND SUMMARY OF REQUIREMENTS			
	A	B	C	D
<p><b>CATEGORY 1</b> RURAL Except plantations and vineyards (For tourist chalets, refer to Estate Fire Management Plan or Individual Fire Management Plan) Sections A, C and D apply to this category.</p>	✓	✓	✓	✓
<p><b>CATEGORY 2</b> URBAN RESIDENTIAL &amp; INDUSTRIAL - COMMERCIAL Sections A, B, D and E1 Trees, apply to this category. Refer to section E - Interpretation and Additional Requirements (E1 Trees).</p>	✓	✓	✓	✓
<p><b>CATEGORY 3 &amp; 4</b> PLANTATIONS Fire Management Plan applies</p>	N/A	N/A	N/A	N/A
<p><b>CATEGORY 5</b> PROTEA PLANTATIONS / VINEYARDS (For tourist chalets, refer to Estate Fire Management Plan or Individual Fire Management Plan) Sections A, B, C and D apply to this category.</p>	✓	✓	✓	✓
<p><b>CATEGORY 6</b> RURAL RESIDENTIAL - LOTS WITH INDIVIDUAL (MINERAL EARTH) BOUNDARY BREAKS Sections A, B, C and D apply to this category unless the property is subject to Estate Fire Management Plan or Individual Fire Management Plan</p>	✓	✓	✓	✓
<p><b>CATEGORY 7</b> RURAL RESIDENTIAL - LOTS WITH A STRATEGIC FIREBREAK ON ONE OR MORE BOUNDARIES Sections A, B, C and D apply to this category unless the property is subject to Estate Fire Management Plan or Individual Fire Management Plan</p>	✓	✓	✓	✓
<p><b>CATEGORY 8</b> RURAL RESIDENTIAL - LOTS WITHIN A STRATEGIC FIREBREAK AREA WITH NO STRATEGIC FIREBREAKS ON THE LOT BOUNDARIES Sections B, C and D apply to this category unless the property is subject to Estate Fire Management Plan or Individual Fire Management Plan</p>	✓	✓	✓	✓

**FIREBREAK CATEGORY CODE AND SUMMARY OF REQUIREMENTS**

ALL REQUIREMENTS IN THIS NOTICE ARE TO BE MAINTAINED THROUGHOUT THE

ENTIRE DURATION OF THE FIRE SEASON

FAILURE TO COMPLY MAY RESULT IN A \$5,000 FINE

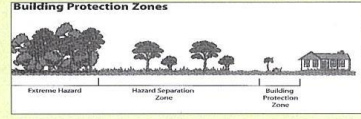
PLEASE BE ADVISED THAT YOUR PROPERTY MUST COMPLY WITH CATEGORY REQUIREMENTS AS NOTED BY A TICK IN COLUMN A, B, C OR D



**A - Firebreak** – The term firebreak includes a mineral earth firebreak. A mineral earth firebreak means a 3 metre wide area of the owner(s)/occupier(s) land, cleared and maintained totally clear of all vegetation material (living or dead) so there is only mineral earth left. Any overhanging trees and other vegetation must be pruned to a height of 5 metres above the ground level of a mineral earth firebreak.  
**Category 1 – Rural:** A mineral earth FIREBREAK shall be constructed 3 metres wide, except in pasture or crop areas where a FIREBREAK shall be 2 metres wide. FIREBREAKS shall be located adjacent to all external boundaries of the land. Where the land area exceeds 120 hectares, an additional FIREBREAK must divide the land into areas of not more than 120 hectares with each part completely surrounded by a FIREBREAK.  
**Category 2 – Urban Residential and Industrial-Commercial:** Where the area of land exceeds 2024m<sup>2</sup> (½ acre) a mineral earth FIREBREAK shall be constructed and maintained at least 3 metres wide and within 6 metres of the inside of all external boundaries of the land. Where the area of land is 2024m<sup>2</sup> (½ acre) or less, hazardous material must be removed in accordance with section B - Fuel Reduction (refer to B1).  
**Category 5 - Protea Plantations/Vineyards:** A mineral earth FIREBREAK shall be 3 metres wide. A low fuel area is to be maintained in accordance with section B - Fuel Reduction (refer to B2).  
**Category 6 and 7 - Rural Residential:** A mineral earth FIREBREAK shall be constructed 3 metres wide. On Category 6 Rural Residential land with pasture or crop, a FIREBREAK shall be 2 metres wide and located within 6 metres of all external boundaries of the land. For Category 7 Rural Residential land, free access along a Strategic FIREBREAK is to be maintained at all times and including across the boundary of a lot, by means of a 3.5 metres wide field gate in the adjoining lot boundary fence.

**B - Fuel Reduction**  
 1) **Category 2 - Urban Residential and Industrial-Commercial:** Where the area of land is 2024m<sup>2</sup> (½ acre) or less, ALL HAZARDOUS MATERIAL must be removed from the whole of the land except living trees. In the area remaining, vegetation is to be maintained to a height of no greater than 10 centimetres; this includes piles of timber, branches and other vegetation. Trees shall be pruned in accordance with section E – Interpretation and Additional Requirements (refer to E1).  
 2) **Category 5 - Protea Plantations/Vineyards:** A 5 metre low fuel area is to be maintained between the 3 metre FIREBREAK and the plantation/vineyard area. In this area, vegetation is to be maintained to a height of no greater than 10 centimetres; this includes piles of timber, branches and other vegetation.  
 3) **Category 6, 7 and 8 - Rural Residential:** Parkland clearing must be carried out in all open paddocks and along the boundary of the property. Clearing means that all dead vegetation and dry grasses (excluding approved crops, pasture areas and living trees/shrubs) including piles of timber and disused materials must be maintained to a height of no greater than 10 centimetres.

**C - Building Protection Zones (BPZ)** - This is a modified area of reduced fuel immediately surrounding a building  
 BPZ's starve the fire by reducing the fuel levels around your house. These requirements are designed to reduce the fire's intensity and minimise the likelihood of flame contact with buildings. The BPZ gives more protection to families should a fire threaten suddenly and they cannot leave. It also provides extra protection for fire fighters and property owners who may decide to stay with their property.  
 A BPZ shall be provided for buildings in bush fire prone areas. The surroundings of buildings must comply with the following requirements:  
 1) The BPZ for existing buildings must be at least 20 metres from any external wall of the building unless varied under an approved Fire Management Plan (FMP) in accordance with section E - Interpretation and Additional Requirements (refer to E4).  
 2) The minimum BPZ for buildings constructed after 1 November 2011, in all cases shall be 25 metres.  
 3) The BPZ must be located within the boundary of the lot that the building is situated on.  
 4) Hazardous/flammable materials must not exceed the maximum fuel load specified in Point 5 below with grass areas not exceeding a height greater than 10 cm.  
 5) Fuel loads must be reduced and maintained at 2 tonne per hectare.  
 6) Isolated trees and shrubs may be retained, however, the first 5 metres around all buildings is to be clear of all hazardous/flammable materials.  
 7) Reticulated gardens in the BPZ shall be maintained to a height of no greater than 500 millimetres.  
 8) Wood piles must be at least 10 metres away from habitable dwellings.  
 9) Trees in the BPZ must comply with section E - Interpretation and Additional Requirements (refer to E1).  
 10) Where the land has an approved FMP, compliance must be achieved in accordance with the FMP. The FMP may vary the above BPZ requirements.  
 11) A Hazard Separation Zone (HSZ) is also recommended in the absence of a Fire Management Plan. Section E - Interpretation and Additional Requirements (refer to E3).



**D – Fuel Storage & Haystack Protection Zones**  
 A 3 metre mineral earth FIREBREAK shall be located within 6 metres of fuel storage tanks, sheds, gas cylinders and haystacks. The mineral earth firebreak shall be maintained so that it is totally clear of all material (living or dead).

**E – Interpretation and Additional Requirements**  
 1) **Trees** On Urban, Industrial, Rural, and Rural Residential land, all tree branches must be removed or pruned to ensure a clear separation of at least 3 metres back from the eaves of all buildings and 5 metres above the top of the roof. Branches that may fall on the house must also be removed. In the BPZ the following is 'recommended'; the spacing of individual or groups of trees should be 15 metres apart to provide for a 5 metres separation between tree crowns. There is also a requirement of 2.5 metres between trees and power lines so they do not come into contact and start a fire or bring down a power line.  
 2) **Hazardous and Flammable Materials** means the accumulation of fuel including burn piles (living or dead) such as leaf litter, twigs, trash, bush, dead trees and scrub capable of carrying a running fire, but excludes standing living trees and isolated shrubs. **NOTE:** All remaining vegetation, piles of timber, branches and other living vegetation must be maintained to a height of no greater than 10 centimetres. To measure and determine fuel loads use DFES's Visual Fuel Load Guide at <http://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/pages/publications.aspx#5> and select Visual Fuel Load Guide Swan Coastal (Part 1 & 2). Surface bush fire fuels should be kept low to the ground.  
 3) **Hazard Separation Zones (HSZ)** A HSZ is a modified area of reduced fuel load outside of the BPZ and is recommended to assist in reducing the fires intensity when flames are approaching buildings. Both the BPZ and the HSZ are essential strategies for the protection of buildings. A HSZ covers the area 75 metres outside the BPZ. The HSZ should be modified to have a maximum fuel load of 6-8 tonne per hectare. This can be implemented by fuel reduction methods such as burning, mowing and slashing to remove the hazard. This should not require the removal of living trees or shrubs. **REMEMBER:** reduce the fuel level of the fire to lower the intensity of the blaze. Further information on fuel loading can be found in the Visual Fuel Load Guide available by calling DFES or via their website at [www.dfes.wa.gov.au](http://www.dfes.wa.gov.au)  
 4) **Fire Management Plan (FMP)** A FMP is a comprehensive plan for the prevention and control of bushfires which may apply to individual land holdings. A notification, pursuant to the Transfer of Land Act 1893 (as amended) may be placed on the Certificate(s) of Title of the land for medium to long term fire management to reduce the occurrence and minimise the impact of uncontrolled bush fires, thereby reducing the threat to life, property and the environment. The land owner must comply with the FMP. **Building in bush fire prone areas,** new dwellings and other forms of accommodation, as well as additions to existing buildings are to be constructed in accordance with *Australian Standard 3959-2009*. In designated bush fire prone areas, the minimum BPZ in all cases shall be 25 metres. Further information on this and other information relating to fire safety issues can be found on the City's website [www.busselton.wa.gov.au](http://www.busselton.wa.gov.au)

# Appendix B    Asset Protection Zone Standards

An APZ is an area surrounding a building that is managed to reduce the bushfire hazard to an acceptable level. The width of the required APZ varies with slope and vegetation. The APZ should at a minimum be of sufficient size to ensure the potential radiant heat impact of a fire does not exceed 29kW/m<sup>2</sup> (BAL-29).

Regardless of whether an Asset Protection Zone exists in accordance with the acceptable solutions and is appropriately maintained, it should be noted that fire fighters are not obliged to protect an asset if they think the separation distance between the dwelling and vegetation is unsafe.

**SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES**

- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Objects:** within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
- **Fine Fuel load:** combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
- **Trees (> 5 metres in height):** trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.

**Figure 18: Tree canopy cover – ranging from 15 to 70 per cent at maturity**

- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m<sup>2</sup> in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- **Grass:** should be managed to maintain a height of 100 millimetres or less.

Figure 1 Asset Protection Zone Standards (Schedule 1 - Guidelines for Planning in Bushfire Prone Areas version 1.3)

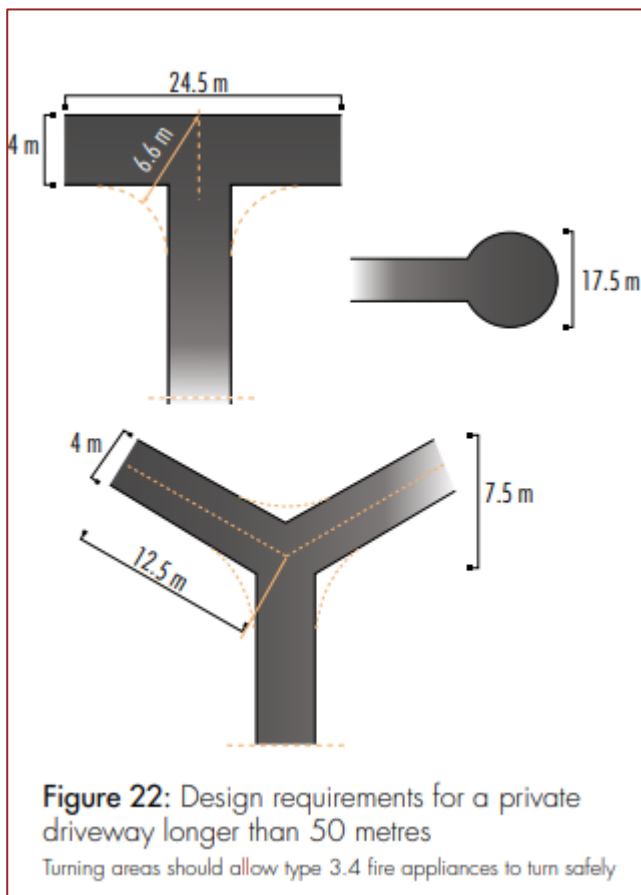
# Appendix C    Vehicle Access Technical Requirements

**Table 6:** Vehicular access technical requirements

<b>TECHNICAL REQUIREMENTS</b>	<b>1 Public road</b>	<b>2 Cul-de-sac</b>	<b>3 Private driveway</b>	<b>4 Emergency access way</b>	<b>5 Fire service access routes</b>
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal clearance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 metres	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius (m)	8.5	8.5	8.5	8.5	8.5

\*Refer to E3.2 Public roads: Trafficable surface

*Figure 1 Vehicular Access Requirements (Table 6 - Guidelines for Planning in Bushfire Prone Areas version 1.3)*



*Figure 2 Turn around requirements for a type 3.4 fire appliance (Figure 22 - Guidelines for Planning in Bushfire Prone Areas version 1.3)*