

SMITH CONSULTING

Bushfire Consultants

BUSHFIRE ATTACK LEVEL REPORT

Breakwater Estate (proposed modified subdivision), Two Rocks
(City of Wanneroo)

Prepared by Ralph Smith
SMITH CONSULTING
smith.consulting@bigpond.com
0458 292 280
30 July 2016

Introduction

This Bushfire Attack Level (BAL) assessment and report has been prepared by Smith Consulting for the exclusive use of the client, Mike Allen Planning.

The BAL assessment and report has been compiled using the standard methodologies required by Western Australian government departments and agencies. The report is based on the following:

- *State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7)*, December 2015
- *Guidelines for Planning in Bushfire Prone Areas*, December 2015
- *Australian Standard 3959 – Construction of buildings in bushfire-prone areas (incorporating amendments 1, 2 and 3)*, March 2009
- Standard fuel load field data collection methods and conversion to a fuel load applicable for the appropriate fire spread models.

The techniques described in the above publications have been applied in the appropriate areas and circumstances for the development of this document.

Where there was no public access the interpretation is based on photographic and satellite imagery, and a laser distance meter was used to measure distances and effective slope.

DISCLAIMER

This Bushfire Attack Level (BAL) assessment and report has been prepared in good faith. It is derived from sources believed to be reliable and accurate at the time of publication. Nevertheless, this report is distributed on the terms and understanding that the author is not responsible for results of any actions taken based on information in this publication or for any error or omission from this publication.

Smith Consulting has exercised due and customary care in the preparation of this BAL report and has not, unless specifically stated, independently verified information provided by others.

Any recommendations, opinions or findings stated in this report are based on circumstances and facts as they existed at the time Smith Consulting performed the work. Any changes in such circumstances and facts upon which this document is based may adversely affect any recommendations, opinions or findings contained in this report.

Report compiled by	Ralph Smith
Report checked by	Julie Smith BPAD Accreditation 36576

Property Description

Location of property: Lot 202 Breakwater Drive, Two Rocks

Property owner or representative: Mike Allen Planning

Property owner or representative details: Mike Allen (phone 0447 447 522)

Date of field assessment: Friday 22 July 2016

Purpose of Assessment

This assessment has been undertaken to determine the potential Bushfire Attack Level (BAL) on the lots within the subdivision for lots adjacent to Breakwater Drive, Oregano Drive and the proposed roads of Cinnamon Meander, Marjoram Vista and Elderberry Link, Two Rocks. The proposal is for the dwelling construction on the lots varying in area of between 1 hectare and 1.14 hectares. A copy of the proposed modified subdivision plan is provided in Appendix 2. The proposed BAL assessments for the lots is contained within the table on page 9.

The BAL assessment and report are based on the physical evidence that was present at the time of assessment and the proposed future development. The BAL assessment is based on the requirements contained within the Western Australian government policies and guidelines. The BAL assessment assumes that an appropriate Asset Protection Zone (APZ) as specified by the state government (Guidelines for Planning in Bushfire Prone Areas) and the City of Wanneroo (Protect your home and property from bushfires) will be applied to all asset protection zones and guide minimum separation distances between the building and the vegetation and construction standards.

BALs are used to determine which, if any, construction requirements contained within Sections 3-9 of the *Australian Standard 3959 – Construction standard of buildings in bushfire prone areas* (AS 3959) are appropriate for a particular site.

Procedure

The BAL assessment involved the following process in accordance with AS 3959 (Method 1):

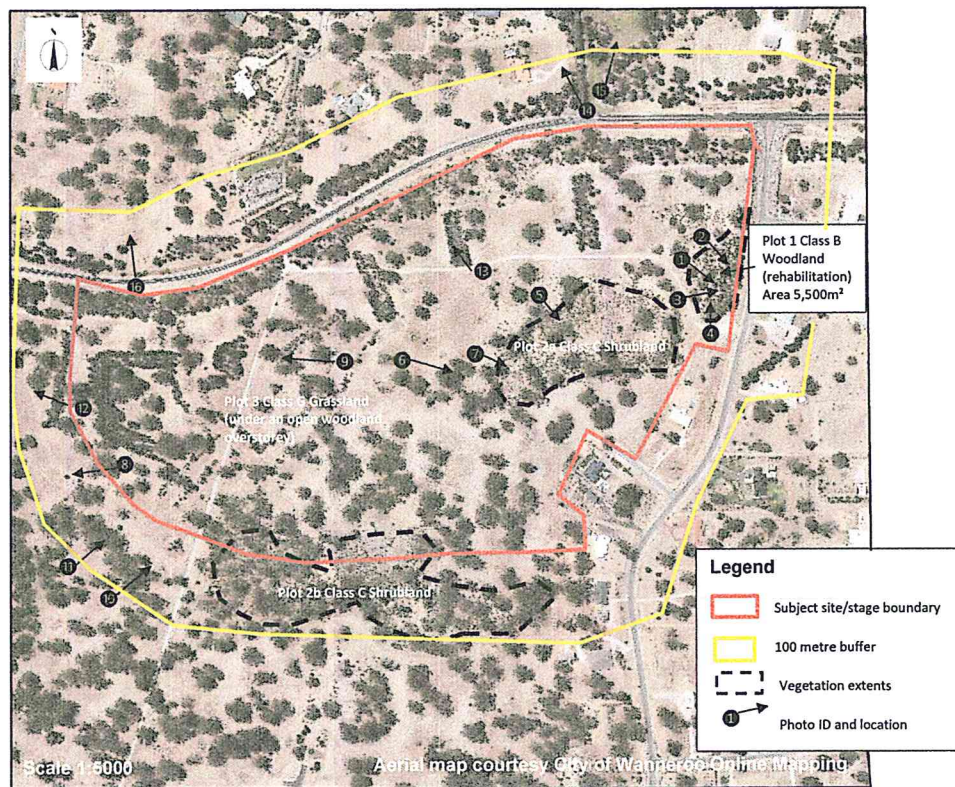
- Determine the area to be assessed
- Determine the relevant Fire Danger Index (FDI)
- Determine the vegetation type/s and class
- Determine the distance of the site from the classified vegetation type/s
- Determine the effective slope/s under the classified vegetation type/s
- Determine the BAL
- Determine the appropriate construction requirements.

Fire Danger Index

The methodology rates bushfire attack using a combination of vegetation type, slope and distance from the building or building envelope to the predominant vegetation. In Western Australia it assumes a Fire Danger Index (FDI) of 80.

Site Assessment

The assessment of the proposed subdivision was undertaken on Friday 22 July 2016 for the purpose of determining the Bushfire Attack Level on accordance with AS 3959 (Method 1).



Vegetation Classification

Oregano Drive is located within a newly-established semi-rural area. The subject site is most easily accessed via Breakwater Drive and Oregano Drive, which leads to the main frontage of the lots via Elderberry Link, Marjoram Vista and Cinnamon Meander (still to be built). The development site has been previously cleared, under a widely spaced tree overstorey which remains. The exception is for the isolated limestone outcrops, which contain limited shrubland native vegetation and the small rehabilitated area (estimated at 5,500m²) near Oregano Drive (and the sales office).

All vegetation within 100 metres of the external boundaries of the subject site was classified in accordance with the Western Australian Government criteria and Clause 2.2.3 of AS 3959 was applied.

Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

It should be noted that while the Western Australian government requires the assessment area to extend 100 metres from the subject site, AS 3959 only requires a distance of 50 metres for a grassland.

PLOT 1

Class B – Woodland (rehabilitated site)



Photo ID: Photo 1 Rehabilitated site with no mid-level tier of scrub.



Photo ID: Photo 2 View of the rehabilitation.



Photo ID: Photo 3 View of rehabilitation.



Photo ID: Photo 4 Rehabilitation site with virtually no surface fuels.

PLOT 2

Class C – Shrubland



Photo ID: Photo 5 Shrubland associated with the limestone outcrops and sparse tree overstorey.



Photo ID: Photo 6 Woodland with a grassland understorey in the foreground and shrubland in the mid to background.



Photo ID: Photo 7 Woodland with shrubland understorey at the top of the rise (top of the photograph) and grass and cleared foreground.

PLOT 3

Class G – Grassland



Photo ID: Photo 8 Grassland under a sparse tree overstorey.



Photo ID: Photo 9 Grassland area.



Photo ID: Photo 10 Sparse woodland with a grassland surface fuel.



Photo ID: Photo 11 Sparse woodland overstorey with a grassland understorey.



Photo ID: Photo 12 Grassland under a tree overstorey.



Photo ID: Photo 13 Representative of the small plantation areas within the site.



Photo ID: Photo 14 Grassland under a tree overstorey on the north side of Breakwater Drive.



Photo ID: Photo 15 Maintained grassland on the north side of Breakwater Drive adjacent to Countryside Drive.



Photo ID: Photo 16 Grassland under a tree overstorey north side of Breakwater Drive.

Potential Bushfire Impacts

The potential bushfire impacts from each of the identified vegetation plots onto each of the building envelopes within the subdivision are shown below. They are presented in numerical order of the proposed lots that were assessed. The location of the building envelopes are not pegged in the field and are therefore estimates, particularly when considering the separation distance between the building envelope and the shrubland vegetation associated with the limestone outcrops. The application of the APZ within all building envelopes has been considered in the BAL assessment. A copy of the proposed survey strata subdivision is provided in Appendix 2.

Table 1: AS 3959 BAL separation distances for the selected vegetation types (all upslopes and flat land).

Vegetation	BAL-29	BAL-19	BAL-12.5	BAL-LOW
B. Woodland	14-<20 m	20-<29	29-<100	100 m plus
D. Shrubland	9-<13	13-<19	19-<100	100 m plus
G. Grassland – including under the open woodland tree overstorey*	8-<12	12-<17	17-<100	100 m plus

This table is only a partial representation of the full Table 2.4.3 on page 31 of in AS 3959.

* Based on Note 2 associated with Table 2.3 in AS 3959 where the vegetation classification is to be determined on the basis of the understorey.

Lots and Proposed BAL

Lot No	Separation (m)	BAL
1	20	BAL-12.5
2	20	BAL-12.5
3	20	BAL-12.5
4	20	BAL-12.5
5	20	BAL-12.5
6	20	BAL-12.5
7	20	BAL-12.5
8	20	BAL-12.5
9	20	BAL-12.5
10	20	BAL-12.5
11	20	BAL-12.5
12	20	BAL-12.5
13	20	BAL-12.5
14	20	BAL-12.5
15	20	BAL-12.5
16	20	BAL-12.5
17	20	BAL-12.5
18	20	BAL-19
19	20	BAL-12.5
20	20	BAL-12.5
21	20	BAL-12.5
22	20	BAL-12.5
23	20	BAL-12.5
24	20	BAL-12.5
25	20	BAL-12.5
26	20	BAL-12.5

The nearest vegetation is classified as open woodland with a grassland surface fuel for all lots except Lots 13, 18 and 19 where the nearest vegetation is shrubland. The site is basically flat with some very short undulations. The assessed distance is from the building envelope boundary (as shown on the plan) closest to the vegetation and the classified vegetation after the APZ has been developed.

Lot 18 building envelope is surrounded by rehabilitation vegetation and, hence, has a higher BAL rating. Clearing of the vegetation and creating an appropriate APZ separation between the proposed building and the vegetation will still leave the BAL as BAL-19.

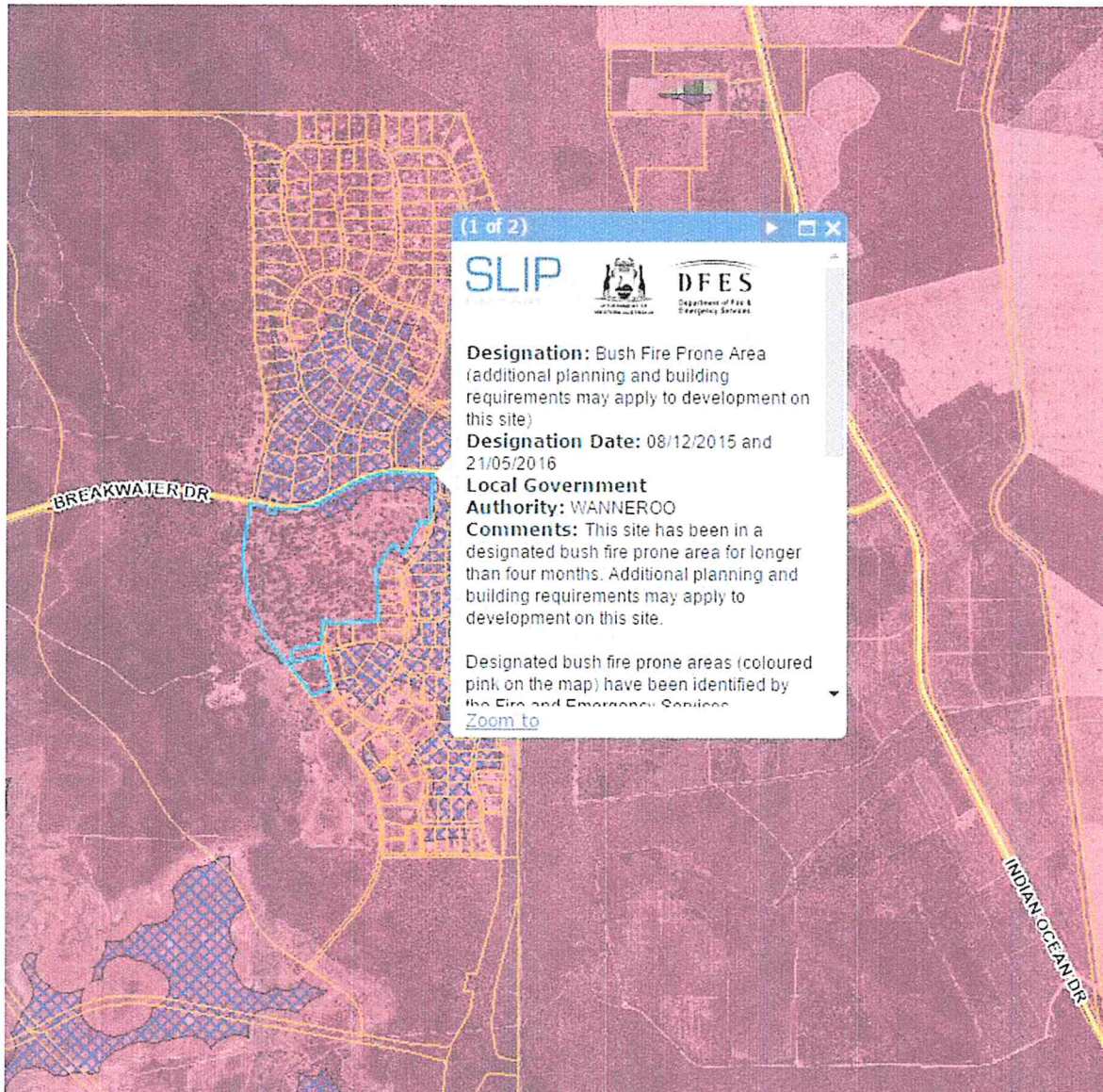
Determination of Bushfire Attack Level

The determined Bushfire Attack Level (highest BAL) for each of the proposed lots are indicated in the table above.

Appendix 1

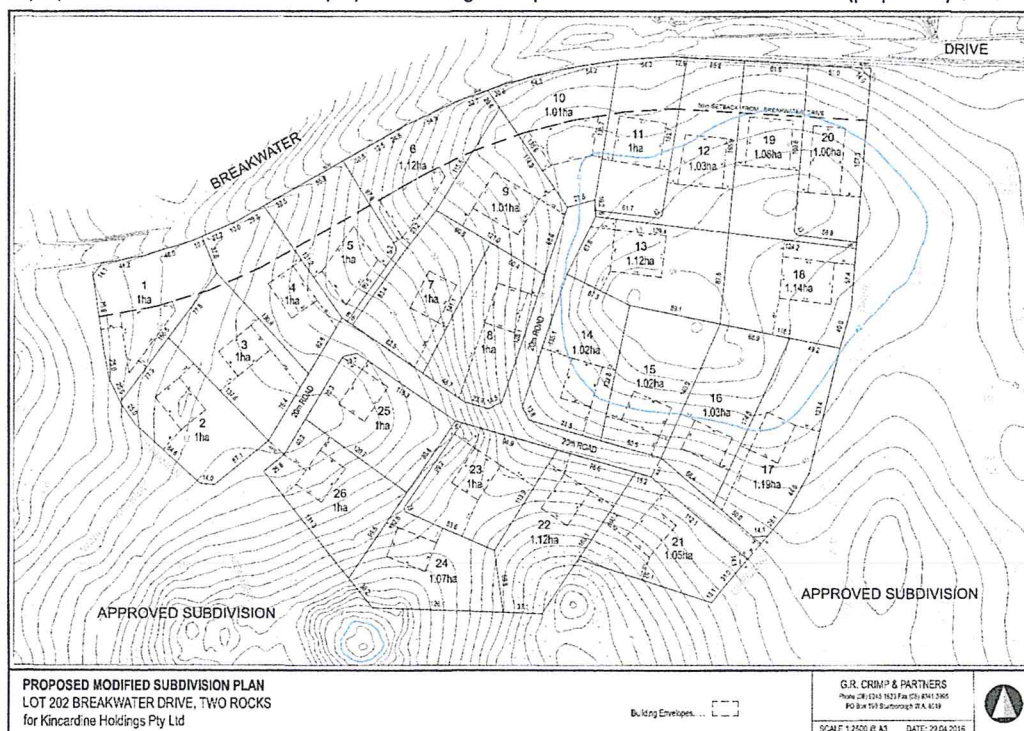
Aerial Map showing the subject site Breakwater Drive, Two Rocks and surrounding area with cadastral boundaries as being designated bush fire prone. The pink colour identifies all designated bush fire prone areas. The blue cross-hatched colour identifies 'newly designated areas' that may be subject to the transitional period. The yellow lines show the cadastral layer (better known as property boundaries).

Source: Department of Fire and Emergency Services online map of bush fire prone areas.



Appendix 2

Plan showing the proposed modified subdivision with proposed building envelopes and lot boundaries. Source: Client (prepared by G.R Crimp and partners).



References

City of Wanneroo. (2016). Aerial map (scale 1:4000). Retrieved 30 July 2016 from <http://gis.wanneroo.wa.gov.au/IntraMaps75/ApplicationEngine/Application.aspx?project=Intermaps>.

City of Wanneroo. (2016). *Protect your home and property from bushfires*. Retrieved 30 July 2016 from <http://wanneroo.wa.gov.au>.

Department of Fire and Emergency Services (DFES). (2015). *Map of Bushfire Prone Areas 2016*. Retrieved 3 July 2016 from <http://www.dfes.wa.gov.au/regulationandcompliance/bushfireproneareas/Pages/default.aspx>

Standards Australia. (2009). *Australian Standard 3959 – Construction of buildings in bushfire-prone areas (incorporating amendment numbers 1, 2 and 3)*. Standards Australia, Sydney, NSW.

Western Australian Planning Commission, (2015). *State Planning Policy 3.7 – Planning in Bushfire Prone Areas*. Western Australian Planning Commission, Perth, WA.

Western Australian Planning Commission, (2015). *Guidelines for Planning in Bushfire Prone Areas*. Western Australian Planning Commission, Perth, WA.