

SMITH CONSULTING

Bushfire Consultants

BUSHFIRE MANAGEMENT PLAN

Lot 173 Cowaramup Loop, Two Rocks

City of Wanneroo



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Site visited 3 October 2018; Report completed 4 October 2018

Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

Site address:

Site visit: Yes No

Date of site visit (if applicable): Day Month Year

Report author:

WA BPAD accreditation level (please circle):

Not accredited Level 1 BAL assessor Level 2 practitioner Level 3 practitioner

If accredited please provide the following.

BPAD accreditation number: Accreditation expiry: Month Year

Bushfire management plan version number:

Bushfire management plan date: Day Month Year

Client/business name:

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the bushfire protection criteria elements)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Is the proposal any of the following (see [SPP 3.7 for definitions](#))?

	Yes	No
Unavoidable development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Strategic planning proposal (including rezoning applications)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Minor development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
High risk land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vulnerable land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>

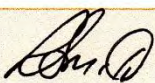
None of the above

Note: Only if one (or more) of the above answers in the tables is yes should the decision maker (e.g. local government or the WAPC) refer the proposal to DFES for comment.

Why has it been given one of the above listed classifications (E.g. Considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

The information provided within this bushfire management plan to the best of my knowledge is true and correct:

Signature of report author



Date

NOTE

This Bushfire Management Plan has been developed by Smith Consulting for the exclusive use of the client, Westbury Investments Pty Ltd and their agents.

The plan has been compiled using the standard methodologies required by Western Australian government departments and agencies. It 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 2017
- *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.

It is recommended that this Bushfire Management Plan be revised every five years to ensure that it remains relevant and in-line with current requirements. This will optimise protection. It is proposed that the property owners undertake the review.

DISCLAIMER

This Bushfire Management Plan has been prepared in good faith. It is derived from sources believed to be reliable and accurate at the time of publication. Nevertheless, this plan 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 Bushfire Management Plan 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 plan.

Document control

Report Version	Purpose	Author/reviewer and accreditation details	Date Submitted
1	Support document for a 32 lot subdivision	Ralph Smith	4 October 2018

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Section 1: Proposal Details



Figure 1. The site plan as provided with the development application.

The proposal is to create 32 lots in a new subdivision. This subdivision is located very close to other recently subdivided areas. The area is designated as bushfire prone. The subdivision site is cleared.



Figure 2. Aerial photo of the bushfire prone area for the subject site.

Section 2: Environmental Considerations

This site is cleared ready for subdivision. Roads are in place.

Subsection 2.1: Native Vegetation – modification and clearing

There is no need for any clearing of native vegetation associated with this subdivision.

Subsection 2.2: Re-vegetation/Landscape Plans

The public open space is developed with reticulated trees planted and playgroup facilities built.

Section 3: Bushfire assessment results

Subsection 3.1: Assessment Inputs

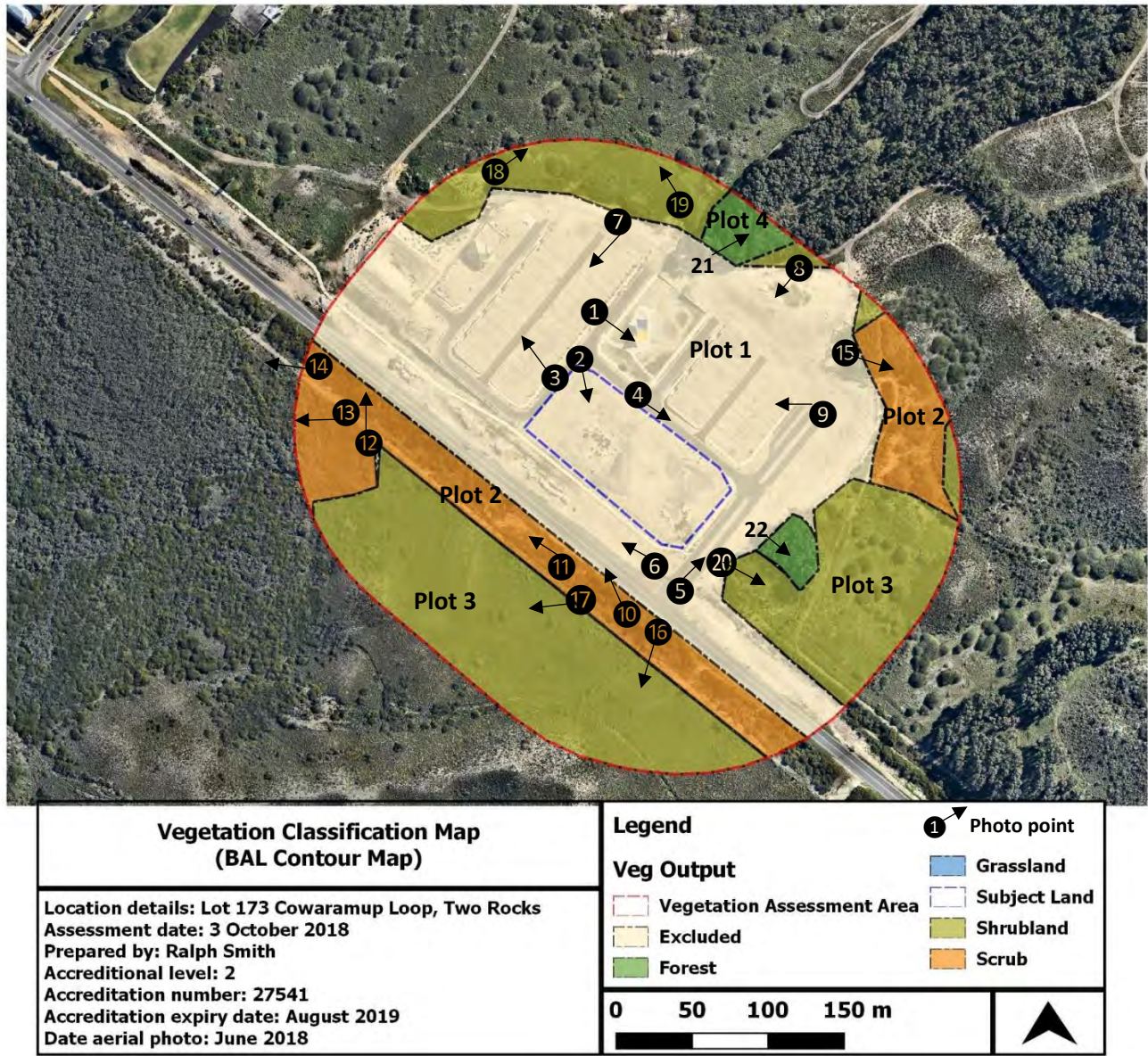


Figure 3. Vegetation classification map

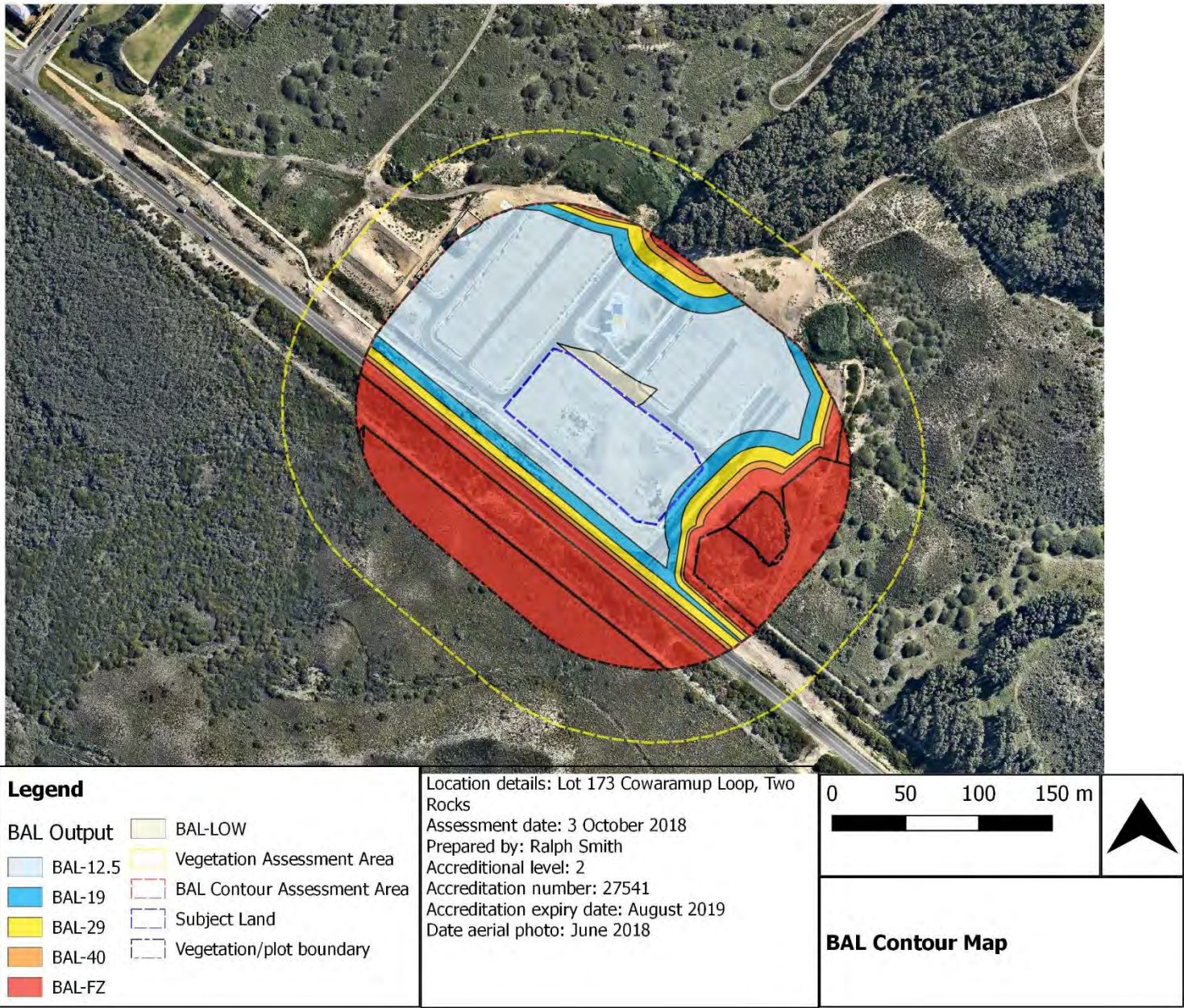


Figure 4. BAL contour map.

Plot 1
 Exclusion
 Clause 2.2.3.3 (e) and (f)



3/10/2018 3:52:51 PM (+8.0 hrs) Lat=-31.51025 Lon=115.60469 Alt=112ft MSL WGS-84
Photo ID: Photo 1 The POS with planted trees, road infrastructure and playground.



3/10/2018 3:53:18 PM (+8.0 hrs) Dir=W Lat=-31.51035 Lon=115.60448 Alt=108ft MSL WGS-84
Photo ID: Photo 2 The cleared neighbouring land.



3/10/2018 3:53:22 PM (+8.0 hrs) Dir=NNW Lat=-31.51035 Lon=115.60448 Alt=105ft MSL WGS-84
Photo ID: Photo 3 The cleared land on the neighbouring properties.



3/10/2018 3:53:25 PM (+8.0 hrs) Dir=SE Lat=-31.51035 Lon=115.60448 Alt=105ft MSL WGS-84
Photo ID: Photo 4 The development site on the right of the road and the road and other infrastructure.



3/10/2018 3:57:50 PM (+8.0 hrs) Dir=ENE Lat=-31.51151 Lon=115.60528 Alt=118ft MSL WGS-84
Photo ID: Photo 5 The road infrastructure adjacent to the development site and forest vegetation on the right.



3/10/2018 3:58:08 PM (+8.0 hrs) Dir=NW Lat=-31.51164 Lon=115.60512 Alt=121ft MSL WGS-84
Photo ID: Photo 6 Two Rocks Road and cleared road reserve at the west of the development site.



3/10/2018 4:22:27 PM (+8.0 hrs) Dir=SW Lat=-31.50971 Lon=115.60457 Alt=105ft MSL WGS-84
Photo ID: Photo 7 The cleared land and associated road infrastructure north of the development site.



3/10/2018 4:30:49 PM (+8.0 hrs) Dir=SW Lat=-31.50977 Lon=115.60531 Alt=112ft MSL WGS-84
Photo ID: Photo 8 The cleared land and associated road infrastructure east of the development site.



3/10/2018 4:36:09 PM (+8.0 hrs) Dir=NW Lat=-31.51026 Lon=115.60616 Alt=10ft MSL WGS-84
Photo ID: Photo 9 The cleared land and associated road infrastructure south-east of the development site.

Plot 2

Class D – Scrub (AS 3959 vegetation classification D – 13)



3/10/2018 4:00:48 PM (+8.0 hrs) Dir=NE Lat=-31.51202 Lon=115.6045 Alt=105ft MSL WGS-84
Photo ID: Photo 10 The scrub vegetation west of Two Rocks Road.



3/10/2018 4:05:49 PM (+8.0 hrs) Dir=NNW Lat=-31.51157 Lon=115.60374 Alt=112ft MSL WGS-84
Photo ID: Photo 11 The mixed scrub and shrubland vegetation west of Two Rocks Road.



3/10/2018 4:07:54 PM (+8.0 hrs) Dir=NE Lat=-31.51134 Lon=115.60326 Alt=85ft MSL WGS-84
Photo ID: Photo 12 The scrub vegetation with grass surface vegetation.



3/10/2018 4:08:18 PM (+8.0 hrs) Dir=SW Lat=-31.51106 Lon=115.60328 Alt=85ft MSL WGS-84
Photo ID: Photo 13 The mixed scrub and shrubland vegetation.



3/10/2018 4:09:33 PM (+8.0 hrs) Dir=WNW Lat=-31.51101 Lon=115.60295 Alt=72ft MSL WGS-84
Photo ID: Photo 14 The scrub vegetation with a grass surface vegetation.



3/10/2018 4:34:26 PM (+8.0 hrs) Dir=SSE Lat=-31.51003 Lon=115.6064 Alt=33ft MSL WGS-84
Photo ID: Photo 15 The scrub vegetation with a mixed shrubland and grass vegetation.

Plot 3
Class C – Shrubland (AS 3959 vegetation classification C – 10)



3/10/2018 4:00:13 PM (+8.0 hrs) Dir=S Lat=-31.51157 Lon=115.60451 Alt=112ft MSL WGS-84
Photo ID: Photo 16 The shrubland west of Two Rocks Road.



3/10/2018 4:02:37 PM (+8.0 hrs) Dir=W Lat=-31.51219 Lon=115.60462 Alt=105ft MSL WGS-84
Photo ID: Photo 17 The shrubland west of Two Rocks Road.



3/10/2018 4:21:32 PM (+8.0 hrs) Dir=NNW Lat=-31.50954 Lon=115.60371 Alt=92ft MSL WGS-84
Photo ID: Photo 18 The mixed shrubland and grass vegetation.



3/10/2018 4:23:10 PM (+8.0 hrs) Dir=NNW Lat=-31.50956 Lon=115.605 Alt=115ft MSL WGS-84
Photo ID: Photo 19 The mixed shrubland and grass north of subdivision site.



3/10/2018 4:38:54 PM (+8.0 hrs) Dir=ESE Lat=-31.51146 Lon=115.60581 Alt=7ft MSL WGS-84
Photo ID: Photo 20 The mixed shrubland and grass vegetation and the forest vegetation on the left.



23/02/2018 2:58:33 PM (+8.0 hrs) Dir=SSE Lat=-33.36672 Lon=115.63749 Alt=82ft MSL WGS-84
Photo ID: Photo 21 The wetland revegetation in the seasonal water overflow site.

Plot 4

Class A – Forest (AS 3959 vegetation classification A – 03)



3/10/2018 4:24:48 PM (+8.0 hrs) Dir=ENE Lat=-31.50972 Lon=115.60537 Alt=108ft MSL WGS-84
Photo ID: Photo 21 The forest with a grass surface vegetation.



3/10/2018 4:37:25 PM (+8.0 hrs) Dir=ESE Lat=-31.51133 Lon=115.60568 Alt=7ft MSL WGS-84
Photo ID: Photo 22 The forest with a grass surface vegetation.

Slope

The orange lines on the slope aerials show the surface slope and the blue line the vegetation and buildings above the surface. The slope is shown commencing at the development site and going away from the site.



Figure 5. Aerial photo to the west of the development site (3.43°).



Figure 6. Aerial photo to the north of the development site (1.83°).



Figure 7. Aerial photo to the east of the development site (1.89°).



Figure 8. Aerial photo to the south of the development site (1.37°).

Subsection 3.2: Assessment outputs

Method 1 BAL Determination				
Vegetation Area/Plot	Applied Vegetation Classification	Effective Slope Under the Classified Vegetation (degrees)	Separation Distance to the Classified Vegetation (metres)	Bushfire Attack Level
1	Exclusion	Not applicable	Not applicable	LOW
2	Scrub	4.52°	39	12.5
3	Shrubland and grass*	2.06°	31	12.5
4	Forest (plantation)	3.09° (upslope)	44	12.5
Determined Bushfire Attack Level				12.5

Note

1 – The slope and distance in the above table are to the closest vegetation from the development site boundary.

2 – For the mixed shrubland and grass vegetation classification the precautionary principle has been applied and the shrubland category has been applied for the BAL assessments.

Section 4: Identification of bushfire hazard issues

The most significant bushfire hazard to this development is the vegetation to the west. This large tract of land that is separated from the development by Two Rocks Road and managed vegetation within the road reserve to the east. The prevailing summer winds for the area are westerly winds.

The old plantations with their grass surface vegetation pose a similar bushfire threat as the mixed grass and low shrubland areas.

By constructing to the appropriate construction standard as described in AS 3959 will ensure the optimum level of protection from a bushfire.

Section 5: Assessment against the Bushfire Protection Criteria

Subsection 5.1: Compliance

Bushfire protection criteria	Method of Compliance	Proposed bushfire management strategies
	Acceptable solutions	
Element 1: Location	A1.1 Development location	This development is located and will developed in such a manner that on completion will be at BAL-12. All dwellings will be rated as BAL-12.5 because of the set back from the lot boundary. There will not be any APZ required on these lots.
Element 2: Siting and design	A2.1 Asset Protection Zone (APZ)	
Element 3: Vehicular access	A3.1 Two access routes.	There are multiple access options that facilitate movement to a range of alternative locations and directions of travel. There will be a temporary EAW (268 metres) that links to Archipelago Way.
	A3.2 Public road	All public roads have been constructed to the appropriate standards as required in the Guidelines.
	A3.3 Cul-de-sac (including a dead-end-road)	There will be no dead-end roads in the subdivision that exceed the requirements in the Guidelines.
	A3.4 Battle-axe	Not applicable.
	A3.5 Private driveway longer than 50m.	Not applicable.
	A3.6 Emergency access way	Approval has been given by a neighbouring development to link the bitumen roads with an EAW between Archipelago Way (to the north) and Cowaramup Loop.
	A3.7 Fire service access routes (perimeter roads)	Not applicable.
	A3.8 Firebreak width	Firebreaks will be established and maintained in accordance with the City's firebreak and fuel load notice.
Element 4: Water	A4.1 Reticulated areas	The site is serviced with reticulated mains water in accordance with the State Government requirements.
	A4.2 Non-reticulated areas	Not applicable.
	A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively)	Not applicable.

Subsection 5.2: Additional management strategies



Legend

- 1. Subject land - - - -
- 2. Cadastre ————

Notes

1. AS 3959 construction standards apply to the entire area as it is declared bushfire prone areas and the lot is BAL rated at BAL-12.5 or above.
2. The site will have reticulated mains water supply.
3. Scrub and shrubland to the west are a significant vegetation plot that provide an ongoing bushfire threat.
4. The site has been cleared during the development.
5. The POS has been developed as 'low threat vegetation'.
6. The forest plots have a grass surface vegetation and have a similar bushfire threat as the mixed shrubland and grass areas.

Location details: Cowaramup Loop, Two Rocks
Local government area: City of Wanneroo
Assessment date: 3 October 2018
Prepared by: Ralph Smith
Accreditation level: 2 Accreditation number: 27541
Accreditation Expiry Date: August 2019
Date of Aerial photo: June 2018
Version No: 1

Figure 9. Spatial representation of the bushfire management strategies.

Section 6: Responsibilities for Implementation and Management of the Bushfire Measures

DEVELOPER/LANDOWNER – PRIOR TO SALE OR OCCUPANCY	
No.	Implementation Action
1	Install the access ways, and associated signs to the City standards.
2	Install the required water supply that meets State Government's specifications.
3	All dwellings to be constructed to AS 3959 standards.

LANDOWNER/OCCUPIER – ONGOING MANAGEMENT	
No.	Management Action
1	Comply with the relevant local government annual firebreak and fuel load notice issued under s33 of the Bush Fires Act 1954.
2	Maintain the dwelling to ensure that it complies with the AS 3959 standards.

Appendix 1

Showing the location and distance of the emergency access way (268 metres in length) that links two bitumen roads and provides multiple entry and exit options and destinations.



Appendix 2

Extracts from the Guidelines (pages 68 and 71) for the standard of the emergency access way.

ELEMENT 3: VEHICULAR ACCESS

EXPLANATORY NOTES

E3.6 Emergency access way

An emergency access way is not a preferred option however may be used to link up with roads to allow alternative access and egress during emergencies where traffic flow designs do not allow for two-way access. Such access should be provided as a right-of-way or easement in gross to ensure accessibility to the public and fire emergency services during an emergency.

The access should comply with minimum standards for a public road and should be signposted. Where gates are used to control traffic flow during non-emergency periods, these must not be locked. Emergency access ways are to be no longer than 600 metres and must be adequately signposted where they adjoin public roads.

Where an emergency access way is constructed on private land, a right of way or easement in gross is to be established.

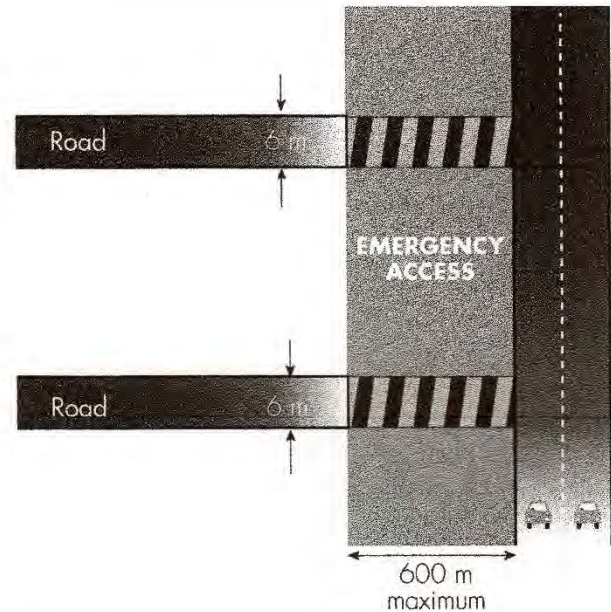


Figure 23: Minimum design requirements for an emergency access way

Two different vehicular access routes, both of which connect to the public road network, should be available to all residents at all times

Table 4: Vehicular access technical requirements

TECHNICAL REQUIREMENTS	1 Public road	2 Cul-de-sac	3 Private driveway	4 Emergency access way	5 Fire service access routes
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