Bushfire Management Plan

Address: Lot 102 Bailup Road, Wooroloo

Shire of Mundaring

Planning Stage:	Subdivision Application
Planning Development Type:	Subdivision - Large Number of Lots
Bushfire Policy – Specific Development or Use Type:	N/A

Job Number:	210888
Assessment Date:	20 October 2021
Report Date:	20 May 2022

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VERSION HISTORY		
Version	**Version Details**	**Date**
1.0	Original Document Issue	9 February 2022
1.1	Corrections to Original Document	11 February 2022
1.2	Amendments to Original Document as Requested by DPLH – Changes requested include the identification of FSARs, potential hydrant locations within the site and additional Responsibilities within Section 6. Additions to Section 6 include an increase in Private Driveway requirements to 70m and the construction of FSARs.	20 May 2022

DISTRIBUTION				
Destination	**Version**	**No. Copies**	**Hard Copy**	**Electronic Copy**
Person/Business: Statewest Planning – Jason Hunt Email: jason.hunt@statewestplanning.com.au	v1.2		☐	☒

Limitation of Liability: The measures contained in this Bushfire Management Plan, are considered to be minimum requirements and they do not guarantee that a building will not be damaged in a bushfire, persons injured, or fatalities occur either on the subject site or off the site while evacuating. This is substantially due to the unpredictable nature and behaviour of fire and fire weather conditions. Additionally, the correct implementation of the required bushfire protection measures will depend upon, among other things, the ongoing actions of the landowners and/or operators over which Bushfire Prone Planning has no control.

All surveys, forecasts, projections and recommendations made in this report associated with the proposed development are made in good faith based on information available to Bushfire Prone Planning at the time. All maps included herein are indicative in nature and are not to be used for accurate calculations.

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EXECUTIVE SUMMARY

This Bushfire Management Plan has been prepared to accompany the Subdivision Application for land located at Lot 102 Bailup Road, Wooroloo. The subject land will form 32 Residential Allotments.

The proposed development is within a designated bushfire prone area, and the proposal requires the application of State Planning Policy No. 3.7: Planning in Bushfire Prone Areas (SPP 3.7). The assessed bushfire risk is considered to be manageable and will be achieved by the identified stakeholders implementing and maintaining the bushfire risk management measures that are presented in this Plan.

The proposal, as set out in this Plan has addressed the applicable legislation, policy, standards and guidelines including the four elements of the Bushfire Protection Criteria of Location, Siting and Design, Vehicular Access and Water Supply. The determination is that the proposal can meet all the requirements. Against the Bushfire Protection Criteria, the decision maker's assessment of this proposal is to be on the basis of it being able to meet the acceptable solutions for all four elements once construction of any applicable structures and roads along with any associated landscaping is complete.

The subject site currently exists as working farmland. Pastured areas are regularly grazed by livestock. For this Bushfire Management Plan however, vegetation within 150 metres of the proposed development has been considered and classified or excluded in accordance with AS3959-2018. The vegetation within the proposed development boundary, (consisting of Class A – Forest, Class B – Woodland and Class G – Grassland), has been considered. It is expected that in the future, vegetation outside of proposed Asset Protection Zones will be retained due a combination of factors. These include areas being designated as Local Natural Areas (LNA) and the presence of habitat trees across the site. The intent is to minimise unnecessary clearing within the subject site whilst achieving a balance between both Bushfire and Environmental Requirements as indicated in the State Planning Policy (SPP 3.7) Objective 5.4. Within the proposed Building Envelopes and associated Asset Protection Zones, it is expected that in future, these areas will be maintained in a low threat state. It will meet AS3959-2018 s2.2.3.2 requirements in conjunction with the requirements stipulated in the Shire of Mundaring Firebreak and Fuel Load Notice.

Furthermore, it is expected that any future structures within the newly created Lots comply with BAL ratings of BAL-29 or less. Access to two different directions to two different destinations is provided for by the existing public road network and via a proposed internal public road network. Howard Road to the west of the subject site will be required to be upgraded/constructed to meet the bushfire technical requirements to enable access to proposed Lots 13, 14, 15, 16 and 17 where applicable. Access to Lots 11 and 12 will be via the internal public road network. A reticulated water supply is available to the subject site along the existing public road network. Where hydrants are to be installed within the development site, they will be in accordance with the Bushfire Technical Requirements established by the Guidelines and the Water Corporation's No. 63 Water Reticulation Standard. This proposal is able to achieve the acceptable solution (access to a designated water supply for firefighting that meets the parameters for the proposed land-use).

Any future buildings within 100 metres of classified vegetation will be constructed to standards which correspond to the determined BAL's, as required by AS 3959-2018 Construction of buildings in bushfire prone areas. As this proposal does not identify the actual location of new building works within the proposal, there may be a requirement to determine the BAL ratings for individual building works once a building site has been identified in the future.

1 PROPOSAL DETAILS

1.1 Description and Associated Plans and Maps

Landowner / Proponent:	Keith (David) & Dianne King
Bushfire Prone Planning Commissioned to Produce the Bushfire Management Plan (BMP) By:	Statewest Planning
For Submission To:	WA Planning Commission (WAPC)
Purpose of the BMP:	To accompany a Subdivision Application
'Development' Site Total Area:	95.6916 hectares
No. of Existing/Proposed Lots:	Existing lot(s) = 1 - Proposed lot(s) = 32 (Rural Residential)
Description of the Proposed Development/Use:	
Subdivision of 1 large existing rural lot into 32 smaller rural residential lots	
Staged Development and Management of Potential Bushfire Hazard Issues	
N/A	

Table 1.1: Details of Lots

ORIGINAL LAND HOLDINGS			
Lot No.	Street No.	Lot Area	Zoning
102	-	95.6916ha	Rural Residential

Table 1.1: Details of Lots (Continued)

POPOSED LOT SUMMARY			
Lot No.	Street No.	Lot Area	Bushfire Prone Area
1	-	3.94ha	✓
2	-	2.0ha	✓
3	-	2.16ha	✓
4	-	3.22ha	✓
5	-	3.07ha	✓
6	-	2.59ha	✓
7	-	2.01ha	✓
8	-	2.48ha	✓
9	-	2.75ha	✓
10	-	14.18ha	✓
11	-	10.59ha	✓
12	-	4.32ha	✓
13	-	1.62ha	✓
14	-	1.62ha	✓
15	-	1.62ha	✓
16	-	1.62ha	✓
17	-	1.84ha	✓
18	-	2.05ha	✓
19	-	2.07ha	✓
20	-	2.22ha	✓
21	-	2.02ha	✓
22	-	2.0ha	✓
23	-	2.1ha	✓
24	-	2.08ha	✓
25	-	2.08ha	✓
26	-	1.62ha	✓
27	-	1.62ha	✓
28	-	1.62ha	✓
29	-	1.62ha	✓
30	-	2.2ha	✓
31	-	2.24ha	✓
32	-	2.04ha	✓

Figure 1.1

Proposed Subdivision

Lot 102 on Plan / Diagram: P414385
Bailup Road
Wooroloo
Shire of Mundaring

------ LEGEND ------

- Hydrants
- Potential Hydrant Locations
- Cadastre
- Fire Service Access Route (FSAR)
- Subject Site

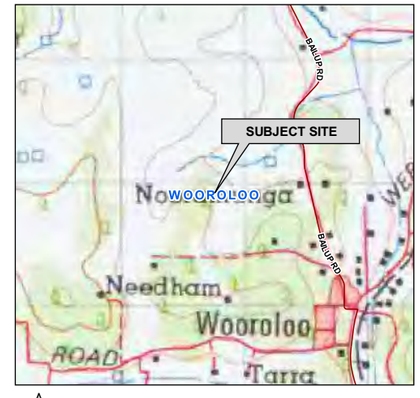
Proposal

- Subdivision
- Building Envelope
- Road Layout
- Tree Retention Area
- Habitat Trees

0 50 100 150 200 250

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

BUSHFIRE PRONE PLANNING

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Sarina Gorman 20-05-2022
SCALE (A3): 1 : 4500

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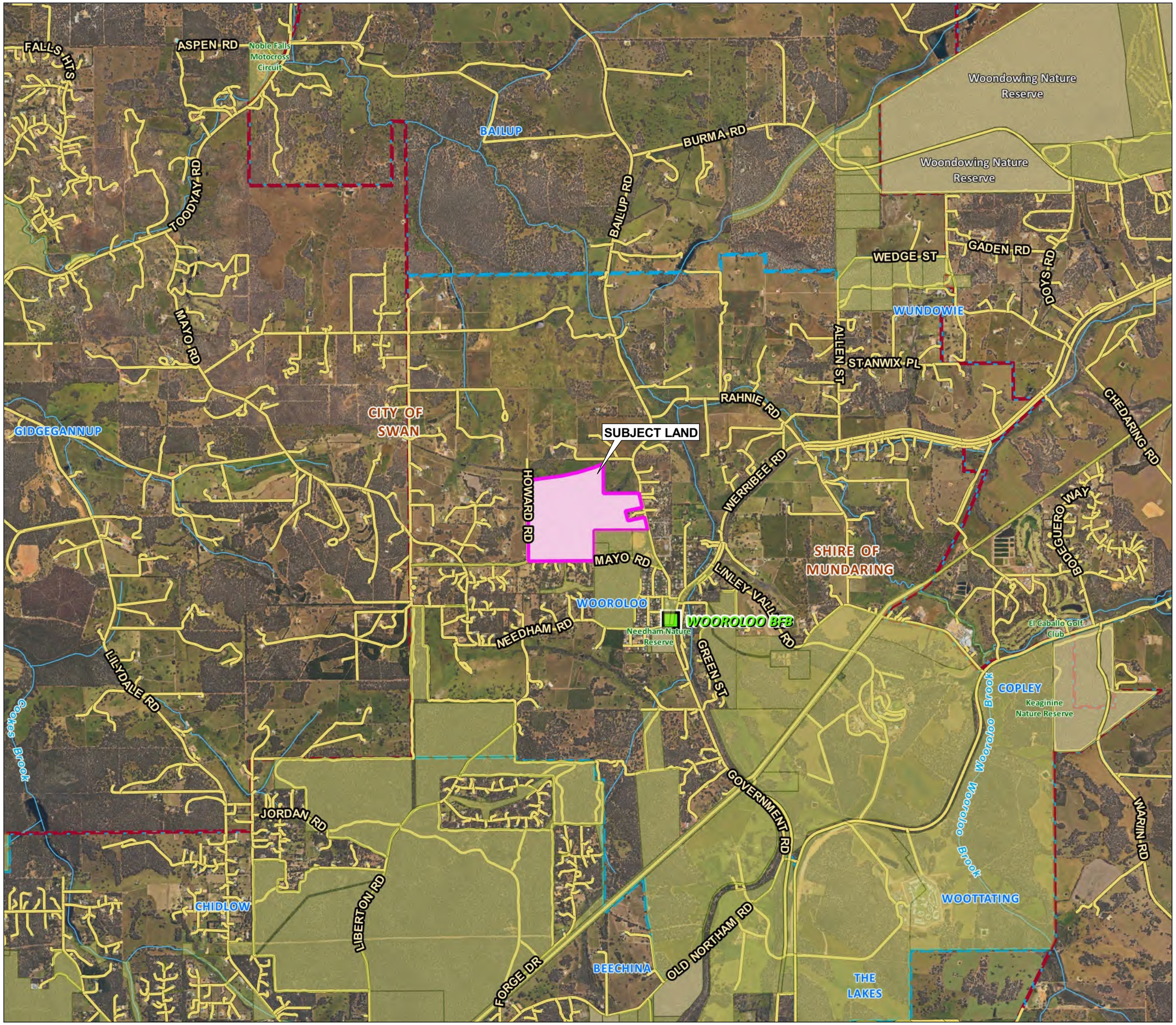


Figure 1.2

Location Plan

Lot 102 on Plan / Diagram: P414385
Bailup Road
Wooroloo
Shire of Mundaring

------ LEGEND ------

- Subject Site
- Local Government Authority
- Localities/Suburb

DFES Stations (DFES-023)

- Bush Fire Brigade
- Reserves

DBCA Legislated Lands & Waters

- Nature Reserve

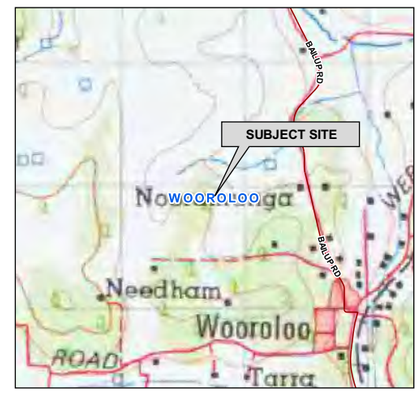
DBCA Lands of Interest (DBCA-012)

- Crown Freehold
- Crown Reserve
- Unallocated Crown Land

0 500 1,000 1,500 2,000 2,500

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Sarina Gorman 08-02-2022
SCALE (A3): 1 : 40000

BUSHFIRE PRONE PLANNING

210888_Location_Lot_102_Bailup_Road_Wooroloo.qgz

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Figure 1.3

Bushfire Prone Areas

Lot 102 on Plan / Diagram: P414385
Bailup Road
Wooroloo
Shire of Mundaring

------ LEGEND ------

- Bushfire Prone Areas
- Local Government Authority
- Localities/Suburb
- Cadastre
- Potential Hydrant Locations
- Fire Services Access Route (FSAR)
- Subject Site

Proposal

- Subdivision
- Building Envelope
- Road Layout
- Tree Retention Area
- Habitat Trees

0 50 100 150 200 250

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

BUSHFIRE PRONE PLANNING

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Sarina Gorman 20-05-2022
SCALE (A3): 1 : 4500

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1.2 Existing Documentation Relevant to the Construction of this Plan

This section acknowledges any known reports or plans that have been prepared for previous planning stages, that refer to the subject area and that may or will impact upon the assessment of bushfire risk and/or the implementation of bushfire protection measures and will be referenced in this Bushfire Management Plan.

Table 1.2: Existing relevant documentation.

RELEVANT EXISTING DOCUMENTS		
Existing Document	Copy Provided by Client	Title
Structure Plan	No	
Environmental Report	No	
Landscaping (Revegetation) Plan	No	
Bushfire Risk Assessments	No	

2 ENVIRONMENTAL CONSIDERATIONS

2.1 Native Vegetation – Restrictions to Modification and/or Clearing

Many bushfire prone areas also have high biodiversity values. SPP 3.7 policy objective 5.4 recognises the need to consider bushfire risk management measures alongside environmental, biodiversity and conservation values (Guidelines s2.3).

There is a requirement to identify any need for onsite modification and/or clearing of native vegetation and whether this may trigger potential environmental impact/referral requirements under State and Federal environmental legislation. Confirmation that any proposed native vegetation modification and/or clearing is acceptable, should be received from the relevant agencies by the proponent and provided to the bushfire consultant for inclusion in the Bushfire Management Plan if it will influence the required bushfire planning assessments and outcomes. The following table details any potential environmental restrictions of which the author of this report is aware.

Table 2.1: Native vegetation and potential environmental considerations and restrictions.

NATIVE VEGETATION MODIFICATION / CLEARING - POTENTIAL ENVIRONMENTAL RESTRICTIONS IDENTIFIED				
Environmental Considerations / Features	Potential Mapping Data Source (SLIP / Local Planning)	Relevant to Proposed Development	Data Applied	Action Required
Onsite clearing of native vegetation is required.		Yes		
Environmental impact/referral requirements under State and Federal environmental legislation may be triggered.		Possible		
National Park / Nature Reserve	DBCA-011	No-Confirmed by Bushfire Consultant	Relevant Database Reviewed by Bushfire Consultant	None
Conservation Covenant	DPIRD-023	Possible	Data Not Readily Available to Bushfire Consultant	Proponent to Seek Advice
Bush Forever Site	DPLH-019	No-Confirmed by Bushfire Consultant	Relevant Database Reviewed by Bushfire Consultant	None
RAMSAR Wetland	DBCA-010	No-Confirmed by Bushfire Consultant	Relevant Database Reviewed by Bushfire Consultant	None
Geomorphic and Other Wetland	DBCA-011- 019, 040, 043, 044	No-Confirmed by Bushfire Consultant	Relevant Database Reviewed by Bushfire Consultant	None
Threatened and Priority Ecological Communities (TECs or PECs)	DBCA-038	No-Confirmed by Bushfire Consultant	Relevant Database Reviewed by Bushfire Consultant	None
Threatened and Priority Flora including Declared Rare Flora (DRFs)	DBCA-036	No-Confirmed by Bushfire Consultant	Relevant Database Reviewed by Bushfire Consultant	None
Land Identified as significant through a Local Biodiversity Strategy	LG - Intramaps	Yes-Confirmed by Bushfire Consultant	Relevant Database Reviewed by Bushfire Consultant	Proponent to Seek Advice
Statement of how the identified environmental feature(s) is dealt with in this Bushfire Management Plan (and the location of relevant information):				

The assessments and bushfire protection measures detailed the BMP, assume that environmental approval will be achieved or clearing permit exemptions will apply.

It is advised that the proponent seek further advice from an Environmental Consultant or the WA Department of Biodiversity Conservation and Attractions for further information on the condition and species contained within the proposed development area and the requirement for referral of the proposal.

Figure 2.1

Environmental Considerations

Lot 102 on Plan / Diagram: P414385
Bailup Road
Wooroloo
Shire of Mundaring

------ LEGEND ------

- Subject Site
- Reserves
- Bush Forever Sites

Clearing Regulations

- Clearing Regulations

DBCA Legislated Lands & Waters

- Nature Reserve

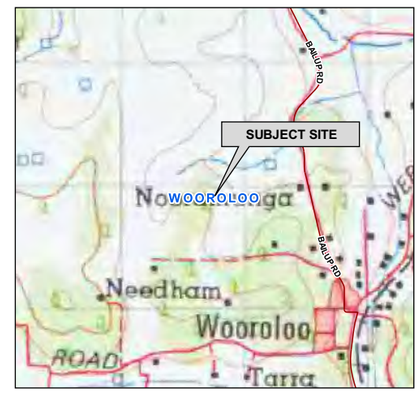
DBCA Lands of Interest (DBCA-012)

- Crown Freehold
- Crown Reserve
- Unallocated Crown Land

0 500 1,000 1,500 2,000 2,500

Metres

------ LOCALITY ------



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Development Design Considerations

Establishing development in bushfire prone areas can adversely affect the retention of native vegetation through clearing associated with the creation of lots and/or asset protection zones. Where loss of vegetation is not acceptable or causes conflict with landscape or environmental objectives, it will be necessary to consider available design options to minimise the removal of native vegetation.

Table 2.2: Development design.

MINIMISE THE REMOVAL OF NATIVE VEGETATION	
Design Option	Assessment / Action
Reduction of lot yield	N/A
Cluster development	N/A
Construct building to a standard corresponding to a higher BAL as per BCA (AS 3959:2018 and/or NASH Standard)	N/A
Modify the development location	N/A
Subject to any applicable Environmental Survey Works and approval from the Local Government Authority, the proposed development can achieve asset protection zone development and maintenance of vegetation on the development site in a low threat state, which will ensure the bushfire risk will be reduced to the immediate surrounding properties due to the continued ongoing management of vegetation.	
IMPACT ON ADJOINING LAND	
Is this planning proposal able to implement the required bushfire protection measures within the boundaries of the land being developed so as not to impact on the bushfire and environmental management of neighbouring reserves, properties or conservation covenants?	Yes
The required Asset Protection Zones (APZ) can be established within the extents of the subject lot. The construction of the proposed development and the ongoing management of onsite vegetation will reduce the threat of bushfire.	

2.2 Retained Vegetation / Re-vegetation / Landscape Plans (including POS)

Riparian zones, wetland/foreshore buffers, road verges and public open space may have plans to re-vegetate or retain vegetation as part of the proposed development. Vegetation corridors may be created between offsite and onsite vegetation and provide a route for fire to enter a development area.

All retained/planned vegetation and its management will be considered in the development of this Bushfire Management Plan.

Is re-vegetation of riparian zones and/or wetland or foreshore buffers and/or public open space a part of this Proposal?	No
Is the requirement for ongoing maintenance of existing vegetation in riparian zones and/or wetland or foreshore buffers and/or public open space a part of this Proposal?	No
Has a landscape plan been developed for the proposed development?	No

2.3 Shire of Mundaring – Local Natural Areas (LNA)

The Shire of Mundaring has a Local Biodiversity Strategy that requires natural areas should be conserved, protected or retained wherever practicable to maintain the Shire's current levels of biodiversity, unless the area is already committed to development through zoning. To achieve this intention formal protection is put in place through the Local Planning Strategy and Town Planning Scheme No. 4 which specify controls and recommendations relating to each of these categories.

PROTECTION LEVELS Based a range of factors including land tenure, specific purpose of Crown reserves, existing lot sizes, subdivision potential and relative conservation priority, all LNA's in the Shire have been assigned a Protection Level.	
Map Shading	Level
Green	Conservation
Blue	Protection
Orange	Retention
Beige	Limited Protection – already committed by zoning

CONSERVATION PRIORITIES To assist in with making decisions on planning proposals affecting LNA's and the allocation of resources to managing them, conservation priorities have been determined. LNA's are identified as having one of three conservation priorities (P1, P2 or P3) based on a range of ecological values. Refer to Shire of Mundaring Local Biodiversity Strategy and Local Planning Strategy)			
Map Shading	Priority	Intention	Conservation Assets
Green	1	To be conserved or protected and receive active management	Rare vegetation complexes / At risk vegetation complexes / Within 20 m of a watercourse Regional linkage over special features / Regional linkage over habituate
Brown	2	To be conserved or protected and receive active management	Habitat / Special features / Regional linkages Within 20-50m off watercourse
Yellow	3	To be retained and where possible receive active management	Every other LNA

Assessment Result

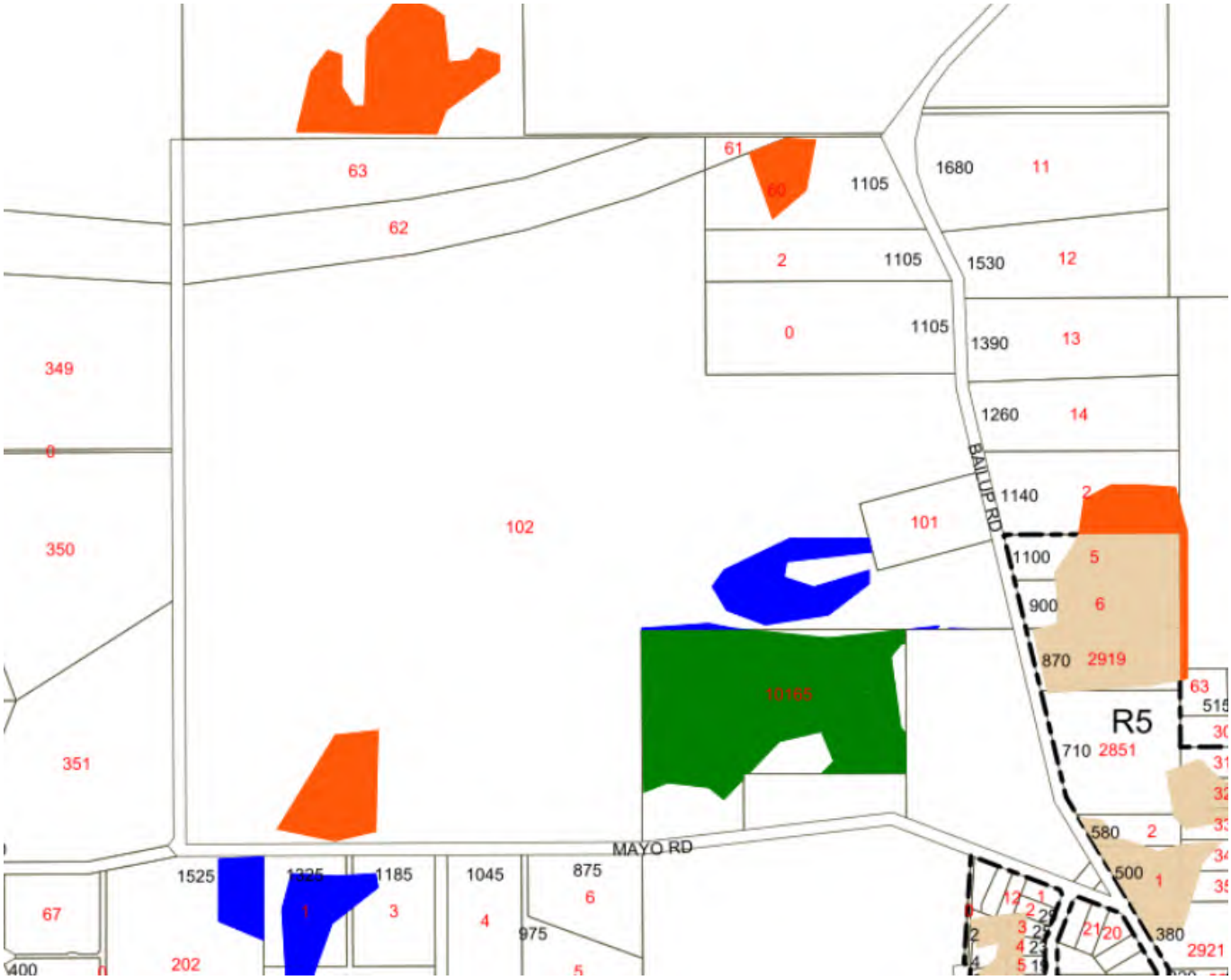
Has the proposed development area (lot(s)) been identified as being subject to a Local Natural Area classification over any portion?	Yes

Mapping

The following map (screen shots) show the Protection Levels and Conservation Priorities for the identified Local Natural Areas on the subject area.

In consideration of any existing vegetation classified as an LNA, the lowest BAL recommended for the subject site / lot is BAL-29 (this is also the highest acceptable BAL). This will result in minimal existing vegetation being removed compared to targeting a lower BAL.

Figure 2.2: Subject Site – LNA Map – Protection Level (Source: Shire of Mundaring Intramaps)



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Orange	Retention
Beige	Limited Protection – already committed by zoning

Figure 2.3: Subject Site – LNA Map – Conservation Priority (Source: Shire of Mundaring Intramaps)



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Yellow	3	To be retained and where possible receive active management	Every other LNA

3 POTENTIAL BUSHFIRE IMPACT ASSESSMENT

3.1 Assessment Input

3.1.1 Fire Danger Index (FDI) Applied

AS 3959:2018 specifies the fire danger index values to apply for different regions as per Table 2.1. The values used in the model calculations are for the Forest Fire Danger Index (FFDI) and for which equivalent representative values of the Grassland Fire Danger Index (GFDI) are applied as per Appendix B. The values can be modified if appropriately justified.

Table 3.1: Applied FDI Value

FDI VALUE			
Vegetation Areas	As per AS 3959:2018 Table 2.1	As per DFES for the Location	Value Applied
1-14	80	N/A	80

3.1.2 Vegetation Classification and Effective Slope

Classification: Bushfire prone vegetation identification and classification has been conducted in accordance with AS 3959:2018 s2.2.3 and the Visual Guide for Bushfire Risk Assessment in WA (DoP February 2016).

When more than one vegetation type is present, each type is identified separately, and the applied classification considers the potential bushfire intensity and behaviour from the vegetation types present and ensures the worst case scenario is accounted for – this may not be from the predominant vegetation type.

The vegetation structure has been assessed as it will be in its mature state (rather than what might be observed on the day). Areas of modified vegetation are assessed as they will be in their natural unmodified state (unless maintained in a permanently low threat, minimal fuel condition, satisfying AS 3959:2018 s2.2.3.2(f) and asset protection zone standards). Vegetation destroyed or damaged by a bushfire or other natural disaster has been assessed on its revegetated mature state.

Effective Slope: Refers to the ground slope under each area of classified vegetation which most influences the bushfire attack (and is described in the direction relative to the view from the building or proposed development site). This slope has a direct and significant influence on the fire's rate of spread and intensity.

Where there is a significant change in effective slope under an area of classified vegetation, that will cause a change in fire behaviour, separate vegetation areas will be identified to enable the correct assessment.

When the effective slope, under a given area of bushfire prone vegetation, will be different relative to multiple proposed development sites, then the effective slopes corresponding to the different locations, are separately identified.

Table 3.2: Vegetation classification and effective slope.

ALL VEGETATION WITHIN 150 METRES OF THE PROPOSED DEVELOPMENT				
Vegetation Area	Identified Vegetation Types [1] or Description if 'Excluded'	Applied Vegetation Classification [1]	Effective Slope (degrees)[2]	
			Assessed	Applied Range
1	Grassland – G-21 Grassland – G-25 Grassland – G-26	Class G Grassland	4.3	downslope >0-5
2	Forest – A-03	Class A Forest	3.6	downslope >0-5
3	Low Threat Vegetation	Excluded as per Section 2.2.3.2 (f) Low Threat Vegetation	N/A	N/A
4	Forest – A-03	Class A Forest	0	upslope or flat
5	Forest – A-03	Class A Forest	4.8	downslope >0-5
6	Grassland – G-26	Class G Grassland	0	upslope or flat
7	Woodland – B-05	Class B Woodland	4.3	downslope >0-5
8	Grassland – G-25 Grassland – G-26	Class G Grassland	0	upslope or flat
9	Woodland – B-05	Class B Woodland	0	upslope or flat
10	Grassland – G-25 Grassland – G-26	Class G Grassland	3.4	downslope >0-5
11	Woodland – B-05	Class B Woodland	4.3	downslope >0-5
12	Grassland – G-25 Grassland – G-26	Class G Grassland	0	upslope or flat
13	Forest – A-03	Class A Forest	0	upslope or flat
14	Woodland – B-05	Class B Woodland	0	upslope or flat
Representative photos of each vegetation area, descriptions and classification justification, are presented on the following pages. The areas of classified vegetation are defined, and the photo locations identified on Figure 3.1, the Existing Vegetation and Topography map.				
Note[1]: Described and classified as per AS 3959:2018 Table 2.3 and Figures 2.3 and 2.4 (A)-(H)				
Note[2]: It is assumed for the purposes of assessment that Area 3 will continue to be managed in a low threat state in perpetuity. (Maintained private properties, gardens and buildings. Cleared bitumen/hardstand areas/roads).				

VEGETATION AREA 1	
AS 3959:2018 Vegetation Classification Applied:	Class G Grassland
Vegetation Types Present:	Closed tussock grassland G-21; Dense sown pasture G-25; Sown pasture G-26
Description/Justification:	Assessed as Grassland due to areas of grasses present in paddock/open areas. Although some sections appear to be either sparse or in a managed state, there are some sections that do appear unmanaged. As such the entire area/s have been classified as a precautionary measure with a worst-case scenario approach. Foliage cover less than 10%.



Photo ID: 1



Photo ID: 2



Photo ID: 3



Photo ID: 4



Photo ID: 5

VEGETATION AREA 2	
AS 3959:2018 Vegetation Classification Applied:	Class A Forest
Vegetation Types Present:	Open forest A-03
Description/Justification:	Mixed species of trees inclusive of Jarrah, Marri, Wandoo and other Eastern States (introduced) Eucalypts with an average height of up to 25-30 metres at maturity. Understorey consists of unmanaged grasses, low shrub and low trees. Canopy coverage greater than 50%.



Photo ID: 6



Photo ID: 7



Photo ID: 8



Photo ID: 9

VEGETATION AREA 3	
AS 3959:2018 Vegetation Classification Applied:	Excluded as per Section 2.2.3.2 (f) Low Threat Vegetation
Vegetation Types Present:	Low Threat Vegetation
Description/Justification:	Maintained private property and gardens containing with a mix of exotic species of plants and trees. Grasses maintained to less than 50mm in height. Trees under pruned to a minimum height of 2 metres. Understorey has been removed. Private driveways and hardstand areas clear of unmanaged vegetation.



Photo ID: 10



Photo ID: 11



Photo ID: 12

VEGETATION AREA 4	
AS 3959:2018 Vegetation Classification Applied:	Class A Forest
Vegetation Types Present:	Open forest A-03
Description/Justification:	Jarrah and Marri dominant area. Trees with an average height of 15-20 metres at maturity. Understorey consists of unmanaged grasses, low shrub and low trees. Canopy coverage greater than 50%.



Photo ID: 13



Photo ID: 14



Photo ID: 15



Photo ID: 16

VEGETATION AREA 4	
AS 3959:2018 Vegetation Classification Applied:	Class A Forest
Vegetation Types Present:	Open forest A-03
Description/Justification:	Jarrah and Marri dominant area. Trees with an average height of 15-20 metres at maturity. Understorey consists of unmanaged grasses, low shrub and low trees. Canopy coverage greater than 50%.



Photo ID: 17



Photo ID: 18



Photo ID: 19



Photo ID: 20

VEGETATION AREA 5	
AS 3959:2018 Vegetation Classification Applied:	Class A Forest
Vegetation Types Present:	Open forest A-03
Description/Justification:	Jarrah and Marri dominant area. Trees with an average height of 15-20 metres at maturity. Understorey consists of unmanaged grasses, low shrub and low trees. Canopy coverage greater than 50%.



Photo ID: 21



Photo ID: 22

VEGETATION AREA 6	
AS 3959:2018 Vegetation Classification Applied:	Class G Grassland
Vegetation Types Present:	Sown pasture G-26
Description/Justification:	Assessed as Grassland due to areas of grasses present in paddock/open areas. Although some sections appear to be either sparse or in a managed state, there are some sections that do appear unmanaged. As such the entire area/s have been classified as a precautionary measure with a worst-case scenario approach. Foliage cover less than 10%.



Photo ID: 23



Photo ID: 24



Photo ID: 25



Photo ID: 26

VEGETATION AREA 7	
AS 3959:2018 Vegetation Classification Applied:	Class B Woodland
Vegetation Types Present:	Woodland B-05
Description/Justification:	Mixed species of trees present inclusive of Jarrah and Marri. Trees with an average height of 15-20 metres at maturity. Understorey consists of predominantly low grasses and leaf litter. Approximately 30% canopy coverage.



Photo ID: 27



Photo ID: 28

VEGETATION AREA 8	
AS 3959:2018 Vegetation Classification Applied:	Class G Grassland
Vegetation Types Present:	Dense sown pasture G-25; Sown pasture G-26
Description/Justification:	Assessed as Grassland due to areas of grasses present in paddock/open areas. Although some sections appear to be either sparse or in a managed state, there are some sections that do appear unmanaged. As such the entire area/s have been classified as a precautionary measure with a worst-case scenario approach. Foliage cover less than 10%.



Photo ID: 29



Photo ID: 30



Photo ID: 31

VEGETATION AREA 9	
AS 3959:2018 Vegetation Classification Applied:	Class B Woodland
Vegetation Types Present:	Woodland B-05
Description/Justification:	Mixed species of trees present inclusive of Jarrah and Marri. Trees with an average height of 15-20 metres at maturity. Understorey consists of predominantly low grasses and leaf litter. Approximately 30% canopy coverage.



Photo ID: 32



Photo ID: 33



Photo ID: 34



Photo ID: 35

VEGETATION AREA 10	
AS 3959:2018 Vegetation Classification Applied:	Class G Grassland
Vegetation Types Present:	Dense sown pasture G-25; Sown pasture G-26
Description/Justification:	Assessed as Grassland due to areas of grasses present in paddock/open areas. Although some sections appear to be either sparse or in a managed state, there are some sections that do appear unmanaged. As such the entire area/s have been classified as a precautionary measure with a worst-case scenario approach. Foliage cover less than 10%.



Photo ID: 36



Photo ID: 37



Photo ID: 38

VEGETATION AREA 11	
AS 3959:2018 Vegetation Classification Applied:	Class B Woodland
Vegetation Types Present:	Woodland B-05
Description/Justification:	Mixed species of trees present inclusive of Jarrah and Marri. Trees with an average height of 15-20 metres at maturity. Understorey consists of predominantly low grasses and leaf litter. Approximately 30% canopy coverage.



Photo ID: 39



Photo ID: 40



Photo ID: 41

VEGETATION AREA 12	
AS 3959:2018 Vegetation Classification Applied:	Class G Grassland
Vegetation Types Present:	Dense sown pasture G-25; Sown pasture G-26
Description/Justification:	Assessed as Grassland due to areas of grasses present in paddock/open areas. Although some sections appear to be either sparse or in a managed state, there are some sections that do appear unmanaged. As such the entire area/s have been classified as a precautionary measure with a worst-case scenario approach. Foliage cover less than 10%.



Photo ID: 42



Photo ID: 43



Photo ID: 44



Photo ID: 45



Photo ID: 46



Photo ID: 47

VEGETATION AREA 13	
AS 3959:2018 Vegetation Classification Applied:	Class A Forest
Vegetation Types Present:	Open forest A-03
Description/Justification:	Jarrah and Marri dominant area. Trees with an average height of 15-20 metres at maturity. Understorey consists of unmanaged grasses, low shrub and low trees. Canopy coverage greater than 50%.



Photo ID: 48



Photo ID: 49



Photo ID: 50

VEGETATION AREA 14	
AS 3959:2018 Vegetation Classification Applied:	Class B Woodland
Vegetation Types Present:	Woodland B-05
Description/Justification:	Mixed species of trees present inclusive of Jarrah and Marri. Trees with an average height of 15-20 metres at maturity. Understorey consists of predominantly low grasses and leaf litter. Approximately 30% canopy coverage.



Photo ID: 51



Photo ID: 52



Photo ID: 53

Figure 3.1

Classified Vegetation & Topography Map (Existing)

Lot 102 on Plan / Diagram: P414385
Bailup Road
Wooroloo
Shire of Mundaring

HOWARD RD
BAILUP RD
MAYO RD
CLAYDEN ST
Bailup Park

AREA 14 Class (B) Woodland Effective Slope 0°
AREA 12 Class (G) Grassland Effective Slope 0°
AREA 1 Class (G) Grassland Effective Slope >0-5°
AREA 2 Class (A) Forest Effective Slope >0-5°
AREA 13 Class (A) Forest Effective Slope 0°
AREA 11 Class (B) Woodland Effective Slope >0-5°
AREA 7 Class (B) Woodland Effective Slope >0-5°
AREA 3 Excluded 2.2.3.2 (f)
AREA 4 Class (A) Forest Effective Slope 0°
AREA 5 Class (A) Forest Effective Slope >0-5°
AREA 9 Class (B) Woodland Effective Slope 0°
AREA 6 Class (G) Grassland Effective Slope 0°
AREA 10 Class (G) Grassland Effective Slope >0-5°
AREA 8 Class (G) Grassland Effective Slope 0°

Lot 1, Lot 2, Lot 3, Lot 4, Lot 5, Lot 6, Lot 7, Lot 8, Lot 9, Lot 10, Lot 11, Lot 12, Lot 13, Lot 14, Lot 15, Lot 16, Lot 17, Lot 18, Lot 19, Lot 20, Lot 21, Lot 22, Lot 23, Lot 24, Lot 25, Lot 26, Lot 27, Lot 28, Lot 29, Lot 30, Lot 31, Lot 32

220m, 225m, 230m, 235m, 240m, 245m, 250m, 255m, 260m, 265m, 270m, 275m, 280m

------ LEGEND ------

- Photos
- Hydrants
- Potential Hydrant Locations
- Fire Service Access Route (FSAR)
- Elevation (m)
- Subject Site

Proposal

- Subdivision
- Building Envelope
- Road Layout
- Tree Retention Area
- Habitat Trees

Assessment Area

- 150m Buffer

Classified Vegetation

- Class A - Forest
- Class B - Woodland
- Class G - Grassland
- Exclusion 2.2.3.2

0 50 100 150 200 250

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

BUSHFIRE PRONE PLANNING

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Sarina Gorman 20-05-2022
SCALE (A3): 1 : 5250

Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

3.1.3 Vegetation Separation Distance

The vegetation separation distance is the horizontal distance measured from the relevant parts of an existing building or a future building's planned location (within a lot), to the determined edge of an area of classified vegetation.

This separation distance applied to determining a Bushfire Attack Level (BAL) can be either:

- The *measured distance* – for which the location of the building relative to the edge of classified vegetation must be known. This will result in single determined BAL that will apply to a building. (The measured distance is a required calculation input); or
- A *calculated minimum and maximum distance (range)* that will correspond to each individual BAL. The calculated distances provide an indicative (or achievable) BAL for which the determined BAL will be dependent on the known location of the building relative to the edge of classified vegetation.

  The calculated range of distances corresponding to each BAL can be presented in different formats (tables or a BAL contour map), dependent on the form of information that is most appropriate for the proposed development/use. These distance ranges corresponding to BAL(s) will be presented in Section 3.2: 'Assessment Output".

For the proposed development/use, the applicable vegetation separation distances will be presented within the Bushfire Management Plan in this location:	In Section 3.2 'Assessment Output' as a table containing the calculated ranges of distance corresponding to each BAL and illustrated as a BAL Contour Map.

3.2 Assessment Output

UNDERSTANDING THE RESULTS OF THE BUSHFIRE IMPACT ASSESSMENT

Bushfire Attack Levels (BALs) – Their Application in the Building Environment is Different to the Planning Environment

In the building environment, a ***determined BAL*** is required for the proposed construction at the building application stage. This is to inform approval considerations and establish the bushfire construction standards that are to apply. An indicative BAL is not acceptable for a building application.

In the planning environment, through the application of SPP 3.7 and associated Guidelines, the deemed to satisfy requirement for a proposed 'development site' or sites (defined by the LPS Amendment Regulations 2015 as "that part of a lot on which a building that is the subject of development stands or is to be constructed"), is that a BAL-29 or lower rating can be achieved once all works associated with the proposal are completed. For planning approval purposes, an ***indicative BAL*** can provide the required information.

Determined Bushfire Attack Level

A determined BAL is to apply to an existing building or the 'development site' on which the building is to be constructed and not to a lot or building envelope. Its purpose is to state the potential radiant heat flux to which the building will be exposed, thereby determining the construction standard to be applied.

A determined BAL cannot be given for a future building whose design and position on the lot are unknown or the vegetation separation distance has not been established. It is not until these variables have been fixed that a determined BAL can be stated, and a BAL Certificate can be issued.

The one exception is when a building ***of any dimension*** can be ***positioned anywhere*** on a proposed lot (within R-Code building setbacks) or within a defined building envelope, and always remain subject to the same BAL, regardless of the retention of any existing classified vegetation either onsite or offsite.

Indicative Bushfire Attack Level

If a BAL is not able to achieve 'determined' status it will be an indicative BAL. It indicates the BAL that can be achieved by the proposed development/use. However, it is conditional upon an assessment variable(s) being confirmed at a later stage (e.g. the building location is established/changed, or vegetation is removed to establish the vegetation separation distance).

A BAL certificate cannot be issued for an indicative BAL – unless that BAL cannot vary (refer to 'Determined BAL' above).

In table form, a single or a range of indicative BAL(s) may be presented. If a single indicative BAL is stated for a defined area (i.e. the lot or building envelope), this will be the highest indicative BAL impacting the defined area.

In BAL contour map form (refer to Section 3.2.2), the illustrated BAL contours visually identify areas of land for which if any part of an existing or proposed building is located on that land and within the BAL contours, then the highest BAL affecting that building (or part of the land on which the building will be constructed), will be the indicative BAL that is to apply.

The BAL can only become a determined BAL once the actual location of that building on the land is known and/or the required minimum vegetation separation distance corresponding to the relevant BAL contour is established (refer to Table 3.2.4).

3.2.1 Bushfire Attack Level Results – Table Format

Table 3.2.1: Vegetation separation distances required to achieve the stated BAL rating.

INDICATIVE (ACHIEVABLE) BUSHFIRE ATTACK LEVELS FOR THE ORIGINAL LOT (A BAL rating is achievable if a separation distance range is known)							
Derived from the Application of Method 1 BAL Determination Methodology (AS 3959:2018 Section 2, Table 2.5)[1]							
Original Lot No.	Vegetation Area	Vegetation Classification	Effective Slope (degree range)	Indicative BAL's – Separation Distance (m) or Status			
				BAL-29	BAL-19	BAL12.5	BAL-LOW
102	1	Class G Grassland	downslope >0-5	9-<14	14-<20	20-<50	Risk of Ember Attack
	2	Class A Forest	downslope >0-5	27-<37	37-<50	50-<100	Risk of Ember Attack
	3	Excluded AS3959:2018 2.2.3.2 (f)	N/A	-	-	-	Risk of Ember Attack
	4	Class A Forest	upslope or flat	21-<31	31-<42	42-<100	Risk of Ember Attack
	5	Class A Forest	downslope >0-5	27-<37	37-<50	50-<100	Risk of Ember Attack
	6	Class G Grassland	upslope or flat	8-<12	12-<17	17-<50	Risk of Ember Attack
	7	Class B Woodland	downslope >0-5	17-<25	25-<35	35-<100	Risk of Ember Attack
	8	Class G Grassland	upslope or flat	8-<12	12-<17	17-<50	Risk of Ember Attack
	9	Class B Woodland	upslope or flat	14-<20	20-<29	29-<100	Risk of Ember Attack
	10	Class G Grassland	downslope >0-5	9-<14	14-<20	20-<50	Risk of Ember Attack
	11	Class B Woodland	downslope >0-5	17-<25	25-<35	35-<100	Risk of Ember Attack
	12	Class G Grassland	upslope or flat	8-<12	12-<17	17-<50	Risk of Ember Attack
	13	Class A Forest	upslope or flat	21-<31	31-<42	42-<100	Risk of Ember Attack
	14	Class B Woodland	upslope or flat	14-<20	20-<29	29-<100	Risk of Ember Attack

Table 3.2.2: Indicative BAL ratings (pre-development).

MINIMUM SEPARATION DISTANCES REQUIRED TO RETAIN INDICATIVE, MAXIMUM, ACCEPTABLE BAL RATING – PRE-DEVELOPMENT				
Vegetation Area	Vegetation Classification	Effective Slope (degrees)	Maximum Acceptable BAL Rating	Required Separation Distances (metres)
1	Class G Grassland	downslope >0-5	BAL-29	9m
2	Class A Forest	downslope >0-5		27m
3	Excluded AS3959:2018 2.2.3.2 (f)	N/A		N/A
4	Class A Forest	upslope or flat		21m
5	Class A Forest	downslope >0-5		27m
6	Class G Grassland	upslope or flat		8m
7	Class B Woodland	downslope >0-5		17m
8	Class G Grassland	upslope or flat		8m
9	Class B Woodland	upslope or flat		14m
10	Class G Grassland	downslope >0-5		9m
11	Class B Woodland	downslope >0-5		17m
12	Class G Grassland	upslope or flat		8m
13	Class A Forest	upslope or flat		21m
14	Class B Woodland	upslope or flat		14m
Note[1]: Subject to any applicable Environmental Survey Works and approval from the Local Government Authority, it is possible for sections of Areas 1, 6, 7, 9, 10, 11 and 12 to be re-classified to "Excluded AS3959:2018 2.2.3.2 (f)" once any applicable vegetation clearing/modification works can be conducted. Refer to Figure 3.2 – Vegetation Classification and Topography Map – (Post Development) and Figure 3.3 – BAL Contour Map – (Post Development).				
Note[2]: It is assumed for the purposes of assessment that Area 3 will continue to be managed in a low threat state in perpetuity. (Maintained private properties, gardens and buildings. Cleared bitumen/hardstand areas/roads).				

Table 3.2.3: Indicative BAL ratings (post-development)

MINIMUM SEPARATION DISTANCES REQUIRED TO RETAIN INDICATIVE, MAXIMUM, ACCEPTABLE BAL RATING – POST-DEVELOPMENT				
Vegetation Area	Vegetation Classification	Effective Slope (degrees)	Maximum Acceptable BAL Rating	Required Separation Distances (metres)
1	Class G Grassland	downslope >0-5	**BAL-29**	9m
*1	Excluded AS3959:2018 2.2.3.2 (f)	N/A		N/A
2	Class A Forest	downslope >0-5		27m
3	Excluded AS3959:2018 2.2.3.2 (f)	N/A		N/A
4	Class A Forest	upslope or flat		21m
5	Class A Forest	downslope >0-5		27m
6	Class G Grassland	upslope or flat		8m
*6	Excluded AS3959:2018 2.2.3.2 (f)	N/A		N/A
7	Class B Woodland	downslope >0-5		17m
*7	Excluded AS3959:2018 2.2.3.2 (f)	N/A		N/A
8	Class G Grassland	upslope or flat		8m
9	Class B Woodland	upslope or flat		14m
*9	Excluded AS3959:2018 2.2.3.2 (f)	N/A		N/A
10	Class G Grassland	downslope >0-5		9m
*10	Excluded AS3959:2018 2.2.3.2 (f)	N/A		N/A
11	Class B Woodland	downslope >0-5		17m
*11	Excluded AS3959:2018 2.2.3.2 (f)	N/A		N/A
12	Class G Grassland	upslope or flat		8m
*12	Excluded AS3959:2018 2.2.3.2 (f)	N/A		N/A
13	Class A Forest	upslope or flat		21m
14	Class B Woodland	upslope or flat		14m
Note[1]: It is assumed for the purposes of assessment that Area 3 will continue to be managed in a low threat state in perpetuity. (Maintained private properties, gardens and buildings. Cleared bitumen/hardstand areas/roads).				
Note[2]: *1, *6, *7, *9, *10, *11 and *12 indicates vegetation subject to changes post development of this site, with sections being reclassified to 'Excluded' AS3959-2018 (f)'. This is the result of the implementation of Asset Protection Zones within the newly created allotments and the upgrade/construction of Howard Road to enable access to proposed Lots 11, 12, 13, 14, 15, 16 and 17 where applicable. It is assumed for the purposes of assessment that these areas (where modified) will be maintained in a low threat state in perpetuity in accordance with Schedule 1: Standards for Asset Protection Zones as stipulated in the Guidelines for Planning in Bushfire Prone Areas, AS3959-2018 s2.2.3.2 requirements and the Shire of Mundaring Firebreak and Fuel Load Notice.				

Figure 3.2

Classified Vegetation & Topography Map (Post Development)

Lot 102 on Plan / Diagram: P414385
Bailup Road
Wooroloo
Shire of Mundaring

HOWARD RD
MAYO RD
BAILUP RD
CLAYDEN ST
Bailup Park
Lot 10
Lot 11
Lot 12
Lot 13
Lot 14
Lot 15
Lot 16
Lot 17
Lot 18
Lot 19
Lot 20
Lot 21
Lot 22
Lot 23
Lot 24
Lot 25
Lot 26
Lot 27
Lot 28
Lot 29
Lot 30
Lot 31
Lot 32
Lot 1
Lot 2
Lot 3
Lot 4
Lot 5
Lot 6
Lot 7
Lot 8
Lot 9

AREA 14 Class (B) Woodland Effective Slope 0°
AREA 12 Class (G) Grassland Effective Slope 0°
AREA 1 Class (G) Grassland Effective Slope >0-5°
AREA 2 Class (A) Forest Effective Slope >0-5°
AREA 13 Class (A) Forest Effective Slope 0°
AREA 11 Class (B) Woodland Effective Slope >0-5°
AREA 9 Class (B) Woodland Effective Slope 0°
AREA 7 Class (B) Woodland Effective Slope >0-5°
AREA 3 Excluded 2.2.3.2 (f)
AREA 4 Class (A) Forest Effective Slope 0°
AREA 10 Class (G) Grassland Effective Slope >0-5°
AREA 6 Class (G) Grassland Effective Slope 0°
AREA 5 Class (A) Forest Effective Slope >0-5°
AREA 8 Class (G) Grassland Effective Slope 0°

220m 225m 230m 235m 240m 245m 250m 255m 260m 265m 270m 275m 280m

------ LEGEND ------

- Photos
- Hydrants
- Potential Hydrant Locations
- Fire Service Access Route (FSAR)
- Elevation (m)
- Subject Site

Proposal

- Subdivision
- Building Envelope
- Road Layout
- Tree Retention Area
- Habitat Trees

Asset Protection Zone

- APZ - (BAL-29 & LGA Requirements)

Assessment Area

- 150m Buffer

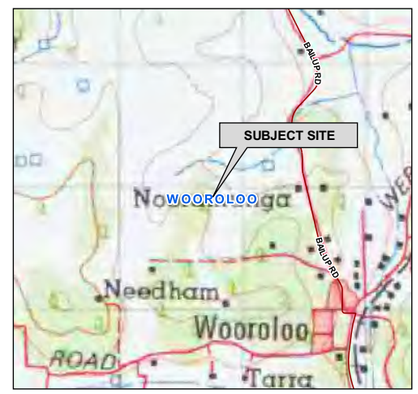
Classified Vegetation

- Class A - Forest
- Class B - Woodland
- Class G - Grassland
- Exclusion 2.2.3.2

0 50 100 150 200 250

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

BUSHFIRE PRONE PLANNING

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Sarina Gorman 20-05-2022
SCALE (A3): 1 : 5250

Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

3.2.2 Bushfire Attack Level Results - BAL Contour Map Format

INTERPRETATION OF THE BUSHFIRE ATTACK LEVEL (BAL) CONTOUR MAP

The contour map will present different coloured contour intervals extending from the areas of classified bushfire prone vegetation. These represent the different bushfire attack levels that will exist at varying distances away from the classified vegetation in the event of a bushfire in that vegetation.

The areas of classified vegetation are those that will remain as the intended end state of the subject development once earthworks, clearing and/or landscaping and re-vegetation have been completed (or each stage completed).

Each bushfire attack level corresponds to a set range of radiant heat flux that is generated by a bushfire. That range is defined by the AS 3959:2018 BAL determination methodology.

The width of each shaded BAL contour is a diagrammatic representation of the separation distances from the classified vegetation that correspond to each BAL for each separately identified area of classified vegetation. They have been calculated by the application of the unique site variables including vegetation types and structure, ground slope and applied fire weather.

(Refer to Section 3.2 'Understanding the Results of the Bushfire Impact Assessment' for the explanation of how BAL(s) for buildings will be assessed from the BAL Contour Map).

Construction of the BAL Contours

VEGETATION AREAS APPLIED TO THE DEVELOPMENT OF THE BAL CONTOUR MAP

All identified areas of classified vegetation have been applied with the following exceptions:

1. For Figures 3.2 and 3.3, classified vegetation within the proposed Asset Protection Zones surrounding the Building Envelopes is excluded. BAL contours are constructed into the Asset Protection Zones surrounding the proposed Building Envelopes from any classified vegetation outside of these areas.

This approach is applied to indicate the achievable bushfire attack levels within the specified land and the resultant area of developable land (i.e. subject to BAL-29 or less). It is based on the following assumptions:

1. Any classified vegetation within each lot/s (where applicable) can potentially be managed by the landowner to meet asset protection zone standards and dimensions corresponding to an indicated BAL; and
2. Each lot/s (where applicable) must be considered independent of what development may or may not take place on the adjoining lot.

Construction of the BAL Contours

Table 3.2.4: Vegetation separation distances applied to construct the BAL contours.

BAL CONTOUR MAP – APPLIED VEGETATION SEPARATION DISTANCES								
Derived from the Application of Method 1 BAL Determination Methodology (AS 3959:2018 Section 2, Table 2.5)[1]								
Vegetation Area	Vegetation Classification	Effective Slope (degrees)	BAL and Corresponding Separation Distance (m)					
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW
1	Class G Grassland	4.3	<7	7-<9	9-<14	14-<20	20-<50	>50
*1	Excluded AS3959:2018 2.2.3.2 (f)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	Class A Forest	3.6	<20	20-<27	27-<37	37-<50	50-<100	>100
3	Excluded AS3959:2018 2.2.3.2 (f)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	Class A Forest	0	<16	16-<21	21-<31	31-<42	42-<100	>100
5	Class A Forest	4.8	<20	20-<27	27-<37	37-<50	50-<100	>100
6	Class G Grassland	0	<6	6-<8	8-<12	12-<17	17-<50	>50
*6	Excluded AS3959:2018 2.2.3.2 (f)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	Class B Woodland	4.3	<13	13-<17	17-<25	25-<35	35-<100	>100
*7	Excluded AS3959:2018 2.2.3.2 (f)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	Class G Grassland	0	<6	6-<8	8-<12	12-<17	17-<50	>50
9	Class B Woodland	0	<10	10-<14	14-<20	20-<29	29-<100	>100
10	Class G Grassland	4.3	<7	7-<9	9-<14	14-<20	20-<50	>50
11	Class B Woodland	4.3	<13	13-<17	17-<25	25-<35	35-<100	>100
*11	Excluded AS3959:2018 2.2.3.2 (f)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12	Class G Grassland	0	<6	6-<8	8-<12	12-<17	17-<50	>50
*12	Excluded AS3959:2018 2.2.3.2 (f)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
13	Class A Forest	0	<16	16-<21	21-<31	31-<42	42-<100	>100
14	Class B Woodland	0	<10	10-<14	14-<20	20-<29	29-<100	>100
Note[1]: It is assumed for the purposes of assessment that Area 3 will continue to be managed in a low threat state in perpetuity. (Maintained private properties, gardens and buildings. Cleared bitumen/hardstand areas/roads).								
Note[2]: *1, *6, *7, *9, *10, *11 and *12 indicates vegetation subject to changes post development of this site, with sections being reclassified to 'Excluded' AS3959-2018 (f)'. This is the result of the implementation of Asset Protection Zones within the newly created allotments and the upgrade/construction of Howard Road to enable access to proposed Lots 11, 12, 13, 14, 15, 16 and 17 where applicable. It is assumed for the purposes of assessment that these areas (where modified) will be maintained in a low threat state in perpetuity in accordance with Schedule 1: Standards for Asset Protection Zones as stipulated in the Guidelines for Planning in Bushfire Prone Areas, AS3959-2018 s2.2.3.2 requirements and the Shire of Mundaring Firebreak and Fuel Load Notice.								

Figure 3.3

BAL Contour Map (Post Development)

Lot 102 on Plan / Diagram: P414385
Bailup Road
Wooroloo
Shire of Mundaring

HOWARD RD
BAILUP RD
MAYO RD
CLAYDEN ST
Bailup Park
AREA 1
AREA 2
AREA 3
AREA 4
AREA 5
AREA 6
AREA 7
AREA 8
AREA 9
AREA 10
AREA 11
AREA 12
AREA 13
AREA 14
Lot 1
Lot 2
Lot 3
Lot 4
Lot 5
Lot 6
Lot 7
Lot 8
Lot 9
Lot 10
Lot 11
Lot 12
Lot 13
Lot 14
Lot 15
Lot 16
Lot 17
Lot 18
Lot 19
Lot 20
Lot 21
Lot 22
Lot 23
Lot 24
Lot 25
Lot 26
Lot 27
Lot 28
Lot 29
Lot 30
Lot 31
Lot 32

------ LEGEND ------

- Potential Hydrant Locations
- Fire Service Access Route (FSAR)
- Subject Site

Proposal

- Subdivision
- Building Envelope
- Road Layout
- Tree Retention Area
- Habitat Trees

Asset Protection Zone

- APZ - (BAL-29 & LGA Requirements)

Assessment Area

- 100m Buffer
- 150m Buffer

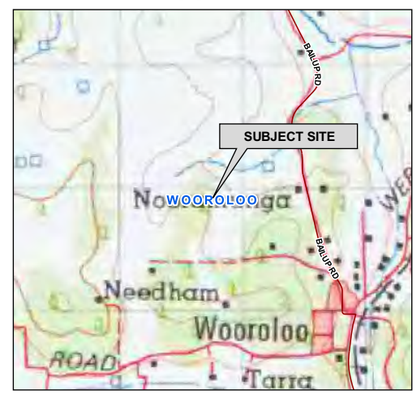
Bushfire Attack Levels

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-LOW

0 50 100 150 200 250

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Sarina Gorman 20-05-2022
SCALE (A3): 1 : 5250

BUSHFIRE PRONE PLANNING

Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

3.2.3 Bushfire Attack Level Results - Derived from The BAL Contour Map

DERIVING A BAL RATING FOR A FUTURE CONSTRUCTION SITE (BUILDING) FROM THE BAL CONTOUR MAP DATA

(Capacity to Issue a BAL Certificate)

Key Assumptions: The actual location of a building within a lot or envelope (an 'area') may not have been determined at this stage of planning; and the BAL ratings represent the BAL of an 'area' not a building.

The BAL Rating is Assessed as Indicative

If the assessed BAL for the 'area' is stated as being 'indicative', it is because that 'area' is impacted by more than one BAL contour interval and/or classifiable vegetation remains on the lot, or on adjacent lots, that can influence a future building's BAL rating (and this vegetation may have been omitted from being contoured for planning purposes e.g. Grassland or when the assumption is made that all onsite vegetation can be removed and/or modified).

In this report the indicative BAL is presented as either the highest BAL impacting the site or as a range of achievable BAL's within the site – whichever is the most appropriate.

The BAL rating that will apply to any future building within that 'area' will be dependent on:

1. vegetation management onsite; and/or
2. vegetation remaining on adjacent lots; and/or
3. the actual location of the future building within that 'area'.

A BAL Certificate cannot be provided for future buildings, within a lot or envelope with an indicative BAL, until the building location and in some instances building design (elevation), have been established and any required and approved vegetation modification/removal has been confirmed. Once this has occurred a report confirming the building location and BAL rating will be required to submit with the BAL certificate.

The required confirmation of the BAL rating must be done by a bushfire practitioner with the same level of accreditation as has been required to compile this BAL Contour report or subsequent Bushfire Management Plan. This is dependent on the type of calculations utilised (e.g. if performance-based solutions have been used in the Plan BPAD Level 3 accreditation is required).

The BAL Rating is Assessed as Determined

If the assessed BAL for the lot or envelope is stated as being 'determined' it is because that lot or envelope is impacted by a single BAL contour interval. This BAL has been determined by the existence (or non-existence) of classified vegetation outside the lot or envelope, and no classifiable vegetation currently exists on the lot or envelope (i.e. it has been cleared to a minimal fuel, low bushfire threat state). In the situation where the BAL Contour Map has been constructed around multiple lots, there also needs to no classifiable vegetation on an adjacent lot if this vegetation has not already been incorporated into the creation of the BAL Contour Map.

As a result, a determined BAL can be provided in this limited situation because:

1. No classified vegetation is required to be removed or modified to achieve the determined BAL, either within the lot/envelope or on adjacent lots (or if vegetation is excluded from classification, it is reasonable to assume it will be maintained in this state into the future); and
2. A future building can be located anywhere within the 'site' and be subject to the determined BAL rating; and
3. The degree of certainty is more than sufficient to allow for any small discrepancy that might occur in the mapping of the BAL contours.

For a determined BAL rating for a lot/envelope, A BAL Certificate (referring to the BMP) can be provided for a future building, if the BMP remains current.

4 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

In response to the Bushfire Management Plan requirements established by Appendix 5 of the Guidelines for Planning in Bushfire Prone Areas (WAPC 2017 v1.3), the following statements are made to assist in the understanding of whether the proposal is likely to be able to comply with the bushfire protection criteria now or in subsequent planning stages.

Spatial Context - Broader Landscape Considerations	
Wider road network and access constraints	At a more local level access options won't be limited to a single road in two directions once construction of the internal road network has been constructed. There is no access constraint for the subject site with regard to what is considered acceptable from a planning perspective, however, where development opportunities can increase local access options within the surrounding area, this would have merit that should be considered as benefiting a greater number of residents. This subdivision will provide alternate access options for existing landowners in this location.
Proximity of settlements and emergency services	The subject site forms part of a rural residential settlement. The Mundaring townsite, to the southwest is 25 km and 20 minutes travel time from the development site. The nearest emergency services are located in Wooroloo (1.2km and 2 minutes travel time).
Bushfire prone vegetation types and extent (including conserved vegetation)	Significant extent of bushfire prone vegetation exists across the broader landscape as retained native vegetation as well as introduced vegetation (a combination of forest and woodland) but interspersed with improved pastures (grassland). Most of the vegetation is on private land and subject to various levels of fuel load management as required under the Shire of Mundaring Firebreak and Fuel Load Notice. The forest and woodland vegetation will produce significant embers and firebrands in a bushfire event primarily due to the type of foliage and type of bark.
Topography and fire behaviour interactions.	The topography is undulating rather than rugged. Some areas of flat land, but slopes of zero (0) to five (5) degrees do exist. Bushfire rates of spread can double for every ten degrees of upslope while downslopes will slow the rate of spread.
Potential for extreme fire behaviour and pyro convective events.	Possible but limited likelihood due to the fragmentation of areas of bushfire prone vegetation due to cleared areas, pastured areas, fuel load management by landowners and the availability of emergency services (including being a part of the greater Perth metropolitan area).
Environmental Considerations	
Constraints to implementing required and/or additional bushfire protection measures	The environment considerations have identified sections within proposed Lots 4, 5, 13, 14, 24 and 25 that are designated as Local Natural Areas (LNA) with Level 2 (Brown) (Lots 4 and 5) and Level 3 (yellow) (Lots 13, 14, 24 and 25) Conservation Priorities.
Provision of Access Within the Subject Site	
Potential constraints	No constraints to establishing the required access will exist.
Potential Bushfire Impacts	
Flame and radiant heat and ability to establish an APZ	The proposed lot sizes will allow a BAL-29 dimensioned APZ to be established within each lot. This will prevent flame contact from the classified vegetation. Some classified vegetation within the lot boundary will need to be removed and managed to achieve the required maximum BAL-29 APZ. Application of the BAL-29 bushfire construction standard will mitigate the risks from radiant heat impact to what is considered an acceptable level.
Embers/firebrands, smoke and fire-driven wind	These will be the major impacts to the subject site. The appropriate protection measures of building construction and strict management of the APZ will mitigate the risk to what is considered an acceptable level.
Issues to be Considered at Subsequent Planning Stages (additional assessments/documents)	

Specific land uses to be addressed	N/A
Additional assessments	N/A
Additional documents	N/A
Discretionary Decision Making and the Precautionary Principle (SPP 3.7 and Guidelines)	
Bushfire consultant consideration for further issues that need to be addressed?	N/A

5 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA ESTABLISHED BY THE GUIDELINES

For a subdivision application to be considered compliant with SPP 3.7, it must satisfy (achieve) the intent of each of the four elements of the bushfire protection criteria. These criteria are established by the *Guidelines for Planning in Bushfire Prone Areas WAPC 2017 v1.3*). Compliance can be achieved by either:

- Meeting all applicable acceptable solutions corresponding to each element (i.e. the minimum bushfire protection measures that are deemed to satisfy planning requirements); or
- Where an acceptable solution cannot be met, by developing a performance solution that satisfies the established requirements.

5.1 Local Government Variations to Apply

Local governments may add to or modify the acceptable solutions of the Bushfire Protection Criteria (BPC) and/or apply technical requirements that vary from those specified in the Guidelines for Planning in Bushfire Prone Areas (WAPC). In such instances, this Proposal will be assessed against these variations and/or any specific local government technical requirements for emergency access and water. Refer to Appendices 2 and 3 for relevant technical requirements.

Will local or regional variations (endorsed by WAPC / DFES) to the applicable acceptable solutions established by the *Guidelines* or the *Position Statement: Tourism land uses in bushfire prone areas WAPC October 2019,* apply to this Proposal?	N/A

5.2 Summary of Assessment Against the Bushfire Protection Criteria

SUMMARISED OUTCOME OF THE ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA					
Element of the Bushfire Protection Criteria	Basis for the Proposal Achieving Full Compliance with SPP 3.7			The Proposal Cannot Achieve Full Compliance with SPP 3.7	
	Acceptable Solutions Met	Achieves the Intent of the Element			
	All applicable solutions are fully met	All applicable solutions are not fully met. A merit based assessment and/or a bushfire performance comparison of the proposals residual risk with that of the residual risk of the acceptable solution is conducted (refer Note 4)	A performance principle-based solution is applied	Bushfire planning development type that may not require full compliance is applied	An improvement in bushfire performance compared to the existing development is detailed (refer Note 4)
1. Location	✓			N/A	
2. Siting and Design of Development	✓				
3. Vehicular Access	✓				
4. Water	✓				

Note: The development proposal has been assessed:

1. Against the requirements established in Appendix 4 of the *Guidelines for Planning in Bushfire Prone Areas, WAPC 2017 v1.3 (Guidelines)*. The Guidelines are found at https://www.planning.wa.gov.au/8194.aspx; and
2. Applying the interpretation guidance provided in *Position Statement: Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design (WAPC Nov 2019)*.
3. Applying any endorsed variations to the Guideline's acceptable solutions and associated technical requirements that have been established by the relevant local government. If known and applicable these have been stated in Section 5.1 with the detail included as an appendix if required by the relevant local government.
4. When non-compliant with SPP 3.7 and when appropriate, by utilising additional compliance pathways that include the application of merit-based assessment and comparative bushfire performance. The validity of this approach is derived from relevant decisions made by the responsible authorities (refer Appendix 2).

5.3 Assessment Detail

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.	
Compliance: How the proposed development achieves the intent of Element 1:	By fully meeting all applicable acceptable solutions established by the bushfire protection criteria (Guidelines v1.3 WAPC 2017)

ASSESSMENT (COMPLIANCE) STATEMENTS

For each applicable acceptable solution, the following statements present the results of the assessment of the proposed development/use against the requirements established by the *Guidelines (WAPC 2017 v1.3)* and apply the interpretation guidance established by the *Position Statement: Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design (WAPC Nov 2019)*.

Acceptable Solution: A1.1: Development Location

ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE GUIDELINES

The proposed subdivision will provide an area of land within each lot that can be considered suitable for development as BAL-40 or BAL-FZ construction standards will not be required to be applied. This meets the requirements established by Acceptable Solution A1.1 and its associated explanatory note.

ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE POSITION STATEMENT

The position statement establishes that:

- The source of risk (the hazard) to be considered in Element 1 is the "level of bushfire exposure" from the type and extent of bushfire prone vegetation and the topography of the land on which it exists; and
- "Consideration should be given to the site context" which includes the land both "within and adjoining the subject site". The "hazards remaining within the site should not be considered in isolation of the hazards adjoining the site, as the potential impact of a bushfire will be dependent on the wider risk context."

The position statement also recognises:

- That the proposed development site and its surrounding land may be part of an area "identified for development or intensification of land use prior to the release of SPP 3.7"; consequently
- Consideration by decision-makers "should also be given to improving bushfire management of the site and surrounding area, thereby reducing the vulnerability of people property and infrastructure to bushfire"; and
- The application of mitigation measures to lessen the risk to the broader area would include improvements to the local road network (including emergency access ways), improvements/additions to firefighting water supply and increasing separation distance from the hazard.

The Hazard Within the Subject Site

The proposal is for the subdivision of one large existing rural allotment into 32 smaller, rural residential allotments. The subject site currently lies within a bushfire prone area as defined by the OBRM map of Bushfire Prone Areas. It exists in a rural residential area (in the suburb of Wooroloo).

The existing lot is currently vegetated with vegetation being classified as Class A Forest, Class B Woodlands and Class G – Grassland. The topography is undulating rather than rugged. Some areas of flat land, but slopes of zero (0) to five (5) degrees do exist. The impact of slopes under the vegetation will be dependent on a bushfire's direction of travel. A bushfire travelling upslope will have increased intensity and rate of spread.

Element 1: Location

Intense bushfire behaviour is possible, particularly if vegetation within the lot is ignited by bushfire in the adjoining hazard and they are involved together. Likelihood is limited however due to the fragmentation of areas of bushfire prone vegetation due to cleared areas/pastured areas.

The removal or modification of classifiable vegetation will be required on the subject site. Due to environmental factors in the area (designated Local Natural Areas (LNA) and habitat trees identified), vegetation modification or clearing (subject to approval by the Local Government) will be limited to Building Envelopes and associated Asset Protection Zones within the newly created allotments.

The ability to establish a BAL-29 dimensioned APZ within each proposed lot's boundaries removes the threat of greater levels of radiant heat or flame contact upon a future dwelling. The BAL-29 APZ will exist over a significant area of each proposed lot.

The primary bushfire threat from bushfire prone vegetation remaining within the proposed lot will be radiant heat and embers. This threat will be mitigated by the application of appropriate building design, bushfire construction standards and the ongoing maintenance of the APZ to ensure the buildings will not be impacted by consequential fire within combustible materials used, stored or accumulated within the APZ.

The Hazard Adjoining the Subject Site

Bushfire prone vegetation within the area exists as predominantly native vegetation classified as Class A Forest, Class B Woodland and Class G Grassland. All areas of classified vegetation are located within 150 metres of this proposal. The undeveloped land within the locality supports this vegetation. Managed areas within private properties do exist, consisting of reticulated grasses and gardens, driveways and cleared areas surrounding existing buildings (existing Asset Protection Zones) in the area.

The impact of the slope under the vegetation will be dependent on a bushfire's direction of travel. The topography in the area surrounding the subject site has an upslope or flat land appearance over large areas, but slopes in the range of zero (0) to five (5) degrees downslope from the proposed lots do exist. Bushfire travelling upslope will have increased intensity and rate of spread. However, the adjoining land cannot be considered as rugged (which would present the potential for more extreme and variable fire behaviour).

Bushfire prone vegetation adjoining the existing subject land exists as predominantly native vegetation. The extent of this hazard is shown in Figures 3.2 and 3.3. These areas of vegetation are occurring under one main scenario:

1. Native vegetation that has been retained both on the subject land due to environmental significance and the adjoining land.

Consequently, the potential exists for intense bushfire behaviour to occur on heightened days of bushfire risk where low humidity and high temperatures occur. The potential bushfire impact on persons and property within the site will be an increase the level of ember attack and potential for running fire on site in the event of a bushfire.

This ember threat and subsequent running fire will be mitigated by adhering to the requirements of the Shire of Mundaring's Firebreak and Fuel Load Notice (where lots are less than 5 hectares in size, it is a requirement under the Shire of Mundaring Firebreak and Fuel Load Notice that all grasses are maintained to heights no greater than 5 centimetres), the application of appropriate building design, bushfire construction standards and the ongoing maintenance of the BAL-29 dimensioned APZ's, to ensure the buildings will not be impacted by consequential fire within combustible materials used, stored or accumulated within the APZ.

Element 2: Siting and Design of Development

Intent: To ensure that the siting and design of development (note: not building/construction design) minimises the level of bushfire impact.

Compliance: How the proposed development achieves the intent of Element 2:	By fully meeting all applicable acceptable solutions established by the bushfire protection criteria (Guidelines v1.3 WAPC 2017)

ASSESSMENT (COMPLIANCE) STATEMENTS

For each applicable acceptable solution, the following statements present the results of the assessment of the proposed development/use against the requirements established by the *Guidelines (WAPC 2017 v1.3)* and apply the interpretation guidance established by the *Position Statement: Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design (WAPC Nov 2019)*.

Acceptable Solution: A2.1: Asset Protection Zone

DEVELOPMENT SITING AND DESIGN:

The necessary outcome of bushfire planning for development siting and design is to ensure that a building can be located within the developable portion of any lot (i.e. excluding those areas that are subject to R-Code building setbacks or any other excluded zones), and be subject to potential radiant heat from a bushfire not exceeding 29 kW/m^2 (i.e. maximum BAL of BAL-29).

This will be achieved when the size of the "low fuel area immediately surrounding a building" (the asset protection zone) is large enough. This requires a certain separation distance between the building and areas of classified vegetation – which for the subject development/use is stated below as the BAL-29 APZ dimensions.

The required low fuel area within a lot and surrounding a building can be reduced in dimensions by the incorporation, through planning, of siting and design elements of non-vegetated (e.g. roads/parking/services/drainage) and/or formally managed areas of vegetation (public open space/recreation), to make up at least part of the required separation distances. This creates more robust and easier managed asset protection zones.

Future buildings on the newly created lots within the proposed subdivision can be surrounded by an APZ that will ensure the potential radiant heat impact of a bushfire does not exceed 29 kW/m^2 (BAL-29).

ASSET PROTECTION ZONE (APZ) – ATTRIBUTES TO SATISFY BUSHFIRE PLANNING REQUIREMENTS:

Width: The required APZ dimensions to ensure buildings are subject to a maximum BAL of BAL-29 (measured from any external wall or supporting post or column to the edge of the classified vegetation), has been determined in Section 3.2 of this BMP and are:

BAL-29 APZ Dimensions		
Applicable to all Lots	Building to Vegetation Area *1	Minimum 9 metres
	Building to Vegetation Area **1	Excluded AS3959:2018 2.2.3.2 (f)
	Building to Vegetation Area *2	Minimum 27 metres
	Building to Vegetation Area *4	Minimum 21 metres
	Building to Vegetation Area *5	Minimum 27 metres
	Building to Vegetation Area 6	Minimum 8 metres
	Building to Vegetation Area **6	Excluded AS3959:2018 2.2.3.2 (f)
	Building to Vegetation Area 7	Minimum 17 metres
	Building to Vegetation Area **7	Excluded AS3959:2018 2.2.3.2 (f)
	Building to Vegetation Area *8	Minimum 8 metres
	Building to Vegetation Area 9	Minimum 14 metres

	Building to Vegetation Area **9	Excluded AS3959:2018 2.2.3.2 (f)
	Building to Vegetation Area *10	Minimum 9 metres
	Building to Vegetation Area **10	Excluded AS3959:2018 2.2.3.2 (f)
	Building to Vegetation Area 11	Minimum 17 metres
	Building to Vegetation Area **11	Excluded AS3959:2018 2.2.3.2 (f)
	Building to Vegetation Area *12	Minimum 8 metres
	Building to Vegetation Area **12	Excluded AS3959:2018 2.2.3.2 (f)
	Building to Vegetation Area 13	Minimum 21 metres
	Building to Vegetation Area *14	Minimum 14 metres

- * Indicates vegetation that is also located outside of the subject land. Vegetation that is onsite is within the control of the subject site's landowner/s and therefore can potentially be removed or maintained to mitigate the bushfire risk, subject to any approval being required by a local government. With the exception of sections of Area 12 to the west of the subject site (for the purposes of upgrading/constructing Howard Road to meet the bushfire technical requirements – Subject to approval by the Local Government Authority) Vegetation that is located offsite however, cannot be removed or modified for BAL reduction purposes as it is not within the control of the subject site landowner.
- ** Indicates vegetation subject to changes post development of this site, with the area/s being reclassified to 'Excluded' AS3959-2018 (f)'. This is the result of the implementation of Asset Protection Zones around any proposed structures and the upgrade/construction of Howard Road to enable access to proposed Lots 13, 14, 15, 16 and 17 where applicable. Access to Lots 11 and 12 will be via the new internal road network. These areas are to be maintained to a low bushfire threat state in perpetuity in accordance with Schedule 1: Standards for Asset Protection Zones as stipulated in the Guidelines for Planning in Bushfire Prone Areas, AS3959-2018 s2.2.3.2 requirements and the Shire of Mundaring Firebreak and Fuel Load Notice.

APZ Location: Asset protection zones can be contained solely within the boundaries of the subject land. The APZ will consist of land primarily within subject land. The APZ that will exist, will consist of the following:

- Roads/Hardstand areas
- Footpaths
- Any applicable landscaping

APZ Management: All vegetation that will require modification/removal and future management is onsite and therefore under the control of the landowner.

Retained vegetation with the APZ's will be managed in accordance with the technical requirements established by the Schedule 1: 'Standards for Asset Protection Zones (Guidelines). The APZ specifications are also detailed in Appendix 1 and the Shire of Mundaring may have additional requirements established by their Firebreak and Fuel Load Notice.

THE APZ – REQUIRED DIMENSIONS TO SATISFY FUTURE BUILDING (AND ONGOING MANAGEMENT)

It is important for the landowner to be aware that the APZ dimensions that will be required to be physically established and maintained on the lot surrounding relevant future buildings, may be different to those for the BAL-29 APZ - which is the minimum dimension a planning proposal needs to show can be established to comply with SPP 3.7.

The actual APZ dimensions to be physically established and maintained, will be based on which of the following establishes the larger APZ dimension:

- The dimensions corresponding to the determined BAL of a building (refer to Section 3.2 for explanation of the 'planning' versus 'building' requirements and 'indicative' versus 'determined' BAL); or
- The APZ dimensions established by the local government's Firebreak Notice.

Element 3: Vehicular Access

Intent: To ensure that the vehicular access serving a subdivision/development is available and safe during a bushfire event.

Compliance: How the proposed development achieves the intent of Element 3:	By fully meeting all applicable acceptable solutions established by the bushfire protection criteria (Guidelines v1.3 WAPC 2017)

ASSESSMENT (COMPLIANCE) STATEMENTS

For each applicable acceptable solution, the following statements present the results of the assessment of the proposed development/use against the requirements established by the *Guidelines (WAPC 2017 v1.3)*.

Acceptable Solution: A3.1: Two Access Routes

The subject site is located on an existing road network within an established rural residential area. Bailup Road, located to the east, immediately adjacent to the subject site, provides a minimum of two alternatives for emergency access/egress in two different directions to two different destinations. The existing road network meets the technical requirements of the guidelines for public roads and is available to both emergency and private vehicles, at all times and under all weather conditions. The construction of the internal road network will provide a connection to Bailup Road to the east, Mayo Road to the south and Howard Road to the west, thus providing additional access and egress options.

Acceptable Solution: A3.2: Public Road

Howard Road to the west of the subject site would be required to be upgraded/constructed to meet the bushfire protection criteria for public roads. This includes having a minimum trafficable surface of 6 metres and being of an all-weather surface such as compacted gravel. The proposed internal road network is also required to be constructed to meet the bushfire protection criteria for public road. The construction technical requirements established by the Guidelines and/or the local government can be complied with. This includes having a minimum trafficable surface of 6 metres. These requirements are set out in Appendix 2.

Acceptable Solution: A3.3: Cul-de-sacs (including a dead-end road)

N/A

Acceptable Solution: A3.4: Battle-axe

N/A

Acceptable Solution: A3.5: Private Driveways

The construction technical requirements established by the Guidelines and/or the local government can and will be complied with.
At the request of DPLH – Private driveways are to be constructed to the Bushfire Technical Requirements Established by the Guidelines where Building Envelopes and associated Residential Dwellings are located more than 70 metres from a public road.

Acceptable Solution: A3.6: Emergency Access Way

An Emergency Access Way is currently under construction at Mayo Road with the intent to connect to Murauba Close to the southwest of the subject site. This will enable an additional emergency egress option in a Bushfire Event upon completion. The construction technical requirements established by the Guidelines and/or the local government can and will be complied with. These requirements are set out in Appendix 2.

Acceptable Solution: A3.7: Fire Service Access Routes

At the request of DPLH – FSARs have been identified in this plan. (Refer to Figures 1.1 and 5.1). The construction technical requirements established by the Guidelines and/or the local government can and will be complied with.

Element 3: Vehicular Access
Acceptable Solution: A3.8: Firebreak Width
The proposed lots will comply with the requirements of the local government annual firebreak notice issued under s33 of the Bush Fires Act 1954. Firebreaks to be installed prior to subdivision clearance.

Element 4: Water

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

Compliance: How the proposed development achieves the intent of Element 4:	By fully meeting all applicable acceptable solutions established by the bushfire protection criteria (Guidelines v1.3 WAPC 2017)

ASSESSMENT (COMPLIANCE) STATEMENTS

For each applicable acceptable solution, the following statements present the results of the assessment of the proposed development/use against the requirements established by the *Guidelines (WAPC 2017 v1.3)*.

Acceptable Solution: A4.1: Reticulated Areas

The subject site is located within a reticulated water supply area for fire-fighting operations. The closest hydrants are located outside the subject lot on both Bailup road to the east and Mayo Road to the south. Existing external hydrants in the area are also located at regular intervals.

Potential new hydrant locations have been identified in this plan (Refer to Figures 1.1 and 5.1) in accordance with The Water Corporation's 'No. 63 Water Reticulation Standard'. Where future hydrants are proposed, the state requirement hydrant separation distances area as follows:

Commercial – 100 metres,

Residential – 200 metres,

Rural Residential – 400 metres.

The construction technical requirements established by the Guidelines and/or the local government can and will be complied with. These requirements are set out in Appendix 3.

Acceptable Solution: A4.2: Non-Reticulated Areas

N/A

Acceptable Solution: A4.3: Non-Reticulated Areas – Individual Lots

N/A

Figure 5.1

Bushfire Protection Measures

Lot 102 on Plan / Diagram: P414385
Bailup Road
Wooroloo
Shire of Mundaring

REQUIREMENTS:

1. Routes providing a minimum of two alternatives for emergency access/egressin two different direcctions to two different destinations. Bailup and Mayo Road form part of the existing public road network and meets compliance with Element 3 of the Guidelines.

2. Internal road networks is to be constructed to enable acccess to proposed allotments within subject site. To be constructed in accordance with Public Road Technical Requirements of Table 6. Refer to Appendix 2 of this Plan.

3. Classified vegetation in accordance with AS3959-2018 that is impacting the proposed development.

4. APZ around proposed Building Envelopes on the newly created lots. To be maintained in accordance with Schedule 1: Standards for Asset Protection Zones as Stipulated in the Guidelines for Planning in Bushfire Prone Areas, AS3959-2018 s2.2.3.2 requirements and the Shire of Mundaring Firebreak and Fuel Load Notice.

5. The subject site is located within a reticulated water supply area for fire-fighting operations. The closest hydrants are located outside the subject lot on both Bailup road to the east and Mayo Road to the south. Existing external hydrants in the area are also located at regular intervals.
Where future hydrants are proposed, the state requirement hydrant separation distances area as follows - Commercial – 100 metres,
Residential – 200 metres,
Rural Residential – 400 metres.

NOTES:
- Removal of any potentially classifiable, native vegetation requires approval from the Shire of Mundaring.

- Driveways longer than 70m shall comply with the Bushfire Technical Requirements established by the Guidelines for Planning in Bushfire Prone Areas.

ASSESSMENT DATE: 20 October 2021
PREPARED BY: Sarina Gorman
ACCREDITATION LEVEL: BPAD Level 2
ACCREDITATION NUMBER: 42204
ACCREDITATION EXPIRY: January 2023
DATE OF AERIAL PHOTO: January 2022
VERSION No: 1.2

AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Sarina Gorman 20-05-2022
SCALE (A3): 1 : 5250

Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

6 RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE PROTECTION MEASURES

Table 6.1: BMP Implementation responsibilities prior to the issue of titles.

Developer (Landowner) - Prior to Issue of Titles		
No.	Implementation Actions	Subdivision Clearance
Note: Planning approval may be conditioned with the requirements: 1. To place certain notifications on the certificates of title and the deposited plan, regarding the existence of this bushfire management plan and the obligations it creates; and 2. To provide certification of the implementation of the bushfire protection measures established by this bushfire management plan.		
1	Condition (as per Code F2 of Model Subdivision Schedule, WAPC April 2020): A notification, pursuant to Section 165 of the *Planning and Development Act 2005*, is to be placed on the certificate(s) of title of the proposed lot(s) with a Bushfire Attack Level (BAL) rating of 12.5 or above, advising of the existence of a hazard or other factor. Notice of this notification is to be included on the diagram or plan of survey (deposited plan). The notification is to state as follows: *"This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is/may be subject to a Bushfire Management Plan. Additional planning and building requirements may apply to development on this land."* (Western Australian Planning Commission).	☐
2	Construct the public roads to the standards stated in the BMP.	☐
3	Proposed Lots 1, 4, 5, 10, 11, 22, 23, 30 and 32 will require private driveways to be constructed to the standards established by the Guidelines for Planning in Bushfire Prone Areas where Building Envelopes and associated Residential Dwellings are located more than 70 metres from a public road.	☐
4	Construct Fire Service Access Routes (FSAR's) to the standards established by the Guidelines for Planning in Bushfire Prone Areas.	☐
5	Install firebreaks within all proposed lots in accordance with the Shire of Mundaring Firebreak and Fuel Load Notice (Alternate firebreaks accepted for vegetation retention).	☐
6	Install the reticulated water supply (hydrants) to the standards stated in the BMP where applicable.	☐

Table 6.2: BMP Implementation responsibilities prior to lot sale, occupancy or building.

Landowner (Developer) - Prior to Lot Sale, Occupancy or Building	
No.	Implementation Actions
1	Prior to sale and post planning approval, the entity responsible for having the BMP prepared should ensure that anyone listed as having responsibility under the Plan has endorsed it and is provided with a copy for their information and informed that it contains their responsibilities. This includes the landowners/proponents (including future landowners where the Plan was prepared as part of a subdivision approval), local government and any other authorities or referral agencies ('Guidelines' s4.6.3).
2	Prior to sale of the subject lots, each individual lot is to be compliant with the Shire of Mundaring Firebreak and Fuel Load Notice issued under s33 of the Bushfires Act 1954. This may include specifications for asset protection zones that differ from the Guideline's APZ Standards, with the intent to better satisfy local conditions. When these are more stringent than those created by the Guidelines, or less stringent and endorsed by the WAPC and DFES, they must be complied with. Refer to Appendix 1.
3	Prior to occupancy - Construct the private driveways to the standards established by the Guidelines for Planning in Bushfire Prone Areas where Building Envelopes and associated Residential Dwellings are located more than 70 metres from a public road.
4	Construct Fire Service Access Routes (FSAR's) to the standards established by the Guidelines for Planning in Bushfire Prone Areas.
5	Prior to any building work, inform the builder of the existence of this Bushfire Management Plan and the responsibilities it contains, regarding the required construction standards. This will be: • The standard corresponding to the determined BAL, as per the bushfire provisions of the Building Code of Australia (BCA); and/or • A higher standard because the BMP establishes that the construction standard is to correspond to a higher BAL as an additional bushfire protection measure.

Table 6.3: Ongoing management responsibilities for the Landowner/Occupier.

Landowner/Occupier - Ongoing	
No.	Ongoing Management Actions
1	Maintain the Asset Protection Zone (APZ) surrounding all future buildings to the largest dimension as determined by either: • The dimensions corresponding to the determined BAL of a building. Once the building location and vegetation separation distances that exist are known and the building's BAL has been determined for building permit purposes, the required dimensions can be stated (refer to Section 3.2 for explanation of the 'planning' versus 'building' requirements and 'indicative' versus 'determined' BAL); or • The dimensions corresponding to the local government's Firebreak Notice. Maintain the APZ to the standards established by the Guidelines (refer to Appendix 1) or as varied by the relevant local government through their Firebreak Notice (refer to the following responsibility).
2	Comply with the Shire of Mundaring Firebreak and Fuel Load Notice issued under s33 of the Bush Fires Act 1954. This may include specifications for asset protection zones that differ from the Guideline's APZ Standards, with the intent to better satisfy local conditions. When these are more stringent than those created by the Guidelines, or less stringent and endorsed by the WAPC and DFES, they must be complied with. Refer to Appendix 1.
3	Where Required - Maintain vehicular access routes within the lot to the required surface condition and clearances as stated in the BMP.
4	Ensure all Fire Service Access Routes (FSAR's) are to remain un-obstructed and maintained to the standards of A3.4b of the 'Bushfire Guidelines'.
5	Ensure that any builders (of future structures on the lot) are aware of the existence of this Bushfire Management Plan and the responsibilities it contains regarding the application of construction standards corresponding to a determined BAL.
6	Ensure all future buildings the landowner has responsibility for, are designed and constructed in full compliance with: 1. the requirements of the WA Building Act 2011 and the bushfire provisions of the Building Code of Australia (BCA); and 2. with any identified additional requirements established by this BMP or the relevant local government.

Table 6.4: Ongoing management responsibilities for the Local Government.

Local Government - Ongoing	
No.	Ongoing Management Actions
1	Monitor landowner compliance with the Bushfire Management Plan and the annual Firebreak and Fuel Load notice.

A1.1 Requirements Established by the Guidelines – Standards for Asset Protection Zones

(Source: Guidelines for Planning in Bushfire Prone Areas - WAPC 2017 v1.3 Appendix 4, Element 2, Schedule 1 and Explanatory Note E2.1)

DEFINING THE ASSET PROTECTION ZONE (APZ)

Description: An APZ is an area surrounding a building that is managed to reduce the bushfire hazard to an acceptable level (by reducing fuel loads). The width of the required APZ varies with slope and vegetation and varies corresponding to the BAL rating determined for a building (lower BAL = greater dimensioned APZ).

For planning applications, the minimum sized acceptable APZ is that which is of sufficient size to ensure the potential radiant heat impact of a fire does not exceed 29kW/m² (BAL-29). It will be site specific.

For subdivision planning, design elements and excluded/low threat vegetation adjacent to the lot(s) can be utilised to achieve the required vegetation separation distances and therefore reduce the required dimensions of the APZ within the lot(s).

Defendable Space: The APZ includes a defendable space which is an area adjoining the asset within which firefighting operations can be undertaken to defend the structure. Vegetation within the defendable space should be kept at an absolute minimum and the area should be free from combustible items and obstructions. The width of the defendable space is dependent on the space, which is available on the property, but as a minimum should be 3 metres.

Establishment: 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.

The APZ may include public roads, waterways, footpaths, buildings, rocky outcrops, golf courses, maintained parkland as well as cultivated gardens in an urban context, but does not include grassland or vegetation on a neighbouring rural lot, farmland, wetland reserves and unmanaged public reserves.

[Note: Regardless of whether an Asset Protection Zone exists in accordance with the acceptable solutions and is appropriately maintained, fire fighters are not obliged to protect an asset if they think the separation distance between the dwelling and vegetation that can be involved in a bushfire, is unsafe.]

Schedule 1: Standards for APZ

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.

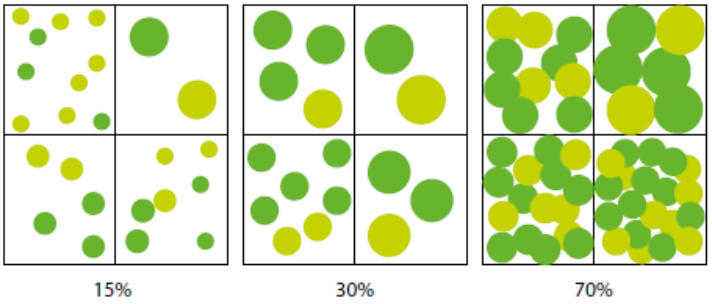
Fine Fuel Load: combustible dead vegetation matter less than 6 mm in thickness reduced to and maintained at an average of two tonnes per hectare (example below).



Example: Fine fuel load of 2 t/ha
(Image source: Shire of Augusta Margaret River's Firebreak and Fuel Reduction Hazard Notice)

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. Diagram below represents tree canopy cover at maturity.

Tree canopy cover – ranging from 15 to 70 per cent at maturity



(Source: Guidelines for Planning in Bushfire Prone Areas 2017, Appendix 4)

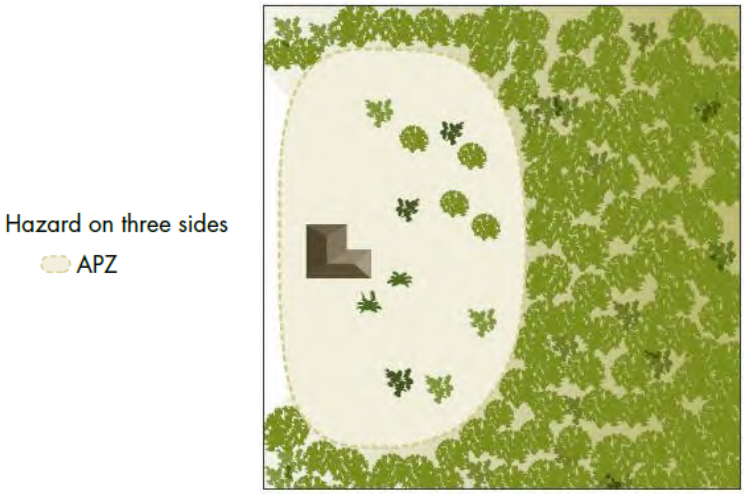
Shrubs (0.5 metres to 5 metres in height): should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m2 in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres 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 mm 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 mm or less.

The following example diagrams illustrate how the required dimensions of the APZ will be determined by the type and location of the vegetation.





A1.2 Requirements Established by the Local Government – the Firebreak Notice

The relevant local government's current Firebreak Notice is available on their website, at their offices and is distributed as ratepayer's information. It must be complied with.

These requirements are established by the relevant local government's Firebreak Notice created under s33 of the Bushfires Act 1954 and issued annually (potentially with revisions). The Firebreak Notice may include additional components directed at managing fuel loads, accessibility and general property management with respect to limiting potential bushfire impact.

If Asset Protection Zone (APZ) specifications are defined in the Firebreak Notice, these may differ from the Standards established by the Guideline's, with the intent to better satisfy local conditions. When these are more stringent than those created by the Guidelines, or less stringent and endorsed by the WAPC and DFES, they must be complied with.

The APZ dimensions to be physically established and maintained, will be based on which of the following establishes the larger APZ dimension:

- The dimensions corresponding to the determined BAL of a building (refer to Section 3.2 explanation of the 'planning' versus 'building' requirements and 'indicative' versus 'determined' BAL(s)); or
- The APZ dimensions established by the local government's Firebreak Notice.

A1.3 Requirements Recommended by DFES – Property Protection Checklists

Further guidance regarding ongoing/lasting property protection (from potential bushfire impact) is presented in the publication 'DFES – Fire Chat – Your Bushfire Protection Toolkit'. It is available from the Department of Fire and Emergency Services (DFES) website.

A1.4 Requirements Established by AS 3959:2018 – 'Minimal Fuel Condition'

This information is provided for reference purposes. This knowledge will assist the landowner to comply with Management Requirement No. 3 set out in the Guidance Panel at the start of this Appendix. It identifies what is required for an area of land to be excluded from classification as a potential bushfire threat.

"Australian Standard - AS 3959:2018 Section 2.2.3.2: Exclusions - Low threat vegetation and non-vegetated areas:

The Bushfire Attack Level shall be classified BAL-LOW where the vegetation is one or a combination of the following:

a) Vegetation of any type that is more than 100m from the site.

b) Single areas of vegetation less than 1ha in area and not within 100m of other areas of vegetation being classified vegetation.

c) Multiple area of vegetation less than 0.25ha in area and not within 20m of the site or each other or other areas of vegetation being classified vegetation.

d) Strips of vegetation less than 20m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20m of the site or each other, or other areas of vegetation being classified vegetation.

e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.

f) *Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a* ***minimal fuel condition,*** *(means insufficient fuel available to significantly increase the severity of a bushfire attack – for example, recognisable as short cropped grass to a nominal height of 100mm), mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks (single row of trees)."*

APPENDIX 2: TECHNICAL REQUIREMENTS FOR VEHICULAR ACCESS

Each local government may have their own standard technical requirements for emergency vehicular access, and they may vary from those stated in the Guidelines.

When required, these are stated in Section 5.1 of this bushfire management plan.

Requirements Established by the Guidelines – The Acceptable Solutions

(Source: Guidelines for Planning in Bushfire Prone Areas WAPC 2017 v1.3, Appendix 4)

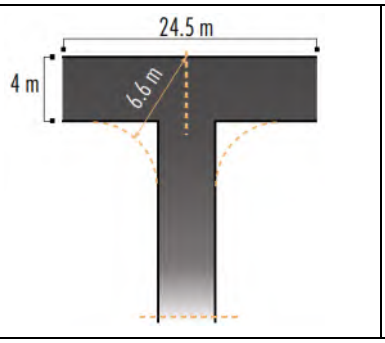
Acceptable Solution 3.5: Private Driveways

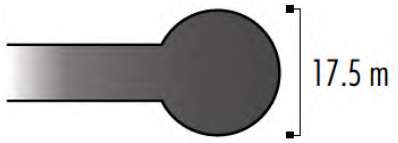
The following requirements are to be achieved:

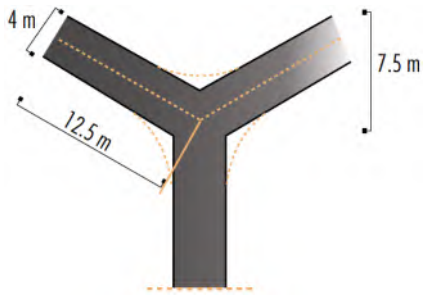
- The design requirements set out in Part 2 of this appendix; and

Where the 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 (ie combined width of the passing bay and constructed private driveway to be a minimum six metres);
- Turn-around areas every 500 metres and within 50 metres of a house, designed to accommodate type 3.4 fire appliances to turn around safely (ie kerb to kerb 17.5 metres);
- Any bridges or culverts are able to support a minimum weight capacity of 15 tonnes; and
- All weather surface (i.e. compacted gravel, limestone or sealed).



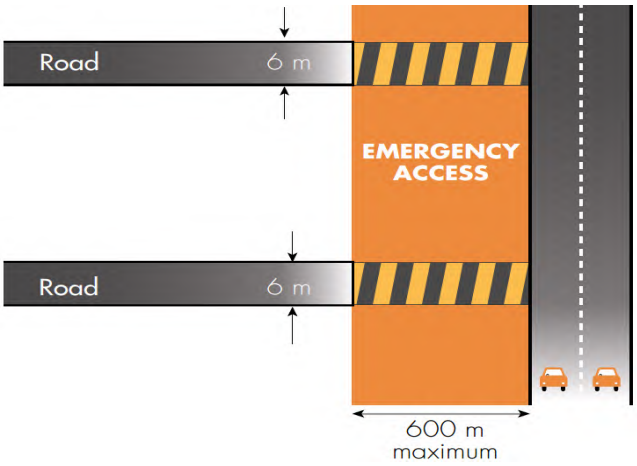




Acceptable Solution 3.6: Emergency Access Way

An access way that does not provide through access to a public road is to be avoided bushfire prone areas. Where no alternative exists, an emergency access way is to be provided as an alternative link to a public road during emergencies. The following requirements are to be achieved:

- No further than 600 metres from a public road;
- Must be signposted including where they ajoin public roads;
- Provided as a right of way or public access easement in gross;
- Where gates are used they must not be locked and they must be a minimum width of 3.6 metres with design and construction approved by local government (refer to the example in this appendix); and
- Meet the additional design requirements set out in Part 2 of this appendix.



Acceptable Solution 3.8: Firebreak Width

Lots greater than 0.5 hectares must have an internal perimeter firebreak of a minimum width of three meters or to the level as prescribed in the local firebreak notice issued by the local government.

VEHICULAR ACCESS TECHNICAL REQUIREMENTS - PART 2					
Technical Component	Vehicular Access Types				
	Public Roads	Cul-de-sacs	Private Driveways	Emergency Access Ways	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	4.5	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 cross-fall	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

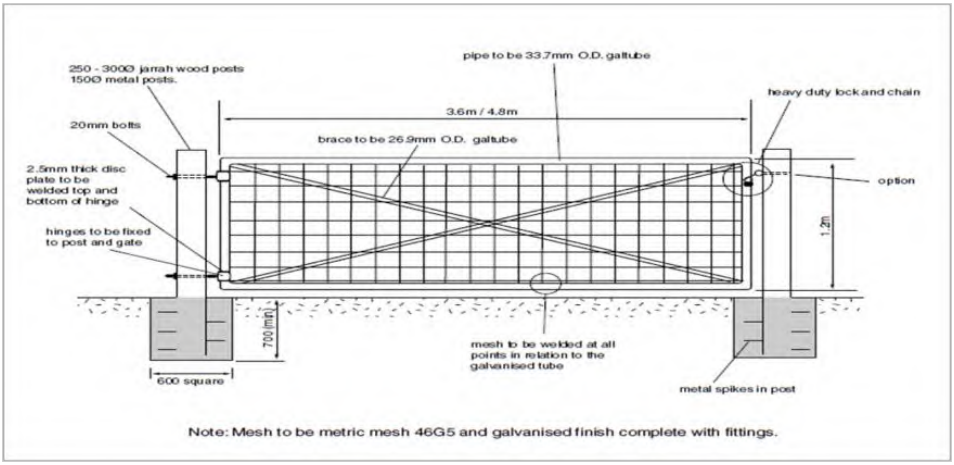
* A six metre trafficable surface does not necessarily mean paving width. It could, for example, include four metres of paving and one metre of constructed road shoulders. In special circumstances, where 8 lots or less are being serviced, a public road with a minimum trafficable surface of four metres for a maximum distance of ninety metres may be provided subject to the approval of both the local government and DFES.

VEHICULAR ACCESS TECHNICAL REQUIREMENTS – GATES AND SIGNS EXAMPLES

Gates

Design and construction to be approved by local government.

- Minimum width 3.6m
- Emergency access way gates must not be locked.
- Fire service access route gates may be locked but only with a common key that is available to local fire service personnel.
- Bollards will be to the local government specifications



Signs

Design and construction to be approved by the local government.

- Minimum height above ground of 0.9m.
- Lettering height to be 100mm.
- To display the words (as appropriate) "Emergency Access Only" or "Fire Service Access – No Public Access".
- Size 600mm x 400mm.
- Sign colour red, base (white) area is reflective background.
- Rounded corners, radius 20mm.
- White key-line 3mm wide, 3mm from outside edge.
- Suggested mounting hole 6mm diameter.



Reticulated Areas

[Source: Guidelines for Planning in Bushfire Prone Areas WAPC 2017 v1.3, Appendix 4, Element 4]

The Water Corporation's 'No 63 Water Reticulation Standard' is deemed to be the baseline criteria for developments and should be applied unless local water supply authority's conditions apply.

The requirement is to supply a reticulated water supply and fire hydrants, in accordance with the technical requirements of the relevant water supply authority and DFES.

Key specifications in the most recent version/revision of the design standard include:

- ***Residential Standard*** – hydrants are to be located so that the maximum distance between the hydrants shall be no more than 200 metres.
- ***Commercial Standard*** – hydrants are to be located with a maximum of 100 metre spacing in Industrial and Commercial areas.
- ***Rural Residential Standard*** – where minimum site areas per dwelling is 10,000 m^2 (1ha), hydrants are to be located with a maximum 400m spacing. If the area is further subdivided to land parcels less than 1ha, then the residential standard (200m) is to be applied.

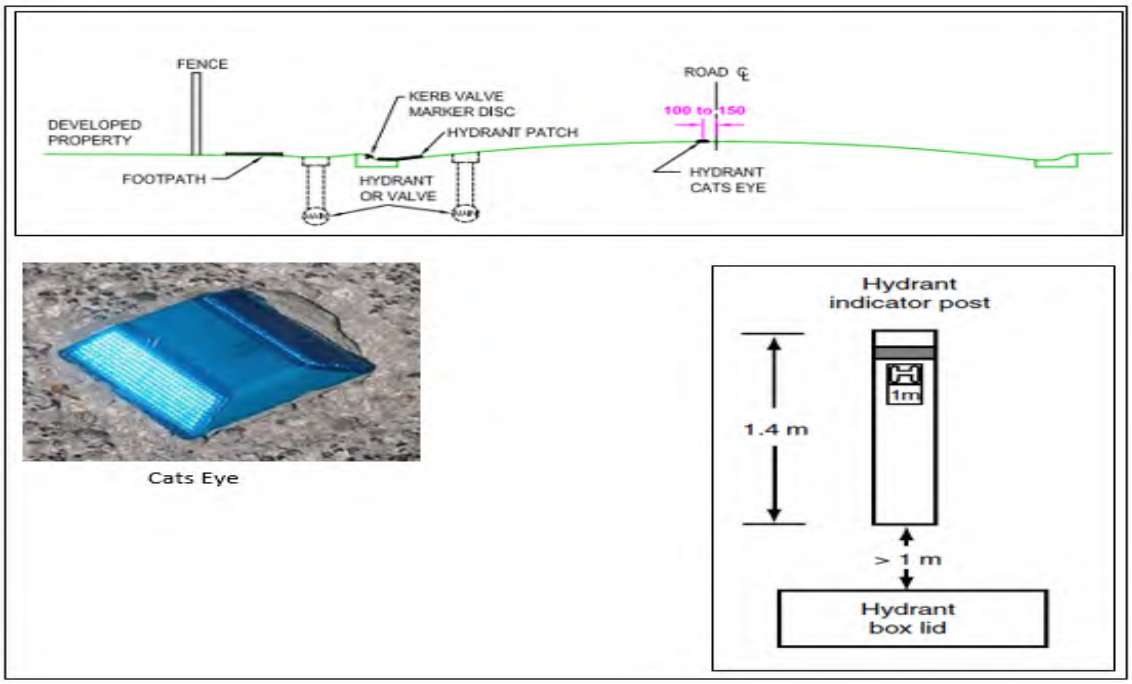


Figure A4.1: Hydrant Location and Identification Specifications

APPENDIX 4: ALTERNATIVE PATHWAYS FOR COMPLYING WITH SPP 3.7

Bushfire Prone Planning, for applicable proposals, is sometimes required to apply argument for the application of compliance pathways that differ from those established by the Guidelines for Planning in Bushfire Prone Areas (WAPC v1.3) - these being meeting the acceptable solutions and developing performance principle-based solutions (alternative solutions).

These additional pathways include the application of merit based assessment and comparative bushfire performance. The validity of this approach is derived from relevant Tribunal hearings and Court cases. A key recent decision highlights many relevant factors and is detailed below.

The Tribunal decision in Bunnings Group Limited and Presiding Member of the Metro North West JDAP **[2019] WASAT 121** references many of these and made its decisions. These include the following paraphrased relevant decisions. Decision makers will need to refer to the actual proceedings.

- [153] In considering the requirements of State Planning Policy 1: State Planning Framework (SPP1) in the application of SPP3.7, there is no basis on which provisions lower in the hierarchy (the Guidelines) should necessarily prevail over provisions higher in the hierarchy (SPP3.7).
- [141] The intent and objectives of policy (SPP3.7) can be infringed by the inflexible application of the provisions of the Guidelines.
- [99] The existence of the principle that policy should not be inflexibly applied means that it is open to the Tribunal to consider the proposed development through the applications of a merits review.
- [145] Application of the precautionary principle requires caution in departing from policy but doesn't preclude approval and provides for assessment on merit and the use of discretion.
- [122] One should be slow to depart from policies unless satisfied that good reason exists.
- [123] It cannot be accepted that, simply because a proposal contemplates a solution that is not contemplated by the Guidelines, the Tribunal cannot approve that proposal. To accept that proposition would amount to inflexibly applying policy.
- [230] The Tribunal finds a sound basis for departing from SPP 3.7 cl. 6.6.2 and Elements 1 and 2 of the Guidelines while being able to accord with the intent and relevant objectives SPP 3.7.
- [231] Finds against the inflexible application of SPP 3.7 and associated Guidelines.

Key to considerations is the Intent of SPP 3.7 which is:

> *"… to implement **effective risk-based** land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure".*

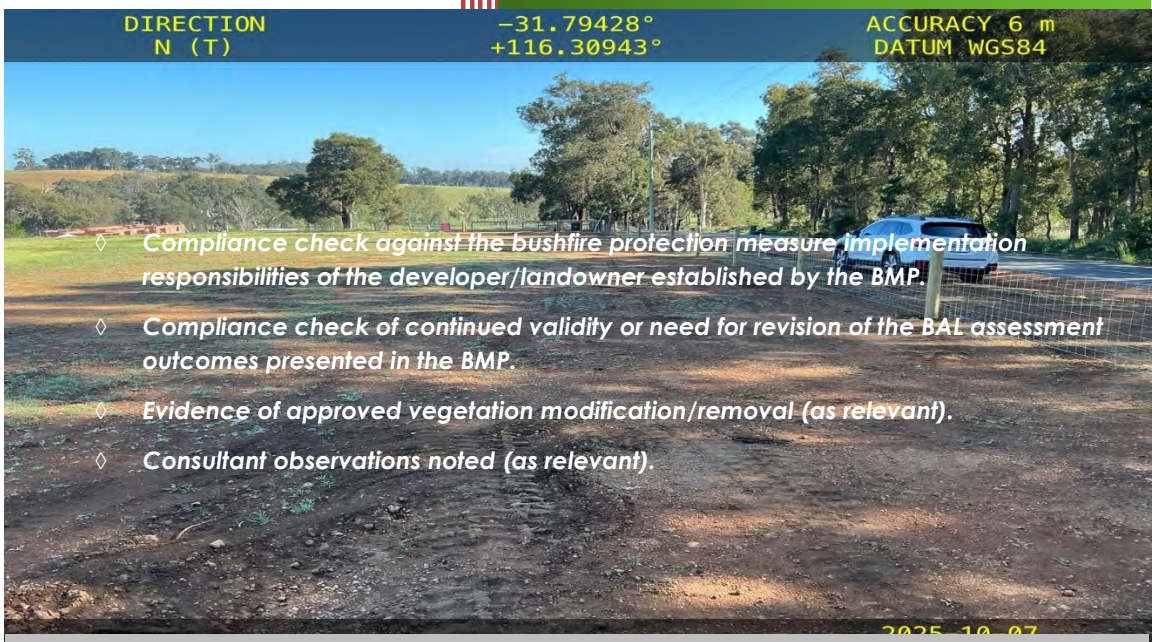
Applying this risk based approach requires an appreciation that the overarching requirement is for:

1. Identification, analysis and evaluation of the risks from the threats of bushfire;
2. Comparison of these to the residual level of risk that will exist after any proposed bushfire protection measures are implemented (i.e. risk treatments); with
3. The intent being to arrive at a tolerable level of risk for the particular land use.

Local Government Use

BUSHFIRE PRONE PLANNING

BMP Compliance Certification Report



Produced to meet the relevant requirements of STATE PLANNING POLICY 3.7 Planning in Bushfire Prone Areas & Guidelines

Lot 102 Bailup Road, Wooroloo

Shire of Mundaring

Referenced BMP Previously Submitted to Support a Subdivision Application

Report Date: 10 October 2025

Job Reference No: 210888

BPP GROUP PTY LTD T/A BUSHFIRE PRONE PLANNING

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VERSION HISTORY		
Version	Status/Details	Date
1.0	Original - Compliance Report	10 October 2025
-	-	-

THE APPLICABLE AND REFERENCED BUSHFIRE MANAGEMENT PLAN			
Version	Source	Job Ref. No.	Date
1.2	Amended BMP - The BMP was prepared by Bushfire Prone Planning.	210888	20 May 2022
-	-	-	-

Limitations: *The protection measures that will be implemented based on information presented in this Report are minimum requirements and they do not guarantee that buildings or infrastructure will not be damaged in a bushfire, persons injured, or fatalities occur either on the subject site or off the site while evacuating.*

This is substantially due to the unpredictable nature and behaviour of fire and fire weather conditions. Additionally, the correct implementation of the required protection measures (including bushfire resistant construction) and any other required or recommended measures, will depend upon, among other things, the ongoing actions of the landowners and/or operators over which Bushfire Prone Planning has no control.

All surveys, forecasts, projections and recommendations made in this report associated with the proposed development are made in good faith based on information available to Bushfire Prone Planning at the time. All maps included herein are indicative in nature and are not to be used for accurate calculations.

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BMP Compliance Certification Report Template v2.2

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1 ESTABLISHING THE BMP COMPLIANCE CHECK REQUIREMENTS

The applicable Bushfire Management Plan (BMP) submitted with the earlier subdivision application (refer to 'document control'), establishes:

- The bushfire protection measures that shall be initially implemented and those requiring ongoing maintenance to the stated requirements; and
- The persons responsible for the implementation and maintenance of the required bushfire protection measures.

This section of the report identifies the bushfire planning guidance that establishes:

- The need to provide certification of compliance with the required bushfire protection measures implementation actions; and
- The type of information required.

1.1 Local Government is to Request an Implementation Table Compliance Check

The Guidelines establish that in implementing the SPP 3.7 and associated Guidelines, local governments have responsibilities. These include to:

> *"Ensure a final compliance check against the implementation table within the bushfire management plan has been undertaken by the BAL assessor, bushfire planning practitioner and/or local government, upon completion of subdivisional works".*

*****

2 COMPLIANCE CHECK - BUSHFIRE PROTECTION MEASURE IMPLEMENTATION TABLES

The following are the relevant implementation responsibilities established in **Section 6 - Table 6.1** (where relevant) of the applicable bushfire management plan (refer to 'document control') submitted as part of the required subdivision application documents.

2.1 Developer / Landowner Responsibilities - Prior to Issue of Titles

TABLE 6.1 REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)				
		Not Compliant	Compliance is Being Progressed	Fully Compliant
1	*Condition that may be imposed (refer to Code F2 of Model Subdivision Conditions Schedule,* *WAPC June 2021 and Guidelines DPLH, 2021 v1.4, s5.3.2)* A notification, pursuant to Section 165 of the Planning and Development Act 2005, is to be placed on the certificate(s) of title of the proposed lot(s) with a Bushfire Attack Level (BAL) rating of 12.5 or above, advising of the existence of a hazard or other factor. Notice of this notification is to be included on the diagram or plan of survey (deposited plan). The notification is to state as follows: "This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is/may be subject to a Bushfire Management Plan. Additional planning and building requirements may apply to development on this land." (Western Australian Planning Commission).	☐	☐	✓
Assessment Comments: Existing Notification on the Title for development clearances provided. A copy of the notification on Title for development clearances is included in this report.				

TABLE 6.1 REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)				
		Not Compliant	Compliance is Being Progressed	Fully Compliant
2	Construct the public roads to the standards stated in the BMP.	☐	☐	✓
Assessment Comments: Transport, roads and access: The consultant may observe the implementation of protection measures for which they are not required and/or do not have the authority to assess compliance. Not applicable to this stage. No roads required to be constructed.				

TABLE 6.1 REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)				
		Not Compliant	Compliance is Being Progressed	Fully Compliant
3	Proposed Lots will require private driveways to be constructed to the standards established by the Guidelines for Planning in Bushfire Prone Areas where Building Envelopes and associated Residential Dwellings are located more than 70 metres from a public road.	☐	☐	✓
Assessment Comments: Not applicable to this stage. Building envelopes on Lot 201 & 202 not required by the Shire of Mundaring. To be assessed at the future development approvals stage, where required.				

TABLE 6.1

REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS

(SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)

		Not Compliant	Compliance is Being Progressed	Fully Compliant
4	Construct Fire Service Access Routes (FSAR's) to the standards established by the Guidelines for Planning in Bushfire Prone Areas.	☐	☐	✓

Assessment Comments: Transport, roads and access: The consultant may observe the implementation of protection measures for which they are not required and/or do not have the authority to assess compliance.

The Fire Service Access Route within the subject site is constructed of a 6m trafficable surface (compacted gravel) with 6m horizontal clearance. Signs and gates installed.



Photo ID: 01



Photo ID: 02



Photo ID: 03

Photo ID: -

TABLE 6.1 REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)				
		Not Compliant	Compliance is Being Progressed	Fully Compliant
5	Install firebreaks within all proposed lots in accordance with the Shire of Mundaring Firebreak and Fuel Load Notice (Alternate firebreaks accepted for vegetation retention).	☐	☐	✓

Assessment Comments: Transport, roads and access: The consultant may observe the implementation of protection measures for which they are not required and/or do not have the authority to assess compliance.

The firebreaks within the subject Lots are constructed 3m horizontal clearance. Gates installed on Lot 201 to access FSAR, as indicated on the compliance map Section 3 of this report.

Minimal fuel condition modification works have been undertaken across the subject lots.

Note: Additional ongoing requirements are required pursuant to the powers contained in Section 33 of the Bush Fires Act 1954, all owners and occupiers of land within the Shire of Mundaring are required annually to have firebreaks or fire control measures installed and maintained for the period in accordance with the Shire of Mundaring Fire break and Fuel Load Notice. This is an ongoing Landowner responsibility.



Photo ID: 04



Photo ID: 05



Photo ID: 06



Photo ID: 07



Photo ID: 08



Photo ID: 09

ADDITIONAL BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (NOT SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)				
		Not Compliant	Compliance is Being Progressed	Fully Compliant
7	Install the reticulated firefighting water supply and hydrants to comply with the technical requirements referenced in the BMP.	☐	☐	✓

Assessment Comments: A reticulated water supply is available to the subdivision with fire hydrants installed. Hydrant on Bailup Road (adjacent Lot 202) is identified with road markings/reflective delineator installed on the road. Hydrant box cover painted white.



Photo ID: 10



Photo ID: 11

3 COMPLIANCE CHECK - CONTINUED VALIDITY OF INDICATIVE BAL RATINGS PRESENTED IN THE BMP

3.1 Revision of Bushfire Attack Level (BAL) Assessment Outcomes – Identified Necessity

IDENTIFICATION OF VARIATIONS REQUIRING A REVISION OF THE BAL CONTOUR MAP AND/OR TABULATED BAL RESULTS				
Variation	Description	Revised Plans Required	Revised BAL Contour Map Required	Revised BAL Rating Tables Required
Subdivision layout and design has been altered.	N/A	No	No	No
Relevant building(s) design and/or location has been altered.	N/A	No	No	No
An error has been identified in the original BAL Contour Map.	N/A		No	No
The subject site conditions have changed.	Modification/removal of vegetation: After the site works have been completed, a compliance certificate may be issued to certify that the BAL ratings shown on the BAL Contour Map remain accurate and compliant.		No	No
The relevant offsite conditions have changed.	Modification/removal of vegetation: After the site works have been completed, a compliance certificate may be issued to certify that the BAL ratings shown on the BAL Contour Map remain accurate and compliant.		No	No
Assessment Outcome: Individual BAL assessments for proposed future buildings/relevant structures on each newly created Lot will be undertaken at the development approval stage.				

Figure 1

Compliance Map
Lot 201 and 202

Lot 102 on Plan / Diagram: P414385
Bailup Road
Wooroloo
Shire of Mundaring

Lot 201

Lot 202

BAILUP RD

JARDINE CL

1 2 3 4 5 6 7 8 9 10 11

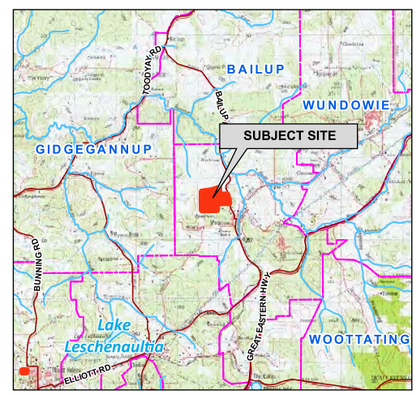
------ LEGEND ------

- Subject Site
- Cadastre
- Hydrants
- Potential Hydrant Locations
- Compliance Photos
- Hydrant
- Alternative Firebreak Gate
- FSAR Gate and Signage
- Alternative Lot Firebreak
- Fire Service Access Route (FSAR)
- Subdivision
- Building Envelope
- Road Layout
- Tree Retention Area
- Habitat Trees

0 20 40 60 80 100

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Sarina Gorman 20-10-2025
SCALE (A3): 1 : 2000

BUSHFIRE PRONE PLANNING

Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

INSTRUCTIONS

1. No alteration should be made by erasure. The words rejected should be scored through and those substituted typed or written above them, the alteration being initialled by the persons signing this document and their witnesses.
2. If insufficient space in any section, Additional Sheet Form B1 should be used with appropriate headings. The boxed sections should only contain the words "See Annexure".
3. Additional Sheets shall be numbered consecutively and bound to this document by staples along the left margin prior to execution by parties.

NOTES

1. **DESCRIPTION OF LAND**
   Lot and Diagram/Plan/Strata/Survey-Strata Plan number or Location name and number to be stated.
   Extent - Whole, part or balance of the land comprised in the Certificate of Title to be stated.
   The Volume and Folio number to be stated.
2. **REGISTERED PROPRIETOR**
   State full name and address of the Registered Proprietors as shown on the Certificate of Title and the address / addresses to which future Notices can be sent.
3. **ATTESTATION OF RESPONSIBLE AUTHORITY**
   To be attested in the manner prescribed by the Local Government Act or as prescribed by the Act constituting the Public Authority.

EXAMINED

OFFICE USE ONLY
O109483 NO
14 Mar 2019 12:01:18 Midland

NOTIFICATION

Planning & Development Act 2005
Section 165

LODGED BY	Statewest Surveys
ADDRESS	PO Box 1377, Midland, WA 6936
PHONE No.	0892743198
FAX No.	
REFERENCE No.	SW15530DP414385
ISSUING BOX No.	

PREPARED BY	Statewest Surveys
ADDRESS	PO Box 1377, Midland, WA 6936
PHONE No.	0892743198 FAX No.
REFERENCE No.	SW15530DP414385

INSTRUCT IF ANY DOCUMENTS ARE TO ISSUE TO OTHER THAN LODGING PARTY

2/2

TITLES, LEASES, DECLARATIONS ETC LODGED HEREWITH

1. _____ Received Items
2. _____ Nos.
3. _____
4. _____
5. _____ Receiving Clerk
6. _____

Registered pursuant to the provisions of the *TRANSFER OF LAND ACT 1893* as amended on the day and time shown above and particulars entered in the Register.

LANDGATE COPY OF ORIGINAL NOT TO SCALE 13/08/2025 04:26 PM Request number: 68614309
Landgate
www.landgate.wa.gov.au

WESTERN AUSTRALIAN PLANNING COMMISSION	
FILE No.	156891

TO: REGISTRAR OF TITLES
REGISTRAR OF DEEDS AND TRANSFERS

NOTIFICATION

PLANNING AND DEVELOPMENT ACT 2005

THE LAND SET OUT IN THE
SCHEDULE IS LAND TO WHICH SECTION 165 OF
THE *PLANNING AND DEVELOPMENT ACT 2005* APPLIES

SCHEDULE

DESCRIPTION OF LAND (Note 1)	EXTENT	VOLUME	FOLIO
LOT 101 ON DP414385 LOT 102 ON DP414385	WHOLE .WHOLE		

REGISTERED PROPRIETOR OF LAND (Note 2)

Keith David King of 1105 Bailup Road, Wooroloo, WA 6558.
Isabel Dianne King of 1105 Bailup Road, Wooroloo, WA 6558.

HAZARDS OR OTHER FACTORS SERIOUSLY AFFECTING THE LAND

The land is within a bushfire prone area as designated by an Order made by the
Fire and Emergency Services Commissioner and may be subject to a Bushfire Management Plan.
Additional planning and building requirements may apply to development on this land.

Dated this 12 day of October Year 2018

EXECUTION BY WESTERN AUSTRALIAN PLANNING COMMISSION (Note 3)

For: WESTERN AUSTRALIAN PLANNING COMMISSION
Rosa Rigali
Manager Planning Administration
Land Use Planning - Department of Planning,
Lands and Heritage

LANDGATE COPY OF ORIGINAL NOT TO SCALE 13/08/2025 04:26 PM Request number: 68614309
Landgate
www.landgate.wa.gov.au

Document Notes:

IMPORTANT: THIS PAGE FORMS PART OF DOCUMENT [O109483] AND MAY CONTAIN REFERENCES TO AMENDMENTS OR CORRECTIONS TO THE DOCUMENT

3/4/2019 16:46:42
NOTIFICATION IS RE-TIMECLOCKED TO 27 MARCH 2019. SEE LETTER DATED 13 MARCH 2019 FROM WOODBRIDGE SETTLEMENTS FILED IN O109482.

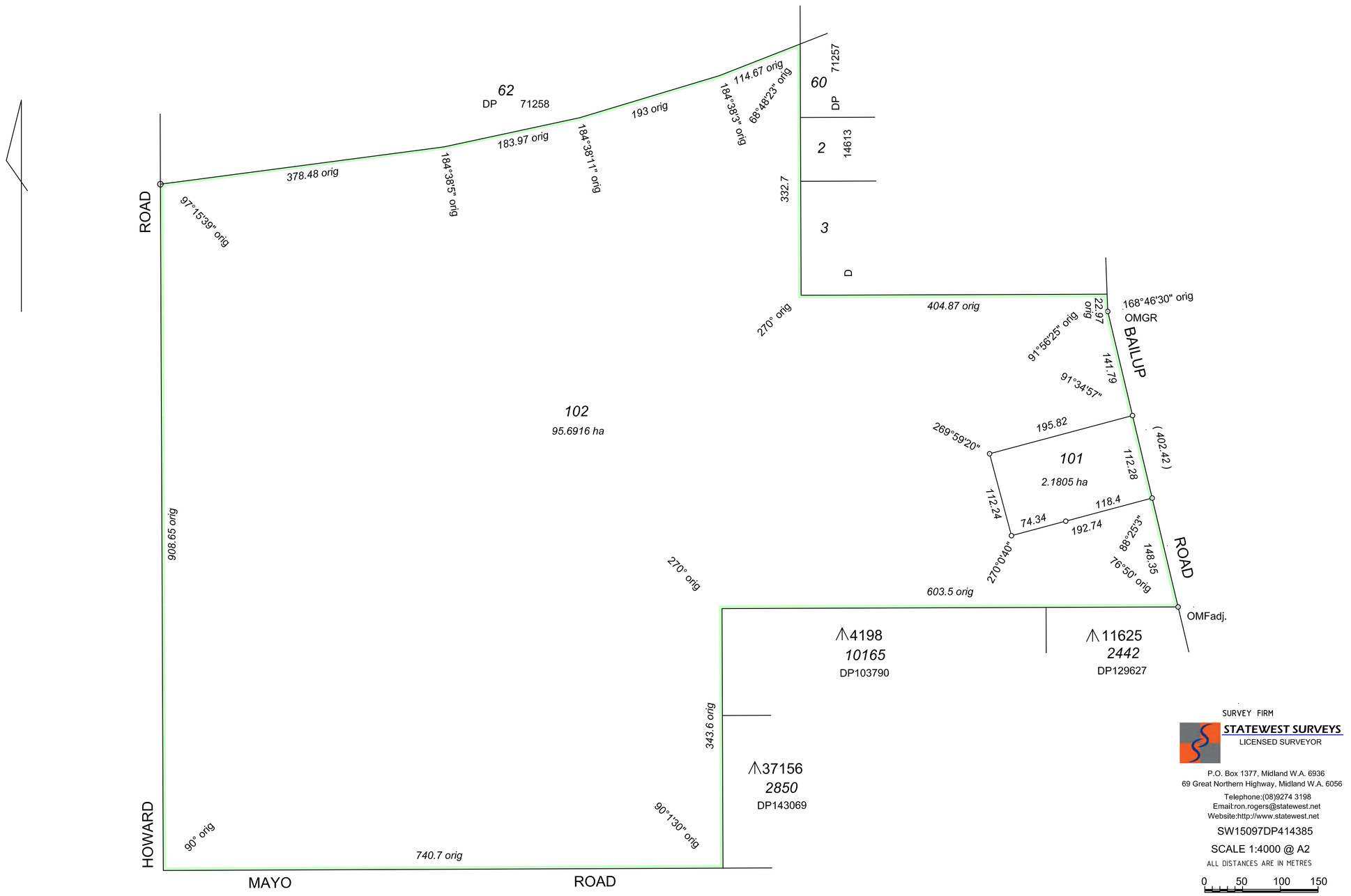
LANDGATE COPY OF ORIGINAL NOT TO SCALE 13/08/2025 04:26 PM Request number: 68614309

Landgate
www.landgate.wa.gov.au

VER.	AMENDMENT	AUTHORISED BY	DATE

HELD BY LANDGATE IN DIGITAL FORMAT ONLY

LIMITED IN DEPTH TO 609.6 METRES



SURVEY FIRM

STATEWEST SURVEYS
LICENSED SURVEYOR

P.O. Box 1377, Midland W.A. 6936
69 Great Northern Highway, Midland W.A. 6056
Telephone:(08)9274 3198
Email:ron.rogers@statewest.net
Website:http://www.statewest.net

SW15097DP414385

SCALE 1:4000 @ A2

ALL DISTANCES ARE IN METRES

0 50 100 150

TYPE FREEHOLD S.S.A. NO

PURPOSE : SUBDIVISION

PLAN OF

LOTS 101 and 102.

FORMER TENURE

LOT 64 ON DP71258 C/T 2780 / 846

LOCAL AUTHORITY

SHIRE OF MUNDARING.

LOCALITY

WOOROLOO

D.O.L. FILE

FIELD RECORD FB146342

SURVEYOR'S CERTIFICATE - REG 54

I, R.J.M.Rogers

hereby certify that this plan is accurate and is a correct representation of the -

(a) *survey; and/or

(b) *calculations from measurements recorded in the field records,

[* delete if inapplicable]

undertaken for the purposes of this plan and that it complies with the relevant written law(s) in relation to which it is lodged.

2019.03.05
09:31:37 +08'00'

LICENSED SURVEYOR DATE

LODGED

13-Mar-19	$423.00	645746
DATE	FEE PAID	ASSESS No.

I.S.C.

EXAMINED

R.LIST 18-3-2019 DATE

WESTERN AUSTRALIAN PLANNING COMMISSION

FILE WAPC 156891

Delegated under S.16 P&D Act 2005 26-Mar-2019 DATE

IN ORDER FOR DEALINGS

SUBJECT TO

Sec 165 of the P&D Act

27-3-2019

FOR INSPECTOR OF PLANS AND SURVEYS DATE

APPROVED-Reg26A(4)

INSPECTOR OF PLANS AND SURVEYS DATE
(S. 18 Licensed Surveyors Act 1909)

GOVERNMENT OF WESTERN AUSTRALIA

Landgate

SUBJECT	PURPOSE	STATUTORY REFERENCE	ORIGIN	LAND BURDENED	BENEFIT TO	COMMENTS
	NOTIFICATION	SEC.165 OF THE P & D ACT	DOC.	ALL LOTS		LOTS ARE WITHIN A BUSHFIRE PRONE AREA AND MAY BE SUBJECT TO A BUSHFIRE MANAGEMENT PLAN. ADITIONAL PLANNING AND BUILDING REQUIREMENTS MAY APPLY TO DEVELOPMENT ON THIS LAND.

DEPOSITED PLAN
414385
SHEET 1 OF 1 SHEETS
VERSION 1