

Bushfire Management Plan Coversheet

This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

Bushfire Management Plan and Site Details

Site Address / Plan Reference: Lot 35 (#777) Welshpool Road East

Suburb: Wattle Grove

State: W.A.

P/code: 6107

Local government area: City of Kalamunda

Description of the planning proposal: Application for Scheme Amendment and future Development Application

BMP Plan / Reference Number: 170336

Version: 1.0

Date of Issue: 21/08/2018

Client / Business Name: Planning Outcomes WA

Reason for referral to DFES

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	☐	☒
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the BPC elements)?	☐	☒
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	☐	☒
Strategic planning proposal (including rezoning applications)	☐	☒
Minor development (in BAL-40 or BAL-FZ)	☐	☒
High risk land-use	☐	☒
Vulnerable land-use	☐	☒

If the development is a special development type as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

Note: The decision maker (e.g. local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

BPAD Accredited Practitioner Details and Declaration

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I declare that the information provided within this bushfire management plan is to the best of my knowledge true and correct

Signature of Practitioner



Date 21/08/2018



Bushfire Management Plan (Development Application)

Site Address: Lot 35 (#777) Welshpool Road East, Wattle Grove

City of Kalamunda

Job Number: 170336

Assessment Date: 10 August 2018

Report Date: 17 August 2018

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Disclaimer

The measures contained in this Bushfire Management Plan are considered to be minimum standards 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 extreme weather conditions. Additionally, the correct implementation of the required bushfire protection measures (and any associated response/evacuation plan if applicable) will depend, among other things, on the actions of the landowners or occupiers over which Bushfire Prone Planning has no control.

All surveys, forecasts, projections and recommendations made in this report associated with the project 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.

Notwithstanding anything contained therein, Bushfire Prone Planning will not, except as the law may require, be liable for any loss or other consequences whether or not due to the negligence of their consultants, their servants or agents – arising out of the services provided by their consultants.

Document Control

Version	Version Details	Date Submitted
1.0	Original Document	29-Aug-18
		-
		-

Author	Accreditation	Signature
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Document Content Compliance Statement

This Bushfire Management Plan (the Plan) provides the required information to address State Planning Policy No. 3.7: Planning in Bushfire Prone Areas - December 2015 (SPP 3.7), the associated Guidelines for Planning in Bushfire Prone Areas - WAPC 2017 v1.3 (Guidelines), and any additional information as directed by the WA Planning Commission (WA Department of Planning, Lands and Heritage). It is fit for accompanying a planning application.

Simple DA BMP Template v1.0

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1 The Proposal and Purpose of the Plan

1.1 Details

Landowner / Proponent: Pu Ti Lian She (Perth) Society Inc / Planning Outcomes WA

Site Address: Lot 35 (#777) Welshpool Road East, Wattle Grove

Local Government: City of Kalamunda

Lot Area: 1.0 ha

Planning Stage: Strategic - local planning scheme amendment

Development Type: Construction of a Class 4 - Class 9 building and additions to existing residence

Overview of the Proposal:

The scheme amendment and development application will be to facilitate the extension of a “Club Premises” with associated amenities including new driveway and parking area. There will also be some additions to the existing residence as shown on the development site plan.

Bushfire Prone Planning

Commissioned to Produce the Plan by: Planning Outcomes WA

Purpose of the Plan: To Accompany an application for a scheme amendment and in the future a development application

For Submission to: City of Kalamunda

Figure 1.1
Proposed Development

Lot 35 on Diagram 74676
[Street No. 777]
Welshpool Road East
WATTLE GROVE

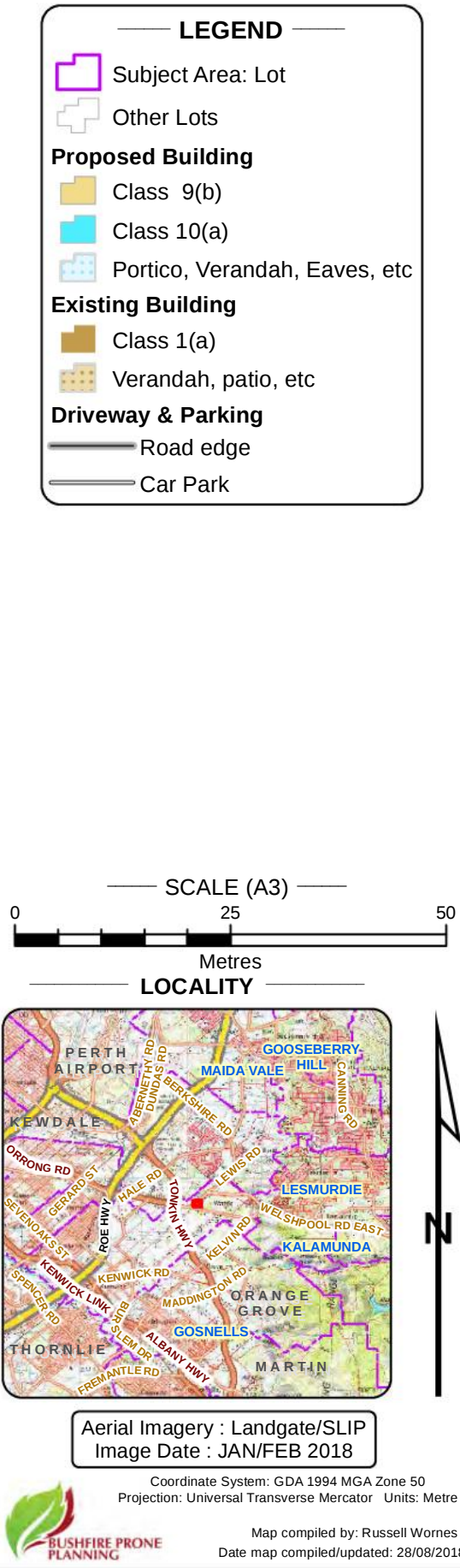


Figure 1.2
Bushfire Prone Area

Lot 35 on Diagram 74676
[Street No. 777]
Welshpool Road East
WATTLE GROVE

LEGEND

Subject Area: Lot

Other Lots

Bushfire Prone Areas (2018)

SCALE (A3)

0

25

50

75

100

125

150

Metres

LOCALITY



Aerial Imagery : Landgate/SLIP
Image Date : JAN/FEB 2018

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre

Map compiled by: Russell Wornes
Date map compiled/updated: 27/08/2018

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.
Map Document Path / Name: G:\BushfireProneMapping\MXD\st2018\170336_Lot 35 (H777) Welshpool Road East, Wattle Grove_BMP_(A3L)18-8.mxd

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.

Relevant Documents		
Existing Document	Copy Provided by Client	Title
Structure Plan	No	
Environmental Report	No	
Landscaping (Revegetation) Plan	No	
Bushfire Risk Assessments	No	

2 Potential Bushfire Impact Assessment

2.1 Assessment Input

2.1.1 Fire Danger Index (FDI) Applied

AS 3959-2009 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 refined if appropriately justified.

Table 2.1: Applied FDI Value

FDI Value			
Vegetation Area	As per AS 3959 - 2009 Table 2.1	As per DFES for the Location	Value Applied
All vegetation areas	80	N/A	80

2.1.2 Existing Vegetation Identification, Classification and Effective Slope

Vegetation identification and classification has been conducted in accordance with AS 3959-2009 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 with the worst-case scenario being applied as the classification. The predominant vegetation is not necessarily the worst-case scenario.

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 3959-2009 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: Is the ground slope under the classified vegetation and is determined for each area of classified vegetation. It is the measured or determined slope which will most significantly influence the bushfire behaviour in that vegetation as it approaches a building or site. Where there is a significant change in effective ground slope under an area of classified vegetation, that will cause a change in fire behaviour, separate vegetation areas will be identified, based on the change in effective slope, to enable the correct assessment.

Table 2.2: Vegetation identification and classification.

All Vegetation Within 150 metres of the Proposed Development				
Vegetation Area	Identified Classification Types ¹ or Description if 'Excluded'	Applied Classification ²	Effective Slope Under Classified Vegetation	
			degrees	description
1	Tussock Grassland Sown Pasture G-26	Class G Grassland	0	Flat
2	Tussock Grassland G-22	Class G Grassland	0	Flat
3	Woodland B-05	Class B Woodland	0	Flat
4	Woodland B-05	Class B Woodland	0	Flat
5	Tussock Grassland G-22 Sown Pasture G-26	Class G Grassland	1	Downslope
6	Woodland B-05	Class B Woodland	0	Flat
-	Managed grassland areas and managed areas around existing dwellings	Excluded AS3959-2009 2.2.3.2 (f)	N/A	N/A

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 the topography and classified vegetation map, Figure 3.1.

Note¹: As per AS 3959-2009 Table 2.3 and Figures 2.3 and 2.4 a-g

Note²: As per AS 3959-2009 Table 2.3.

Vegetation Area 1

Classification Applied: Class G Grassland

Classification Justification: Unmanaged tussock grassland and sown pasture on subject lot



Photo ID: 1a



Photo ID: 1b

Vegetation Area 1

Classification Applied: Class G Grassland

Classification Justification: Unmanaged grassland close to existing building and shed

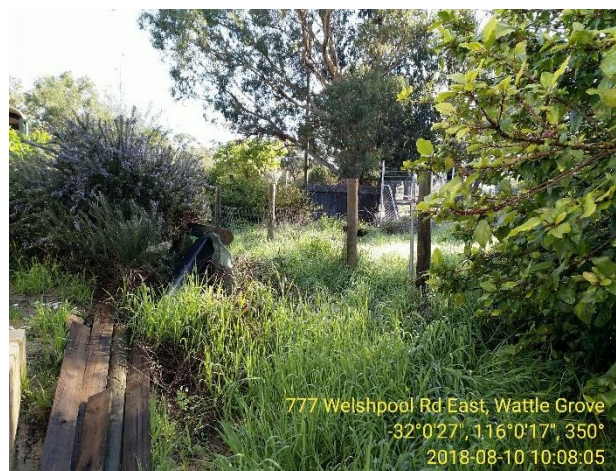


Photo ID: 1c



Photo ID: 1d

Vegetation Area 2

Classification Applied: Class G Grassland

Classification Justification: Unmanaged tussock grassland on neighbouring lot



Photo ID: 2a



Photo ID: 2b

Vegetation Area 3

Classification Applied: Class B Woodland

Classification Justification: Narrow strip of Eucalypts, sheoaks, some shrubs, with partly managed grass understorey



Photo ID: 3a

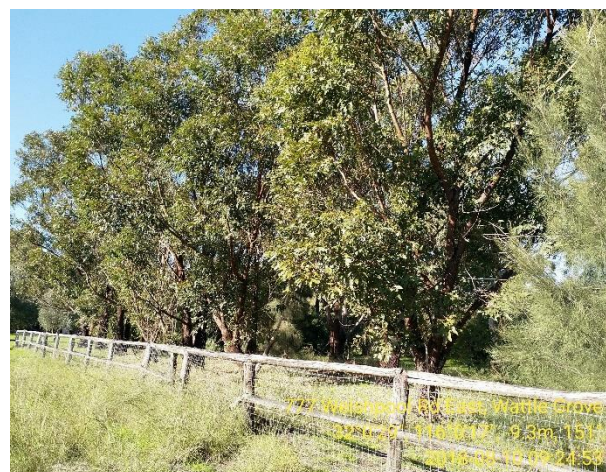


Photo ID: 3b

Vegetation Area 4

Classification Applied: Class B Woodland

Classification Justification: Narrow strip of marris with grassy understorey



Photo ID: 4a



Photo ID: 4b

Vegetation Area 5

Classification Applied: Class G Grassland

Classification Justification: Unmanaged tussock grassland and sown pasture



Photo ID: 5a

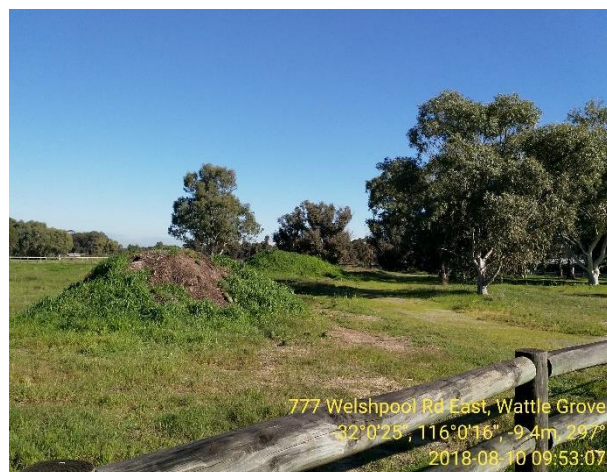


Photo ID: 5b

Vegetation Area 5

Classification Applied: Class G Grassland

Classification Justification: Sown pasture, partly managed



Photo ID: 5c

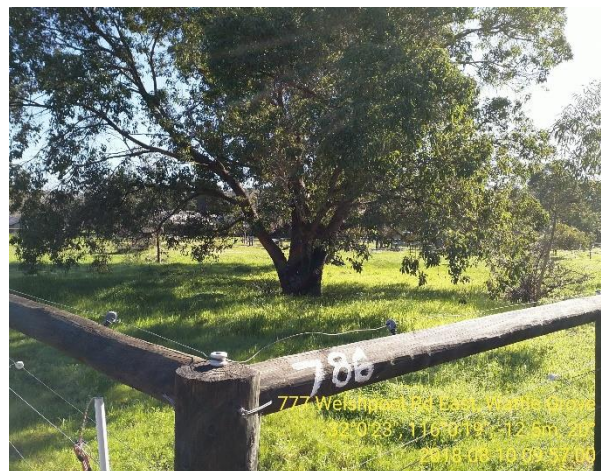


Photo ID: 5d

Vegetation Area 6

Classification Applied: Class B Woodland

Classification Justification: Narrow strip of low eucalypts and melaleuca under power lines, grass understorey

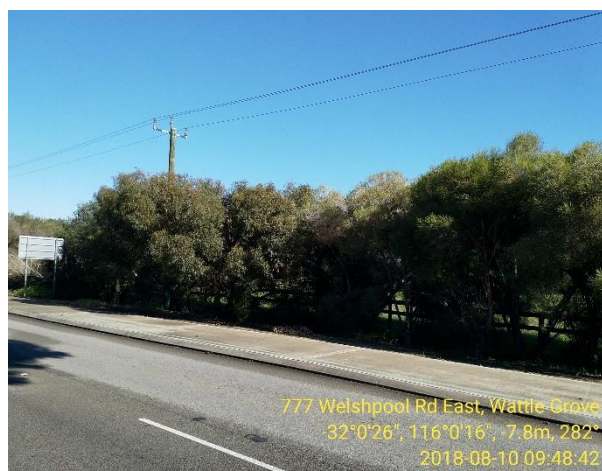


Photo ID: 6a

Vegetation Area

Classification Applied: Excluded AS3959-2009 2.2.3.2 (f)

Classification Justification: Managed grassland areas on subject lot



Photo ID: 7a



Photo ID: 7b

Vegetation Area

Classification Applied: Excluded AS3959-2009 2.2.3.2 (f)

Classification Justification: Managed grassland areas on neighbouring lot



Photo ID: 7c



Photo ID: 7d

Vegetation Area

Classification Applied: Excluded AS3959-2009 2.2.3.2 (f)

Classification Justification: Managed grassland areas on neighbouring lots

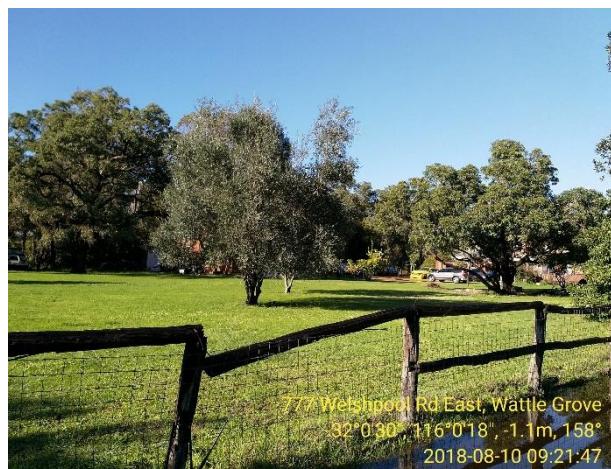


Photo ID: 7e



Photo ID: 7f

Vegetation Area

Classification Applied: Excluded AS3959-2009 2.2.3.2 (f)

Classification Justification: Managed grassland areas on neighbouring lots



Photo ID: 7g

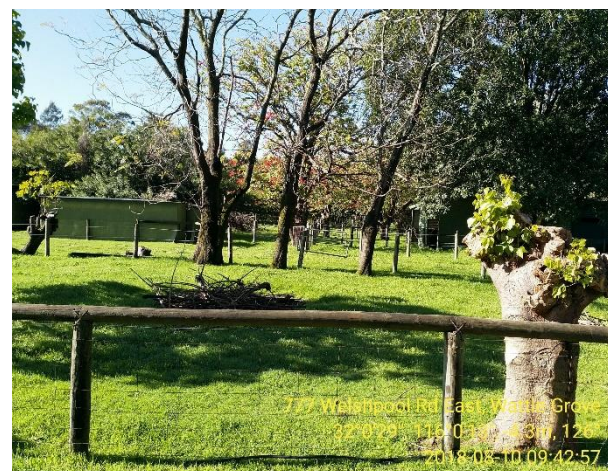
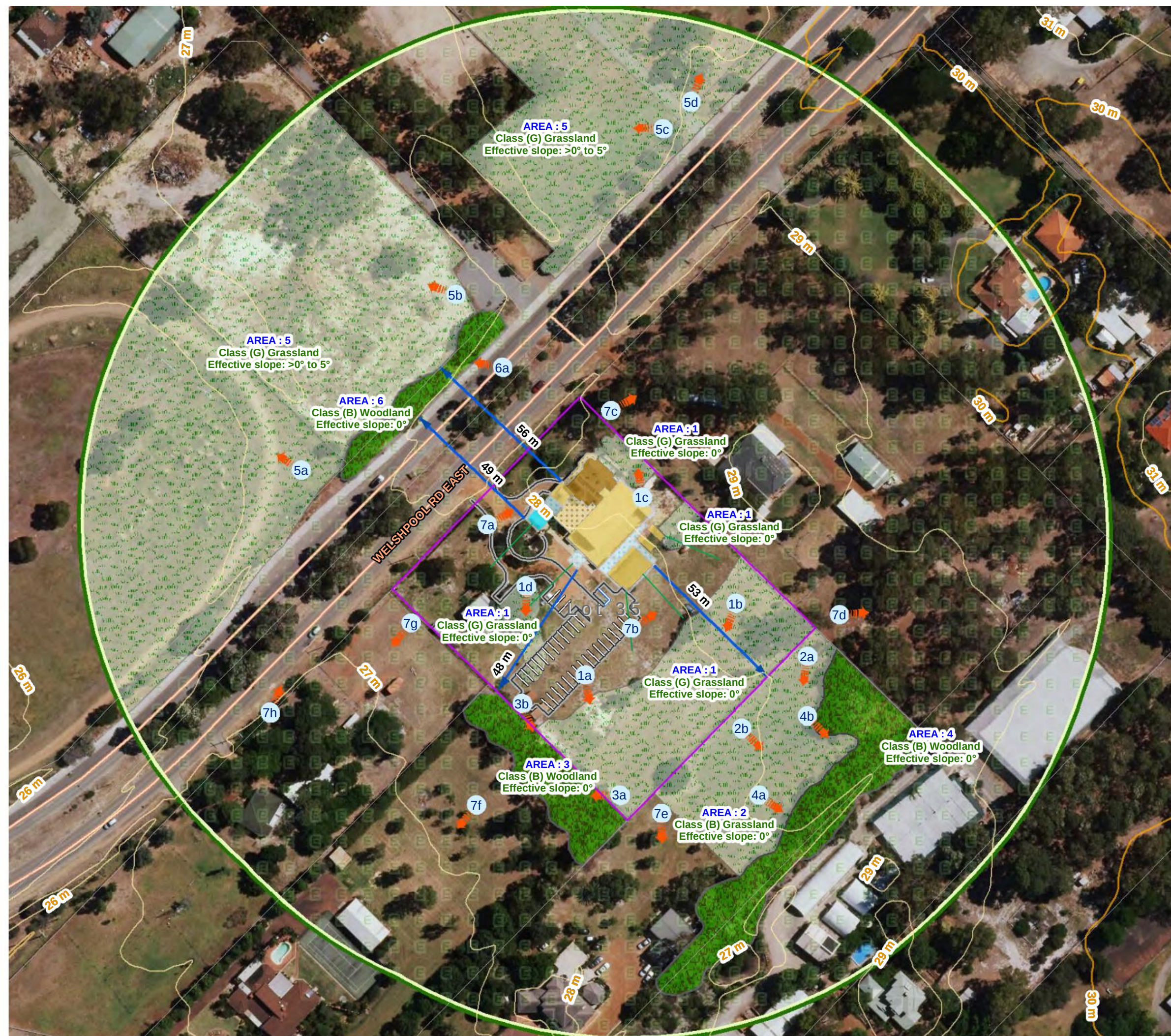
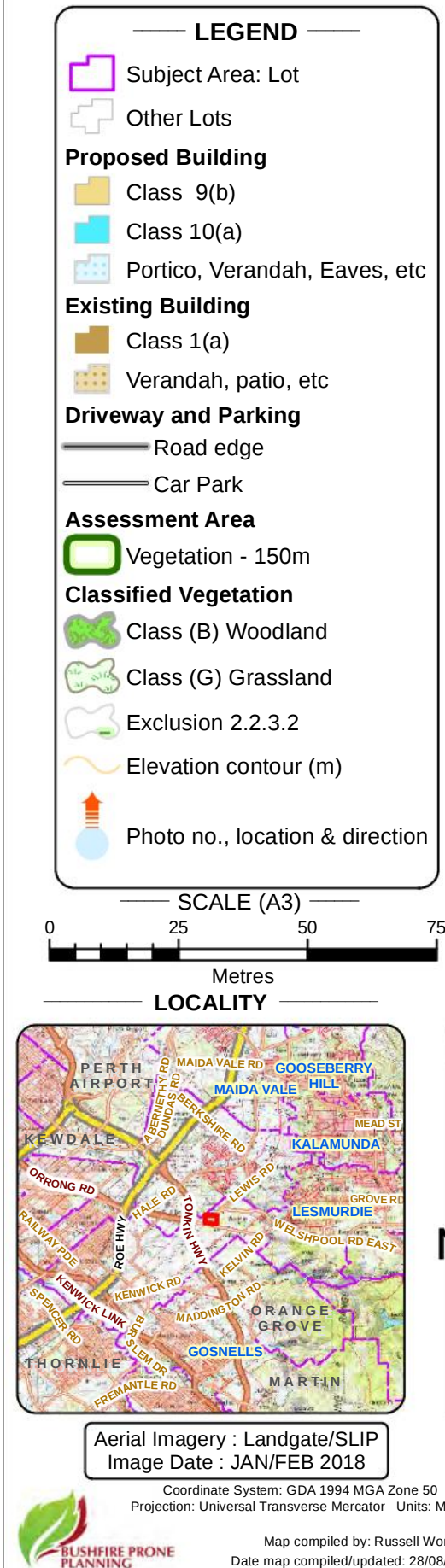


Photo ID: 7h

Figure 3.1
Topography &
Classified Vegetation
Lot 35 on Diagram 74676
[Street No. 777]
Welshpool Road East
WATTLE GROVE



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.

Map Document Path / Name: G:\BushfireProneMapping\MXD's\2018\170336 Lot 35 (H777) Welshpool Road East, Wattle Grove BMP (A3L)\18-8.mxd

2.1.3 Vegetation Separation Distance

The vegetation separation distance is the horizontal distance from an existing building or planned building footprint to the start of an area of classified vegetation.

The separation distance can be:

- The actual distance – which will correspond to a single determined BAL rating. It can only be measured when the location of a building or building footprint is known; or
- A required distance or range of distances that correspond to a single BAL rating or varying BAL ratings. These calculated distances are used to indicate what BAL rating/s are achievable.

Required distances can be presented in this Plan in the following formats, dependant on the specific development proposal and the type of information most applicable:

- A distance that must be achieved to result in a stated BAL rating. This is presented as the Conditional BAL rating (conditional upon achieving the required separation distance);
- A table stating the separation distance range that, if achieved, would correspond to each BAL rating; or
- A map visually showing the separation distance range - from areas of classified vegetation that would remain post-development - that correspond to each BAL rating i.e. a BAL Contour Map.

Note:

Required (calculated) separation distances are presented in the 'Assessment Output' section as the BAL Contour Map and relevant tables to assist with its interpretation.

Actual measured vegetation separation distances are applied in this assessment and are presented in the tables below.	✓
Required vegetation separation distances (calculated) to achieve stated BAL's are determined in this assessment and are presented in Section 2.2.2	✓

2.2 Assessment Output

Understanding the Bushfire Assessment Results - Application of Bushfire Attack Levels (BAL)

The BAL rating has a different application in the building environment compared to the planning environment and the BAL assessment can result in a determined BAL or an indicative BAL which have different implications.

Building versus Planning Applications

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

In the planning environment, assessing the ability of a proposed development site to achieve BAL-29 or less is the objective (as one of the bushfire protection criteria being assessed). The 'development site' is 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".

Therefore, being able to show that a BAL rating of BAL-29 or lower is achievable for a proposed development site (i.e. the building footprint) is an acceptable outcome for that criteria, as established by the bushfire provisions, SPP 3.7 and the associated Guidelines. For planning purposes, this BAL rating could be either indicative or determined.

Determined BAL Ratings

A determined BAL rating is to apply to an existing or proposed construction site (building) and not to a lot or envelope. Its purpose is to state the potential radiant heat flux to which the building will be exposed.

A determined BAL cannot be given for a future building whose location, elevation design and footprint (on a given lot) are unknown. It is not until these variables have been fixed that a BAL can be determined (typically at the development application or building application stage).

The one exception is when a building of **any dimension** can be **positioned anywhere** on a proposed lot or within defined limits within the lot (i.e. building setbacks or building envelope) and always remain subject to the same BAL rating. For this to be the case, there needs to be no classified vegetation either onsite or offsite that if retained could impact upon the determined BAL rating.

Indicative BAL Ratings

When this Plan presents a single indicative BAL rating for a proposed construction site (building), this will be because the construction is still subject to a location within the lot being confirmed and/or a vegetation separation distance being achieved. That is, it will be conditional upon some factor being confirmed at a later stage.

For planning applications associated with proposed lots, the building location, elevation design and footprint have typically not been established. Therefore, indicative rather than determined BAL rating/s will be presented for each lot (with the exception as noted above under 'Determined BAL Ratings').

When this Plan presents a single indicative BAL rating for a lot or building envelope (i.e. an 'area' that is not a located building footprint) it will represent the highest BAL rating affecting that 'area'. The BAL rating of a future building on that 'area' will be dependent on its eventual location.

Otherwise, this Plan will present all BAL ratings for each lot and for each BAL rating, the vegetation separation distances from each area of classified vegetation that are to apply. These distances will be presented as either figures in a table or as a BAL contour map.

From this indicative BAL information, it can be assessed if acceptable BAL ratings ($\leq$ BAL-29) can be achieved for future buildings.

2.2.1 Determined (BAL) Results Using Method 1

Table 2.3.1: Determined BAL for the proposed development using AS 3959-2009 Method 1.

Determined Bushfire Attack Levels - Method 1¹				
For the Proposed Development on the Subject Lot				
Applied Fire Danger Index (AS3959-2009 Table 2.1)				80
Vegetation Area	Applied Vegetation Classification	Effective Slope Under the Classified Vegetation (degrees)	Separation Distance to the Classified Vegetation (metres)	Bushfire Attack Level
1	Class G Grassland	0	0	BAL-FZ
2	Class G Grassland	0	53	BAL-LOW
3	Class B Woodland	0	48	BAL-12.5
4	Class B Woodland	0	69	BAL-12.5
5	Class G Grassland	1	56	BAL-LOW
6	Class B Woodland	0	49	BAL-12.5
-	Excluded AS3959-2009 2.2.3.2 (f)	N/A	N/A	BAL-LOW
Determined Bushfire Attack Level				BAL-FZ

¹ As per AS 3959-2009 s2.2.6 and Table 2.4.3

Reliance on the assessment and determination of the Bushfire Attack Level contained in this Plan should not extend beyond a period of 12 months from the date of issue of the report. If this report was issued more than 12 months ago, it is recommended that the validity of the determination be confirmed with the Accredited Practitioner and where required an updated report issued.

Table 2.3.2: Determined BAL for the existing residence and covered areas using AS 3959-2009 Method 1.

Determined Bushfire Attack Levels - Method 1¹ For the Existing Residence and Covered Areas on the Subject Lot				
Applied Fire Danger Index (AS3959-2009 Table 2.1)				80
Vegetation Area	Applied Vegetation Classification	Effective Slope Under the Classified Vegetation (degrees)	Separation Distance to the Classified Vegetation (metres)	Bushfire Attack Level
1	Class G Grassland	0	0	BAL-FZ
2	Class G Grassland	0	63	BAL-LOW
3	Class B Woodland	0	57	BAL-12.5
4	Class B Woodland	0	78	BAL-12.5
5	Class G Grassland	1	55	BAL-LOW
6	Class B Woodland	0	49	BAL-12.5
-	Excluded AS3959-2009 2.2.3.2 (f)	N/A	N/A	BAL-LOW
Determined Bushfire Attack Level				BAL-FZ

¹ As per AS 3959-2009 s2.2.6 and Table 2.4.3

Reliance on the assessment and determination of the Bushfire Attack Level contained in this Plan should not extend beyond a period of 12 months from the date of issue of the report. If this report was issued more than 12 months ago, it is recommended that the validity of the determination be confirmed with the Accredited Practitioner and where required an updated report issued.

The proposed development and existing residence currently have BAL ratings of BAL-FZ. This is due to unmanaged grass and shrubs close to the buildings (See Figure 3.1). The minimum required separation distances from classifiable vegetation to achieve a lower BAL rating is stated in the following Section 2.2.2 Conditional Bushfire Attack Level.

2.2.2 Conditional Bushfire Attack Level

The conditions required to achieve a lower Determined Bushfire Attack Level (BAL) are presented below if the initial BAL assessment determines it is achievable within the lot boundary and appropriate.

If the conditions are approved and/or achieved, a site revisit is required to take measurements confirming the increased vegetation separation distances and take photographic evidence or if proposed building work is repositioned, a revised dimensioned site plan will be required. The re-assessment is then compiled as a BAL Compliance Report. A BAL Certificate can then be issued.

IMPORTANT: If a Conditional BAL is provided, this Plan and its assessment of the Proposal's compliance with SPP 3.7 and the associated Guidelines (including the bushfire protection criteria), will assume that the required conditions will be approved by the local government and that their achievement on the subject lot will subsequently be confirmed. The purpose of this approach is to facilitate the progress of this application with the knowledge that the required conditions are often approved (this is not guaranteed). This assists in moving the planning and building application process forward in the best interests of all parties, by limiting the number of times amendments and re-submission might be required.

The BAL assessment in this Plan has determined that the subject site/proposed development will be subject to a Bushfire Attack Level of BAL-FZ. In conducting the assessment, Bushfire Prone Planning has determined that a lower BAL rating is achievable within the lot boundary and appropriate.

For the BAL to be reduced the separation distance between the proposed building works and the identified classified vegetation needs to be increased. This can be achieved with the appropriate onsite vegetation removal.

Important – Environmental Considerations - Approval Required

Approval for any native vegetation removal must first be obtained from the relevant local government after submitting this Bushfire Management Plan. This is a legislated requirement.

The Conditional BAL for the proposed development and the required minimum vegetation separation distances, are stated in the table on the following page.

Table 2.4.1: Proposed development required minimum separation distances for the stated BAL rating.

Minimum Vegetation Separation Distances Required to Achieve the Conditional BAL					
Relevant Fire Danger Index (AS3959-2009 Table 2.1)					80
BAL Determination Method		Method 1 (as per AS 3959-2009 s2.2.6 and Table 2.4.3)			
Vegetation Area	Applied Vegetation Classification	Effective Slope (degrees)	Conditional Bushfire Attack Level	Minimum Separation Distance Required (metres)	Current Separation Distance from proposed development (metres)
1	Class G Grassland	0	BAL-12.5	17	0
2	Class G Grassland	0		17	53
3	Class B Woodland	0		29	48
4	Class B Woodland	0		29	69
5	Class G Grassland	1		20	56
6	Class B Woodland	0		29	49
-	Excluded AS3959-2009 2.2.3.2 (f)	N/A		N/A	N/A
Note: A Conditional BAL lower than BAL-29 will not be provided if it requires the removal of native vegetation.					

There is an obligation to comply with the City of Kalamunda Fire Hazard Reduction Notice. This will require, among other conditions, that a minimum 20 metre Asset Protection Zone (APZ) be established around the proposed development and existing dwelling, within the lot boundaries.

Some areas within the Asset Protection Zone currently do not comply with APZ requirements and will need to be managed to achieve the lower BAL rating of BAL-12.5.

3 Assessment Against the Bushfire Protection Criteria (BPC)

3.1 Bushfire Protection Criteria - Assessment Summary

Summarised Outcome of the Assessment Against the Bushfire Protection Criteria (BPC)				
Element	Basis for the Assessment of Achieving the Intent of the Element			
	Achieves compliance with the Element through meeting Acceptable Solutions		Achieves compliance with the Element by application of a Performance Based Solution	Minor or Unavoidable Development
	Meets all relevant acceptable solutions	One or more relevant Acceptable Solutions are not <u>fully</u> met. A <u>variation</u> of the solution is provided and justified.	One or more applicable Acceptable Solutions are not met. A solution is developed with the summary presented in this Plan in Section 5.5. The supporting document presenting Bushfire Prone Planning's detailed methodology is submitted separately to the decision makers.	The required supporting statements are presented in this Plan.
Location	✓			N/A
Siting and Design of Development	✓			
Vehicular Access		✓		
Water	✓			

The subject Proposal has been assessed against:

1. The requirements established in Appendix 4 of the Guidelines for Planning in Bushfire Prone Areas, WAPC 2017 v1.3 (the 'Guidelines'). The detail, including technical construction requirements, are found at <https://www.planning.wa.gov.au/8194.aspx>. A summary of relevant information is provided in the appendices of this Plan; and
2. 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 5.2 of this Plan with the detail included as an appendix if required by the relevant local government.

3.2 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 to the acceptable solutions (endorsed by WAPC / DFES) and/or the technical requirements contained in the Guidelines, apply to this Proposal.	No
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3.3 Bushfire Protection Criteria – Acceptable Solutions Assessment Detail

3.3.1 Element 1: Location

Bushfire Protection Criteria Element 1: Location Assessment Statements and Bushfire Protection Measures to be Applied			
Intent: To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.			
Acceptable Solution:	A1.1: Development Location	Method of achieving Element compliance and/or the Intent of the Element:	The acceptable solution will be fully met in the future.

The proposed development achieves compliance by:

- By ensuring future building work on the lot can be located on an area that will be subject to potential radiant heat from a bushfire not exceeding 29 kW/m² (i.e. a BAL rating of BAL-29 or less will apply). This can be achieved by using positioning, design and appropriate vegetation removal/modification; and
- Managing the remaining bushfire risk to an acceptable level by the existence/implementation and ongoing maintenance of all required bushfire protection measures, as identified within this Plan. These measures include the requirements for vegetation management, vehicular access and firefighting water supply.

3.3.2 Element 2: Siting and Design of Development

Bushfire Protection Criteria Element 2: Siting and Design of Development

Assessment Statements and Bushfire Protection Measures to be Applied

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

Acceptable Solution:	A2.1: Asset Protection Zone	Method of achieving Element compliance and/or the Intent of the Element:	The acceptable solution will be fully met in the future.
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The proposed development achieves compliance by:

- Ensuring future building work on the lot can have established around it an APZ of the required dimensions - to ensure that the potential radiant heat from a bushfire to impact future buildings, does not exceed 29 kW/m² (i.e. a BAL rating of BAL-29 or less will apply to determine building construction standards);
- The APZ can be partially established within the lot boundaries. The balance of the APZ's required dimensions are being contributed by an area on adjoining land that is either non-vegetated or assessed as being managed in a low-fuel state and which can most reasonably be expected to be managed this way in perpetuity.
- The landowners having the responsibility of continuing to manage the required APZ as low threat vegetation in a minimal fuel state, by maintaining the APZ to the required dimensions and standard, including compliance with the local government's annual firebreak notice.

The required APZ dimensions are set out in Section 3.4.1 and shown on Figure 5.1. The APZ technical requirements (Standards) are detailed in Appendix 1 and the City of Kalamunda Fire Hazard Reduction Notice.

3.3.3 Element 3: Vehicular Access

Bushfire Protection Criteria Element 3: Vehicular Access Assessment Statements and Bushfire Protection Measures to be Applied

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

Acceptable Solution:	A3.1: Two access routes	Method of achieving Element compliance and/or the Intent of the Element:	The acceptable solution is mostly met. A variation is justified.
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Welshpool Road East provides safe access and egress to two different destinations. As a sealed public road, it is available to all residents and the public at all times and under all weather conditions.

Welshpool Road East is a dual carriageway with a an approximately 9 metre wide median strip. Egress from the subject lot is available in only one direction. The nearest cross street is Crystal Brook Road at a distance of Approximately 250 metres. From this point access to two different destinations are available.

The route is bounded by low to moderate bushfire threat vegetation consisting of generally managed grasslands with some unmanaged areas.

The intent of the element, to ensure that vehicular access serving the development is available and safe during a bushfire event, is met.

Acceptable Solution:	A3.2 Public Road	Method of achieving Element compliance and/or the Intent of the Element:	N/A
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No new public roads are planned for this development.

Acceptable Solution:	A3.3 Cul-de-sacs (including a dead-end road)	Method of achieving Element compliance and/or the Intent of the Element:	N/A
Acceptable Solution:	A3.4: Battle-axe	Method of achieving Element compliance and/or the Intent of the Element:	N/A
Acceptable Solution:	A3.5: Private Driveways	Method of achieving Element compliance and/or the Intent of the Element:	The acceptable solution will be fully met in the future.

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.

The proposed development is less than 50 metres from Welshpool Road East. However, the proposed driveway will be 6 metres in width and a turnaround area will be available within the new car parking layout.

Bushfire Protection Criteria Element 3: Vehicular Access (continued)

Assessment Statements and Bushfire Protection Measures to be Applied

Acceptable Solution:	A3.6 Emergency Access Way	Method of achieving Element compliance and/or the Intent of the Element:	N/A
Acceptable Solution:	A3.7 Fire Service Access Routes	Method of achieving Element compliance and/or the Intent of the Element:	N/A
Acceptable Solution:	A3.8 Firebreak Width	Method of achieving Element compliance and/or the Intent of the Element:	The acceptable solution will be fully met in the future.

The proposed lots will comply with the requirements of the local government annual firebreak notice issued under s33 of the Bush Fires Act 1954.

3.3.4 Element 4: Water

Bushfire Protection Criteria Element 4: Water Assessment Statements and Bushfire Protection Measures to be Applied			
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Intent: To ensure water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire.

Acceptable Solution:	A4.1 Reticulated Areas	Method of achieving Element compliance and/or the Intent of the Element:	The acceptable solution is fully met.
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A reticulated water supply is currently available to the site. The closest hydrant is located approximately 50 metres north east of the subject site on the south side of Welshpool Road East.

Acceptable Solution:	A4.2 Non-Reticulated Areas	Method of achieving Element compliance and/or the Intent of the Element:	N/A
Acceptable Solution:	A4.3 Non-reticulated Areas (Individual Lots)	Method of achieving Element compliance and/or the Intent of the Element:	N/A

3.4 Additional Information for Required Bushfire Protection Measures

The purpose of this section of the Plan is:

- As necessary, to provide additional detail (to that provided in the tables of Section 5.3) regarding the implementation of the acceptable solutions for those persons who will have the responsibility to apply the stated requirements;
- As necessary, to detail specific onsite vegetation management requirements such as the APZ dimensions, management of Public Open Space or application of landscaping plans for onsite vegetation;
- To discuss how staged development will be handled, if applicable; and
- As relevant, for future planning stages, consider and discuss the requirements that may apply to future planning applications and the content of the associated BMP. In particular:
 - Any potential Vulnerable or High-Risk Land Uses.
 - Any additional content that will be required in the future BMP.

3.4.1 Vegetation Management

Asset Protection Zone (APZ) Dimensions that are to Apply

The required dimensions of the APZ will vary dependent upon the purpose for which the APZ has been defined. There are effectively three APZ dimensions that can apply:

1. An application for planning approval will be required to show that an APZ can be created which is of sufficient size to ensure the potential radiant heat impact of a fire does not exceed 29kW/m² (BAL-29); and
2. If the assessment has determined a BAL rating for an existing or future building is less than BAL-29, the APZ must be of sufficient size to ensure the potential radiant heat impact of a fire does not exceed the kW/m² corresponding to the lower assessed BAL rating; or
3. Complying with the relevant local government's annual firebreak notice may require an APZ of greater size than that defined by the two previous parameters.

The dimensions (vegetation separation distances) that are to apply to the APZ for this Proposal are presented in the tables below.

The 'Conditional BAL' APZ				
Required Minimum Dimensions for the Subject Site				
Relevant Fire Danger Index (AS3959-2009 Table 2.1)				80
BAL Determination Method		Method 1 (as per AS 3959-2009 s2.2.6 and Table 2.4.3)		
Vegetation Area	Applied Vegetation Classification	Effective Slope (degrees)	Determined Bushfire Attack Level	Minimum Separation Distance Required (metres)
1	Class G Grassland	0	BAL-12.5	17
2	Class G Grassland	0		17
3	Class B Woodland	0		29
4	Class B Woodland	0		29
5	Class G Grassland	1		20
6	Class B Woodland	0		29
-	Excluded AS3959-2009 2.2.3.2 (f)	N/A		N/A

'Local Government Firebreak Notice APZ'	
Required Minimum Dimensions for the Subject Site	
Requirement Set By:	City of Kalamunda
Minimum Dimensions:	20 metres. See City of Kalamunda Fire Hazard Reduction Notice.
Other Conditions:	If Asset Protection Zone technical requirements are defined in the Notice, the standards and dimensions may 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.
This requirement has been established through the stated local government's annual fire break notice issued under the Bushfires Act 1954 s33.	

3.5 Recommended Bushfire Protection Measures

These recommendations are for measures that are not directly considered by SPP 3.7 and the associated Guidelines, including the bushfire protection criteria.

These measures are recommended by the bushfire consultant to improve the safety of property occupants and the resilience of buildings in the event of a bushfire impacting the property.

Recommendations may be of specific benefit in supporting applications for 'Minor Development' or 'Unavoidable Development' which are otherwise unable to fully comply with the established bushfire protection criteria.

Retrospective Application of Bushfire Construction Standards

Class 1, 2 and 3 buildings and Class 10a associated buildings and decks, constructed prior to the requirement to comply with bushfire performance requirements, do not need to meet these requirements.

Retrospectively upgrading buildings to assist in reducing bushfire risk to persons and property is a voluntary choice.

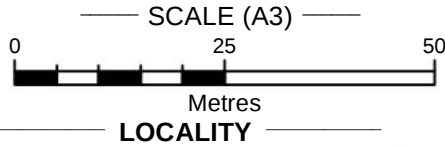
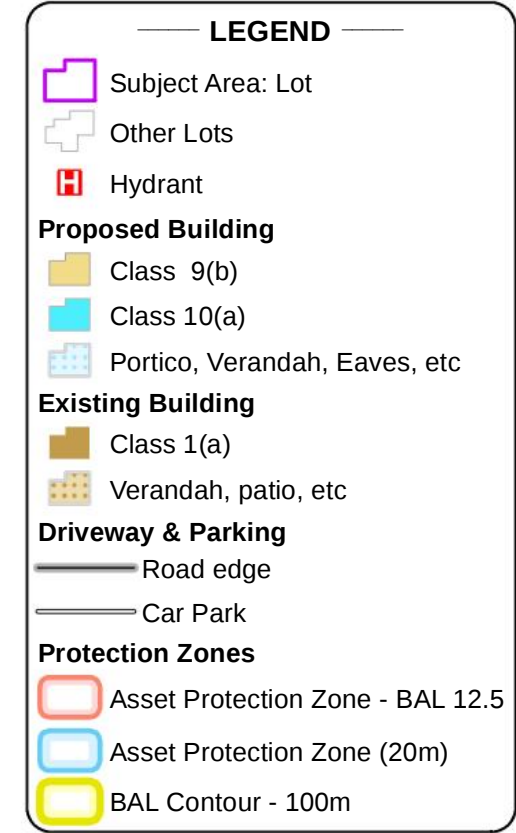
As the existing buildings are located in a bushfire prone area and may be subject to a bushfire attack, Bushfire Prone Planning recommends that some degree of upgrading be considered to improve the protection for occupants and the building's survivability. At a minimum protection from ember attack should be considered (i.e. constructed to the standard required for BAL-12.5).

Buildings of Class 4 to Class 9 are not required by the Building Code of Australia (BCA) to be constructed to comply with bushfire performance requirements. Although responsible authorities may require it. Bushfire Prone Planning recommends that all extensions and additions are constructed to their Conditional BAL assessment of BAL-12.5.

All requirements of the City of Kalamunda Fire Hazard Reduction Notice must be complied with, including establishing a minimum 20 metre Asset Protection Zone around all existing and future habitable buildings on the subject lot.

Figure 5.1
Bushfire Lot Management

Lot 35 on Diagram 74676
[Street No. 777]
Welshpool Road East
WATTLE GROVE



Aerial Imagery : Landgate/SLIP
Image Date : JAN/FEB 2018

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre



Map compiled by: Russell Wornes
Date map compiled/updated: 28/08/2018



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.
Map Document Path / Name: G:\BushfireProneMapping\MXD\st18\170336_Lot 35 (H777) Welshpool Road East, Wattle Grove_BMP_(A3L)18-8a.mxd

4 Responsibilities for Implementation and Management of the Bushfire Protection Measures

Table 6.1: BMP Implementation responsibilities prior to lot sale, occupancy or building for the Landowner (Developer).

LANDOWNER (DEVELOPER) - PRIOR TO LOT SALE, OCCUPANCY OR BUILDING	
No.	Implementation Actions
1	The local government may condition a development application approval with a requirement for the landowner/proponent to register a notification onto the certificate of title (it may also need to be included on the deposited plan). This will be done pursuant to Section 70A Transfer of Land Act 1893 as amended ('Factors affecting use and enjoyment of land, notification on title:'). This is to give notice of the bushfire hazard and any restrictions and/or protective measures required to be maintained at the owner's cost. This condition ensures that: 1. Landowners/proponents are aware their lot is in a designated bushfire prone area and of their obligations to apply the stated bushfire risk management measures; and 2. Potential purchasers are alerted to the Bushfire Management Plan so that future landowners/proponents can continue to apply the bushfire risk management measures that have been established in the Plan.
2	Prior to occupation 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).
3	Prior to occupancy of the proposed development on the subject lot, the lot is to be compliant with the relevant local government's annual firebreak notice issued under s33 of the Bushfires Act 1954.
4	Establish the Asset Protection Zone (APZ) on the lot to the dimensions and standard stated in the BMP. This is the responsibility of the landowner.
5	Prior to occupancy of the proposed development, install the private driveways to the standards stated in the BMP.
6	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 rating, as per the bushfire provisions of the Building Code of Australia (BCA); and/or • A higher standard as a result of the BMP establishing that construction is required at a standard corresponding to a higher BAL rating.

Table 6.2: Ongoing management responsibilities for the Landowner/Occupier.

LANDOWNER/OCCUPIER - ONGOING	
No.	Ongoing Management Actions
1	Maintain the Asset Protection Zone (APZ) to the dimensions and standard stated in the BMP.
2	Comply with the City of Kalamunda Fire Hazard Reduction Notice issued under s33 of the Bush Fires Act 1954.
3	Maintain vehicular access routes within the lot to the required surface condition and clearances as stated in the BMP.
4	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 rating.
5	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.
6	To consider, implement and maintain, as relevant and able, any bushfire protection measures that have been <u>recommended</u> by the bushfire consultant (refer to Section 3.5), in addition to the measures that are <u>required</u> to be implemented and maintained.

Table 6.3: 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 Fire Hazard Reduction Notice.

Appendix 1 - Onsite Vegetation Management Technical Requirements

It is the responsibility of the landowner to maintain the established bushfire protection measures on their property. Not complying with these responsibilities can result in buildings being subject to a greater potential impact from bushfire than that determined by the assessed BAL rating presented in this Bushfire Management Plan.

For the management of vegetation within a lot (i.e. onsite) the following technical requirements exist:

1. **The APZ:** Installing and maintaining an asset protection zone (APZ) of the required dimensions to the standard established by the Guidelines for Planning in Bushfire Prone Areas (WA Planning Commission, as amended). When, due to the planning stage of the proposal to which this Bushfire Management Plan applies, defined APZ dimensions are known and are to be applied to existing or future buildings – then these dimensions are stated in Section 5.4.1 of this Plan.
2. **The Firebreak/Fuel Load Notice:** Complying with the requirements established by the relevant local government's annual firebreak notice issued under s33 of the Bushfires Act 1954. Note: If an APZ requirement is included in the Notice, the standards and dimensions may differ from the Guideline's APZ Standard – the larger dimension must be complied with.
3. **Changes to Vegetated/Non-Vegetated Areas:**
 - a. If applicable to this Plan, the minimum separation distance from any classified vegetation, that corresponds to the determined BAL for a proposed building, must be maintained as either a non-vegetated area or as low threat vegetation managed to a minimal fuel condition as per AS 3959-2009 s2.2.3.2 (e) and (f). Refer to Part 4 of this Appendix 1.
 - b. Must not alter the composition of onsite areas of classified vegetation (as assessed and presented in Section 3.1.2) to the extent that would require their classification to be changed to a higher bushfire threat classification (as per AS 3959-2009); and
 - c. Must not allow areas within a lot (i.e. onsite) that have been:
 - i. excluded from classification by being low threat vegetation or non-vegetated; and
 - ii. form part of the assessed separation distance that is determining a BAL rating -
 ...to become vegetated to the extent they no longer represent a low threat (refer to Part 4 of Appendix 1). Note: The vegetation classification exclusion specifications as established by AS 3959-2009 s2.2.3.2, are included at A1.4 below for reference.

1. Requirements Established by the Guidelines – the Asset Protection Zone (APZ) Standards

(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. 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.

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.

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

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.

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).

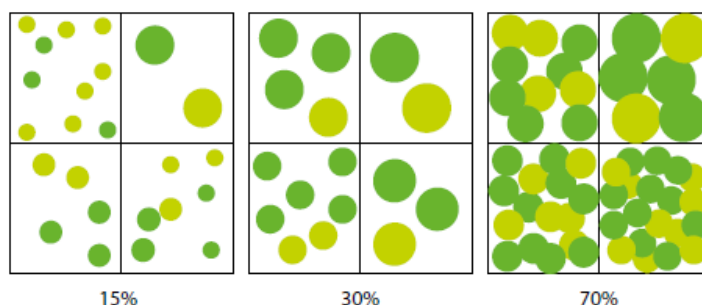
Example Fine Fuel Load of Two Tonnes per Hectare



(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.

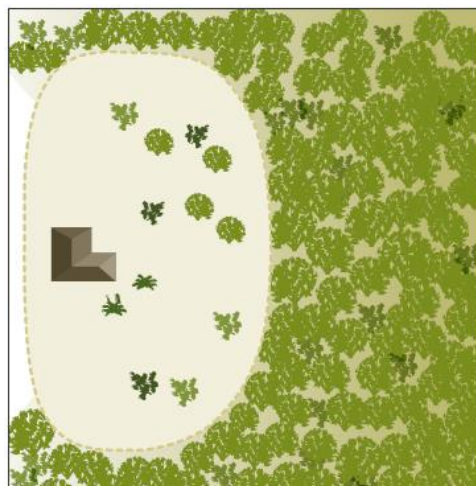
Grass: should be managed to maintain a height of 100 mm or less.

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

Hazard on one side
APZ



Hazard on three sides
APZ



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

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 Notice may include additional components directed at managing fuel loads, accessibility and general property management with respect to limiting potential bushfire impact.

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.

If Asset Protection Zone technical requirements are defined in the Notice, the standards and dimensions may 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.

When, due to the planning stage of the proposal to which this Bushfire Management Plan applies, defined APZ dimensions are known and are to be applied to existing or future buildings – then these dimensions are stated in Section 5.4.1 of this Plan.

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.

4. Requirements Established by AS 3959-2009 - Maintaining Areas within your Lot as 'Low Threat'

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 3959-2009 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.*
- c) Multiple area of vegetation less than 0.25ha in area and not within 20m of the site or each other.*
- 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.*
- e) Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.*
- f) Low threat vegetation, including grassland managed in a **minimal fuel condition** (i.e. insufficient fuel available to significantly increase the severity of a bushfire attack – recognisable as short cropped grass to a nominal height of 100mm for example), maintained lawns, golf courses, maintained public reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks."*

Appendix 2 - Vehicular Access Technical Requirements

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

Contact the relevant local government for the requirements that are to apply in addition to the requirements set out as an acceptable solution in the Guidelines. If the relevant local government requires that these are included in the Bushfire Management Plan, they will be included in this appendix and referenced.

Requirements Established by the Guidelines – The Acceptable Solutions

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

Vehicular Access Technical Requirements - Part 1

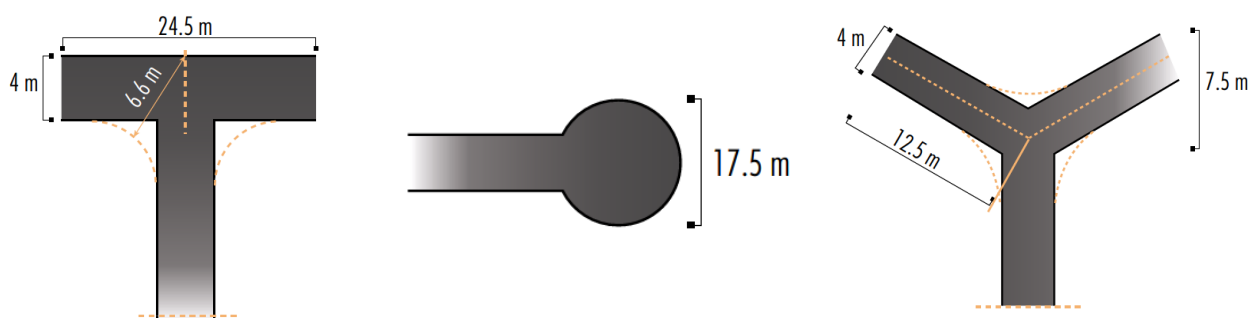
Acceptable Solution 3.5: Private Driveways

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 3.8: 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.