ATTACHMENT 6

Amended Bushfire Management Plan

Prepared by:

Land and Environment Consultants

Land and environment consultants

Bushfire management plan

Proposed development | Mackenzie Street | Mount Lofty | Queensland
Prepared for CPLK Property Pty Ltd | 6 May 2026

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Bushfire management plan

Final V3

Report 23017 | CPLK Property Pty Ltd | 6 May 2026

Approved by Robert Janssen

Position Managing principal

Signature 

Date 6 May 2026

Document control

Version	Date	Prepared by	Reviewed by
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Appendix

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Disclaimer

Notwithstanding the precautions adopted in this report, it should always be remembered that bushfires burn under a range of conditions. An element of risk, no matter how small always remains, and although AS 3959-2018 is designed to improve the performance of such buildings, there can be no guarantee, because of the variable nature of bushfires, that any building will withstand bushfire attack on every occasion.

It should be noted that upon lodgement of a development proposal, State Government, council and/or the fire service may recommend additional construction requirements.

Although every care has been taken in the preparation of this report, Land and Environment Consultants Pty Ltd accept no responsibility resulting from the use of the information in this report.

1 Introduction

Land and Environment Consultants Pty Ltd (**LEC**) was engaged to prepare a bushfire management plan (**BMP**) for the proposed reconfiguration of a lot (**proposed development**) at Mackenzie Street, Mount Lofty, properly described as lots 1 and 2/RP177105 (**the site**).

A development permit application has been made for the proposed development under the Toowoomba Regional Planning Scheme 2012 – Toowoomba Regional Council (**Council**) application reference RAL/2025/1213 and MCUI/2025/1212.

The site is identified as a bushfire hazard area by the *Bushfire hazard overlay map* (**Bushfire hazard overlay map**) in the Toowoomba Regional Planning Scheme 2012 online mapping system (TRC 2023). Therefore, the development permit application for the proposed development is subject to compliance with the Toowoomba Regional Planning Scheme 2012 *Bushfire hazard overlay code* (**Bushfire hazard overlay code**).

This BMP has been prepared in general accordance with *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience – Bushfire'* (QFES 2019a) (**BRC guide**) which was prepared to provide technical guidance for the implementation of the *Natural Hazards, Risk and Resilience – Bushfire, State Planning Policy State Interest guidance material* (DSDMIP 2019) (**SPP guidance material – bushfire**). It documents the bushfire hazard assessment and demonstrates how the proposed development will comply with the Bushfire hazard overlay code. It includes:

- an introduction (this section) and description of methods and information resources used for the preparation of this BMP;
- description of the site and proposed development;
- bushfire hazard assessment;
- identification of bushfire hazards associated with the site and proposed development;
- radiant heat exposure assessment;
- a plan for mitigating bushfire hazards; and
- assessment of the proposed development against the Bushfire hazard overlay code.

1.1 Method

To meet requirements of the BRC guide, the following tasks were undertaken:

- desktop review of relevant information, including
  - Bushfire hazard overlay map;
  - fire history data in Queensland Globe (DR 2025); and
  - the Queensland regional ecosystem (**RE**) map, vegetation hazard class (**VHC**) map and severe fire weather map in the Queensland Fire and Emergency Services online mapping system (QFES 2023) (**Catalyst**);
- a site inspection to classify vegetation, measure slope, and make observations about land management practices and evidence of previous fires;
- bushfire hazard assessment in general accordance with the method in the BRC guide;
- radiant heat exposure assessment using the Fire Protection Association of Australia *BAL calculator V4.9* (**BAL calculator**) which models the 'method 2' bushfire attack level (**BAL**) assessment procedure in the *Australian Standard* (**AS 3959-2018**) *Construction of buildings in bushfire prone areas*; and

- assessment of the proposed development against the Bushfire hazard overlay code.

Aerial imagery of the site and measuring tools were accessed online from Google Earth and Queensland Globe to assist with validating observations and measurements made during the site inspection.

1.2 Suitably qualified person

This BMP was prepared by Robert Janssen who is a suitably qualified and experienced bushfire management consultant with respect to criteria in section 10.2 of the BRC guide.

Robert is the managing principal at LEC and has over 25 years of experience in bushfire planning and operations. He has prepared bushfire management plans for residential, commercial and industrial property developments, utilities, government facilities and conservation estates.

Robert's formal qualifications as an environmental scientist and consulting experience are coupled with 10 years of experience as a nationally accredited fire-fighter with the national parks and wildlife service in New South Wales and Queensland.

2 Description of the site and proposed development

This chapter provides a description of the site and proposed development.

2.1 Site description

The site is 12 hectares (**ha**) and has historically been used as a farm. It has frontage to Mackenzie Street and Rifle Range Road and access to mains water. Its location is shown in Figure 3.1.

Most of the site has been cleared of bushland vegetation and consists of scattered trees with a grassy understorey. Notwithstanding, a corridor of land within the northern boundary of the site is identified as an area of ecological significance by the Toowoomba Regional Planning Scheme 2012 *Environmental significance overlay map* in Council's online mapping system.

The northern boundary of the site adjoins bushland vegetation, and the southern, eastern and western boundaries adjoin built-up areas which consist of residential development.

2.2 Proposed development

The preliminary lot layout for the proposed development is provided in Appendix 1 and shows the proposed layout of allotments, stormwater easement and new roads.

The proposed stormwater easement within lot 47 will include a rock lined drainage swale and turf. Council will maintain the proposed stormwater easement, ensuring it is weed and regrowth free with low cut grass.

Bushland vegetation will be retained and rehabilitated within the balance of lot 47, which is not subject to the proposed building envelope. It is assumed the rehabilitation will seek to restore the species and structure indicated by the local pre-clear RE mapping.

Access and egress for the proposed development will be via new road connections to Mackenzie Street, Rifle Range Road and Windemere Terrace.

The proposed development will be connected to mains water, and a reticulated hydrant system will be installed in the new road reserves.

2.3 Bushfire hazard overlay map

The Bushfire hazard overlay map for the site is provided in Appendix 2. Verification of the bushfire hazard areas shown in the Bushfire hazard overlay map is provided via the bushfire hazard assessment in Chapter 3.

3 Bushfire hazard assessment

This chapter provides details about the desktop review, site inspection and bushfire hazard assessment.

3.1 Severe fire weather

The severe fire weather map in Catalyst indicates the 5 % annual exceedance probability forest fire danger index (**FFDI**) for the site is 64. This FFDI value has been used for the potential bushfire intensity calculations in Section 3.4 and the radiant heat exposure assessment in Section 5.7.

3.2 Fire history

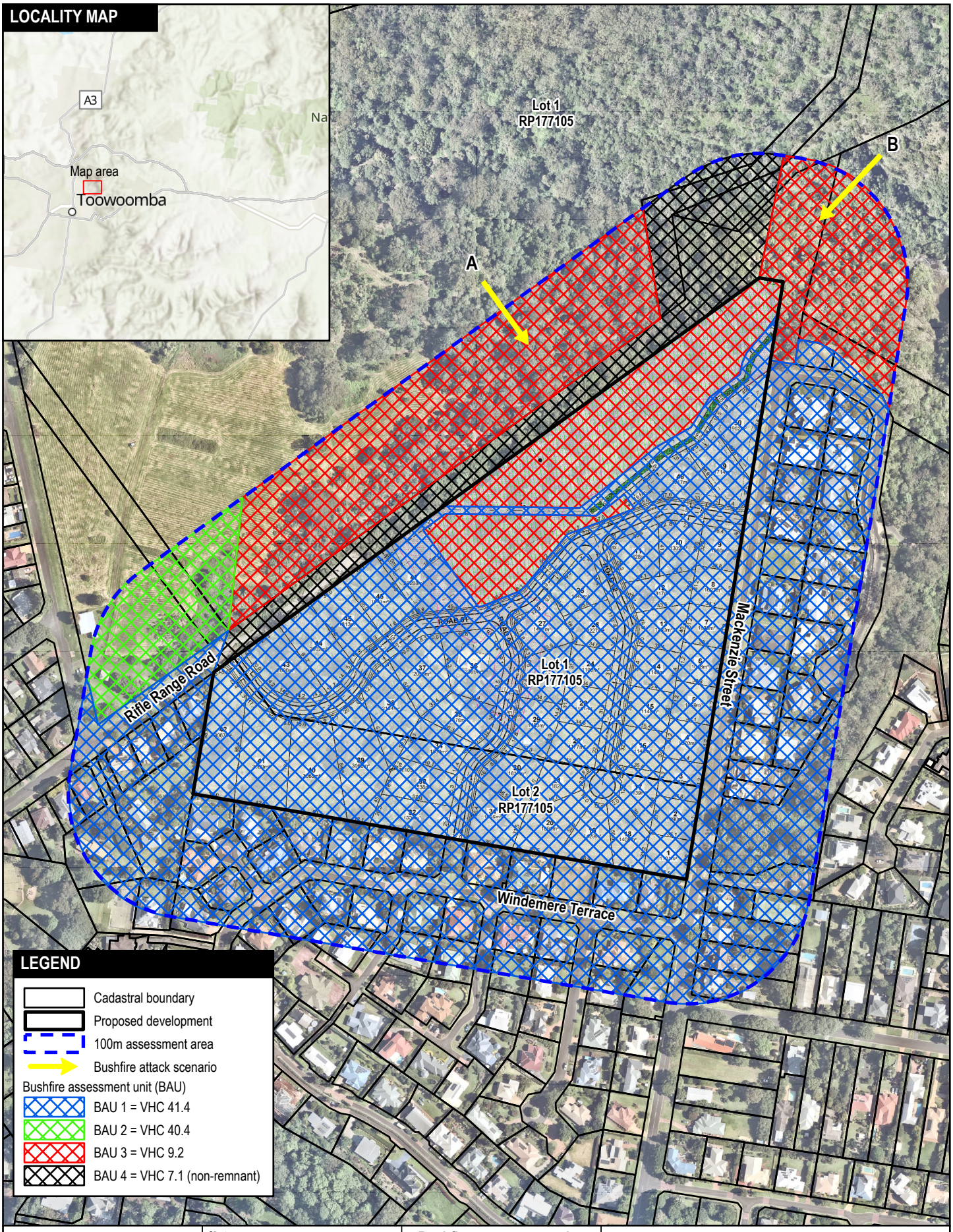
Fire history data in Queensland Globe indicates there have been numerous bushfires within 1 kilometre (**km**) of the site during the past 20 years. This includes fires burning up to the northern boundary of the site in 2011 and 2012. The data does not indicate the origin of the fires, ie whether they were the result of unplanned ignitions or prescribed burns.

3.3 Site inspection

LEC inspected the site on 11 April 2023. Observations were recorded about current land use and management, vegetation characteristics, the slope of land and evidence of previous fires.

Bushfire assessment units (**BAUs**) have been used to describe characteristics of vegetation within 100 metres (**m**) of the site and are shown in Figure 3.1. They consider the post development landform of the proposed development.

Table 3.1 provides a summary of the VHC data in Catalyst, observations from the site inspection and notes about the VHC assessment of BAUs. Features of BAUs are shown in Photographs 3.1-3.4.



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Client:
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Bushfire management plan
Lots 1 and 2 Mackenzie Street
Mount Lofty

Design: Land and Environment Consultants
Date Saved: 23/04/26 5:27 PM Created by: RA
Scale: 1:4,000
Name: J23017_ArcGIS Project_Lot 1 and 2 Mackenzie St

Title:
Site locality and
VHC assessment

Figure
3.1

Aerial image: Nearmap (December 2024)

Scale: 1:4,000
0 50 100 150 m

N

Table 3.1 Site observations

BAU	Catalyst VHC	Post development VHC	Notes
BAU 1	VHC 9.2 *Moist to dry eucalypt woodland on coastal lowlands and ranges* (**VHC 9.2**) and VHC 41.4 *Discontinuous low grass or tree cover* (**VHC 41.4**)	VHC 41.4	BAU 1 is aligned the existing residential development adjoining the southern, eastern and western boundaries of the site and most of the proposed allotments and roads within the site. BAU 1 is also aligned with the proposed stormwater easement within lot 47 which will include a rock lined drainage swale and turf. Council will maintain the proposed stormwater easement, ensuring it is weed and regrowth free with low cut grass. BAU 1 is assessed as an intensively maintained landscape with discontinuous low grass or tree cover. VHC 41.4 has discontinuous bushfire fuel and is classified as a low hazard class in figure 14 of the BRC guide.
BAU 2	VHC 9.2 and VHC 40.4 *Continuous low grass or tree cover* (**VHC 40.4**)	VHC 40.4	BAU 2 is aligned with a former rifle range which consists of low grass cover. VHC 40.4 has continuous grassfire fuel and is classified as grassfire prone in figure 14 of the BRC guide.
BAU 3	VHC 9.2, VHC 40.4 and VHC 41.4	VHC 9.2	BAU 3 is aligned with bushland vegetation adjacent to the northern boundary of the site and bushland vegetation that will be retained and rehabilitated in the balance of lot 47. The VHC assessment of BAU 3 is based on the pre-clear RE and VHC data in Catalyst. VHC 9.2 has continuous bushfire fuel and is classified as a bushfire hazard class in figure 14 of the BRC guide.
BAU 4	VHC 9.2	VHC 7.1 *Semi - evergreen to deciduous microphyll vine forest* (**VHC 7.1**)	BAU 4 is aligned with non-remnant bushland vegetation within the Rifle Range Road reserve along the northern boundary of the site which was assessed as non-remnant VHC 7.1.

Photograph 3.1 Example of VHC 41.4 within BAU 1

Photograph 3.2 VHC 40.4 within BAU 2

Photograph 3.3 Eample of VHC 9.2 within BAU 3

Photograph 3.4 Example of VHC 7.1 within BAU 4

3.4 Potential bushfire intensity calculations

The potential bushfire intensity of BAUs was determined using the Queensland Public Safety Business Agency *Potential Bushfire Intensity Calculator* (version November 2014) which is an Excel spreadsheet calculator that models the bushfire hazard assessment method in Section 4.2.4 of the BRC guide.

Section 3.1 of the BRC guide defines bushfire hazard classes as follows:

- very high – potential bushfire intensity > 40,000 kilowatts/m (**kW/m**);
- high – potential bushfire intensity 20,000-40,000 kW/m;
- medium – potential bushfire intensity 4,000-20,000 kW/m; and
- non-bushfire hazard – potential bushfire intensity < 4,000 kW/m.

Results of the potential bushfire intensity calculations which determine the bushfire hazard class of BAUs shown in Figure 3.1 are presented in Table 3.2.

Table 3.2 Potential bushfire intensity

BAU	VHC	Potential fuel load (tonnes (t)/ha)[1]	Slope (°)	Potential bushfire intensity (kW/m)	Bushfire hazard class
BAU 1	VHC 41.4	-	-	< 4,000[2]	Non-bushfire hazard class
BAU 2	VHC 40.4	5	6	1,501	Non-bushfire hazard class
BAU 3	VHC 9.2	17.2	11	25,076	High
BAU 4	VHC 7.1 (non-remnant)	13	11	14,325	Medium

Notes 1 Potential fuel load taken from the BRC guide.
2 VHC 41.4 is classified in Figure 14 of the BRC guide as a low hazard with discontinuous bushfire fuel. Therefore, it is deemed to have a potential bushfire intensity < 4,000 kW/m^2.

3.5 Bushfire hazard areas

Results of the potential bushfire intensity calculations in Table 3.2 confirm the proposed development is affected by medium and high potential bushfire intensity areas and the 100 m potential impact buffer which is applied to these areas. Therefore, the proposed development is within a bushfire hazard area, and the development permit application is subject to compliance with the Bushfire hazard overlay code.

4 Bushfire hazards associated with the site

This chapter identifies bushfire hazards associated with the site.

4.1 Fire danger season

The fire danger season at the site starts in August, peaks in September and will begin to fall when consistent summer rainfall occurs. Typically, the worst fire weather conditions will be experienced during the fire danger season when the wind direction is from the north or west.

An FFDI of 64 will be associated with hot, dry and windy conditions. If a bushfire starts and takes hold under these conditions, it will be difficult to control and fast moving in large areas of unmanaged vegetation.

4.2 Fire history

As discussed in Section 3.2, fire history data indicates numerous bushfires have occurred within 1 km of the site during the past 20 years, including two fires which burnt up to the northern boundary of the site in 2011 and 2012. Given this fire history and the continuous area of bushland vegetation adjacent to the site, it is considered possible that the proposed development could be exposed to bushfire attack in the future.

4.3 Potential directions of bushfire attack

The proposed development could be exposed to the bushfire attack scenarios, shown in Figure 3.1, where hazardous vegetation occurs. These bushfire attack scenarios are further analysed in Section 5.7.

4.4 Potential bushfire hazards from adjacent land uses

The Mount Lofty Rifle Range closed in 2011 and is not a potential bushfire hazard to the proposed development.

Residential development adjoining the site has nil to very low vegetation cover and was determined to be a non-bushfire hazard class by the potential bushfire intensity calculations in Section 3.4.

The fire history data discussed in Section 3.2 confirms that the bushland vegetation that will be retained and rehabilitated within the site and the bushland vegetation adjacent to the site is the main source of bushfire hazard to the proposed development. Notwithstanding, the risk of the bushfire hazard is considered manageable subject to the implementation of the bushfire mitigation plan in Chapter 6.

4.5 Water and access for emergency services

The site has access to mains water and a public road network which will provide access and egress for emergency services and occupants.

5 Bushfire hazards associated with the proposed development

This chapter identifies potential bushfire hazards associated with the proposed development.

5.1 Siting and design

The proposed development will be designed to mitigate the risk of bushfire hazards determined by the bushfire hazard assessment in this BMP.

- building envelopes will be appropriately separated from hazardous vegetation;
- new roads will be designed to accommodate an urban fire truck; and
- the proposed development will be connected to mains water, and a reticulated hydrant system will be installed in the new road reserve.

5.2 Land use

The proposed development does not involve a vulnerable use, community infrastructure for essential services or hazardous materials manufactured or stored in bulk.

5.3 Stormwater management easement

The proposed stormwater easement within lot 47 will include a rock lined drainage swale and landscaping which consists of turf. Council will maintain it, ensuring it is weed and regrowth free with low cut grass. As a result, it can be relied upon to provide a setback between hazardous vegetation and boundaries of the proposed residential allotments.

5.4 Balance of lot 47

Bushland vegetation will be retained and rehabilitated within the balance of lot 47, which is not subject to the proposed building envelope. Rehabilitation within this area will seek to restore the species and structure indicated by the local pre-clear RE mapping. This area is identified as part of BAU 3 in Figure 3.1 and was assessed as a high potential bushfire intensity area in Section 3.4.

5.5 Fire-fighter water supply

The proposed development will be connected to mains water.

A reticulated hydrant system will be installed in the new road reserves. It will be designed and constructed in accordance with requirements in the Bushfire hazard overlay code.

5.6 Access and egress

Access and egress for the proposed development will be via new roads which are connected to Rifle Range Road, Mackenzie Street and Windemere Terrace.

The new roads will be public roads which are designed and constructed in general accordance with the design criteria for urban fire trucks in the Bushfire hazard overlay code with a maximum grade of 15%.

5.7 Radiant heat exposure

The Bushfire hazard overlay code requires setbacks to hazardous vegetation which are 1.5 times the predominant mature canopy tree height of adjacent vegetation or 10 m, whichever is the greater. Notwithstanding, this BMP defers to the SPP guidance material – bushfire and BRC guide which provide more contemporary guidance about setbacks to hazardous vegetation that is based on achieving a

radiant heat exposure outcome. The radiant heat exposure outcome is a separation distance from hazardous vegetation which achieves a radiant heat flux level ≤ 29 kW/m^2 at allotment boundaries or building envelopes where they are identified in a plan of development.

As discussed in Section 4.3, the proposed development could be exposed to the bushfire attack scenarios, shown in Figure 3.1, where hazardous vegetation occurs. The radiant heat profile of these bushfire attack scenarios was analysed using the BAL calculator. Inputs used in the BAL calculator and results are provided in Appendix 3.

Results of the radiant heat exposure assessment have been used to inform the location of building envelopes within the proposed allotments. Figure 6.1 shows the 29 kW/m^2 radiant heat flux contour from the bushfire attack scenarios and confirms the building envelopes within the proposed allotments achieve a radiant heat flux level ≤ 29 kW/m^2.

6 Bushfire mitigation plan

This chapter identifies mitigation measures that must be implemented as part of the proposed development to comply with the Bushfire hazard overlay code.

It is the total of the mitigation measures in this chapter that will reduce the risk of bushfire hazard to an acceptable level. Failure to implement all actions in their entirety could result in an increased level of exposure to bushfire hazards.

6.1 Bushfire management zones

Bushfire management zones (**BMZs**) must be established and maintained within proposed lots 43-50, as shown in Figure 6.1.

Buildings and structures, other than a driveway, swimming pool, fence or retaining wall, must not be located within a BMZ. If a swimming pool, fence or retaining wall is located within the BMZ, it must be constructed with fire-resisting materials.

Storage or parking must not occur within the BMZ.

The BMZs must be maintained with a mown grass understorey at a nominal height < 100 millimetres (**mm**), and kept free of weeds, woody regrowth, ie emergent trees and shrubs, and vegetation debris.

Prospective purchasers of proposed lots 43-50 must be notified about the effects of the BMZ on these allotments at the point of sale.

6.2 Landscaping

Trees which overhang building envelopes within proposed lots 43-50 must be removed.

Landscaping within the proposed allotments (except the balance of lot 47) must be designed in accordance with Part 5 of *Bushfire Resilient Building Guidance for Queensland Homes* (QRA 2020) (**Bushfire resilient building**). Plant selection must favour the list of plant species in Appendix E of Bushfire resilient building.

Garden waste and vegetation debris must be removed from the proposed allotments at regular time intervals during the calendar year and grass must be maintained as lawn at a nominal height of < 100 mm.

6.3 Fire-fighter water supply

The proposed development must be connected to mains water, and a reticulated hydrant system must be installed in the new road reserve.

The reticulated hydrant system must be designed and constructed in accordance with *Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots* (QFES 2019b) (**Fire hydrant and vehicle access guidelines**) which defers to the local water retailer's specifications and the *Australian Standard* (**AS 2419.1-2021**) *Fire hydrant installations, System design, installation and commissioning.* Where there are differences between the local water retailer's specifications and AS 2419.1-2021, the higher-level standard should prevail.

6.4 Access and egress

New roads must be designed and constructed in general accordance with requirements for an urban fire truck in accordance with Schedule 6.2 *Planning Scheme Policy No. 2 – Engineering Standards – Roads and Drainage Infrastructure* in the Toowoomba Regional Planning Scheme 2012 or Fire hydrant

and vehicle access guidelines which defers to the *Road Planning and Design Manual – 2nd Edition* (DTMR 2013) for load bearing capacity, geometry and turning radii.

Access and egress for the proposed development is shown in Figure 6.1.

6.5 Prospective purchaser notification

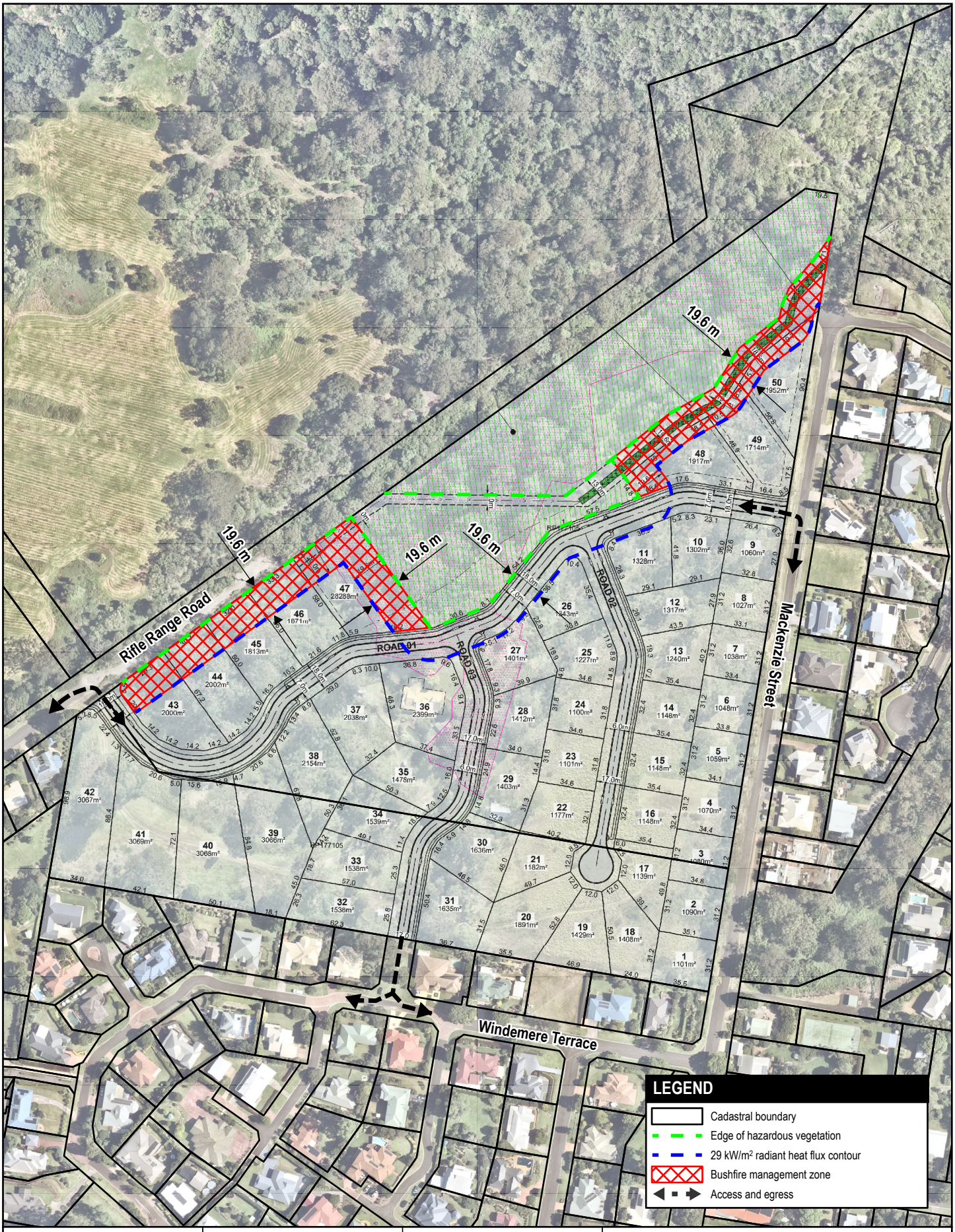
Purchasers of the proposed residential allotments must be notified:

a) The proposed residential allotments are in a 'designated bushfire prone area' pursuant to section 7 of the Queensland *Building Regulation 2021* and provisions of the *National Construction Code* (ABCB 2022) that apply to a designated bushfire prone area will apply to any building assessment work within them, which will include compliance with BAL design and construction specifications in AS 3959-2018.
b) The BAL ratings for the proposed residential allotments.

A BAL rating is a matter relevant to a building application. Therefore, it is appropriate that the BAL assessment for proposed residential allotments is delivered outside of the development permit application process and this BMP.

6.6 Service installation

Reticulated services, ie water, electricity, gas and communications, must be installed underground.



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Land and environment consultants

Client:
CPLK Property Pty Ltd

Bushfire management plan
Lots 1 and 2 Mackenzie Street
Mount Lofty

Aerial image: Nearmap (December 2024)

Scale: 1:3,000

0 20 40 60 80 100 120 m

N

Design: Land and Environment Consultants
Date Saved: 23/04/26 5:51 PM Created by: RA
Scale: 1:3,000
Name: J23017_ArcGIS Project_Lot 1 and 2 Mackenzie St

Title:
Bushfire mitigation plan

Figure
6.1

7 Conclusion

This BMP was prepared by a suitably qualified and experienced person based on the criteria in section 10.2 of the BRC guide and is in general accordance with the BRC guide.

A bushfire hazard assessment determined the proposed development is within a bushfire hazard area and the development permit application for the proposed development is subject to compliance with the Bushfire hazard overlay code.

Mitigation measures that must be implemented as part of the proposed development are specified in Chapter 6. With the implementation of these mitigation measures the proposed development is considered to comply with the Bushfire hazard overlay code as demonstrated in Appendix 4.

References

Australian Building Codes Board (ABCB) 2022, *National Construction Code Series, Building Code of Australia*, Australian Government and States and Territories of Australia, adopted May 2023

Queensland Department of Resources (DR) 2025, *Queensland Globe,* accessed in January 2025

Queensland Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) 2019, *Natural Hazards, Risk and Resilience – Bushfire, State Planning Policy – state interest guidance material*, December 2019

Queensland Department of Transport and Main Roads (DTMR) 2013, *Road Planning and Design Manual – 2nd Edition*, 2013

Queensland Fire and Emergency Service (QFES) 2019a, *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience – Bushfire'*, October 2019

Queensland Fire and Emergency Service (QFES) 2019b *Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots*, March 2019

Queensland Fire and Emergency Services (QFES) 2023, *Catalyst - Sustainable development mapping system*, QFES Sustainable Development Unit, accessed online in April 2023

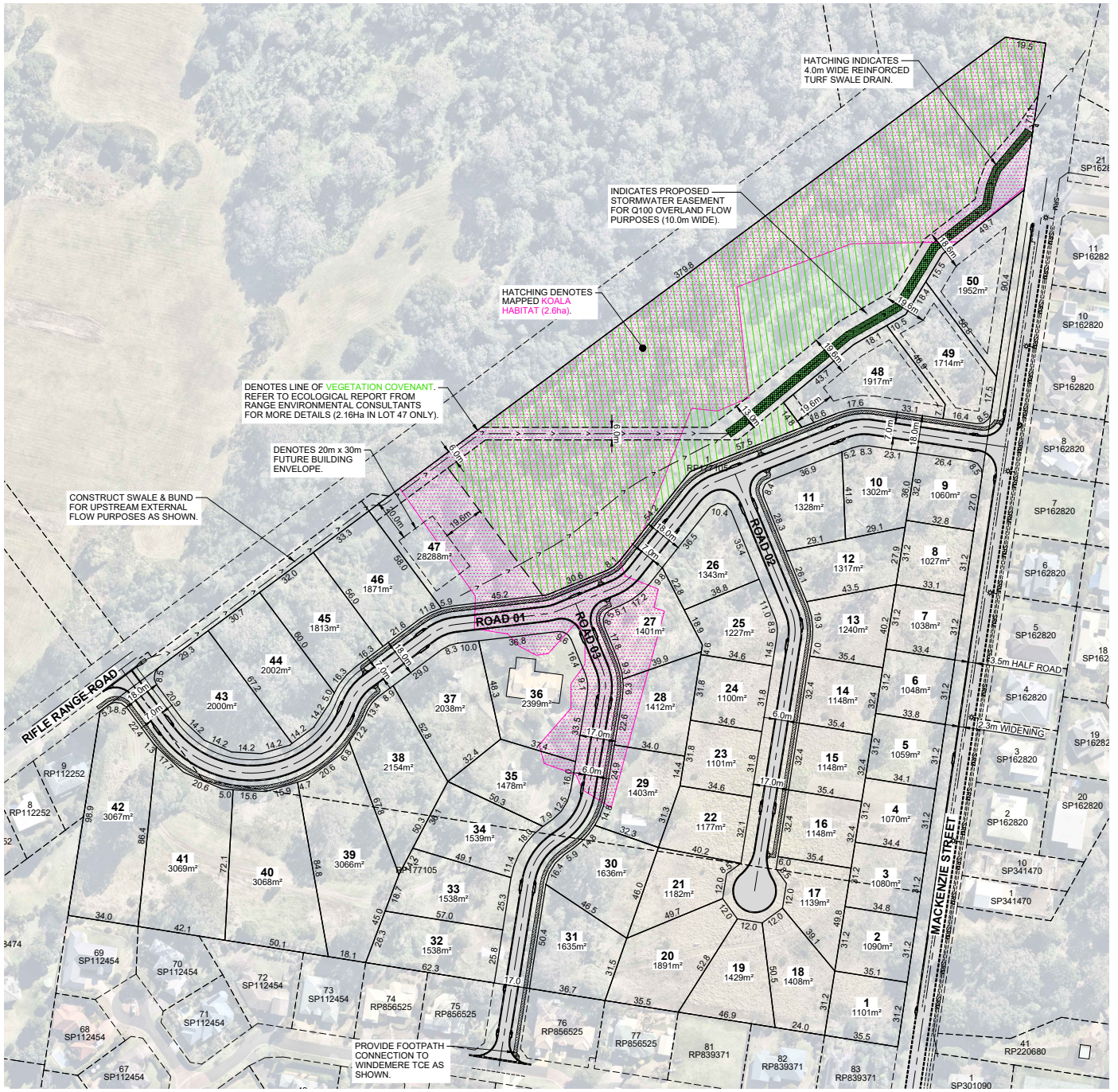
Queensland Reconstruction Authority (QRA) 2020, *Bushfire Resilient Building Guidance for Queensland Homes*, July 2020

Standards Australia Limited (Standards Australia) 2021, *Australian Standard 2419.1-2021 – Fire hydrant installation, System design, installation and commissioning, sixth edition*, September 2021

Standards Australia Limited (Standards Australia) 2018, *Australian Standard 3959-2018 Construction of buildings in bushfire prone areas*, Fourth edition, November 2018

Toowoomba Regional Council 2023, *Toowoomba Regional Planning Scheme 2012 mapping system,* accessed in April 2023

Appendix 1 Preliminary lot layout



PRELIMINARY LOT LAYOUT - OPTION 2

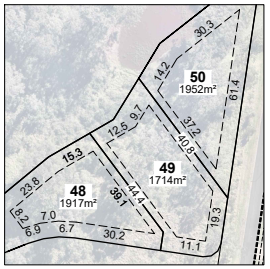
SCALE:- 1:1000 @ A1, 1:2000 @ A3

NOTE:

+ ALL SHOWN SERVICES ARE FROM ON SITE VISUAL INSPECTIONS AND EXISTING RECORDS ONLY. CONTRACTOR TO CONFIRM LOCATION AND DEPTH OF ALL INGROUND SERVICES PRIOR TO ANY EXCAVATION.

BUILDING ENVELOPE TABLE

LOT No.	AREA	SIZE
47	600m²	20m x 30m
48	857m²	SEE BELOW
49	994m²	SEE BELOW
50	884m²	SEE BELOW



BUILDING ENVELOPE PLAN

SCALE:- 1:1000 @ A1, 1:2000 @ A3

DATUM
PSM
LiDAR

DRAWING ISSUE

ISSUE	DATE	DETAILS	INITIAL
P7	02.12.25	FOR APPROVAL	PJS
P8	12.02.26	FOR APPROVAL	PJS
P9	20.02.26	FOR APPROVAL	NJK
P10	09.04.26	FOR APPROVAL	PJS

0 10m 20m 30m 40m 50m

SCALE 1:1,000 @ A1
SCALE 1:2,000 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION
DATE 09.04.26 11:48 AM

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CLIENT
WIDELAND GROUP

PROJECT
MACKENZIE STREET,
MOUNT LOFTY - SUBDIVISION

DRAWING TITLE
PRELIMINARY LOT LAYOUT - OPTION 2

DESIGN	KE	ORIGINAL SIZE	A1
DRAWN	KE	PROJECT NUMBER	C2223180
CHECKED	MS		
APPROVED		DRAWING NUMBER	DA11
DATE		ISSUE	P10

Appendix 2 Bushfire hazard overlay map


Toowoomba Regional Planning Scheme v28
Rich traditions. Bold ambitions.
i.e. Address or LGIP ID
Layer List
Layers
Planning Data
Other
Priority Development Area
Planning Scheme
Strategic Framework
LGIP
Overlays
Airport Environs Overlay
Environmental Significance
Bushfire Hazard
High Fire Risk
Medium Fire Risk
Extractive Resources
Regional Infrastructure Corridors and Substations Overlay
Heritage
Agricultural Land
Neighbourhood Character
Landslide Hazard
Flood Hazard
Scenic Amenity
Water Resources Catchment Overlay
TRANTER S TREET
WISSEMANN ROAD
PRESTON BOUNDARY ROAD
ACACIA AVENUE
KEARNEY STREET
FAROUHARSON
0 50 100m
395,731 6,943,160 Meters

Appendix 3 Radiant heat exposure assessment

Bushfire attack scenario A

- Forest fire danger index - 64
- Vegetation - VHC 9.2 *Moist to dry eucalypt woodland on coastal lowlands and ranges* and non-remnant VHC 7.1 *Semi-evergreen to deciduous microphyll vine forest*
- Understorey fuel load – 14.9 tonnes/ hectare (**t/ha**)
- Total fuel load – 17.2 t/ha
- Effective slope – 11° down slope
- Site slope – 0° slope
- Flame width – 100 metres (**m**)

FPA AUSTRALIA | FLAMESOL

Calculated May 4, 2023, 1:36 pm (MDc v.4.9)

J23017

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	64	Rate of spread	2.44 km/h
Vegetation classification	Woodland	Flame length	17.95 m
Understorey fuel load	14.9 t/ha	Flame angle	52 °, 62 °, 69 °, 74 °, 75 ° & 81 °
Total fuel load	17.2 t/ha	Elevation of receiver	7.07 m, 7.92 m, 8.380000000000001 m, 8.619999999999999 m, 8.67 m & 8.859999999999999 m
Vegetation height	n/a	Fire intensity	21,722 kW/m
Effective slope	11 °	Transmissivity	0.866, 0.844, 0.8169999999999999, 0.791, 0.778 & 0.72
Site slope	0 °	Viewfactor	0.6045, 0.4498, 0.3045, 0.2075, 0.1687 & 0.0456
Flame width	100 m	Minimum distance to < 40 kW/m²	14.7 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	19.7 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	28.2 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m²	38.9 m
		Minimum distance to < 10 kW/m²	45.6 m

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Bushfire attack scenario B

- Forest fire danger index - 64
- Vegetation - VHC 9.2 *Moist to dry eucalypt woodland in coastal lowlands and ranges*
- Understorey fuel load – 14.9 t/ha
- Total fuel load – 17.2 t/ha
- Effective slope – 30° down slope[1]
- Site slope – 0° slope
- Flame width – 100 metres

Note 1 Down slope angle limited to 30° in accordance with CB1 in Appendix B of the *Australian Standard* (AS 3959-2018) *Construction of buildings in bushfire prone areas*.

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J23017

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	64	Rate of spread	9.06 km/h
Vegetation classification	Woodland	Flame length	61 m
Understorey fuel load	14.9 t/ha	Flame angle	43 °, 49 °, 54 °, 59 °, 61 ° & 73 °
Total fuel load	17.2 t/ha	Elevation of receiver	20.8 m, 23.02 m, 24.67 m, 26.14 m, 26.68 m & 29.17 m
Vegetation height	n/a	Fire intensity	80,589 kW/m
Effective slope	30 °	Transmissivity	0.822, 0.791, 0.762, 0.741, 0.731 & 0.669
Site slope	0 °	Viewfactor	0.6393, 0.4811, 0.3268, 0.2214, 0.1794 & 0.049
Flame width	100 m	Minimum distance to < 40 kW/m²	45.5 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	56 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	71.7 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m²	89.7 m
		Minimum distance to < 10 kW/m²	100.7 m

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Appendix 4 Bushfire hazard overlay code assessment

8.2.2 Bushfire Hazard overlay code

8.2.2.1 Application

This code applies to assessable development:-

(1) subject to the Bushfire Hazard Overlay shown on the overlay maps contained within Schedule 2 (Mapping); and

(2) identified as requiring assessment against the Bushfire Hazard Overlay Code by the tables of assessment in Part 5 (Tables of assessment).

8.2.2.2 Purpose and overall outcomes

(1) The purpose of the Bushfire Hazard Overlay Code is to protect the safety of people and property in bushfire risk areas.

(2) The purpose of the code will be achieved through the following overall outcomes:

(a) development does not increase the exposure of people and property to an unacceptable bushfire hazard risk;

(b) development located in a bushfire risk area is designed to mitigate the bushfire risk through siting, design and management measures;

(c) development provides access and evacuation routes for both private and emergency service vehicles which are appropriate to the nature of the development and the level of bushfire risk;

(d) development for essential community infrastructure is able to function effectively during and immediately after a bushfire event;

(e) public health and safety and the environment are not put at risk by development involving the manufacture and/or storage of hazardous goods in a bushfire hazard area;

(f) the reconfiguration of land appropriately responds to bushfire hazard having regard to the appropriate siting of future development and access for evacuation; and

(g) development provides access to an adequate water supply for fire fighting purposes.

8.2.2.3 Requirements for accepted development and assessment benchmarks for assessable development

Table 8.2.2:1 – Bushfire hazard overlay code – requirements for accepted development and assessment benchmarks for assessable development.

Performance outcomes	Acceptable outcomes	Compliance assessment
PO1 Development is provided with an adequate water supply for fire fighting purposes that is safely located and freely accessible.	**AO1.1** Development within a water supply area involving the creation of new lot/s or involving proposed and existing buildings with a combined gross floor area greater than 50m^2, is connected to Council's reticulated water supply system. It will be readily available at all times for fire fighting vehicles and a water supply outlet located within the road reserve is within 40m of the following: (a) all of the land; or (b) a building envelope designated on each lot; or (c) the centre of each lot, excluding access handles (where no building envelope is designated; and (d) all existing and proposed buildings, and Fire hydrants are designed and installed in accordance with Queensland Fire and Emergency Services', Fire Hydrant and Vehicle Access Guidelines, unless otherwise specified by the relevant water entity.	**Complies with AO1.1** The proposed lots will be connected to mains water, and a reticulated hydrant system will be installed in the new road reserve. The reticulated hydrant system will be designed and constructed in accordance with *Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots 2019* (**Fire hydrants and vehicle access guidelines**) which defers to the local water retailer's specifications and the *Australian Standard* (2419.1-2021) *Fire hydrant installation, system design, installation and commissioning*.

Performance outcomes	Acceptable outcomes	Compliance assessment
	AO1.2 Development outside a water supply area involving proposed or existing buildings with a combined gross floor area greater than 50m^2, are provided with a dedicated on site water storage system that permanently holds a minimum of 10, 000 litres (eg dam, swimming pool or water tank) for fire fighting purposes.	**Not applicable** Proposed lots will be connected to mains water.
	AO1.3 A water tank is provided within 10m of each building (other than a class 10 building) which: (a) is either blow ground level or of non-flammable construction; (b) has a take-off connection at a level that allows the following dedicated, static water supply to be left available for access by fire fighters i. 10,000 litres for residential buildings; ii. for industrial, commercial and other buildings, a volume specified in AS 2304-2011 (c) includes shielding of tanks and pumps is accordance with AS 2304-2011; (d) includes a hardstand area allowing medium rigid vehicle (15 tonne fire appliance) access within 6m of the tank; (e) is provided with rural fire brigade tank fittings if serviced by a rural fire brigade (ie 50mm ball valve and male camlock coupling and, if underground, an access hole of 200mm (minimum) to accommodate suction lines; and (f) is clearly identified by directional signage at the street frontage.	**Not applicable** Proposed lots will be connected to mains water.
PO2 Development provides for the safely of people and property by avoiding areas of High or Medium bushfire risk.	**AO2.1** Development is not located on land that is subject to High or Medium bushfire risk. OR	**Complies with AO2.2** A bushfire management plan (**BMP**) has been prepared for the proposed development which has been prepared in general accordance with *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest*
	AO2.2 Where development is located in a High or Medium bushfire risk area	

Performance outcomes	Acceptable outcomes	Compliance assessment
	(except for single dwellings on existing lots), it complies with a Bushfire Management Plan for the premises. Note – Where the assessment manager has not previously approved a Bushfire Management Plan (either by condition on a previous development approval or by incorporating it in the planning scheme or a planning scheme policy), the development proponent will be expected to prepare such a plan to satisfaction of the assessment manager. See State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, Appendix 8: Undertaking a Bushfire Management Plan.	*'Natural Hazards, Risk and Resilience – Bushfire' 2019*. The BMP provides mitigation measures that will reduce the risk of bushfire hazards and assist the proposed development to achieve compliance with this bushfire hazard overlay code.
PO3 Development provides for the safety of people and property by mitigating the bushfire risk through the siting of buildings.	**AO3** Buildings and Structures: (a) are sited in locations of lowest hazard within the lot; and (b) achieve setbacks from hazardous vegetation of 1.5 times the predominant mature canopy tree height or 10m, whichever is the greater; and (c) are 10m from any retained vegetation strips or small areas of vegetation; and (d) are sited so that elements of the development are least susceptible to fire are sited closest to the bushfire hazard.	**Complies with PO3** The BMP defers to the radiant heat exposure outcome for the reconfiguration of a lot in the *Natural Hazards, Risk and Resilience – Bushfire, State Planning Policy State Interest guidance material 2019* which requires building envelopes to be separated from hazardous vegetation by a distance which achieves a radiant heat flux level of ≤ 29 kilowatts/metre^2 (**kW/m^2**) at the building envelopes. Results of a radiant heat exposure assessment have been used in the BMP to inform the location of building envelopes. Figure 6.1 of the BMP shows the 29 kW/m^2 radiant heat flux contour from the bushfire attack scenarios shown in Figure 3.1 of the BMP and confirms the building envelopes achieve a radiant heat flux level ≤ 29 kW/m^2.

Table 8.2.2:2 – Bushfire hazard overlay code – assessment benchmarks for assessable development.

Performance outcomes	Acceptable outcomes	Compliance assessment
For all development		
PO1 Community infrastructure is only located in a bushfire medium or high risk area where the function and role of the infrastructure necessitates its location in the area and there are no suitable alternative sites in a low bushfire hazard area.	No acceptable outcome is nominated.	**Not applicable** The proposed development does not involve community infrastructure.
PO2 Community infrastructure is able to function effectively during and immediately after bushfire events .	**AO2.1** The community infrastructure is located on land that is not subjected to High or Medium	**Not applicable** The proposed development does not involve community infrastructure.

Performance outcomes	Acceptable outcomes	Compliance assessment
	bushfire risks. Note – a site-specific bushfire hazard assessment is necessary to demonstrate that although the proposed development site is within a bushfire hazard area, the bushfire hazard is low on that site.	
	AO2.2 The community infrastructure will not involve any new building work other than a minor extension (<20m^2 Gross Floor Area) to an existing building; or	**Not applicable** The proposed development does not involve community infrastructure.
	AO2.3 The community infrastructure development is located within a bushfire hazard area (as identified in the Bushfire Hazard Overlay Maps) but is designed to function effectively during and immediately after bushfire events. Note – The development application must include and comply with a comprehensive Bushfire Management Plan.	**Not applicable** The proposed development does not involve community infrastructure.
Water supply		
PO3 Development is provided with an adequate water supply for fire fighting purposes that is safely located and freely accessible.	**AO3.1** Development within a water supply area involving the creation of new lot/s or involving proposed and existing buildings with a combined gross floor area greater than 50m^2, is connected to Council's reticulated water supply system. It will be readily available at all times for fire fighting vehicles and a water supply outlet located within the road reserve is within 40m of the following: (e) all of the land; or (f) a building envelope designated on each lot; or (g) the centre of each lot, excluding access handles (where no building envelope is designated; and (h) all existing and proposed buildings, and Fire hydrants are designed and installed in accordance with Queensland Fire and Emergency Services', Fire Hydrant and Vehicle Access Guidelines, unless otherwise specified by the relevant water entity.	**Complies with AO3.1** Refer to the response to PO1 in Table 8.2.2.1.
	AO3.2 Development outside a water supply area involving proposed or existing buildings with a combined gross floor area greater than 50m^2,	**Not applicable** Proposed lots will be connected to mains water.

Performance outcomes	Acceptable outcomes	Compliance assessment
	are provided with a dedicated on site water storage system that permanently holds a minimum of 10, 000 litres (eg dam, swimming pool or water tank) for fire fighting purposes.	
	AO3.3 A water tank is provided within 10m of each building (other than a class 10 building) which: (g) is either blow ground level or of non-flammable construction; (h) has a take-off connection at a level that allows the following dedicated, static water supply to be left available for access by fire fighters i. 10,000 litres for residential buildings; ii. for industrial, commercial and other buildings, a volume specified in AS 2304-2011 (i) includes shielding of tanks and pumps is accordance with AS 2304-2011; (j) includes a hardstand area allowing medium rigid vehicle (15 tonne fire appliance) access within 6m of the tank; (k) is provided with rural fire brigade tank fittings if serviced by a rural fire brigade (ie 50mm ball valve and male camlock coupling and, if underground, an access hole of 200mm (minimum) to accommodate suction lines; and is clearly identified by directional signage at the street frontage.	**Not applicable** Proposed lots will be connected to mains water.
Hazardous Materials		
PO4 Public safety and the environment are not adversely affected by the detrimental impacts of bushfire on the manufacture or storage of hazardous materials in bulk.	**AO4.1** Development complies with a Bushfire Management Plan for the premises. Note – 'Hazardous materials in bulk' is defined in Section 9, Glossary of the SPP Guideline. Where the assessment manager has not previously approved a Bushfire Management Plan, the development proponent will be expected to prepare such a plan to the satisfaction of the	**Not applicable** The proposed development does not involve hazardous materials manufactured or stored in bulk.

Performance outcomes	Acceptable outcomes	Compliance assessment
	assessment manager. See Appendix 8 for more information on bushfire management plans.	
Reconfiguring a lot and material change of use		
PO5 Lot design and the siting of buildings provide safe sites for habitable and non-habitable buildings.	**AO5.1** All development enables buildings and structures to achieve setbacks from hazardous vegetation that are: (a) sited within the area of lowest hazard within the lot; and (b) provide for adequate setbacks from hazardous vegetation; and (c) 1.5 times the predominant mature canopy tree height or 10m, whichever is the greater; and (d) 10 m from any retained vegetation strips or small areas of vegetation; and (e) sited so that elements of the development least susceptible to fire are sited closest to the bushfire hazard.	**Complies with PO5** Refer to the response to PO3 in Table 8.2.2.1.
PO6 For development that will result in multiple buildings or lots, roads and access are designed to mitigate against bushfire hazard by ensuring adequate access for: (a) fire fighting and other emergency vehicles; and (b) the evacuation of people in the event of an emergency.	**AO6.1** The road design is capable of providing access for fire fighting and other emergency vehicles, in accordance with the standards identified in SC6.2 PSP No. 2 – Engineering Standards – Roads and Drainage Infrastructure.	**Complies with AO6.1** Proposed roads will be designed and constructed in general accordance with requirements for an urban fire truck in accordance with Schedule 6.2 *Planning Scheme Policy No. 2 – Engineering Standards – Roads and Drainage Infrastructure* (**Planning scheme policy No. 2**) in the Toowoomba Regional Planning Scheme 2012 or Fire hydrants and vehicle access guidelines which defers to the *Road Planning and Design Manual – 2nd Edition 2013* for load bearing capacity, geometry and turning radii.
	AO6.2 The lot layout ensures that all roads are through roads.	**Complies with AO6.2** The proposed development includes a through road with new road connections to Rifle Range Road, Mackenzie Street and Windermere Terrace.
	AO6.3 The lot layout does not include long narrow lots, long access ways or rear lots.	**Complies with PO6** The lot layout does not include long narrow lots, long access ways or rear lots.
	AO6.4 The road has a maximum gradient of 1 in 8 (12.5%).	**Complies with AO6.4** The maximum vertical gradient is 15%.
PO7	**AO7.1**	**Complies with PO7**

Performance outcomes	Acceptable outcomes	Compliance assessment
For development that will result in multiple buildings or lots, fire breaks are provided that: (a) adequately and effectively separate the development site from surrounding vegetation to mitigate against bushfire hazard; (b) have sufficient width to enable continuous access for fire fighting and other emergency vehicles, residents and equipment; and (c) are in secure tenure and are maintained.	The development incorporates a fire break provided by a perimeter road that: (a) separates the boundary of lots and the adjacent bushland; (b) has a minimum cleared width of 20m; (c) has a formed road width of 6m; and (d) is constructed to an all weather standard.	Fire breaks are not considered necessary for the proposed development. Proposed allotments have building envelopes which are setback from hazardous vegetation by a distance which achieves a radiant heat flux level ≤ 29 kW/m^2 at the building envelopes. Section 6.1 of the BMP requires bushfire management zones (**BMZs**) to be established within proposed lots 43-50. The BMZs are shown in Figure 6.1 of the BMP and will ensure that landscaping within these allotments provides a low fuel hazard area with discontinuous fuel. The BMZs shown in Figure 6.1 are supported by specifications for landscaping within the proposed allotments which are provided in Section 6.2 of the BMP.
	AO7.2 The development includes fire breaks which are located as close as possible to the boundaries of the lot(s) and the adjoining bushfire hazard and the fire breaks have: (a) a minimum cleared width of 6m; (b) a minimum formed width of 4m; (c) a maximum gradient of 1 in 8 (12.5%); (d) are constructed and maintained to prevent erosion, provide adequate drainage and provide continuous access for fire fighting vehicles; (e) provide passing bays and turning areas for fire-fighting appliances; and (f) are either located on public land, or within an access easement that has been granted in favour of the Toowoomba Regional Council and the Queensland Fire and Rescue Service.	
	AO7.3 Vehicular access is provided along and at each end of the fire break to existing fire maintenance trails or roads.	
	AO7.4 The development includes sufficient cleared breaks of 6m minimum width in retained bushland within the development (eg creek corridors and retained vegetation) to allow burning of sections and access for bushfire response.	