



BUSHFIRE HAZARD ASSESSMENT

PROPERTY

87 – 93 Koplick Road

Park Ridge

Lot 15 on RP 899708

Lot 100 & 101 SP 181808

- + Bushfire assessments
- + Property vegetation assessments
- + Site planning for bushfire
- + Property management for bushfire
- + Bushfire management plans

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CONTENTS

Executive Summary	3
Proposed Development	3
Site Description	3
Bushfire Attack Level.....	3
Introduction	4
Site Details	4
Location and Legal Description	5
Scope of Bushfire Hazard Assessment	5
Bushfire Hazard	5
Modes of Bushfire Attack.....	6
Proposed Development	8
Site Location and Description	9
Location and Legal Description.....	9
Site Description	10
Bushfire Hazard Assessment	11
Local Government Provisions	12
Site Assessment	12
Vegetation.....	12
Lot 16 RP 135029	14
Risk Analysis.....	16
Classified Vegetation	17
Assessment of Bushfire Hazard	17
Bushfire Attack Level.....	18
Bushfire Management and Mitigation	19
Vegetation Management	19
Clearing	19
Landscaping.....	19
Access and Egress	19
Fencing	19
Water Supply	19
Bushfire Preparedness	19
Bushfire Overlay Code	20
Appendix 1	23
Method for Determination of Bal	24
Determination of Bushfire Attack Level.....	24



EXECUTIVE SUMMARY

Proposed Development

Lot 15 on RP899708 and Lot 100 & 101 SP 181808, located at 87-93 Koplick Road, is proposed for a reconfiguration of lot from 1 into 89 lots for residential purposes and a detention basin. The site is located in Park Ridge in Logan City, an area that is undergoing a significant transition from large rural properties to urban residential development. The proposal will establish urban residential allotments.

Site Description

Lot 15 RP95718 and Lot 100 & 101 SP 181808 have an area of 49 530 square metres and are located within a Low-Density Residential Zone of Logan City - an area that is undergoing a transition from large rural properties to urban residential lots. Development has occurred or is underway in the Logan Central and adjoining Locales. It is reasonable to assume that this will continue as a result of the zoning.

This report has been prepared in accordance with the Logan Planning Scheme Version 5.1 and the requirements of the Australian Standard - construction in bushfire prone areas – AS3959 – 2009.

Bushfire Attack Level

The remnant vegetation on Lot 16 RP135029 adjoining the east will impact the proposed lots.

Fifty – eight (58) of the proposed eighty - nine (89) lots captured by the impact of classified vegetation will comply with the construction standards of the AS 3959 – 2009 - BAL 12.5.

Lots 30 to 39 (Inc) and Lots 42 to 89 (Inc.) will be exposed to a Bushfire Attack Level (BAL) **not greater than 12.5** kW/m²

Lots 1 to 29 (Inc) and Lots 40 & 41 will require no construction standards as per the AS 3959 – 2009 – BAL.

A Bushfire Hazard Assessment has been conducted as per the Logan Planning Scheme Policy Version 5.1 Part 8. 8.2.3 Bushfire Overlay Code.

This report has been prepared in accordance with the methodology in the CSIRO report: A new methodology for state-wide mapping of bushfire prone areas in Queensland by J. Leonard, G. Newnham, K. Opie, R. Blanche. 2014, CSIRO, Australia.



INTRODUCTION

Queensland Bushfire Planning has been engaged on behalf of Koplick Developments to conduct a site-based bushfire hazard assessment in relation to a reconfiguration of a lot for the purpose of urban residential development at 87-93 Koplick Road, Park Ridge. A report has been prepared in accordance with the Logan City Council Sc6.2.6 Planning Scheme policy 6 – Management of Bushfire Hazard Logan Planning Scheme 2015 version 5. The aim of this report is to demonstrate the level of bushfire hazard, utilising the methodology as required by Part 2 of that policy.

SITE DETAILS

Site Address	87-93 Koplick Road, Park Ridge
Local Government	Logan City Council
Real Property Description	Lot 15 on RP899708 & Lot 100 - 101 SP 181808
Zoning	Emerging Community
Area of Site	49 530m ²
Tenure	Freehold
Applicant	Koplick Developments
Current Land Use	Detached Dwellings
Proposed Land Use	Reconfiguration of a lot for urban residential purposes

LOCATION AND LEGAL DESCRIPTION

The site is located at 87-93 Koplick Road, Park Ridge and is described as Lot 15 RP899708 and Lot 100 & 101 SP 181808 within Logan City. (Figure 1)

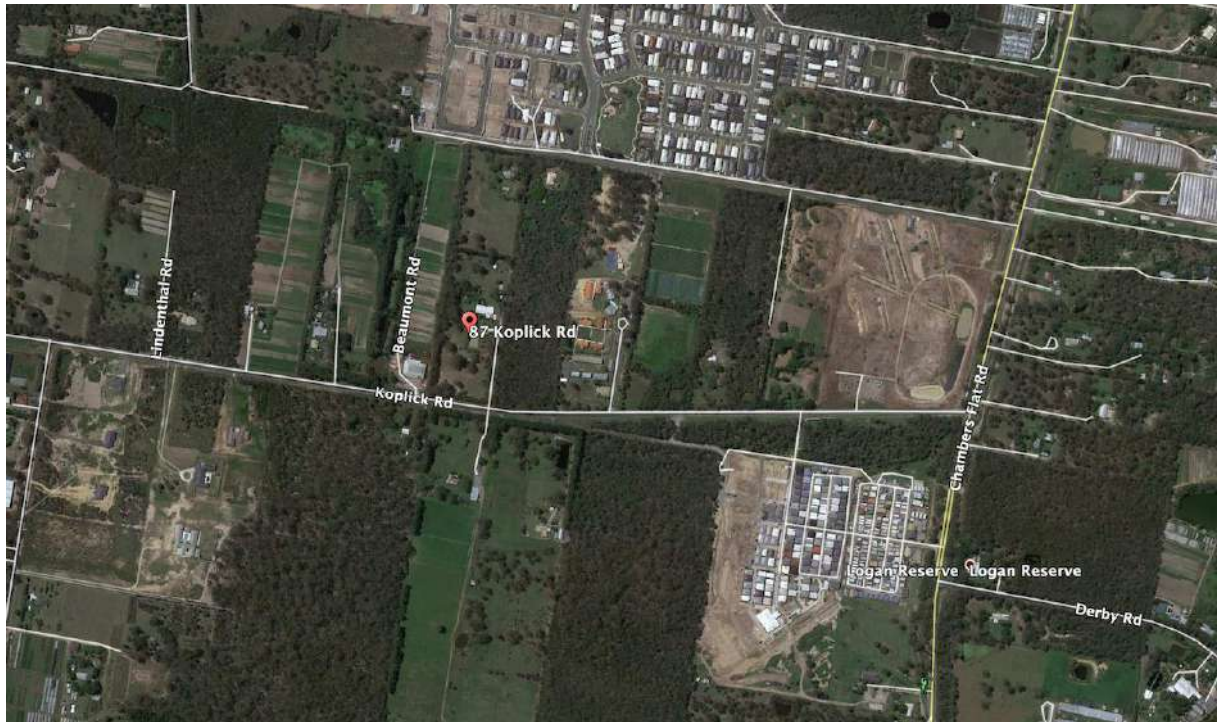


Figure 1

Scope of Bushfire Hazard Assessment

A reconfiguration of a lot has been proposed at 87-93 Koplick Road, Park Ridge, Lot 15 on RP899708 and Lot 100 & 101 SP 181808. The site is captured by the State Planning Policy Natural Hazards and Resilience, Bushfire Prone Area Mapping and in accordance with the provisions of the Planning Scheme Policy 6, a detailed Bushfire Hazard Assessment has been prepared.

Bushfire Hazard

The combination of vegetation, topography and climate makes Australia one of the most bushfire prone areas of the world. A bushfire hazard exists where there is vegetation - grass, scrub, bushes and trees. The hazard is not restricted to rural areas but also exists in the rural-urban interface where the areas included bush land.

Modes of Bushfire Attack

There are four modes of bushfire attack:

- Burning debris;
- Radiant heat;
- Flame contact;
- Wind. (Figure 2)

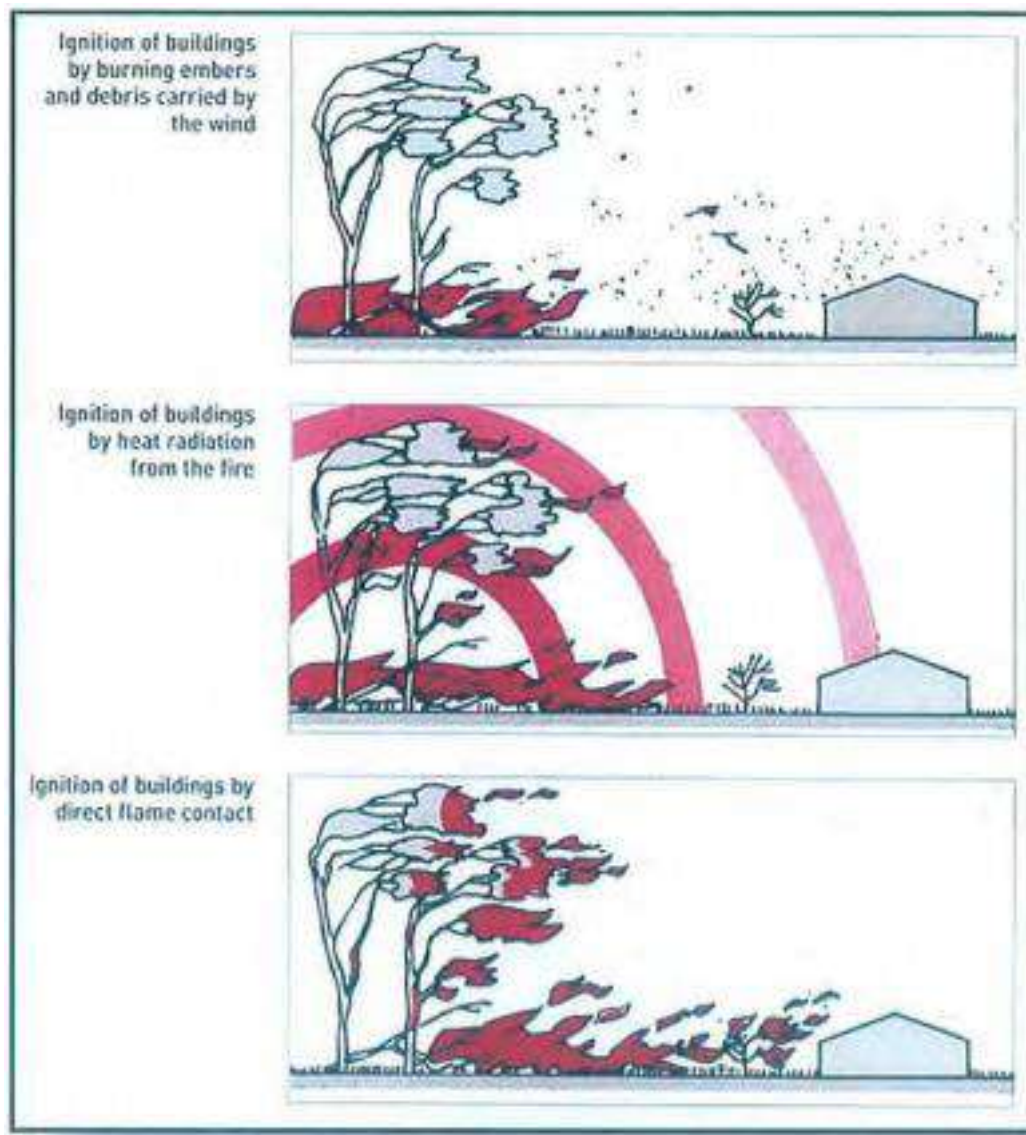


Figure 2



Burning Debris

All bushfires will produce burning debris (embers) that is carried before the fire front by prevailing winds and convective forces. Ember attack occurs before and after the passage of the active fire front.

Radiant Heat

Radiant heat will assist with ignition by preheating fuels and structures. Radiant heat is a measure of the heat energy released from the fire front that impacts on the surrounding environment. Radiant heat impact reduces as a square of distance.

Flame contact

Direct flame contact is a function of fuel load and the proximity of the fuel to structures. The risk is increased when in combination with high winds.

Wind

Strong winds can intensify a fire, convey burning embers and debris and compromise the integrity of structures.

Other factors

Vegetation structure and density is also an important factor and when allied with topography can have a significant effect on fire intensity and behaviour.

Landscape and Localised Fire Hazard

There are two risk types to be considered when evaluating bushfire hazard within a specific locality:

- Landscape hazard – large areas of vegetation close to and encroaching on residential areas;
- Localised hazard – fragmented and linear areas of vegetation that may be included within developments.

The two types of hazard present very different wildfire scenarios specifically, in regard to fire behaviour, fire intensity and rate of spread.

Landscape fires generally have the following dynamics:

- Higher fuel loads;
- Steeper topography;
- Difficult access;
- Continuity of fuel; and
- Induced fire weather conditions.

Localised bushfire risk generally consists of fragmented and disturbed areas of vegetation including green corridors and retained green space. Fires that originate in the area would be constrained by the physical size of the vegetation, lighter fuel loads and opportunities for suppression.



Proposed Development

Lot 15 on RP899708 and Lot 100 & 101 SP 181808 are proposed for a reconfiguration of lot for residential purposes. The site is located in Park Ridge in Logan City, an area that is undergoing a significant transition from large rural properties to urban residential development. The proposal will establish urban residential allotments.

The development proposes a reconfiguration of lot from 1 into 89 lots. A storm water basin is proposed in the south-eastern extent. (Figure 3)

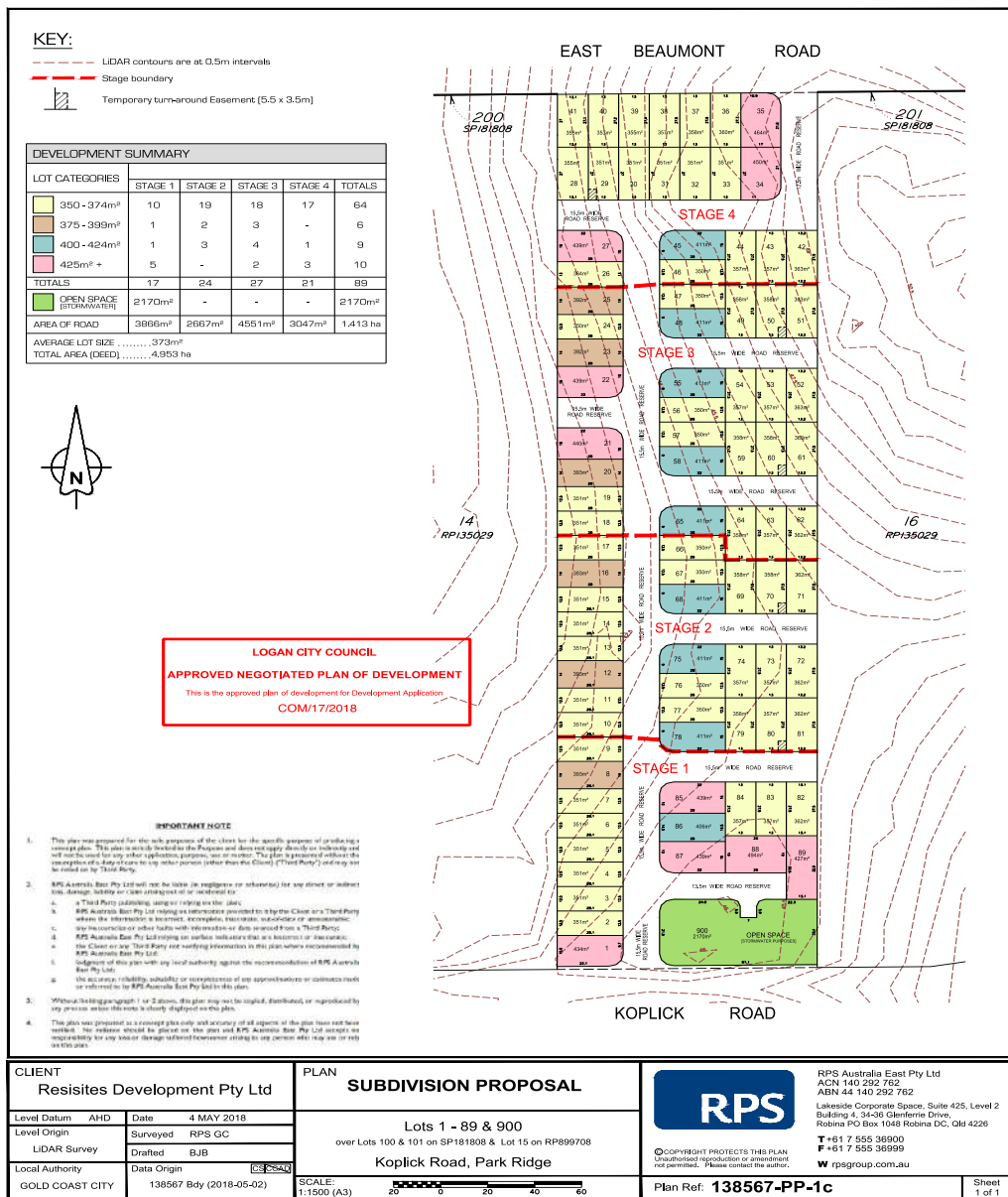


Figure 3

- + Bushfire assessments
- + Property vegetation assessments
- + Site planning for bushfire
- + Property management for bushfire
- + Bushfire management plans

Site Location and Description

Location and Legal Description

Lot 15 on RP899708, and Lot 100 & 101 SP 181808, 87-93 Koplick Road, Park Ridge. (Figure 4)



Figure 4

Site Description

Lot 15 RP899708 and Lot 100 & 101 SP 181808 has a total area of 49 530 square metres and is aligned north – south with a southerly aspect and a slope of 2 degrees. The site is within an Emerging Community Zone of Logan City and an area that is undergoing a transition from large rural properties to urban residential lots. Development has occurred to the north. (Figure 5)



Figure 5

Bushfire Hazard Assessment

The State Government Single State Planning Policy (SPP) released in 2013, includes mapping that is an outcome of the new bushfire hazard mapping methodology, developed by the CSIRO and the Queensland Government. The new Bushfire Prone Area mapping was found to have an average reliability of 85%. The new methodology provides a major improvement in bushfire hazard mapping.

The new modified approach calculates potential fire line intensity using total fuel loads, landscape slope and fire weather severity. A default 100-metre buffer was determined from analysis of heat and radiation decay curves and research that indicates 80% of housing loss and 80% of life loss occurred within 100 metres of bushland.

The subject site is identified on the State Planning Policy State-wide Mapping Hazard Overlay as being within the potential impact buffer zone, requiring the bushfire hazard impacts be addressed. (Figure 6)

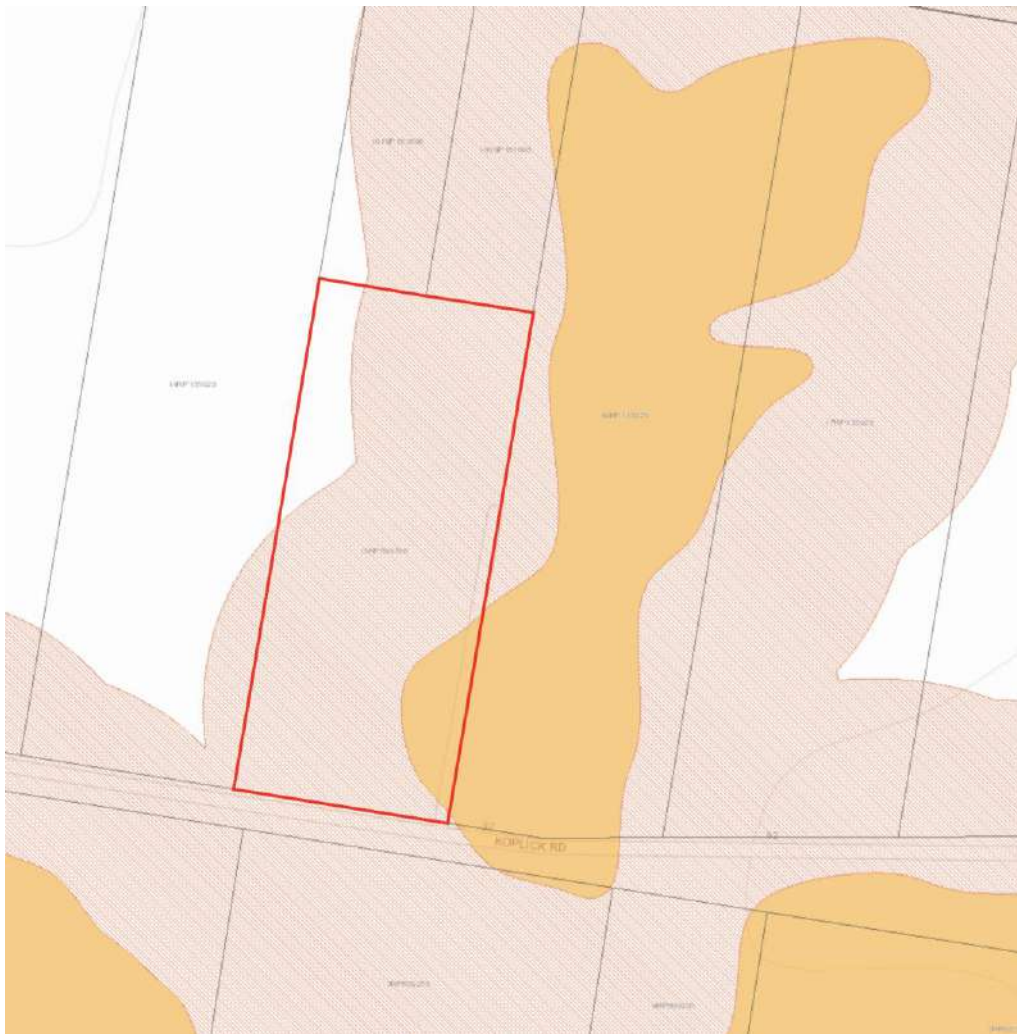


Figure 6



Local Government Provisions

The Logan City Plan 2015 v 5.1 came into effect on September 8, 2017 and incorporated Bushfire Overlay Mapping, Overlay Code and Bushfire Hazard Planning Scheme Policy. A Bushfire Hazard Assessment has been conducted as per the Logan City Bushfire Planning Scheme Policy, Schedule 6. Assessment has also been conducted against the Overlay Code.

Site Assessment

Vegetation

An onsite inspection and assessment were conducted at Lot 15 on RP899708 and Lot 100 & 101 SP 181808, 87-93 Koplick Road, Park Ridge on April 15, 2019 to observe and record the relevant information to determine the bushfire hazard in accordance with the requirements of the Logan City Plan 2015 and incorporates Bushfire Overlay Mapping, Overlay Code and Bushfire Hazard Planning Scheme Policy. The vegetation on the proposed lots will be removed as part of the development.

There are three areas of possibly hazardous (bushfire) vegetation that require consideration as part of this proposal. The non-remnant vegetation on Lot 16 RP135029 adjoining the east of Lot 15, Lot 7 RP68700 and Lot 5 RP68700 adjacent to the south east and south west. (Figure 7)



Figure 7

- + Bushfire assessments
- + Property vegetation assessments
- + Site planning for bushfire
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The adjacent and adjoining lots to the west, Lots 12,13,14 RP 135029 are managed agricultural land. (Photo 1, Photo 2)



Photo 1



Photo 2

- + Bushfire assessments
- + Property vegetation assessments
- + Site planning for bushfire
- + Property management for bushfire
- + Bushfire management plans



Lot 16 RP 135029

Lot 16 RP135029 consists of an area of scattered regrowth woodland vegetation, approximately 4 Ha in extent. The Public Safety Business Agency (PSBA) State-wide Bushfire Hazard (Bushfire Prone Area) mapping identifies grassy woodland, non – remnant regrowth vegetation. (Photo 3, Photo 4)



Photo 3

- + Bushfire assessments
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Photo 4

Risk Analysis

The potential for an unplanned vegetation fire to occur within retained vegetation is a function of the level of hazard and the opportunity for ignition and fire development. The risk can be quantified in two parts:

- Internal: No hazardous vegetation will remain on Lot 15 and Lot 100 & 101
- External: Lot 16 RP 135029 adjoining to the east is area of remnant woodland. (Figure 8)



Figure 8



Classified Vegetation

The Australian Standard: Construction of Buildings in Bushfire Prone Areas (AS 3959–2009) requires that, any classified vegetation within 100 metres of the proposed works must be assessed. The Logan Central area is not exposed to bushfire events that are associated with significant landscape areas of contiguous forest types that impact urban areas. Discrete isolated areas of remnant and regrowth woodlands present the risk in this location. A fire event about Lot 8 would be the result of localised ignition. The disturbed state of the vegetation and the limited extent would reduce the intensity.

Assessment of Bushfire Hazard

The Australian Standard: Construction of Buildings in Bushfire Prone Areas (AS 3959–2009) requires that any classified vegetation within 100 metres of the proposed works must be assessed. Figure 9 shows the extent of the 100-metre separation zone (BAL Impact Zone).

The nature of the vegetation required a subjective assessment to determine the representative fuel loads. Available fuel weights were calculated using the Field Guide - Fuel Assessment and Fire Behaviour Prediction in Dry Eucalypt Forests (J.s Gould et al (2007), Ensis-CSIRO).

Surface Fuel Layer

Hazard rating	Description	Hazard score	Litter Depth (mm)	Ave. Fuel Tonne/ha
Low	Thin layer, no decomposition discontinuous	1	< 10	3

Near Surface Fuel Layer

Hazard rating	Description	Hazard score	Ave. Fuel Tonne/ha
Low	Sparse dispersed fuel. Dead material virtually absent	1	1

Elevated Fuel hazard

Hazard rating	Description	Fraction dead	Hazard score	Ave. Fuel Tonne/ha
Moderate	Sparse and dispersed	<5%	1	2

Intermediate and over storey bark Fuels

Hazard rating	Description	Hazard score	Ave. Fuel Tonne/ha
Low	No Fibrous bark, no spotting	0	0
			Total Fuel - Tonnes/ha
			6

Bushfire Attack Level

The remnant vegetation on Lot 16 RP 135029 adjoining to the east, will impact the proposal.

Calculations using the Australian Standard in accordance with Appendix B of AS 3959-2009, Detailed Method for Determining the Bushfire Attack Level (BAL) – Method 2 (Normative) determine the following impacts. (Appendix 1)

Bushfire Attack Level impacts as a function of distance from classified vegetation. **Table 1** shows the Heat Flux Exposure ratings, as calculated using Method 2 of the Australian Standard AS 3959 – 2009.

Minimum Distance to < 40 kW/m ²	2m
Minimum Distance to < 29 kW/m ²	3 m
Minimum Distance to < 19 kW/m ²	4 m
Minimum Distance to < 12.5 kW/m ²	6m

Table 1

A 15-metre low hazard zone exists on the western boundary of Lot 16.

The 100-metre impact zone will capture all lots **30 – 39 Inclusive** and **Lots and Lots 42 – 89 inclusive** on the proposed development. The Bushfire Attack Level (BAL) for each lot will be a function of the separation as shown in Table 1 and as such none will exceed a BAL of 12.5.

Lots **1-29 Inclusive** and **Lots 40 & 41** are outside the bushfire impact zone and require no construction standard. (Figure 9)



Figure 9– Not to scale, indicative only



Bushfire Management and Mitigation

A range of strategies can be applied to mitigate the potential impacts of bushfire:

- Vegetation management
- Access and egress
- Fencing
- Water supply
- Awareness and education
- Building construction

Vegetation Management

Onsite vegetation and landscape management are important to maintaining low hazard conditions by:

- limiting fuel accumulation;
- reducing connectivity of fuels;
- establishing and maintaining defensible space;
- appropriate landscaping; and
- the proposed lot size of the development will constrain the development of any additional bushfire hazard.

Clearing

The site will be cleared to facilitate the proposed development.

Landscaping

The establishment of residential lots of less than 450 m² will result in the establishment of typical managed and manicured urban landscapes.

Access and Egress

The proposed roading will provide access and egress via connection to Koplick Road to the south and East Beaumont Road to the north for residents and emergency services. The designed egress is away from the hazard and provides alternate exit strategies for residents and ready access for emergency services.

Fencing

Fencing materials have the capacity to contribute to fire spread and intensity. For properties subject to BAL impacts, it is recommended that non-combustible fencing materials should be used.

Water Supply

Reticulated water will be supplied to the development meeting the required statutory standards.

Bushfire Preparedness

The affected residents will be provided with a bushfire information kit containing all the necessary information on bushfire risks and their roles and responsibilities for prevention, preparedness and response to any fire event. As a function of the location and design of this reconfiguration and the anticipated low fire line intensity of a fire event on Lot 38 the option for residents to remain within their homes would be a considered alternative. This option would avoid putting residents at risk as a result of smoke, traffic congestion and the movements of emergency vehicles and firefighters. The warning systems now implemented by Emergency Services and Local Authorities provide timely information and advice to residents.

https://ruralfire.qld.gov.au/Fire_Safety_and_You/Bushfire_Survival_Plan/



Bushfire Overlay Code (8.2.3.3.2)

Performance Outcomes	Acceptable Outcomes	Compliance
<p>PO1 In a bushfire hazard area, the fire mitigation methods used at the site are adequate for the bushfire hazard of the individual site, having regard to:</p> <ol style="list-style-type: none"> 1. vegetation type; 2. slope; 3. aspect; 4. bushfire history; 5. conservation values of the site; 6. ecological restoration, including forest succession; 7. ongoing maintenance; 8. climate change; and 9. onsite and off-site fire hazard implications. 	<p>AO1 A written assessment by a suitably qualified and experienced bushfire management consultant confirms that the site is not in a bushfire hazard area.</p>	Compliant
<p>PO2 In a bushfire hazard area, development: does not result in a high concentration of people living, working or congregating in a bushfire hazard area;</p> <ol style="list-style-type: none"> 1. does not result in the bulk manufacture or storage of hazardous materials; and 2. 'essential' community infrastructure is able to function effectively during and immediately after a bushfire event. 	<p>AO2 The following land uses are not located in a bushfire hazard area:</p> <ol style="list-style-type: none"> 1. Aged care facility; 2. Childcare centre; 3. Community care centre; 4. Community use; 5. Development involving the manufacture or storage of hazardous material in bulk; 6. Educational establishment; 7. Hospital; 8. Residential care facility; 9. Retirement facility; 10. Rooming accommodation; 11. Sport and recreation use; 12. Tourist attraction; 13. Tourist park; and 14. Utility installation (waste management facilities) 	Compliant
<p>PO3 In a bushfire hazard area, developments, including lot layout, are designed to avoid bushfire hazard and provide safe sites for people, property and buildings.</p>	<p>AO3 The development is designed to adequately demonstrate that the risk to life and property is minimised to achieve acceptable levels and ensure ongoing site management.</p>	Lots captured by the impact of Classified Vegetation will comply with the construction standards of the AS 3959 – 2009.



	<p>AO3.2 The development design incorporates bushfire radiation zone/s that:</p> <ol style="list-style-type: none"> 1. use existing or natural fire breaks & minimise the need to clear native vegetation; 2. does not impact matters of environmental significance; 3. are located entirely within the boundaries of the private property of the development site; and 4. incorporates landscaping species that are less likely to exacerbate a bushfire event 	<p>Retention basin will be revegetated and managed in a low hazard condition.</p>
<p>PO5 Development uses fencing that:</p> <ol style="list-style-type: none"> 1. does not contribute to the spread of bushfire; 2. facilitates the safe movement of fauna; and 3. provides access for firefighting purposes. 	<p>AO5 Fences are constructed:</p> <ol style="list-style-type: none"> 1. using non-combustible or fire retardant materials within 20m of any building used for accommodation; 2. does not impede the safe movement of fauna (where applicable); and 3. has gates that can be freely accessed for firefighting purposes (if applicable). 	<p>Compliant Where applicable the fencing materials will be non-combustible</p>
<p>PO6 In a bushfire hazard area, vehicular access (including internal roads) is designed to mitigate against bushfire hazard by ensuring adequate access for:</p> <ol style="list-style-type: none"> 1. Firefighting and other emergency vehicles, and 2. The evacuation of residents and emergency personnel, during a bushfire event. 	<p>AO6.1 The development design incorporates a perimeter road that:</p> <ol style="list-style-type: none"> 1. is located between the boundary of the lots and/or buildings and the adjacent natural area and/or bushfire hazard area; 2. has a minimum cleared width of 20m; 3. has a constructed minimum road width of 6m; 4. has a maximum gradient of 12.5%; 5. is constructed to an all-weather standard; and 6. is constructed to ensure all culverts and bridges have a minimum load bearing of 15 tonnes (if applicable). 	<ol style="list-style-type: none"> 1. An internal north - south constructed road will traverse the proposed site and will provide separation for the proposed lots. 2. N/A 3. Complies 4. Complies 5. Complies 6. Complies



<p>PO8 For areas to be dedicated to council as open space, management strategies to mitigate bushfire risk must be identified.</p>	<p>AO8 N/A</p>	<p>N/A</p>
<p>PO9 In a bushfire hazard area, fire trails must be provided to:</p> <ol style="list-style-type: none"> 1. enable access for firefighters, residents and equipment; 2. contribute to (where required) bushfire radiation zone(s); 3. mitigate against bushfire hazard; and 4. allow access for hazard reduction management programs. 		<p>The discrete and isolated extent of the remnant vegetation and the low hazard zone at the eastern boundary of Lot 15 proposed internal roads require no fire trail construction.</p>
<p>PO10 In a bushfire hazard area, the development maintains the safety of people and property by ensuring that the water supply is reliable and has sufficient flow and pressure requirements for firefighting purposes at all times.</p>	<p>AO10.1 The development is proposed in a bushfire hazard area, and reticulated water is supplied in accordance with SC6.9 City Plan policy – Land development guidelines.</p>	<p>Reticulated water will be provided to the development in accordance with Logan City policy.</p>



APPENDIX 1



Appendix 1

Method for Determination of BAL

BAL was determined in accordance with Appendix B of AS 3959-2009, Detailed Method for Determining the Bushfire Attack Level (BAL) – Method 2 (Normative).

Step 1: Determine the relevant FDI.

Step 2: Determine the vegetation classification, fuel loads.

Step 3: Determine the effective slope in degrees under the classified vegetation.

Step 4: Determine the slope in degrees of the land between the site and the classified vegetation.

Step 5: Determine the distance of the site from classified vegetation.

Step 6: Calculations.

Determination of Bushfire Attack Level

Step 1. Relevant Fire Danger Index

The Public Safety Business Agency State-wide Bushfire Hazard (bush fire prone area) mapping identifies the FDI for this area as 50.

Step 2. Vegetation Classification - Fuel Loads

The vegetation type was classified as Woodland.

Available fuel weights were derived from; *A new methodology for state-wide mapping of bushfire prone areas in Queensland* by J. Leonard, G. Newnham, K. Opie, R. Blanchi. 2014, CSIRO, Australia

Fuel weights were determined as:

- 3 tonne/hectare surface fuels
- 1 tonne/hectare near surface fuels
- 2 tonne/hectare elevated fuels
- Total fuel weight = 6 Tonne/hectare.

Step 3. Determine the effective slope in degrees under the classified vegetation

The average slope under the vegetation to the northwest was calculated using a Nikon Forestry Pro Range Finder and Inclinometer at < 2 degrees downslope.

Step 4. Determine the slope in degrees of the land between the site and the classified vegetation

The slope between the site and the classified vegetation was calculated using a Nikon Forestry Pro Range Finder and Inclinometer at < 2 degrees downslope.

Step 5. Determine the distance of the site from classified vegetation

Distance is calculated from the closest edge of the classified vegetation. Where the hazard is on an adjoining property the distance is measured to the boundary of that lot-classified vegetation under AS 3959-2009 does not include low threat vegetation.