QUEENSLAND BUSHFIRE PLANNING

# BUSHFIRE HAZARD ASSESSMENT (BHA)

## Property

120 Coutts Drive and 48 Ogilvy Road, Burpengary
Lot 51 on RP82952 and Lot 2 on RP189017

Farriers Creek Pty Ltd
July 2021

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

qldbushfireplanning.com.au

**Disclaimer**

This document has been prepared for the benefit of Farriers Creek Pty Ltd. This report is prepared for the benefit of the named client only. No third party may rely upon any advice or work done by Queensland Bushfire Planning (QBP) in relation to the services, including this report, except to the extent expressly agreed to in writing by QBP.

It is acknowledged and agreed that the site may be subject to a degree of bushfire hazard. The client acknowledges and agrees that QBP has not created or contributed to the creation of this hazard and the client indemnifies QBP for claims arising out of or result from a bushfire event except to the extent attributable to the negligence of QBP.

The client agrees that QBP shall have no liability in respect of any damage or loss incurred as a result of bushfire. Compliance with this report shall be the responsibility of the client and/or the land-owners. This disclaimer shall apply notwithstanding the report may be made available to the relevant Local Government Authority and other persons for an application for permission or approval to fulfill a legal requirement.

# EXECUTIVE SUMMARY

A 91 Lot subdivision and included drainage, parkland and open space (Lots 900, 901, 902) has been proposed at 120 Coutts Drive and 48 Ogilvy Road, Burpengary, Lot 51 on RP82952 and Lot 2 on RP189017. The site is identified by the Moreton Bay Regional Council State Planning Policy Natural Hazards and Resilience - *Bushfire Prone Area* mapping and in accordance with the provisions of the Moreton Bay RegionalCouncil Bushfire Hazard Overlay Code, a detailed Bushfire Hazard Assessment has been prepared.

Bushfire hazard in Queensland is mapped as bushfire prone areas. This mapping forms part of the State Planning Policy Interactive Mapping System (SPPIMS). The mapping identifies the extent and level of the bushfire hazard across the state. Mapping is in accordance with the process described in 'A new methodology for state-wide mapping of bushfire-prone areas in Queensland', Leonard, J and Newnham, G et al (2014). The areas are mapped as either very high, high or medium potential bushfire intensity and include potentially hazardous vegetation that could support a significant bushfire. This vegetation is classified and mapped as having a vegetation hazard class. The SPP IMS does not identify any bushfire impact on Lot 51 on RP82952 and a limited impact at the eastern extent of Lot 2 on RP189017.

The original vegetation on and about this site is identified as Regional Ecosystem (RE) 12.5.3 Eucalyptus racemosa subsp. racemosa woodland on remnant Tertiary surfaces Figure 3 shows the extent of that original vegetation and demonstrates that as a result of past management and rural residential development no significant areas of RE 12.5.3 remain. The original vegetation on and about Burpengary Creek is identified as Regional Ecosystem (RE) 12.3.16 Gallery rainforest (notophyl vine forest) on alluvial plains - Fire sensitive and not considered flammable. The QFES defendable space calculator yields a BAL of Low. The Lots adjoining or adjacent to the west and north have discrete, non - contiguous areas of non - remnant vegetation with managed understory dissected by internal roads and trails and secondary infrastructure.

**CONCLUSION: The SPP IMS does not identify any bushfire impact on Lot 51 on RP82952 or Lot 2 on RP189017 This has been confirmed by onsite visit and ground truthing.**

## Recommendations

| Summary | |
|---|---|
| 1 | There is no classified vegetation impacting on the proposed development on Lot 51 on RP82952 and Lot 2 on RP189017. The Australian Standard AS3959- 2018 - *Construction of buildings in bushfire prone areas* has not been triggered on this site. |
| 2 | The vegetation on 120 Coutts Drive and 48 Ogilvy Road, Burpengary will be maintained in managed low hazard state. |
| 3 | Fencing on Lot 51 on RP82952 and Lot 2 on RP189017 will be constructed of non – combustible materials. |
| 4 | Ingress and egress for residents and emergency services will be via Coutts Road |
| 5 | Reticulated water will be provided to the reconfiguration. |

# INTRODUCTION

Queensland Bushfire Planning has been engaged on behalf of Farriers Creek Pty Ltd to conduct a site-based Bushfire Hazard Assessment in relation to a 91 Lot subdivision and included drainage, parkland and open space (Lots 900, 901, 902)development at 120 Coutts Drive and 48 Ogilvy Road, Burpengary. This Report has been prepared in accordance with the Moreton Bay Regional Council Planning Scheme V4. The aim of this report is to demonstrate the level of bushfire hazard, utilising the methodology as required by *Planning Scheme Policy, Bushfire Prone Area* of the Plan.

The focus of this Report refers to the statutory planning and building requirements as they may apply, pursuant to all relevant policies, standards and regulation, along with end-user consideration. In addition, this report seeks to ensure fire risk and evacuation for adjoining and nearby properties is not inadvertently adversely impacted. This assessment report aims to mitigate the risk to life and property from bushfire threat and the impact of bushfire attack which includes:

- Direct flame contact;
- Ember and firebrand attack;
- Radiant heat; and
- Fire-driven wind.

This assessment does not seek to remove the threat of any bushfire risk, but provide detailed siting, layout, building and/or servicing information to assist the ability of the owner(s) to manage the potential threat of this risk. This assessment report is prepared in accordance with best practice industry standards as applicable in Queensland and pursuant to both State and local government bushfire hazard policies and guidelines.

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# SITE DETAILS

| Site Address | 120 Coutts Drive and 48 Ogilvy Road, Burpengary |
|---|---|
| Local Government | Moreton Bay RegionalCouncil |
| Real Property Description | Lot 51 on RP82952 and Lot 2 on RP189017 |
| Zoning | Emerging Community, Limited Development |
| Area of Site (square meters) | 121 150 |
| Applicant | Farriers Creek Pty Ltd |
| Current Land Use | Residential |
| Proposed Land Use | Low density residential |

## General Description - Site and Surrounds

The subject land is bounded by Burpengary Creek. Lot 51 is cleared of vegetation, Lot 2 has been generally cleared for production purposes on the higher ground. Significant low density residential development has occurred to the south and northeast of Burpengary Creek. To the north and west are managed rural residential Lots. The precinct is bounded in the east by the M1 and to the west by the main North Coast Railway right of way and Morayfield Road to the north. To the south is Station Road and significant residential development. The isolated pockets of vegetation are not contiguous and therefore would not support a intense fire front.

The site is located at 120 Coutts Drive and 48 Ogilvy Road, Burpengary and is described as Lot 51 on RP82952 and Lot 2 on RP189017 within Moreton Bay Regional Council (Figure 1).

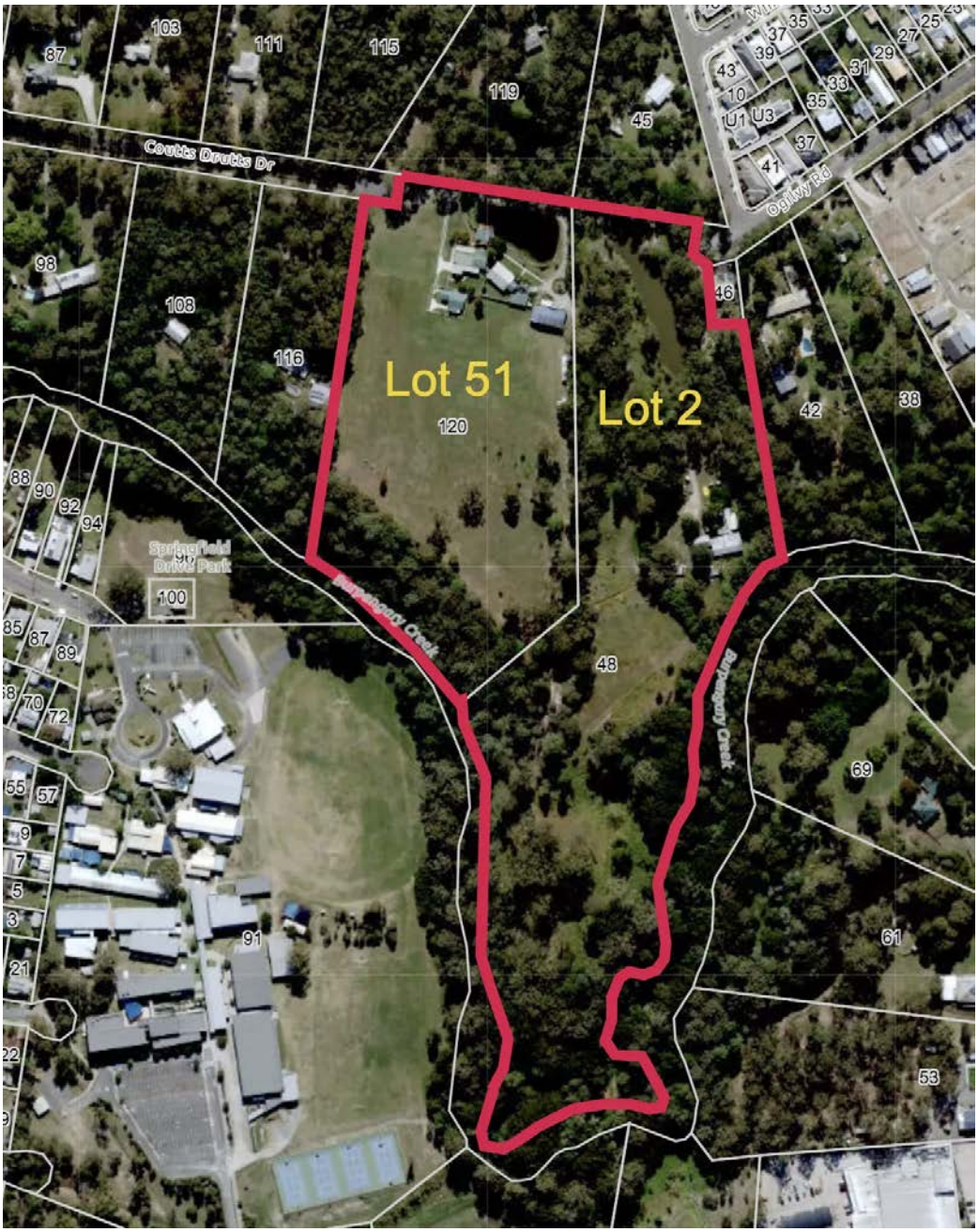


**Figure 1**

Lot 51 on RP82952 and Lot 2 on RP189017 has an area of 121 150 square metres and is aligned northsouth with a northeasterlyaspect (Figure 2).


**Figure 2**

Lot 51 on RP82952 and Lot 2 on RP189017 are currently zoned Emerging Community, Limited Development (Figure 3).

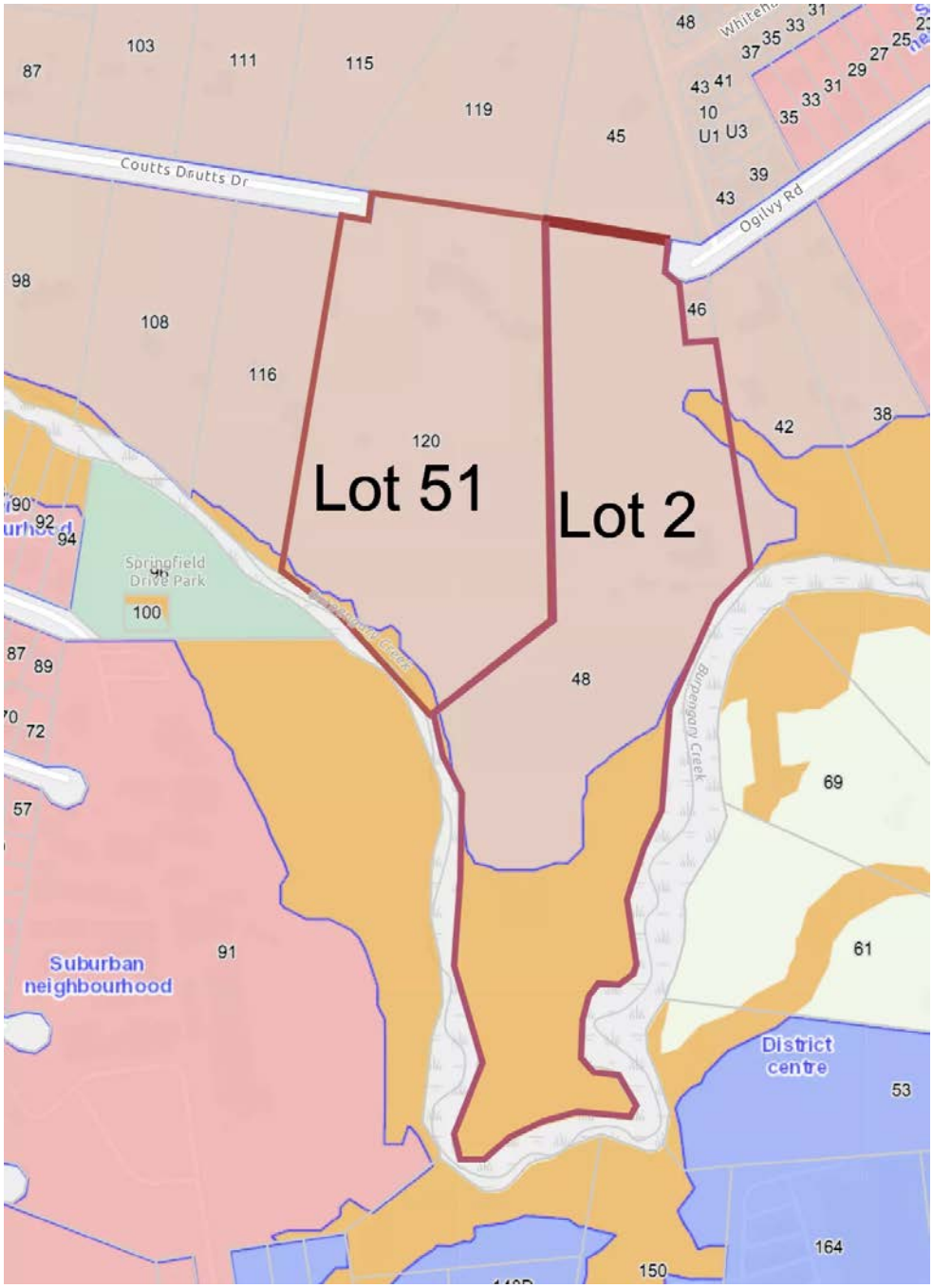


**Figure 3**

# PROPOSED DEVELOPMENT

The proposed development is a 91 Lot subdivision and included drainage, parkland and open space (Lots 900, 901, 902) (Figure 4).

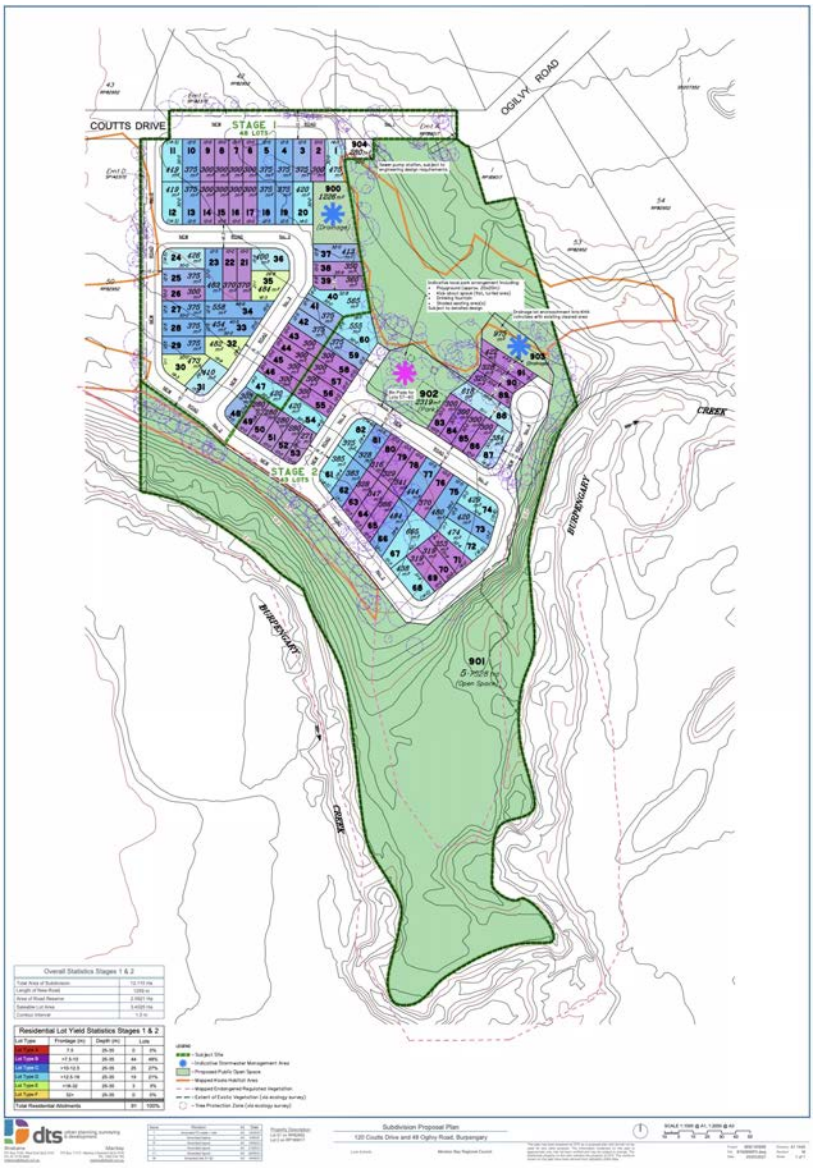


**Figure 4**

# SCOPE OF BUSHFIRE HAZARD ASSESSMENT

A reconfiguration of a lot has been proposed at 120 Coutts Drive and 48 Ogilvy Road, Burpengary, Lot 51 on RP82952 and Lot 2 on RP189017. 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 Moreton Bay Regional Council Bushfire Hazard Overlay Code, a detailed Bushfire Hazard Assessment has been prepared.

# UNDERSTANDING BUSHFIRE HAZARD

Bushfires are an intrinsic part of Australia's environment. Natural ecosystems have evolved with fire and the landscape, along with its biological diversity, has been shaped by both historic and recent fires. Many of Australia's native plants are fire prone and very combustible, while numerous species depend on fire to regenerate. Indigenous Australians have long used fire as a land management tool and it continues to be used to clear land for agricultural purposes and to protect properties from intense, uncontrolled fires. Historically, bushfires have caused loss of life and significant damage to property. While naturally occurring bushfires cannot be averted, their consequences can be minimised by implementing mitigation strategies and reducing the potential impact to areas which are most vulnerable.

## Bushfire Attack

Bushfire attack refers to the various methods in which bushfire may impact upon life and property and principally encompass:

- Direct flame contact;
- Ember and firebrand attack;
- Radiant heat; and
- Fire-driven wind (Figure 5).

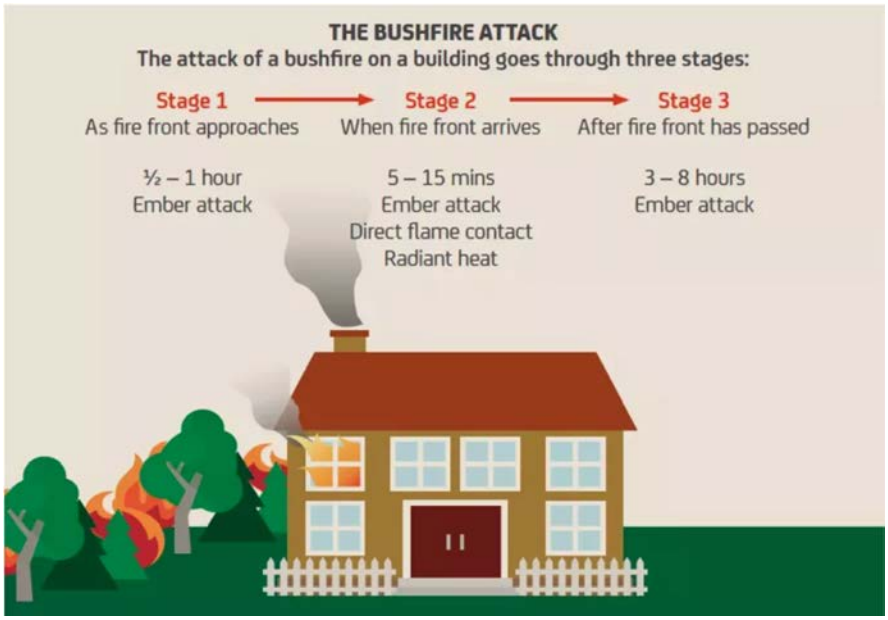


**Figure 5**

## Direct Flame Contact

Direct flame attack refers to flame contact from the main fire front, the flame that engulfs burning vegetation is the same flame that contacts the building. It is estimated that only 10 to 20 per cent of buildings lost to bushfire occur as a direct result of flame attack.

## Ember and Firebrand Attack

CSIRO research has shown that ember attack is the cause of up to 80% of house loss in Australia. The convective forces of bushfire raise burning embers into the atmosphere on prevailing winds and deposit them to the ground ahead of the fire front. Typically, ember attack occurs approximately 30 minutes prior to the arrival of the fire front and continues during the impact of the fire front and for several hours afterwards. Building loss via ember attack relates largely to the vulnerabilities and peculiarities of each building, its distance from the classifiable vegetation and whether someone is present to actively defend the building.

## Radiant Heat

Measured in kilowatts per m2, radiant heat is the heat energy released from the fire front which radiates to the surrounding environment, deteriorating rapidly over distance. In terms of impacts on buildings, radiant heat can pre-heat materials making them more susceptible to ignition. Radiant heat can also damage building materials such as window glazing, allowing openings into a building through which embers may enter.

## Fire Driven Wind

The convective forces of a bushfire typically result in strong fire-driven winds, which can lead to building damage. The typical effects of fire driven wind include conveyance of embers, damage from branches and debris hitting the building, as well as direct damage to vulnerable building components, such as lifting roofs and the breakage of windows.

# Vegetation

The Australian bush varies greatly around the country. There are regions of open woodlands, grassland savannas, dense rainforest. Different types of vegetation burn differently. Generally, fuel is classified as being fine (grasses and twigs that are less than 6 millimetres in diameter) or heavy (branches, logs or stumps). Finer fuels burn more easily, increasing the spread of the fire. Another key factor is fuel moisture content, or how dry the fuel is. The drier the fuel, the more easily it will burn. The dryness of the fuel depends on seasonal rainfall and temperatures.

# Topography

Fires burn faster uphill. This is due to the radiation and convection a fire creates preheating the fuel. A 10-degree increase in slope results in a doubling of the speed of the fire. Fire will spread up a 10-degree slope two times as fast as it will along flat ground (Figure 6). The aspect of a slope (direction that a sloping piece of land is facing) influences a fire's behaviour. Northern and western aspects receive more direct heat from the sun, drying both the soil and the vegetation more than on southern or eastern slopes. The fuels on northern and western aspects are often drier and less dense than fuels on slopes with a different aspect.

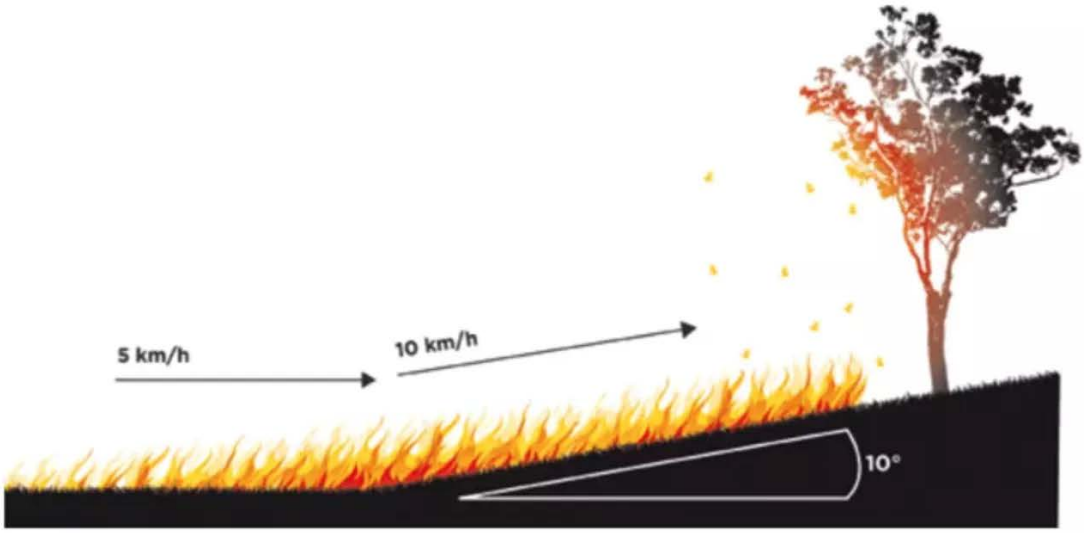


**Figure 6**

## Fire Weather

Fire weather affects bushfire risk levels on a daily, weekly or seasonal basis. The South-east Queensland weather pattern is dominated by a maritime effect. The most common winds are southeast and northeast, the latter being very common during the summer months as an afternoon sea breeze. The most severe fire weather in the area is associated with a northwest wind generated on the back of a high pressure system moving slowly from west to east or from a situation where there is intense low pressure activity in the southeast of Australia extending a trough into southern Queensland (Just, 1978). However, the frequency of these situations in the region is low, being generally of the order of one to two days or fewer per year. The exception can occur in bad fire seasons when fuel conditions are very dry as a result of prolonged dry periods. In Queensland, these bad fire seasons occur about once a decade and are infrequent when compared with the fire situation that prevails frequently in southern Australia.

Whilst an assessment of vegetation types, fuel loads, effective slope and other factors can be readily undertaken, fire weather can fluctuate across days, weeks and seasons and can have a significant impact on the potential for bushfire threat, as well as influence bushfire behaviour and intensity. The Forest Fire Danger Index (FFDI) is a commonly used method to readily advise the community of the likely ability of fire suppression based on fire weather, which is used to inform the Fire Danger Rating (FDR) System (Figure 7). It is important to maintain awareness as to the level of local fire danger during the fire season.

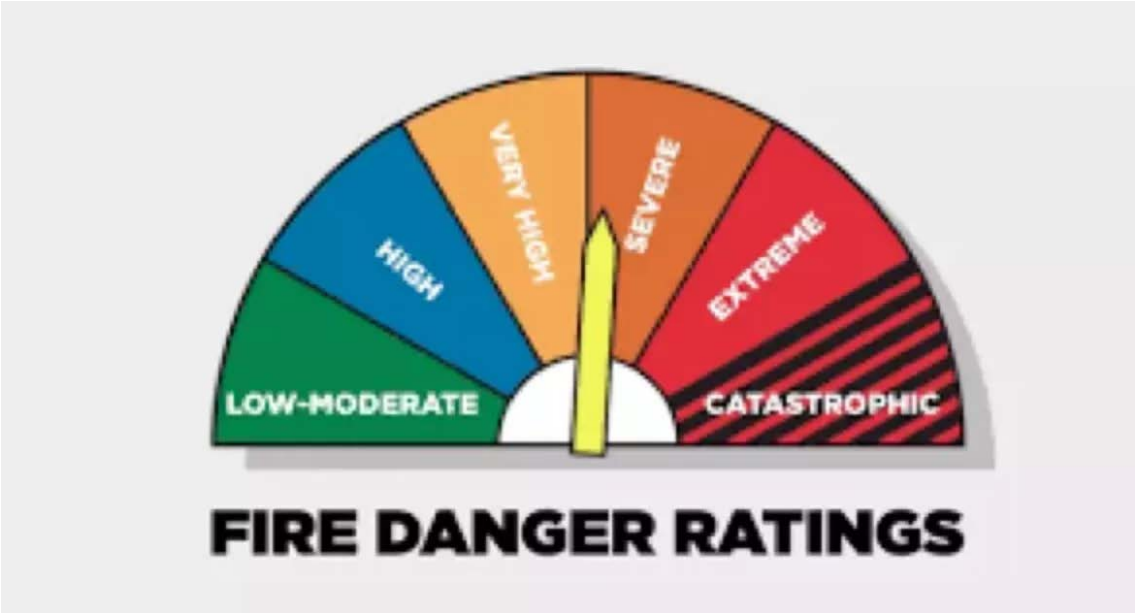
LOW-MODERATE
HIGH
VERY HIGH
SEVERE
EXTREME
CATASTROPHIC
FIRE DANGER RATINGS

**Figure 7**

# BUSHFIRE HAZARD ASSESSMENT

The State Government Single State Planning Policy (SPP) released in 2017, 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 Moreton Bay Regional Council *Bushfire Hazard Overlay Ma*p as being within Potential Bushfire Impact zone (Figure 8).

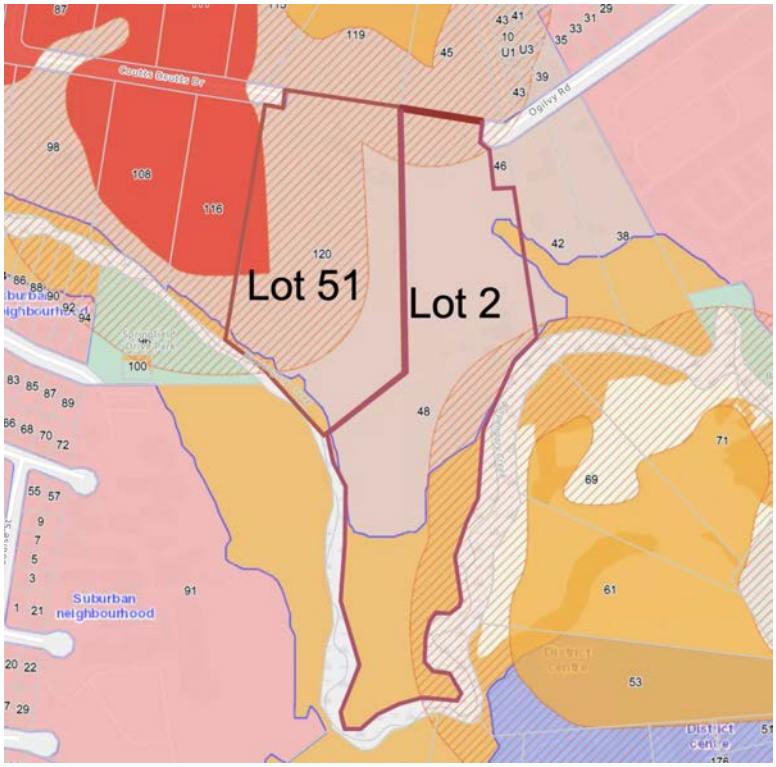


**Figure 8**

Bushfire hazard in Queensland is mapped as bushfire prone areas. This mapping forms part of the State Planning Policy Interactive Mapping System (SPPIMS). The mapping identifies the extent and level of the bushfire hazard across the state. Mapping is in accordance with the process described in 'A new methodology for state-wide mapping of bushfire-prone areas in Queensland', Leonard, J and Newnham, G et al (2014). The areas are mapped as either very high, high or medium potential bushfire intensity and include potentially hazardous vegetation that could support a significant bushfire. This vegetation is classified and mapped as having a vegetation hazard class. The SPP IMS does not identify any bushfire impact on Lot 51 on RP82952 and a limited impact at the eastern extent of Lot 2 on RP189017.

The MBRC Bushfire hazard overlay mapping under its planning scheme indicates areas of High hazard to the east and west. The Bushfire Resilient communities-technical Reference guide for the State Planning Policy State Interest "Natural Hazards, Risk and resilience – Bushfire (Oct 2019) requires where mapping is not of sufficient reliability, local governments may seek too either:

a) liaise with QFES to confirm and resolve identified mapping issues in state-wide bushfire hazard area maps, or

b) prepare local scale bushfire hazard area maps using improved local vegetation or slope mapping applying the same methodology as the state used in preparing the SPP IMS bushfire prone area mapping, as described in Section 4.2.

c) liaise with QFES to confirm and resolve identified mapping issues in state-wide bushfire hazard area maps, or

d) prepare local scale bushfire hazard area maps using improved local vegetation or slope mapping applying the same methodology as the state used in preparing the SPP IMS bushfire prone area mapping, as described in section 4.2.

e) The hazard as shown on the MBRC bushfire overlay mapping would indicate this has not been done and therefore the SPPIMS mapping is more relevant in for the existing vegetation (Figure 9)

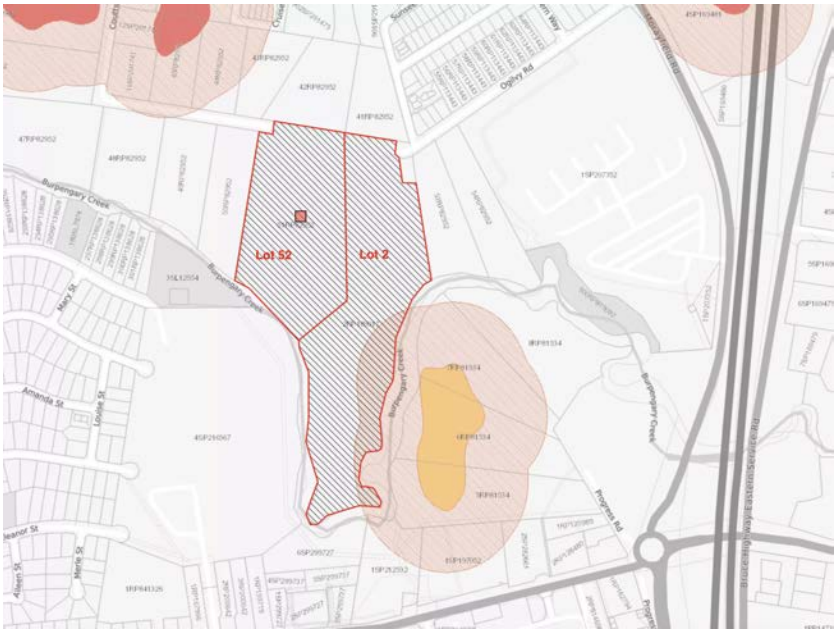


**Figure 9**

# LOCAL GOVERNMENT PROVISIONS

The Moreton Bay Regional Council Planning Scheme Version 4 came into effect on 27 June 2017 and incorporated Bushfire Hazard Overlay Mapping, Overlay Code and Bushfire Hazard Planning Scheme Policy. An Assessment has also been conducted against the applicable Overlay Code.

# SITE ASSESSMENT

An onsite inspection and assessment were conducted at 120 Coutts Drive and 48 Ogilvy Road, Burpengary on 24 May, 2021 to observe and record the relevant information to determine the bushfire hazard in accordance with the requirements of the Moreton Bay Regional Council Planning Scheme Version 4.

## Vegetation

The *Public Safety Business Agency (PSBA) State-wide Bushfire Hazard (Bushfire Prone Area)* mapping identifies the original vegetation on and about this site as Regional Ecosystem (RE) 12.5.3 Eucalyptus racemosa subsp. racemosa woodland on remnant Tertiary surfaces  Figure 3 shows the extent of that original vegetation and demonstrates that as a result of past management and rural residential development no significant areas of RE 12.5.3 remain. The Lots adjoining or adjacent to the west and north have discrete, non - contiguous areas of non - remnant vegetation with managed understory dissected by internal roads  and trails and secondary infrastructure (Figure 10).


**Figure 10**

The original vegetation on and about Burpengary Creek is identified as Regional Ecosystem (RE) 12.3.16 Gallery rainforest (notophyl vine forest) on alluvial plains - Fire sensitive and not considered flammable. (Figure 11).


**Figure 11**

The proposed development will have a perimeter road of minimum 15 metres from the vegetation on Burpengary Creek. The QFES defendable space calculator yields a BAL - Low. (Appendix 2)

# Classified Vegetation

Australian Standard, *Construction of Buildings in Bushfire Prone Areas* (AS 3959–2018*)* requires any classified vegetation within 100 metres of the proposed works must be assessed. The vegetation on Lot 51 on RP82952 and Lot 2 on RP189017 and surrounding properties has been cleared or fragmented by past management and development of rural residential and low density residential lots. The fragmentation of the surrounding vegetation and the non - flammability of the vine forest type has removed any bushfire impacts on the proposed development

# 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
- External

## Internal

No significant vegetation remains on Lot 51 RP82952 (Photo 1 and 2) and Lot 51 (Photo 3, 4, and 5).

**Photo 1 (Lot 51 -East from Coutts Rd)**

**Photo 2 (Lot 51 - West from Burpengary Creek)**

**Photo 3 (Lot 51 - Park Area)**

**Photo 4 (Lot 51 - Park Area)**

**Photo 5 (Gallery Rainforest Burpengary Creek)**

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External

The adjoining Lots to the east are occupied rural residential lots predominantly maintained in a managed low hazard condition (Photo 6 and 7).

**Photo 6 (Lot 50 on RP82952)**

**Photo 7 (Lot 50 on RP82952)**

A discrete area of vegetation to the south of Burpengary Creek is identified on the State Planning Policy Interactive Mapping System (SPPIMS). The mapping identifies the extent and level of the bushfire hazard across the state. The area of the vegetation is approximately 6 000 square meters. Section 2 of the *Australian Standard AS3959 -2018 - Construction of buildings in Bushfire prone areas - 2.2.3.2 (a)* allows that any area of less than 1 ha and not within 100 metres of any other vegetation being classified vegetation can be excluded from consideration (Figure 12).


**Figure 12**

# ASSESSMENT OF BUSHFIRE HAZARD

Australian Standard - *Construction of Buildings in Bushfire Prone Areas (AS 3959–2018)* requires that any classified vegetation within 100 metres of the proposed works must be assessed. Figure 13 shows the extent of the Non Classified Vegetation - Regional Ecosystem (RE) 12.3.16  Gallery rainforest (notophyl vine forest)

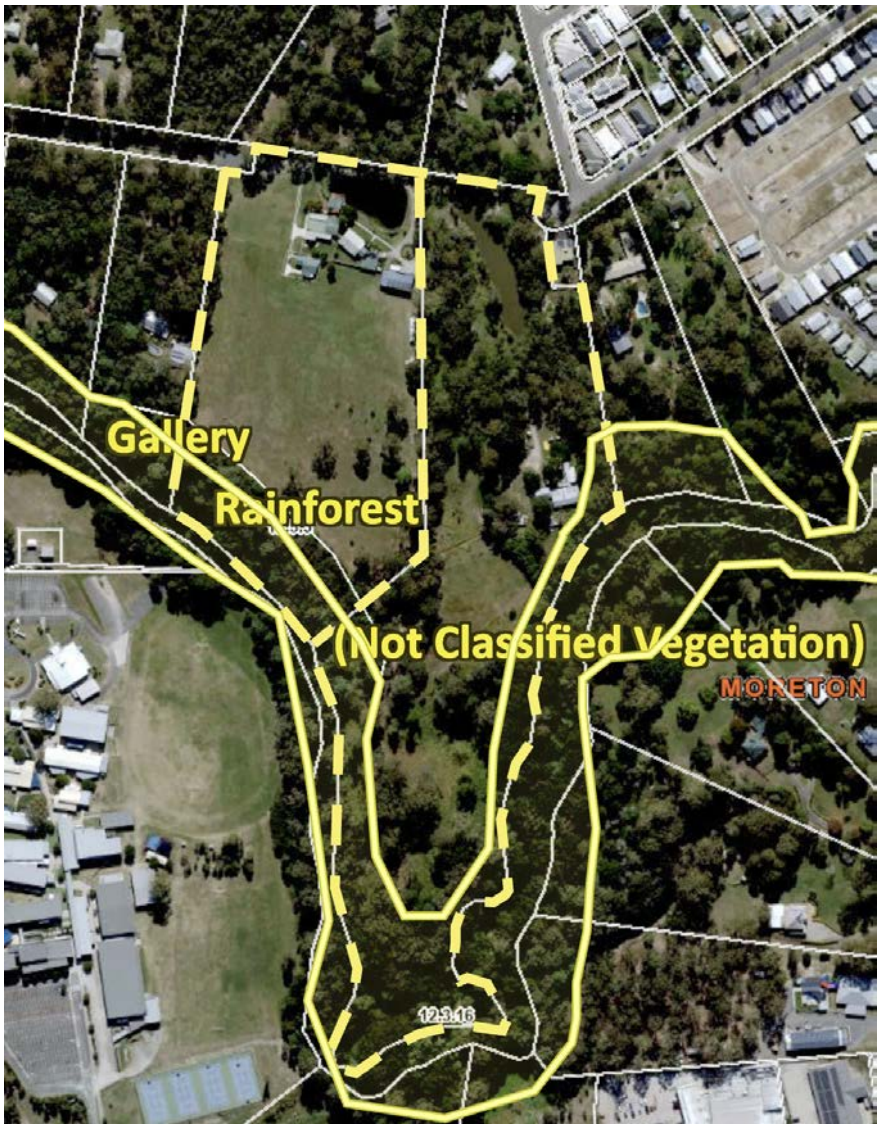


**Figure 13**

## Potential Radiant Heat Flux

The Australian Standard, Construction of Buildings in Bushfire Prone Areas (AS 3959-2018), provides a suitable methodology for identifying assessable vegetation and determining the requirements for the construction of buildings in order to improve their resistance to bushfire attack from burning embers, radiant heat, flame contact and a combination of the three attack forms.

## Bushfire Protection Measures in Combination

Figure 14 illustrates that effective protection against bushfire can only be achieved by the integration of multiple measures. Removing the bushland (hazard) will remove the risk but this option is neither necessarily possible nor desirable. An acceptable level of protection of life and property can be achieved while still retaining and protecting biodiversity and the natural values of the bushland.


**Figure 14**

# BUSHFIRE RISK 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 defendable space;
- Appropriate landscaping; and
- The proposed lot size of the development will constrain the development of any additional bushfire hazard.

### Clearing

The site proposed for residential Lots carries no significant vegetation. Lot 902 will be managed parkland. Lot 901 Open space consists of remnant Regional Ecosystem 12.3.16.

### Landscaping

No hazardous vegetation will be established within the residential development,

## Site Access and Egress

The intent of design requirements for roads is to provide safe egress for residents and access for attending firefighting vehicles. A road system that is compliant with guideline measures provides fire services with easier access to buildings, a safe retreat for firefighters and residents, and can provide a fire control line where hazard reduction and back burning can take place. In determining safe access to a site, consideration is given to the fire brigade vehicles which are required to access public and private roads. Given the size of these vehicles and the poor visibility in which they often operate, roads need to be designed to specific requirements, including road width, grade, cross-fall, weight capacity, passing bays and turnaround areas, all of which may vary depending on whether it is a perimeter, access, cul-de-sac or battle-axe road type.

## Fencing

Fencing materials have the capacity to contribute to fire spread and intensity. No specific construction is required.

## Water Supply

Providing a sufficient water supply provides firefighters and residents with the appropriate levels of water to undertake building defense. There are two options in which a house site can be supplied with a sufficient water supply; from either reticulated water accessible via a hydrant, or a dedicated static water supply. Reticulated water will be supplied to the development meeting the required statutory standards.

# Community Awareness

Property owners are responsible for developing their own knowledge and understanding of the level of bushfire risk specific to their respective properties. A household bushfire plan is required and must take account of matters such as where occupants are during the day (at home, work or school), if any occupants require special assistance (i.e. infants, the elderly or the ill), evacuation routes available, evacuation destinations, property maintenance and preparation and arrangements for pets. Planning ahead of any perceived bushfire event is essential.

The warning systems now implemented by Emergency Services and Local Authorities provide timely information and advice to occupants. Understanding what to do in the event of bushfire emergency is critical. Prior knowledge as to the steps to take during the lead up to a fire event, during the passage of bushfire, and what to do immediately after the fire front has passed is critical.

The Rural Fire Service Queensland (RFSQ) 'Bushfire Survival Plan' provides detailed information on how to prepare for the bushfire season and how to take action to survive in the event of bushfire. A copy of this publication can be obtained from the RFSQ website. (https://ruralfire.qld.gov.au/Fire_Safety_and_You/Bushfire_Survival_Plan/)

# SUMMARY OF RECOMMENDATIONS

This report includes a number of recommendations regarding bushfire risk mitigation in accordance with AS3959-2018 and Moreton Bay Regional Council Planning Scheme Version 4. A summary of recommendations made by this report is included below.

| RECOMMENDATIONS |
| --- |
| 1. There is no classified vegetation impacting on the proposed development on Lot 51 on RP82952 and Lot 2 on RP189017. The Australian Standard AS3959- 2018 - *Construction of buildings in bushfire prone areas* has not been triggered on this site. |
| 2. The vegetation on 120 Coutts Drive and 48 Ogilvy Road, Burpengary will be maintained in managed low hazard state. |
| 3. Fencing on Lot 51 on RP82952 and Lot 2 on RP189017 will be constructed of non – combustible materials.Ingress and egress for residents and emergency services will be via Coutts Drive |
| 4. Ingress and egress for residents and emergency services will be via Coutts Road. |
| 5. Reticulated water will be provided to the reconfiguration. |

# CONCLUSIONS

This report considers the bushfire mitigation measures required for 120 Coutts Drive and 48 Ogilvy Road, Burpengary, Lot 51 on RP82952 and Lot 2 on RP189017. Based upon detailed analysis of the potential future bushfire hazard no specific mitigation is required. It is significant to note that bushfire remains a natural process which is endemic to the Australian bush and it remains subject to a range of contributing factors which are variable on a daily and hourly basis. It is extremely difficult to predict the behaviour and intensity of a fire event at any given time. Therefore, it remains of the upmost importance that residents within identified bushfire prone areas obtain knowledge and remain aware of their options in the event of a bushfire to ensure the preservation of both life and property.

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# Appendices

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APPENDIX 1

# CODE COMPLIANCE ASSESSMENT

| Performance Outcomes | Acceptable Outcomes | Compliance |
|---|---|---|
| **PO96**<br>Development:<br>**(a)** minimises the number of buildings and people working and living on a site exposed to bushfire risk;<br>**(b)** ensures the protection of life during the passage of a fire front;<br>**(c)** is located and designed to increase the chance of survival of buildings and structures during a bushfire;<br>**(d)** minimises bushfire risk from build up of fuels around buildings and structures;<br>**(e)** ensure safe and effective access for emergency services during a bushfire. | **E96.1**<br>Buildings and structures are:<br>(a) not located on a ridgeline;<br>(b) not located on land with a slope greater than 15% (see Overlay map - Landslide hazard);<br>(c) dwellings are located on east to south facing slopes<br>**E96.2**<br>Buildings and structures have contained within the site:<br>(a) a separation from classified vegetation of 20m or the distance required to achieve a bushfire attack level (BAL) at the building, roofed structure or fire fighting water supply of no more than 29, whichever is the greater;<br>(b) a separation from low threat vegetation of 10m or the distance required to achieve a bushfire attack level (BAL) at the building, roofed structure or fire fighting water supply of no more than 29, whichever is the greater;<br>(c) a separation of no less than 10m between a fire fighting water supply extraction point and any classified vegetation, buildings and other roofed structures; | No Bushfire impact. |

| Performance Outcomes | Acceptable Outcomes | Compliance |
|---|---|---|
| | (a) an area suitable for a standard fire fighting appliance to stand within 3m of a fire fighting water supply extraction point; and<br>(b) an access path suitable for use by a standard fire fighting appliance having a formed width of at least 4m, a cross-fall of no greater than 5%, and a longitudinal gradient of no greater than 25%:<br>i. to, and around, each building and other roofed structure; and<br>ii. to each fire fighting water supply extraction point. | N/A |
| **PO97**<br>Development and associated driveways and access ways:<br>**(a)** avoid potential for entrapment during a bushfire;<br>**(b)** ensure safe and effective access for emergency services during a bushfire;<br>**(c)** enable safe evacuation for occupants of a site during a bushfire. | **E97**<br>A length of driveway:<br>(a) to a road does not exceed 100m between the most distant part of a building used for any purpose other than storage and the nearest part of a public road;<br>(b) has a maximum gradient no greater than 12.5%;<br>(c) have a minimum width of 3.5m; accommodate turning areas for fire fighting appliances in accordance with Qld Fire and Emergency Services' Fire Hydrant and Vehicle Access Guideline. | N/A |
| **PO98**<br>Development provides an adequate water supply for fire-fighting purposes. | **E98**<br>(a) a reticulated water supply is provided by a distributer retailer for the area or; | Complies |

| Performance Outcomes | Acceptable Outcomes | Compliance |
|---|---|---|
| | (b) where not connected to a reticulated water supply, on-site fire fighting water storage containing not less than 10 000 litres (tanks with fire brigade tank fittings, swimming pools) is located within 10m of buildings and structures.<br>(c) Where a swimming pool is the nominated on-site fire fighting water storage source, vehicle access is provided to within 3m of that water storage source.<br>(d) Where a tank is the nominated on-site fire fighting water storage source, it includes:<br>i. a hardstand area allowing medium rigid vehicles (15 tonne fire appliance) access within 6m of the tank;<br>ii. fire brigade tank fittings, comprising 50mm ball valve and male camlock coupling and, if underground, an access hole of 200mm (minimum) to accommodate suction lines. | |
| **PO99**<br>Development:<br>**(a)** does not present unacceptable risk to people or environment due to the impact of bushfire on dangerous goods or combustible liquids;<br>(b) does not present danger or difficulty to emergency services for emergency response or evacuation. | **E99**<br>Development does not involve the manufacture or storage of hazardous chemicals. | N/A |

QUEENSLAND BUSHFIRE PLANNING

# APPENDIX 2

| SPP Bushfire Separation Distance Calculator | | | |
|---|---|---|---|
| VARIABLE DESCRIPTION | VARIABLE | UNITS | VALUE |
| *Input Values* | | | |
| FIRE WEATHER SEVERITY | FDI | | 55.00 |
| VEGETATION HAZARD CLASS | VHC | - | 1.1 Complex mesophyll to notophyll vine forests |
| REMNANT STATUS | - | - | Remnant |
| SLOPE TYPE (UPSLOPE OR DOWNSLOPE) | ST | - | Downslope |
| EFFECTIVE SLOPE UNDER THE HAZARDOUS VEGETATION | eSlope | degrees | 5.00 |
| SLOPE BETWEEN SITE AND HAZARDOUS VEGETATION | θ | degrees | 2.00 |
| DISTANCE OF THE SITE FROM HAZARDOUS VEGETATION | d | m | 15.00 |
| *Output Values* | | | |
| SURFACE FUEL LOAD | - | t/ha | 2.60 |
| NEAR SURFACE FUEL LOAD | - | t/ha | 0.00 |
| BARK FUEL LOAD | - | t/ha | 0.00 |
| ELEVATED FUEL LOAD | - | t/ha | 0.00 |
| TOTAL OVERALL FUEL LOAD | W | t/ha | 2.60 |
| TOTAL SURFACE FUEL LOAD | w | t/ha | 2.60 |
| POTENTIAL FIRE LINE INTENSITY | I | kW/m | 0 |
| RADIANT HEAT FLUX | q | $kW/m^2$ | 0.00 |
| BUSHFIRE ATTACK LEVEL (AS 3959-2009) | BAL | - | BAL-LOW |

QUEENSLAND BUSHFIRE PLANNING

## Appendix 2

# About the Report Author

This Report was prepared by Bushfire Specialist Bernard Trembath. Bernard has extensive practical knowledge and experience in bushfire planning and management and an intimate working knowledge of Queensland vegetation and climate, particularly in relation to fire prediction and behaviour.

Prior to establishing Queensland Bushfire Planning in 2014, Bernard was the Regional Manager Rural Operations, Brisbane Region, for Queensland Fire and Emergency Services (QFES). As Regional Manager, Bernard was responsible for bushfire mitigation within the Brisbane Region, working with Local Governments and many other organisations to help reduce the impacts of bushfires. Bernard was also the QFES bushfire planning specialist, providing specialist bushfire planning and management advice on behalf of QFES.
Since 2014, Bernard has provided his specialist bushfire planning knowledge to advise and assist a large number of individuals, companies and government agencies. His happy clients include: