



BUSHFIRE HAZARD ASSESSMENT (BHA)

Property

45 Ogilvie Road, Burpengary
Lot 41 on RP82952

Farriers Creek No. 2 Pty Ltd
October 2021

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

qldbushfireplanning.com.au

Disclaimer

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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 subdivision proposal (RoL), one (1) Lot into fifteen (15) Lots plus Open Space, has been proposed at 45 Ogilvie Road, Burpengary, Lot 41 on RP82952. The subject site has been identified in the Queensland State Planning Policy (2017) as being within a potential bushfire impact zone. 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. This report includes a number of recommendations regarding bushfire risk mitigation in accordance with AS3959-2018 and Moreton Bay Regional Council Planning Scheme V4.

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. The Bushfire Hazard Assessment (BHA) for Lot 41 on RP82952, 45 Ogilvie Road, Burpengary has been determined as **Low** as per *AS 3959-2018 Appendix B: Method for Determining The Bushfire Attack Level (BAL) – Method 2 (Normative)*. Appendix B - *Detailed Method for Determining the Bushfire Attack Level (BAL) – Method 2 (Normative)* indicates that at a separation distance of greater than 100 metres buildings located on the proposed site will not be exposed to a radiant heat flux.

INTRODUCTION

Queensland Bushfire Planning has been engaged on behalf of Farriers Creek No. 2 Pty Ltd to conduct a site-based Bushfire Hazard Assessment in relation to a subdivision proposal (RoL), one (1) Lot into fifteen (15) Lots plus Open Space, development at 45 Ogilvie 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.

SITE DESCRIPTION AND DETAILS

Site Address	45 Ogilvie Road, Burpengary
Local Government	Moreton Bay Regional Council
Real Property Description	Lot 41 on RP82952
Zoning	Emerging Community
Area of Site (square meters)	10 445
Applicant	Farriers Creek No. 2 Pty Ltd
Current Land Use	Residential
Proposed Land Use	Residential

The site is located at 45 Ogilvie Road, Burpengary and is described as Lot 41 on RP82952 within Moreton Bay Regional Council (Figure 1).



Figure 1

- + Bushfire assessments
- + Property vegetation assessments
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Lot 41 on RP82952 has an area of 10 445 square metres and is aligned north - south with a southerly aspect (Figure 2).



Figure 2

Lot 41 on RP82952 is currently zoned Emerging Community (Figure 3).



Figure 3

PROPOSED DEVELOPMENT

The proposed development is a subdivision proposal (RoL), one (1) Lot into fifteen (15) Lots plus Open Space (Figure 4).



Figure 4

SCOPE OF BUSHFIRE HAZARD ASSESSMENT

A reconfiguration of a lot has been proposed at 45 Ogilvie Road, Burpengary, Lot 41 on RP82952. 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.

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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).

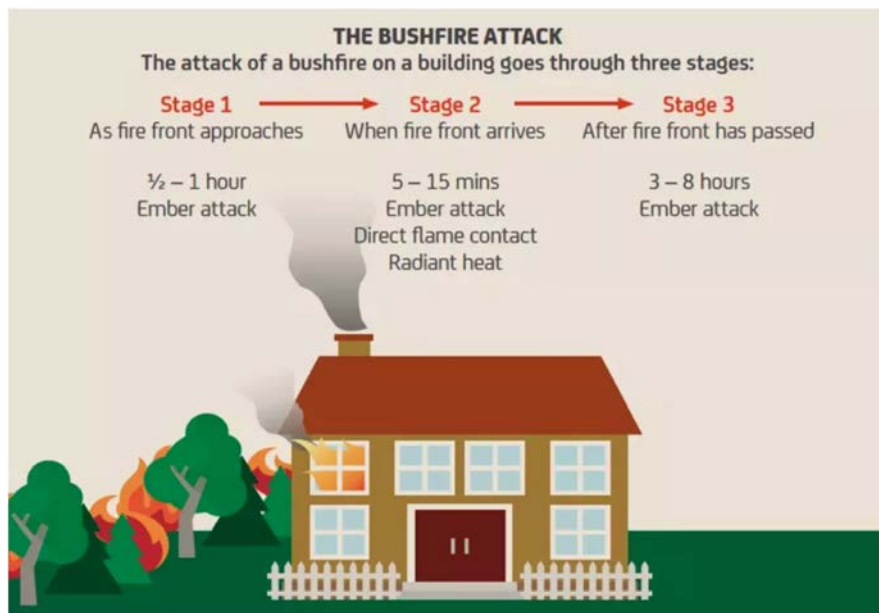


Figure 5

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.

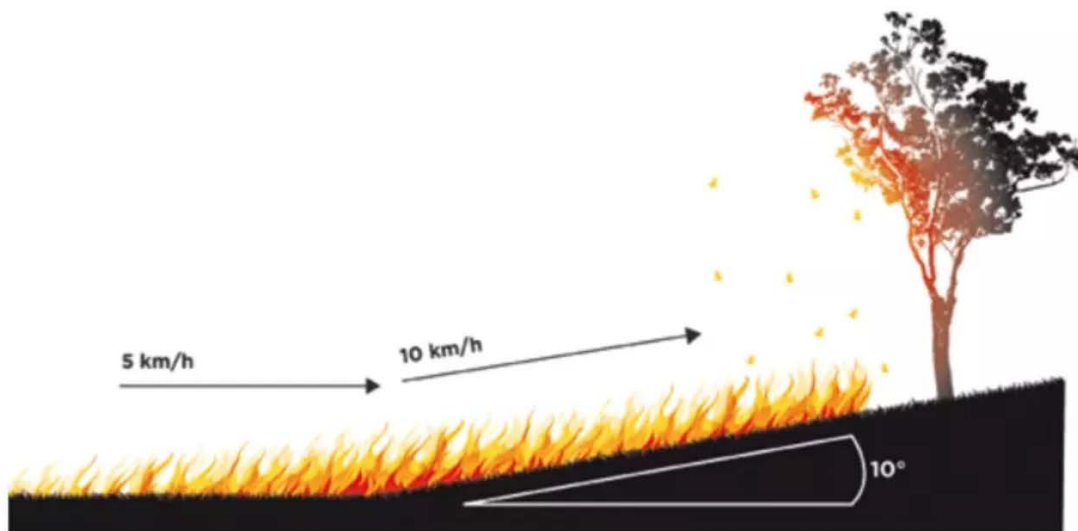


Figure 6

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.

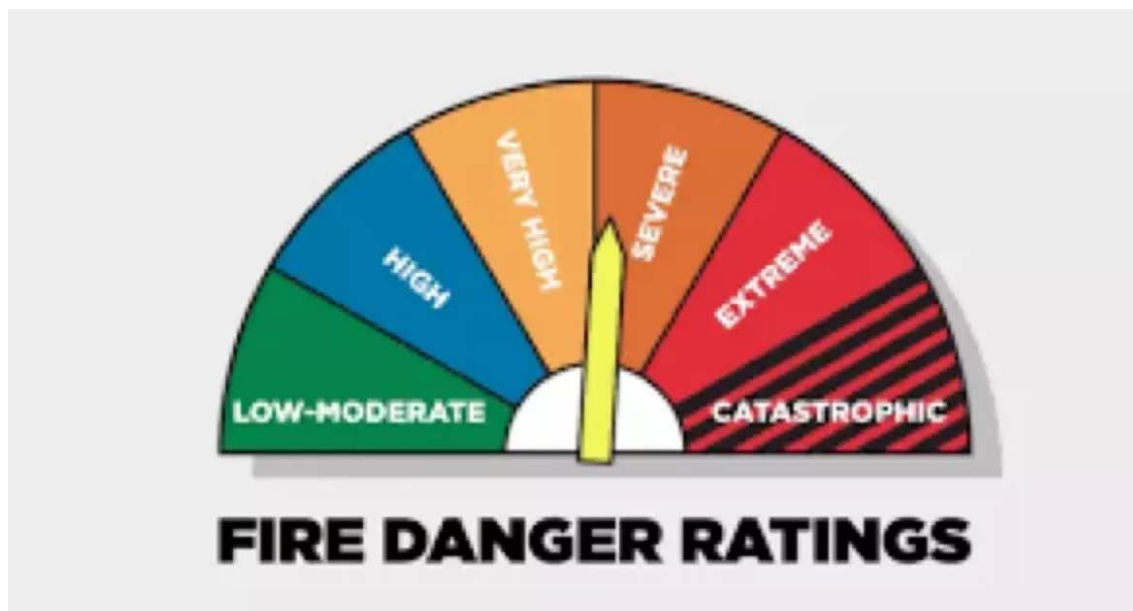


Figure 7

BUSHFIRE HAZARD ASSESSMENT

The subject site is identified on the Moreton Bay Regional Council *Bushfire Hazard Overlay Map* as being within potential bushfire impact zone, requiring the bushfire hazard impacts be addressed (Figure 8).

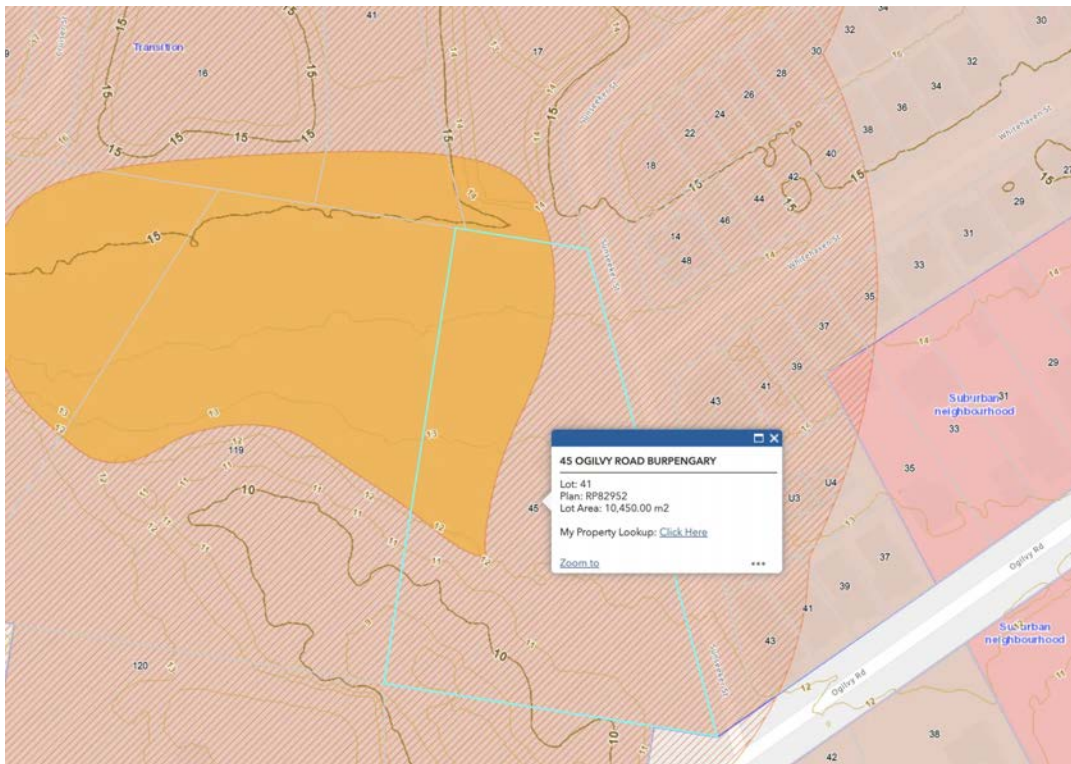


Figure 8



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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 SPP mapping supports the physical on ground assessment conducted by Queensland Bushfire Planning in the preparation of this report (Figure 9).



Figure 9

We note the requirement to establish a Bushfire Attack Level (BAL) for a proposed subdivision on the Lots noted above (the “Subject Lots”) given the designation by both MBRC of some of the area concerned as a “bushfire prone area” (BPA) in terms of Council’s Planning Scheme and Section 12 of Building Regulation 2006.

LOCAL GOVERNMENT PROVISIONS

The Moreton Bay Regional Council Planning Scheme Version 4 came into effect on 29 January 2020 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 45 Ogilvie Road, Burpengary on 27 October, 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. The mapping requires:

- a supporting Bushfire Hazard Assessment (BHA) to accompany the Development Application;
and
- Triggers the Building Code of Australia (BCA) and the requirement to comply with AS3959-2018 *Construction of buildings in bushfire prone areas*, providing ‘deemed to satisfy’ construction solutions.

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 *Eucalyptus tereticornis* ± *Eucalyptus siderophloia*, *Corymbia intermedia* open forest on alluvial plains usually near coast (Photo 1).



Photo 1

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 41 on RP82952 and surrounding properties is disturbed and modified non - remnant type (Photo 2, 3, 4)



Photo 2 (Lot 42 adjoining to west)

Lot 42 is a managed rural residential lot, the vegetation being maintained and managed in a low hazard condition. The condition of the landscape was confirmed by Queensland Bushfire Planning through the conduct of an onsite inspection.



Photo 3 (adjoining parkland to north)



Photo 4 (Lot 2 adjoining to south)

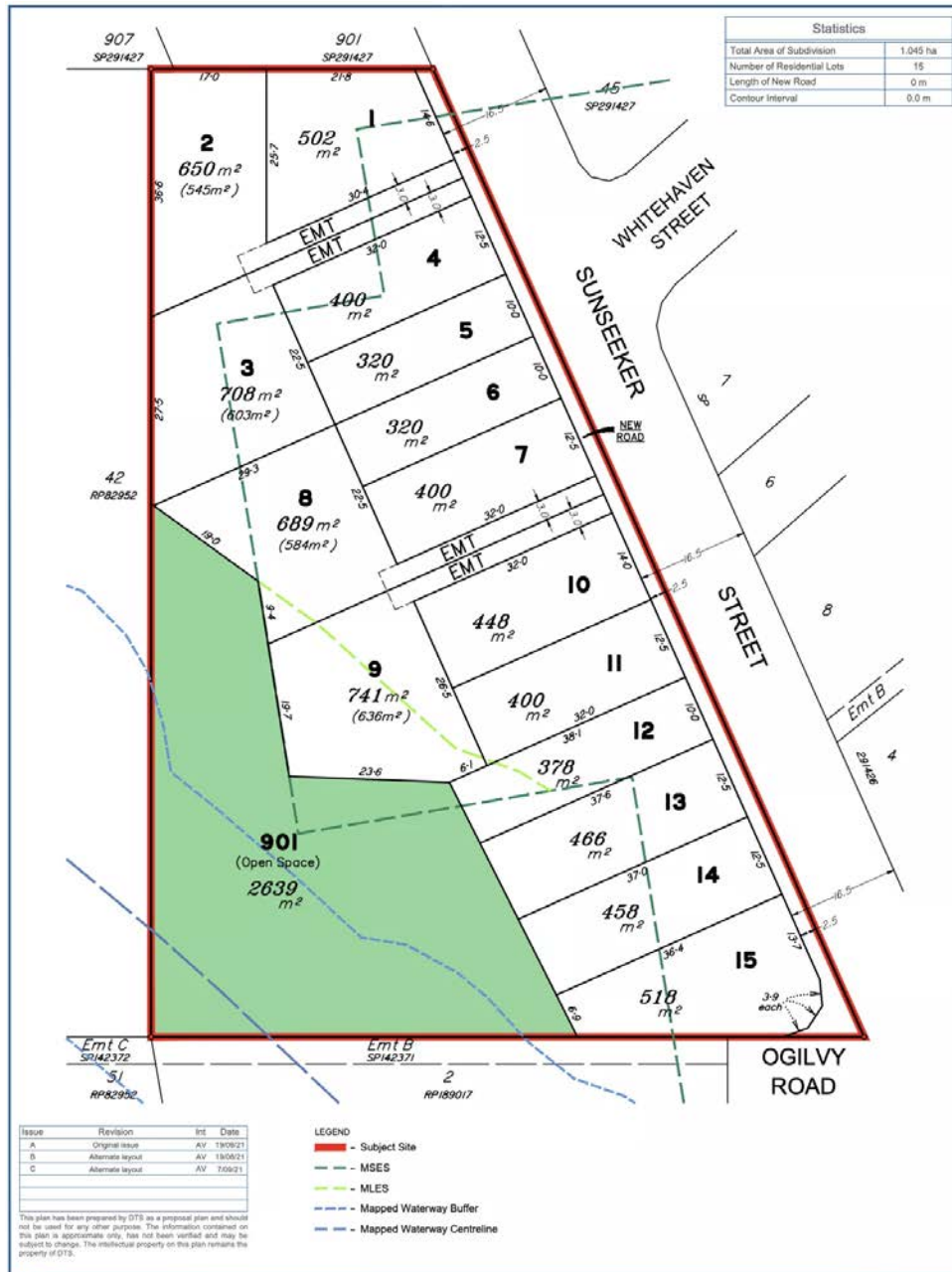
Risk Analysis

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 classified hazardous vegetation will remain on the development site. The Open Space area (Lot 901) will be an area of less than 1Ha (2 639 square meters) (Figure 9).. The Australian Standard for building in bushfire prone areas (AS3959 - 2018) S2.2.3.2 states "*Exclusions - Low threat vegetation and non - vegetated areas (b) Single areas of vegetation less than 1Ha in area and not within 100 metres of other areas of vegetation being classified vegetation*".



dts urban planning, surveying & development

Subdivision Concept Plan
45 Ogilvie Road, Burpengary

SCALE 1:500

0 10 20 30

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Lot 41 on RP62952
Moreton Bay Regional Council
CFMG

Project: BNE180387
File: B180387P2.dwg
Date: 7/09/2021

Drawing: A3 6315
Revision: C
Sheet: 1 of 1

Figure 9

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External

An onsite assessment and ground truthing conducted on 27 October, 2021 confirmed the anomalies between the hazard mapping of MBRC and the State Planning Policy (SPP) bushfire hazard mapping. The SPP mapping is based on a methodology outlined in *A new methodology for State-wide mapping of bushfire prone areas in Queensland* (CSIRO 2014). 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 (Figure 10).



Figure 10

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 11 shows the extent of the 100-metre separation zone about Lot 41 (BAL Impact Zone).



Figure 11

It is noted that a low density residential development has been proposed for Lot 2 on RP189017 and Lot 51 on RP82952 adjoining to the south (Figure 12).

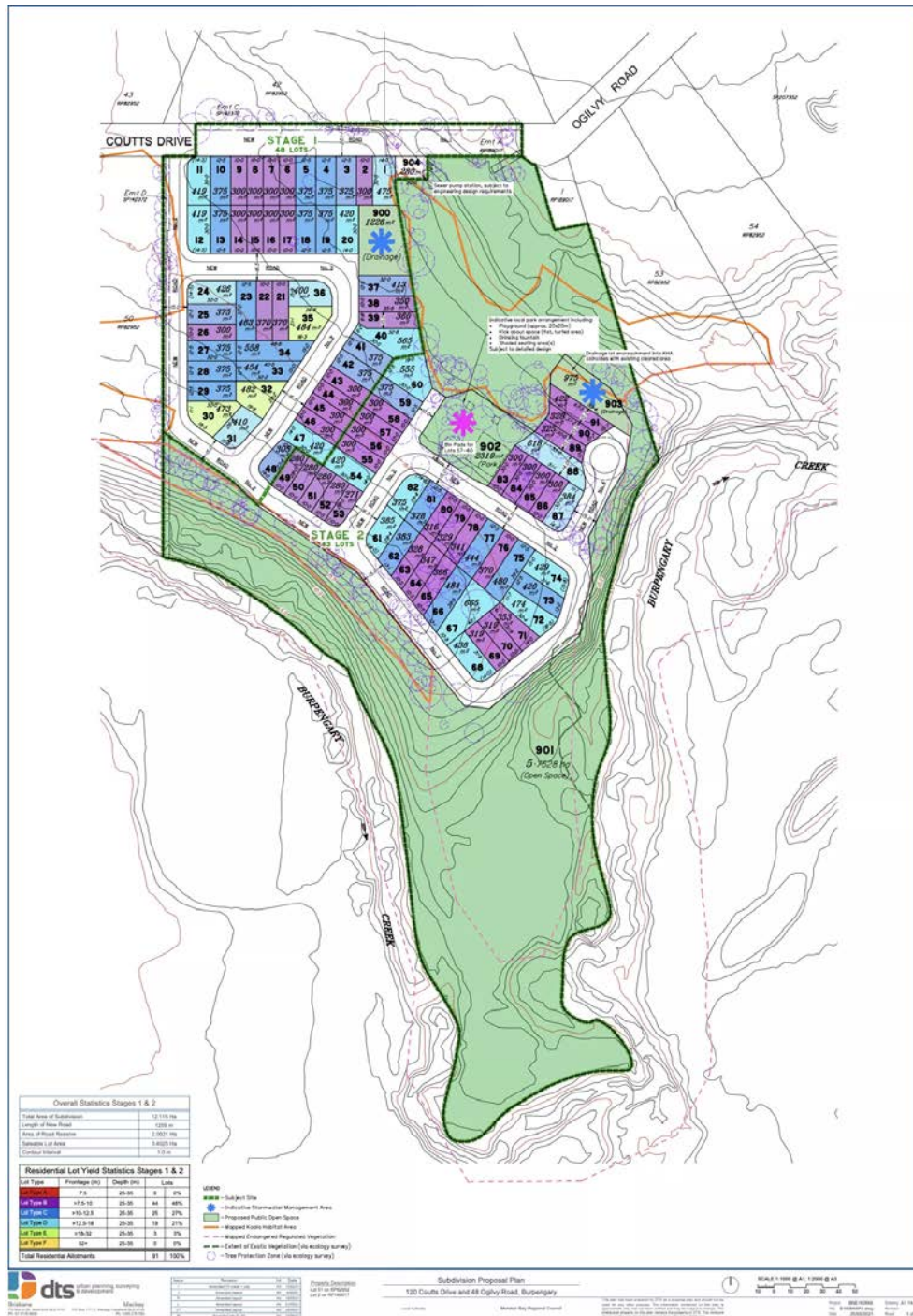


Figure 12

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The removal of the native vegetation from Lot 41 on RP82952, 45 Ogilvie Road, Burpengary, the fragmentation of the wider landscape by public and private infrastructure and the reduction in ground fuels has removed the bushfire threat to people and property. There is no evidence of recent fire activity. Assessable vegetation is measured as a horizontal distance from the proposed works and is not restricted to the Lot on which the works will be carried out. Where the assessable vegetation is on adjoining lands the distance is measured to the nearest classified vegetation. No significant classified vegetation has been identified as required by *Australian Standard - Construction of Buildings in Bushfire Prone Areas (AS 3959-2018)* "any classified vegetation within 100 metres of the proposed works must be assessed."

Conclusion and Recommendations

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.

The Bushfire Hazard Assessment (BHA) for Lot 41 on RP82952, 45 Ogilvie Road, Burpengary has been determined as **Low** as per *AS 3959- 2018 Appendix B: Method for Determining The Bushfire Attack Level (BAL) – Method 2 (Normative)*.

Appendix B - *Detailed Method for Determining the Bushfire Attack Level (BAL) – Method 2 (Normative)* indicates that at a separation distance of greater than 100 metres buildings located on the proposed site will not be exposed to a radiant heat flux.



Appendices

Appendix 3

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:



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