
BUSH FIRE ASSESSMENT REPORT

Lot 69, 70 and 71 DP 230448

5-7 McDermott Avenue & 1 Phillip Street Goonellabah

Proposed three storey 20 unit residential development and strata subdivision, and possible consolidation of existing three allotments into one allotment

Section 100B Rural Fires Act

Prepared for: David McGrath

Date: 2 February 2024

Reference: 23/159

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A	12.08.2023	Final report	Patrick Thornton	Peter Thornton
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1.0 EXECUTIVE SUMMARY

This report has been prepared to assess the proposed three storey 20 unit residential building, strata subdivision and possible consolidation of existing three lots at 5-7 McDermott Avenue and 1 Phillip Street Goonellabah, to demonstrate compliance with Planning for Bushfire Protection 2019 (PBP2019) and accompany an application for a Bush Fire Safety Authority.

The subject property is located on mapped bushfire prone land. The assessment shows the mapping is not accurate as the subject site and surrounding area for a distance greater than 100m has been assessed as managed land. As such, the development will be located greater than 100m from Category 1 or 2 bushfire hazard, and greater than 50m from a grassland hazard.

Accordingly, the buildings will be BAL Low (construction) and no specific bushfire conditions are applicable pursuant to PBP2019, although a landscaping condition for the site has been included to ensure the site has continuity of bushfire management between the buildings and the bushfire hazard. The landscape concept plan has been reviewed with comments provided relating to amendments required for the final detailed landscape plans to be submitted to the consent authority for approval.

It is recommended the property owner and occupants familiarise themselves with the relevant bushfire preparation and survival information on NSW Rural Fire Service website www.rfs.nsw.gov.au. The following table is provided as a summary of the recommendations and method of assessment for each consideration relating to PBP 2019.

MEASURE	RECOMMENDATION	METHOD OF ASSESSMENT
Construction Standards	No specific bushfire requirement	Acceptable Solution
APZ Required	No specific bushfire requirement	Acceptable Solution
Water Supply	No specific bushfire requirement	Acceptable Solution
Electricity Supply	No specific bushfire requirement	Acceptable Solution
Gas Supply	No specific bushfire requirement	Acceptable Solution
Landscaping	Landscaping to comply with Table 5.3a PBP2019	Acceptable Solution
Access	No specific bushfire requirement	Acceptable Solution

Recommendation

Landscaping for the entire site is to be compliant with Table 5.3a of Planning for Bushfire Protection 2019, except increased canopy within the central courtyard is permitted provided the remaining aspects of the landscape plan comply with Appendix 4 PBP1019, particularly in relation to plantings and management of the under-storey. A detailed

landscape plan is to be submitted to the consent authority for approval prior to issue of the development consent.

2.0 INTRODUCTION

2.1 General

This report has been prepared to assess the proposed development and demonstrate compliance with PBP2019, to accompany an application for a Bush Fire Safety Authority.

The recommendations within this report address the aims and objectives of PBP2019 to reduce the risk of ignition of the proposed buildings in a bushfire event. It is noted however that bushfire is a natural phenomenon and there can never be any guarantee that a building or occupants will not be adversely affected by bushfire.

2.2 Significant Environmental Features

An assessment is to be undertaken, if applicable, regarding:

- SEPP (Biodiversity and Conservation) 2021
- SEPP (Resilience and Hazards) 2021
- Biodiversity Conservation Act 2016 (NSW)
- Local Land Services Act 2013 (NSW)
- Land Management (Native Vegetation) Code 2017 (NSW)
- National Parks and Wildlife Act 1974 (NSW)
- Environmental Protection and Biodiversity Conservation Act 1999 (Cwlth)

This report does not consider the above legislation and in this regard this report should be read in conjunction with the Statement of Environmental Effects submitted with the development application.

2.3 Report Details

Report Reference No.:	23/159
Property Address:	Lot 69, 70 and 71 DP 230448, 5-7 McDermott Avenue and 1 Phillip Street Goonellabah
Local Government Area:	Lismore City Council
FDI	80
Water supply	Reticulated supply

Proposal:	Three storey 20 unit residential development, strata subdivision and possible consolidation of 3 lots.
Drawings:	Attached in Appendix A
Client:	David McGrath Davcam

3.0 PROPOSED DEVELOPMENT

The applicant is proposing a three storey residential unit development, comprising ground floor carparking, first floor ten residential units and second floor ten residential units, strata subdivision and possible consolidation of 3 lots. The location of the site is shown on the locality plan in Figure 1.

The applicant has advised the proposed buildings will be Class 7a & Class 2 (NCC) shown on the site plans in Figure 2 and Appendix A. Access is by way of McDermott Avenue and Phillip Street, both supporting a reticulated street hydrant system.

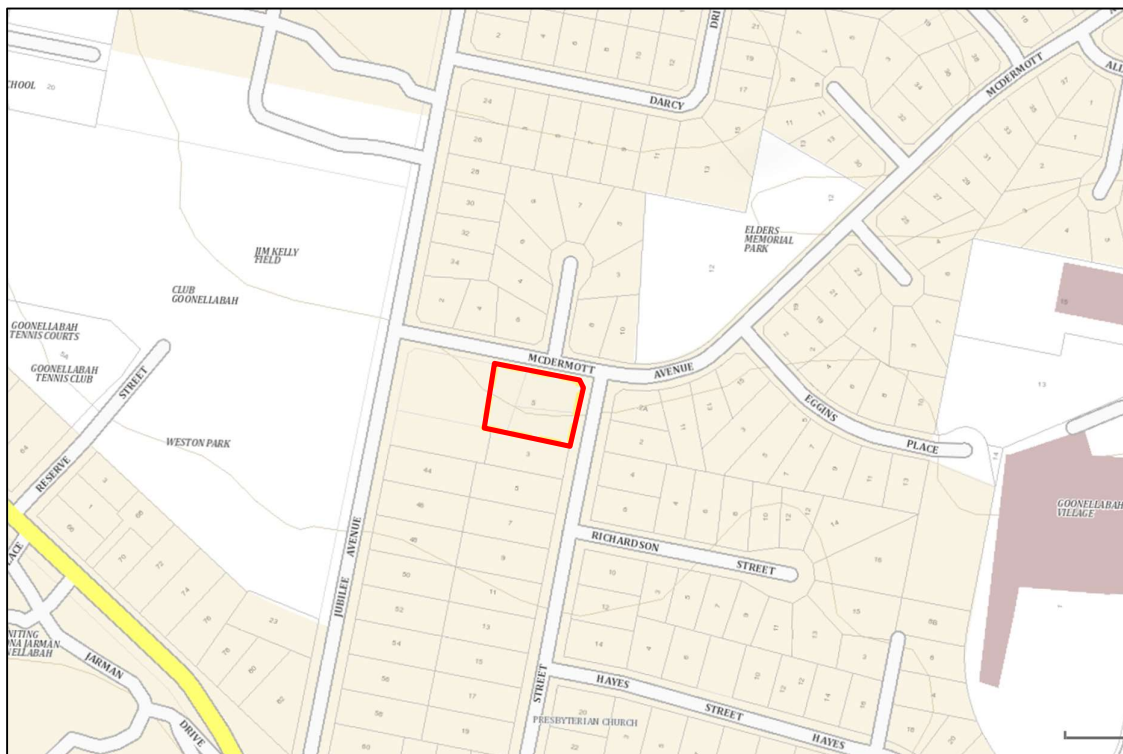


Figure 1: Location of subject property

Source: NSW Gov. Sixmaps



Figure 2: Site plan and floor plans

4.0 BUSHFIRE THREAT ASSESSMENT

4.1 Overview

A bushfire threat assessment has been undertaken in accordance with PBP2019. For the purposes of determining a Bushfire Attack Level (BAL), the assessment has been made over 100m in accordance with Table A1.12.3 PBP2019.

4.2 Bushfire Prone Land Map

Bushfire prone land mapping identifies the subject allotment as bushfire prone land as indicated in Figure 3. Aerial mapping and inspection of the site reveals the bushfire prone land map is not accurate as the extent of forest vegetation to the north of the site has been overestimated as shown in Figure 4, with managed residential land at the northern end of Quilty Place and managed parkland (low threat) within Elders Memorial Park as shown in Photo 1.

Additionally, the site inspection revealed that mapped rainforest vegetation along Phillip Street to the south of the subject property should instead be classified as managed residential land (low threat), shown in Photo 2.

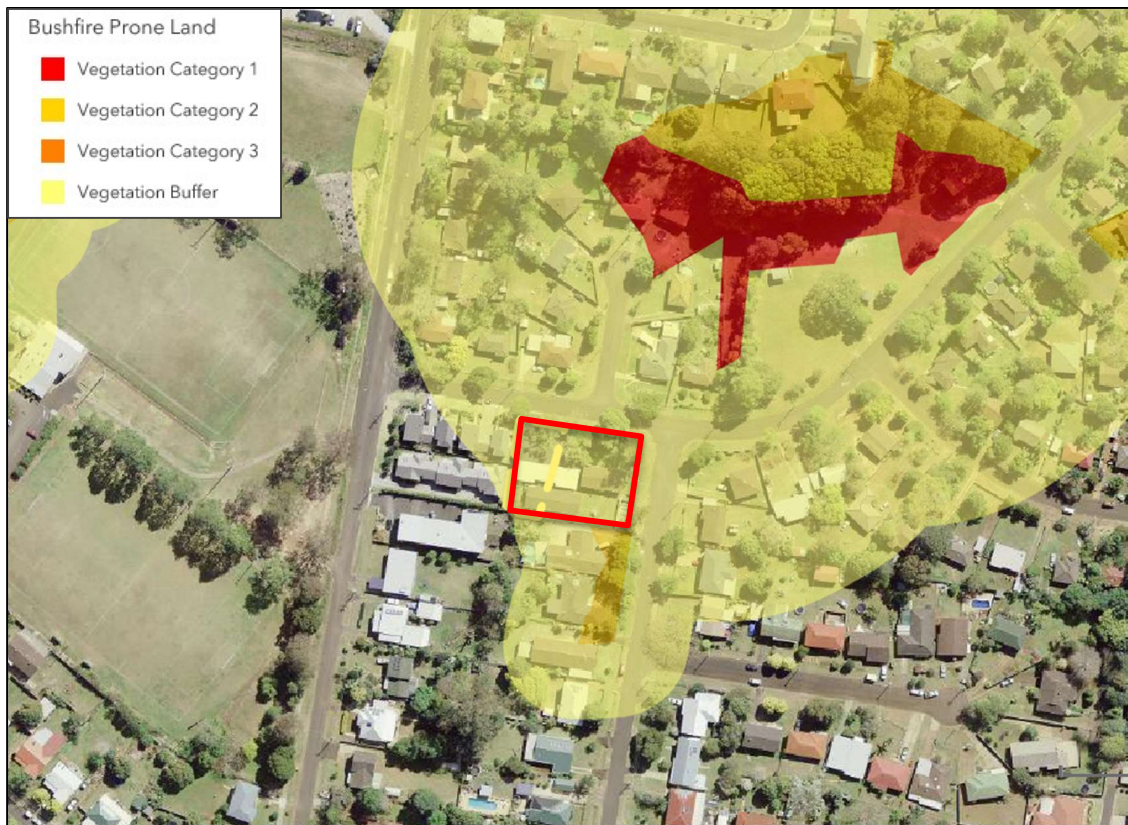


Figure 3: Bushfire prone land map

Source: planningportal.nsw.gov.au

4.3 Vegetation Classification

Identification of the vegetation formations for each aspect within 140 metres of the proposed dwellings as per Keith (2004) classifications was undertaken. No slope analysis was required to be undertaken given the surrounding land for a distance of greater than 100m was managed at the time of inspection as shown in the following images. Figure 4 demonstrates the bushfire treat analysis. It is noted the park is greater than 50m from the subject site.



Photo 1: Elders Memorial Park to the northeast, managed parkland.



Photo 2: Managed land along Phillip Street to the south, non-hazard vegetation.



Figure 4: Bushfire threat analysis

Source: NSW Planning Portal

5.0 ASSET PROTECTION ZONES AND CONSTRUCTION STANDARDS

As detailed in Section 4 of this report the proposed residential unit development will not be exposed to bushfire hazard within 100m of the site and will not require specific BAL construction pursuant to AS 3959-2018 or asset protection zones. Table 1 summarises the bushfire assessment pursuant to PBP 2019.

Table 1: Summary Bushfire Threat Assessment, APZs & Construction Standards				
ASPECT	SLOPE	VEGETATION. CLASS (PBP2019)	APZ REQUIRED	CONSTRUCTION LEVEL AS 3959-2018
North	n/a	Managed land low threat >100m	n/a	BAL LOW
East	n/a	Managed land low threat >100m	n/a	BAL LOW
South	n/a	Managed land low threat >100m	n/a	BAL LOW
West	n/a	Managed land low threat >100m	n/a	BAL LOW

6.0 WATER AND UTILITY SERVICES

No specific bushfire measures for water supply or utilities given the proposed development is not subject to bushfire hazard within 100m of the site. It is noted street hydrants are located in McDermott Avenue and Phillip Street.



Photo 3 - Street hydrant in Phillip Street



Photo 4 - Street hydrant in McDermott Avenue

7.0 ACCESS

No specific bushfire requirements given the proposed development is not subject to bushfire hazard within 100m of the site and street hydrants are located adjacent to the subject property.

8.0 LANDSCAPING

Whilst the proposed development is not subject to bushfire hazard within 100m of the site, the report will recommend landscaping compliance to ensure continuity of managed land between the proposed buildings and the bushfire hazard beyond.

Concept landscape plans DWG No. 1014-LCP01 and 02 Rev B dated 29.01.24 prepared by Alderson and Associates Landscape Architects was received for review and comment relating to compliance with the landscape recommendation.

An assessment of the concept plans shown in Appendix B of this report has been undertaken. It is noted the assessment is limited given the insufficient detail of a concept plan with further assessment required when fully detailed plans are provided to the consent authority for approval.

The assessment established that the concept plan has the potential to be amended to achieve compliance. The following is a summary of amendments required for the final detailed landscape plans to be submitted and approved by the consent authority.

- The non-combustible path around the perimeter of the building is to be increased from 600mm to a minimum 1000mm.
- Remove reference to organic mulch in the raised planter section on Level 2 Plan.
- Provide a specific detail of shrub and ground cover plantings demonstrating plantings are located twice the mature height away from windows and doors, including plantings located below windows on storeys above. For example, the shrubs adjacent to the west elevation and identified in the table on plan have a mature height of 5-8m and are located in close proximity to openings which does not meet IPA requirements.
- The percentage of canopy cover and shrub layer is to be calculated using the percentage of landscaped area rather than the total site area. The central court has been shown with 100% planting coverage. The level 2 private court yards have been shown with greater than 75% planting coverage. In this regard, a performance solution (see appendix C) has been provided for the tree canopy however it relies

upon shrub and groundcover compliance with Appendix 4 PBP2019 in relation to planting location and coverage. Plans to be amended to demonstrate compliance.

- Indicate the location of the proposed vines. It is noted that use of vines is generally not supported in IPA areas, particularly on building structures.

The assessment is limited due to the conceptional nature of the plan and therefore further assessment will need to be undertaken when a detailed landscape plan has been prepared. The performance solution for the increase canopy coverage is provided in Appendix C of this report.

9.0 CONCLUSION

This bushfire assessment report has been undertaken in relation to the proposed residential unit development, strata subdivision and possible consolidation of existing allotments. The site inspection and bushfire assessment determined the bushfire prone land mapping is incorrect, and the land surrounding the development site, for a distance greater than 100m, is managed land. As such, the proposed building will be located greater than 100m from a Category 1 or 2 bushfire hazard and greater than 50m from a grassland hazard, and no specific bushfire conditions are applicable pursuant to PBP2019 with exception to landscaping.

DISCLAIMER

This report was prepared for the purposes and exclusive use of the stated client to accompany an application to Lismore City Council specifically relating to the residential unit development, strata subdivision and possible consolidation of existing allotments on the subject property and is not to be used for any other purpose or by any other person or Corporation. BCA Check Pty Ltd accepts no responsibility for any loss or damage suffered howsoever arising to any person or Corporation who may use or rely on this report in contravention of the terms of this clause. This report is not intended for or to be used where aluminium composite panels or intumescent paints are proposed. The report is not to be construed as an assessment of the building materials or compliance with the recommended bushfire attack level/s.

As identified in PBP2019 and the NCC the report is to provide recommendations to reduce the risk of ignition and does not guarantee the complete protection of the building in the event of bush fire or that the building will not be adversely impacted upon.

Reporting has been based on the relevant Council and Rural Fire Service Guidelines however recommendations or suggestions given in this report are based on our site investigation at the time of reporting. In some cases site conditions may change dramatically within a few years due to rapid vegetation re-growth and invading weed species.

REFERENCES

Keith, D.A. (2004). *'Ocean Shores to Desert Dunes: The Native Vegetation of New South Wales and the ACT'*. NSW Department of Environment and Conservation.

NSW Rural Fire Service (2019), *Planning for bushfire protection, A guide for councils, planners, fire authorities and developers'*. November 2019, NSW Government.

Standards Australia, (2018), AS3959 *Construction of buildings in bushfire prone areas*, Australian Standards, Sydney.

LEGISLATION

Environmental Planning and Assessment Act 1979 and Regulations 2021. *New South Wales*. Parliamentary Counsel's Office, NSW Government Information Service.

Rural Fires Act 1997. *New South Wales*. Parliamentary Counsel's Office, NSW Government Information Service.

Rural Fires Regulation 2022. *New South Wales*. Parliamentary Counsel's Office, NSW Government Information Service.

APPENDIX A

Site plan and floor plans

Lot: 69
5 McDermott Ave
 DP230448
 Parcel: 6526
 R1 General Residential
 Area 582m2

Lot: 70
7 McDermott Ave
 DP230448
 Parcel: 6527
 R1 General Residential
 Area 651m2

Lot: 71
1 Phillip St
 DP230448
 Parcel: 6526
 R1 General Residential
 Area 588m2

Total Area: 1,821m2



RALJINIK
 design group
 ARCHITECTS



A1.2 For a corner allotment in zones R1, R2, R3 and RU5, the setback is **6m from the primary street and 3m from the secondary road.**
 Lismore Local Environmental Plans & Development Control Plans
 LEP2012 - RESIDENTIAL DEVELOPMENT

- STORMWATER
- STORMWATER PITS
- SEWERAGE
- MANHOLES
- - - WATER







APPENDIX B

Concept Landscape Plan





APPENDIX C

Performance Solution Landscape Tree Canopy Coverage

PERFORMANCE SOLUTION – TREE CANOPY EXCEEDS 15% CANOPY COVERAGE

The trees proposed with the concept landscape plan, particularly within the central courtyard exceed 15% canopy coverage required for an Inner Protection Area, Appendix 4 Planning for Bushfire Protection (PBP) 2019.

NON-COMPLIANT ACCEPTABLE SOLUTION

The application does not comply with the canopy coverage prescriptive requirements of the acceptable solution as follows –

- *APZs are managed in accordance with the requirements of Appendix 4 of PBP.*

Recommendation

A detailed landscape plan is to be prepared demonstrating strict compliance with the acceptable solutions of Appendix 4 of PBP2019, except for the following two embedded points -

- *Tree canopy cover should be less than 15% at maturity;*
- *Tree canopies should be separated by 2 to 5 metres.*

Relevant Performance Criteria - Table 7.4a PBP2019

APZs are managed and maintained to prevent the spread of a fire to the building.

Assessment Method sA2.4 PBP2019

PBP2019-A2.4(b) – Verification method.

The study assesses the forecast fire behaviour based on research by Ellis, Cruz, Gould, Plucinski, and Sullivan CSIRO for Bushfire CRC – Fire Development, Transitions and Suppression, Planning for Bushfire Protection 2019 and AS 3959-2018.

LIMITATIONS

The report provides recommendations that will reduce the risk of ignition while the fire front passes however as documented:

‘The goal of absolute safety during a bush fire event is not attainable and despite best effort there is the ever-present risk of personal injury or damage to property. Ultimately, it is the responsibility of the owner/occupier to comply with conditions of consent and to maintain systems designed to mitigate the impacts of bush fire’.

The performance solution relies on the owner/occupier to comply with the recommendations in this report and the consent conditions and to maintain in perpetuity systems designed to mitigate the impacts of bush fire. The report is not considered to be a compliance report for any other aspects other than that specified in the scope.

Any future buildings/structures within the recommended APZs, including Class 10a must be specifically assessed by a Level 3 Accredited Bushfire Practitioner in consultation with NSW RFS to ensure the asset protection zone recommended is not compromised due to additional fuel (structure and contents) within the APZ or compromising defensible space.

ASSUMPTIONS

Continual management will be undertaken of the landscaping and asset protection zone.

The final detailed landscape plan is to demonstrate compliance with the requirements of Appendix 4 Planning for Bushfire Protection 2019 except in relation to the tree canopy coverage addressed by this report.

TRIAL DESIGN

Landscaping for the entire site is to be compliant with Table 5.3a of Planning for Bushfire Protection 2019, except increased canopy within the central courtyard is permitted provided the remaining aspects of the landscape plan comply with all other aspects of Appendix 4 PBP1019, particularly in relation to management of under-storey. A detailed landscape plan is to be submitted to the consent authority for approval prior to issue of the development consent.

ANALYSIS FOR CANOPY GREATER THAN 15% of the APZ

An assessment of the forecast fire behaviour was undertaken with a site inspection of the bushfire hazard which is located further than 100m for forest and 50m for grassland from the proposed building.

However, given Table 1.12.6 of Planning for Bushfire Protection 2019 establishes BAL LOW it requires low threat management from the building to the hazard. In turn a landscape and asset protection zone recommendation are needed to support this outcome.

The assessment uses the research by Ellis, Cruz, Gould, Plucinski, and Sullivan CSIRO for Bushfire CRC – Fire Development, Transitions and Suppression as a document that demonstrates the likely bushfire behaviour within these landscape areas to establish the forecast fire behaviour.

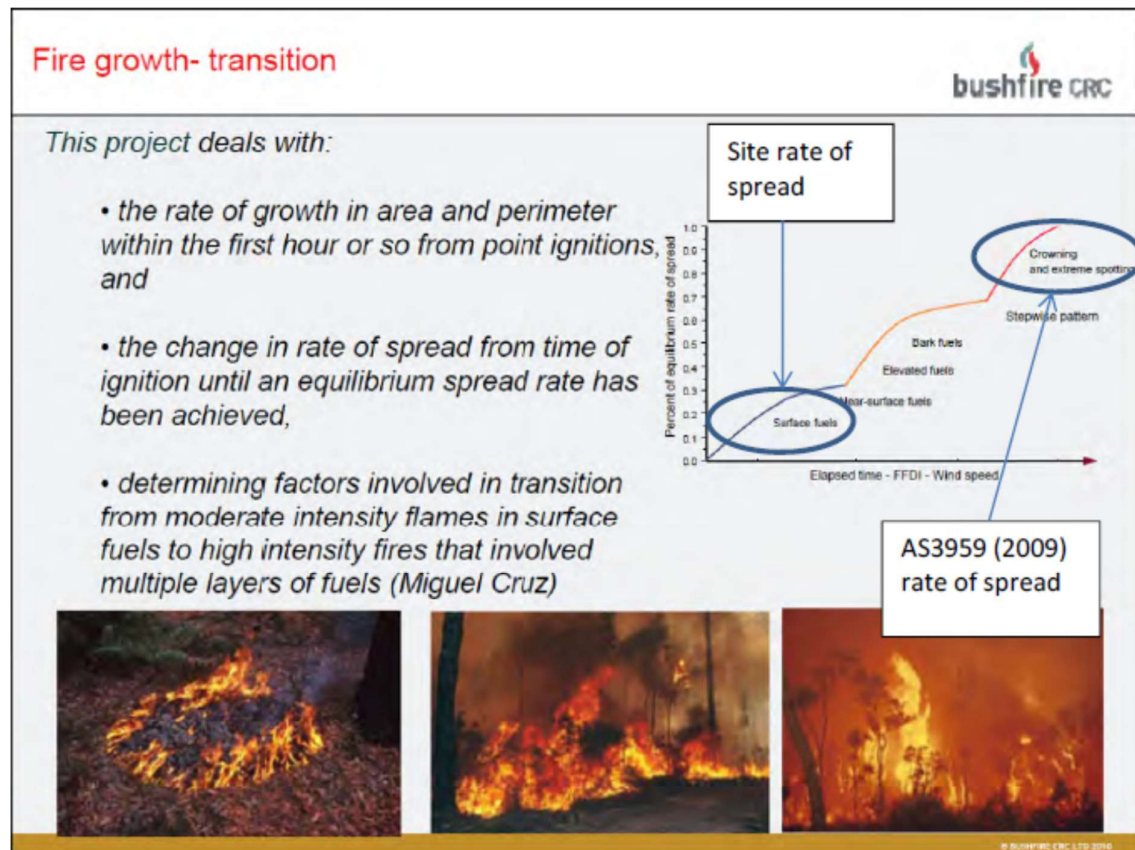


Figure C1: CRC fire growth transition

Planning for Bushfire Protection 2006 and AS 3959 acknowledge that buildings greater than 100m from a hazard are statistically less likely to be adversely affected by bushfire. It is also acknowledged that inappropriate landscaping has a significant influence on building ignition even when greater than 100m from the hazard. This occurs with embers landing within landscaping, creating secondary fires that may directly impact the building. Appendix 4 of Planning for Bushfire Protection 2019 provides limitations to landscaping to adequately reduce this risk to an acceptable level.

The bushfire hazard being greater than 100m from the building will result in no flame contact to the property from the primary bushfire hazard and low radiant heat flux received that would be high enough for adverse preheating of fuels. The tree canopies will not receive sufficient radiant heat from the primary hazard to ignite and the reduction of

embers at 100m together with the limited sustained landing areas will mean the canopies will not directly ignite.

The surface and near surface fuels are the key drivers of bushfire rate of spread leading to fire intensity. These fuels without adequate management are vulnerable to embers landing within and creating a secondary fire. The canopies will only potentially become involved if there is sufficient fuel beneath to support a convective column that can then ignite a canopy. This is called the 'ladder effect'. The proposed rainforest species further limit ignition. Appendix 4 establishes limitations to plantings, particularly shrubs to prevent this effect from occurring.

The trial design recommended that the surface and near surface fuels be managed to meet the requirements of Appendix 4 PBP2019. Therefore the fuels will be limited, and the tree canopies will not be impacted by fire. In conclusion, increased canopy coverage will not be involved and will not spread fire to the building, satisfying the performance criteria.

CONCLUSION

The study has established the increased canopy coverage of rainforest trees will not be impacted by a bushfire event and therefore the coverage limitation is not a function of secondary fire behaviour subject to compliance with the recommendation in this report.