



**BUSHFIRE MITIGATION REPORT
FM 6743-2
for
KEYLIN
at
54 GEORGE ALEXANDER WAY
COOMERA**

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DISCLAIMER

Experienced fire fighters with extensive knowledge of building have prepared this Report. Their practical knowledge of fire fighting has been backed up by academic study.

However, fire is an element of nature. Small natural occurrences can disastrously affect the outcome of the best planning. Human actions similarly can have disastrous results.

Whilst every care has been taken in the formulation of this management report, there can be no guarantee that even the strictest adherence to its recommendations can guarantee safety of life and property.

The authors of this report accept no responsibility for any damage to life or property caused by fire or any other cause to persons using land or structures, which could in any way be construed to be the subject of this report.

The report has been commissioned as the land falls within an area deemed a fire risk by the local authority.

As such, it must be recognized that structures upon this land and those using the structures could be deemed at risk.

Logo by LogoInstant

Very Important Note:

This report is valid for the following periods;

- a) A maximum time of 5 years from date of preparation.
- b) The currency of the legislation referred to in Section 1 Report Brief
- c) Changes to any legislation generally that may impact on the report outcomes.
- d) Changes to vegetation, both on and off site, which may impact on the results of this report.
- e) Any other changes that may impact on the report in any manner.

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THIS REPORT RELIES ON THE AS 3959 FOR THE CALCULATION OF CONSTRUCTION LEVELS.

ANY POSSIBLE ERRORS IN THE STANDARD ARE NOT THE RESPONSIBILITY OF THE AUTHOR.

THIS REPORT IS ONLY TO BE USED AND DISTRIBUTED AS A COMPLETE REPORT CONTAINING AS A MINIMUM SECTIONS 1,2,3,4 AND 5 (SECTIONS 5.1 & 5.2)

THIS REPORT IS NOT TO BE AMENDED IN ANY WAY BY ANY PERSONS OTHER THAN THE ORIGINAL AUTHOR.

THIS REPORT IS ONLY TO BE USED FOR PROJECTS IDENTIFIED IN THE REPORT AND REPRESENTED ON THE SITE PLAN ACCOMPANYING THE REPORT.

INTRODUCTION

This Fire Management Report has been written for the benefit of future occupants of this proposed site and developed in accordance with the requirements of;

- The Gold Coast City Council Town Plan,
- SPP 07/2017.
- Queensland Planning Act 2016
- "Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest" Natural Hazards, Risk and Resilience-Bushfire" published by QFES and Queensland Government.
- Natural hazards, risk and resilience-Bushfire State Planning Policy-state interest guidance material published by Queensland Government
- Bushfire Resilient Building Guidance for Queensland Homes published by CSIRO and Queensland Government
- The National Construction Code
- Queensland Bushfire Plan published by Queensland Government prepared by QFES.
- Australian Standard AS3959,
- International Fire Safety Engineering Guidelines
- Australian Fire Engineering Guidelines

The report has been prepared as supporting documentation for a Material Change of Use (Building) /Reconfiguration of Lot Application.

This report is to be reviewed as development occurs on adjoining and opposing sites with resultant changes to the impacting vegetation masses.

- 1.1. Address:**
54 George Alexander Way
Coomera.
- 1.2. Local Authority**
Gold Coast City Council
- 1.3. R.P.D.**
Lot 96 on RP187418
- 1.4. Site area**
30100m²
- 1.5. Responsible Fire Authority**
QFD for all fires.
- 1.6. Potential Bushfire Hazard Rating.**
The hazard rating maps prepared for the Council show the ratings on this property ranging from Medium to being in a Bushfire Hazard Buffer Area
The draft risk rating maps prepared for the State Government show the ratings on this property ranging from Medium to being in a Bushfire Hazard Buffer Area

It must be noted that State Government is currently revising the mapping and there may be changes to mapped areas.
- 1.7. Land tenure.**
Freehold
- 1.8. Adjoining owners are:**
Freehold
- 1.9. Current Land Use:**
Rural Residential
- 1.10. Fire danger Index.**

FDI 40 (nominated by AS 3959 as advised by Queensland Government Dept. of Housing and Public Works)

1.11. Topography
Rolling Hills

1.12. Predominant Wind Direction
The predominate wind direction is from the South East. In times of severe fire weather, the wind direction will be from the North West. The Topography will create microclimates, which will cause swirling, which will modify the apparent wind direction according to primary direction and velocity.

1.13. Slope
-6⁰ Upslope to West and North West
7⁰ to South East

1.14. Aspect
South East

1.15. Fuel Type
Predominate vegetation.

REGIONAL ECOSYSTEM	VHC	VHC DESCRIPTION	SURFACE FUEL LOAD	TOTAL FUEL LOAD
12.11.24 (12.11.5a)	9.2	Moist to dry eucalypt woodland on coastal lowlands and range	11.4	17.2
12.11.5	10.1	Spotted Gum dominated open forests	16.3	20.8

1.16. Threat Vegetation Location
RE 12.11.25 is located on adjoining properties, Lot 95 on RP187418 to the South East and Lot 101 on SP312031 North West
RE 12.11.5 is located on Lot 1 on SP295238 opposing to the west.

1.17. Fire History
There is no evidence of a recent fire event.

1.18. Location of Access Tracks
The site is served by a sealed road system.

1.19. Location of Fire Breaks
There are no formal firebreaks. Managed and Low threat vegetation to the western end of Lot 95 on RP187418 to the South East forms effective fire breaks.

1.20. Location of existing firefighting Infrastructure
The site is served by reticulated water.

1.21. Historical and Cultural Sites
There is no evidence of Historical and Cultural sites on the property.

1.22. Koala Habitat
The site is in a Koala Habitat area and there are specific requirements in relation to bushfire management.

2. SITE AND HAZARD ASSESSMENT

2.1. Discussion with Responsible Fire Authority

The fires management report has not been discussed with the Fire Brigade.

2.2. Vegetation Types

The vegetation type predominate to this site are as scheduled in section 1.15.

2.3. Potential Bushfire Hazard Rating.

Desktop study, site inspection and assessment against the State Planning Policy Mapping Methodology generally confirms the intent of both Local Government and State Mapping in that the area is in a Potential Bushfire Hazard Area, and the relevant aspects required for Town Planning and Building are to be addressed.

2.4. Building Construction

All buildings situated within the site are in a Designated Risk Area. There is a requirement that certain Buildings within this area be constructed in accordance with the National Construction Code/Building Code of Australia, which refers to either the Australian Standard for Construction in Bushfire Prone Areas (AS 3959) or NASH Standard-Steel Framed Construction in Bushfire Areas as Deemed to Satisfy Solutions.

The levels determined effect the types and usage of materials in relation to the type of Bushfire Attack, which may occur as assessed under the Standard. The Level of Bushfire Attack is assessed taking the vegetation types, slope, and distance from vegetation into account. The most common elements affected are Windows and flyscreening, with some restrictions on cladding and timber types. A comprehensive breakdown is available in either the National Construction Code, the Australian Standard for Construction in Bushfire Prone Areas or NASH Standard-Steel Framed Construction in Bushfire Areas.

Extracts of these documents are not provided due to copyright reasons. Full details can be obtained from your building designer or certifier.

Note that the Building Code of Australia only requires Classes 1,2 and 3 buildings, certain Class 9 buildings and Class 10a building associated with those buildings to comply with the bushfire provisions of the NCC /BCA.

Where a plan used to show the construction levels that may apply to a Building, the base construction level is taken as the highest level shown that the building is located in. The building cannot be graded in construction levels in accordance with distance from the vegetation.

Building Class requirements AS 3959

FDI	40
<u>Transect 1 opposing to West</u>	
Vegetation Classification	RE 12.11.5
Land slope	Upslope -6 degrees

Distance of building from Predominate vegetation class (m) (Vegetation Management Zone)	Primary Bushfire Attack Level
0-<5.3	BAL -FZ
5.3-<7.1	BAL-40
7.1-<10.5	BAL-29
10.5-<15.4	BAL-19
15.4-<100	BAL-12.5
100-	BAL-LOW

Transect 2 to North West

Vegetation Classification	RE 12.11.5a
Land slope	Upslope -6 degrees

Distance of building from Predominate vegetation class (m)	Primary Bushfire Attack Level
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(Vegetation Management Zone)	
0-<4	BAL -FZ
4-<5.4	BAL-40
5.4-<8	BAL-29
8-<11.8	BAL-19
11.8-<100	BAL-12.5
100-	BAL-LOW

Transect 3 to South East

Vegetation Classification

Land slope

RE 12.11.5a

Downslope

7 degrees

Distance of building from Predominate vegetation class (m) (Vegetation Management Zone)	Primary Bushfire Attack Level
0-<6.6	BAL -FZ
6.6-<8.9	BAL-40
8.9-<13.3	BAL-29
13.3-<19.2	BAL-19
19.2-<100	BAL-12.5
100-	BAL-LOW

Note:

The levels shown above have been produced using Method 2 as outlined in the AS 3959. Printouts of these calculations are included as Appendix 5.3.1. Site specific fuel loads provided by the State Government are utilised as a Performance Solution to provide more accurate site-specific loads than those provided in AS 3959.

The Vegetation management zone is described as all areas managed to a Low Threat condition encompassed by the distance between the building and threat vegetation from which construction levels are taken.

The distances shown above are horizontal distances, not measured along the slope.

ALL ELEVATIONS ARE TO BE THE SAME CONSTRUCTION LEVEL DUE TO VEGETATION MASS DISTRIBUTION.

Construction Levels are shown as part of a comprehensive Bushfire Management Plan.

They are provided for the end user of the land and its eventual occupants.

THEY ARE NOT PROVIDED FOR ASSESSMENT BY THE LOCAL AUTHORITY, IN ACCORDANCE WITH THE PLANNING ACT 2016, THE STATE PLANNING POLICY, AND THE BUILDING ACT 1975.

The Planning Act 2016 Section 8 What are Planning Instruments (5) and (6) state;

- (5) A local planning instrument must not include provisions about building work, to the extent the building work is regulated under the building assessment provisions, unless permitted under the Building Act.
- (6) To the extent a local planning instrument does not comply with subsection (5), the local planning instrument has no effect.

The Building Act 1975, Section 31 states;

“(4) A local law, local planning instrument or local government resolution must not include

provisions about building work, to the extent the building work is regulated under a code under subsection (3).

(5) To the extent a local law, local planning instrument or local government resolution does not comply with subsection (4), the local law; local planning instrument or local government resolution is of no effect.

(6) Subsections (3) to (5) are subject to sections 32 and 33.”

Building Work in planning schemes-Guidance for local governments

The above references are further supported by “Integrating Building Work in planning schemes-Guidance for local governments”- Queensland Government Section 3.9 Bushfire Prone Areas, with particular reference to Section 3.9.1 Planning scheme cannot include.

“Building work applications for specified classes of building in a “designated bushfire prone area” are required to meet the mandatory bushfire provisions in the BCA and AS3959-2018:Construction of buildings in bushfire prone areas”

For building works, the scheme is limited to designating the bushfire prone area, it is not the role of the scheme to include additional benchmarks to mitigate bushfire hazard, such as the design of the building or setbacks/clearance requirements from vegetation.

The planning scheme provisions need not and should not deal with the construction or built form of Class 1-3 buildings and class 10 structures in bushfire prone areas, such as the Bushfire Attack levels (BAL) defined by ASS3959-2018”

We refer also to Section 3.9.2 which states;

“In allocating land for future development , consider whether that land is located within a reticulated water supply area (or will be provided with reticulated water as part of the development and, if not, apply an assessment benchmark for the provision of an appropriate static water supply , and a development condition may specify how this is to be provided condition (However the planning scheme should not include information about the construction of hardstand areas, the size of water tanks, or tank fittings, for example, as these are not matters that are assessed at planning development application stage)”

The National Construction Code- Volume 1 Building Code of Australia, Part G5 Construction in Bushfire Prone Areas, Performance Requirements G5P1 Bushfire Resistance cites performance Requirements for

- (a) a Class 2 or 3 Building; and
- (b) a Class 9a health-care building; and
- (c) a Class 9b-
 - i) early childhood centre; and
 - ii) primary or secondary school; and
- (d) a Class 9c residential care building; and
- (e) a Class 10a building or deck immediately adjacent or connected to a building of a type listed in (a) to (d).

Section G5P2 addresses “ Additional bushfire requirements for certain Class 9 buildings” and applies to Class 9a, 9b and 9c buildings.

G5D1 Deemed-to-Satisfy Provisions

- (1) Where a Deemed-to Satisfy Solution is proposed, Performance Requirement s G5P1⁵and subject to G5D2⁶, GfP2⁷, are satisfied by complying with G5D3⁸ and G5D4⁹

G5D3 Protection -residential buildings

In a designated bushfire prone area the following must comply with AS 3959:

- (a) A Class 2 or 3 building
- (b) A class 10a building or deck immediately adjacent or connected to as Class 2 or 3 building.

G5D4 Protection – certain Class 9 Buildings

- (1) In a designated bushfire prone area the following must comply with Specification 43²⁵

- a) A Class 9a health -care building
- b) A class 9b-
 - i) Early childhood centre ; or
 - ii) Primary or secondary school
- c) A Class 9c residential care building

- (2) In a designated bushfire prone area, a Class 10a building immediately adjacent or connected to a building of a type listed in (1) must comply with S43C2²⁶ and S43c13²⁷

The National Construction Code- Volume 2 Building Code of Australia, Performance Requirements H7P5 Buildings in bushfire prone areas:-

A Class 1 building or a Class 10a building or deck associated with a Class 1 building that is constructed in a designated bushfire prone area must be designed and constructed to-

- a) Reduce the risk of ignition from a *design bushfire* with an annual probability of exceedance not more than 1:50 years; and
- b) Take account of the assessed duration and intensity of the fire actions of the *design bushfire*; and
- c) Be designed to prevent internal ignition of the building and its contents; and
- d) Maintain the structural integrity of the building for the duration of the *design bushfire*.

H7D4 Construction in bushfire prone areas

- (1) The requirements of (2) only apply in a *designated bushfire prone area*.
- (2) Performance requirement H7P5 is satisfied for a Class 1 building , or a Class 10a building or deck associated with a Class 1 building, if it is constructed in accordance with-
 - a) AS 3959 ; or
 - b) NASH Standard-Steel Framed Construction in Bushfire Areas.

Qld Variation to H7D4 Construction in Bushfire prone areas

- (3) The requirements of (2) do not apply when, in accordance with AS 3959, the classified vegetation is group F rainforest (excluding wet sclerophyll forest types) , mangrove community=ties or grass lands under 300mm high.

Therefore, it is clear that compliance with any Construction Level of AS 3959 satisfies the Performance Requirements of Building Code of Australia, and all construction levels therefore are to be considered as mitigating risk in an equal manner.

2.5. Ecological Requirements

The site is in a Koala Habitat Area and there is specific restriction in relation to vegetation management.

Note;

The Category of Bushfire Attack referred to in the Australian Standard is different to the Hazard/Risk area referred to above.

Extensive modification of the existing vegetation types including that on adjoining sites could result in a change of Category of Bushfire Attack and therefore variation in the Level of construction required.

It is the responsibility of the owner of each individual site to ensure that plantings after their occupation of the site do not reduce the safety of their buildings in a manner, which could require a higher level of Construction than that originally utilised.

3. RISK MANAGEMENT PLAN

3.1. Agencies / Persons Responsible

The responsible Fire Authority is the Queensland Fire Department being responsible for Structural Fires

It is the responsibility of the Developers and Owners of the properties to ensure that the relevant measures required by this Management Report are in place prior to inspection by the Council and the Building Certifier and to ensure that those measures are in place prior to the occupation of any buildings, which are the subject of this report. It is the responsibility of Council and Building Certifiers to ensure that relevant measures within their responsibility are in place prior to the issuance of any certification.

3.2. Bushfire Safety Objective

The objective of this report is to minimise potential risk to life and property by protecting the buildings from the effects of bushfire.

3.3. Aims

The aims to achieve this objective are to mitigate the effect of the bushfire attack mechanisms of: -

- 3.3.1. Radiant Heat
- 3.3.2. Direct Flame Contact
- 3.3.3. Wind
- 3.3.4. Ember Attack
- 3.3.5. Smoke

3.4. Functional Requirements

The functional requirements to achieve this objective are: -

- 3.4.1. The provision of safe conditions for fire fighters
- 3.4.2. The provision of safe conditions for residents
- 3.4.3. Ensure adequate and safe access to and from the property.
- 3.4.4. Ensure adequate and safe water supply to the property and the establishment of firefighting water reserves.
- 3.4.5. Provide a system of fire breaks and trails to protect the building component.
- 3.4.6. Remove vegetation that is considered dangerous and a hazard in Fire Conditions
- 3.4.7. To ascertain the required standard of construction of the buildings in accordance with the requirements of the National Construction Code and the Australian Standard for Construction in Bushfire Prone Areas or the provision of a satisfactory alternative solution
- 3.4.8. Facilitate the return to "normalcy "

3.5. Proposed Fire Fighting Infrastructure

- 3.5.1. The proposed buildings are to be served by a reliable reticulated water supply.

3.6. Vegetation management

- 3.6.1. Any grass and existing mid storey vegetation within the Vegetation Management Zone shall be always kept to a maximum of 100mm or be of less flammable or rain forest species.
- 3.6.2. Existing non rainforest trees within this area are to be reduced to give a noncontinuous canopy cover between trees with a total cover of less than 30% of the area.
- 3.6.3. Generally, no trees that are of protected size are required to be removed to comply with the above requirements, subject to the comments below in relation to wind during a bushfire event.
- 3.6.4. The above vegetation management scenario will produce a Low Threat scenario like "*maintained public reserves and parklands*" as cited in section 2.2.3.2(f) of AS 3959.
- 3.6.5. The width of the vegetation management zone noted above can be used to calculate the required BAL.
- 3.6.6. **NO WORKS CAN BE CARRIED OUT ON ADJOINING PROPERTIES UNLESS FORMAL APPROVAL IN PERPETUITY IS PROVIDED AND ATTACHED TO THE LAND TITLE**
- 3.6.7. Requirements noted above may be subject to State and Local Authority approval. Those approvals must be obtained prior to implementation of any of these measures.
- 3.6.8. Refer to Sections 14 and 19 of the Planning Act 2016 in relation to Local Authority Approval.
- 3.6.9. The management referred to above is regarded as "Essential Management "(necessary to remove or reduce the imminent risk that the vegetation poses of serious personal injury or damage to infrastructure" under the Sustainable Planning Regulation Schedule 24. It is

recommended that the owner register any clearing work with www.dnrm.qld.gov.au, "Vegetation management notification form for self-assessable codes".

Under changes to **Planning Regulation 2017 effective December 13, 2019**, permitted operational work includes the following:

Schedule 6, Part 3, Section 20A - Operational work for necessary firebreaks or fire management lines

Operational work that is clearing native vegetation if—

(a) the clearing is necessary for—

(i) establishing or maintaining a necessary firebreak to protect infrastructure, other than a fence, road or vehicular track, and the maximum width of the firebreak is equal to 1.5 times the height of the tallest vegetation next to the infrastructure, or 20m, whichever is the wider; or

(ii) establishing a necessary fire management line, and the maximum width of the clearing for the fire management line is 10m; and

(b) the clearing—

(i) is on freehold land; or

(ii) is on indigenous land; or

(iii) is on land leased under the Land Act 1994 for agriculture or grazing purposes;

or

(iv) is on land leased under the Land Act 1994, other than for agriculture or grazing purposes, and is consistent with the purpose of the lease; or

(v) is on trust land under the Land Act 1994, other than indigenous land, is carried out, or allowed to be carried out, by the trustee and is consistent with achieving the purpose of the trust; or

(vi) is on unallocated State land and is carried out, or allowed to be carried out, by the chief executive of the department in which the Land Act 1994 is administered; or

(vii) is on land that is subject to a licence or permit under the Land Act 1994 and is carried out by the licensee or permittee.

As an example, with a height of the tallest vegetation being between 30 – 35m, the width of clearing would be calculated as between 45 – 52.5m.

*Under **Planning (Spit Master Plan and Other Matters) Amendment Regulation 2019 (Subordinate Legislation 2019 No.243)** amends Schedule 6 Part 3 stating that "Development local categorising instrument is prohibited from stating if the above operational work is assessable development".*

Under Schedule 7 Part 3 this is placed in context, stating that *the above operational work is accepted development.*

It must be noted that the distances noted above in relation to 20m, and vegetation height are not related to distances necessary to achieve a BAL but relate more to damage that may occur from a tree falling. In relation to bushfire this could be from wind which is one of the attack mechanisms of bushfire and could be exacerbated by the drying impacts of a bushfire loosening tree roots through drying out of the soil.

Note. The major fire threat to this building is from ember attack from fire in vegetation outside the control of the owner located on surrounding land. As such, there is little that the owner can do to manage this.

The management is a component of the Construction Level. Therefore, the Building Certifier must ensure that the management has occurred in accordance with this report before issuing final certification.

Recent research (Project Vesta) indicates that tree canopy without mid storey and surface fuels forms an important filter for control of ember attack, which is responsible for more than 90% all bushfire related Building fires.

3.7. Fencing

Any boundary fencing located adjoining bushland, or a fire access trail is to be.

- 3.7.1. A maximum of 1000mm high
- 3.7.2. At least 75 % transparency
- 3.7.3. Contain at least 1 personal gate from each lot to the threat vegetation.
- 3.7.4. Contain personal gates between each lot on the fire trail easement.
- 3.7.5. Fencing materials to be non-combustible materials or wood compliant with Appendix F of AS 3959.
- 3.7.6. No CCA treated timbers are to be used due to the potential toxicity of the products of combustion.
and
Fencing between Buildings should be of materials matching the requirements for external walls for the relevant level of construction of the subject Building where within 6m of the building.
- 3.7.7. No CCA treated timbers are to be used due to the potential toxicity of the products of combustion.

3.8. Building Construction

All construction is to be in accordance with National Construction Code/Building Code of Australia, which refers to either the Australian Standard for Construction in Bushfire Prone Areas (AS 3959) or NASH Standard-Steel Framed Construction in Bushfire Areas as Deemed to Satisfy Solutions. and the Level of construction assessed under Section 2.4 "Building Construction ."

Note that it is our opinion that timber should not be used externally for BAL-29 plus construction even though under the Australian Standard situations could arise where it could be deemed acceptable.

The plans lodged for Building Certification are to be assessed on this basis by the Building Certifier.

A final stage completion certificate (Form 21) issued by the Building Certifier is to be received prior to occupation of the building.

Buildings are not to be occupied until certification is received.

Buildings are to be maintained in a manner that protects the integrity of the construction and building elements as outlined in this report.

We recommend that the buildings being assessed as having a BAL greater than BAL 29 not be constructed until the impacting vegetation has been cleared to accommodate future development

3.9. Street Numbering

Numbering is to be installed in accordance with the current Street Numbering System at time of completion of building.

3.10. Less Flammable Landscaping

Any new landscaping within the vegetation management zone is to be Less Flammable, in accordance with the list enclosed as an Appendix at the rear of this Report, rainforest species, or cultivated gardens, and comply with the requirements of " *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest*" *Natural Hazards , Risk and Resilience-Bushfire*" published by QFES and Queensland Government, and "Natural hazards, risk and resilience-Bushfire-Assessment Benchmark 5" which cite a maximum Fuel Load of 8t/ha for revegetation or rehabilitation within bushfire prone areas.

“Bushfire Resilient Building Guidance for Queensland Homes” published by Qld State Government provides a schedule of species in Appendix E.
<https://www.qra.qld.gov.au/bushfireguideline>

3.11. Insurance

Failure to comply with this management report may have a detrimental effect upon the Insurance of the subject Buildings.

3.12. Emergency Response Procedures

In the event of Fire Emergency, assistance is to be obtained by dialling 000.

- 3.12.1. The owner should read thoroughly the brochures contained and those recommended at the rear of this report. They contain valuable information that could assist in the saving of lives and property in a fire event!

3.13. Community Awareness Strategies

- 3.13.1. Each subsequent owner is to be provided with a copy of this Fire Management report with an alert placed on either Title or Council Rate searches that the Report is in existence and is to be made available to ensuing owners.

3.14. Administering Staff

It is the responsibility of the developers and owners to ensure compliance with this Report and the Town Plan, and to ensure that each of the new owners is provided with a copy of this report.

It is the responsibility of the Council and the Building Certifier to ensure that the relevant measures required by this management report are in place prior to the final completion stage inspection of any buildings on any sites which are the subject of this report as noted in Clause 3.1 of this report.

It is the responsibility of the ensuing owners of the properties to maintain the properties in the conditions outlined in this report.

4. FIRE MANAGEMENT ACTION SUMMARY AND SCHEDULE

DEVELOPMENT REQUIREMENTS	BUILDING REQUIREMENTS	MAINTENANCE
All dead and damaged timber to be removed from the areas indicated to be mowed and removed from site.	Buildings to comply with the National Construction Code/Building Code of Australia, No occupation until compliance with Standard and Management Report	Regular mowing and maintenance of vegetation management areas as set out in this report. Drive and fire trail access to be kept clear and accessible to satisfaction of the Fire Brigade. Building materials are to be maintained in "as new" condition to preserve the integrity of the relevant materials.

5. APPENDICES

5.1. Site Plans

5.2. Supporting Information:

- 5.2.1. Method 2 Calculation printouts
- 5.2.2. Fuel Load Calculation

Note. These items below are referenced for information purposes only and are not to be construed as being part of the management report.

This information is generic and not provided for approval purposes.

It is only provided for end user knowledge and only included within the report hardcopy.

- 5.2.3. Planning Regulation Fact Sheet December 2019
- 5.2.4. Prepare. Act. Survive
- 5.2.5. Rural property Fire Management Guide 2010
- 5.2.6. Notes for Landholders
- 5.2.7. Bushfire Action Guide
- 5.2.8. Bushfire Safety in Urban Fringe Areas
- 5.2.9. Water + Power -Vital for Fire fighting
- 5.2.10. Less Flammable Vegetation
- 5.2.11. Fire Retardant Native Plants
- 5.2.12. Tree selection for Fire-Prone Areas
- 5.2.13. Bushfire Resilient Building Guidance for Queensland Homes Appendix E
- 5.2.14. First Draft (specifying timber in bush fire zones)
- 5.2.15. External water spray system
- 5.2.16. Fire Retardant Coating Solutions
- 5.2.17. Archicentre Bushfire Design Guide
- 5.2.18. Section 3.8 Sign Types - Fire Trail Signage of the GCCC Natural Areas Management Unit Signage Guidelines (Page 16)
- 5.2.19. Trail Number and Key Point signage
- 5.2.20. Bushfire Hydrant detail
- 5.2.21. Tank detail
- 5.2.22. Recycled Water for Firefighting
- 5.2.23. Sample Easement Document
- 5.2.24. Bushfire Windows and Shutters
- 5.2.25. A guide to retrofit your home for better protection from a bushfire.
- 5.2.26. FireFly BAL-FZ System
- 5.2.27. Bushfire Planning and Design Certification Scheme Update
- 5.2.28. Eaves Water System
- 5.2.29. Aussi Ember Guard
- 5.2.30. The Australian "False Alarm: the great rainforest fire that wasn't".
- 5.2.31. Hijacking Australian 2019 Bushfire Tragedies to Fearmonger Climate Change
- 5.2.32. Bushfires have been in Australia for over 60 million years.

We also recommend that the landholder obtains and reads the following;

- 5.2.33. Bushfire Hazard Planning in Queensland
- 5.2.34. Protecting your home against Bushfire

Both available from the Dept. of Local Government and Planning, and

- 5.2.35. Fire in Bushland Conservation
- Available from Queensland Heritage Trust.

- 5.2.36. Bushfire Resilient Building Guidance for Queensland Homes
- <https://www.qra.qld.gov.au/bushfireguideline>

5.3 Completed GCCC Bushfire Hazard Overlay Code

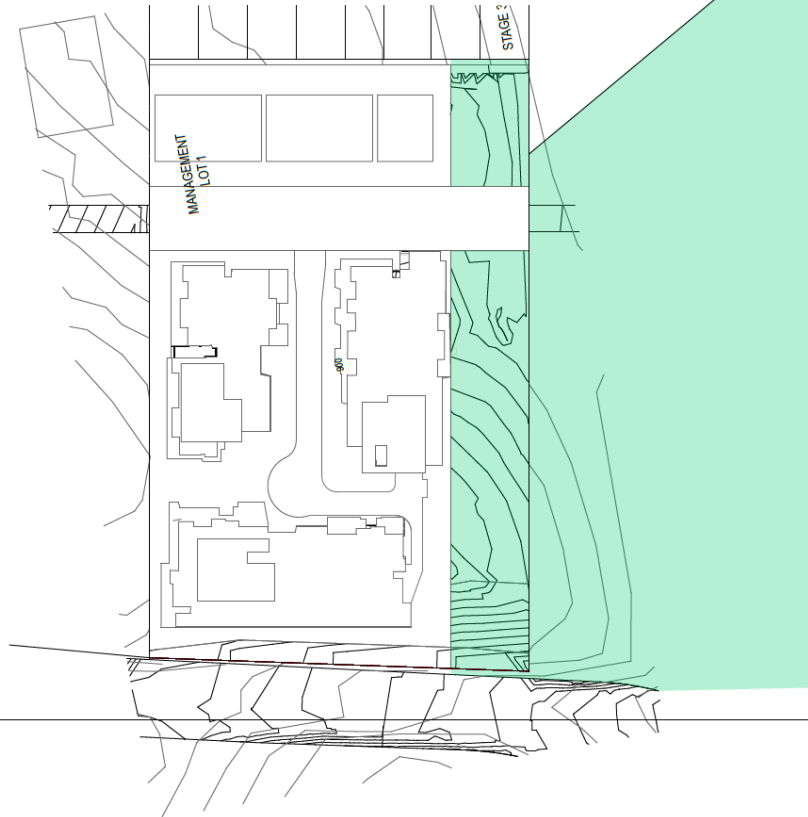
Signed

Eldon Bottcher
Grad. Dip. DBPA (UWS) Dip. Arch. (QIT), Cert. R.F.M. (USQ), F.R.A.I.A., M.A.I.E.S. AIFireE
Architect
BPAD-L3 Practitioner



APPENDIX 5.1 SITE PLANS





LOW THREAT VEGETATION

[illegible]

APPENDIX 5.2

SUPPORTING INFORMATION

(NOTE: SOME OF THIS INFORMATION IS GENERIC AND NOT PROVIDED FOR APPROVAL PURPOSES. IT IS ONLY PROVIDED FOR END USER KNOWLEDGE)

BUSHFIRE ATTACK ASSESSMENT



ELDON BOTTCHER ARCHITECT PTY LTD
145 VARSITY PARADE PH 0755920082
VARSITY LAKES E architects@eb-a.com.au
QLD. 4327



THIS ASSESSMENT USES AS 3959-2009 METHOD 2

PROJECT	PROPOSED RESIDENTIAL DEVELOPMENT	
SITE ADDRESS	54 GEORGE ALEXANDER WAY COOMERA TRANSECT 1 WEST RE 12.11.5	
INPUTS		
FDI		40
VEGETATION TYPE	SEE TABLE	Site Specific Fuel Loads
TOTAL FUEL LOAD		20.8 tonnes/ha
SLOPE UNDER VEGETATION		-6 degrees
SLOPE BETWEEN VEGETATION AND BUILDING		-6 degrees
FLAME WIDTH		100 m
ELEVATION OF RECEIVER		2.8 m
DISTANCE BETWEEN VEGETATION AND BUILDING		5.3 m
RESULTS		
RADIANT HEAT		39.33 kw/m ²
FLAME LENGTH		5.86 m
RATE OF SPREAD		0.52 km/hr
ATMOSPHERIC TRANSMISSIVITY		89%
PEAK ELEVATION OF RECEIVER		2.8 m
FLAME ANGLE		50 degrees
CONSTRUCTION LEVEL REQUIRED		BAL-40 BAL

BUSHFIRE ATTACK ASSESSMENT



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PROJECT	PROPOSED RESIDENTIAL DEVELOPMENT	
SITE ADDRESS	54 GEORGE ALEXANDER WAY COOMERA TRANSECT 1 WEST RE 12.11.5	
INPUTS		
FDI		40
VEGETATION TYPE	SEE TABLE	Site Specific Fuel Loads
TOTAL FUEL LOAD		20.8 tonnes/ha
SLOPE UNDER VEGETATION		-6 degrees
SLOPE BETWEEN VEGETATION AND BUILDING		-6 degrees
FLAME WIDTH		100 m
ELEVATION OF RECEIVER		3.23 m
DISTANCE BETWEEN VEGETATION AND BUILDING		7.1 m
RESULTS		
RADIANT HEAT		28.83 kw/m ²
FLAME LENGTH		5.86 m
RATE OF SPREAD		0.52 km/hr
ATMOSPHERIC TRANSMISSIVITY		88%
PEAK ELEVATION OF RECEIVER		3.23 m
FLAME ANGLE		60 degrees
CONSTRUCTION LEVEL REQUIRED		BAL-29 BAL

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PROJECT	PROPOSED RESIDENTIAL DEVELOPMENT	
SITE ADDRESS	54 GEORGE ALEXANDER WAY COOMERA TRANSECT 1 WEST RE 12.11.5	
INPUTS		
FDI		40
VEGETATION TYPE	SEE TABLE	Site Specific Fuel Loads
TOTAL FUEL LOAD		20.8 tonnes/ha
SLOPE UNDER VEGETATION		-6 degrees
SLOPE BETWEEN VEGETATION AND BUILDING		-6 degrees
FLAME WIDTH		100 m
ELEVATION OF RECEIVER		3.8 m
DISTANCE BETWEEN VEGETATION AND BUILDING		10.5 m
RESULTS		
RADIANT HEAT		18.93 kw/m ²
FLAME LENGTH		5.86 m
RATE OF SPREAD		0.52 km/hr
ATMOSPHERIC TRANSMISSIMTY		87%
PEAK ELEVATION OF RECEIVER		3.8 m
FLAME ANGLE		68 degrees
CONSTRUCTION LEVEL REQUIRED		BAL-19 BAL

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PROJECT	PROPOSED RESIDENTIAL DEVELOPMENT	
SITE ADDRESS	54 GEORGE ALEXANDER WAY COOMERA TRANSECT 1 WEST RE 12.11.5	
INPUTS		
FDI		40
VEGETATION TYPE	SEE TABLE	Site Specific Fuel Loads
TOTAL FUEL LOAD		20.8 tonnes/ha
SLOPE UNDER VEGETATION		-6 degrees
SLOPE BETWEEN VEGETATION AND BUILDING		-6 degrees
FLAME WIDTH		100 m
ELEVATION OF RECEIVER		4.4 m
DISTANCE BETWEEN VEGETATION AND BUILDING		15.4 m
RESULTS		
RADIANT HEAT		12.45 kw/m ²
FLAME LENGTH		5.86 m
RATE OF SPREAD		0.52 km/hr
ATMOSPHERIC TRANSMISSIMTY		85%
PEAK ELEVATION OF RECEIVER		4.4 m
FLAME ANGLE		73 degrees
CONSTRUCTION LEVEL REQUIRED		BAL-12.5 BAL

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PROJECT	PROPOSED RESIDENTIAL DEVELOPMENT	
SITE ADDRESS	54 GEORGE ALEXANDER WAY COOMERA TRANSECT 2 NORTH WEST RE 12.11.24	
INPUTS		
FDI		40
VEGETATION TYPE	SEE TABLE	Site Specific Fuel Loads
TOTAL FUEL LOAD		17.2 tonnes/ha
SLOPE UNDER VEGETATION		-6 degrees
SLOPE BETWEEN VEGETATION AND BUILDING		-6 degrees
FLAME WIDTH		100 m
ELEVATION OF RECEIVER		2.2 m
DISTANCE BETWEEN VEGETATION AND BUILDING		4 m
RESULTS		
RADIANT HEAT		39.41 kw/m ²
FLAME LENGTH		4.42 m
RATE OF SPREAD		0.36 km/hr
ATMOSPHERIC TRANSMISSIVITY		89%
PEAK ELEVATION OF RECEIVER		2.2 m
FLAME ANGLE		52 degrees
CONSTRUCTION LEVEL REQUIRED		BAL-40 BAL

BUSHFIRE ATTACK ASSESSMENT



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PROJECT

PROPOSED RESIDENTIAL DEVELOPMENT

SITE ADDRESS

54 GEORGE ALEXANDER WAY
COOMERA
TRANSECT 2
NORTH WEST
RE 12.11.24

INPUTS

FDI		40
VEGETATION TYPE	SEE TABLE	Site Specific Fuel Loads
TOTAL FUEL LOAD		17.2 tonnes/ha
SLOPE UNDER VEGETATION		-6 degrees
SLOPE BETWEEN VEGETATION AND BUILDING		-6 degrees
FLAME WIDTH		100 m
ELEVATION OF RECEIVER		2.4 m
DISTANCE BETWEEN VEGETATION AND BUILDING		5.4 m

RESULTS

RADIANT HEAT	28.74 kw/m ²
FLAME LENGTH	4.42 m
RATE OF SPREAD	0.36 km/hr
ATMOSPHERIC TRANSMISSIMTY	89%
PEAK ELEVATION OF RECEIVER	2.4 m
FLAME ANGLE	60 degrees
CONSTRUCTION LEVEL REQUIRED	BAL-29 BAL

BUSHFIRE ATTACK ASSESSMENT



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PROJECT	PROPOSED RESIDENTIAL DEVELOPMENT	
SITE ADDRESS	54 GEORGE ALEXANDER WAY COOMERA TRANSECT 2 NORTH WEST RE 12.11.24	
INPUTS		
FDI		40
VEGETATION TYPE	SEE TABLE	Site Specific Fuel Loads
TOTAL FUEL LOAD		17.2 tonnes/ha
SLOPE UNDER VEGETATION		-6 degrees
SLOPE BETWEEN VEGETATION AND BUILDING		-6 degrees
FLAME WIDTH		100 m
ELEVATION OF RECEIVER		2.8 m
DISTANCE BETWEEN VEGETATION AND BUILDING		8 m
RESULTS		
RADIANT HEAT		18.93 kw/m ²
FLAME LENGTH		4.42 m
RATE OF SPREAD		0.36 km/hr
ATMOSPHERIC TRANSMISSIMTY		87%
PEAK ELEVATION OF RECEIVER		2.8 m
FLAME ANGLE		68 degrees
CONSTRUCTION LEVEL REQUIRED		BAL-19 BAL

BUSHFIRE ATTACK ASSESSMENT



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PROJECT

PROPOSED RESIDENTIAL DEVELOPMENT

SITE ADDRESS

54 GEORGE ALEXANDER WAY
COOMERA
TRANSECT 2
NORTH WEST
RE 12.11.24

INPUTS

FDI		40
VEGETATION TYPE	SEE TABLE	Site Specific Fuel Loads
TOTAL FUEL LOAD		17.2 tonnes/ha
SLOPE UNDER VEGETATION		-6 degrees
SLOPE BETWEEN VEGETATION AND BUILDING		-6 degrees
FLAME WIDTH		100 m
ELEVATION OF RECEIVER		3.4 m
DISTANCE BETWEEN VEGETATION AND BUILDING		11.8 m

RESULTS

RADIANT HEAT	12.48 kw/m ²
FLAME LENGTH	4.42 m
RATE OF SPREAD	0.36 km/hr
ATMOSPHERIC TRANSMISSIVITY	86%
PEAK ELEVATION OF RECEIVER	3.4 m
FLAME ANGLE	73 degrees
CONSTRUCTION LEVEL REQUIRED	BAL-12.5 BAL

BUSHFIRE CONSTRUCTION STANDARD (BAL) ASSESSMENT



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PROJECT

PROPOSED RESIDENTIAL DEVELOPMENT

SITE ADDRESS

54 GEORGE ALEXANDER WAY
COOMERA

TRANSECT 3

INPUTS

FDI		40
VEGETATION TYPE	SEE TABLE	Site Specific Fuel Loads
TOTAL FUEL LOAD		17.2 tonnes/ha
SLOPE UNDER VEGETATION		7 degrees
SLOPE BETWEEN VEGETATION AND BUILDING		1 degrees
FLAME WIDTH		100 m
ELEVATION OF RECEIVER		3 m
DISTANCE BETWEEN VEGETATION AND BUILDING		6.6 m

RESULTS

RADIANT HEAT	39.62 kw/m ²
FLAME LENGTH	7.83 m
RATE OF SPREAD	0.89 km/hr
ATMOSPHERIC TRANSMISSIMTY	89%
PEAK ELEVATION OF RECEIVER	3 m
FLAME ANGLE	54 degrees
CONSTRUCTION LEVEL REQUIRED	BAL-40 BAL

BUSHFIRE CONSTRUCTION STANDARD (BAL) ASSESSMENT



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PROJECT

PROPOSED RESIDENTIAL DEVELOPMENT

SITE ADDRESS

54 GEORGE ALEXANDER WAY
COOMERA

TRANSECT 3

INPUTS

FDI		40
VEGETATION TYPE	SEE TABLE	Site Specific Fuel Loads
TOTAL FUEL LOAD		17.2 tonnes/ha
SLOPE UNDER VEGETATION		7 degrees
SLOPE BETWEEN VEGETATION AND BUILDING		1 degrees
FLAME WIDTH		100 m
ELEVATION OF RECEIVER		3.4 m
DISTANCE BETWEEN VEGETATION AND BUILDING		8.9 m

RESULTS

RADIANT HEAT	29.00 kw/m ²
FLAME LENGTH	7.83 m
RATE OF SPREAD	0.89 km/hr
ATMOSPHERIC TRANSMISSIVITY	87%
PEAK ELEVATION OF RECEIVER	3.4 m
FLAME ANGLE	65 degrees
CONSTRUCTION LEVEL REQUIRED	BAL-29 BAL

BUSHFIRE CONSTRUCTION STANDARD (BAL) ASSESSMENT



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PROJECT

PROPOSED RESIDENTIAL DEVELOPMENT

SITE ADDRESS

54 GEORGE ALEXANDER WAY
COOMERA

TRANSECT 3

INPUTS

FDI		40
VEGETATION TYPE	SEE TABLE	Site Specific Fuel Loads
TOTAL FUEL LOAD		17.2 tonnes/ha
SLOPE UNDER VEGETATION		7 degrees
SLOPE BETWEEN VEGETATION AND BUILDING		1 degrees
FLAME WIDTH		100 m
ELEVATION OF RECEIVER		3.5 m
DISTANCE BETWEEN VEGETATION AND BUILDING		13.3 m

RESULTS

RADIANT HEAT	18.95 kw/m ²
FLAME LENGTH	7.83 m
RATE OF SPREAD	0.89 km/hr
ATMOSPHERIC TRANSMISSIVITY	86 %
PEAK ELEVATION OF RECEIVER	3.5 m
FLAME ANGLE	74 degrees
CONSTRUCTION LEVEL REQUIRED	BAL-19 BAL

BUSHFIRE CONSTRUCTION STANDARD (BAL) ASSESSMENT



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PROJECT

PROPOSED RESIDENTIAL DEVELOPMENT

SITE ADDRESS

54 GEORGE ALEXANDER WAY
COOMERA

TRANSECT 3

INPUTS

FDI		40
VEGETATION TYPE	SEE TABLE	Site Specific Fuel Loads
TOTAL FUEL LOAD		17.2 tonnes/ha
SLOPE UNDER VEGETATION		7 degrees
SLOPE BETWEEN VEGETATION AND BUILDING		1 degrees
FLAME WIDTH		100 m
ELEVATION OF RECEIVER		3.5 m
DISTANCE BETWEEN VEGETATION AND BUILDING		19.5 m

RESULTS

RADIANT HEAT	12.46 kw/m ²
FLAME LENGTH	7.83 m
RATE OF SPREAD	0.89 km/hr
ATMOSPHERIC TRANSMISSIMTY	84%
PEAK ELEVATION OF RECEIVER	3.5 m
FLAME ANGLE	79 degrees
CONSTRUCTION LEVEL REQUIRED	BAL-12.5 BAL



State-wide Bushfire Prone Area Mapping

Vegetation Hazard Class Descriptions and Fuel Characteristics – Jan 2017

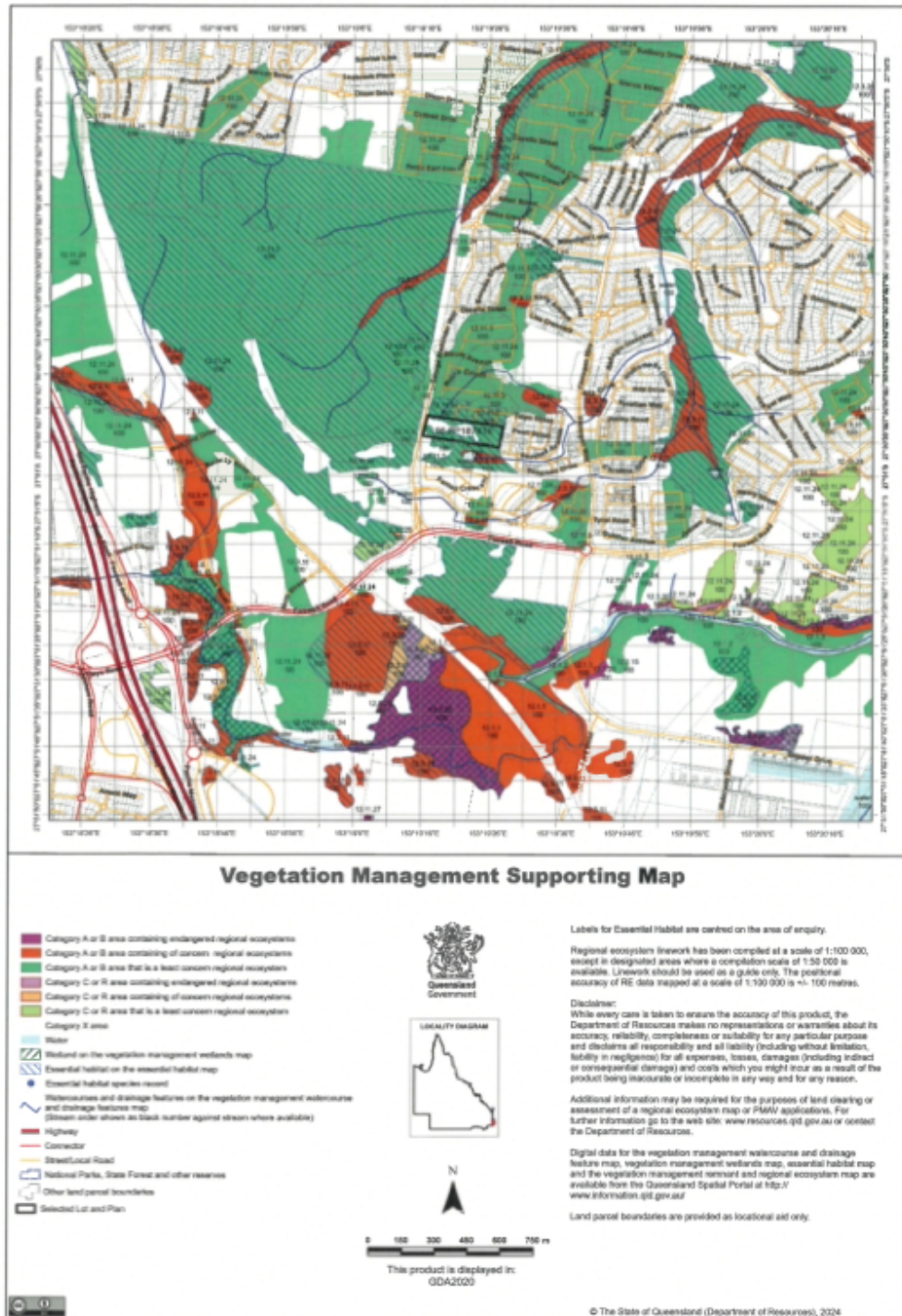
Vegetation Hazard Class	Potential Fuel Load (t/ha)						Prone Type ¹		Fuel Continuity ²	
	Surface	Near Surface	Elevated	Bark	Total (Remnant)	Total (Non-Remnant)	Remnant	Non-Remnant	Remnant	Non-Remnant
1.1 <i>Complex mesophyll to notophyll vine forests</i>	2.6	0.0	0.0	0.0	2.6	12.0	3	1	2	1
2.1 <i>Complex to simple, semi-deciduous mesophyll to notophyll vine forest</i>	3.5	0.0	0.0	0.0	3.5	12.0	3	1	2	1
3.1 <i>Notophyll vine forest</i>	4.5	0.0	0.0	0.0	4.5	12.0	3	1	2	1
3.3 <i>Notophyll vine thicket</i>	4.4	0.0	0.0	0.0	4.4	12.0	3	1	2	1
4.1 <i>Notophyll and notophyll palm or vine forest</i>	4.5	0.0	0.0	0.0	4.5	12.0	3	1	2	1
5.1 <i>Notophyll to microphyll vine forests</i>	3.9	0.0	0.0	0.0	3.9	12.0	3	1	2	1
5.2 <i>Notophyll to microphyll vine forest with sparse overstorey</i>	3.9	0.0	0.0	0.0	3.9	12.0	3	1	2	1
5.5 <i>Sedgeland within Notophyll to microphyll vine forests</i>	3.9	0.0	0.0	0.0	3.9	12.0	3	1	2	1
6.1 <i>Montane Notophyll vine forest and microphyll fern forest</i>	3.9	0.0	0.0	0.0	3.9	12.0	3	1	2	1
6.3 <i>Montane Notophyll vine thicket and microphyll fern thicket</i>	3.9	0.0	0.0	0.0	3.9	12.0	3	1	2	1
7.1 <i>Semi-evergreen to deciduous microphyll vine forest</i>	6.0	0.0	0.0	0.0	6.0	12.0	3	1	2	1
7.2 <i>Sparse semi-evergreen to deciduous microphyll vine forest</i>	6.0	0.0	0.0	0.0	6.0	12.0	3	1	2	1
8.1 <i>Wet eucalypt tall open forest</i>	28.0	3.0	2.0	2.0	35.0	35.0	1	1	1	1
8.2 <i>Wet eucalypt tall woodland</i>	18.0	3.1	1.7	1.0	23.8	23.8	1	1	1	1
9.1 <i>Moist to dry eucalypt open forests on coastal lowlands and ranges</i>	17.5	3.5	2.2	1.0	24.2	24.2	1	1	1	1
9.2 <i>Moist to dry eucalypt woodland on coastal lowlands and ranges</i>	11.4	3.5	1.3	1.0	17.2	17.2	1	1	1	1
9.3 <i>Shrubland within moist to dry eucalypt on coastal lowlands and ranges</i>	7.8	3.0	1.9	0.0	12.7	12.7	1	1	1	1
10.1 <i>Spotted gum dominated open forests</i>	16.3	3.0	1.5	0.0	20.8	20.8	1	1	1	1
10.2 <i>Spotted gum dominated woodlands</i>	14.0	3.0	1.0	0.0	18.0	18.0	1	1	1	1
11.2 <i>Moist to dry eucalypt woodlands on basalt areas</i>	7.5	4.0	0.5	1.0	13.0	13.0	1	1	1	1
12.1 <i>Dry eucalypt open forest on sandstone and shallow soils</i>	15.0	3.5	1.5	1.0	21.0	21.0	1	1	1	1

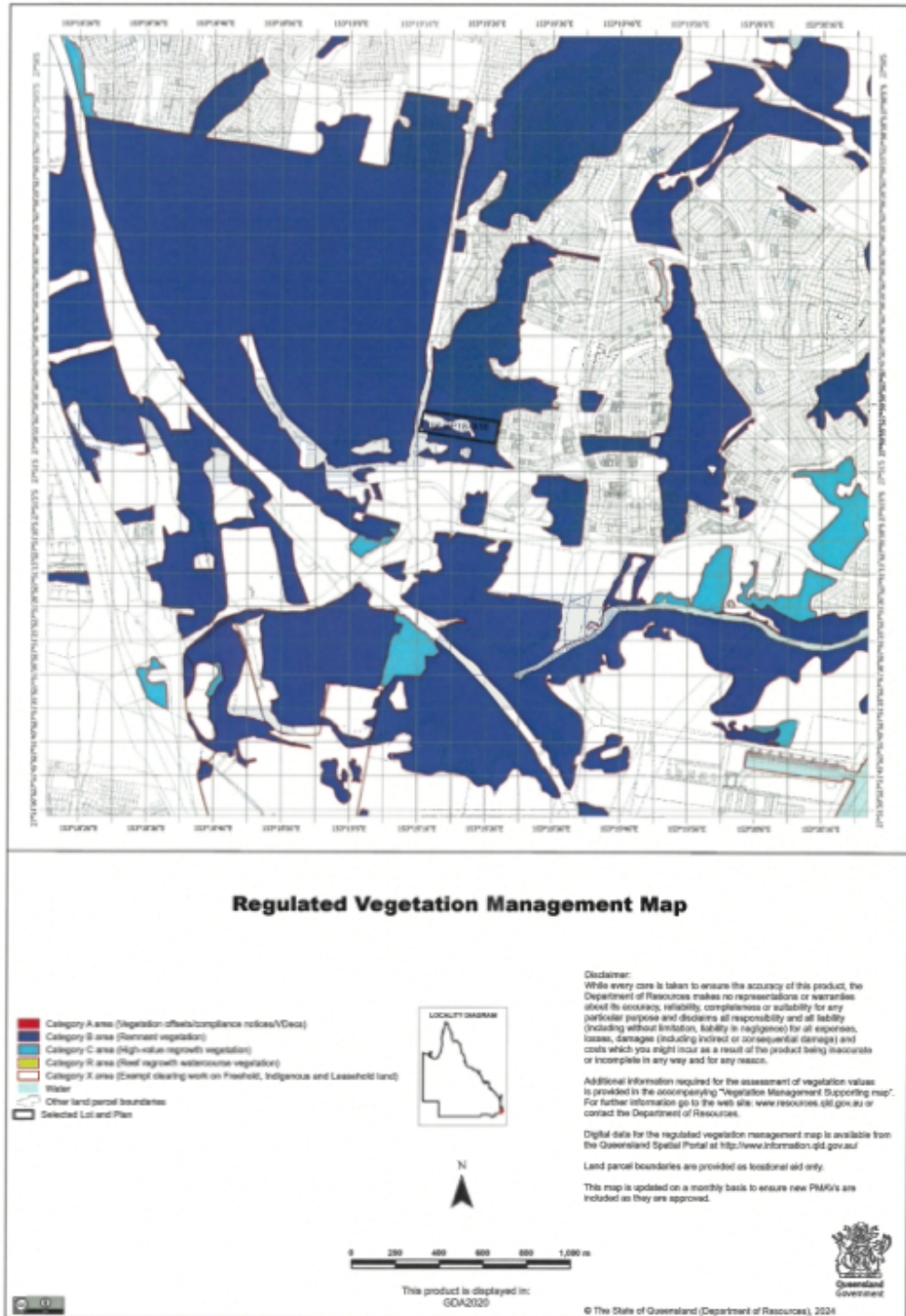
¹ Prone Type: 1 = Bushfire Prone, 2 = Grass Fire Prone, 3 = Low Hazard

² Fuel Continuity: 1 = Continuous, 2 = Discontinuous

RE8	RE8_Label	VHC	VHC_DESC
12.1.1	Casuarina glauca woodland on margins of marine clay plains	28.2	28.2 Woodlands in coastal locations with species such as she-oak or swamp box
12.1.2	Saltpan vegetation including grassland, herbland and sedgeland on marine clay plains	35.4	35.4 Tidal saltmarshes
12.1.3	Mangrove shrubland to low closed forest on marine clay plains and estuaries	35.3	35.3 Shrubland associated with mangroves and tidal saltmarshes
12.11.1	Simple notophyll vine forest often with abundant Archontophoenix cunninghamiana (gully vine forest) on metamorphics ± interbedded volcanics	4.1	4.1 Notophyll and notophyll palm or vine forest
12.11.10	Notophyll vine forest ± Araucaria cunninghamii on metamorphics ± interbedded volcanics	2.1	2.1 Complex to simple, semi-deciduous mesophyll to notophyll vine forest
12.11.11	Araucarian microphyll vine forest on metamorphics ± interbedded volcanics; usually southern half of bioregion	5.1	5.1 Notophyll to microphyll vine forests
12.11.12	Araucarian complex microphyll vine forest on metamorphics ± interbedded volcanics; usually northern half of bioregion	5.1	5.1 Notophyll to microphyll vine forests
12.11.13	Semi-evergreen vine thicket on metamorphics ± interbedded volcanics; usually northern half of bioregion	7.1	7.1 Semi-evergreen to deciduous microphyll vine forest
12.11.14	Eucalyptus crebra, E. tereticornis, Corymbia intermedia woodland on metamorphics ± interbedded volcanics	13.2	13.2 Dry to moist eucalypt woodlands on undulating metamorphics and granite
12.11.15	Eucalyptus tereticornis, Corymbia intermedia open woodland with Xanthorrhoea johnsonii understorey on serpentinite	9.2	9.2 Moist to dry eucalypt woodland on coastal lowlands and ranges
12.11.16	Eucalyptus cloeziana open forest on metamorphics ± interbedded volcanics	8.1	8.1 Wet eucalypt tall open forest
12.11.16x1	Eucalyptus cloeziana ± E. propinqua, E. acmenoides, E. microcorys and E. grandis tall open forest on sedimentary rocks	8.1	8.1 Wet eucalypt tall open forest
12.11.17	Eucalyptus acmenoides or E. portuensis open forest on metamorphics ± interbedded volcanics	9.1	9.1 Moist to dry eucalypt open forests on coastal lowlands and ranges
12.11.18	Eucalyptus moluccana woodland on metamorphics ± interbedded volcanics	13.2	13.2 Dry to moist eucalypt woodlands on undulating metamorphics and granite
12.11.18a	Eucalyptus moluccana, E. tereticornis and Lophostemon confertus open forest in gullies on metamorphics ± interbedded volcanics	13.1	13.1 Dry to moist eucalypt open forests on undulating metamorphics and granite
12.11.19	Eucalyptus fibrosa subsp. fibrosa woodland on metamorphics ± interbedded volcanics	9.2	9.2 Moist to dry eucalypt woodland on coastal lowlands and ranges
12.11.2	Eucalyptus saligna or E. grandis, E. microcorys, Lophostemon confertus tall open forest on metamorphics ± interbedded volcanics	8.1	8.1 Wet eucalypt tall open forest
12.11.20	Corymbia intermedia, Lophostemon suaveolens woodland on metamorphics ± interbedded volcanics	9.2	9.2 Moist to dry eucalypt woodland on coastal lowlands and ranges
12.11.21	Allocasuarina luehmannii, Melaleuca nervosa woodland on metamorphics ± interbedded volcanics	9.2	9.2 Moist to dry eucalypt woodland on coastal lowlands and ranges
12.11.22	Angophora leiocarpa, Eucalyptus crebra woodland on metamorphics ± interbedded volcanics	9.2	9.2 Moist to dry eucalypt woodland on coastal lowlands and ranges
12.11.23	Eucalyptus pilularis open forest on coastal metamorphics and interbedded volcanics	8.1	8.1 Wet eucalypt tall open forest
12.11.3	Eucalyptus siderophloia, E. propinqua ± E. microcorys, Lophostemon confertus, Corymbia intermedia, E. acmenoides open forest on metamorphics ± interbedded volcanics	9.1	9.1 Moist to dry eucalypt open forests on coastal lowlands and ranges
12.11.3a	Lophostemon confertus ± Eucalyptus microcorys, E. carnea, E. propinqua, E. major, E. siderophloia woodland on metamorphics ± interbedded volcanics	9.2	9.2 Moist to dry eucalypt woodland on coastal lowlands and ranges
12.11.3b	Eucalyptus pilularis tall open forest on subcoastal hills and ranges of metamorphics ± interbedded volcanics	8.1	8.1 Wet eucalypt tall open forest
12.11.4	Semi-evergreen vine thicket on metamorphics ± interbedded volcanics	7.1	7.1 Semi-evergreen to deciduous microphyll vine forest
12.11.5	Corymbia citriodora subsp. variegata, Eucalyptus siderophloia, E. major open forest on metamorphics ± interbedded volcanics	10.1	10.1 Spotted gum dominated open forests
12.11.5a	Eucalyptus tindaliae, E. carnea, Corymbia intermedia ± E. siderophloia or E. crebra, Corymbia citriodora subsp. variegata woodland on metamorphics ± interbedded volcanics	9.2	9.2 Moist to dry eucalypt woodland on coastal lowlands and ranges
12.11.5e	Corymbia citriodora subsp. variegata woodland ± Eucalyptus siderophloia or crebra, E. carnea, E. acmenoides, E. propinqua on metamorphics ± interbedded volcanics	10.2	10.2 Spotted gum dominated woodlands
12.11.5h	Eucalyptus planchoniana woodland to open forest on metamorphics ± interbedded volcanics	9.2	9.2 Moist to dry eucalypt woodland on coastal lowlands and ranges
12.11.5j	Eucalyptus racemosa subsp. racemosa and/or E. seeana and Corymbia intermedia woodland on metamorphics ± interbedded volcanics	9.2	9.2 Moist to dry eucalypt woodland on coastal lowlands and ranges
12.11.5k	Corymbia henryi ± Eucalyptus crebra, E. carnea, E. tindaliae, E. fibrosa subsp. fibrosa woodland on metamorphics ± interbedded volcanics	10.2	10.2 Spotted gum dominated woodlands
12.11.6	Corymbia citriodora subsp. variegata, Eucalyptus crebra woodland on metamorphics ± interbedded volcanics	10.2	10.2 Spotted gum dominated woodlands
12.11.7	Eucalyptus crebra woodland on metamorphics ± interbedded volcanics	13.2	13.2 Dry to moist eucalypt woodlands on undulating metamorphics and granite
12.11.8	Eucalyptus melanophloia, E. crebra woodland on metamorphics ± interbedded volcanics	17.2	17.2 Dry woodlands dominated by poplar box, silver-leaved ironbark or White's ironbark on sand or depositional plains
12.11.9	Eucalyptus tereticornis open forest on metamorphics ± interbedded volcanics. Usually higher altitudes	9.1	9.1 Moist to dry eucalypt open forests on coastal lowlands and ranges
12.11.9x1	Eucalyptus montivaga open forest on metamorphics ± interbedded volcanics	8.1	8.1 Wet eucalypt tall open forest
12.12.1	Simple notophyll vine forest usually with abundant Archontophoenix cunninghamiana (gully vine forest) on Mesozoic to Proterozoic igneous rocks	4.1	4.1 Notophyll and notophyll palm or vine forest
12.12.10	Shrubland of rocky peaks on Mesozoic to Proterozoic igneous rocks	29.3	29.3 Heathlands and associated scrubs and shrublands
12.12.11	Eucalyptus portuensis or E. acmenoides, Corymbia trachyphloia subsp. trachyphloia woodland on Mesozoic to Proterozoic igneous rocks	9.2	9.2 Moist to dry eucalypt woodland on coastal lowlands and ranges
12.12.12	Eucalyptus tereticornis, Corymbia intermedia, E. crebra ± Lophostemon suaveolens woodland on Mesozoic to Proterozoic igneous rocks	9.2	9.2 Moist to dry eucalypt woodland on coastal lowlands and ranges
12.12.13	Araucarian complex microphyll to notophyll vine forest on Mesozoic to Proterozoic igneous rocks	2.1	2.1 Complex to simple, semi-deciduous mesophyll to notophyll vine forest
12.12.14	Eucalyptus racemosa subsp. racemosa ± Lophostemon confertus, Syncarpia glomulifera, Eucalyptus acmenoides woodland usually on rocky near coastal areas on Mesozoic to Proterozoic igneous rocks	9.2	9.2 Moist to dry eucalypt woodland on coastal lowlands and ranges







APPENDIX 5.3 COMPLETED GCCC BUSHFIRE OVERLY CODE

PART B – ASSESSABLE DEVELOPMENT BENCHMARKS

Table 8.2.3-2: Bushfire hazard overlay code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
Bushfire hazard			
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: (a) vegetation type; (b) slope; (c) aspect; (d) bushfire history; (e) conservation values of the site; (f) ecological restoration, including forest succession; (g) ongoing maintenance; (h) climate change; and (i) on site and off-site ¹ fire hazard implications. ¹Note: This includes potential hazard from land up to 10kms away from the site. For example, how might large tracts of forest away from the site impact on the bushland that surrounds the site.	AO1 A written assessment by a suitably qualified and experienced bushfire management consultant confirms that the site is not in a bushfire hazard area. OR The development complies with an approved Bushfire management plan prepared in accordance with SC6.3 City Plan policy – Bushfire management plans . OR The development complies with an existing approved Bushfire management plan as referenced within the approved reconfiguration of a lot. Note: Prior to: (a) plan sealing for a Reconfiguration of a lot; or (b) the issue of a Building final or Certificate of classification for Building work; or (c) the commencement of use where building work is not proposed. Whichever comes first, the applicant must submit to Council, certification from an appropriately qualified and experienced person that the development has been completed in accordance with, and complies with the approved Bushfire management plan and that all risk treatments are functioning in accordance with the approved plan.		

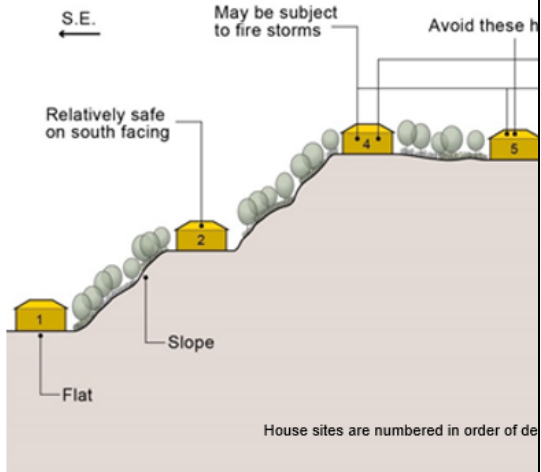
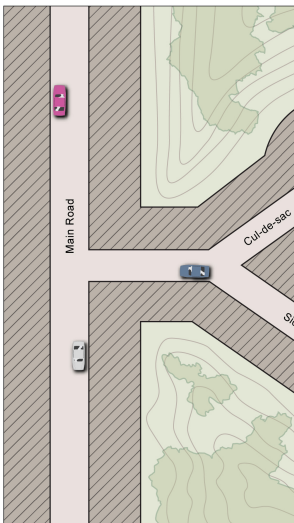
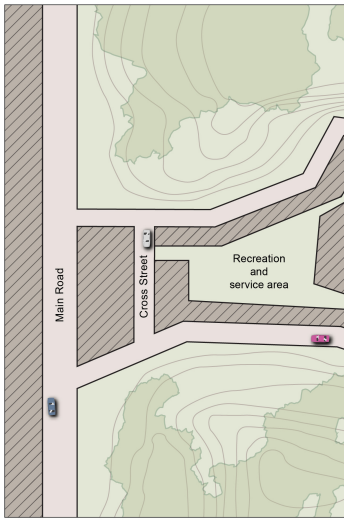
Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
 S.E. May be subject to fire storms Avoid these h Relatively safe on south facing 4 2 1 Slope Flat House sites are numbered in order of de			

Figure 8.2.3-1
 Bushfire hazard overlay – Preferred house site location in bushfire hazard areas. Image adapted from QDHLGP (1993) Bushfire Hazard Planning in Queensland.

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
Land use			
PO2 In a bushfire hazard area, development: (a) does not result in a high concentration of people living, working or congregating in a bushfire hazard area; (b) does not result in the bulk manufacture or storage of hazardous materials; and (c) 'essential' community infrastructure is able to function effectively during and immediately after a bushfire event.	AO2 The following land uses are not located in a bushfire hazard area: (a) Child care centre; (b) Community care centre; (c) Community use; (d) Development involving the manufacture or storage of hazardous material in bulk; (e) Educational establishment; (f) Hospital; (g) Residential care facility; (h) Retirement facility; (i) Rooming accommodation; (j) Sport and recreation uses; (k) Tourist attraction; (l) Tourist park; and (m) Utility installation (waste management facilities). AND In a bushfire hazard area permitted essential community infrastructure is designed to function effectively during and immediately after bushfire events, as demonstrated in a Bushfire management plan. Note: A Bushfire management plan prepared by a suitably qualified person and in accordance with SC6.3 City Plan policy – Bushfire management plans is Council's preferred method for addressing this acceptable outcome.		
Development design and lot layout			

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
PO4 In a bushfire hazard area, when designing for bushfire hazard mitigation the lot layout must avoid impacts on matters of environmental significance.	AO4 Development design, Lot size, and layout avoids impact on matters of environmental significance and minimises impacts such as fragmentation, habitat loss and edge effects for any matters of environmental significance.	Complies	
PO5 Development uses fencing that: (a) does not contribute to the spread of bushfire; (b) facilitates the safe movement of fauna; and (c) provides access for fire-fighting purposes.	AO5 Fences are constructed: (a) using non-combustible or fire retardant materials within 20m of any building used for accommodation; (b) that do not impede the safe movement of fauna (where applicable); and (c) has gates that can be freely accessed for fire-fighting purposes (if applicable).	Complies	
Vehicular access			
PO6 In a bushfire hazard area, vehicular access (including internal roads) is designed to mitigate against bushfire hazard by ensuring adequate access for: (a) fire-fighting and other emergency vehicles, and (b) the evacuation of residents and emergency personnel, during a bushfire event.	AO6.1 The development design incorporates a perimeter road that: (a) is located between the boundary of the lots and/or buildings and the adjacent natural area and/or bushfire hazard area; (b) has a minimum cleared width of 20m; (c) has a constructed minimum road width of 6m; (d) has a maximum gradient of 12.5%; (e) is constructed to an all-weather standard; and (f) is constructed to ensure all culverts and bridges have a minimum load bearing of 15 tonnes (if applicable). (refer Figure 8.2.3-2b).	The development incorporates roads and pedestrian fire trails. Roads comply with the cited requirement. The site will eventually be joined by a proposed residential development site to the south.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	AO6.2 The road design is capable of providing access for fire-fighting and other emergency vehicles, in accordance with SC6.12 City Plan policy – Land development guidelines, Section 2 – Transport network standards.	Complies	
	AO6.3 The road design does not include dead end roads (refer Figure 8.2.3-2a).	The site will eventually be joined by a proposed residential development site to the south.	
Figures 8.2.3-2a and 8.2.3-2b: Examples of acceptable and unacceptable road layout designs in bushfire hazard areas			
 Figure 8.2.3-2a Unacceptable design – along a ridge top in a bushfire hazard area – the ridge top development has no fire control lines and obstructs fire fighters.  Figure 8.2.3-2b Acceptable design – Ring road system provides a fire control line and access for fire fighters with all lots located on the inside of the ring-road.			

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
maintained with due regard for landscape and ecological values and should not result in soil disturbance or erosion.	are in accordance with SC6.3 City Plan policy – Bushfire management plans, Section 3.5(f). For other fire trails, AO9.2 – AO9.6 apply.		
	AO9.2 The fire trail has: (a) a minimum cleared width of 6m; (b) a minimum of 4.8m vertical clearance; (c) a cross fall of no greater than 10 degrees; (d) a minimum formed width of 4m; (e) a maximum gradient of 12.5%, with adequate drainage to prevent soil erosion and minimise ongoing trail maintenance; and (f) culverts and/or bridges with a minimum load bearing of 8 tonnes (if applicable).	Fire trails are pedestrian fire trails , with the design parameters outlined in the report.	
	AO9.3 Vehicular links are provided along the fire trail either to existing fire trails or roads, and these links are designed having regard to the topography of the site, fire fighter safety and the need to regularly access water supplies. Note: where possible, these links should be at intervals of approximately 200m	The site will eventually be joined by a proposed residential development site to the south.	
	AO9.4 The fire trail has vehicular access at each end, and links either to existing fire trails or public roads.	The site will eventually be joined by a proposed residential development site to the south.	
	AO9.5 The fire trail provides turning areas for fire-fighting appliances. The turning bay can be either:	Complies with a driveway access providing an appropriate “T” shaped turning bay.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
	(a) a turning circle; (b) a 'T' shaped turning bay; or (c) a 'Y' shaped turning bay.		
	AO9.6 The fire trail provides areas for vehicles to pass or turn at intervals of not more than 200m and with a maximum grade of 5% (1 in 20).		
Areas with water reticulation			
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 fire-fighting purposes at all times.	AO10.1 The development is proposed in a bushfire hazard area, and reticulated water is supplied in accordance with SC6.12 City Plan policy – Land development guidelines, Section 6 – Water supply and sewerage reticulation standards.	complies	
	AO10.2 Development involving new or existing buildings with a gross floor area of greater than 50m ² , each lot has a reliable reticulated water supply that has sufficient flow and pressure characteristics for fire-fighting purposes at all times. It must have a minimum pressure and flow of 10 litres a second at 200 kPa.	complies	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
Areas with no water reticulation (private water supply)		N/A	
PO11 In a bushfire hazard area, the development maintains the safety of people and property by ensuring that an adequate water supply for fire-fighting purposes is provided.	AO11.1 For development with a combined GFA less than 500m ² where one or more buildings are proposed, dedicated fire-fighting water storage is provided to protect each individual building. Each dedicated fire-fighting water storage must have a volume of water not less than 10,000 litres for each building, be provided within 10m of each building and be: (a) a separate tank that is either below ground level or of non -flammable construction; or (b) a reserve section in the bottom part of the main water supply tank that is either below ground level or of non -flammable construction. Note: dedicated fire-fighting water storage is in addition to water supply for household use and does not include swimming pools, creeks and dams.		
	AO11.2 For development that proposes one or more buildings with a combined GFA greater than 500m ² there is no acceptable outcome provided.		
PO12 In a bushfire hazard area, all fire-fighting water storage tanks, including domestic water supply tanks, are fitted with the standard rural fire brigade fittings.	AO12 The outlet pipe is 50mm in diameter, fitted with a 50mm male camlock (standard rural fire brigade fitting) and an isolating valve.		
PO13 In a bushfire hazard area, water storage provided for fire-fighting purposes is safely located and accessible	AO13.1 The water supply outlet is located at least 9m from any potential fire hazards, such as venting gas bottles and combustible structures.		

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
at all times.			
	AO13.2 A safe and accessible hard stand area capable of accommodating a fire fighting vehicle is provided not more than 3m from the water supply outlet.		
PO14 Development in a bushfire hazard area must provide adequate fire-fighting water storage. This infrastructure must be provided on public land so as to be readily accessible to fire brigades for hazard reduction and fire-fighting purposes.	AO14.1 Where public water supplies (e.g. fire hydrants or public water storage) do not exist, water supply tanks are provided for fire-fighting purposes on public land within the development. The water tanks must: (a) Be installed on land dedicated to Council; (b) hold a volume of at least 22,500 litres per every 20 dwellings; (c) be of concrete construction; and (d) have an outlet pipe of 50mm in diameter, fitted with a 50mm male camlock (standard rural fire brigade fitting) and an isolating valve.		
	AO14.2 Development on public land provides a safe and accessible hardstand area capable of accommodating a fire fighting vehicle not more than 3m from the water supply outlet.		
Storage of Hazardous Materials			
PO15 Development does not cause: (a) an unacceptable risk to people, property and the environment due to the impact of bushfire on hazardous chemicals; (b) excess danger or difficulty to emergency services	AO15 Development involving the storage, handling or manufacture of hazardous chemicals is not located within a Bushfire hazard area.	N/A	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
for emergency response or evacuation.			
Advice to new residents			
PO16 In a bushfire hazard area, new residents/occupants of a development in a bushfire hazard area are informed about: (a) the potential bushfire hazard on their site; (b) their responsibility for fire management; (c) the measures required for ongoing fire hazard mitigation; and (d) emergency procedures during a bushfire or on bad fire weather days. Editor's note - Further information on bushfire preparation can be found at www.ruralfire.qld.gov.au	AO16 A copy of the Bushfire management plan, complete with the Queensland Fire and Emergency Services cover sheet and any other addendums is provided to each resident/occupant for their information. Note: the QFES cover sheet is attached to the approved Bushfire management plan and a notification will be placed on the property's rates notice.	Complies	

8.2.3.1 Other relevant requirements

SC6.3 City Plan policy – Bushfire management plans is directly relevant to the development of land within bushfire hazard areas.

ELDON BOTTCER

EDUCATION AND QUALIFICATIONS

Graduate Diploma in Design in Bushfire Prone Areas

University of Western Sydney

Diploma in Architecture

Queensland Institute of Technology

Certificate of Rural Fire Management

University of Southern Queensland

Registered Architect

Queensland

A+ Architect

Australian Institute of Architects

FPA Australia Certified Practitioner (BPAD-Level 3-16935)

Bushfire Planning and Design (BPAD-LEVEL 3),
Alternate Solutions & DTS

PROFESSIONAL MEMBERSHIPS

Fellow

Australian Institute of Architects

Member

Australian Institute of Emergency Services

Member

Australian Institute of Engineers Society of Fire Safety

Member

Queensland Environmental Law Association.

Member Board of Experts

Bushfire Building Council of Australia

Associate Member

Institution of Fire Engineers

Corporate Member

Fire Protection Association of Australia

PROFESSIONAL EXPERIENCE

Director

Eldon Bottcher Architect Pty Ltd since 1978

Bushfire Assessment and Planning Consultant since 1998 with Involvement in more than 6,000 Bushfire Mitigation Projects ranging from single dwellings to major subdivisions, burn plans and general mitigation advice.

Group Officer

Albert Rural Fire Brigades Group

Queensland Fire and Rescue Service

Group Officer

Gold Coast Rural Fire Brigades Group

Queensland Fire and Rescue Service

Group Officer

South East Regional Support Group

Queensland Fire and Rescue Service

Planning Officer

Gold Coast Rural Fire Brigades Group

Queensland Fire and Rescue Service

Life Member

Guanaba Rural Fire Brigade

Member

Clagiraba Rural Fire Brigade

Member Practice Committee AIA Qld Chapter

AIA delegate to Building Industry and Research Consultation Panel on Bushfire Hazard advising Queensland State Bushfire Committee

BBCA representation to Australian Standards Committee FP20 (AS 3959 & AS 5414)

Research Consultant to Queensland University of Technology Scenic Rim Black Saturday Recovery Project

OTHER BUSHFIRE RELATED COURSES AND TRAINING

I.C.S./AIIIMS (40 hr. course) in Incident Command Systems

Certificate 4 (Workplace Training and Assessment)

RFSQ Level 1

RFSQ Level 2 (Officer)

RFSQ Fire Management 1

RFSQ Crew Leader

Certificate II in Public Safety (Firefighting Operations)

Fire Weather 1

QELA Expert Witness Workshop 2020

BUSHFIRE RELATED AWARDS

National Planning Award

State Planning Award

Planning Institute of Australia

Gold Coast Bushfire Management Strategy

(Co-Initiator and Member of Preparation Committee)

Australian Government

National Medal

Long and Distinguished Service to Fire fighting

Queensland Fire and Rescue Service

Diligent and Ethical Service Medal + Clasp

Service to Fire fighting

Queensland Government

Australia Day Medallion

Services to Rural Fire Fighting

Queensland Government

Year of the Volunteer Medallion

Services to Fire fighting

UDIA

Best Consultancy Team Award in 2007.

SERVICES OFFERED

Bushfire management Reports

Bushfire Safety Engineering

Bushfire Planning and Design

Bushfire Hazard Assessment

Alternative Solutions

Expert Witnessing

(See Planning and Environment Court of Queensland Determination

File No. BD 624 of 2005 sections 28 to 35)

Continuing Professional Development Lectures

Tertiary Education Lectures and Tutorials

Town Planning Bushfire Codes for Local Authorities

Bushfire Burn Planning

General consultancy relating to all aspects of Bushfire