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8/13 Fairway Close, Manly Vale, NSW, 2093

Bushfire Risk Assessment

In relation to the proposed development at:

328a and 330-334 Galston Road, Galston, NSW

Report No: 330Gal-01 Date: 28/1/2018

Plans provided by: CED Building Design

Project No: C1507.1 Dated: 6/12/2017

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Executive Summary

The purpose of this report is to provide a bushfire risk assessment for the proposed new retirement Village at No 328a and 330-334 Galston Road, Galston, NSW.

In accordance with Section 146 of the environmental Assessment Legislation Act, 2007 [EP&A Act] the subject site has been identified as bushfire prone land and the legislative requirements for building and development on bushfire prone lands are applicable.

This report has been prepared in accordance with the format of Clause 44 of the Rural Fire Regulation 2008 for consideration of a Bushfire Safety Authority under section 100B of the Rural Fires Act 1997.

This assessment includes an analysis of the hazard, threat and subsequent risk to the development proposal and provides recommendations that satisfy the Objectives and Performance requirements of the Building Code of Australia, Planning for Bushfire Protection 2006 and AS3959-2009 Construction of buildings in bushfire prone areas.

Following a site assessment, it was determined the asset protection zone of the development will exceed minimum requirements, and keep radiant heat levels below 10kW/m² and therefore, with the recommendations stated in this report, can achieve the requirements for the issue of a Bushfire Safety Authority.

The site was inspected on 25/1/2018.

1. Description of the subject property

Property address: Lots 21 and 22 DP 851940, No 328a and 330-334 Galston Road, Galston

Local government area: Hornsby

a) Description

The development location is a large site on the northern side of Galston Road. This report describes in detail the vegetation, slope, access and egress, availability of water supply and environmental considerations for the site.

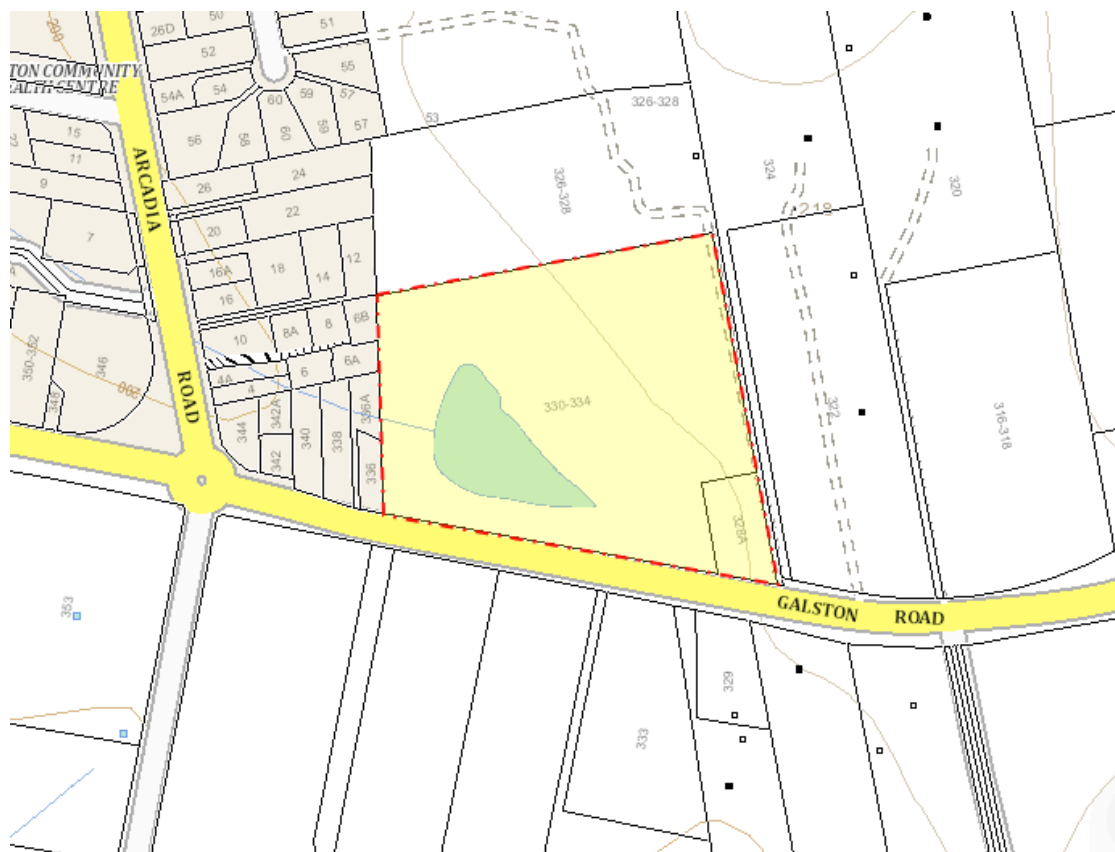


Figure 1: Map showing location of the subject site.

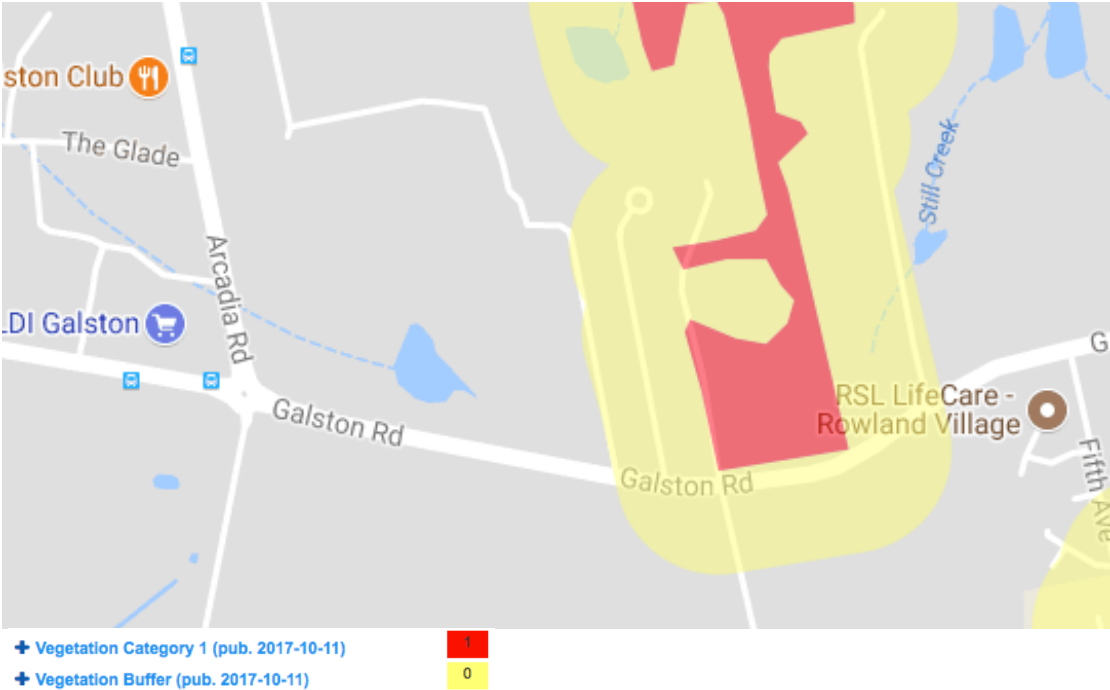


Figure 2: Bushfire prone land map.

b) Zoning of the proposed development site and adjoining properties

This site is Zoned RU4, Primary Production Small Lots.

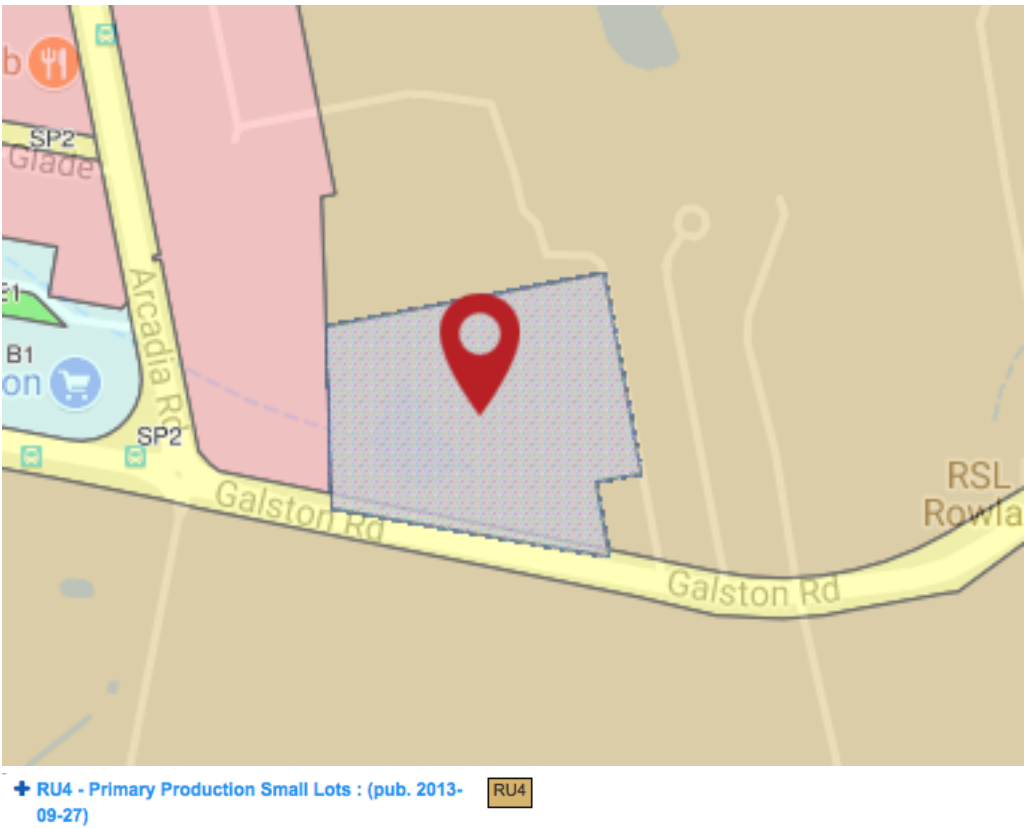


Figure 3: Land zoning map.

c) Development proposal and building classifications

The development proposal is for the construction of new retirement village.



Figure 4: Proposed new site plan.

2. Classification of the vegetation on and surrounding the site

The site is located within an existing subdivision. The site has been cleared and there is no threat from bushfire attack on the site. For the purpose of assessing the bushfire hazard to the subject site, there is an area of vegetation to the east, which is of significance.



Figure 5: Aerial photo showing the location of the site and surrounding vegetation.

North: Properties to the north of the site are developed and maintained and there is no threat of bushfire attack from this direction for more than 140m.

East: There is a small area of Forest vegetation to the east on No 316-318 Galston Rd. The site is partially within the 100m buffer zone for this hazard, and as such, the legislative requirements for building on bushfire prone land are applicable. However, the entire of the existing dwelling, and proposed alterations and additions are not within the 100m buffer zone, therefore, the bushfire attack level (BAL) is 'Low' and in accordance with section 2.2.3.2 and Table 3.1 of AS3959-2009, there is insufficient risk to warrant specific construction requirements.

South: Properties to the south of the site are developed and maintained and there is no threat of bushfire attack from this direction for more than 140m.

West: Properties to the west of the site are developed and maintained and there is no threat of bushfire attack from this direction for more than 140m.



Figure 6: Photo showing Forest vegetation located on No 316-318 Galston Road.



Figure 7: Photo showing No 322 Galston Road, which adjoins the subject site. This block separates the subject site from the Forest vegetation to the east. Given the managed and maintained nature of this site, it has been included in the APZ for the development.

3. Assessment of effective slope

Direction	Hazard Type	Effective slope
North	No hazard >140m	N/A
East	Forest	Upslope
South	No hazard >140m	N/A
West	No hazard >140m	N/A

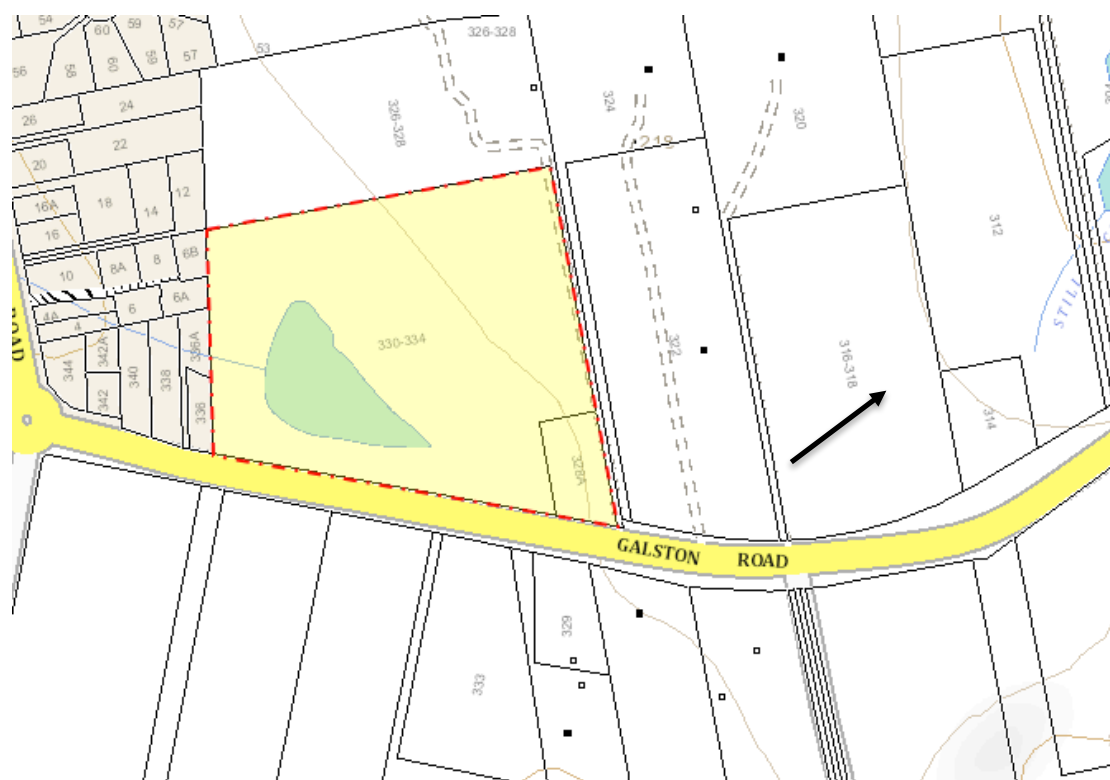


Figure 6: Topographic map showing direction of effective slope.

4. Bushfire risk assessment

a) The extent to which the development is to provide for setbacks and APZ's

Table 1: Reference to *Planning for Bushfire Protection 2006* Table A2.6, minimum specifications for asset protection zones (m) for residential and rural residential subdivision.

Direction	FDI	Vegetation classification	Effective slope	Required APZ with reference to Table A2.4 in PBP	Actual distance to classified vegetation
North	100	No hazard >140m	N/A	N/A	N/A
East	100	Forest	Upslope	60m	120m
South	100	No hazard >140m	N/A	N/A	N/A
West	100	No hazard >140m	N/A	N/A	N/A

Summary: Asset protection zones can be provided for in excess of the requirements of Table A2.4 of PBP.

Table 2; reference AS 3959, 2009 table 2.4.2

Determination of the category of bushfire attack for the site, and subsequent required building standards.

Direction	Distance to classified vegetation	Vegetation Classification	Assessment of effective slope	FDI	Bushfire Attack Level
North	>140m	N/A	N/A	N/A	BAL-Low
East	120m	Forest	Upslope	100	BAL-Low
South	>140m	N/A	N/A	N/A	BAL-Low
West	>140m	N/A	N/A	N/A	BAL-Low

Summary: Based upon the relevant provisions of PBP and AS3959-2009, the Bushfire Attack Level (BAL) of the buildings is BAL-Low.

b) Siting and adequacy of water supplies for fire fighting

The area and site has reticulated water supply. Hydrants are spaced at a regular distance along Galston Road.

c) The capacity of public roads in the vicinity to handle increased volumes of traffic in the event of a bushfire emergency

The public roads in the vicinity of the subject site are all two-way with no restrictions to impede the flow of traffic and appear to be adequate to handle increased traffic in an emergency.

d) Whether or not public roads in the vicinity that link with the fire trail network have two-way access

There are no fire trails in the vicinity. The subject site has direct access to public roads.

e) The adequacy of arrangements for access and egress from the development site for the purpose of an emergency response

Galston Road is a public two-way Road. Access and egress for emergency vehicles appears to be adequate

f) The adequacy of bush fire maintenance plans and fire emergency procedures for the development site

Bushfire maintenance plan: Minimum APZ requirements shall be managed in accordance with asset protection zone requirements of PBP. A bushland management and maintenance plan has not been recommended.

Fire emergency procedures: Fire emergency procedures for the site consist of passive fire protection measures that provide a safe refuge, defensible space, asset protection zones and adequate access and egress paths for occupants and fire fighting authorities. It is advised the residents should complete a *Bushfire Survival Plan* as formulated by the NSW Rural Fire Service and Fire and Rescue NSW. An emergency evacuation is not recommended as a condition of consent.

g) Construction standard to be used for building elements in the development

AS 3959-2009 does not provide construction requirements for buildings assessed in bushfire prone areas, in accordance with section two, as being BAL-LOW. There would be minimal attack from radiant heat and flame due to the distance of the site from the vegetation. Although some attack from burning debris is possible, there is insufficient threat to warrant specific construction requirements.

h) Adequacy of sprinkler systems and other fire protection measures to be incorporated into the development

The use of sprinkler systems is not required as a bushfire protection measure for this development. However, given this proposal is for a retirement village, other relevant standards will require the installation of a sprinkler system.

5. Assessment of the extent to which the development proposal conforms or deviates from the specifications set out in Chapter 4 of *Planning for Bushfire Protection 2006*.

Performance Criteria	How this development meets acceptable solutions
<u>Asset Protection zones</u> -Radiant heat levels at any point of the proposed building will not exceed 10 kW/m ² . -APZ's are managed and maintained to prevent the spread of fire towards the building. -APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is negated.	-The separation between the hazard and the proposed development is in excess of the requirements of Table A2.6 of PBP. -Defendable space can be provided for around the new dwelling. -APZ's are located on land with slope less than 18 degrees.
<u>Property Access</u> -Access to properties is provided in recognition of the risk to fire fighters and/or evacuating occupants. -The capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles. -All weather access is provided. -Road widths and design enable safe access for vehicles.	-All roads to the property are sealed, two-way public roads and appear to be adequate for fire brigade equipment and residential evacuation. -The access and egress requirements have been designed to provide safe and effective evacuation from the subject site and appear to be adequate for fire brigade personnel and fire fighting equipment.
<u>Services- Water, electricity and gas</u> -Water supplies are easily accessible and located at regular intervals. -Location of electrical services limits the possibility of ignition of surrounding bushland or the fabric of the building. -Location of gas services will not lead to ignition of surrounding bushland or the fabric of the building.	-This report shall recommend compliance with PBP 4.1.3 for services including electricity and gas.
<u>Construction standards</u> - It is demonstrated that the proposed building can withstand bushfire attack in the form of wind, smoke, embers, radiant heat and flame contact.	-Construction standards have been recommended in accordance with the requirements of PBP and AS 3959-2009.

<u>Siting & design</u> -Buildings are sited and designed to minimise the risk of bushfire attack.	-The siting and design of the lots has been determined in accordance with local council requirements. No advantage could be gained by recommending a re-siting of the building.
<u>Landscaping</u> -Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind driven embers to cause ignition.	- Landscaping should be designed in accordance with Appendix 5 of Planning for Bushfire Protection 2006.
<u>Emergency and evacuation planning</u> -The intent of emergency and evacuation planning is to ensure occupants are aware of the need to prepare adequately for a bushfire emergency.	-An Emergency Planning Committee should be established to consult with residents, their families and staff in developing and implementing an Emergency Procedure Manual.

6. Recommendations

The following recommendations are made for the bushfire protection measures for the proposed new retirement village at No 328a and 330-334 Galston Road, Galston, and are based upon the relevant provisions of the NSW Rural Fire Service guideline entitled *Planning for Bushfire Protection 2006*.

This report has been formulated to support consideration of a Bushfire Safety Authority under Section 100B of the Rural Fires Act 1997.

1) **Construction Standard:**

AS 3959-2009 does not provide construction requirements for buildings assessed in bushfire prone areas, in accordance with section two, as being BAL-LOW. There would be minimal attack from radiant heat and flame due to the distance of the site from the vegetation. Although some attack from burning debris is possible, there is insufficient threat to warrant specific construction requirements.

2) Electricity and Gas Supplies: As far as practical, new electricity and gas supplies shall be installed in accordance with the requirements of 4.1.3 of PBP. Note: 4.1.3 of PBP requires that '*where practical, electrical transmission lines should be underground*' and '*the location of gas services will not lead to ignition of surrounding bush land or the fabric of the building*'.

3) Emergency and Evacuation Planning: An Emergency Planning Committee should be established to consult with residents, their families and staff in developing and implementing an Emergency Procedure Manual.

4) Water Supplies: Fire hydrant spacing, sizing and pressure within the development should comply with AS 2319.1-2005. Where this cannot be met, the RFS will require a test report of the water pressure anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles.

7. Summary

This report consists of a bushfire risk assessment for the proposed new retirement village at No 328a and 330-334 Galston Road, Galston, NSW.

This report has been formulated to support consideration of a Bushfire Safety Authority under Section 100B of the Rural Fires Act 1997.

The report concludes that the proposed development is on designated bushfire prone land and the legislative requirements for development in bushfire prone areas are applicable.

This report has considered all of the elements of bushfire attack and the compensation measures listed are only of value and capable of providing the required protection from bushfire attack if they are considered as a complete package.

Provided the proposed development is constructed in accordance with the recommendations included in section 6 of this report, the development proposal is considered to satisfy the Objectives and Performance requirements of the Building Code of Australia, Planning for Bushfire Protection and Australian Standard AS3959, 2009.

NOTE: Notwithstanding the precautions adopted, it should always be remembered that bushfires burn under a wide range of conditions and an element of risk, no matter how small always remains, and although the standard is designed to improve the performance of such buildings, there can be no guarantee, because of the variable nature of bushfires, that any one building will withstand bushfire attack on every occasion.



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Certificate IV Building & Construction

Certificate III in Public Safety (Firefighting and Emergency Operations)



8. References

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D. Drysdale D. [1998]

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Part 79BA-Consultation and development consent- certain bushfire prone land

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Planning for Bushfire Protection 2006

A guide for Councils, Planners, Fire Authorities, Developers and Home Owners

This document provides the necessary planning considerations when developing areas for residential use in residential, rural residential, rural and urban areas when development sites are in close proximity to areas likely to be affected by bushfire events and replaces Planning for Bushfire Protection 2001.

[This document is essential reading. Download a copy from the RFS website or purchase a copy through the NSW Government online shop or phone 9228 6333.](#)

Ramsay C & Rudolph L [2003]

Landscape and building design for bushfire prone areas

CSIRO Publishing

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Australian Standards 3959

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