

Supplementary Bush Fire Assessment Report

Proposed:
Rezoning

At:
**Chain-O-Ponds Road &
The Northern Road,
Mulgoa NSW**

Reference Number: 180693B

Prepared For:
Mirvac

12th April 2022



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Contents

	<u>Page No.</u>
Copyright and Disclosure	2
List of Abbreviations	3
1.0 Introduction	4
2.0 Purpose of Report	4
3.0 Scope of Report	5
4.0 Referenced Documents and Persons	5
5.0 Aerial view of the subject allotment	6 - 7
6.0 Bushfire Hazard Assessment	8 - 14
7.0 Site and Bushfire Hazard Determination	15 - 16
8.0 Conclusion	17
9.0 Annexure	18
- List of referenced documents and attachments	
- Attachments	

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List of Abbreviations:

APZ	Asset Protection Zone
AS3959	Australian Standard 3959 – 2009 as amended.
BAL	Bushfire Attack Level
BPMs	Bushfire Protection Measures
BPLM	Bush Fire Prone Land Map
Council	Penrith City Council
DA	Development Application
EP&A Act	Environmental Planning and Assessment Act - 1979
ESD	Ecologically Sustainable Development
FRNSW	Fire & Rescue NSW
IPA	Inner Protection Area
NCC	National Construction Code
NP	National Park
NSP	Neighbourhood Safer Places
OPA	Outer Protection Area
PBP	Planning for Bush Fire Protection
ROW	Right of Way
RF Act	Rural Fires Act - 1997
RFS	NSW Rural Fire Service
SEPP	State Environmental Planning Policy
SFPP	Special Fire Protection Purpose
SWS	Static Water Supply

1.0 Introduction

Building Code and Bushfire Hazard Solution P/L has been commissioned by Mirvac Homes (NSW) Pty Ltd and Vianello Holdings Pty Ltd to investigate and report the relevant Bushfire Protection Measures (BPMs) applicable to a planning proposal which will facilitate a future large scale residential and mixed use development in Mulgoa.

The subject site comprises of twenty-one (21) existing allotments totalling approximately 201 hectares in size and is bounded by The Northern Road to the east, Chain-O-Ponds Road to the south, private rural-residential allotments to the west and the Glenmore Park Release Area, including a conservation area, to the north.

The rezoning application seeks approval to facilitate the establishment of a future residential community including mixed density residential areas (approx. 2,400 new allotments), mixed use centre, school, public recreation and open spaces and associated services and infrastructure.

Building Code and Bushfire Hazard Solutions P/L prepared the Bush Fire Assessment Report (ref 180693, dated 9th May 2018) which formed part of the submission package for Planning Proposal (RZ18/0006).

The NSW Rural Fire Service issued comments to the Planning Proposal on 9th June 2021 (RFS ref: SPI20210514000067).

It is understood that in response to the draft Cumberland Plain Conservation Plan and comments received by Penrith City Council the proposed layout has been modified to introduce more open space areas. The primary reason for this modification is to reduce the environmental impact.

In addition as part of the expanded environmental studies for the site advice was provided by Gunninah (2022) which supports a Woodland classification for the vegetation within the adjacent Mulgoa Nature Reserve. This assessment has subsequently been updated to reflect this Woodland classification.

The Layout Plan has subsequently been modified and subsequently we provide this supplementary Bush Fire Assessment Report to address the relevant specification and requirements of Planning for Bush Fire Protection. In addition this report responds to the three (3) comments detailed in the NSW RFS submission.

It is acknowledged that since the time this application was lodged *Planning for Bush Fire Protection 2019* has come into effect and is applicable to all applications lodged on or after 1st March 2020.

In accordance with NSW Government Planning Circular 'Planning for Bushfire Protection 2019' (PS 20-001, March 2020) as the subject Planning Proposal was lodged before 1st March 2020 it is to continue to have regard to Planning for Bush Fire Protection 2006.

2.0 Purpose of Report

The purpose of this Bushfire Assessment Report is to provide an independent bushfire assessment together with appropriate recommendations for bushfire mitigation measures considered necessary having regard to development within a designated 'bushfire prone' area.

3.0 Scope of this Report

The scope of this report is limited to providing a bushfire hazard assessment and recommendations for the subject site. Where reference has been made to the surrounding lands, this report does not purport to directly assess those lands; rather it may discuss bushfire impact and/or progression through those lands and possible bushfire impact to the subject site.

4.0 Referenced Documents and Persons

Comments provided are based on the requirements of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act), the Rural Fires Act 1997, the Rural Fires Regulation 2013, the RFS document known as 'Planning for Bush Fire Protection – 2006' and Australian Standard 3959 – 2009 'Construction of buildings in bushfire-prone areas'.

In acknowledging that Planning for Bush Fire Protection 2019 will be applicable to the future Development Application consideration has also been given to the minimum required Asset Protection Zones and other Bushfire Mitigation Measures outlined in this document.

Company representatives have undertaken a detailed site inspection of the subject property and surrounding area.

The New CPCP Boundaries Response Plan prepared by Mirvac Design (dwg no PL 01, rev H, dated 11.04.2022) has been relied upon for this assessment.

5.0 Aerial view of the subject site



Image 01: Aerial view of the subject site

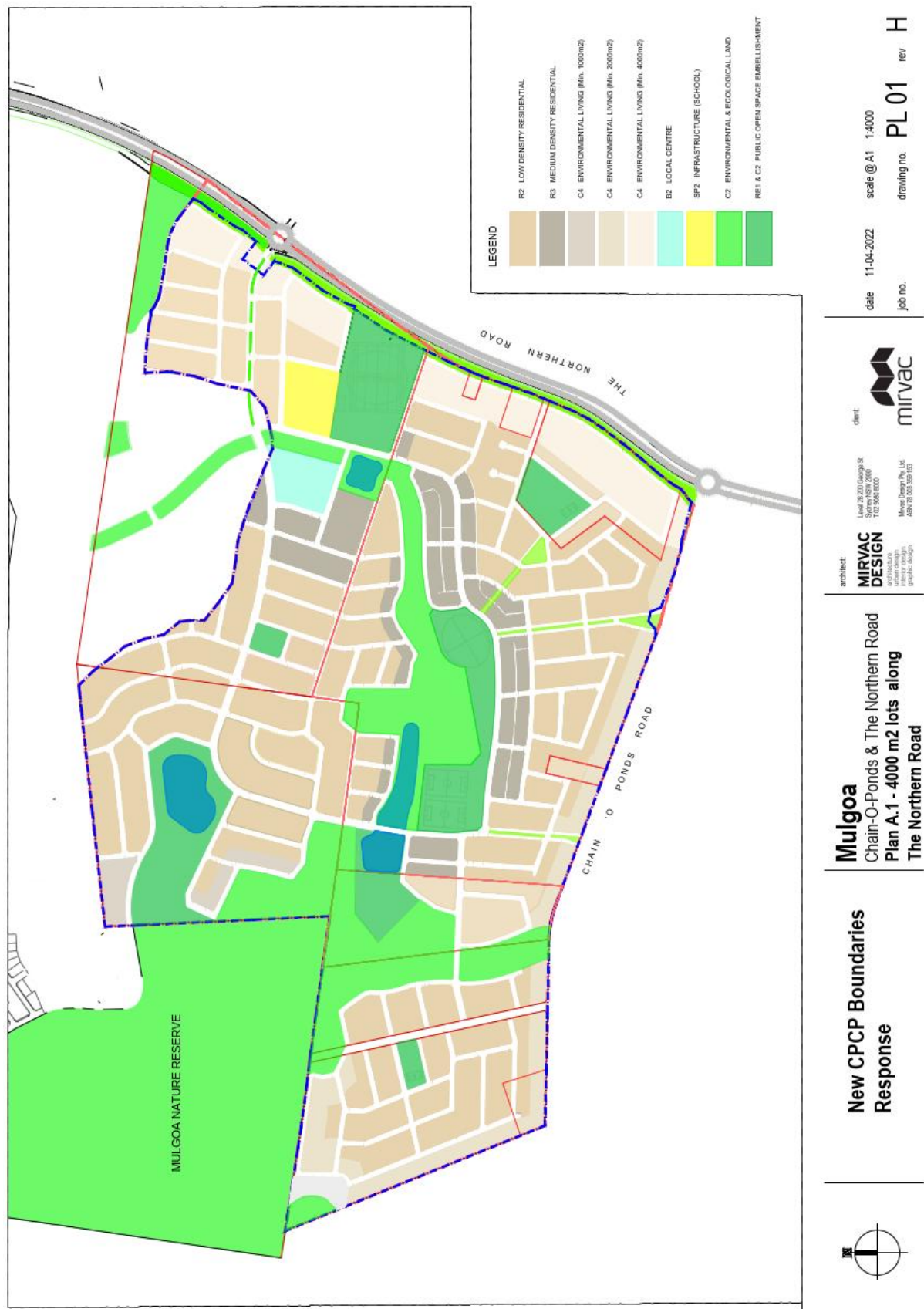


Image 02: Extract of the New CPCP Boundaries Response Plan

6.0 Bushfire Hazard Assessment

6.01 Preface

Properties considered to be affected by possible bushfire impact are determined from the local Bushfire Prone Land Map as prepared by Council and/or the Rural Fire Service. All property development within affected areas is subject to the conditions detailed in the document 'Planning for Bush Fire Protection - 2006' (PBP).

Planning for Bush Fire Protection – 2006, (PBP) formally adopted on the 1st March 2007 and amended May 2010 (Appendix 3) provides for the protection of property and life (including fire-fighters and emergency service personnel) from bushfire impact.

The thrust of the document is to ensure that developers of new properties or sub-divisions include the constraints associated with the construction of buildings in bushfire prone areas within their proposed development sites. PBP is applicable to proposed development inside determined Category 1 or 2 vegetation and also inside a buffer zone radius of 100m from a Category 1 vegetation or 30m from Category 2 vegetation.

The future development application will relate to the subdivision of existing allotments for residential purposes and Special Fire Protection Purpose development. To accord with PBP the future development applications will be classified as integrated development and assessed under section 100B of the *Rural Fires Act 1997*.

It is acknowledged that since the time this applications were lodged *Planning for Bush Fire Protection 2019* has come into effect and is applicable to all applications lodged on or after 1st March 2020.

In accordance with NSW Government Planning Circular 'Planning for Bushfire Protection 2019' (PS 20-001, March 2020) as the Planning Proposal was lodged before 1st March 2020 it is to continue to have regard to Planning for Bush Fire Protection 2006.

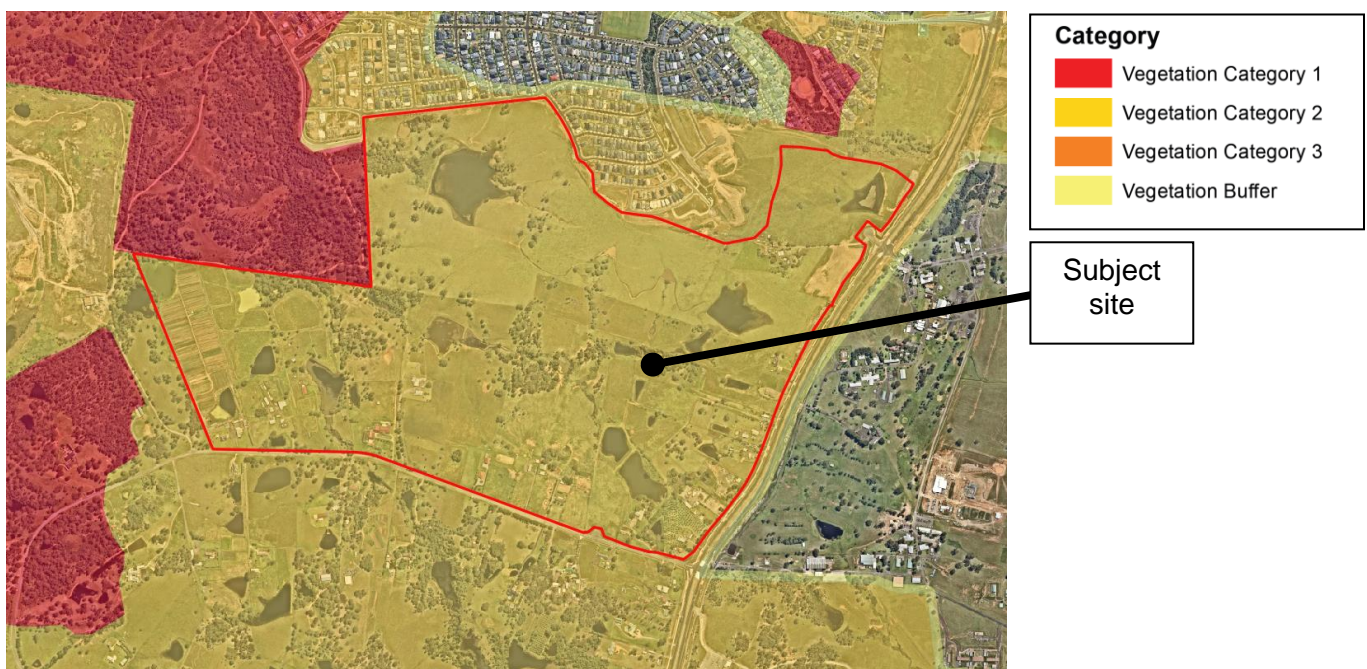


Image 03: Extract from Penrith Council's Bushfire Prone Land Map

6.02 Location

The subject site comprises of twenty-one (21) existing allotments (zoned RU2 Rural Landscape and E3 Environmental Management) totalling approximately 201 hectares in size, being:

Street Address	Lot and DP
19 Middlebrook Rise, Glenmore Park	Lot 701 DP 1275647
2265 The Northern Road, Mulgoa	Lot 3 DP 1240361
2277-2283 The Northern Road, Mulgoa	Lot 1 DP 29081
2285 The Northern Road, Mulgoa	Lot 2 DP 29081
2289-2293 The Northern Road, Mulgoa	Lot 4 DP 29081
2337-2339 The Northern Road, Mulgoa	Lot 3 DP 29081
2297-2307 The Northern Road, Mulgoa	Lot 6 DP 29081
2295 The Northern Road, Mulgoa	Lot 5 DP 29081
2309-2317 The Northern Road, Mulgoa	Lot 1 DP 1088989
2319-2327 The Northern Road, Mulgoa	Lot 8 DP 29081
2319-2327 The Northern Road, Mulgoa	Lot 1 DP 795841
2337-2339 The Northern Road, Mulgoa	Lot 2 DP 1240361
38 James Riley Drive, Mulgoa	Lot 3 DP 12224642
35-53 Chain-O-Ponds Road, Mulgoa	Lot 30 DP 244610
55 Chain-O-Ponds Road, Mulgoa	Lot 29 DP 244610
71-85 Chain-O-Ponds Road, Mulgoa	Lot 28 DP 244610
87-99 Chain-O-Ponds Road, Mulgoa	Lot 27 DP 244610
101-113 Chain-O-Ponds Road, Mulgoa	Lot 26 DP 244610
115-129 Chain-O-Ponds Road, Mulgoa	Lot 25 DP 244610
133-145 Chain-O-Ponds Road, Mulgoa	Lot 19 DP 244610
145-159 Chain-O-Ponds Road, Mulgoa	Lot 18 DP 244610

The subject site is bounded by The Northern Road to the east, Chain-O-Ponds Road to the south, private rural-residential allotments to the west and the Glenmore Park Release Area, including a conservation area, to the north.

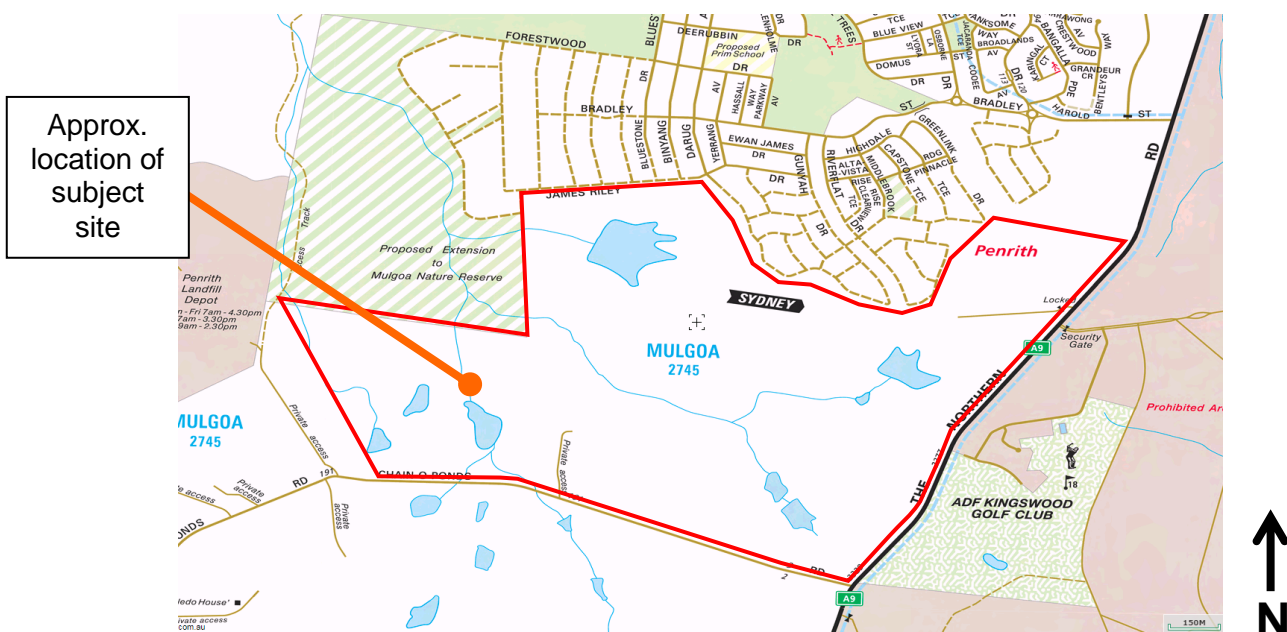


Image 04: Extract from street-directory.com.au

6.03 Vegetation

The subject site was found to largely comprise of grazed pastures, with some small remnant pockets of trees and more pronounced bushland along the existing watercourses.

The site has been identified by Gunninah as containing Cumberland Plain Woodland (CPW) a listed Critically Endangered Ecological Community (CEEC) under the *Environment Protection and Biodiversity Conservation Act 1999* and *Biodiversity Conservation Act 2016*. CPW is classified as a Grassy Woodland formation and our site observations are consistent with this classification.

Historically the use of the site has been for agricultural purposes, including the cultivation of arable crops and breeding and raising livestock. These farming practices have resulted in significantly modified vegetation within the subject site.

As part of this bushfire assessment process consideration has been given to all existing vegetation within neighbouring allotments and any retained or proposed vegetated areas within the subject site.

In response to the draft Cumberland Plain Conservation Plan and comments received by Penrith City Council the proposed layout has been modified to introduce more open space areas. The primary reason for this modification is to reduce the environmental impact.

An expanded environmental study for the site was undertaken by Gunninah (2022) and advice provided which supports a Woodland classification for the vegetation within the adjacent Mulgoa Nature Reserve. Specifically this advice states:

I can confirm that my observations of Mulgoa Nature Reserve is that the vegetation is typical Cumberland Plain woodland vegetation with scattered open grassy patches and other areas with moderately dense weeds or native shrubs (such as Blackthorn). It is not classified as forest in my opinion.

It is understood that the basins shaded blue on the Masterplan will be permanent bodies of water and therefore have not been assessed as a bushfire hazard.

For the purpose of assessment all vegetation posing a hazard within the subject site and Mulgoa Nature Reserve was determined to be Woodland.

The vegetation along The Northern Road will be maintained to a standard not conducive to bushfires and therefore this area was not considered to pose a bushfire hazard.

6.04 Slope and Topography

The slope that would most significantly affect bushfire behaviour must be assessed for at least 100 metres from the available building footprints.

The effective slopes were determined using 2 metre LiDar contour mapping of the subject area in conjunction with site observations.

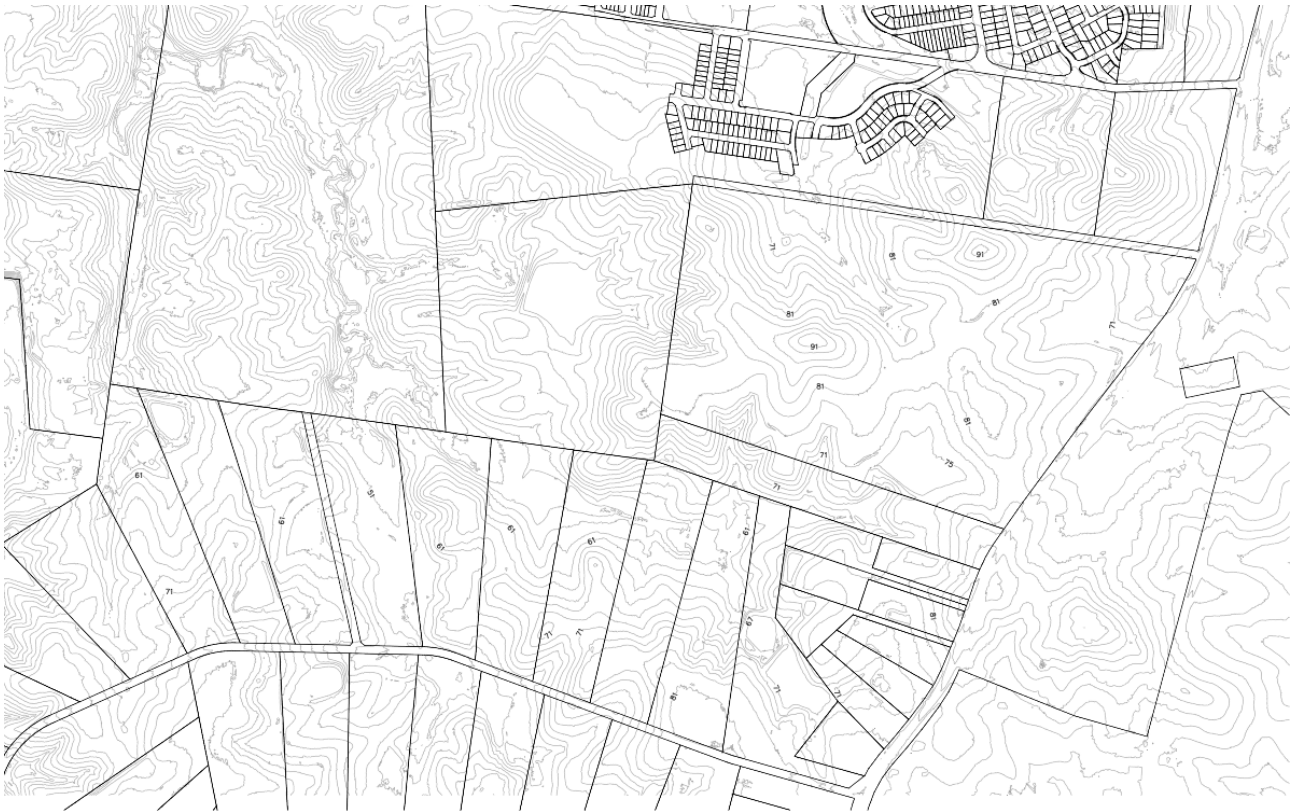


Image 06: LiDar contour mapping of subject area (2m contours)

6.05 Asset Protection Zones

Asset Protection Zones (APZs) for residential subdivision are determined from Table A2.4 of Planning for Bush Fire Protection 2006 (PBP) or bushfire design modelling achieving a radiant heat impact of no more than 29 kW/m² at a building footprint.

APZs for Special Fire Protection Purpose development (applicable to the school site) are determined from Table A2.6 of PBP or bushfire design modelling achieving a radiant heat impact of no more than 10 kW/m² at a building footprint.

Penrith City Council had previously raised a concern on whether the proposed masterplan has considered the required Asset Protection Zones (APZs).

Building Code and Bushfire Hazard Solutions P/L prepared the Bush Fire Assessment Report (ref 180693, dated 9th May 2018) which formed part of the submission package for this Planning Proposal. This report was accompanied by an overlay titled 'Bushfire Constraints Minimum Setbacks' which depicted the minimum required APZs.

In response to Council's concern we have also provided an updated overlay showing the minimum required Asset Protection Zones over the then current masterplan.

It is acknowledged that since the time this application was lodged (21st May 2018) Planning for Bush Fire Protection 2019 (PBP 19) has come into effect. As this Planning Proposal was submitted prior to the 1st March 2020 Planning for Bush Fire Protection 2006 remains the valid assessment document for this matter.

Regardless in acknowledging that the future Development Applications will be lodged under PBP 19 we have shown the relevant Asset Protection Zones under this document for the updated Master Plan - attached.

As shown on the attached overlay the future allotments can suitably accommodate the required APZs and a dwelling footprint.

The available APZs consist of the land entirely within the subject site (including proposed roads).

6.06 Fire Fighting Water Supply

Hydrants are available along The Northern Road and Chain-O-Ponds Road for the replenishment of attending fire services. A hydrant system will be extended along the new internal roads to service the proposed residential allotments. The sizing, spacing and pressures of this system must comply with AS2419.1-2021.

The subject site has the capacity to comply with the Water Supply requirements as detailed in section 4.1.3 and 4.2.7 of PBP.

6.07 Property Access – Fire Services & Evacuation

The subject site has street frontage to The Northern Road to the east and Chain-O-Ponds Road to the south and abuts the Glenmore Park Release Area to the north.

The proposed internal road system will provide a central connection to The Northern Road and multiple connections points to Chain-O-Ponds Road and the Glenmore Park Release Area.

Planning for Bush Fire Protection addresses design considerations for internal roads (public roads) for properties determined to be bushfire prone in section 4.1.3 (1). Perimeter roads and through roads are the preferred design option.

The proposed Masterplan includes perimeter roads adjacent the identified bushfire hazards and utilises through roads throughout the design therefore satisfying the preferred design option.

We are satisfied that the proposed internal road system has the capacity to comply with the requirements for Public Roads under s4.1.3 (1) of PBP 2006.

Consideration was also given to the application of the Access requirements detailed in section 5.3.2 of PBP 19 and the proposed road design also has capacity to comply with these requirements.

The NSW Rural Fire Service encourages limiting or excluding incompatible development in bushfire affected areas where;

- development is likely to be difficult to evacuate during a bush fire,
- development is likely to create control difficulties during a bush fire,
- development will adversely affect other bush fire protection strategies or place existing development at increased risk,
- development is likely to result in a substantially increased requirement for government spending on bush fire mitigation measures, infrastructure or services,
- environmental constraints to the site cannot be overcome,
- required bush fire protection measures would incur significant environmental costs.

We have undertaken an analysis of the existing public road infrastructure in this locality and the indicative road layout shown on the Masterplan in consideration of the bushfire threat to the subject property and existing development.

We are satisfied that the proposed Masterplan, in combination with the bushfire protection measures discussed herein will not result in areas that are difficult to evacuate, create control difficulties during a bushfire or adversely affect other bush fire protection strategies or place existing development at increased risk.

6.08 RFS Comments

The NSW Rural Fire Service issued generally favourable comments to the Planning Proposal on 9th June 2021 (RFS ref: SPI20210514000067). This submission included three (3) items to which we provide a response below:

- *The Asset Protection Zones (APZs) shown on the 'Bushfire Constraint Overlay PBP 2019' map (revised 19 March 2020) meet or exceed the minimum requirements, except for some areas along Linear Park 1 running East-West. A preliminary assessment undertaken by the NSW RFS indicates that a minimum APZ of 20m is required based on Grassy Woodland formation and an effective downslope of 5-10 degrees. This may impact future medium housing due to a small minimum lot size (i.e. 180m²) and a 1.5m front setback to the articulation zone. The Council is to review these controls to determine whether a sizable building envelope can be achieved with a 20m APZ.*

Response:

The extent of the open space has been modified in response to the draft Cumberland Plain Conservation Plan and Council comments. The attached 'Asset Protection Zone Overlay' has responded to these modifications and applied the minimum required APZs.

It is acknowledged that the riparian corridor along Linear Park 1 provides relatively steep embankments (5-10°) in locations, however these embankments provide a limited fire development period (generally less than 25m).

The most significant bushfire impact is considered to be a fully developed fire burning along the watercourse in an easterly direction, being influenced by the westerly winds associated with severe fire behaviour. This scenario attracts a Woodland classification and 0 – 5 degree down slope which would result in a minimum required APZ of 16 metres as determined from Table A1.12.2 of PBP.

A 5 – 10 degree downslope has been adopted for part of the embellished open space on the northern side of Linear Park 1 where a larger fire development period is available.

- *Parking provisions have changed under section 5.3.2 of Planning for Bush Fire Protection 2019 (PBP 2019). Parking is now required to be provided outside of the minimum carriageway width of 8m for perimeter roads and 5.5m for non-perimeter roads. The NSW RFS recommends the proposed Development Control Plan for Glenmore Park Stage 3 be amended to reflect the new requirement.*

Response:

The applicant acknowledges the parking restrictions applied in section 5 of Planning for Bush Fire Protection 2019 and will ensure compliance where necessary.

- *Fire hydrant flows, pressures and installations (spacing, design and sizing) comply with the relevant clauses of Australian Standard AS 2419.1:2005 and not located on any road carriageway. Please note the NSW RFS intentionally adopted the superseded 2005 Australian Standard under PBP 2019.*

Response:

The future fire hydrant flows, pressures and installations (spacing, design and sizing) will comply with the relevant clauses of Australian Standard AS 2419.1:2005 and will not be located on any road carriageway.

7.0 Site & Bushfire Hazard Determination

7.01 Planning for Bush Fire Protection - 2006

Planning for Bush Fire Protection – 2006 (PBP) is applicable to those lands determined as being within a 'bushfire prone area' in accordance with a local Bushfire Prone Land Map as provided by the Rural Fire Service and Councils.

The most appropriate method of determining site bushfire hazard under the terms of PBP is to consider the site in a singular form.

Bushfire prone areas are defined as those areas;

- *within or within 100m of high or medium bushfire hazards; or*
- *within or within 30m of low bushfire hazards.*

7.02 Australian Standard AS 3959 – 2009 'Construction of buildings in bushfire –prone areas'

Australian Standard 3959 – 2009 'Construction of buildings in bushfire-prone areas' provides for six (6) levels of building construction these being BAL - Low, BAL - 12.5, BAL - 19, BAL - 29, BAL - 40 and BAL - FZ. The Australian Standard 3959 specifies construction standards for buildings within various Bushfire Attack Levels as determined by the Planning for Bush Fire Protection – 2006 document. The NSW Rural Fire Service will not accept deemed to satisfy provisions for BAL Flame Zone and therefore have a NSW variation to the listed standard provisions of BAL FZ under AS3959 - 2009.

7.03 Correlation between bushfire impact and AS3959

Bushfire Attack Level	Maximum radiant heat impact (kW/m ²)	Level of construction under AS3959-2009
Low		No special construction requirements
12.5	≤12.5	BAL - 12.5
19	12.6 to 19.0	BAL - 19
29	19.1 to 29.0	BAL - 29
40	29.1 to 40.0	BAL - 40
Flame Zone	>40.0	BAL FZ No deemed to satisfy provisions

7.04 Site Specific Bushfire Hazard Determination

All property development must be assessed on an individual basis as broad-brush approaches of documents such as PBP may not be applicable in every instance. The proposed development was assessed against the requirements of Planning for Bush Fire Protection 2006 noting the following:

- The proposal has the capacity to comply with water and access provisions detailed in PBP 2006.
- The subject site has the capacity through perimeter roads to the hazard and standard setbacks to provide residential allotments that accommodate a building footprint achieving, and in most instances exceeding the minimum required Asset Protection Zones for Residential Subdivisions under PBP 19.

7.05 Viable Construction Method

The objectives of Planning for Bush Fire Protection – 2006 are for the protection of life including fire fighters. Provided these objectives can be met the construction of buildings is feasible and both the Rural Fire Service and Council should be in a position to consider such applications.

No new dwellings are proposed as part of this application. Those future residential allotments that are mapped as 'bushfire prone' will require further assessment under s4.14 of the *Environmental Planning and Assessment Act* 1979 at the time of any future development application.

8.0 Conclusion

The subject site comprises of twenty-one (21) existing allotments totalling approximately 201 hectares in size and is bounded by The Northern Road to the east, Chain-O-Ponds Road to the south, private rural-residential allotments to the west and the Glenmore Park Release Area, including a conservation area, to the north.

The rezoning application seeks approval to facilitate the establishment of a future residential community including mixed density residential areas (approx. 2,400 new allotments), mixed use centre, school, public recreation and open spaces and associated services and infrastructure.

Given that the property is deemed bushfire prone under Penrith City Council's Bush Fire Prone Land Map any future development would need to meet the requirements of Planning for Bush Fire Protection. The determination of any bushfire hazard must be made on a site-specific basis that includes an assessment of the local bushland area and its possible impact to the subject site.

We are satisfied that the subject site and proposed Masterplan has the capacity to comply with the relevant specifications and requirements of Planning for Bush Fire Protection 2006 and relevant Bushfire Protection Measures of Planning for Bush Fire Protection 2019.

Furthermore we are satisfied that the proposed Masterplan, in combination with the bushfire protection measures discussed herein will not result in areas that are difficult to evacuate, create control difficulties during a bushfire or adversely affect other bush fire protection strategies or place existing development at increased risk.

We are therefore in support of the rezoning application.

Should you have any enquiries regarding this project please contact me at our office.

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BPAD Accreditation No. BPAD30356



9.0 Annexure 01

List of Referenced Documents

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

Standards Australia (2014). *AS/NZS 1596 The storage and handling of LP Gas*

Standards Australia (2005). *AS 2419.1 Fire hydrant installations – System design, installation and commissioning*

Acknowledgements to:

Geoscience Australia
NSW Department of Lands – SIXMaps
Nearmap.com
Street-directory.com.au

Attachments

Attachment 01: Asset Protection Zone Overlay (PBP 19)

