



AUSTRALIAN BUSHFIRE CONSULTING SERVICES



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Bush Fire Assessment Report



Proposed community title subdivision:

**Proposed Lot 1 in the subdivision of
Lot 402 DP 1155154
52A Tweed Road
Bowenfels, NSW, 2790.**

25th August 2024
Reference 24-206

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Abbreviations:

ABCS	Australian Bushfire Consulting Services Pty Ltd
APZ	Asset Protection Zone
AS 2419	AS 2419 – 2021 Fire hydrant installations System design, installation and commissioning
AS3959-2018	Australian Standard 3959 – 2018 Construction of buildings in bushfire prone areas
BAL	Bushfire Attack Level
BCA	Building Code of Australia
BPMs	Bushfire Protection Measures
BPLM	Bushfire Prone Land Map
BFSA	Bush Fire Safety Authority
Council	Lithgow City Council
DA	Development Application
EP&A Act	Environmental Planning and Assessment Act - 1979
ESD	Ecologically Sustainable Development
FR NSW	Fire & Rescue NSW
IPA	Inner Protection Area
LGA	Local Government Area
NASH Standard	National Association of Steel-Framed Housing Standard - Steel Framed Construction in Bushfire Areas 2021
NCC	National Construction Codes
NP	National Park
NSP	Neighbourhood Safer Place
OPA	Outer Protection Area
PBP 2019	Planning for Bush Fire Protection – 2019
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
SFR	Short Fire Run
SWS	Static Water Supply

1.0 Introduction.

The subject site is proposed Lot 1 in the subdivision of Lot 402 DP 1155154 52A Tweed Road, Bowenfels NSW. The property benefits from an approved development being DA094/19 which provides approval for the concept development for multi dwelling housing ((15) fifteen dwellings) 2 Lot Torrens Title Subdivision, Stage 1 Civil works, the construction of three (3) dwellings and strata subdivision.

This subject development relates to Stage 2 of DA094/19 for the construction of the remaining twelve (12) dwellings and community title subdivision in accordance with the approved Stage 1 concept development at 52A Tweed Road Bowenfels, NSW.

The approved civil works Stage 1 of DA094/19 have commenced to provide access for the three (3) new dwellings already approved as Stage 1 development. An amendment of the road layout is required in this application due to a difference in that the Council Stamped Plans and Construction Certificate for the civil works seem not to allow for the required turning heads imposed by Condition 52 of DA1094/19.

This development application will therefore propose to modify the road design to align the layout with the more current bushfire policy *Planning for Bush Fire Protection 2019* and in doing so will correct this anomaly.

The NSW RFS have reviewed and conditionally approved the concept layout without correctly identifying the sites capacity to provide the turning heads required by condition 52. The proposed amendments to the road design included within this report provide a better outcome than the already Council approved and commenced civil works.

The subject site is mapped as bushfire prone land and therefore the application of *Planning for Bush Fire Protection 2019* (PBP 2019) is relevant to the development proposal. The aims of PBP 2019 is to *provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment*. This is achieved by determining and applying the required asset protection zones, where applicable, applying the relevant construction requirements, ensuring satisfactory access and egress has been incorporated into the design and providing safe service supply and adequate water provisions for occupants and attending emergency services.

2.0 Property details.

Address: 52A Tweed Road, Bowenfels NSW, 2790.
Lot/Sec/DP: Proposed Lot 1 in the subdivision of Lot 402 DP 1155154
52A Tweed Road Bowenfels, NSW, 2075.
Zoned: C4 Environmental Living &
R1 General Residential
LGA: Lithgow City Council

The subject site is surrounded by small lot residential development to the northeast through to the southeast aspect and abuts large rural allotments to the west and south and a large lot residential property to the remaining northern boundary. Farmers Creek is a significant landscape feature within this area and is located along the western boundary of the subject site.

The vegetation identified as a bushfire threat within the surrounding area is located to the west within the residual Lot 2 created as part of Stage 1 development.

3.0 Legislative context.

Subdivision development is classified as integrated development under s100B of the Rural Fires Act 1997. Applying s4.47 of the Environmental Planning and Assessment Act 1979 Council must refer the application to the NSW RFS seeking a Bush Fire Safety Authority from them as part of the development approval process.

Under the integrated development process, the approval authority (in this case the Commissioner of the RFS) is required to provide “general terms” of agreement to the consent authority. If the approval body informs the consent authority that it will not grant an approval the consent authority must refuse consent to the application. If the approval body fails to inform the consent authority whether or not it will grant the approval the consent authority may determine the development application.

In general, the approving authority has 40 days upon receipt of the development application and supporting documents in which to determine the matter. A refusal is subject to appeal to the Land and Environment Court.

To support an application for a Bush Fire Safety authority, an applicant is required to submit a bush fire assessment in accordance with clause 44 of the Rural Fires Regulation 2022. The purpose of this report is to satisfy that requirement. Inclusive of the recommendations made herein the proposal meets the aims, objectives and performance requirements of PBP 2019.

4.0 Referenced documents and people.

The following documents have been referenced in the preparation of this report;

- Lithgow City Council’s Bushfire Prone Land Map
- Fire & Rescue NSW Fire Safety Guidelines for minor residential development Version 2 1 Sept 2016
- AS3959 – 2018 Construction of buildings in bushfire prone areas
- NASH Standard *National Standard Steel Framed Construction in Bushfire Areas 2021*
- Planning for Bush Fire Protection 2019
- Rural Fires Act 1997
- Rural Fires Regulation 2022
- 10/50 Vegetation Clearing Code of Practice
- NSW RFS Guide for bush fire prone land mapping V5b Nov 2015
- Ocean Shores to Desert Dunes – David Andrew Keith 2004
- Site inspection of the subject property and surrounding area, performed 5th July 2024
- Overall site plan by Better Built Homes Sheet 1 of 1
- Proposed subdivision plan by Samana Blue Engineering Ref 20210451FC - C06-C15 inclusive, C44 A, C47 A.
- Detail Survey by CEH Consulting Pty Ltd Ref D22235_121223 Sheet 1 of 1
- Concept Landscape Plan by Zenith Landscape Designs Ref 18-3749 L01 & L02
- Sheets 1-10 for Lot 4 to Lot 15 submission plans by Better Built Homes

5.0 Copyright, scope and disclaimer.

This assessment of possible bushfire impact (including smoke, ember, radiant heat and flame contact) and compliance with matters such as Asset Protection Zones, access and service supply is pertinent to the subject site only. Where reference has been made to the surrounding lands, this report does not assess impact to those lands rather it is an assessment of possible bushfire progression and impact on or from those lands towards the subject site.

Apart from any use permitted under the Copyright Act 1968 no part of this document, including any wording, images, or graphics, can be modified, changed or altered in any way without written permission from Australian Bushfire Consulting Services Pty Ltd. This report may only be referenced, distributed or forwarded to other parties in its original format.

This report has been prepared as a submission document in support of a development application to Council and cannot be relied upon for commencement of works or construction until it has been included within the consent conditions issued by Council as part of the DA determination. **The onus is on the applicant to cross reference this document with any conditions of consent issued by Council or any requirements provided by the NSW Rural Fire Service.** I can review and cross reference these documents however the onus is on the applicant / client to provide them to me and request this review.

Where any difference between this document and the development consent (or the NSW Rural Fire Service requirements) is found, the conditions of consent always take precedence until an application to review, amend or vary those conditions is approved.

The statements and opinions contained in this report are given in good faith and in the belief that such statements and opinions are correct and not misleading. AS3959 – 2018 states that “...*there can be no guarantee that a building will survive a bushfire event of every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions*”. The NSW RFS state “*Homes are not designed to withstand fires in catastrophic conditions*”. Correspondingly any representation, statement of opinion, or advice expressed or implied in this document is made on the basis that Australian Bushfire Consulting Services Pty Ltd is not liable to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any representation, statement or advice made by Australian Bushfire Consulting Services Pty Ltd.

6.0 Assessment summary table.

Aspect.	North	South	West	East
Vegetation Formation	n/a	n/a	Grassland	n/a
Hazard slope.	n/a	n/a	15-20° downslope	n/a
FFDI	80			
Minimum Asset Protection Zone BAL 29	n/a	n/a	16 metres	n/a
Available Asset Protection Zone	n/a	n/a	≥ 16 metres	n/a
APZ BAL 29			≥ 16 - < 24 metres	n/a
APZ BAL 19			≥ 24 - < 34 metres	n/a
APZ BAL 12.5			≥ 34 - < 50 metres	n/a
APZ BAL Low			≥ 50 metres	n/a
Asset Protection Zones general.	<p>At the time of the parent subdivision APZs for grasslands were not mandated within <i>Planning for Bush Fire Protection 2006</i> however asset protection zones were generally taken from Table 2.5 within AS3959-2018 to align with BAL 29 construction. The bushfire protection measures assessed for the subdivision and three (3) dwelling construction are therefore reliant on an asset protection zone / inner protection area of 14 metres.</p> <p>The required APZs for grasslands are now determined and incorporated within <i>Planning for Bush Fire Protection 2019</i>. The required asset protection zone has increased by 2 metres and is now 16 metres.</p> <p>A restriction to user is necessary to be placed on the residual Lot 2 of 11 metres which, when combined with the setbacks provided for private open space within each strata lot, will ensure a greater than 16 metre APZ is provided for all dwellings.</p> <p>The restriction to user was 9 metres for the parent DA and concept design layout (condition 50 (2) of DA094/19). Due to the afore mentioned legislative changes the recommendations of this report will include that this condition is now amended to increase by 2 metres to 11 metres.</p> <p>Recommendations will be included that suitably worded instrument under section 88B of the Conveyancing Act is placed on Lot to ensure the above asset protection zone requirement will be maintained for the life of the development.</p> <p>The APZ has also been retrospectively amended around the existing approved dwellings to ensure uniformity and adequate protection is provided to all dwellings within the estate.</p>			
Threatened Species Aboriginal Relics	None known			
Radiant heat impact	≤ 29 kW/m ²			

Construction of buildings in bushfire prone areas.

The highest bushfire attack level to each dwelling has been determined to be

- Lots 4-5-6 & 7
BAL 29 Roof and the north, west and south facades. BAL 19 east facades
- Lot 8
BAL 19 Roof and the north, west and south facades. BAL 12.5 east facade
- Lot 9
Entire dwelling BAL: 12.5
- Lots 10-11-12-13-14 & 15
BAL Low – no bushfire construction requirements

The recommendations of this report will include that

1. That the proposed new dwellings in Lots 4, 5, 6, & 7 roof and the north, west and south facades are constructed in accordance with section 3 and 7 BAL 29 of *AS 3959 – 2018 Construction of buildings in bushfire prone areas* or NASH Standard *National Association of Steel-Framed Housing Standard - Steel Framed Construction in Bushfire Areas 2021* as appropriate for BAL 29 construction.
2. That the proposed new dwellings in Lots 4, 5, 6, & 7 east facades the proposed new dwelling in Lot 8 roof and the north, west and south facades are constructed in accordance with section 3 and 6 BAL 19 of *AS 3959 – 2018 Construction of buildings in bushfire prone areas* or NASH Standard *National Association of Steel-Framed Housing Standard - Steel Framed Construction in Bushfire Areas 2021* as appropriate for BAL 19 construction.
3. That the proposed new dwelling in Lot 8 east facades and the proposed new dwelling in Lot 9 (entire dwelling) are constructed in accordance with section 3 and 5 BAL 12.5 of *AS 3959 – 2018 Construction of buildings in bushfire prone areas* or NASH Standard *National Association of Steel-Framed Housing Standard - Steel Framed Construction in Bushfire Areas 2021* as appropriate for BAL 12.5 construction.
4. That the proposed new dwellings within Lots 4-9 inclusive are also constructed to that of the 'Additional Construction Requirements' detailed within section 7.5.2 of *Planning for Bush Fire Protection 2019*.
5. That any new fencing or gates within Lots 4, 5, 6, & 7 is to be made from non-combustible materials only.
6. That any new fencing or gates within Lots 8 and 9 is to be made from hardwoods or non-combustible materials except where a fence or gate is within 6 metres of a dwelling it should be made from non-combustible materials only.

Property Access

The proposed private road is required by Condition 52 of DA094/19 to comply with all necessary requirements of section 4.1.3 (1) of *Planning for Bush Fire Protection 2006*.

The approved civil works Stage 1 of DA094/19 have commenced to provide access for the three (3) new dwellings already approved as Stage 1 development. An amendment of the road layout is required in this application due to a difference in that the Council Stamped Plans and Construction Certificate for the civil works seem not to allow for the required turning heads imposed by Condition 52 of DA1094/19.

This development application will therefore propose to modify the road design to align the layout with the more current bushfire policy *Planning for Bush Fire Protection 2019* and in doing so will correct this anomaly. The NSW RFS have reviewed and conditionally approved the concept layout without correctly identifying the sites capacity to provide the turning heads required by condition 52. The proposed amendments to the road design included within this report provide a better outcome than the already Council approved and commenced civil works.

The recommendations within this report will include that the proposed road design complies with the *General Requirements and Non Perimeter Road* specifications of Table 5.3b within *Planning for Bush Fire Protection 2019*.

To this effect the plans have been amended to include a multi-point turning head that complies with PBP 2019 Figure A3.3 Types B between (and west of) Lots 6 & 7. This turning head isn't necessary for property protection which can be achieved from the spine road, however enables direct access to the hazard interface for fire suppression or hazard reduction activities. It also provides access to the asset protection zone for maintenance purposes.

The plans have also been amended to include a turning head east of Lots 1-3. Noting that the turning head initiates at 196 metres from Tweed Road this has been designed as a multi-point turning bay that complies with PBP 2019 Figure A3.3 Types D.

The recommendations herein do not propose a turning head on the dead end leg to Lot 12. The most disadvantaged point of any dwelling within Lots 10-15 is within 70 metres of the spine road. Noting the spine road will provide in excess of 5.5 metre trafficable width, a fire appliance can be located at the intersection of the eastern leg and the spine road, or reverse into the leg, and be within 20 metres of a hydrant and 70 metres of any point of a dwelling within Lots 10-15. The dwellings within Lots 10-15 are in an area determined to be BAL Low.

Table A1.7 PBP 2019: *BAL Low - Minimal attack from radiant heat and flame due to the distance of the building from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements.*

Property protection around the dwellings within Lots 10-15 isn't necessarily a significant consideration.

A "No parking" restriction is required along both sides of the private road and around the turning heads to ensure the trafficable width is maintained free at all times.

Water Supply

Reticulated water is to be provided and extended through the development site. The proposed new allotments will be connected to reticulated water mains for domestic needs.

Recommendations will be included within this report to ensure that the reticulated water supply, including hydrant locations, are provided and installed in accordance with Table 5.3c PBP 2019.

Gas & Electrical Supply

Existing above ground electrical supply is provided to the subject site however this will be redirected below ground within this development. A reticulated gas network is available in this area.

Recommendations will be included to ensure that any new electrical services or gas supply is provided and installed in accordance with Table 5.3c of PBP 2019.

7.0 Images and maps.

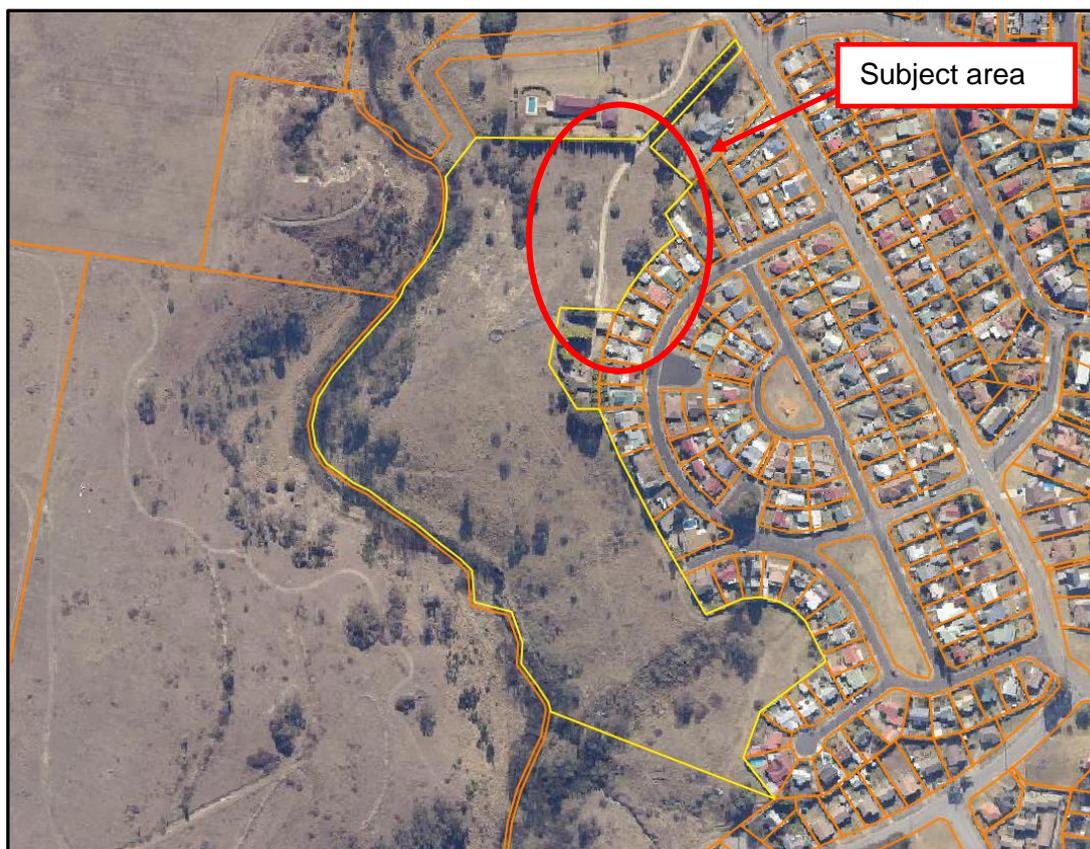


Image 01: Aerial image from NSW Government Planning Portal Property Information

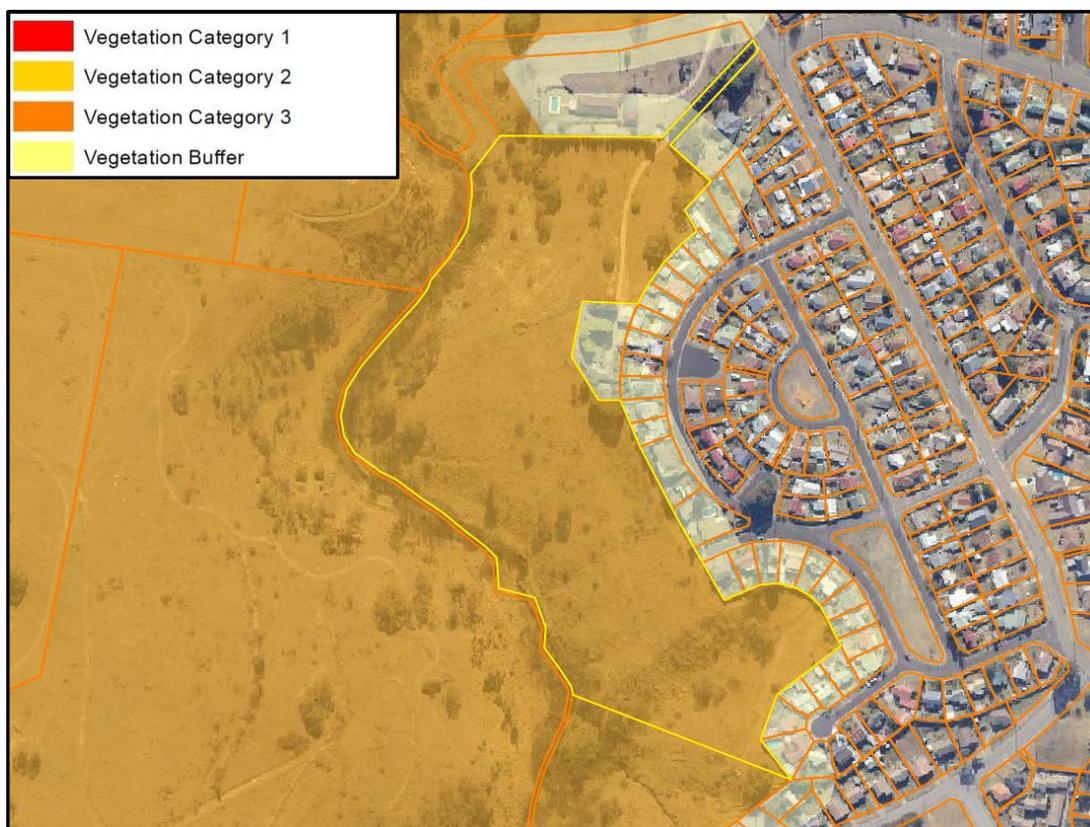


Image 02: Bushfire Prone Land Map from NSW Government Planning Portal Property Information

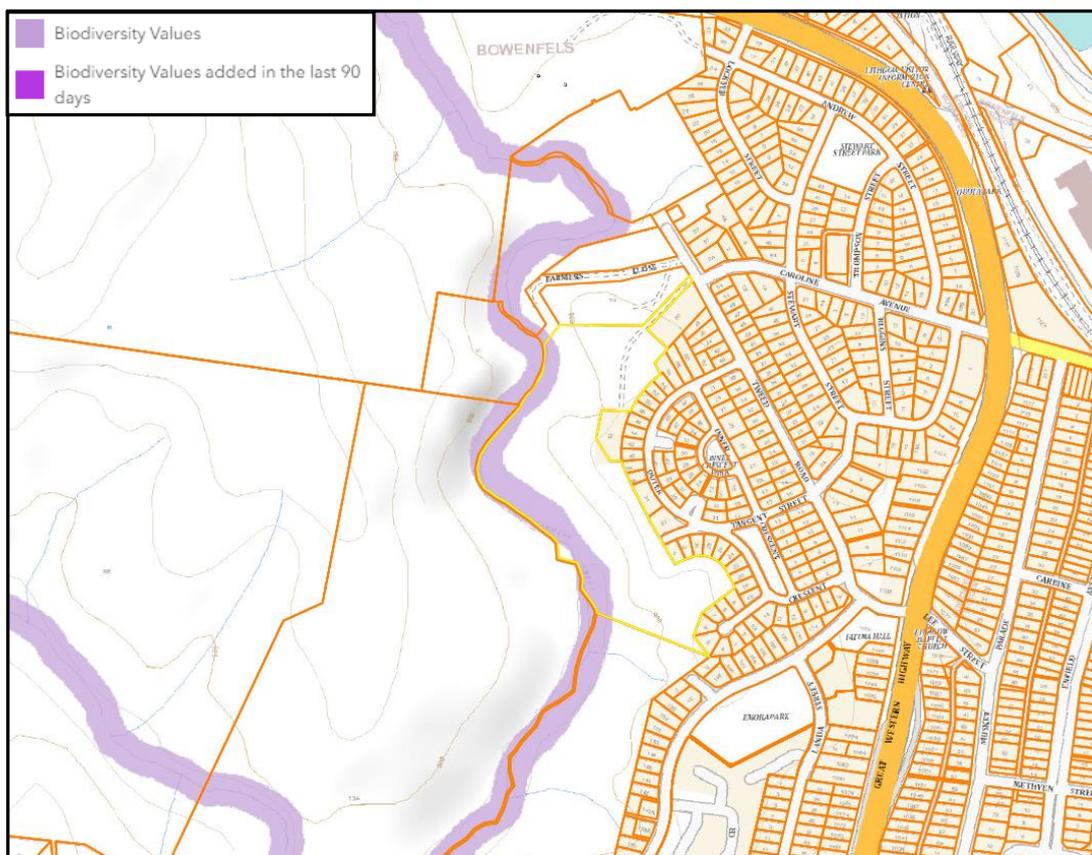


Image 05: Biodiversity Values Map from NSW Government Planning Portal Property Information

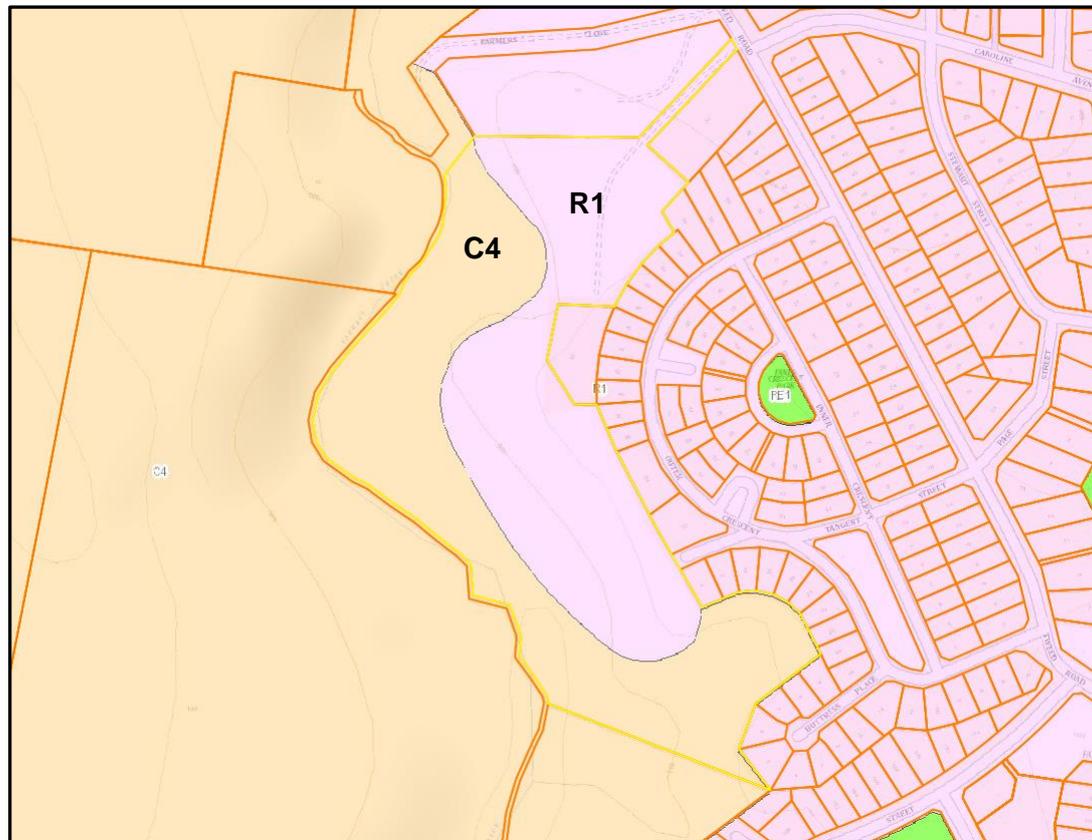
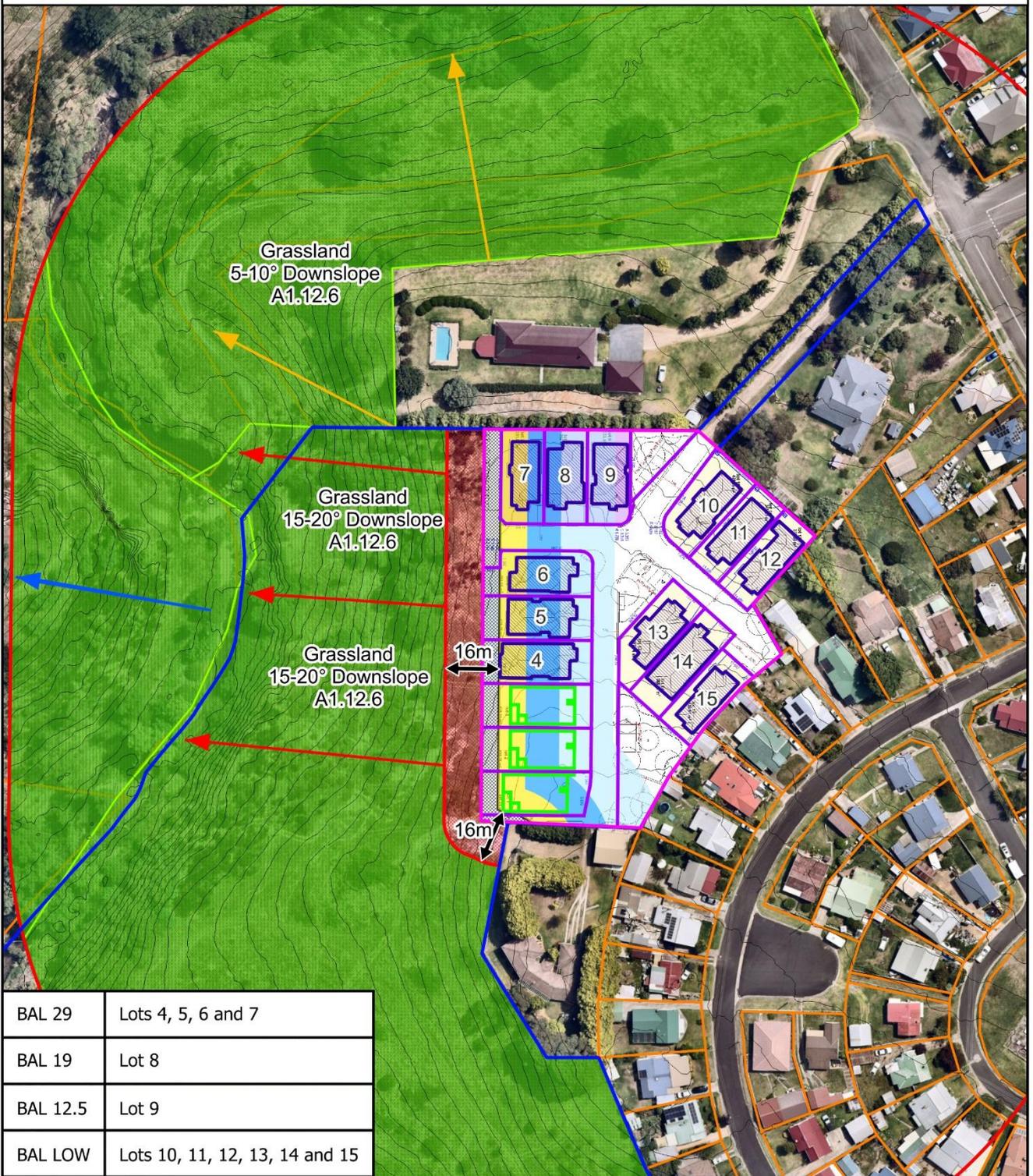


Image 06: Council LEP Zones from NSW Government Planning Portal Property Information

52A Tweed Road Bowenfels - BAL Contours



Legend

- 1m Contours
- ↔ Distance Arrows
- ▭ Property Boundaries
- ▭ Subject Area
- ▭ Subject Site
- ▭ 140m Assessment Area
- ▭ Approved Dwellings
- ▭ Proposed Community Title Lots
- ▭ Proposed 11m APZ Easment
- ▭ Vegetation
 - ▭ Grassland
- BAL Contours**
 - ▭ APZ in POS
 - ▭ BAL-29
 - ▭ BAL-19
 - ▭ BAL-12.5
- Slope Analysis**
 - ▭ 0° and upslope
 - ▭ 0-5° downslope
 - ▭ 5-10° downslope
 - ▭ 10-15° downslope
 - ▭ 15-20° downslope
 - ▭ >20° downslope



ABCS Ref: 24-206
 Map creator: Daniel Tucker
 Date: 19/08/2024
 Imagery: © Nearmap
 Paper size: A4
 Scale: 1:1500
 Coordinate system: GDA 2020 MGA Zone 56

Image 07: Site assessment summary diagram

8.0 Bush fire hazard assessment

Properties considered to be bushfire prone land are identified on Councils Bush Fire Prone Land Map as being:

- *within or within 100 m of Category 1 (high) hazards or,*
- *within or within 30 m of Category 2 (low) hazards or,*
- *within or within 30 m of Category 3 (medium) hazards.*

The NSW RFS document PBP – 2019 is applicable to all development on bushfire prone land, this includes an assessment of the proposals adequacy in providing an appropriate combination of bushfire protection measures in terms of asset protection zones, landscaping, access and service supply. This document also provides a means of determining the necessary level of building construction under AS3959 - 2018. All integrated development on bushfire prone land must be accompanied with a bushfire hazard assessment that includes;

- (a) a description (including the address) of the property on which the development the subject of the application is proposed to be carried out;*
- (b) a classification of the vegetation on and surrounding the property (out to a distance of 140 metres from the boundaries of the property) in accordance with the system for classification of vegetation contained in Planning for Bush Fire Protection;*
- (c) an assessment of the slope of the land on and surrounding the property (out to a distance of 100 metres from the boundaries of the property);*
- (d) identification of any significant environmental features on the property;*
- (e) the details of any threatened species, population or ecological community identified under the Threatened Species Conservation Act 1995 that is known to the applicant to exist on the property;*
- (f) the details and location of any Aboriginal object (within the meaning of the National Parks and Wildlife Act 1974) or Aboriginal place (within the meaning of that Act) that is known to the applicant to be situated on the property;*
- (g) a bush fire assessment for the proposed development (including the methodology used in the assessment) that addresses the following matters:*
 - (i) the extent to which the development is to provide for setbacks, including Asset Protection Zones;*
 - (ii) the siting and adequacy of water supplies for fire fighting;*
 - (iii) the capacity of public roads in the vicinity to handle increased volumes of traffic in the event of a bush fire emergency;*
 - (iv) whether or not public roads in the vicinity that link with the fire trail network have two-way access;*
 - (v) the adequacy of arrangements for access to and egress from the development site for the purposes of an emergency response;*
 - (vi) the adequacy of bush fire maintenance plans and fire emergency procedures for the development site;*
 - (vii) the construction standards to be used for building elements in the development;*
 - (viii) the adequacy of sprinkler systems and other fire protection measures to be incorporated into the development;*
 - (h) an assessment of the extent to which the proposed development conforms with or deviates from the standards, specific objectives, performance criteria and acceptable solutions set out in Chapters 5-8 of PBP; and*
- (i) identify any fire trails that exist on the property that are on the Register of Certified Fire Trails under RF Acts.*

8.1 Site

The subject site is surrounded by small lot residential development to the northeast through to the southeast aspect and abuts large rural allotments to the west and south and a large lot residential property to the remaining northern boundary. Farmers Creek is a significant landscape feature within this area and is located along the western boundary of the subject site.

Ku-ring-gai Council's Bushfire Prone Lands Map (BPLM) identifies that the subject site is currently affected by the buffer zone from a Category 1 and 2 Vegetation, and it is therefore appropriate to apply *Planning for Bush Fire Protection 2019* to the proposed development.

8.2 Vegetation

The vegetation must be assessed for a distance of 140 metres of the development site or asset as per Keith (2004). This includes assessing vegetation both within and external to the site boundaries. Where mixes of vegetation formations are located together, the vegetation formation providing the greater hazard shall be used for the purpose of this assessment.

The vegetation identified as a bushfire threat within the surrounding area is located to the west within the residual Lot 2 created as part of Stage 1 development. The vegetation is grassland extending down to the Farmers Creek. Along the banks of Farmers Creek there is scattered trees and weeds confined to a very narrow corridor. Beyond Farmers creek is grassland and pastures.

For the purpose of this assessment the hazard has been determined to be a grassland.



Image 08: Drone view looking southeast across the subject site



Image 09: Drone view looking northeast across the subject site



Image 10: Drone view looking north across the subject site

8.3 Topography

The slope must be assessed over a distance of at least 100m from the existing property boundary (or proposed building footprint) towards the various vegetation communities constituting the hazard. In identifying the effective slope, it may be found that there are a variety of slopes covering different distances within the vegetation. T

The effective slope is considered to be the slope under the vegetation which will most significantly influence the bush fire behaviour must be determined. The most significant bushfire impact from within the hazard to the west is expected to be from a bushfire travelling upslope towards the subject site at 15-20 degrees.



Image 11: View south within Lot 2 taken west of the proposed development



Image 12: View south within Lot 2 taken west of the proposed development

8.4 Asset Protection Zones

An Asset Protection Zone (APZ) is a buffer zone between a bush fire hazard and buildings, which is managed progressively to minimise fuel loads and reduce potential radiant heat levels, flame, ember and smoke attack. A fuel-reduced, physical separation between buildings and bush fire hazards is the key element in the suite of bushfire protection measures.

Minimum APZs for residential subdivision are determined under PBP and must be such that, during a bushfire event, a building footprint is not exposed to greater than 29 kW/m². APZs can be determined from either deemed to satisfy tables within PBP or by alternate solutions using bushfire design fire modelling.

At the time of the parent subdivision APZs for grasslands were not mandated within *Planning for Bush Fire Protection 2006* however asset protection zones were generally taken from Table 2.5 within AS3959-2018 to align with BAL 29 construction. The bushfire protection measures assessed for the subdivision and three (3) dwelling construction are therefore reliant on an asset protection zone / inner protection area of 14 metres.

The required APZs for grasslands are now determined and incorporated within *Planning for Bush Fire Protection 2019*. The required asset protection zone has increased by 2 metres and is now 16 metres.

A restriction to user is necessary to be placed on the residual Lot 2 of 11 metres which, when combined with the setbacks provided for private open space within each strata lot, will ensure a greater than 16 metre APZ is provided for all dwellings.

The restriction to user was 9 metres for the parent DA and concept design layout (condition 50 (2) of DA094/19). Due to the afore mentioned legislative changes the recommendations of this report will include that this condition is now amended to increase by 2 metres to 11 metres.

Recommendations will be included that suitably worded instrument under section 88B of the Conveyancing Act is placed on Lot to ensure the above asset protection zone requirement will be maintained for the life of the development.

The APZ has also been retrospectively amended around the existing approved dwellings to ensure uniformity and adequate protection is provided to all dwellings within the estate.

Inner Protection Areas (IPAs)

Trees:

- canopy cover should be less than 15% (at maturity)
- trees (at maturity) should not touch or overhang the building
- lower limbs should be removed up to a height of 2m above ground
- canopies should be separated by 2 to 5m
- preference should be given to smooth barked and evergreen trees.

Shrubs:

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings
- shrubs should not be located under trees
- shrubs should not form more than 10% ground cover
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass:

- should be kept mown (as a guide grass should be kept to no more than 100mm in height)
- leaves and vegetation debris should be removed.

8.5 Access & egress

The proposed private road is required by Condition 52 of DA094/19 to comply with all necessary requirements of section 4.1.3 (1) of *Planning for Bush Fire Protection 2006*. The approved civil works Stage 1 of DA094/19 have commenced to provide access for the three (3) new dwellings already approved as Stage 1 development. An amendment of the road layout is required in this application due to a difference in that the Council Stamped Plans and Construction Certificate for the civil works seem not to allow for the required turning heads imposed by Condition 52 of DA1094/19.

This development application will therefore propose to modify the road design to align the layout with the more current bushfire policy *Planning for Bush Fire Protection 2019* and in doing so will correct this anomaly. The NSW RFS have reviewed and conditionally approved the concept layout without correctly identifying the sites capacity to provide the turning heads required by condition 52. The proposed amendments to the road design included within this report provide a better outcome than the already Council approved and commenced civil works.

The recommendations within this report will include that the proposed road design complies with the *General Requirements* and *Non Perimeter Road* specifications of Table 5.3b within *Planning for Bush Fire Protection 2019*.

To this effect the plans have been amended to include a multi-point turning head that complies with PBP 2019 Figure A3.3 Types B between (and west of) Lots 6 & 7. This turning head isn't necessary for property protection which can be achieved from the spine road, however enables direct access to the hazard interface for fire suppression or hazard reduction activities. It also provides access to the asset protection zone for maintenance purposes.

The plans have also been amended to include a turning head east of Lots 1-3. Noting that the turning head initiates at 196 metres from Tweed Road this has been designed as a multi-point turning bay that complies with PBP 2019 Figure A3.3 Types D.

The recommendations herein do not propose a turning head on the dead end leg to Lot 12. The most disadvantaged point of any dwelling within Lots 10-15 is within 70 metres of the spine road. Noting the spine road will provide in excess of 5.5 metre trafficable width, a fire appliance can be located at the intersection of the eastern leg and the spine road, or reverse into the leg, and be within 20 metres of a hydrant and 70 metres of any point of a dwelling within Lots 10-15. The dwellings within Lots 10-15 are in an area determined to be BAL Low.

Table A1.7 PBP 2019: *BAL Low - Minimal attack from radiant heat and flame due to the distance of the building from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements.*

Property protection around the dwellings within Lots 10-15 isn't necessarily a significant consideration.

A "No parking" restriction is required along both sides of the private road and around the turning heads to ensure the trafficable width is maintained free at all times.

The applicable Rural Fire Service road and access requirements are;

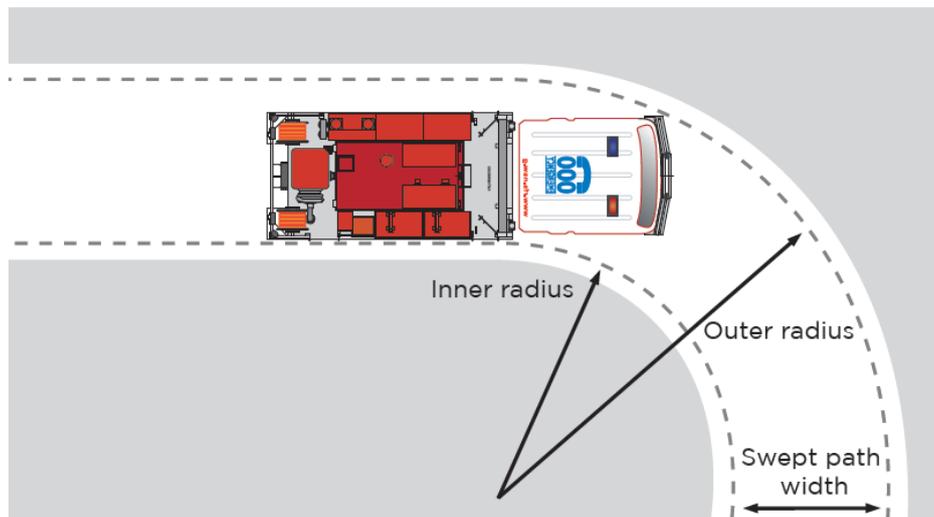
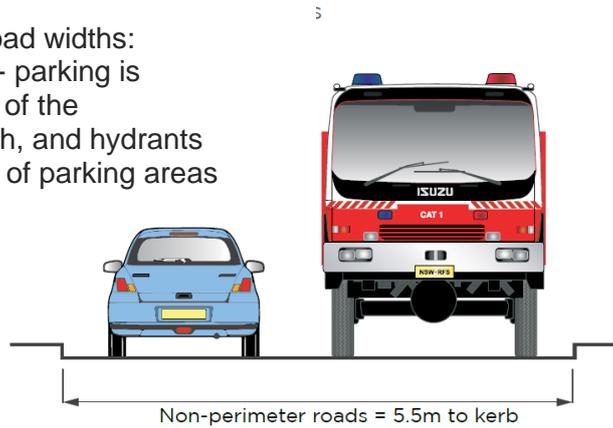
General Requirements:

- property access roads are two-wheel drive, all-weather roads;
- traffic management devices are constructed to not prohibit access by emergency services vehicles;
- maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient;
- where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road;
- hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression;
- the capacity of road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/causeways are to clearly indicate load rating.

Non-perimeter roads:

- minimum 5.5m carriageway width kerb to kerb;
- parking is provided outside of the carriageway width;
- hydrants are located clear of parking areas;
- curves of roads have a minimum inner radius of 6m;
- provide a suitable turning area in accordance with Appendix 3;
- the road crossfall does not exceed 3 degrees; and
- a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.

Non-perimeter road widths:
5.5 metres wide - parking is provided outside of the carriageway width, and hydrants are located clear of parking areas



Minimum curve radius for turning vehicles.

Curve radius (inside edge in metres)	Swept path (metres width)
< 40	4.0
40 - 69	3.0
70 - 100	2.7
> 100	2.5

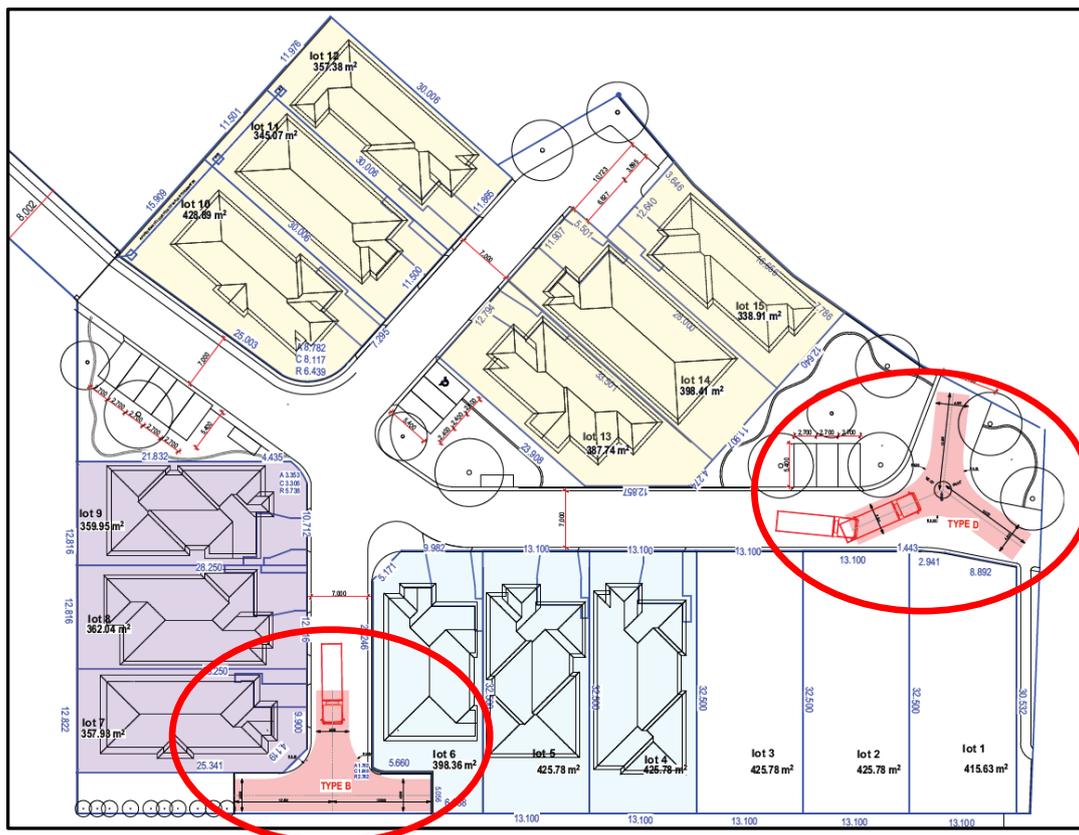
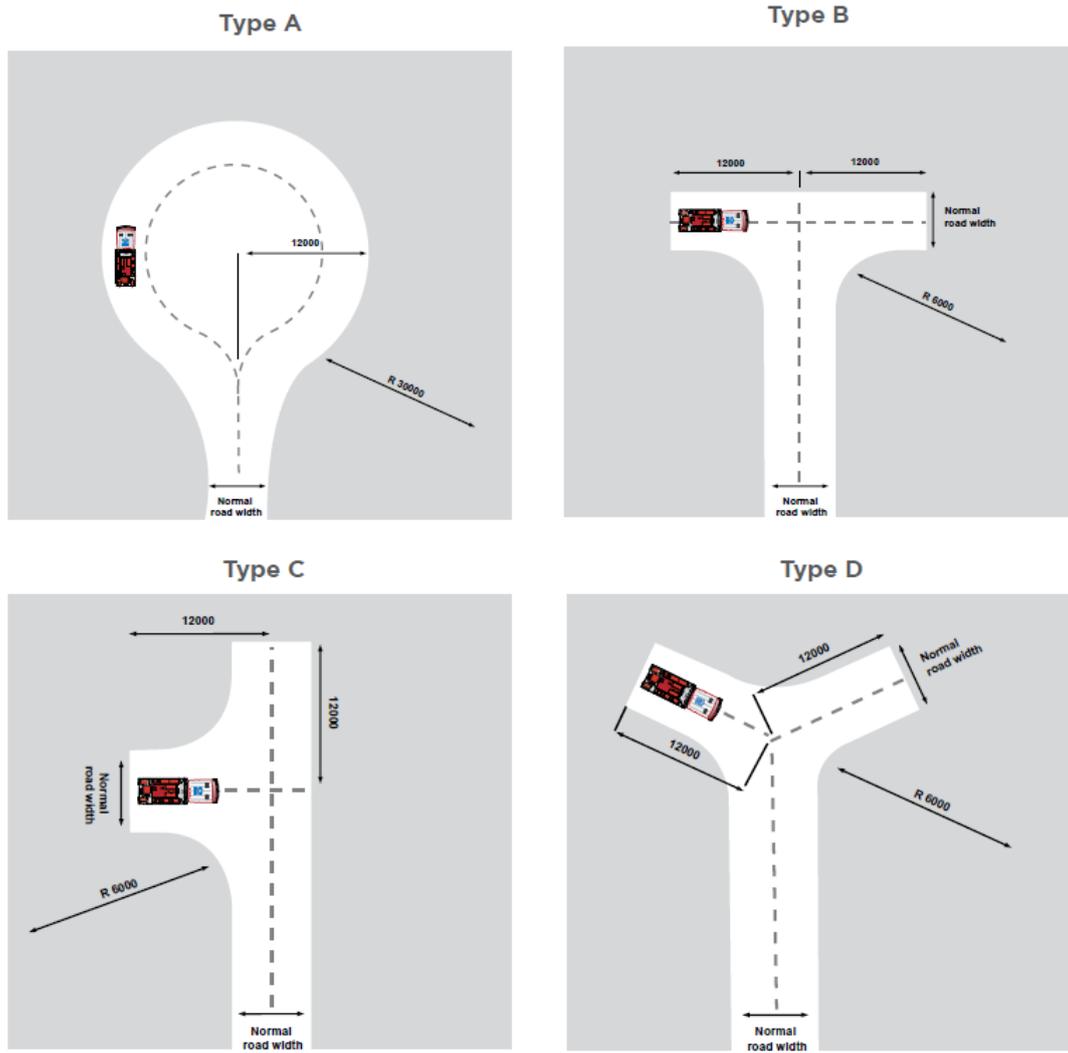


Image 08: Extract from Overall Site Plan Better Built Homes Sheet 1 of 1 Rev C

8.6 Evacuation

All new allotments will have direct access to Tweed Road to the north via the proposed private road. Evacuation is possible by utilising existing road infrastructure.

It is advised that future occupants should complete a Bush Fire Safety Plan addressing “Prepare, Act, Survive” as advocated by the NSW RFS <http://www.rfs.nsw.gov.au/> under publications / bushfire safety.

8.7 Services

Reticulated water is to be provided and extended through the development site. The proposed new allotments will be connected to reticulated water mains for domestic needs.

Recommendations will be included within this report to ensure that the reticulated water supply, including hydrant locations, are provided and installed in accordance with Table 5.3c PBP 2019.

Recommendations will be included within this report to ensure that new hydrants are installed in accordance with Table 5.3c PBP 2019. The water supplies shall be located at regular intervals; and accessible and reliable for firefighting operations.

- Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2021;
- Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression;
- Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2021.

Existing above ground electrical supply is provided to the subject site. Recommendations will be included to ensure that any new electrical services supply is provided and installed in accordance with Table 5.3c of PBP 2019. The location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.

- Where practicable, electrical transmission lines are underground;
- Where overhead, electrical transmission lines are proposed as follows:
 - lines are installed with short pole spacing of 30m, unless crossing gullies, gorges or riparian areas; and
 - no part of a tree is closer to a power line than the distance set out in *ISSC3 Guideline for Managing Vegetation Near Power Lines*.

A reticulated gas network is available in this area. Recommendations will be included to ensure that any new gas supply is provided and installed in accordance with Table 5.3c of PBP 2019. The location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.

- reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 - *The storage and handling of LP Gas*, the requirements of relevant authorities, and metal piping is used;
- polymer-sheathed flexible gas supply lines are not used, above-ground gas service pipes are metal, including and up to any outlets.

8.8 Construction

AS3959 – 2018	
BAL Low	It is predicated on low threat vegetation and non-vegetated areas. This Standard does not provide construction requirements for buildings assessed in bushfire-prone areas as being BAL-LOW.
BAL-12.5	BAL-12.5 is primarily concerned with protection from ember attack and radiant heat up to and including 12.5 kW/m ² where the site is less than 100 m from the source of bushfire attack.
BAL-19	BAL-19 is primarily concerned with protection from ember attack and radiant heat greater than 12.5 kW/m ² up to and including 19 kW/m ² .
BAL-29	BAL-29 is primarily concerned with protection from ember attack and radiant heat greater than 19 kW/m ² up to and including 29 kW/m ² .
BAL-40	BAL-40 is primarily concerned with protection from ember attack, increased likelihood of flame contact and radiant heat greater than 29 kW/m ² and up to and including 40 kW/m ² .
BAL-FZ	BAL-FZ is primarily concerned with protection from flame contact together with ember attack and radiant heat of more than 40 kW/m ² . Construction in the Flame Zone BAL-FZ may require reliance on measures other than construction. The requirements for construction of a building in the Flame Zone are regulated by the building authorities having jurisdiction in the States and Territories of Australia.



Planning for Bush Fire Protection 2019 provides for six (6) levels of building construction these being BAL - Low, BAL - 12.5, BAL - 19, BAL - 29, BAL - 40 and BAL - FZ. A Bushfire Attack Level (BAL) is a means of measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat expressed in kilowatts per metre squared, and is the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire.

The highest bushfire attack level to each dwelling has been determined to be

- Lots 4-5-6-7
BAL 29 Roof and the north, west and south facades. BAL 19 east facades
- Lot 8
BAL 19 Roof and the north, west and south facades. BAL 12.5 east facade
- Lot 9
Entire dwelling BAL: 12.5
- Lots 10-11-12-13-14-15
BAL Low – no bushfire construction requirements

PBP 2019 Fences and Gates:

Fences and gates in bush fire prone areas may play a significant role in the vulnerability of structures during bush fires. In this regard, all fences in bush fire prone areas should be made of either hardwood or non-combustible material.

However, in circumstances where the fence is within 6m of a building or in areas of BAL-29 or greater, they should be made of non-combustible material only.

The recommendations of this report will include that

7. That the proposed new dwellings in Lots 4, 5, 6, & 7 roof and the north, west and south facades are constructed in accordance with section 3 and 7 BAL 29 of AS 3959 – 2018 *Construction of buildings in bushfire prone areas* or NASH Standard *National Association of Steel-Framed Housing Standard - Steel Framed Construction in Bushfire Areas 2021* as appropriate for BAL 29 construction.
8. That the proposed new dwellings in Lots 4, 5, 6, & 7 east facades the proposed new dwelling in Lot 8 roof and the north, west and south facades are constructed in accordance with section 3 and 6 BAL 19 of AS 3959 – 2018 *Construction of buildings in bushfire prone areas* or NASH Standard *National Association of Steel-Framed Housing Standard - Steel Framed Construction in Bushfire Areas 2021* as appropriate for BAL 19 construction.
9. That the proposed new dwelling in Lot 8 east facades and the proposed new dwelling in Lot 9 (entire dwelling) are constructed in accordance with section 3 and 5 BAL 12.5 of AS 3959 – 2018 *Construction of buildings in bushfire prone areas* or NASH Standard *National Association of Steel-Framed Housing Standard - Steel Framed Construction in Bushfire Areas 2021* as appropriate for BAL 12.5 construction.
10. That the proposed new dwellings within Lots 4-9 inclusive are also constructed to that of the 'Additional Construction Requirements' detailed within section 7.5.2 of *Planning for Bush Fire Protection 2019*.
11. That any new fencing or gates within Lots 4, 5, 6, & 7 is to be made from non-combustible materials only.
12. That any new fencing or gates within Lots 8 and 9 is to be made from hardwoods or non-combustible materials except where a fence or gate is within 6 metres of a dwelling it should be made from non-combustible materials only.

9.0 Recommendations

9.1 Asset Protection Zones / landscaping

1. That at the commencement of subdivision and in perpetuity all grounds within Lots 1 of the subdivision of Lot 402 DP 1155154 52A Tweed Road, Bowenfels NSW are to be maintained as an Asset Protection Zone / Inner Protection Area as detailed in Appendix 4 of Planning for Bushfire Protection 2019.
2. That at the commencement of subdivision and in perpetuity all grounds within proposed Lot 2 in the subdivision of Lot 402 DP 1155154 52A Tweed Road, Bowenfels NSW for a minimum distance of 11 metres along the common boundary with Lot 1 are to be maintained as an Asset Protection Zone / Inner Protection Area as detailed in Appendix 4 of Planning for Bushfire Protection 2019.
3. That at the issue of a subdivision certificate a suitably worded instrument is created pursuant to section 88 of the *Conveyancing Act 1919* to ensure the asset protection zone requirement within Lot 2 will be maintained for the life of the development. Full and free right to enter and maintain the asset protection zone shall be granted to the strata scheme of Lot 1.

9.2 Construction

4. That the proposed new dwellings in Lots 4, 5, 6, & 7 roof and the north, west and south facades are to be constructed in accordance with section 3 and 7 BAL 29 of AS 3959 – *2018 Construction of buildings in bushfire prone areas* or NASH Standard *National Association of Steel-Framed Housing Standard - Steel Framed Construction in Bushfire Areas 2021* as appropriate for BAL 29 construction.
5. That the proposed new dwellings in Lots 4, 5, 6, & 7 east facades the proposed new dwelling in Lot 8 roof and the north, west and south facades are to be constructed in accordance with section 3 and 6 BAL 19 of AS 3959 – *2018 Construction of buildings in bushfire prone areas* or NASH Standard *National Association of Steel-Framed Housing Standard - Steel Framed Construction in Bushfire Areas 2021* as appropriate for BAL 19 construction.
6. That the proposed new dwelling in Lot 8 east facades and the proposed new dwelling in Lot 9 (entire dwelling) are to be constructed in accordance with section 3 and 5 BAL 12.5 of AS 3959 – *2018 Construction of buildings in bushfire prone areas* or NASH Standard *National Association of Steel-Framed Housing Standard - Steel Framed Construction in Bushfire Areas 2021* as appropriate for BAL 12.5 construction.
7. That the proposed new dwellings within Lots 4-9 inclusive are also to be constructed to that of the 'Additional Construction Requirements' detailed within section 7.5.2 of *Planning for Bush Fire Protection 2019*.
8. That any new fencing or gates within Lots 4, 5, 6, & 7 is to be made from non-combustible materials only.
9. That any new fencing or gates within Lots 8 and 9 is to be made from hardwoods or non-combustible materials except where a fence or gate is within 6 metres of a dwelling it should be made from non-combustible materials only.

9.2 Access

10. That the proposed road layout complies with the following *General Requirements* and *Non Perimeter Road* specifications of Table 5.3b of PBP 2019.

- property access roads are two-wheel drive, all-weather roads;
- traffic management devices are constructed to not prohibit access by emergency services vehicles;
- maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient;
- dead end roads are clearly sign posted as a dead end;
- the capacity of non-perimeter road surfaces is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes);
- hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression;
- minimum 5.5m carriageway width kerb to kerb;
- parking is provided outside of the carriageway width;
- hydrants are located clear of parking areas;
- curves of roads have a minimum inner radius of 6m;
- the road crossfall does not exceed 3 degrees; and
- a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.

11. That a no parking restriction is required to be enforced along the internal road and within all turning areas.

Note: To comply with the above the plans have been amended to include a multi-point turning head that complies with PBP 2019 Figure A3.3 Types B between (and west of) Lots 6 & 7 and another turning head that complies with PBP 2019 Figure A3.3 Types D east of Lots 1-3.

9.3 Services

Water Supply

12. That hydrant services are provided in accordance with Table 5.3c of PBP 2019. The water supplies shall be located at regular intervals; and accessible and reliable for firefighting operations.

- Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2021;
- Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression;
- Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2021.

Electricity

13. That new electrical services are provided in accordance with Table 5.3c of PBP 2019. The location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.

- Where practicable, electrical transmission lines are underground;
- Where overhead, electrical transmission lines are proposed as follows:

lines are installed with short pole spacing of 30m, unless crossing gullies, gorges or riparian areas; and

no part of a tree is closer to a power line than the distance set out in ISSC3 *Guideline for Managing Vegetation Near Power Lines*.

Gas

14. That any new gas supply is provided in accordance with Table 5.3c of PBP 2019. The location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.

- reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 - *The storage and handling of LP Gas*, the requirements of relevant authorities, and metal piping is used;
- polymer-sheathed flexible gas supply lines are not used, above-ground gas service pipes are metal, including and up to any outlets.

10.0 Conclusion

The subject property is determined to be bushfire prone land and the development is classified as integrated development under s100B of the Rural Fires Act 1997. Therefore, under s4.47 of the Environmental Planning and Assessment Act 1979, Council must refer the application to the NSW RFS seeking a Bush Fire Safety Authority (BFSA) from them as part of the development approval process.

To receive a BFSA a development must, to the degree necessary, meet the intent of measures and performance requirements of PBP 2019. In new subdivisions this is achieved with an appropriate combination of bushfire protection measures, especially an APZ, to ensure in a bushfire event no future dwelling will be exposed to radiant heat levels greater than 29 kW/m². In addition to an APZ suitable access, services supply and means of maintaining the bushfire protection measures for the life of the development are applied.

This bushfire hazard and determination has been made on a site-specific basis which includes an assessment of the local bushland area and its possible impact to the subject property. Inclusive of the recommendations made herein the proposal meets the aims and objectives of PBP 2019 by compliance with the intent of measures and performance requirements of that document. I am satisfied these recommendations will provide a reasonable and satisfactory level of bushfire protection to the proposed development.

I am therefore in support of the development application.

Australian Bushfire Consulting Services Pty Ltd



Wayne Tucker

Managing Director
G. D. Design in Bushfire Prone Areas.
Certificate IV Fire Technology
Ass Dip Applied Science
FPA Australia BPAD Level 3 Accredited Practitioner
BPAD Accreditation No. BPAD9399



List of attachments

Attachment 01: S4.14 Certificate

Bush Fire Certificate

Certificate issued under 4.14(1)(b) of the *Environmental Planning & Assessment Act, 1979* and *Planning for Bush Fire Protection 2019*

This Certificate has been issued by a person accredited by Fire Protection Association Australia (FPA Australia) under the Bush Fire Planning and Design (BPAD) Accreditation Scheme and who is recognised by the NSW Rural Fire Service as a qualified consultant in bushfire risk assessment within the meaning of section 4.14(1)(b) of the *Environmental Planning and Assessment Act 1979* (NSW).

Property Details and Description of Works

Address Details	Unit no	Street no	Street name	Lot/Sec/DP
	Suburb			State
Local Government Area				
BCA class of the building				
Description of the proposal				
Development Application Reference				

Bush Fire Assessment Report

A detailed Bush Fire Assessment Report is attached, which includes the relevant submission requirements set out in <i>Appendix 2 of Planning for Bush Fire Protection 2019</i> together with recommendations as to how the relevant specifications and requirements are to be achieved.	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Report Reference and date		

BPAD Certification

Name	I hereby certify, in accordance with Section 4.14(1)(b) of the <i>Environmental Planning and Assessment Act 1979</i> that:	
Company Details & ABN	<ul style="list-style-type: none"> I am a person recognised by the NSW Rural Fire Service as a qualified consultant in bush fire risk assessment; and the development conforms to the relevant specifications and requirements of <i>Planning for Bush Fire Protection 2019</i> in accordance with section 4.14(1)(b) of the <i>Environmental Planning and Assessment Act 1979</i> (NSW). 	
BPAD Accreditation Number	Signature	Date
		