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Bushfire Assessment Report

Proposed

Development: "Locale", Attached Multi Dwelling Housing Comprising
Twenty-Four (24) Houses Across Three Buildings

Client: Propel Investment

Property Details: Lot 11 DP 593328 & Lot 5 DP 525896
60 Bangalow Road Byron Bay NSW 24

LGA: Byron Shire

Date of Issue: 12/01/2024

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Document Control

Version	Date	Description	Prepared by	Authorised by
0.1	21/09/2023	Draft	PM	PM
1.0	25/09/2023	Final	PM	PM
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Executive Summary

This report has been prepared to assess the Construction of Twenty-four (24) Affordable Housing dwellings at Lot 11 DP 593328 & Lot 5 DP 525896, 60 Bangalow Road Byron Bay NSW 24 to determine the Bushfire Attack Level (BAL) and radiant heat levels for the site(s) and relevant requirements under 'Planning for Bushfire Protection 2019' (PBP).

The results of the site assessment undertaken on 31/08/2023 are summarised in the table below.

<i>Potential building footprints are <u>not</u> exposed to radiant heat levels exceeding 29kW/m² on each potential lot?</i>	<i>YES.</i>
<i>Does the development comply with PBP 2019:</i>	<i>YES.</i>
<i>Are Performance Solutions presented:</i>	<i>NO.</i>

Full results and recommendations are presented in [Section 3](#) & [Section 4](#).

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1. Introduction

1.1 PROPOSED DEVELOPMENT

This bushfire assessment report has been prepared by FireTech Bushfire Consulting on behalf of Propel Investment for construction of "Locale", Attached Multi Dwelling Housing Comprising 24 Houses Across Three Buildings located at Lot 11 DP 593328 & Lot 5 DP 525896, 60 Bangalow Road Byron Bay NSW 24 (Figure 1; Table 1).

The proposed development is classified as infill development under Section 4.14 of the Environmental Planning & Assessment Act 1979 (EP&A Act) therefore the proposed development must satisfy the relevant consent authority that it can conform to the provisions within *Planning for Bushfire Protection 2019* (PBP), specifically, Section 7 *Residential Infill Development*.

Whilst strata subdivision is not included in the proposed development, it is considered likely to occur in the future therefore this report has included assessment of provisions required to conform with Section 5 *Residential and Rural Residential Subdivisions* (PBP).

The proposed development involves the consolidation of two existing lots (Lot 11 DP 593328 & Lot 5 DP 525896) and part of Lot 14 DP 792128 into one lot, and to construct multi-dwelling housing containing 24 dwellings across three buildings.

The surrounds of the subject site consist of residential lots with dwelling on three aspects (north, east, south). Bangalow Road traverses the lot to the east while a large parcel of Coastal Swamp Forest sits adjacent to the west.



Figure 1: Aerial image of the subject site (Source: Metromap 2023; Google Maps 2023)

Table 1: Lot Sizes

Existing Lots	Existing Lot Size (m ²)
5/525896	648.42
11/593328	1272.04
14/792128 (part)	3421

Proposed Lot Size (m ²)
5341.46

1.2 BUSHFIRE PRONE LAND

The proposed development site is mapped as ‘Bush Fire Prone Land’ (BFPL) under section 10.3 of the EP&A Act, thus triggering the legislative requirements for construction on bushfire prone land (Figure 2).

The area where the multi-dwelling housing is to be constructed is situated in Vegetation Buffer zone.



Figure 2: BFPL Map (Source: NSW Government 2023)

1.3 AIM & OBJECTIVES

All development on BFPL must satisfy the aim and objectives of PBP. The aim of PBP 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 (PBP 2019).

The aim of this report is to demonstrate how the proposed development shall conform to the specific objectives of infill development (Section 7.3, PBP) by recommending & ensuring that appropriate Bushfire Protection Measures (BPMs) are implemented and are commensurate to the bushfire risk to the site (Ref. Tables 3-8).

1.4 LIMITATIONS OF THIS REPORT

This bushfire report does not include an environmental, ecological or Aboriginal assessment. A Statement of Environmental Effects (SEE) and any supporting assessments, not limited to the list below, in support of the DA shall be the responsibility of the client.

- State Environmental Planning Policy (Biodiversity and Conservation) 2021
- State Environmental Planning Policy (Resilience and Hazards) 2021
- Biodiversity Conservation Act 2016 (NSW)
- Local Land Services Act 2013 (NSW)
- National Parks and Wildlife Act 1974 (NSW)
- Environmental Protection and Biodiversity Conservation Act 1999

1.5 METHOD

An onsite assessment of the subject site was undertaken on 31/08/2023 in accordance with the *Site Assessment Methodology* as described in Appendix 1 of PBP.

The Forest Fire Danger Index (FFDI) for the site is 80.

2. Bushfire Threat Assessment

2.1 VEGETATION ANALYSIS

Assessment of vegetation formations are undertaken in accordance with Keith (2004) and s.A1.2 of PBP, to at least 140m from the development site or building (Table 2; Figure 3).

Table 2. Vegetation formation analysis

<p>North, East, South – Managed Land</p> <p>These areas consist of residential lots with dwellings. Bangalow Rd traverses the eastern boundary.</p>	 <p>Photo 1: Managed land north</p>
	 <p>Photo 2: Managed land east</p>
	 <p>Photo 3: Managed land south</p>
<p>West – Forest</p> <p>This area consists of forest vegetation on level ground.</p>	 <p>Photo 4: Forest west</p>



Figure 3: Vegetation analysis for "Locale", 60 Bangalow Rd, Byron Bay (Source: Metromap 2023)

3. Results – Bushfire Protection Measures

3.1 ASSET PROTECTION ZONES (APZs)

APZs shall be maintained in perpetuity as an Inner Protection Area (IPA) & Outer Protection Area (OPA) per Table A1.12.4 of PBP 2019 and based on setbacks pursuant to Tables A1.12.3 & A1.12.6 of PBP 2019 (Ref. Tables 3,4,5 & Figure 3). The IPA & OPA must comply with *Appendix 4 - Asset Protection Zone Requirements* (PBP 2019) which is presented in Appendix B this report.

Table 3. Summary Bushfire Attack Level (BAL) Assessment for Block A

Direction	Vegetation formation	Distance to hazard (m)	Slope	APZ required (m)
North,East,South	Managed Land	-	-	To boundary
West	Forest	30	Level	29 (19 IPA; 10 OPA)

Table 4. Summary Bushfire Attack Level (BAL) Assessment for Blocks B & C

Direction	Vegetation formation	Distance to hazard (m)	Slope	APZ required (m)
North,East,South	Managed Land	-	-	To boundary
West	Forest	20	Level	20 (10 IPA; 10 OPA)

Table 5. BPM Compliance - APZs

BPM	Performance Criteria	Acceptable Solutions	Complies
Asset Protection Zones	Potential building footprints must not be exposed to radiant heat levels exceeding 29kW/m ² on each proposed lot.	APZs are provided in accordance with Tables A1.12.3 or A1.12.6 based on the FFDI.	YES
	APZs are managed and maintained to prevent the spread of a fire towards a building.	APZs are managed in accordance with the requirements of Appendix 4 (PBP).	YES
	The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	YES
	APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZ are located on lands with a slope less than 18 degrees.	YES

3.2 CONSTRUCTION LEVEL

The BAL rating/s for the proposed development is as follows:

Block A: Construction shall comply with *AS3959:2018 'Construction of Buildings in Bushfire-prone Areas'* s.3 - Construction General and s.6 - Construction Requirements for BAL-19 for the entire roof system and the northern, western & southern aspects; and s.3 - Construction General and s.5 - Construction Requirements for BAL-12.5 on the eastern aspect.

Blocks B & C: Construction shall comply with *AS3959:2018 'Construction of Buildings in Bushfire-prone Areas'* s.3 - Construction General and s.7 - Construction Requirements for BAL-29 for the entire roof system and the northern, western & southern aspects; and s.3 - Construction General and s.6 - Construction Requirements for BAL-19 on the eastern aspect.

In addition to the above, the NSW variations detailed in s.7.5.2 of PBP 2019 shall be implemented.

Table 6. BPM Compliance - Construction

BPM	Performance Criteria	Acceptable Solutions	Complies
Construction Standards	The proposed building can withstand bush fire attack in the form of embers, radiant heat, and flame contact.	BAL is determined in accordance with Tables A1.12.5 to A1.12.7; and Construction provided in accordance with the NCC and as modified by section 7.5 (please see advice on construction in the flame zone).	YES – refer s.4.
	Proposed fences and gates are designed to minimise the spread of bush fire.	Fencing and gates are constructed in accordance with section 7.6.	YES
	Proposed Class 10a buildings are designed to minimise the spread of bush fire.	Class 10a buildings are constructed in accordance with section 8.3.2.	YES

3.3 ACCESS

Access is to comply with Tables 7.4a & 5.3b of PBP 2019 (Ref. Table 7).

Access to the subject site is by way of a Council-managed, sealed, two-way road (Bangalow Road). A sealed dead-end internal access road of approx. 120m in length is proposed.

PBP 2019 does not require specific access requirements where the access from the public road supporting hydrants to the most distant part of a building has an unobstructed path of 70m. There are two hydrants situated on Bangalow Rd which provide only partial coverage therefore requiring an additional fire hydrant within the site subject.

Thus the requirement for a firefighting vehicle to access within the subject site and provision of a suitable turning/reversing area (Figure 4). A larger version is provided in Appendix A.



Figure 4: Access plan

Table 7. BPM Compliance - Access

BPM	Performance Criteria	Acceptable Solutions	Complies
Access (General Requirements)	Firefighting vehicles are provided with safe, all-weather access to structures.	<ul style="list-style-type: none"> 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 not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end; Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road; Where access/egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system; and One way only public access roads are no less than 3.5metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression. 	YES – refer s.4
	The capacity of access roads is adequate for firefighting vehicles.	The capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.	YES
	There is appropriate access to water supply.	<ul style="list-style-type: none"> Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression; Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2021 - <i>Fire hydrant installations System design, installation and commissioning</i>; and There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available. 	YES – refer s.4

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Property Access</p>	<p>Firefighting vehicles can access the dwelling and exit the property safely.</p>	<p>There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.</p> <p>In circumstances where this cannot occur, the following requirements apply:</p> <ul style="list-style-type: none"> • minimum 4m carriageway width; • in forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay; • a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; • provide a suitable turning area in accordance with Appendix 3; • curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress; • the minimum distance between inner and outer curves is 6m; • the crossfall is not more than 10 degrees; • maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and • a development comprising more than three dwellings has access by dedication of a road and not by right of way. <p>Note: Some short constrictions in the access may be accepted where they are not less than 3.5m wide, extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above.</p>	<p>YES – refer s.4</p>
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3.4 WATER SUPPLY

Water supply is to comply with Tables 7.4a & 5.3c of PBP 2019 (Ref. Table 8).

The subject site is serviced by reticulated water. There are two hydrants situated on Bangalow Rd which provide partial coverage therefore there is a need to provide an additional fire hydrant within the subject site.

Table 8. BPM Compliance - Water Supply

BPM	Performance Criteria	Acceptable Solutions	Complies
Water Supplies	Adequate water supplies is provided for firefighting purposes.	Reticulated water is to be provided to the development where available; A static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and Static water supplies shall comply with Table 5.3d.	YES – refer s.4.
	Water supplies are located at regular intervals; and The water supply is 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 not located within any road carriageway; and Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	YES
	Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2021.	YES
	The integrity of the water supply is maintained.	All above-ground water service pipes are metal, including and up to any taps; and Above-ground water storage tanks shall be of concrete or metal.	YES

3.5 UTILITIES – ELECTRICITY & GAS SUPPLY

Electricity & Gas services are to comply with Tables 7.4a & 5.3c of PBP 2019 (Ref. Table 9).

Electricity & Gas services (where installed) shall be located to limit the possibility of ignition of the surrounding vegetation or fabric of the building.

An existing overhead electricity supply to the subject site complies with the requirements of PBP.

Table 9. BPM Compliance - Electricity & Gas Supply

BPM	Performance Criteria	Acceptable Solutions	Complies
Electricity	Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	<p>Where practicable, electrical transmission lines are underground; and</p> <p>Where overhead, electrical transmission lines are proposed as follows:</p> <ul style="list-style-type: none"> • 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 <i>ISSC3 Guideline for Managing Vegetation Near Power Lines</i>. 	YES
Gas	Location and design of gas services will not lead to ignition of surrounding Bushland or the fabric of buildings.	<p>Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 - The storage and handling of LP Gas, and the requirements of relevant authorities, and metal piping is used.</p> <p>All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side.</p> <p>Connections to and from gas cylinders are metal.</p> <p>Polymer-sheathed flexible gas supply lines are not used; and</p> <p>Above-ground gas service pipes are metal, including and up to any outlets.</p>	YES – where installed.

3.6 LANDSCAPING

Landscaping is to comply with Table 7.4a & 5.3c of PBP 2019 (Ref. Table 10).

Table 10. BPM Compliance - Landscaping

BPM	Performance Criteria	Acceptable Solutions	Complies
Landscaping	Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Landscaping is in accordance with Appendix 4; and Fencing is constructed in accordance with section 7.6.	YES – refer s.4.

4. Recommendations

APZ

- The subject site shall be managed, in perpetuity, as follows:
 - **Block A:** Inner Protection Area to the boundary on the northern, eastern & southern aspects; minimum 19m Inner Protection Area & minimum 10m Outer Protection Area on the western aspect.
 - **Blocks B & C:** Inner Protection Area to the boundary on the northern, eastern & southern aspects; minimum 10m Inner Protection Area & minimum 10m Outer Protection Area on the western aspect.

CONSTRUCTION LEVEL

- **Block A:** Construction shall comply with *AS3959:2018 'Construction of Buildings in Bushfire-prone Areas'* s.3 - Construction General and s.6 - Construction Requirements for BAL-19 for the entire roof system and the northern, western & southern aspects; and s.3 - Construction General and s.5 - Construction Requirements for BAL-12.5 on the eastern aspect.
- **Blocks B & C:** Construction shall comply with *AS3959:2018 'Construction of Buildings in Bushfire-prone Areas'* s.3 - Construction General and s.7 - Construction Requirements for BAL-29 for the entire roof system and the northern, western & southern aspects; and s.3 - Construction General and s.6 - Construction Requirements for BAL-19 on the eastern aspect.
- In addition to the above, the NSW variations detailed in s.7.5.2 of PBP 2019 shall be implemented.
- New fences/gates shall be constructed of either hardwood or non-combustible material.

ACCESS

- The internal access road shall comply with the acceptable solutions of Tables 7.4a & 5.3b, and Appendix 3 of PBP.

WATER SUPPLY

- An additional hydrant shall be installed within the subject site to ensure the farthest wall of all buildings are within 70m of a water supply.
- Hydrant design, spacing & sizing shall comply with Tables 7.4a & 5.3c of PBP 2019, and AS2419.1:2021.

LANDSCAPING

- Landscaping shall be undertaken to comply with *Appendix 4 - Asset Protection Zone Requirements (PBP) & RFS guide 'Standards for Asset Protection Zones'*.

BUSHFIRE PLAN

- It is recommended that a Bush Fire Survival Plan is prepared for the site and revised annually prior to the bush fire season. A *Guide to Making a Bush Fire Survival Plan* has been developed by the NSW RFS to assist residents and can be found at www.rfs.nsw.gov.au.

5. Conclusion

This report has demonstrated that the proposed development shall comply with the acceptable solutions as set out in *Planning for Bush Fire Protection (2019)*, based upon compliance with the Bushfire Protection Measures and recommendations contained within this report (Ref. Sections 3 & 4 herein).

Disclaimer

This report has been prepared exclusively for the client and their purposes stated in the opening page above. The report is valid for twelve (12) months from the date of issue, however, where there have been significant alterations to the site, this report will become invalid, and a new site assessment may be required.

Recommendations made within this report are made in good faith and are based on requirements set out in *Planning for Bush Fire Protection 2019, AS3959 'Construction of Buildings in Bushfire-prone Areas'*, and the National Construction Code to reduce the risk to life and property. However, it is noted that bushfires are by nature unpredictable therefore the recommendations contained within this report does not guarantee against adverse impacts created by bushfire.

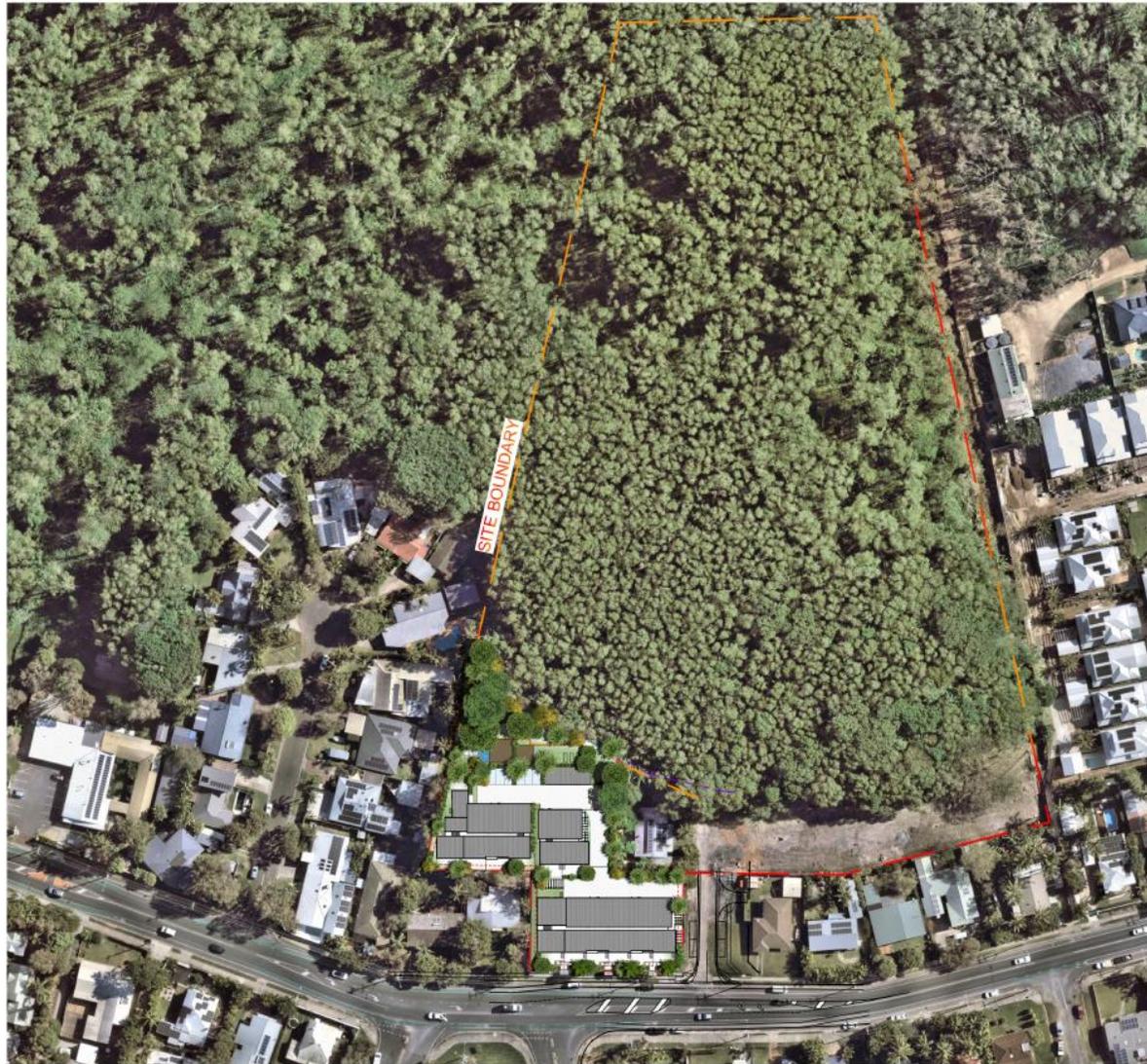
References

- NSW Rural Fire Service. (2005). *Standards for Asset Protection Zones*. Sydney: NSW Rural Fire Service.
- NSW Rural Fire Service. (2019). *Planning for Bush Fire Protection: A guide for councils, planners, fire authorities and developers*. Granville: NSWRFSS.
- Standards Australia. (2020). Australian Standard 3959-2018 - Construction of buildings in bush fire prone areas. Sydney: SAI Global.

Legislation

- NSW Government. *Environmental Planning and Assessment Act 1979*.
- NSW Government. *Rural Fires Act 1997*.

Appendix A – Site Plans



RAUNIK
design group
ARCHITECTS

Work in Progress.
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By JulianaA


1:1@A3
OVERALL SITE PLAN
23923 | BYRON WORKER HOUSING | COMMUNITY NOTIFICATION | 15/09/2023 | CN-09 | REV





RAUNIK
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ARCHITECTS

Work in Progress.
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23923 | BYRON WORKER HOUSING | COMMUNITY NOTIFICATION | 15/09/2023 | CN-11 | REV

LEVEL 1 GROUND
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APPENDIX 4

ASSET PROTECTION ZONE REQUIREMENTS

In combination with other BPMs, a bush fire hazard can be reduced by implementing simple steps to reduce vegetation levels. This can be done by designing and managing landscaping to implement an APZ around the property.

Careful attention should be paid to species selection, their location relative to their flammability, minimising continuity of vegetation (horizontally and vertically), and ongoing maintenance to remove flammable fuels (leaf litter, twigs and debris).

This Appendix sets the standards which need to be met within an APZ.

A4.1 Asset Protection Zones

An APZ is a fuel-reduced area surrounding a building or structure. It is located between the building or structure and the bush fire hazard.

For a complete guide to APZs and landscaping, download the NSW RFS document *Standards for Asset Protection Zones* at the NSW RFS Website www.rfs.nsw.gov.au.

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Bush fire fuels should be minimised within an APZ. This is so that the vegetation within the zone does not provide a path for the spread of fire to the building, either from the ground level or through the tree canopy.

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- direct flame contact on the building;
- damage to the building asset from intense radiant heat; and
- ember attack.

The methodology for calculating the required APZ distance is contained within Appendix 1. The width of the APZ required will depend upon the development type and bush fire threat. APZs for new development are set out within Chapters 5, 6 and 7 of this document.

In forest vegetation, the APZ can be made up of an Inner Protection Area (IPA) and an Outer Protection Area (OPA).

A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defensible space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

Trees

- tree 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 the ground;
- tree canopies should be separated by 2 to 5m; and
- 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 should be provided;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass

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

A4.1.2 Outer Protection Areas (OPAs)

An OPA is located between the IPA and the unmanaged vegetation. It is an area where there is maintenance of the understorey and some separation in the canopy. The reduction of fuel in this area aims to decrease the intensity of an approaching fire and restricts the potential for fire spread from crowns; reducing the level of direct flame, radiant heat and ember attack on the IPA.

Because of the nature of an OPA, they are only applicable in forest vegetation.

When establishing and maintaining an OPA the following requirements apply:

Trees

- tree canopy cover should be less than 30%; and
- canopies should be separated by 2 to 5m.

Shrubs

- shrubs should not form a continuous canopy; and
- shrubs should form no more than 20% of ground cover.

Grass

- grass should be kept mown to a height of less than 100mm; and
- leaf and other debris should be removed.

An APZ should be maintained in perpetuity to ensure ongoing protection from the impact of bush fires. Maintenance of the IPA and OPA as described above should be undertaken regularly, particularly in advance of the bush fire season.

APPENDIX 3

ACCESS

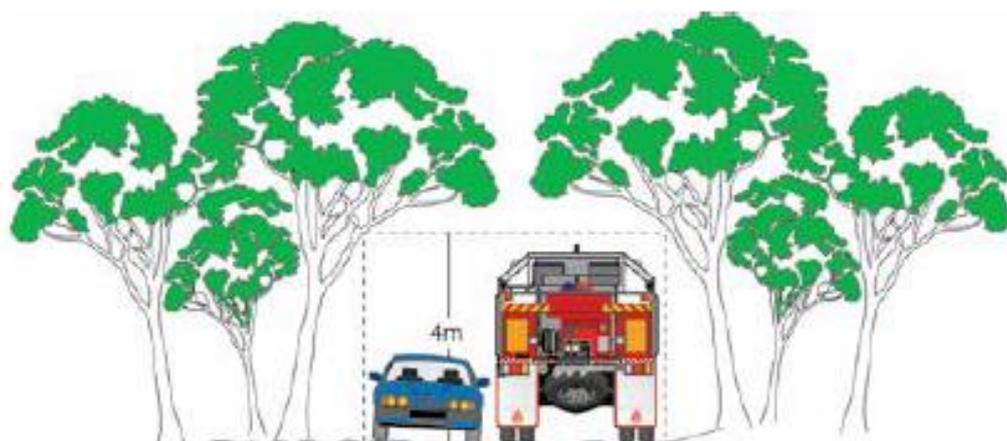
This appendix provides design principles for emergency service vehicle access.

A3.1 Vertical clearance

An unobstructed clearance height of 4 metres should be maintained above all access ways including clearance from building construction, archways, gateways and overhanging structures (e.g. ducts, pipes, sprinklers, walkways, signs and beams). This also applies to vegetation overhanging roads.

Figure A3.1

Vertical clearance.



A3.2 Vehicle turning requirements

Curved carriageways should be constructed using the minimum swept path as outlined in Table A3.2.

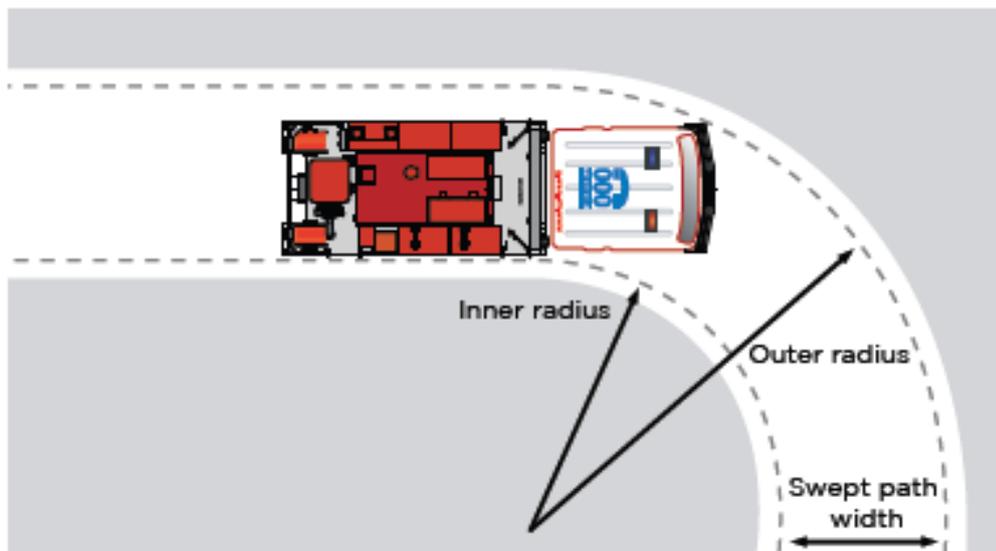
Table A3.2

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

Figure A3.2a

Swept path width for turning vehicles.



The radius dimensions given are for wall to wall clearance where body overhangs travel a wider arc than the wheel tracks (vehicle swept path). The swept path shall include an additional 500mm clearance either side of the vehicle.

Figure A3.2b

Roundabout swept path.



Example of a swept path as applied to a roundabout. The distance between inner and outer turning arcs allows for expected vehicle body swing of front and rear overhanging sections (the swept path).

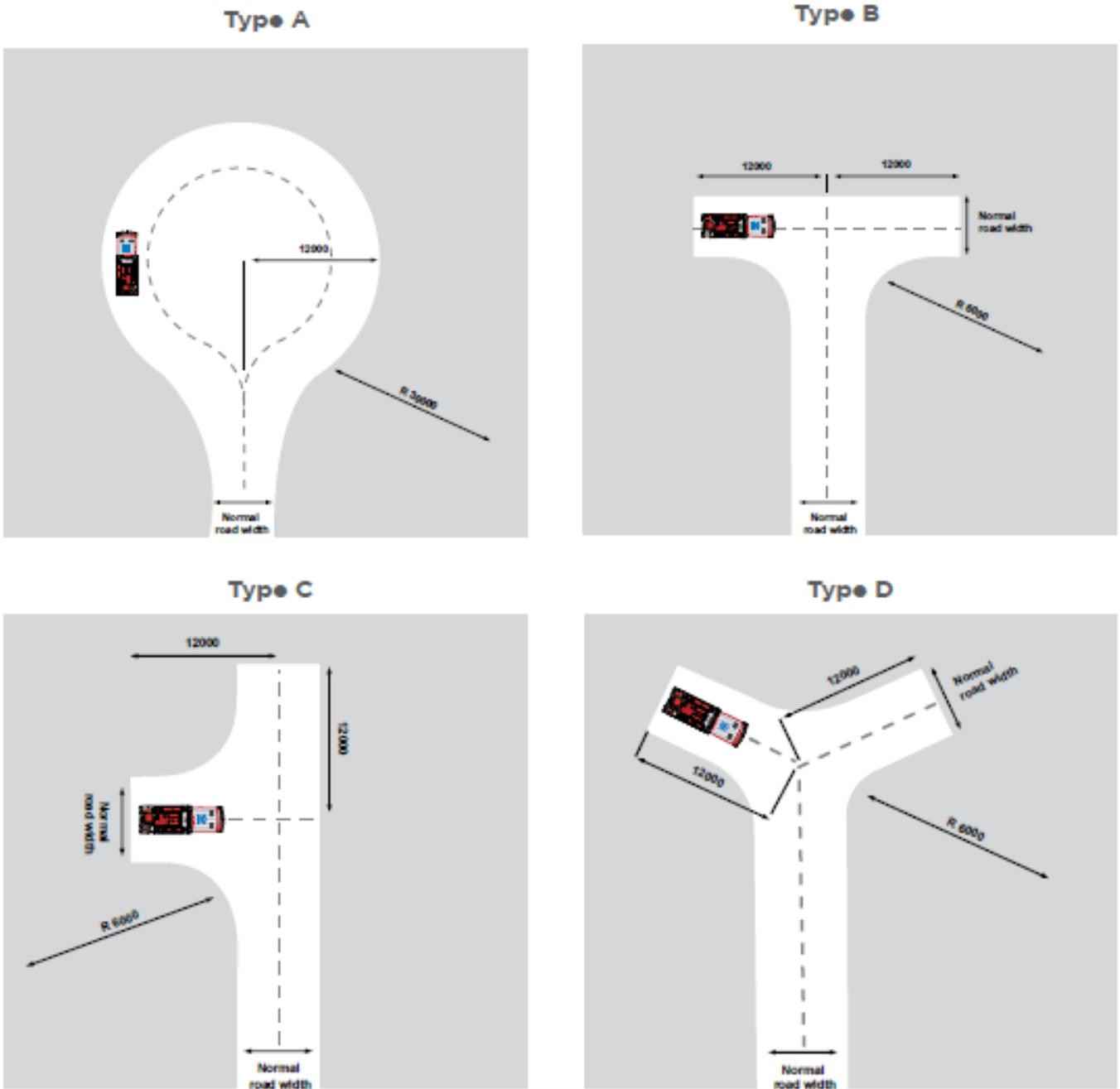
A3.3 Vehicle turning head requirements

Dead ends that are longer than 200m must be provided with a turning head area that avoids multipoint turns. "No parking" signs are to be erected within the turning head.

The minimum turning radius shall be in accordance with Table A3.2. Where multipoint turning is proposed the NSW RFS will consider the following options:

Figure A3.3

Multipoint turning options.



A3.4 Passing bays

The construction of passing bays, where required, shall be 20m in length and provide a minimum trafficable width at the passing point of 6m.

Figure A3.4

Passing bays can provide advantages when designed correctly. Poor design can and does severely impede access.



A3.5 Parking

Parking can create a pinch point in required access. The location of parking should be carefully considered to ensure fire appliance access is unimpeded. Hydrants shall be located outside of access ways and any parking areas to ensure that access is available at all times.

Figure A3.5

Hydrants and parking bays.

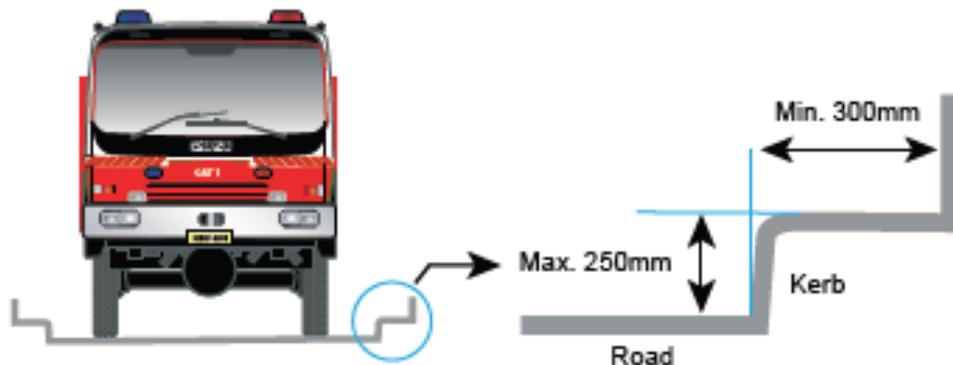


A3.6 Kerb dimensions

All kerbs constructed around access roads should be no higher than 250mm and free of vertical obstructions at least 300mm back from the kerb face to allow clearance for front and rear body overhang.

Figure A3.6

Carriageway kerb clearance dimensions.



A3.7 Services

Hydrant services should be located outside the carriageway and parking bays to permit traffic flow and access. Setup of standpipes within the carriageway may stop traffic flow. Hydrant services shall be located on the side of the road away from the bush fire threat where possible.

A3.8 Local Area Traffic Management (LATM)

The objective of LATM is to regulate traffic an acceptable level of speed and traffic volume within a local area.

Traffic engineers and planners should consider LATM devices when planning for local traffic control and their likely impact on emergency services. LATM devices by their nature are designed to restrict and impede the movement of traffic, especially large vehicles.

Where LATM devices are provided they are to be designed so that they do not impede fire vehicle access.

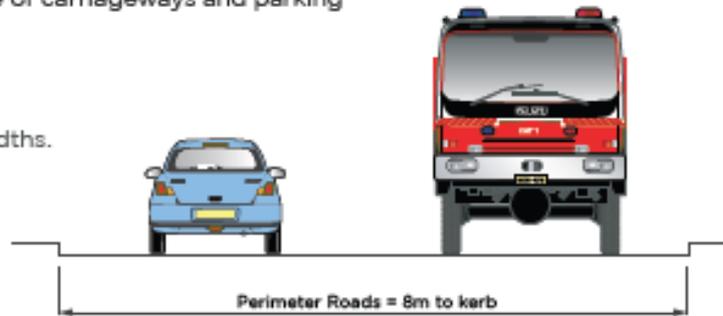
A3.9 Road types

A3.9.1 Perimeter Roads

Perimeter roads are to be provided with a minimum clear width of 8m. Parking and hydrants are to be provided outside of carriageways. Hydrants are to be located outside of carriageways and parking areas.

Figure A3.9a

Perimeter road widths.

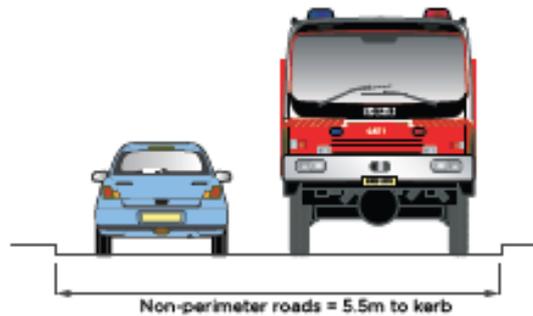


A3.9.2 Non-perimeter Roads

Non-perimeter roads shall be provided with a minimum clear width of 5.5m. Parking is to be provided outside of the carriageway and hydrants are not to be located in carriageways or parking areas.

Figure A3.9b

Non-perimeter road widths.



A3.9.3 Property access

Property access roads are to be a minimum of 4m wide.

Figure A3.9c

Property access road widths.

