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Bushfire Assessment Report

Proposed Development: Alterations & additions to an existing Class 1a dwelling

Client: Susan Fiedler
Property Details: Lot 1 DP 602058
420 Goremans Road, Eureka, NSW 2480
LGA: Byron Shire
Date of Issue: 03/06/2024

Report prepared by:

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GCert (Bushfire Protection) UWS
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Document Control

Version	Date	Description	Prepared by	Authorised by
0.1	29/05/2024	Draft	KF	PM
1.0	03/06/2024	Final	PM	PM

Executive Summary

This report has been prepared to assess the Alterations & additions to an existing Class 1a dwelling at Lot 1 DP 602058, 420 Goremans Road, Eureka, NSW 2480 to determine the Bushfire Attack Level (BAL) for the site and relevant requirements under 'Planning for Bushfire Protection 2019' (PBP).

The results of the site assessment undertaken on 28/05/2024 are summarised below.

<i>Bushfire Attack Level (BAL) rating (PBP 2019):</i>	<i>BAL-29 (all new external alterations & additions)</i>
<i>Does the development comply with PBP 2019:</i>	<i>YES.</i>
<i>Are Performance Solutions presented:</i>	<i>NO.</i>

Results from the site assessment are presented in [Section 3](#).

Full recommendations/requirements are detailed in [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 Susan Fiedler for, Alterations & additions to an existing Class 1a dwelling located at Lot 1 DP 602058, 420 Goremans Road, Eureka, NSW 2480 (Figure 1).

The development is classified as infill development therefore in accordance with Section 4.14 of the *Environmental Planning & Assessment Act 1979* (EP&A Act) 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*.

The subject site is a rural residential lot with frontage to Goremans Road and Springvale Road. The site is surrounded by larger agricultural lots, with orchards to the east and south. The nearest hazard vegetation is the grassland to the west and northwest of the lot.



Figure 1: Aerial image of the subject site (Source: Metromap 2024; Google Maps 2024)

1.2 BUSHFIRE PRONE LAND

The proposed development site is mapped as 'Bush Fire Prone Land' (BFPL) under section 10.3 of the Environmental Planning and Assessment Act (1979), thus triggering the legislative requirements for construction on bushfire prone land (Figure 2).

The existing dwelling is situated in Vegetation Category 3 (Figure 2).



Figure 2: BFPL Map (Source: NSW Government 2024; Metromap 2024)

1.3 AIM & OBJECTIVES

All development on BFPL must satisfy the aim and objectives of *Planning for Bush Fire Protection (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).

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 28/05/2024 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 1; Figure 3).

Table 1. Vegetation formation analysis

East, Northeast, South & Southwest
– Managed Land

Within the lot is managed land (mown and/or grazed grass, vehicle parking and curtilage).

To the east is Goremans Road, and to the south is Springvale Road.

Beyond both roads are large lots with orchards. Pursuant to s.A1.10 of PBP, this vegetation can be classed as low threat and considered as managed.

To the southwest is a residential lot with dwelling.



Photo 1: Managed land northeast & east



Photo 2: Managed land south & southwest

West & Northwest – Grassland

This area consists of grassland on a 5-10 degree downslope.



Photo 3: Grassland west



Photo 4: Grassland northwest (managed land northeast)

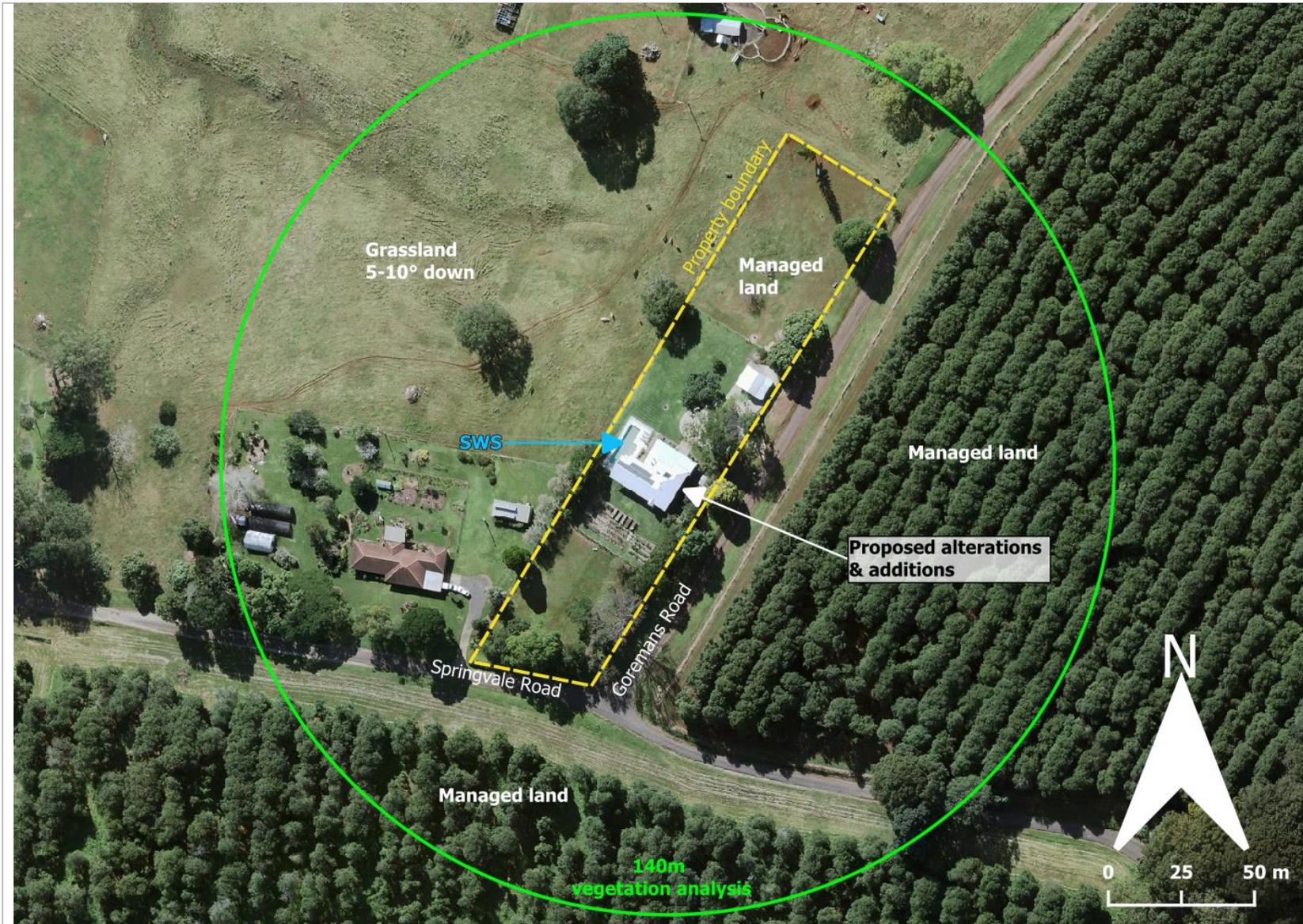


Figure 3: Vegetation analysis for 420 Goremans Road, Eureka (Source: Metromap 2024)

3. Results

The results of the onsite assessment and methods used for compliance with the BPMs are presented below.

3.1 ASSET PROTECTION ZONES (APZs)

The APZ shall be maintained in perpetuity as an Inner Protection Area (IPA) per Table 7.4a of PBP 2019 and based on setbacks pursuant to Table A1.12.6 of PBP 2019 (Ref. Tables 2,3 & Figure 3). The IPA must comply with *Appendix 4 - Asset Protection Zone Requirements* (PBP 2019) which is presented in Appendix B herein this report.

The area surrounding the existing dwelling currently provides for an effective APZ with mown grass, vehicle parking and curtilage.

It is noted that no native vegetation modification is required for creation of an adequate APZ.

Table 2. Summary Bushfire Attack Level (BAL) Assessment

Direction	Vegetation formation	Distance to hazard (m)	Slope	APZ required (m)	Highest BAL rating
Northeast, East, South, Southwest	Managed Land	-	-	10, or to boundary (whichever is closest)	-
West	Grassland	16.5	5-10° down	12	BAL-29
Northwest	Grassland	19	5-10° down	12	BAL-29

Table 3. BPM Compliance - APZs

BPM	Performance Criteria	Acceptable Solutions	Complies
Asset Protection Zones	APZs are provided commensurate with the construction of the building; and A defensible space is provided.	An APZ is provided in accordance with Table A1.12.2 or A1.12.3 in Appendix 1.	YES – refer s.4.
	APZs are managed and maintained to prevent the spread of a fire to the building.	APZs are managed in accordance with the requirements of Appendix 4 of PBP.	YES
	The APZ is provided in perpetuity. APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZs are wholly within the boundaries of the development site. APZ are located on lands with a slope less than 18 degrees.	YES

3.2 CONSTRUCTION LEVEL

PROPOSED ALTERATIONS & ADDITIONS

The BAL rating/s for the proposed development is as follows: BAL-29 (all new external alterations & additions).

Therefore, 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 (all new external alterations & additions), in addition to the NSW variations detailed in s.7.5.2 of PBP 2019 and the National Construction Code (NCC).

It is highly recommended that the assigned BAL rating(s) are clearly displayed on all plans used for construction.

EXISTING DWELLING

Optional - Ember attack accounts for up to 85% of building loss during a bushfire (RFS 2019) therefore the existing main dwelling may benefit from upgrades for ember protection. The RFS document '*Upgrading of Existing Buildings*' (Ref. Appendix B) provides advice for mitigation against ember attack. Upgrades for ember protection for existing buildings is not mandatory.

EXISTING CLASS 10A SHED

An existing Class 10a shed is situated approximately 30m to the northeast of the dwelling, therefore no bushfire requirements being situated >6m away.

Table 4. 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 Table 7.4a of PBP 2019 (Ref. Table 5).

Access to the subject site is by way of a Council-managed, sealed, two-way road (Goremans Road).

A short, all-weather gravel driveway with large turning circle currently provides access within the lot (Photo 5).



Table 5. BPM Compliance - Access

BPM	Performance Criteria	Acceptable Solutions	Complies
Access	Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	Property access roads are two-wheel drive, all-weather roads.	YES
	The capacity of access roads is adequate for firefighting vehicles.	The capacity of 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.	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2021; 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

	<p>Firefighting vehicles can access the dwelling and exit the property safely.</p>	<p>At least one alternative property access road is provided for individual dwellings or groups of dwellings that are located more than 200 metres from a public through road.</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>YES – refer s.4.</p>
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3.4 WATER SUPPLY

Water supply is to comply with Table 7.4a of PBP 2019 (Ref. Table 6).

A water supply of at least 10,000L shall be provided for firefighting purposes.

An approx. 80,000L in-ground swimming pool situated to the west of the dwelling shall be nominated as the firefighting water supply (Ref. Figure 3). Access for a firefighting vehicle is via the gravel driveway and mown grass adjacent to the pool (Photo 5).

It is worth noting there are two existing poly tanks to the east of the dwelling that may be utilised in an emergency situation.



Table 6. BPM Compliance - Water Supply

BPM	Performance Criteria	Acceptable Solutions	Complies
Water Supplies	An adequate water supply is provided for firefighting purposes.	Reticulated water is to be provided to the development where available. A static water supply is provided where no reticulated water supply is available.	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 comply with the relevant clauses of 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.	N/A
	Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2021.	N/A
	The integrity of the water supply is maintained.	All above-ground water service pipes external to the building are metal, including and up to any taps.	YES
	A static water supply is provided for firefighting purposes in areas where reticulated water is not available.	Where no reticulated water supply is available, water for firefighting purposes is provided in accordance with Table 5.3d (PBP).	YES

3.5 UTILITIES – ELECTRICITY & GAS SUPPLY

Electricity & Gas services are to comply with Table 7.4a of PBP 2019 (Ref. Table 7).

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 complies with the requirements of PBP.

Table 7. 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 ISSC3 <i>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 of PBP 2019 (Ref. Table 8).

Landscaping should be designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.

Table 8. 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.	<p>Compliance with the NSW RFS 'Asset protection zone standards' (see Appendix 4).</p> <p>A clear area of low-cut lawn or pavement is maintained adjacent to the house;</p> <p>Fencing is constructed in accordance with section 7.6; and</p> <p>Trees and shrubs are located so that:</p> <ul style="list-style-type: none"> • The branches will not overhang the roof; • The tree canopy is not continuous; and • Any proposed windbreak is located on the elevation from which fires are likely to approach. 	YES – refer s.4.

3.7 EMERGENCY PLANNING

It is highly recommended that a bushfire survival plan is created for all developments situated on BFPL. A plan can be downloaded via www.rfs.nsw.gov.au/resources/bush-fire-survival-plan (NSW RFS 2022).

4. Recommendations

APZ

- The APZ shall be managed as an Inner Protection Area (IPA) for a minimum of 12m on the western and northwestern aspects, and 10m or to boundary (whichever is closest) on all other aspects.
- No native vegetation modification is required for creation of an adequate APZ.

CONSTRUCTION LEVEL

- To be constructed as per s.3 - Construction General and s.7 - Construction Requirements for BAL-29 (all new external alterations & additions), in addition to the NSW variations detailed in s.7.5.2 of PBP 2019 and the National Construction Code.
- No bushfire requirements for the Class 10a shed, being >6m from the existing Class 1a dwelling.

ACCESS

- An existing gravel driveway provides access to the dwelling. No further conditions are required in relation to bushfire.

WATER SUPPLY

- The proposed pool with a capacity of approx. 80,000L shall be nominated as the firefighting water supply.

LANDSCAPING

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

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.

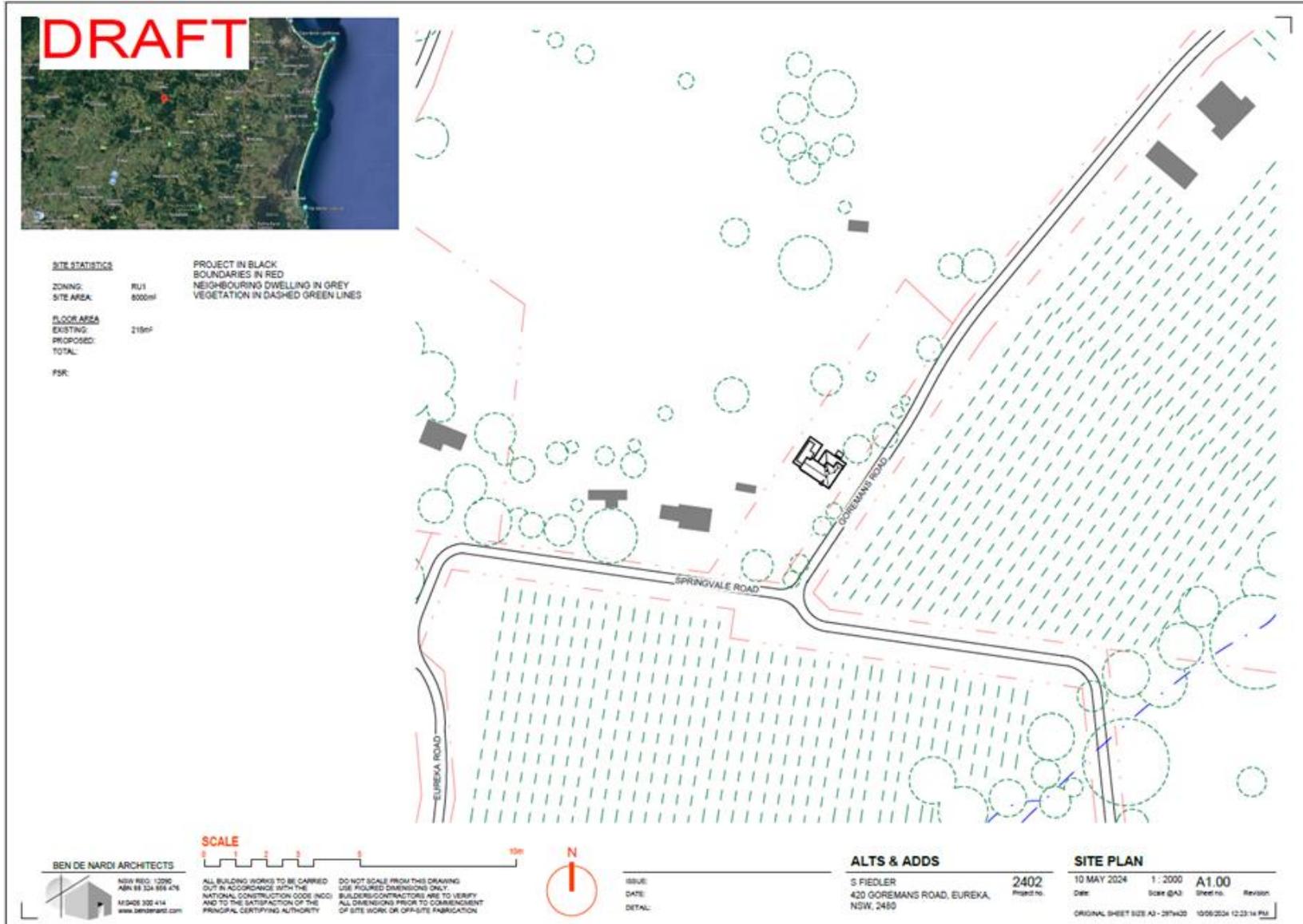
Standards Australia. (2020). Australian Standard 3959:2018 - Construction of buildings in bush fire prone areas. Sydney: SAI Global.

Legislation

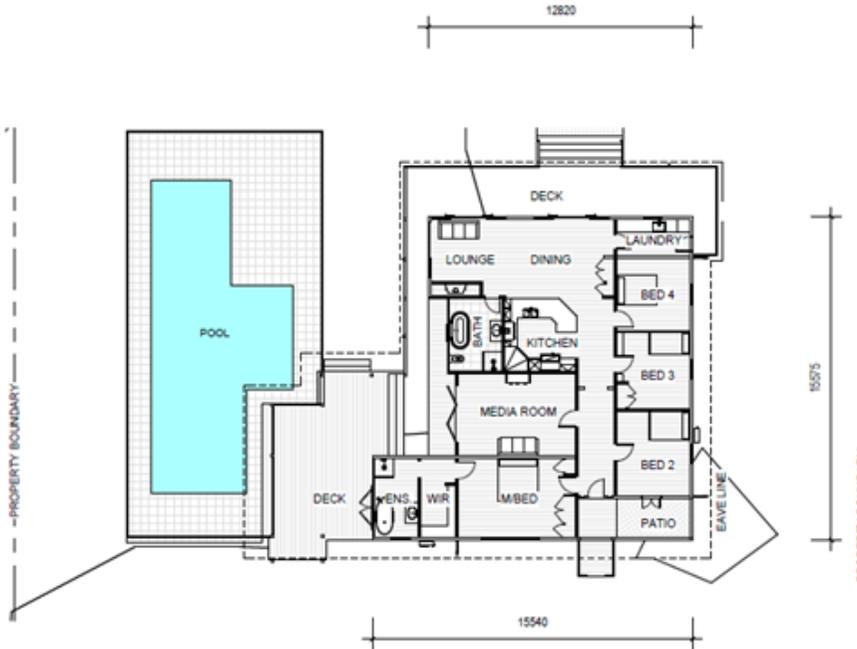
NSW Government. *Environmental Planning and Assessment Act 1979*.

NSW Government. *Rural Fires Act 1997*.

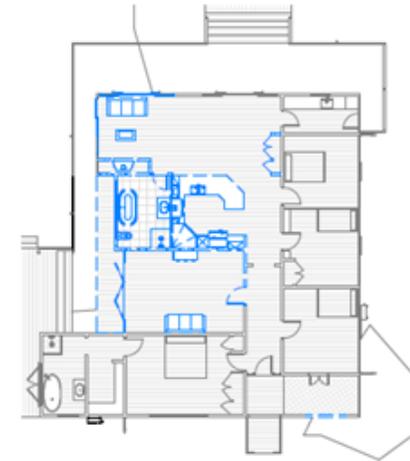
Appendix A – Site Plans



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1 03 GROUND FLOOR PLAN
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2 DEMOLITION PLAN
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EXISTING FLOOR PLAN & DEMOLITION PLAN

10 MAY 2024
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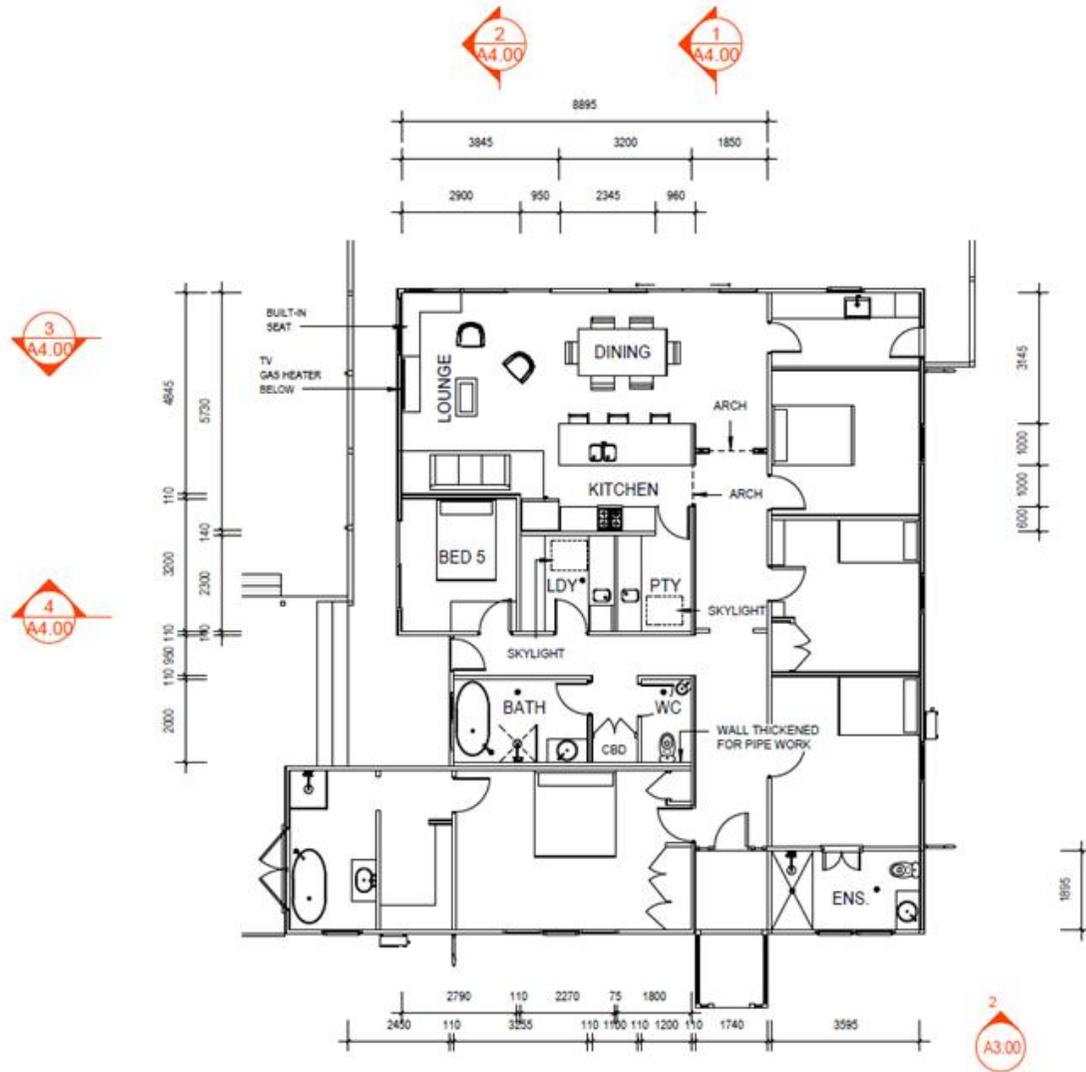
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PROPOSED FLOOR PLAN - A

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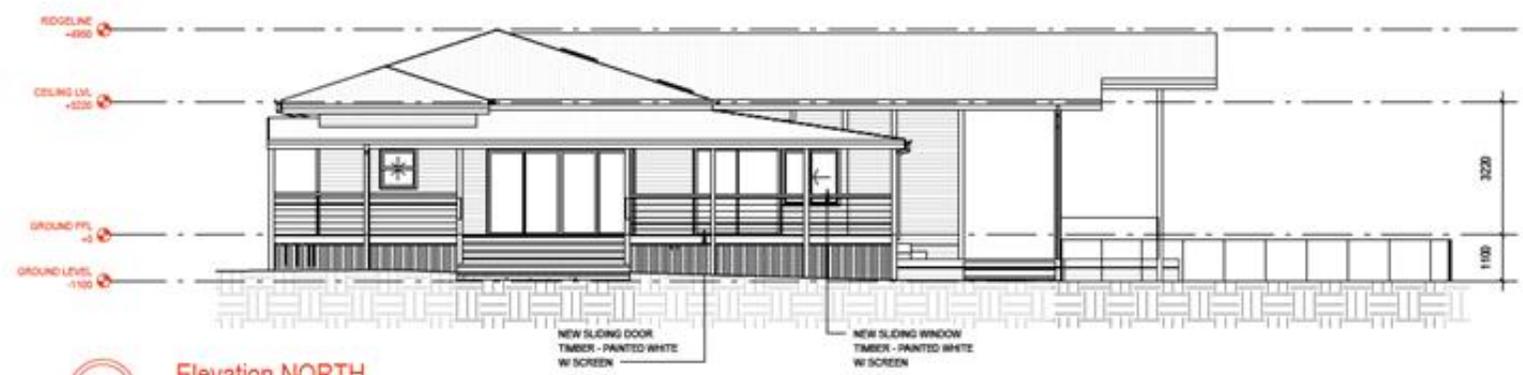
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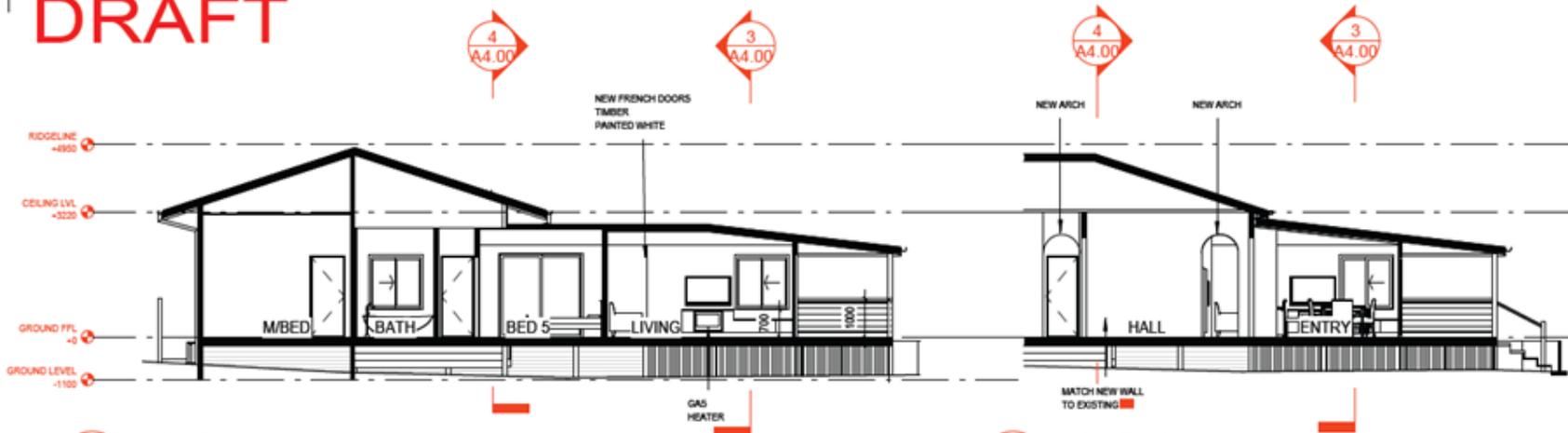
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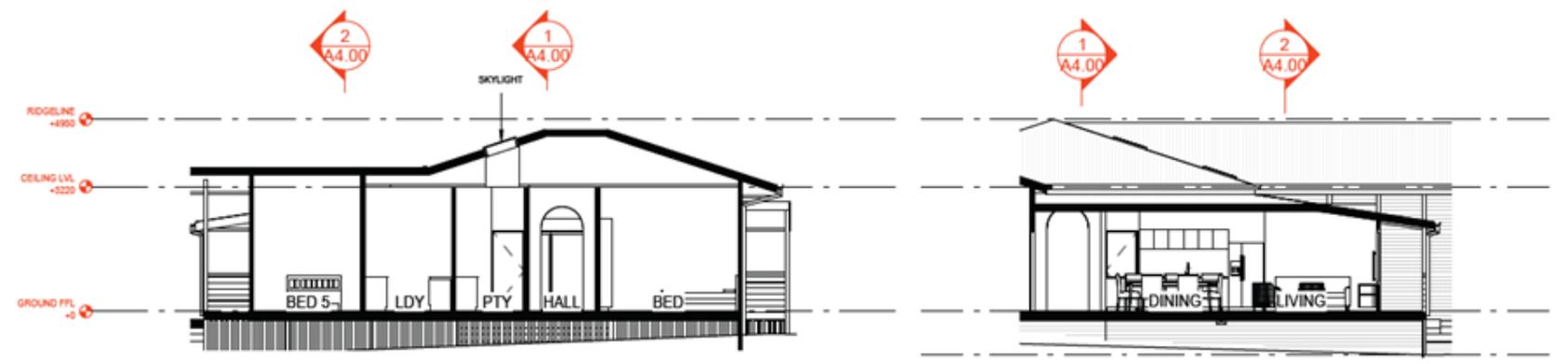
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APPENDIX 4

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.

Water Supply for Fire Fighting Purposes

This Fast Fact clarifies the NSW Rural Fire Service (RFS) position on the requirement for water supplies for development in bush fire prone areas.

Adequate water supply is critical for effective fire fighting. Where a non reticulated water supply is provided or the reticulated water supply is deemed inadequate, an additional onsite stored supply of water for fire fighting will be required. Non reticulated water is a supply that is not piped by council or a water authority and includes rainwater, ground water or surface water.

In the past, additional water sources could take the form of a static water supply (SWS) or a dedicated water supply. The RFS has traditionally required that an alternate supply of water be 'dedicated' for fire fighting purposes in line with the provisions of *Planning for Bush Fire Protection 2006* (PBP). Dedicated water implies that the supply shall be in the form of a tank of water and has traditionally not included swimming pools or dams. The term also implies that the supply must be isolated from other domestic water supplies and used solely for fire fighting purposes.

From a practical fire fighting point of view, any source of available water will be utilised during a bush fire event and dedicated tanks are not always the most practical option.

In light of the above and the increasing demand for sustainable and efficient use of our water resources, the RFS will no longer require water to be solely 'dedicated' for fire fighting purposes and will allow more flexibility in satisfying the water requirements of PBP. As such, water holding structures such as tanks, swimming pools and dams can be considered.

Therefore, the RFS conditions addressing water supply will no longer refer to a 'dedicated' water supply and will simply state that a supply of water shall be provided for 'fire fighting purposes'. This position will also apply to previously issued conditions referring to dedicated supplies. As such, the water source can be used for other purposes and allow for the circulation of fresh water. The onus will be on the property owner to provide suitable water supply arrangements for fire fighting that meet the RFS requirements and ensure that any water sources are maintained at the appropriate capacity (see Table 4. of PBP).

Water capacities, access (tanker or pedestrian) for fire fighters and the provision of appropriate connections should also be considered when determining if a proposed water source is suitable. Furthermore, the property owner is encouraged to place a 'SWS' sign in a visible location on the street front.

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DEVELOPMENT ASSESSMENT & PLANNING

Upgrading of Existing Buildings

WORKING TOWARDS A SAFER COMMUNITY



INTRODUCTION

Bush fire is a major challenge for the community. It has been a natural part of our landscape for thousands of years and remains an ever-present threat.

Due to historic settlement patterns and the need to provide housing for people, development has occurred in areas that are bush fire prone placing lives and property at risk.

The NSW Rural Fire Service (NSW RFS) has a statutory obligation to protect life, property and the environment through fire suppression and fire prevention. Improved land use planning and construction of buildings in bush fire prone areas are intrinsic to the fire management strategies of the NSW RFS.

Through a working relationship with local Councils and the NSW Department of Planning, the NSW RFS has been able to refine and implement bush fire protection for new developments through the NSW

planning system. Since the introduction of these planning and building regulations in August 2002, all new development on bush fire prone land in NSW must comply with the requirements of *Planning for Bush Fire Protection 2006* and Australian Standard 3959-2009 - *Construction of buildings in bushfire-prone areas* (AS3959).

This means that people who are building or renovating have a clear direction on how to design and build their homes to be better protected from the impacts of bush fires. The types of protection measures include asset protection zones (vegetation management), access, landscaping, water supply, building design and construction. These measures assist building survival during a bush fire. They also contribute to the safety of fire-fighters and members of the community occupying buildings during the passage of a bush fire front.

Unfortunately, the majority of buildings in bush fire prone areas pre-date these regulations, meaning that most existing houses are at an increased risk of damage or loss from a bush fire.

BUSH FIRE INFORMATION LINE
1800 NSW RFS
1800 679 737
www.rfs.nsw.gov.au

With this in mind, the NSW RFS has developed a practical guide for those living in bush fire prone areas who may wish to take the opportunity to upgrade their existing building to increase its resilience from bush fire attack.

The guide provides a range of options that homeowners may wish to consider in determining the level of protection appropriate for their circumstances and risk. These include minimal protection measures such as basic ember proofing, establishment of Asset Protection Zones (APZs) to higher level protection measures such as re-building or upgrading construction elements of the building.

While this guide identifies protection methods, it is vital that such building enhancements are considered in conjunction with any upgrade works undertaken, consideration of other bush fire protection measures such as maintenance of Asset Protection Zones, services and landscaping.

The guide is not intended to be a comprehensive bush fire assessment of the risk to your property or an indication of compliance with *Planning for Bush Fire Protection 2006* and AS3959-2009. In this regard, home owners are advised to seek professional advice with regards to further upgrades or reconstruction to improve their resistance to bush fire attack.

For further assistance, details regarding suitably qualified consultants can be found on the NSW RFS website www.rfs.nsw.gov.au

IS UPGRADING MANDATORY?

Upgrading of existing elements of the building to *Planning for Bush Fire Protection* is not mandatory. However, in the interests of achieving a better bush fire outcome, the NSW RFS strongly recommends improvement of existing elements including upgrade of buildings.

Anyone whose land is bush fire prone should have regard to this document for practical guidance in protecting your property against bush fire attack. For all new developments on bush fire prone land, following the Development Application process or the Exempt and Complying Development process, the advice in this document should be applied as a minimum standard to the existing situation. This is in addition to any other bush fire protection measures that may be required by the development consent or complying development certificate.

These upgrading measures will contribute to making your home safer against the impact of the different elements of attack in the event of a bush fire; however, they form only part of the solution. Undertaking routine property maintenance and preparing a Bush Fire Survival Plan are other important parts to your bush fire protection and survival.

UPGRADE PROVISIONS

85% of houses are lost from ember attack. The following provisions are designed to give existing buildings improved protection from ember attack during a bush fire event. Ember attack can occur over distances greater than 100 metres from the bush fire front. Any gaps, cracks or areas where embers and fuel can lodge (leaves, twigs, debris) significantly reduces a building's resistance to bush fire attack.

To mitigate against ember attack you should consider the minimal upgrades as detailed in the table below. Additional protection measures may also be considered and this will be dependent on the individual circumstances of the building commensurate with the level of threat from bush fire attack. The potential level of threat to the property from bush fire attack should also be taken in to account when deciding what level of protection should be used. Factors to be taken in to consideration include the isolation of the development and how easily you can react in the event of a bush fire.

Owners are cautioned that existing buildings may contain materials made from asbestos or have painted surfaces that contain lead. These materials should be handled in accordance with appropriate guidelines.





BUILDING ELEMENT	MINIMAL PROTECTION MEASURES	ADDITIONAL PROTECTION MEASURES
GENERAL	Seal all gaps (>3mm) around the house (excluding subfloor) with: <ul style="list-style-type: none"> • appropriate joining strips; • flexible silicon based sealant; or • mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium. 	<ul style="list-style-type: none"> • Install a bush fire sprayer system. (Please contact a bush fire consultant or relevant industry expert to discuss options) Seal all gaps (>3mm) around the house (excluding subfloor) with: <ul style="list-style-type: none"> • appropriate joining strips • flexible silicon based sealant; or mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium.
WALLS	Install sarking with a flammability index of not more than 5 behind weatherboards or other external cladding when they are being replaced for maintenance or other reasons.	<ul style="list-style-type: none"> • Replace wall materials with non-combustible materials • Install sarking with a flammability index of not more than 5 behind weatherboards or other external cladding.
SUBFLOOR	Removal of combustible materials and keeping areas clear and accessible.	<ul style="list-style-type: none"> • Enclose subfloor with non-combustible material.
DOORS	Install weather strips, draught excluders or draught seals at the base of side-hung doors.	<ul style="list-style-type: none"> • Replace external doors with non-combustible or solid timber doors with minimum thickness of 35mm. • Replace or over-clad parts of door frames less than 400mm above the ground, decks and similar elements or fittings with non-combustible material. • Install weather strips, draught excluders or draught seals at the base of side-hung doors.
VENTS & WEEPHOLES	Seal vents and weepholes in external walls with mesh (with an aperture size of 2 mm) of corrosion resistant steel, bronze or aluminium.	<ul style="list-style-type: none"> • Seal vents and weepholes in external walls with mesh (with an aperture size of 2 mm) of corrosion resistant steel, bronze or aluminium.
ROOFS	Seal around roofing and roof penetrations with a non-combustible material. Install sarking with a flammability index of not more than 5 beneath existing roofing when it is being replaced for maintenance or other reasons. If installed, gutter and valley leaf guards shall be non-combustible.	<ul style="list-style-type: none"> • Replace fascia and roof materials with non-combustible materials. • Seal around roofing and roof penetrations with a non-combustible material. • Install sarking with a flammability index of not more than 5 beneath existing roofing. • If installed, gutter and valley leaf guards shall be non-combustible.
WINDOWS	Install mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium to all external doors and openable windows	<ul style="list-style-type: none"> • Installing appropriately tested shutters to doors and windows • Install mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium to all external doors and windows • Replacing glass with toughened or laminated safety glass • Replace overhead glazing with 'grade a' safety glass
EXTERNAL STRUCTURES		<ul style="list-style-type: none"> • External structures to be located >10 metres from the main dwelling.
DECKING		<ul style="list-style-type: none"> • Replace decking with non-combustible material

OTHER REQUIREMENTS

ASSET PROTECTION ZONES

Development on bush fire prone land requires suitable separation from the bush fire hazard. This separation is referred to as an asset protection zone (APZ) and should be located wholly within the development property.

The APZ separates the building from the hazard. It is designed to minimize the presence of fuels, which could burn in a fire. Therefore, the impact of direct flame contact, radiant heat and ember attack on the development is reduced.

In order to ensure appropriate levels of safety, the NSW RFS recommends that an APZ is always provided. Where a building has been newly developed or alterations and additions have been undertaken, recommended levels of construction are reliant upon the ongoing maintenance of the APZ. In this regard, the suitability of the design and construction of the building will be significantly compromised should the APZ not be maintained or implemented as intended.

APZ should be managed in accordance with section 4.1.3 and Appendix 5 of 'Planning for Bush Fire Protection 2006' and the NSW Rural Fire Service's document *Standards for asset protection zones*.

SERVICES

During major bush fire events, the preparedness of the dwelling and its occupants may be seriously jeopardised with the loss of basic services, particularly water and electricity.

Adequate water supply is critical for any firefighting operation, particularly where property protection is envisaged. A reticulated water supply should be provided which is easily accessible and located at regular intervals. Where no reticulated water supply is available, a water supply of 5,000L reserve (i.e. water tank or dam) dedicated to firefighting purposes should be installed and maintained.

Electricity services should be located so that the possibility of ignition of the surrounding bushland or fabric of the buildings is limited. Regular inspection of the electricity lines should be undertaken to ensure they are not impacted by branches.

The location of gas services should vent facing away and not lead to the ignition of surrounding bushland or the fabric of the buildings.

LANDSCAPING

Vegetation can burn during a bush fire. With this in mind, careful attention must be paid to species selection, their location relative to their flammability, avoidance of continuity of vegetation (horizontally and vertically), and ongoing maintenance to readily remove flammable fuels (leaf litter, twigs and debris).

Homeowners are advised to contact their local Council before undertaking any work that involves modifying or removing existing trees.

The following additional information relating to landscaping is available at www.rfs.nsw.gov.au:

1. Standards for Asset Protection Zones
2. Appendix 5 of *Planning for Bush Fire Protection 2006*.



For more information please visit www.rfs.nsw.gov.au
or contact Development Assessment & Planning on **8741 5175**
or email development.assessment@rfs.nsw.gov.au.