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Building Construction in Bush Fire Prone Areas

Bushfire Hazard Assessment Report

REF No. 23.01.021

Address	Lot 7 DP 755423 1164 Coxs Creek Road Coxs Creek NSW 2849
For	Rylstone Community Association
The site was inspected on	31st January 2023

Report Preparation

Craig Burley

Grad Dip Design for Bushfire Prone Areas
FPAA Certified BPAD – Level 3 Practitioner

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

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Bushfire Risk Assessment Certificate

As required by legislation under section 4.14 of the *Environmental Planning and Assessment Act* 1979

Property Address:	Lot 7 DP 755423 1164 Coxs Creek Road Coxs Creek NSW 2849
Description of Proposal	New Community Centre
Plan Reference: [Relied upon in report preparation]	This assessment is based on plans supplied by a representative of the association
Bushfire Hazard Assessment Report Ref. No.	23.01.021
Report Date:	30.05.2023
BAL Rating:	BAL 29
Does the proposal comply with the requirements of *Planning for Bush Fire Protection* 2019?	YES with incorporation of the recommendations included contained in the attached Bushfire Hazard Assessment Report
Does the proposal require referral to the NSW Rural Fire Service?	YES
Does the proposal rely on Alternate Solutions?	NO

I Craig Burley of Control Line Consulting have carried out a bushfire risk assessment on the above-mentioned proposal and property.

A detailed Bushfire Hazard Assessment Report has been prepared in accordance to the submission requirements as set out in *Planning for Bush Fire Protection* 2019 together with recommendations as to how the relevant specifications and requirements are to be achieved.

I hereby certify, in accordance with section 4.14 *of the Environmental Planning and Assessment Act* 1979:

1. That I am a person recognised by the *NSW Rural Fire Service* as a qualified consultant in bushfire risk assessment; and

2. That subject to the recommendations contained in the attached Bushfire Hazard Assessment Report the proposed development conforms to the relevant specifications and requirements.

I am aware that the Bushfire Hazard Assessment Report, prepared for the above mentioned site is to be submitted in support of a development application for this site and will be relied upon by Mid Western Regional Council as the basis for ensuring that the bushfire risk management aspects of the proposed development have been addressed in accordance with *Planning for Bushfire Protection* 2019.

Yours faithfully

[redacted]

Craig Burley
Grad Dip Design in Bushfire Prone Areas
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Executive Summary

We have been engaged by Rylstone Community Association, the Tennant of the subject land to prepare a bush fire hazard assessment report to be a supplement for inclusion in a development application to Mid Western Regional Council, for the proposed construction of a new Community Centre upon their land.

The site has been identified as being bushfire prone land and therefore the legislative requirements for the proposed development are applicable.

The proposed development is an *other development* as defined within *Planning for Bush Fire Protection* 2019 and this report has been prepared in accordance with the requirements of *Section 4.14 of the Environmental Planning and Assessment Act 1979.*

The objectives and performance requirements for the proposed development as required by the National Construction Code of Australia Volume 2 and the document *Planning for Bush Fire Protection* 2019 will be achieved by the incorporation of the recommendations contained within this report.

Bushfire Attack Summary
Lot 7 DP 755423
1164 Coxs Creek Road
Coxs Creek NSW 2849

	North	Southeast	Southwest
Vegetation Formation	Grassland (Area A)	Forest (Area B)	Forest (Area C)
Vegetation Slope	Level	Upslope degrees	Upslope degrees
Building Separation Distance metres	41	44	30
Separation Slope	Downslope > 0 to 5 degrees	Upslope degrees	Upslope degrees
Fire Danger Index	80	80	80
AS 3959 Construction Standard	BAL 12.5	BAL 12.5	BAL 19

The proposal and the recommendations contained within this report can provide for conformity to *Planning for Bush Fire Protection* 2019 and therefore will assist in providing a reasonable level of bushfire protection and improve but not guarantee the chances of building survival, or provision for the occupants with a safe refuge during the passage of a bushfire front and or the provision of a defendable space for fire fighters.

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Document Control

Revision No.	Author	Status	Date
01	Craig Burley	Final	13.02.2023
02	Craig Burley	Revision	02.05.2023
03	Craig Burley	Revision	30.05.2023

1.0 Introduction

We have been engaged by Rylstone Community Association, the tenant of the subject land to prepare a bush fire hazard assessment report to be a supplement for inclusion in a development application to Mid Western Regional Council for the proposed construction of a new Community Centre upon the subject land.

The site has been identified as being bushfire prone land and therefore the legislative requirements for the proposed development are applicable.

The proposed development is *an other* development as defined within *Planning for Bush Fire Protection* 2019 and this report has been prepared in accordance with the requirements of *Section 4.14 of the Environmental Planning and Assessment Act 1979.*

The proposed community centre will not be greater than 500m² floor space and therefore does not require consideration as integrated development and the issuance of a Bush Fire Safety Authority.

1.1 Purpose of Report

- To determine the vegetation type, the expected fire behaviour and the threat to the proposal; and
- To assess the proposal with reference to *Planning for Bush Fire Protection* 2019; and
- To assess the proposed construction with reference to the National Construction Code of Australia Volume 2; and
- To determine the level of construction with reference to AS 3959-2018 *Construction of buildings in bushfire prone areas;* and
- To identify any other such measures as to improve the chances of building survival during a bushfire event; and
- To assist the consent authority Mid Western Regional Council in the determination of the development application subject to this proposal.

1.2 Scope of Report

The scope of this report is limited to the Bushfire Hazard Assessment for the proposed development and only contains recommendations for the subject property. Where reference is made to adjacent or adjoining lands, this report does not purport to assess those lands; rather it may discuss bushfire progression on and through those lands with the possible bushfire impact to the subject property and the proposed development.

1.3 Regulatory Controls

The preparation of this report has given consideration to the various legislative and regulatory requirements including the *Environmental Planning and Assessment Act*

1979, the National Construction Code of Australia, *Planning for Bush Fire Protection* 2019 and AS 3959-2018 *Construction of buildings in bushfire prone areas.*

1.4 Methodology

A site inspection for the purpose of assessing bushfire related matters affecting this site was conducted on the 31st January 2023 and a review of the proposed plan as supplied and prepared by Rylstone Community Association has taken place.

An assessment of slope was conducted out to a distance of 100 metres and assessment of vegetation to a distance of 140 metres from the proposed development.

The findings were related and assessed with reference to *Planning for Bush Fire Protection* 2019 and AS 3959-2018 *Construction of buildings in bushfire prone areas* for the formulation of the Bushfire Hazard Assessment.

1.5 The Proposal

The proposal as indicated by consultation with the proponents and perusal of plans supplied, shows for the construction of a new Class 9b building, being a new Community Centre.

The proposed community centre will not be greater than 500m² floor space and therefore does not require consideration as integrated development and the issuance of a Bush Fire Safety Authority.

At present there no structures or services within the area of the proposed development and is considered as vacant land.

The building footprint has been positioned upon the plans supplied and detail on such plans shows the new building shall be located approximately 21.5 metres from the northern (road frontage) boundary.

The external finishes for the community facility have not been shown upon the plans supplied although it is anticipated that these will be further developed subject to the findings of this report.

Details of location of the building are shown upon plans included within appendix 1 of this report.

However, it must be noted that the plans supplied may not fully satisfy the recommendations included within this report and subject to actual consent conditions issued by the consent authority some modifications or changes may need to occur to achieve the required compliance.

2.0 Site and Adjacent Developments

The following seeks to describe the site, the adjoining lands and land uses effective upon the development proposal.

2.1 Site Description

The site is identified as Lot 7 DP 755423
1164 Coxs Creek Road
Coxs Creek NSW 2849
LGA Mid Western Regional Council

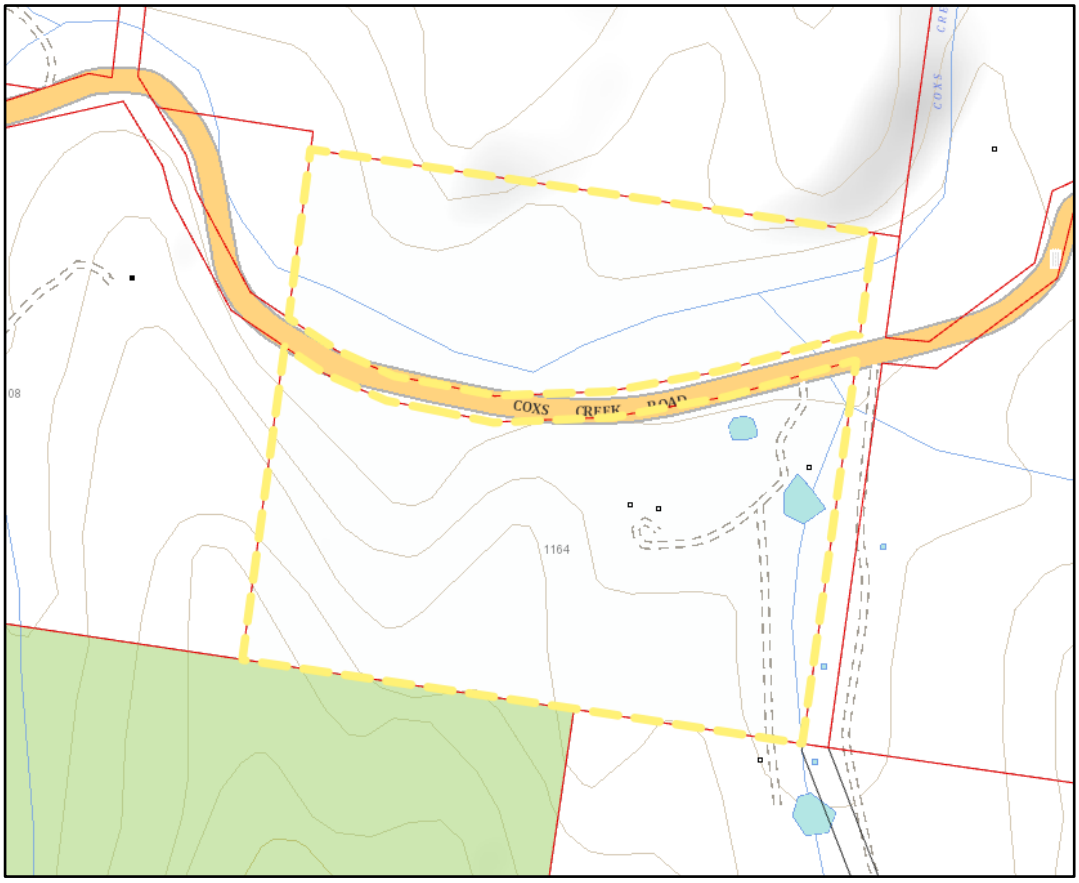


Figure 1: Address validation ex NSW Planning Portal

The subject allotment was created prior to the current subdivisional requirements contained within *Planning for Bush Fire Protection* 2019.

The site is a rural allotment located on the northern and southern sides of Coxs Creek Road. The area in which the proposal is located is within the western portion of the parcel.

The subject allotment is located within an area that should be considered as having a direct interface to bushfire hazardous vegetation.

The proposed development is positioned upon the northerly aspect slopes of a valley located between north to south ridgelines. The proposed development is to the south of Coxs Creek which descends westerly from the proposed development area.

The portion of the parcel of land that is to be leased to the Rylstone Community Association is irregular in shape and its northern boundary forms a road frontage that provides for vehicle access to the site.

At present the site has no structural improvements and no clearing of vegetation for the provision of asset protection zones has taken place.

In terms of vegetation the development site contains an area of predominately grassland and also extends into an area of forest vegetation within the south eastern and south western corners of the overall site.

The site is shown upon the Mid Western Regional Council Bushfire Prone Land Map (Figure 2) to be within a combination of category 1 vegetation (shown red), category 3 vegetation (shown orange) and the resultant buffer zones. The site inspection and interpretation of aerial photography confirms that the subject allotment is reasonably depicted upon this image.

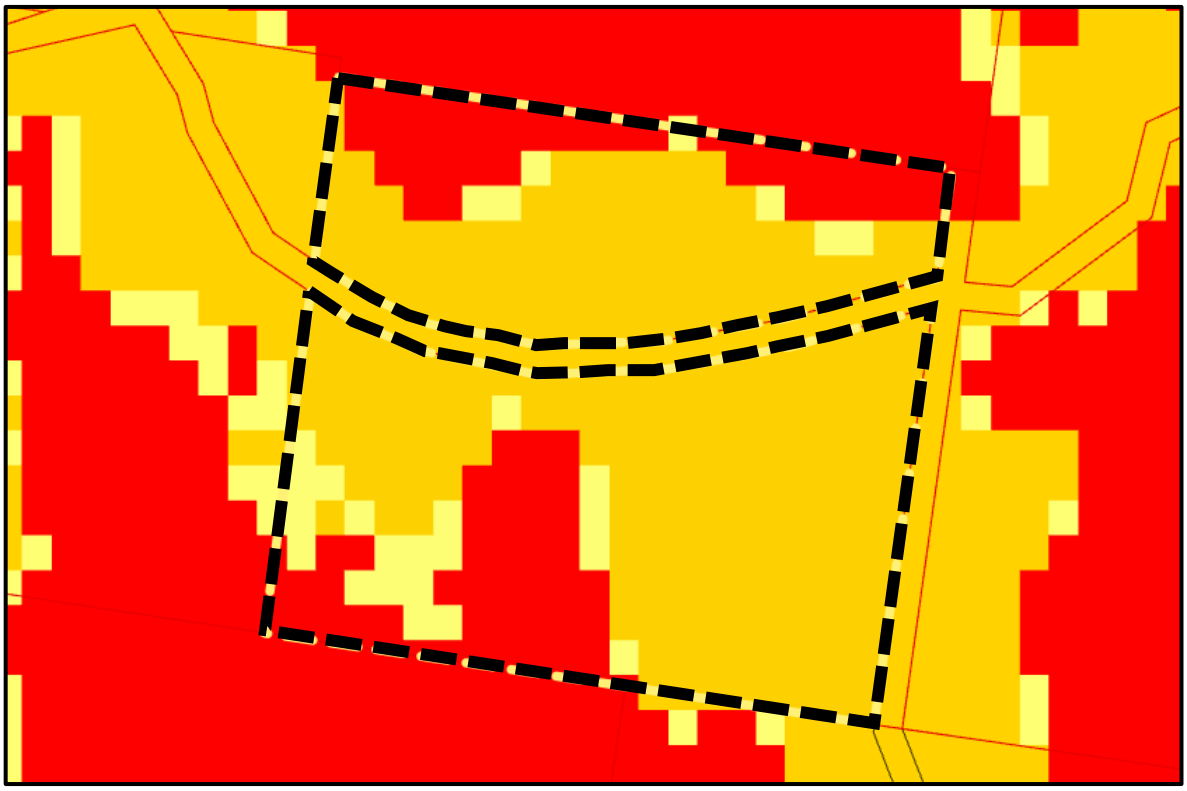


Figure 2; Section Mid Western Regional Council LGA Bushfire Prone Land Map ex NSW Planning Portal

Provision of electricity and phone is available to the proposal by existing infrastructure. The site is not serviced by reticulated water system and the provision of water for the subject development will be principally by rainwater collection.

2.2 Description of Adjoining Lands

To the north of the proposed development site is the carriageway of Coxs Creek Road beyond which lies a section of the parent subject allotment comprising of a large area of grassland vegetation within the valley area associated with Coxs Creek before transitioning into being large and expansive areas of forest vegetation on the elevated land beyond the valley floor.

To the east of the proposed development site is initially grassland that transitions into being a large and expansive area of forest vegetation.

Figure 3: Aerial photo depicting localised terrain the subject allotment and the proposed development site

3.0 Environmental Considerations

The scope of this report has not been to provide an environmental survey although this report will be a supplement to a Statement of Environmental Effects as part of the development application process.

The proposed scope of works does necessitate the reduction of grassland vegetation as required to satisfy the recommendations for asset protection zones. It is also our opinion that the bushfire protection measures as recommended within this report will have little or no adverse environmental effects.

4.0 Bushfire Hazard Assessment

The bushfire hazard assessment was conducted for the proposed development, using the procedures as outlined in *Planning for Bush Fire Protection* 2019 to determine the bushfire attack level (BAL) likely upon the development.

The assessment was conducted on the assumption of the building footprint being positioned as described in section 1.5 The Proposal of this report and the site plan.

4.1 Classification of Vegetation and Separation Distance from Proposed Development

The vegetation was assessed for a distance of 140 metres from the proposed development building footprint in each of the following directions. To the north, east, south and west being the general direction adjacent and away from the proposed building elevations within such building footprint.

Figure 4: Vegetation study area 140 metre radius approx. Image ex NSW SIX map

Proposed Community Centre location Forest Grassland

To the north of the proposed development (Area A) is an area of effective grassfire hazardous vegetation and this area should be classified as being a vegetation formation of Grassland with a minimum separation distance of 41 metres.

To the southeast of the proposed development (Area B) is an area of effective bushfire hazardous vegetation and this area should be classified as being a vegetation formation of Forest with a minimum separation distance of 44 metres.

To the southwest of the proposed development (Area C) is an area of effective bushfire hazardous vegetation and this area should be classified as being a vegetation formation of Forest with a minimum separation distance of 30 metres.

4.2 Slope Assessment

The slope was assessed for a distance of 100 meters within the bushfire hazardous vegetation and reference to slope classifications has been undertaken considering the procedure specified within *Planning for Bush Fire Protection* 2019.

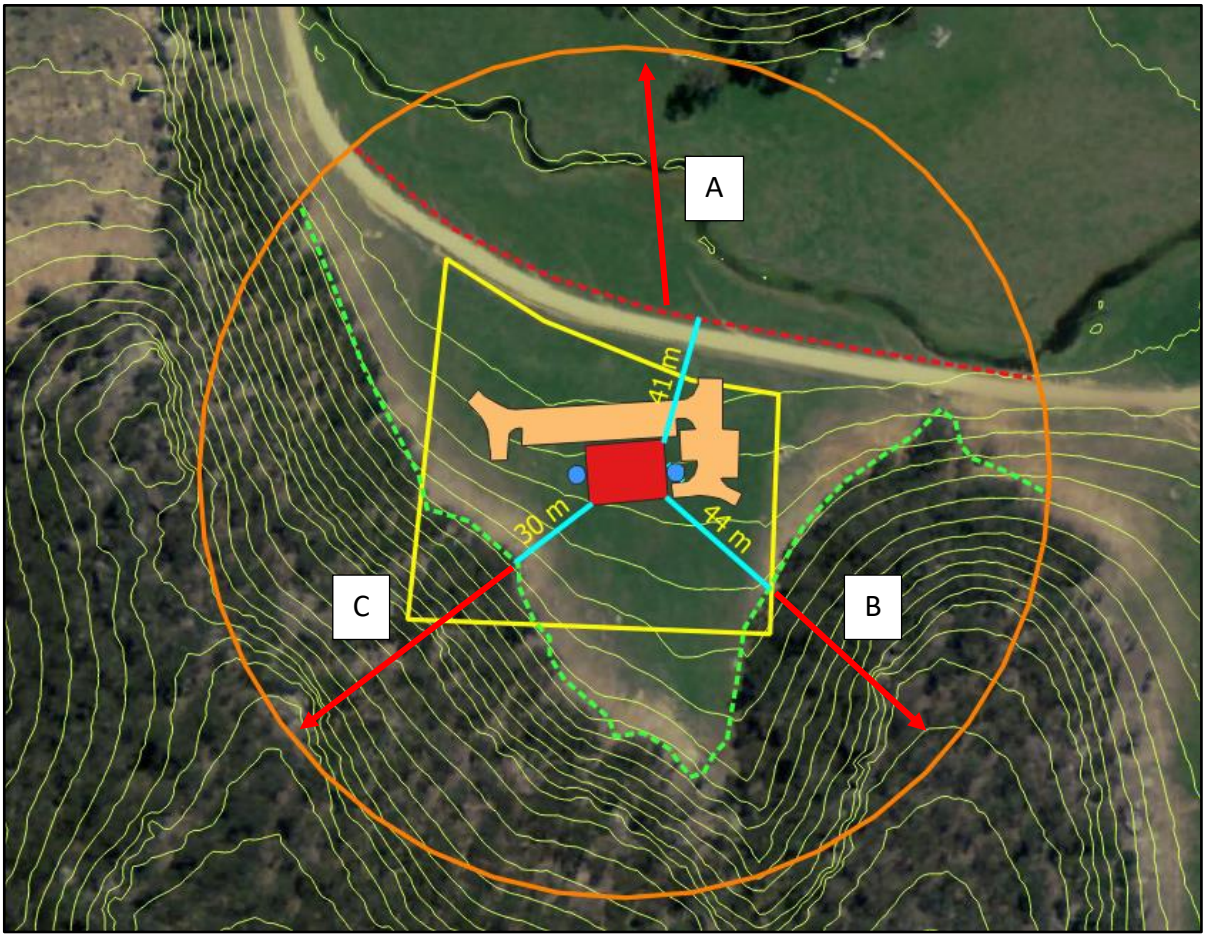


Figure 5; Slope assessment study area contour data ex Geoscience Australia

The **effective slope** of the land, out to a distance of 100 metres from the proposed scope of works (that is, the slope of the land most likely to influence bushfire behaviour for the purposes of calculating the Category of Bushfire Attack and Asset Protection Zones, has been assessed (using a clinometer) and desktop analysis as being;

- Area A – Grassland – Level degrees (assumed) (elevation 0.74 met / dist. 75.93 met = 0.56 degrees)

- Area B – Forest – Upslope degrees (assumed) (elevation 23.55 met / dist. 68.55 met = 18.96 degrees)

- Area C – Forest – Upslope degrees (assumed) (elevation 37.10 met / dist. 89.01 met = 22.62 degrees

4.3 Category of Bushfire Attack

The bushfire attack level (BAL) for the proposed development was determined by using the information gathered with respect to the classification of the vegetation, the effective slope and provision of asset protection zones specified in this report with reference given to *Planning for Bush Fire Protection* 2019.

It is the determination of the site inspection, the assessment procedure with incorporation of the recommendations in this report that the proposed development could experience a BAL 19 category of bushfire attack. The proposed development is most likely to be subject to the greatest bushfire attack from any area to the southwest from the proposed development location.

Bushfire Attack Summary

	North	Southeast	Southwest
Vegetation Formation	Grassland (Area A)	Forest (Area B)	Forest (Area C)
Vegetation Slope	Level	Upslope degrees	Upslope degrees
Building Separation Distance metres	41	44	30
Separation Slope	Downslope > 0 to 5 degrees	Upslope degrees	Upslope degrees
Fire Danger Index	80	80	80
AS 3959 Construction Standard	BAL 12.5	BAL 12.5	BAL 19

5.0 Assessment of the extent to which the development conforms or deviates from *Planning for Bush Fire Protection* 2019

The proposed development being the construction of a new Class 9b building will conform to the requirements of *Planning for Bush Fire Protection* 2019 when considered in conjunction with both the proposal supplied for this assessment and the recommendations arising from this bushfire hazard assessment report.

5.1 Asset Protection Zones

The maintenance of the majority of area upon the proposed development site currently would not satisfy the requirements of an inner protection area of an asset protection zone as contained in *Planning for Bush Fire Protection* 2019.

This report will recommend that the entire site where not built upon is maintained to the requirements of an inner protection area of an asset protection zone and managed to these provisions for the lifetime of the development as follows;

- From the northern elevation of the proposed building to the adjacent section of the allotment (road frontage) boundary;
- From the south eastern corner of the proposed building for a distance of 44 metres; and
- From the south western corner of the proposed building for a distance of 30 metres.

In this instance all that is required will be the regular mowing of the grassland upon the proposed development site.

The following is a summary of the requirements for an asset protection zone inner protection areas as described within the documents *Planning for Bush Fire Protection* 2019 and NSW RFS *Standards for Asset Protection Zones*.

Inner Protection Area (IPA)

The IPA is the area closest to the building and creates a fuel management area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defendable space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 10cm 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 in IPA the following requirements apply;

Trees

- tree canopy cover should be listed 15% at maturity;
- trees at maturity should not touch your overhang the building;
- lower limbs should be removed to a height of two metres above the ground;

- preference should be given to smooth bark and Evergreen trees

Shrubs

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards the buildings;
- 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 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 vegetation debris should be removed

The creation and continued maintenance of the full asset protection zone is one of the primary factors in bushfire protection measures for developments in bushfire prone areas.

5.2 Position and Design of Proposed Development

The design and siting of the proposed community facility must take into consideration the actual bushfire risk and this report contains recommendations to assist in mitigating the mechanisms of bushfire attack.

5.3 Construction Level

The National Construction Code contains both the performance requirements and the 'deemed to satisfy' provisions relating to construction of class 1, 2 & 3 buildings that are proposed for *construction in bushfire prone areas.* To satisfy the performance provision P2.3.4 of the National Construction Code of Australia Vol. 2, a Class 1a building that is constructed in a designated bushfire prone area must be designed and constructed to reduce the risk of ignition from a bushfire while the fire front passes.

Australian Standard 3959-2018 *Construction of buildings in bushfire prone areas* is referenced by the NCC as the deemed to satisfy construction standard for buildings in designated bushfire prone areas with the exception that in NSW the requirements shall be varied to comply with section 7.5.2 Additional construction requirements of *Planning for Bushfire Protection* 2019.

The proposed development could experience a Bushfire Attack Level (BAL) 19 from vegetative fuels to the southeast however, due to the nature of the proposed development being a public assembly building and the location of the proposed development, it should be considered by the consent authority that during a major bushfire event the following may occur;

- The suppression or defensive operations by fire authorities may not be possible in the general area of the development due to safety considerations for fire fighters
- That there may not be adequate fire authority resources to protect this development or others in the general area

Subsequently, this report recommends that this proposed development should include additional protection measures and therefore be designed and constructed to the requirements of AS 3959-2018 and must be constructed to comply with section 3 Construction General and section 7 BAL 29 of such standard apart from as varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bushfire Protection* 2019.

5.4 Access / Egress

5.4.1 To the Proposed Development

The access to the subject site is from Coxs Creek Road, which in sections is an unsealed single lane road in a reasonably well maintained condition.

Under most conditions this road should provide adequate access and egress for both residents and emergency service vehicles although during major bushfire events or high bushfire behavior access and egress may become problematic.

Significant sections of Coxs Creek Road are exposed to large areas of forest vegetation and the carriageway may suddenly become unsafe to negotiate due to the mechanisms of bushfire attack particularly flame impingement or heavy smoke.

The members of the community that may be attending the proposed community center should consider very carefully their ability and the overall level of preparedness of the property to deal and cope with a bushfire event. The personal stress of dealing with a bushfire event may be beyond the ability of many members of the public.

5.4.2 Within the Site

The site plan for the proposal does show that vehicle access may not be possible to all elevations of the community facility, although a fire tanker will be able to park in close proximity to the northern and southern building elevations upon the proposed parking areas and foot access will be available to each of the other building elevations.

To comply with the requirements of *Planning for Bush Fire Protection* 2019 the driveway surface must be an all-weather surface capable of carrying a fully laden fire tanker (23 tonnes).

The driveway must have trafficable width of not less 4.0 metres and have a minimum of 4.0 metres vertical clearance. The inner radius of any curve must be greater than 6.0 metres. The minimum distance between inner and outer curves is 6.0 metres.

As a minimum the site must not inhibit the movement of fire fighters on foot and provide for an area of hard surfaced driveway to negotiate the turning around of a bushfire tanker that is constructed in accordance with Appendix 3 of *Planning for Bush Fire Protection* 2019.

Whilst all fire authorities will endeavour to assist all occupants and protect all buildings during major bushfire events this is not always possible and cannot be guaranteed.

5.5 Utility Supplies

5.5.1 Water

The locality of Coxs Creek is not serviced by a mains reticulated water supply and the provision of potable water for the building will be principally supplied by the collection of rain water.

The availability of water for use during a bushfire event is a significant component of the overall bushfire protection measures for any building in a bushfire prone area.

Therefore the proposed development must be able to integrate suitable measures that ensure an independent, reliable water supply for use during a bushfire event by the occupants or a firefighting authority tanker, and should have the following key objectives:

- To enable a suitably prepared, able bodied person or persons to undertake first aid fire suppression of small ignitions near or on the external elevations of the building that may occur before and after the passing of a bushfire front.

- To be able to replenish bushfire tankers that may be in attendance during a bushfire event

- To be able to operate independently of the mains power supply so as to be able to fully function if an electrical mains power failure occurred

- To be able to supply an adequate amount of water at the required pressure to firefighting hose or hoses

To satisfy the requirements of *Planning for Bush Fire Protection* 2019 it is a recommendation of this report that a reserve Static Water Supply (SWS) of not less than 20,000 litres be permanently maintained on the subject allotment within noncombustible tanks located within the inner protection area of the asset protection zone.

The reserve Static Water Supply (SWS) should be permanently plumbed to a petrol or diesel firefighting water pump of not less than 5 hp. The pump must be shielded from the direct effects of a bushfire event.

The site restrictions may not allow for a bushfire tanker to have direct and clear access to the reserve Static Water Supply (SWS) and as such the proposed development should provide a delivery line of not less than 50mm diameter from the firefighting water pump to an outlet point located within 4.0 metres of the proposed turning bay in the new driveway. This outlet point should be fitted with a ball or gate valve and a 65 to 38mm Storz reducer fitting.

The water pump should also be connected to and supply water to kink resistant hose or hoses with a minimum diameter of not less than 19mm and firefighting nozzle capable of reaching all building elevations.

All plumbing and fittings associated with reserve water supply, the first aid fire hoses, the tanker refill outlet point and firefighting pump that is above the ground or below the ground for less than 300mm shall be metal.

The installation and ongoing maintenance of the plumbing and water pump must be undertaken to the manufacturer specifications. Fire hose reels are to be constructed in accordance with AS/NZS 1221:1997 and installed in accordance with the relevant clauses of AS 2441:2005.

The installation and ongoing maintenance of the plumbing and water pump must be undertaken to the manufacturer specifications.

The site shall provide NSW RFS Static Water Supply (SWS) approved signage fitted in the approved locations to enable fire fighters clear indication of the location of the reserve water and the outlet point.

The NSW RFS district office can assist with the procurement of these signs and the guidelines for suitable installation.

5.5.2 Electricity

The methodology for electrical connection had not been finalized at the time of formulating this report although this report recommends that wherever possible this is located below ground level to reduce both ignition potential and to minimize potential infrastructure damage.

5.5.3 Gas

At the time of report preparation, it was not known if it is proposed to connect gas supply to the subject community facility. However any future connection to either mains or portable gas supply should be undertaken and maintained to the provisions of AS 1596-2002 *Storage and handling of LP Gas.* All piping associated with the installation must be metal.

5.6 Landscaping

A formal landscaping plan was not supplied for perusal at the time of formulating this report however recommendations are made with respect to the maintenance of the area on the site.

It is highly probable that in the future landscaping and garden establishment may occur on the site. However no future planting of trees or shrubs, or combustible landscaping features should be undertaken or constructed in a manner which creates a path for bushfire progression towards the community facility or allows for a potential compromise to the integrity of the asset protection zone.

5.7 Emergency Procedures

Preparation of procedures and actions by individuals and occupants of lands within bushfire prone areas has clearly been shown to increase chances of personal safety and building survival should a bushfire event occur.

The NSW Rural Fire Service and the NSW Fire and Rescue have formulated a Bush Fire Survival Plan and this is readily available from either the NSW RFS website or the local district office.

This document should be completed by the Rylstone Community Association executive so as to better prepare all persons for a bushfire event.

After completion it should be regularly reviewed (at least once a year) and stored in a location as to be easily accessible for reference during a bushfire emergency.

6.0 Bushfire Hazard Assessment Recommendations

1. That the site where not built upon shall have the vegetation reduced where necessary to satisfy the requirements of *Planning for Bush Fire Protection* 2019 and the NSW Rural Fire Service document "Standards for Asset Protection Zones" for an inner protection area of an asset protection zone and this area shall be maintained at this vegetation level for the lifetime of the development as described below;

   - From the northern elevation of the proposed building to the adjacent section of the allotment (road frontage) boundary;
   - From the south eastern corner of the proposed building for a distance of 44 metres; and
   - From the south western corner of the proposed building for a distance of 30 metres.

   These areas are to form a continuous and linked buffer around the entire community facility.

2. That no future landscaping features, planting of shrubs, trees or other vegetation shall occur in such a manner as to compromise the integrity of the asset protection zone.

3. That the proposed Community Centre shall be constructed to section 3 Construction General and section 7 BAL 29 of AS3959-2018 *Construction of buildings in bushfire prone areas* with the exception that the construction requirements shall be varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bush Fire Protection* 2019.

4. That the driveway shall be constructed to comply with the requirements of *Planning for Bush Fire Protection* 2019 which include:
   a) The surface shall be a material capable of carrying a fully laden fire tanker (23 tonnes) in all weather conditions.
   b) The width shall be a minimum of not less than 4.0 metres and a vertical clearance of not less than 4.0 metres
   c) Provide for a turning area in accordance with the Appendix 3 of *Planning for Bush Fire Protection* 2019
   d) Curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress
   e) The minimum distance between inner and outer curves is 6m
   f) The crossfall is not more than 10 degrees
   g) Maximum grade for sealed roads does not exceed 15 degrees or not more than 10 degrees for unsealed roads

5. That the building shall maintain a reserve Static Water Supply (SWS) for use during a bushfire event of not less than 20,000 litres stored in a non combustible tank within the area of recommended asset protection zone.

6. The reserve Static Water Supply shall be permanently plumbed to a petrol or diesel fire fighting water pump with a minimum of 5hp. The pump shall be regularly maintained as per the manufacturer specifications. The pump must be located in such a position to be shielded from the direct mechanisms of bushfire attack.

7. That a water delivery line of not less than 50 mm diameter be plumbed from the fire fighting water pump plumbed to the reserve Static Water Supply tank, to an outlet point located within 4.0 metres of the truck turning area in the new driveway of the proposed development to enable fire fighting tankers to refill. The outlet of this line shall be fitted with a ball or gate valve and a 65 to 38mm reducer Storz fitting.

8. That the development must provide and have readily available kink resistant hose or hoses with a diameter of not less than 19mm and a fire fighting nozzle, capable of reaching all elevations of the community facility, and fittings suitable for connection to the fire fighting water pump.

9. Fire hose reels are constructed in accordance with AS/NZS 1221:1997 and installed in accordance with the relevant clauses of AS 2441:2005.

10. That all plumbing associated with the reserve water supply above the ground or for a depth of not less than 300mm below the ground shall be metal.

11. That approved NSW Rural Fire Service; Static Water Supply signage is installed at approved locations for the proposed development.

12. That the supply of electricity and telephone to the building shall be under ground where at all possible.

13. That if the supply of gas to the subject building is undertaken it shall be installed and maintained in accordance with AS 1596-2002 and the requirements of relevant authorities.

14. The Rylstone Community Association should complete a *Bush Fire Survival Plan* as formulated by the NSW Rural Fire Service and the NSW Fire & Rescue.

15. That an Emergency Management Committee is established to develop and implement an Emergency Procedures Manual.

These recommendations are the opinions of the author of this report and are compiled to assist the consent authority and the NSW Rural Fire Service in the assessment of this proposed development and that the final conditions as imposed by the consent authority must be adhered to at all stages and where required for the lifetime of the development.

7.0 Conclusion

The objectives and performance requirements for the proposed development as required by the National Construction Code Volume 2 and the document *Planning for Bush Fire Protection* 2019 will be achieved by the incorporation of the 15 recommendations contained within this report.

The recommendations contained within this report will assist in providing a reasonable level of bushfire protection and improve but not guarantee the chances of building survival, or provision for the occupants with a safe refuge during the passage of a bushfire front and or the provision of a defendable space for fire fighters.

Craig Burley
Grad.Dip. Building in Bushfire Prone Areas (UWS)
FPA Australia Certified BPAD – Level 3 Practitioner

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Caveat

Quote from *Planning for Bush Fire Protection* 2006, '*not withstanding the precautions adopted, it should always be remembered that bushfire burn under a wide range of conditions and an element of risk, no matter how small always remains.'*

Quote from Standards Australia, '*Although the standard is designed to improve the performance of such buildings, there can be no guarantee, because of the variable nature of bushfires, that any one building will withstand bushfire attack on every occasion.'*

References

Planning for Bush Fire Protection 2019 Planning NSW in conjunction with NSW Rural Fire Service

Building Code of Australia Volume 2 2013 Australian Building Codes Board

AS 3959 –2018 Construction of buildings in bushfire prone areas Standards Australia & Australian Building Codes Board

Landscape and building Design for Bushfire Areas Ramsay C. & Rudoplh L. CSIRO 2003

Quantifying bushfire penetration into urban areas in Australia Keping Chan & McAneny J. Geophysical Research Letters, Volume 31, L12212, doi:10.1029/2004GL020244,2004

Bushfires in Australia Luke R.H. & McArthur CSIRO 1978

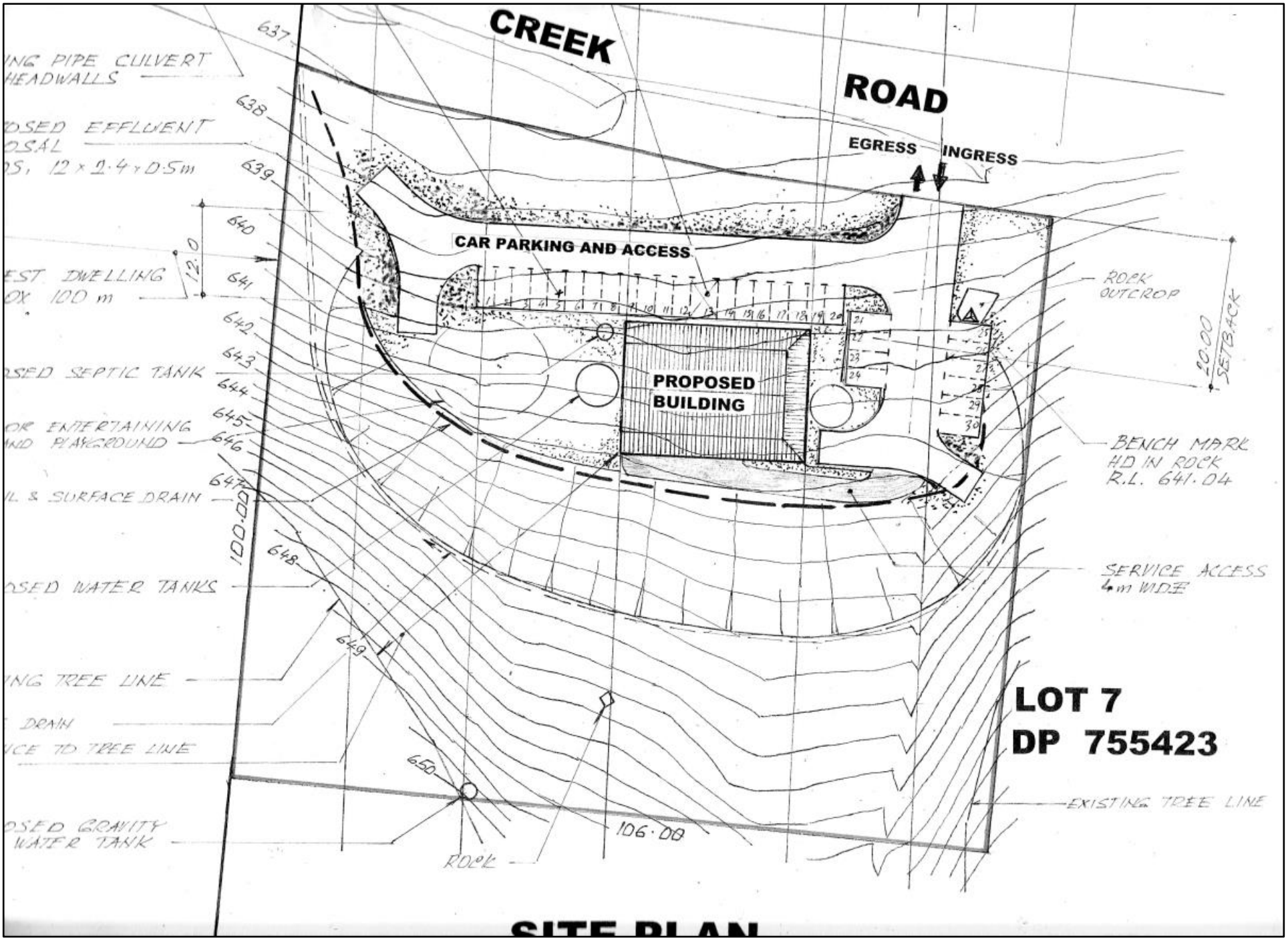
Performance of Building Elements in Bushfire Prone Areas Poon S.L. & England J.P. Warrington Fire Research Australia

Address Validation Search Department of Lands www.maps.nsw.gov.au

Standards for Asset Protection Zones NSW Rural Fire Service 2005

Ocean Shores to Dessert Dunes Keith D. Department of Environment and Conservation Sydney 2004

Appendix 1- Proposed Community Centre Plan


CREEK
ROAD
EGRESS
INGRESS
CAR PARKING AND ACCESS
PROPOSED BUILDING
ROCK OUTCROP
10.00 SETBACK
BENCH MARK HD IN ROCK R.L. 641.04
SERVICE ACCESS 4m WIDE
LOT 7
DP 755423
EXISTING TREE LINE
106.08
ROCK
100.00
12.0
637
638
639
640
641
642
643
644
645
646
647
648
649
650
ING PIPE CULVERT HEADWALLS
OSED EFFLUENT OSAL
S, 12 x 2.4 x 0.5m
EST. DWELLING OX 100 m
SED SEPTIC TANK
OR ENTERTAINING ND PLAYGROUND
L & SURFACE DRAIN
OSED WATER TANKS
NG TREE LINE
DRAIN
CE TO TREE LINE
OSED GRAVITY WATER TANK

SITE PLAN