

Bush Fire Assessment Report

Proposed:
**Seniors Living
Development**

At:
**24 Coronation Road,
Congarinni North NSW**

Reference Number: 210154

14th December 2020



Prepared By:
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Version Control			
Version	Date	Author	Details
1	14/12/2020	Stuart McMonnies BPAD Accreditation No. 9400	Final Report

List of Abbreviations:

APZ	Asset Protection Zone
AS3959	Australian Standard 3959 – 2018 as amended
BAL	Bushfire Attack Level
BPMs	Bushfire Protection Measures
BPLM	Bushfire Prone Land Map
Council	Nambucca Valley Council
DA	Development Application
ELVIS	Elevation and Depth Foundation Spatial Data
EP&A Act	<i>Environmental Planning and Assessment Act - 1979</i>
ESD	Ecologically Sustainable Development
FRNSW	Fire and Rescue NSW
IPA	Inner Protection Area
NASH	National Association of Steel-framed Housing
NCC	National Construction Code
NP	National Park
NSP	Neighbourhood Safer Place
OPA	Outer Protection Area
PBP	<i>Planning for Bush Fire Protection – November 2019</i>
ROW	Right of Way
RF Act	<i>Rural Fires Act - 1997</i>
RFS	NSW Rural Fire Service
SEPP	State Environmental Planning Policy
SFPP	Special Fire Protection Purpose
SWS	Static Water Supply

Executive Summary:

Building Code and Bushfire Hazard Solution P/L has been engaged to prepare an independent Bushfire Assessment Report for the proposed seniors living development at 24 Coronation Road, Congarinni North NSW.

The proposed works include the construction of two hundred and seventy-six (276) residential units, an aged care centre, a sports centre, helipad and associated infrastructure and landscaping.

A special provision clause (Schedule 1, clause 3) was introduced into the Nambucca Valley Local Environmental Plan to permit seniors housing within the subject site. As part of the assessment process the NSW Rural Fire Service provided a submission (ref LEP/0091, dated 23rd October 2013) which raised no objection to the Planning Proposal, however identified the following advice in relation to any future development application for senior living on the subject land:

- *Senior Living development is classified as a 'Special Fire Protection Purpose' (SFPP) under S100B of the Rural Fires Act 1997.*
- *Development applications for all development on bush fire prone lands will be required to comply with S100B of the Rural Fires Act 1997.*
- *The 'concept' Masterplan submitted with documentation for the planning proposal, does not appear to meet the specifications and requirements of Planning for Bush Fire Protection 2006. Specifically the RFS has concerns with the following Bush Fire Prevention Measures (BFPM) required to be incorporated in the development. These BFPM will need to be addressed at any future development application stage:*
 - *Asset Protection Zones are required to comply with the requirements for SFPP developments as per Planning for Bush Fire Protection 2006-*
 - *Vegetation classification for the bush fire hazard located to the north and west;*
 - *Inclusion of grasslands as a bushfire hazard to the south.*
 - *Vehicle access requirements-*
 - *Perimeter road around the residential housing component;*
 - *Loop road around the Nursing home;*
 - *Secondary access entrance to the property.*

In conclusion, the RFS is satisfied that the land has the capability to support a 'senior's living' development with respect to bush fire impacts generated within the site and from adjoining land. While a detailed bush fire assessment of the 'concept' Masterplan has not been carried out, any future development applications will need to submit a revised Masterplan that meets the specifications and requirements of Planning for Bush Fire Protection 2006.

The subject site is depicted on Nambucca Valley Council's Bushfire Prone Land Map as containing Category 1 and 2 Vegetation and their associated buffer zones and therefore the subject site is considered 'bushfire prone'.

Seniors living development is a listed Special Fire Protection Purpose (SFPP) under section 100b of the Rural Fires Act 1997.

As the proposal involves a listed SFPP development on bushfire prone land it is classified as integrated development under section 4.46 of the *Environmental Planning and Assessment Act* 1979. The Development Application subsequently requires a Bushfire Safety Authority from the Commissioner of the NSW Rural Fire Service.

In accordance with the submission requirements for a Bush Fire Safety Authority as detailed in clause 44 of the *Rural Fires Regulation* 2013 an assessment of the extent to which the proposed development conforms with or deviates from *Planning for Bush Fire Protection* (PBP) is required.

The proposal must therefore conform to the aim and objectives detailed in Chapter 1 'Introduction' and the specific objectives and bushfire protection measures detailed in Chapter 6 'Special Fire Protection Purpose Developments' of PBP.

In this instance the proposed building footprints were found to achieve and in most instances exceed the minimum required Asset Protection Zones for SFPP development. The APZs consist of maintained grounds entirely within the subject property.

The proposal satisfies all relevant specifications and requirements of *Planning for Bush Fire Protection* 2019.

1.0 Introduction

The development proposal relates to the construction of a new seniors living development, comprising of two hundred and seventy-six (276) residential units, an aged care centre, a sports centre, helipad and associated infrastructure and landscaping, at 24 Coronation Road, Congarinni North NSW (Lots 157 and 188 DP 755537).

The subject property has street frontage to Coronation Road and Wilson Road to the east and abuts private rural allotments to the remaining aspects.

The subject site is depicted on Nambucca Valley Council's Bushfire Prone Land Map as containing Category 1 and 2 Vegetation and their associated buffer zones and therefore the subject site is considered 'bushfire prone'.

As the proposal involves a listed SFPP development on bushfire prone land it is classified as integrated development under section 4.46 of the *Environmental Planning and Assessment Act* 1979. The Development Application subsequently requires a Bushfire Safety Authority from the Commissioner of the NSW Rural Fire Service.

This report has been prepared to address the relevant specifications and requirements of Planning for Bush Fire Protection - 2019 (PBP) for Special Fire Protection Purpose (SFPP) development.



Figure 01: Extract from Nambucca Valley Council's Bushfire Prone Land Map (subject site outlined in yellow dotted line)

2.0 Purpose of Report

The purpose of this Bushfire Assessment Report is to provide the NSW Rural Fire Service and Nambucca Valley Council with an independent bushfire assessment together with appropriate recommended bushfire mitigation measures.

The recommendations contained within this report may assist in forming the basis of any specific construction conditions and/or bushfire mitigation measures that Council and/or the NSW Rural Fire Service may elect to place within any consent conditions issued for the subject Development Application.

3.0 Scope of this Report

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

4.0 Compliance Tables & Notes

The following table sets out the projects compliance with *Planning for Bush Fire Protection – 2019*.

	North	East	South	West
Vegetation Structure	Coastal Swamp Forest	Managed Land	Grassland	Forest / Rainforest
Slope	0° across	N/A	Variable	0 - 5° down
Required Asset Protection Zone	59 metres*	N/A	26 – 44 metres*	70 metres* / 47 metres
Available Asset Protection Zone	≥59 metres	>140 metres	40->44 metres	≥70 metres / ≥47 metres
Significant Landscape Features	Swampland area	Coronation Road and Wilson Road	Proposed collector road	Proposed perimeter road
Threatened Species	By Others	By Others	By Others	By Others
Aboriginal Relics	By Others	By Others	By Others	By Others
Bushfire Attack Level	BAL 12.5	N/A	BAL 12.5	BAL 12.5

* Determined from bushfire design modelling

Compliance Summary of Bushfire Protection Measures Assessed			
Bushfire Protection Measure	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones & Landscaping	<input type="checkbox"/>	<input checked="" type="checkbox"/>	7.03
Construction Standard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.03
Access	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.03
Services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.03
Emergency Management Planning	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.03

Asset Protection Zones Compliance

Asset Protection Zones for new Special Fire Protection Purpose (SFPP) development are determined from Table A1.12.1 of PBP or bushfire design modelling achieving a radiant heat impact of no more than 10kW/m² at the closest point of the available building footprint.

The minimum required Asset Protection Zone (APZ) was determined from Table A1.12.1 of PBP and bushfire design modelling (report attached).

The proposed building footprints were found to achieve and in most instances exceed the minimum required APZs.

The APZs consist of maintained grounds entirely within the subject property.

Construction Level Compliance

The highest Bushfire Attack Level to the proposed buildings was determined from Table A1.12.6 of PBP to be 'BAL 12.5'.

The proposed buildings are required to comply with the relevant Bushfire Attack Level as shown on the attached Bushfire Attack Level Overlay. The highest Bushfire Attack Level applies to the entire building.

5.0 Aerial view of the subject allotment

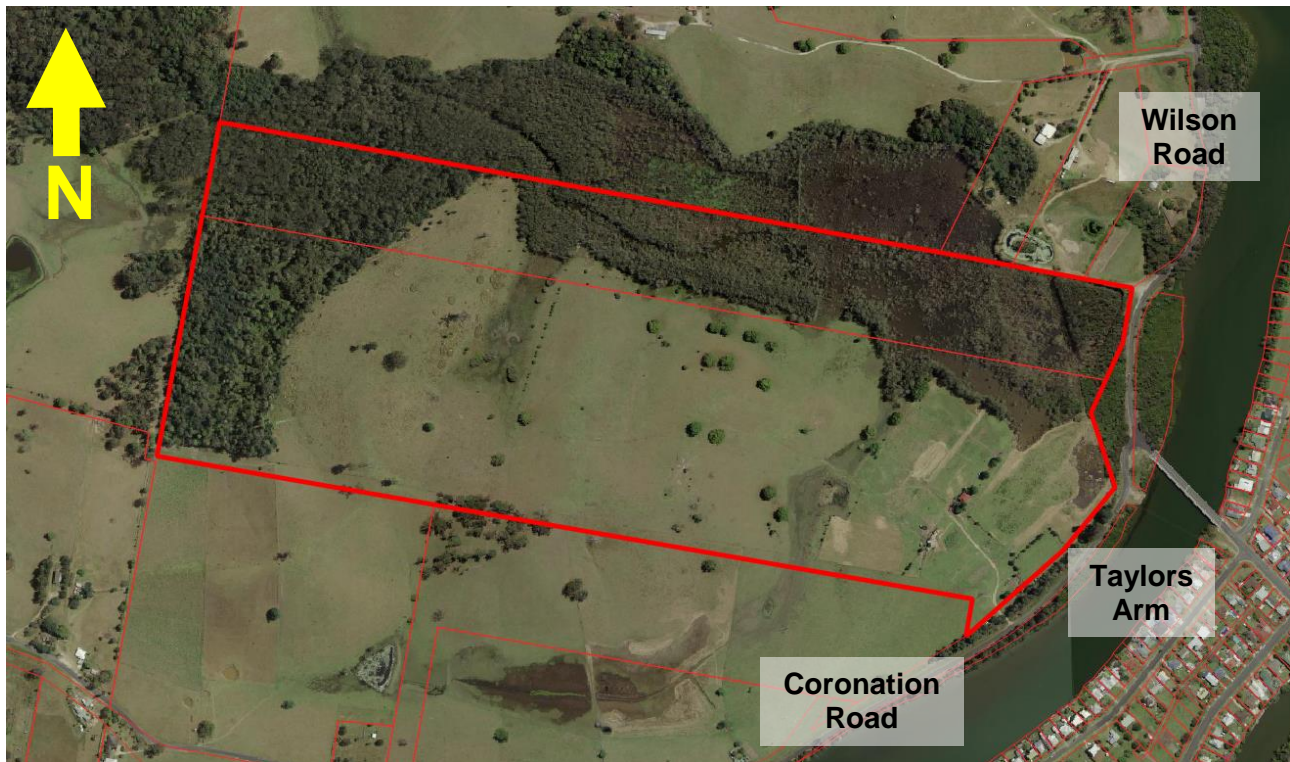


Figure 02: Aerial view of the subject site (thick red outline) and surrounding area
Courtesy Sixmaps

6.0 Site Assessment

6.01 Location

The subject site comprises of two existing allotments (Lots 155 & 188 DP 755537) known as 24 Coronation Road, Congarinni North. The subject site is zoned 'RU1: Primary Production', 'E3: Environmental Management' and 'E2: Environmental Conservation' and located within Nambucca Valley Council's local government area.

The subject site has street frontage to Coronation Road and Wilson Road to the east and abuts neighbouring private rural allotments to the north, south and west.



Photograph 01: View north across the development area from within the subject site

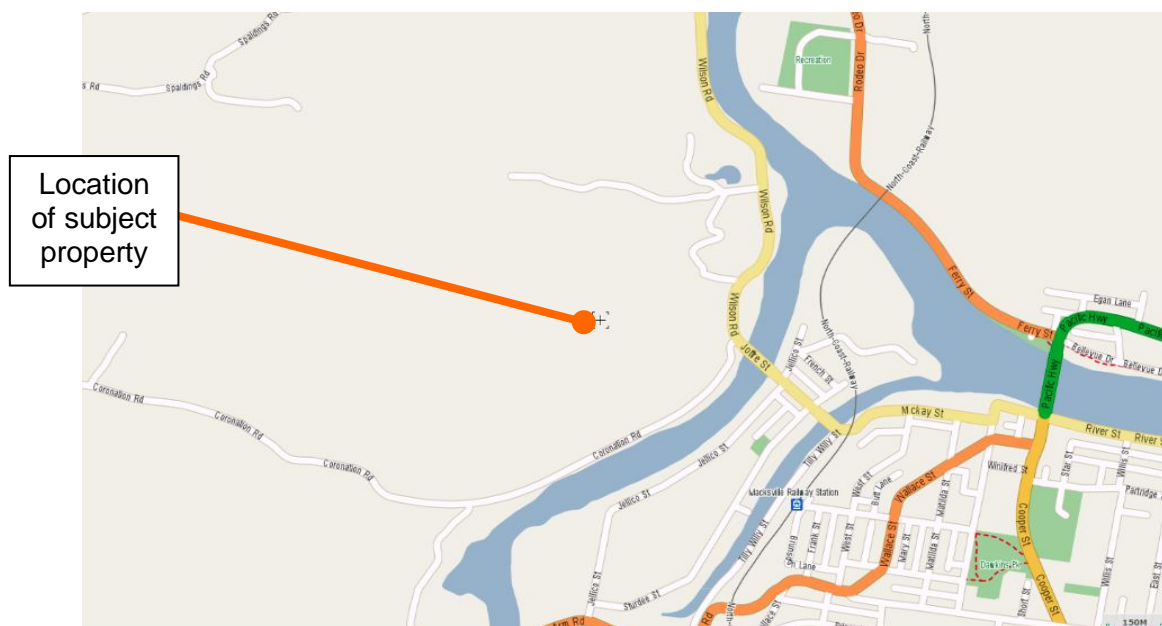


Figure 03: Extract from street-directory.com.au

6.02 Vegetation

Historically the subject site has been used for agricultural purposes resulting in most of the landscape comprising of slashed / grazed pastures. More pronounced vegetation was observed on the lower slopes adjacent the existing watercourses.

In accordance with Appendix 1 'Site Assessment Methodology' of PBP we have undertaken an assessment of all vegetation formations within 140 metres of the development site for each aspect as per Keith (2004).

The vegetation identified a posing a bushfire hazard to the subject development is within the subject site to the north and west and neighbouring private rural allotments to the south.

The vegetation posing a hazard to the north is identified on vegetation mapping (NambuccaLGA_2015_E_4473) as being Swamp Oak forested wetland of saline areas of coastal estuaries, which as a Coastal Swamp Forest classification sensu Keith (2004). Our site observations were consistent with this classification.

The neighbouring properties to the south were found to comprise of grazed pastures with a small stand of remnant trees on the upper slope. The stand of remnant trees was found to be approximately one hectare in size and located >220 metres from any other bushfire hazard. The highest hazard to this aspect was determined to be Grassland.

The vegetation posing a hazard to the west of the development site has been identified by the project ecologist (Dr T. J. Hawkeswood) as having a classification of Rainforest sensu Keith (2004). We have relied on this advice for the purpose of determining the minimum required APZ.



Figure 04: Vegetation assessment supplied by Dr T. J. Hawkeswood showing extent of 'Rainforest' (shaded pink)

6.03 Slope and Topography

The slope of the land under the classified vegetation has a direct influence on the forward rate of spread, fire intensity and radiant heat exposure. The effective slope is considered to be the slope under the classified vegetation which will most significantly influence bushfire behaviour toward the development site.

In accordance with A1.4 'Determine slope' of PBP the slope assessment is to be derived from the most detailed contour data available.

The slope that would **most significantly** influence bushfire behaviour was determined from topographic imagery (1 metre contours sourced from ELVIS - Geoscience Australia) in conjunction with site observations to be:

- 0 degrees across slope within the hazard to the north (yellow arrows)
- 0 - 5 degrees down slope within the hazard to the west (red arrows)
- 9 degrees up slope within the hazard to the south (purple arrows)
- 12 degrees down slope within the hazard to the south (purple arrows)

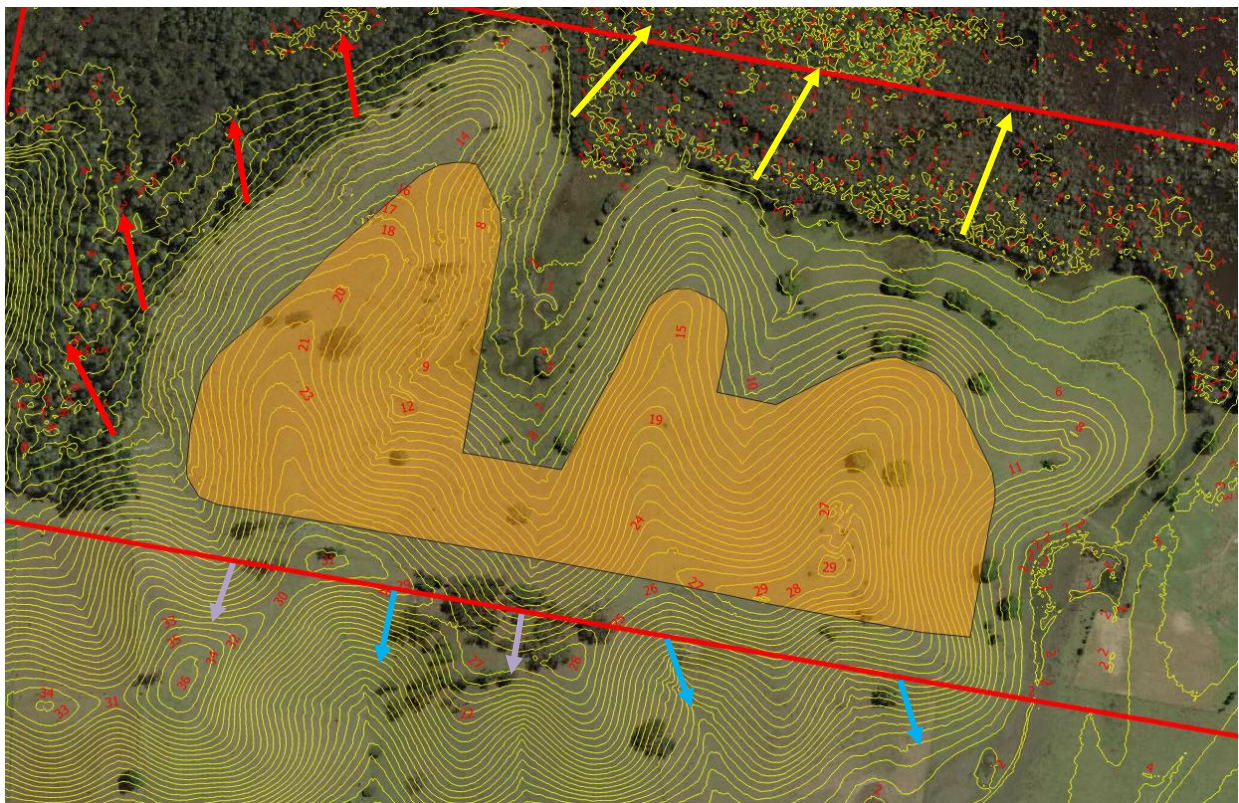


Figure 05: Extract from Nearmap and ELVIS showing 1 metre contours
(Building footprint shaded orange)

6.04 Fire Weather

All development which attracts an Asset Protection Zone under PBP requires the identification of the relevant Forest Fire Danger Index (FFDI). The FFDI required to be used for development assessment purposes is based on the local government boundaries, being Nambucca Valley Council in this instance.

In accordance with the NSW Rural Fire Service publication 'NSW Local Government Areas FDI' (2017) Nambucca Valley Council forms part of the North Coast Fire Weather District and attracts an FFDI of 80.

6.05 Fire History

There are areas within NSW that have significant fire history and are recognised as known fire paths. While the fire history is more commonly considered as part of strategic planning (to ensure future development is not exposed to an unacceptable risk), it is useful to consider at a Development Application phase to ensure the land is suitable for development in the context of bushfire risk.

In this instance there have been no wildfires recorded within the immediate area (source NPWS Fire History dataset). The closest recorded wildfire was found to be located >2 kilometres from the subject site (Kian Road Fire 2019).

The subject site is therefore not considered to be within a known fire path. Furthermore in consideration of the previous bushfire history the likelihood of a bushfire occurring within the immediate area is considered unlikely.

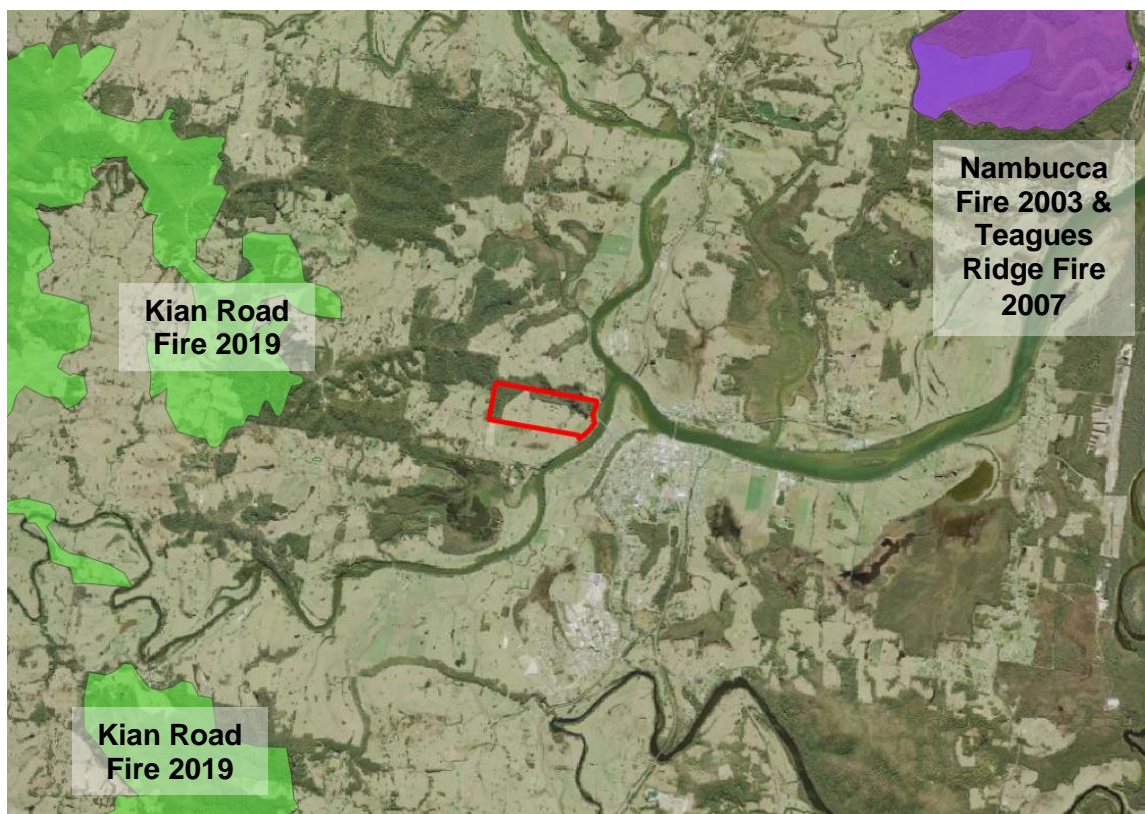


Figure 06: Aerial view of the subject area with previous wildfire history layer
(source NPWS Fire History)

7.0 Bushfire Assessment

7.01 Planning for Bush Fire Protection - 2019

Properties considered to be affected by possible bushfire impact are determined from the local Bushfire Prone Land Map as prepared by Council and or the Rural Fire Service.

The subject site is depicted on Nambucca Valley Council's Bushfire Prone Land Map as containing Category 1 and 2 Vegetation and their associated buffer zones and therefore the subject site is considered 'bushfire prone'.

Seniors living development is a listed Special Fire Protection Purpose (SFPP) under section 100b of the Rural Fires Act 1997.

As the proposal involves a listed SFPP development on bushfire prone land it is classified as integrated development under section 4.46 of the *Environmental Planning and Assessment Act* 1979. The Development Application subsequently requires a Bushfire Safety Authority from the Commissioner of the NSW Rural Fire Service.

In accordance with the submission requirements for a Bush Fire Safety Authority as detailed in clause 44 of the *Rural Fires Regulation* 2013 an assessment of the extent to which the proposed development conforms with or deviates from *Planning for Bush Fire Protection* (PBP) is required.

The proposal must therefore conform to the aim and objectives detailed in Chapter 1 'Introduction' and the specific objectives and bushfire protection measures detailed in Chapter 6 'Special Fire Protection Purpose Developments' of PBP.

7.02 Specific Objectives

The following table lists the specific objectives for Special Fire Protection Purpose development in accordance with section 6.2 of PBP applicable to the proposal and our comments on compliance or otherwise.

Specific Objective	Comment
<i>minimise levels of radiant heat, localised smoke and ember attack through increased APZ, building design and siting;</i>	The proposal achieves and in most instances exceeds the minimum required Asset Protection Zone for SFPP development.
<i>provide an appropriate operational environment for emergency service personnel during firefighting and emergency management;</i>	<p>The proposal includes a perimeter roads which will provide direct access to the grassland and bushfire hazards for attending fire services and are considered the logical fire fighting platforms.</p> <p>The proposed APZs and perimeter roads will provide an appropriate operational environment for emergency service personnel.</p>

Specific Objective	Comment
<i>ensure the capacity of existing infrastructure (such as roads and utilities) can accommodate the increase in demand during emergencies as a result of the development; and</i>	<p>The surrounding public roads provide existing carriageways in excess of the requirements for Non-Perimeter Roads as described in Table 6.8b of PBP.</p> <p>Furthermore in consideration of the low risk posed to the proposed buildings a late large scale evacuation due to bushfire is considered unlikely.</p> <p>Coronation and Wilson Roads are not serviced by hydrants. The external utility providers for the hydrants within the township of Macksville have systems in place to cater for increased demand as necessary.</p>
<i>ensure emergency evacuation procedures and management which provides for the special characteristics and needs of occupants.</i>	This assessment includes a recommendation that a Bushfire Emergency Management Plan be prepared.

7.03 Bushfire Protection Measures

Section 6.8 'Bush fire protection measures' of PBP outlines the specific Bushfire Protection Measures (BPMs) applicable to Special Fire Protection Purpose development, including APZs, Landscaping, Construction, Access, Services & Emergency Management Plan.

The following section addresses each BMP and the proposals compliance or otherwise.

Asset Protection Zones & Landscaping

Asset Protection Zones for new Special Fire Protection Purpose (SFPP) development are determined from Table A1.12.1 of PBP or bushfire design modelling achieving a radiant heat impact of no more than 10kW/m² at the closest point of the available building footprint.

The minimum required Asset Protection Zone (APZ) was determined from Table A1.12.1 of PBP and bushfire design modelling (report attached). These minimum required APZs are illustrated on the Master Planning Scheme plan prepared by Tony Owen Partners (dwg title A012, issue A).

The proposed building footprints were found to achieve and in most instances exceed the minimum required APZs.

The APZs consist of maintained grounds entirely within the subject property.

All Asset Protection Zones within the subject site will be maintained in accordance with an Inner Protection Area as detailed in Appendix 4 of *Planning for Bush Fire Protection* 2019 and the NSW Rural Fire Service publication 'Standards for Asset Protection Zones'.

Construction

The proposed buildings are required to be constructed to the relevant Bushfire Attack Level under Australian Standard 3959 'Construction of buildings in bushfire-prone areas' 2018.

The highest Bushfire Attack Level to the proposed buildings was determined from Table A1.12.6 of PBP to be 'BAL 12.5'.

The proposed buildings are required to comply with the relevant Bushfire Attack Level as shown on the attached Bushfire Attack Level Overlay. The highest Bushfire Attack Level applies to the entire building.

Access

The subject site has street frontage to Coronation Road and Wilson Road to the east.

The proposal includes a comprehensive internal road network inclusive of perimeter roads (8m carriageway), collector road (11m carriageway), large internal roads (6m carriageway) and minor internal roads (5.5m carriageway).

The proposed roads are two-way through roads with regular connections back onto the internal road network.

The proposed internal roads must comply with the requirements for Perimeter and Non-Perimeter Roads as detailed in Table 6.8b of PBP.

In addition to the above the NSW Rural Fire Service specified the following access requirements in their response to the Planning Proposal (ref LEP/0091, dated 23rd October 2013):

- Perimeter road around the residential housing component;
- Loop road around the Nursing home;
- Secondary access entrance to the property.

We have reviewed the proposed road design and are of the opinion it has the capacity to comply with the relevant requirements for Perimeter and Non-Perimeter Roads detailed in Table 6.8b of PBP. Furthermore the proposed road design has captured the additional measures requested by the NSW Rural Fire Service.

Persons seeking to egress the proposed buildings will be able to do so via the proposed roads and existing road infrastructure.

Access for fire services and opportunities for occupant evacuation are considered adequate for this development.

Services – Water, electricity & gas

There are no hydrants along Coronation Road or Wilson Road. Existing hydrants are available across Wilson Bridge throughout the township of Macksville.

The proposal is required provide a hydrant system. The hydrant spacing, design, sizing, flows and pressures must comply with AS2419.1-2005. Hydrants are not permitted within the carriageway of any road.

The proposed water supply is considered adequate for the replenishment of attending fire services.

Recommendations will be included to ensure compliance with any new electricity and gas services.

Bushfire Emergency Management Plan

The intent of the Bushfire Emergency Management Plan measure is to provide suitable emergency and evacuation arrangements for occupants of SFPP developments.

This assessment includes a recommendation that a Bushfire Emergency Management Plan be prepared. This recommendation satisfies the acceptable solutions detailed in Table 6.8d of PBP.

7.04 Aim & Objectives

The following table details the aim and objectives of Planning for Bush Fire Protection 2019 and the proposals ability to comply.

Aim / Objective	Comment
<i>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.</i>	With the inclusion of the recommendations made herein it is of our opinion that the aim of PBP has been satisfied.
<i>(i) afford buildings and their occupants protection from exposure to a bush fire;</i>	<p>The proposed buildings achieve and in most instances exceed the minimum required APZ for SFPP development.</p> <p>The new buildings will be constructed to the corresponding Bushfire Attack Level under AS3959 – 2018.</p> <p>The proposed APZs in conjunction with the application of the corresponding BAL will afford building and their occupants protection from a bush fire.</p>

Aim / Objective**Comment**

(ii) provide for a defensible space to be located around buildings;

The proposed buildings achieve and in most instances exceed the minimum required APZ for SFPP development.

The proposed collector road and perimeter roads provide direct vehicle access to the identified grassland and bushfire hazards.

These roads will be serviced by hydrants at regular intervals and would subsequently be the logical fire fighting platforms for attending fire services.

A suitable defensible space is provided.

(iii) provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;

The proposed APZs in conjunction with the application of the corresponding BAL will prevent the likely fire spread to the building.

(iv) ensure that appropriate operational access and egress for emergency service personnel and occupants is available;

The proposed collector road and perimeter roads provide direct vehicle access to the identified grassland and bushfire hazards.

These roads will be serviced by hydrants at regular intervals and would subsequently be the logical fire fighting platforms for attending fire services.

The proposal is required provide a hydrant system which is installed in accordance with AS2419.1-2005.

(v) provide for ongoing management and maintenance of bush fire protection measures, (BPMs); and

The Asset Protection Zones within the subject site are to be maintained in accordance with the NSW Rural Fire Service's document 'Standards for Asset Protection Zones' and Appendix 4 of *Planning for Bush Fire Protection 2019*.

Any new landscaping is to comply with the provisions of Appendix 4 of PBP.

(vi) ensure that utility services are adequate to meet the needs of firefighters.

The proposal is required provide a hydrant system which is installed in accordance with AS2419.1-2005.

It is of our opinion that the proposal can satisfactorily comply with the aim and objectives of Planning for Bush Fire Protection 2019.

8.0 Recommendations

The following recommendations are provided as the minimum necessary for compliance with Planning for Bush Fire Protection – 2019. Additional recommendations are provided to supplement these minimum requirements where considered necessary.

Asset Protection Zones

1. That all grounds nominated as 'APZ Zone' on the Constraints Plan prepared by Tony Owen Partners (issue A) not built upon shall be maintained as an Inner Protection Area as detailed in the NSW Rural Fire Service's document 'Standards for Asset Protection Zones' and Appendix 4 of Planning for Bush Fire Protection 2019.
2. That all grounds from the proposed development site to the eastern boundary, excluding the area nominated as 'Preserved Vegetation and wetlands' on the Constraints Plan prepared by Tony Owen Partners (issue A), shall be maintained as an Inner Protection Area as detailed in the NSW Rural Fire Service's document 'Standards for Asset Protection Zones' and Appendix 4 of Planning for Bush Fire Protection 2019.

Emergency Management

3. That a bushfire emergency / evacuation plan be prepared consistent with the NSW Rural Fire Service Guidelines for the *Preparation of Emergency / Evacuation Plan*.

Landscaping

4. That any new landscaping is to comply with Appendix 4 of *Planning for Bush Fire Protection 2019*.

Services (where applicable)

Water:

5. That the new internal hydrant system is to comply with the requirements detailed in Table 6.8c of Planning for Bush Fire Protection 2019, specifically:
 - fire hydrant spacing, design and sizing comply with the Australian Standard AS 2419.1:2005,
 - hydrants are not located within any road carriageway,
 - reticulated water supply to SFPPs uses a ring main system for areas with perimeter roads,
 - fire hydrant flows and pressures comply with AS 2419.1:2005, and
 - all above-ground water service pipes external to the building are metal, including and up to any taps.

Electricity:

6. Any new electrical services must comply with Table 6.8c of *Planning for Bush Fire Protection 2019*, specifically:
 - where practicable, electrical transmission lines are underground.
 - where overhead electrical transmission lines are proposed:
 - lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and
 - no part of a tree is closer to a power line than the distance set out in *ISSC3 Guideline for Management Vegetation Near Power Lines*.

Gas:

7. Any new gas services must comply with Table 6.8c of *Planning for Bush Fire Protection 2019*, specifically:
 - reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 - *The storage and handling of LP Gas*, the requirements of relevant authorities, and metal piping is used;
 - all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side;
 - connections to and from gas cylinders are metal;
 - if gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2m away from any combustible material, so they do not act as a catalyst to combustion;
 - polymer-sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used; and
 - above-ground gas service pipes external to the building are metal, including and up to any outlets.

Construction

8. That the proposed buildings be constructed to the relevant Bushfire Attack Level (BAL) under Australian Standard 3959 'Construction of buildings in bushfire-prone areas' 2018 as depicted on the attached Bushfire Attack Level overlay (attachment 01).
9. That any building required to be constructed to a BAL under AS3959 2018 must also be constructed to the 'Additional Construction Requirements' detailed in section 7.5 of *Planning for Bush Fire Protection 2019*.

Access

10. That the proposed internal roads shall comply with the Access requirements as detailed in Table 6.8b of PBP, specifically:
 - SFPP access roads are two-wheel drive, all-weather roads;
 - access is provided to all structures;
 - traffic management devices are constructed to not prohibit access by emergency services vehicles;
 - access roads must provide suitable turning areas in accordance with Appendix 3; and
 - one way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.
 - the capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.
 - 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 2419.1:2005; and
 - there is suitable access for a Category 1 fire appliances to within 4m of the static water supply where no reticulated supply is available.
11. That the proposed collector road and perimeter roads shall comply with the requirements for Perimeter Roads as detailed in Table 6.8b of PBP, specifically:
 - there are two-way sealed roads;
 - minimum 8m carriageway width kerb to kerb;
 - parking is provided outside of the carriageway width;
 - hydrants are to be located clear of parking areas;
 - there are through roads, and these are linked to the internal road system at an interval of no greater than 500m;
 - curves of roads have a minimum inner radius of 6m;
 - the maximum grade road is 15 degrees and average grade of not more than 10 degrees;
 - the road crossfall does not exceed 3 degrees; and
 - a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.

12. That the proposed large internal roads and minor internal roads shall comply with the requirements for Non-Perimeter Roads as detailed in Table 6.8b of PBP, specifically:

- SFPP access roads are two-wheel drive, all-weather roads;
- access is provided to all structures;
- traffic management devices are constructed to not prohibit access by emergency services vehicles;
- access roads must provide suitable turning areas in accordance with Appendix 3; and
- 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.
- 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 2419.1:2005;
- minimum 5.5m carriageway width kerb to kerb;
- parking is provided outside of the carriageway width;
- hydrants are located clear of parking areas;
- curves of roads have a minimum inner radius of 6m;
- the maximum grade road is 15 degrees and average grade of not more than 10 degrees;
- the road crossfall does not exceed 3 degrees; and
- a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.

9.0 Conclusion

The development proposal relates to the construction of a new seniors living development, comprising of two hundred and seventy-six (276) residential units, an aged care centre, a sports centre, helipad and associated infrastructure and landscaping, at 24 Coronation Road, Congarinni North NSW (Lots 157 and 188 DP 755537).

The subject site is depicted on Nambucca Valley Council's Bushfire Prone Land Map as containing Category 1 and 2 Vegetation and their associated buffer zones and therefore the subject site is considered 'bushfire prone'.

As the proposal involves a listed SFPP development on bushfire prone land it is classified as integrated development under section 4.46 of the *Environmental Planning and Assessment Act* 1979. The Development Application subsequently requires a Bushfire Safety Authority from the Commissioner of the NSW Rural Fire Service.

This report has been prepared to address the relevant specifications and requirements of Planning for Bush Fire Protection - 2019 (PBP) for Special Fire Protection Purpose (SFPP) development.

The proposal satisfies all relevant specifications and requirements of PBP.

In accordance with the bushfire safety measures contained in this report, and consideration of the site specific bushfire risk assessment it is our opinion that when combined, they will provide a reasonable and satisfactory level of bushfire protection to the subject development.

We are therefore in support of the development.

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

Prepared by
Building Code & Bushfire Hazard Solutions P/L



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BPAD Accreditation No. BPAD9400



10.0 Annexure 01

List of Referenced Documents

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Acknowledgements to:

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

Attachments

Attachment 01: BAL Overlay

Attachment 02: Bushfire Design Modelling



NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

Print Date: 14/12/2020

Assessment Date: 18/09/2020

Site Street Address: 24 Coronation Road, Congarinni North

Assessor: Please Enter Your Name; Please Enter Company Name

Local Government Area: Nambucca

Alpine Area: No

Equations Used

Transmissivity: Fuss and Hammins, 2002

Flame Length: RFS PBP, 2001/Vesta/Catchpole

Rate of Fire Spread: Noble et al., 1980

Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005

Peak Elevation of Receiver: Tan et al., 2005

Peak Flame Angle: Tan et al., 2005

Run Description: North

Vegetation Information

Vegetation Type: Forest (including Coastal Swamp Forest)

Vegetation Group: Forest and Woodland

Vegetation Slope: 0 Degrees

Vegetation Slope Type: Level

Surface Fuel Load(t/ha): 22

Overall Fuel Load(t/ha): 36.1

Vegetation Height(m): 2

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 10 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 59

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1200

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 80

Program Outputs

Level of Construction: BAL 12.5

Peak Elevation of Receiver(m): 0

Radiant Heat(kW/m2): 9.86

Flame Angle (degrees): 87

Flame Length(m): 18.06

Maximum View Factor: 0.115

Rate Of Spread (km/h): 2.11

Inner Protection Area(m): 36

Transmissivity: 0.767

Outer Protection Area(m): 23

Fire Intensity(kW/m): 39392

Run Description:	South		
<u>Vegetation Information</u>			
Vegetation Type:	Grassland		
Vegetation Group:	Grassland		
Vegetation Slope:	10 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	6	Overall Fuel Load(t/ha):	6
Vegetation Height(m):	0	Only Applicable to Shrub/Scrub and Vesta	
<u>Site Information</u>			
Site Slope:	10 Degrees	Site Slope Type:	Downslope
Elevation of Receiver(m):	Default	APZ/Separation(m):	43
<u>Fire Inputs</u>			
Veg./Flame Width(m):	100	Flame Temp(K):	1200
<u>Calculation Parameters</u>			
Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	110
<u>Program Outputs</u>			
Level of Construction:	BAL 12.5	Peak Elevation of Receiver(m):	0
Radiant Heat(kW/m2):	9.78	Flame Angle (degrees):	90
Flame Length(m):	11.21	Maximum View Factor:	0.111
Rate Of Spread (km/h):	28.51	Inner Protection Area(m):	43
Transmissivity:	0.789	Outer Protection Area(m):	0
Fire Intensity(kW/m):	88381		

Run Description:	South - Across		
<u>Vegetation Information</u>			
Vegetation Type:	Grassland		
Vegetation Group:	Grassland		
Vegetation Slope:	0 Degrees	Vegetation Slope Type:	Level
Surface Fuel Load(t/ha):	6	Overall Fuel Load(t/ha):	6
Vegetation Height(m):	0	Only Applicable to Shrub/Scrub and Vesta	
<u>Site Information</u>			
Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	34
<u>Fire Inputs</u>			
Veg./Flame Width(m):	100	Flame Temp(K):	1200
<u>Calculation Parameters</u>			
Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	110
<u>Program Outputs</u>			
Level of Construction:	BAL 12.5	Peak Elevation of Receiver(m):	3.93
Radiant Heat(kW/m2):	9.65	Flame Angle (degrees):	82
Flame Length(m):	7.94	Maximum View Factor:	0.107
Rate Of Spread (km/h):	14.3	Inner Protection Area(m):	34
Transmissivity:	0.806	Outer Protection Area(m):	0
Fire Intensity(kW/m):	44330		

Run Description: South - Down	
<u>Vegetation Information</u>	
Vegetation Type:	Grassland
Vegetation Group:	Grassland
Vegetation Slope:	12 Degrees
Surface Fuel Load(t/ha):	6
Vegetation Height(m):	0
<u>Site Information</u>	
Site Slope:	10 Degrees
Elevation of Receiver(m):	Default
<u>Fire Inputs</u>	
Veg./Flame Width(m):	100
<u>Calculation Parameters</u>	
Flame Emissivity:	95
Heat of Combustion(kJ/kg)	18600
Moisture Factor:	5
<u>Program Outputs</u>	
Level of Construction:	BAL 12.5
Radiant Heat(kW/m2):	9.82
Flame Length(m):	12.01
Rate Of Spread (km/h):	32.73
Transmissivity:	0.786
Fire Intensity(kW/m):	101460
<u>Vegetation Information</u>	
Vegetation Type:	Grassland
Vegetation Group:	Grassland
Vegetation Slope:	9 Degrees
Surface Fuel Load(t/ha):	6
Vegetation Height(m):	0
<u>Site Information</u>	
Site Slope:	10 Degrees
Elevation of Receiver(m):	Default
<u>Fire Inputs</u>	
Veg./Flame Width(m):	100
<u>Calculation Parameters</u>	
Flame Emissivity:	95
Heat of Combustion(kJ/kg)	18600
Moisture Factor:	5
<u>Program Outputs</u>	
Level of Construction:	BAL 12.5
Radiant Heat(kW/m2):	9.71
Flame Length(m):	5.82
Rate Of Spread (km/h):	7.68
Transmissivity:	0.823
Fire Intensity(kW/m):	23823

Run Description:	West		
<u>Vegetation Information</u>			
Vegetation Type:	Forest (including Coastal Swamp Forest)		
Vegetation Group:	Forest and Woodland		
Vegetation Slope:	5 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	22	Overall Fuel Load(t/ha):	36.1
Vegetation Height(m):	2	Only Applicable to Shrub/Scrub and Vesta	
<u>Site Information</u>			
Site Slope:	5 Degrees	Site Slope Type:	Downslope
Elevation of Receiver(m):	default	APZ/Separation(m):	70
<u>Fire Inputs</u>			
Veg./Flame Width(m):	100	Flame Temp(K):	1200
<u>Calculation Parameters</u>			
Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80
<u>Program Outputs</u>			
Level of Construction:	BAL 12.5	Peak Elevation of Receiver(m):	5.55
Radiant Heat(kW/m2):	9.97	Flame Angle (degrees):	80
Flame Length(m):	23.72	Maximum View Factor:	0.118
Rate Of Spread (km/h):	2.98	Inner Protection Area(m):	44
Transmissivity:	0.758	Outer Protection Area(m):	26
Fire Intensity(kW/m):	55622		