



Bush Fire Hazard Assessment Report

For Proposed, Alterations and Additions with Swimming Pool

49 Binburra Ave, Avalon Beach NSW 2107



22nd February 2021

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Abbreviations Used

TFC – The Fire Consultants

PBP 2006 – Planning for Bushfire Protection (NSW Rural Fire Service)

RFS - Rural Fire Service

BCA - Building Code of Australia

EP&A Act- Environmental Planning and Assessment Act 1979

BAL - Bushfire Attack Level

APZ - Asset Protection Zone

FRNSW - Fire Rescue NSW

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Document Control

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Executive Summary

This report has been prepared as a Bushfire Hazard Assessment for the proposed alterations and additions to the existing dwelling and, the installation of a swimming pool with associated decking located on the subject Lot at 49 Binburra Ave, Avalon NSW 2107 in the Northern Beaches Council LGA.

The proposal is “Residential Infill Development” and has been identified as being bushfire prone and is subject to consideration under Section 4.14 of the Environmental Planning and Assessment Act 1979 (EP&A Act) (NSW RFS 2019).

The nearest Bushfire Hazard Vegetation, Category 1 Bushfire Hazard Vegetation, is Tall Heath Classified Vegetation and has been found to be 30m East of the proposal. The effective slope under the Tall Heath Classified Vegetation is Upslope/Flat.

Furthermore, there is Category 1 Bushfire Hazard Vegetation – Tall Heath Classified Vegetation 59m East of the proposed development and has an effective slope of Upslope/Flat.

It is important to note that the Northern Beaches Council LGA Bushfire Prone Land map indicates that the Category 1 Bushfire Hazard Vegetation is located 54m East of the proposal. However, there is unmanaged vegetation across Binburra Ave which must be considered as a potential bushfire threat to the proposed development and is therefore considered as such.

The proposed construction of alterations and additions to the existing dwelling has been found to be in the BAL – 19 range of AS3959-2018 Construction of buildings in bushfire prone areas as per Table A1.12.5 of Planning for Bushfire Protection 2019. It will also need to meet the objectives, performance criteria and acceptable solutions of PBP 2019 (NSW RFS 2019).

However, it must be noted that the proposed stairs, landings, and all decking/veranda is rated as BAL-29 as per Section 7.5 – Additional Construction Requirements of PBP 2019. This report makes recommendations to approve the proposal as it meets and exceeds the requirements of both the Building Code of Australia 2018 and Planning for Bushfire Protection 2019.

Building Elevation	Construction Standard (Bush Fire)
North	BAL -19 AS3959
South	BAL -19
East	BAL -19
West	BAL -12.5

Table 1 – BAL Rating for the proposed alterations and additions.

Note the stairs, landings and all decking are rated as BAL-29 as per Section 7.5 of PBP 2019.

1. Introduction

This report forms a Bush Fire Assessment Report to Northern Beaches Council for the purposes of Section 4.14 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The report identifies that the proposal can meet the requirements of Planning for Bush Fire Protection (2019). This report has been prepared in accordance with the submission requirements of Appendix 2 of Planning for Bush Fire Protection (NSW RFS 2019). The site is identified as being within a Category 1 Bushfire Hazard Vegetation Buffer Zone as per the Northern Beaches Council LGA Bushfire Prone Land Map and therefore compliance with Bushfire Legislation is required.

The proposed development is to construct alterations and additions to the existing dwelling and, the installation of a swimming pool with associated decking on the subject Lot. This report forms a Bush Fire Assessment Report to Northern Beaches Council for the purposes of Section 4.14 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

2. Purpose of this Report

The purpose of a Bush Fire Hazard Assessment report is to provide the consent authority, owners and RFS with a bushfire hazard determination consistent with the aim and objectives of Planning for Bush Fire Protection 2019 (RFS) and Section 4.14 of the EP&A Act 1979. Such report provides the necessary recommendations for new building construction standards and any further bushfire mitigation measures appropriate having regard the hazard and particular circumstances of the development.

The recommendations provided in this report will assist Council and the Owner in proving a construction standard consummate with bushfire safety standards so that a safer level is provided should a bushfire occur on or near the property.

Property Details

Council:	Northern Beaches
Council Reference	N/A
Address:	49 Binburra Ave, Avalon Beach. NSW 2107
	Lot 53 DP 22275
Site Area:	587sqm approx.
Zoning	E4 – Environmental Living

3. **Proposal**

The proponent seeks to construct alterations and additions to the existing dwelling and, the installation of a swimming pool with associated decking at 49 Binburra Ave, Avalon. NSW 2107. The site is also known as Lot 53 DP 22275. It is bounded by residential development to the North, South, East and West. Northern Beaches Council LGA Bushfire Prone Land Map indicates that the proposed development is located within Category 1 Bushfire Hazard Vegetation Buffer Zone.

The land is zoned E4 – Environmental Living for residential purposes and the proposal is understood to comply with the requirements of Northern Beaches Council LEP and DCP. This report only addresses the planning and construction issues relevant to the proposal. The proposal constitutes Residential Infill Development as defined and as such must meet the performance criteria and acceptable solutions outlined in Table 7.4a in of Planning for Bush Fire Protection 2019 (NSW RFS 2019).

Type of Proposal PBP 2019

<input type="checkbox"/>	New Building	<input checked="" type="checkbox"/>	Urban	<input type="checkbox"/>	Dual Occupancy
<input type="checkbox"/>	Rural Residential	<input checked="" type="checkbox"/>	Alterations/Additions	<input type="checkbox"/>	Isolated Rural

4. **Scope of Report and Referenced Documents**

The scope of this report is limited to the actual property concerned. A representative of TFC has visited the site and surrounding area but did not enter neighbouring private lands.

This report is based on requirements of the EP&A Act, Planning for Bush Fire Protection 2019, the Building Code of Australia (BCA) and AS3959 - 2018 Construction of buildings in Bush Fire Prone areas. The methodology for this report is outlined in Appendix 1 of PBP 2019. Vegetation and site information was gathered from site inspection, Council Vegetation data and Aerial Photos. The report used base drawings as provided by the applicant to TFC.

5. Statement that the site is Bush Fire Prone Land

The land has been identified on Northern Beaches Council LGA Bush Fire Prone Land Map which covers the entire site.

A copy of the bush fire prone land status is shown below (Figure 1).



Figure 1- 49 Binburra Ave, Avalon. NSW 2107 Bushfire Prone Land Map (NSW Government 2021).

It should be noted that the Bush Fire Prone Land Map above indicates that the subject Lot is identified as being in a Category 1 Bushfire Hazard Vegetation Buffer Zone. As stated previously, there is what I believe to be hazardous vegetation across Binburra Ave at 30m from the proposal which is not mapped as bushfire hazard vegetation. However, for the purpose of this assessment it will be deemed as a potential bushfire threat to the proposal.

Hazard

Bushfire Prone Land

- Vegetation Category 1
- Vegetation Category 2
- Vegetation Category 3
- Vegetation Buffer



Image 1 - Aerial View of the subject Lot with the distance to hazardous vegetation across Binburra Ave to the South-East identified (NSW Government 2021)

6. Bush Fire Hazard Assessment

6.1 Preface.

This bushfire hazard assessment has been done according to the guidelines of Planning for Bushfire Protection 2019 (NSWRFS). Properties that are located within a designated Bushfire Prone Area as identified by a Council Area Bush Fire Prone Map and Registered with the NSWRFS, must have either a Bush Fire Hazard Assessment or a Bush Fire Hazard Certificate (in certain Complying Development instances) completed and submitted prior to Council or a Private Certifier being able to approve the development.

The proposed development is to construct alterations and additions to the existing dwelling and, the installation of a swimming pool with associated decking on the subject Lot, which is Residential Infill Development and as such, must comply with Section 4.14 of the EP&A Act 1979 and Section 7 of PBP 2019.

The property is known as 49 Binburra Ave, Avalon. NSW 2107 (Lot 53 DP 22275) and is within a residential area in the Northern Beaches Council Local Government Area. The property has direct access to Binburra Ave which runs to the South-East of the subject allotment. The Classified Bushfire Hazard Vegetation – Tall Heath that is a potential bushfire hazard to the proposed development is 30m South - East of the proposal and 59m East of the proposal.

6.2 Location



Image 2 - Site Aerial. (NSW Government 2021)



Figure 2 -Street Location of Property (NSW Government 2021)

6.3 Vegetation.

The vegetation that effects the development and is deemed the "Hazard" is mapped by Council on the applicable Bush Fire Prone Land map as Category 1 Bushfire Hazard Vegetation. The Lot is mainly cleared and the predominant Bushfire Hazard Vegetation formation using "Keith 2004" identification is Tall Heath to the South-East and East of the proposal within Bangalley Headland.

The property is located within other residential properties to the North, South, East and West. To the South-East at 30m is Tall Heath Classified Vegetation and 59m East is Tall Heath Classified Vegetation which is rated as Category 1 Bushfire Hazard Vegetation. For the purposes of this compliance report this assessment notes that the property does not contain hazard upon it. The separation distance to the hazard is assessed as follows;

Direction	Distance to Hazard
North	>100m
South (SE)	30m
East	59m
West	>100m



Image 3 - Indicates that the separation distance to Tall Heath Classified Bushfire Hazard Vegetation (NSW Government 2021).

6.4 Slope

The slope that would most significantly affect a bushfire is assessed for 100 metres from the building. The slope that is measured is under the hazard. The slope under the Tall Heath Classified Vegetation to the South-East and East is Upslope/Flat of the proposed development.

Therefore, the “effective” slope has been assessed as Upslope/Flat under Tall Heath Classified Bushfire Hazard Vegetation 30m South-East and 59m East of the proposal.

Direction	Effective Slope
North	N/A
South (SE)	Upslope/Flat
East	Upslope/Flat
West	N/A



Figure 3 - Indicates the degree of slope under the nearest Bushfire Hazard Vegetation – Tall Heath (NSW Government 2021)

6.5 Asset Protection Zones (APZ)

The APZ for the proposed development is >100m to the North, >100m to the South, 30m to the South-East, 59m to the East and >100m to the West comprising of minimal distance on actual property and APZ made up of developed land.

Direction/Aspect	Effective Slope	Distance to Hazard	Required by PBP Table 1.12.2	Land-use	Vegetation type/Formation	Complies
North	N/A	100+m	N/A	Residential	Managed Land	Yes
South	N/A	100+m	N/A	Residential	Managed Land	Yes
South-East	Upslope/Flat	30m	16m	Residential/Bushland	Tall Heath	Yes
East	Upslope/Flat	59m	16m	Residential/Bushland	Tall Heath	Yes
West	N/A	100+m	N/A	Residential	Managed Land	Yes

Table 2 - APZ distances



Image 4 – Indicates the APZ distances to Bushfire Hazard Vegetation (NSW Government 2019).

6.6 Access for Fire Services and Escape

The subject property has direct access to Binburra Ave which allows an egress route to safety. Binburra Ave is a sealed two-wheeled drive, all-weather road and suitable for fire appliances. The sealed all-weather road allows occupants to evacuate the site whilst allowing oncoming emergency vehicles to pass safely. Should occupants be required to escape the area in emergency then they should be able to do so.

Access is therefore considered suitable.

6.7 Water Supply

The site is connected to mains pressure reticulated water supply and there are fire hydrants located along Binburra Ave. The nearest Reticulated Mains Pressure Hydrants are located outside Nos 43 & 59 Binburra Ave.

6.8 Environmental Impact

It is not proposed that any further environmental impact will occur due from the alterations and additions.

6.9 Electricity Services

The site is provided with electricity direct from overhead transmission lines.

6.10 Gas Services

Gas is supplied via underground supply and is to be maintained in accordance with AS1596, metal piping should be used.

6.11 Hazard Assessment Determination

PBP refers to the appropriate construction standard for a development as determined by Table A1.12.5 of PBP 2019. This provides a recommendation for the Bush Fire Attack (BAL) Level required for a development.

The following Bush Fire Attack Levels have been determined for 49 Binburra Ave, Avalon. NSW 2107. FFDI Appropriate to Development – Northern Beaches Council LGA 100

Direction/ Aspect	Distance to Vegetation	Vegetation Formation	Slope in degrees	Construction Requirements AS3959-2018
North	100+metres	N/A	N/A	BAL-LOW
South	100+metres	N/A	N/A	BAL-LOW
South- East	30 metres	Tall Heath	Upslope/Flat	BAL-19
East	59 metres	Tall Heath	Upslope/Flat	BAL-12.5
West	100+metres	N/A	N/A	BAL-LOW

Table 3 - Summary of Building Compliance Requirements AS3959-2018.

The site has been found to be in the BAL-19 range as per table A1.12.5 of PBP 2019 and will have to comply with requirements for BAL Construction -Sections 3, 5 & 6 of AS3959-2018 "*Construction of buildings in Bush Fire Prone Areas*".

As stated previously, the stairs, landings and all decking/verandas are rated as BAL-29 as per Section 7.5 of PBP 2019 and will be required to comply with the construction standards outlined in Section 7 of AS3959-2018.

PBP allows where more than one facade is exposed to a hazard, then the facade with the highest requirement is used to determine the appropriate level of construction. Other facades may be reduced by one level of construction unless that facade is also subject to the same level of bush fire attack. Should the highest level be BAL-12.5 then the entire site shall be deemed as BAL - 12.5.

6.12 Compliance with PBP 2019

The proposed development must also comply with the Performance Criteria and Acceptable Solutions of Table 7.4a of PBP 2019 for Infill Development. This assessment is provided below in detail.

Performance Criteria	Acceptable Solutions	Compliance
Asset Protection Zones APZs are provided commensurate with the construction of the building; and A defendable space is provided.	An APZ is provided in accordance with Table A1.12.2 or A1.12.3 in Appendix 1.	Complies – The APZs in the Northern, Southern, Eastern and Western aspects meet the required distances in Table A1.12.2.
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.	Complies – The APZ will be managed/maintained as an IPA within the subject Lot, and in neighbouring developed Lots and roads to the North, South, East and West which meets the intent of Section 3.2 of PBP 2019. The APZ will be managed in accordance with Appendix 4 of PBP.
The APZ is provided in perpetuity and the 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. and are located on lands with a slope less than 18 degrees.	Complies – the APZs are on Developed Maintained Lands in all aspects which also meets the intent of Section 3.2 of PBP 2019. The APZ is on a slope <18 degrees Downslope and the APZ is made up of maintained within the subject Lot and maintained land on neighbouring Lots and a road
In relation to access/egress: Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	Property access roads are two-wheel drive, all-weather roads.	Complies - The subject Lot has direct access to Binburra Ave which allows occupants an egress route to safety. Binburra Ave is a surfaced

<p>The capacity of access roads is adequate for firefighting vehicles.</p>	<p>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.</p>	<p>all-weather road and is suitable for fire appliances.</p> <p>Complies - The capacity of Binburra Ave and surrounding roads is enough to carry fully loaded firefighting vehicles (up to 23 tonnes).</p>
<p>There is appropriate access to water supply.</p>	<p>Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005.</p>	<p>Complies - Fire hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005. There are nearest reticulated fire hydrants are located along Binburra Ave.</p>
<p>Firefighting vehicles can access the dwelling and exit the property safely</p>	<p>There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles</p>	<p>Complies – There is a maximum distance of less than 70m from the road to the Northern boundary of the subject Lot.</p>
<p>In relation to Water Supplies</p> <p>An adequate water supply is provided for firefighting purposes.</p>	<p>Reticulated water is to be provided to the development, where available; and a static</p>	<p>Complies - The site is connected to reticulated mains pressure water supply.</p>

<p>Water supplies are located at regular intervals; and the water supply is accessible and reliable for firefighting operations.</p>	<p>water supply is provided where no reticulated water is available.</p> <p>Fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005; 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.</p>	<p>Complies with AS2419.1 2005 and the fire hydrants are located off the road.</p>
<p>Flows and pressure are appropriate.</p>	<p>Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.</p>	<p>Complies with AS2419.1 2005.</p>
<p>The integrity of the water supply is maintained.</p>	<p>All above-ground water service pipes external to the building are metal, including and up to any taps.</p>	<p>Complies - All above-ground service pipes to the proposed development, including taps, are metal</p>
<p>In relation to Electricity Supply:</p> <p>The Location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings.</p>	<p>Where practicable, electrical transmission lines are underground; and where overhead, electrical transmission lines are proposed as follows: lines are installed with short pole spacing (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</p>	<p>Complies – The proposed development is to be provided with electricity via existing above ground supply which is clear of trees and branches</p>

	accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines	
<p>In relation to Gas Supply:</p> <p>The location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings</p>	<p>Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and 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;</p> <p>Connections to and from gas cylinders are metal. Polymer-sheathed flexible gas supply lines are not used; and above-ground gas service pipes are metal, including and up to any outlets</p>	<p>Complies – Any reticulated gas supply and any gas cylinders used shall comply with AS/NZS 1596:2014.</p>
<p>In relation to Construction Standards:</p> <p>The proposed building can withstand bush fire attack in the form of embers, radiant heat and flame contact.</p>	<p>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).</p>	<p>Complies - The proposed development has been found to be in the BAL-19 range as per Table A1.12.5 of PBP and will comply with the construction standards outlined in Sections 3, 5 & 6 of AS3959-2018. The proposed stairs, landings and all decking/verandas are rated as BAL-29 as per Section 7.5 of PBP 2019 and will therefore comply with the construction standards outlined in Section 7 of AS3959-2018.</p>

Proposed fences and gates are designed to minimise the spread of bush fire.	Fences and gates are constructed in accordance with section 7.6.	N/A
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	Complies
<p>In relation to Landscaping:</p> <p>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>	<p>Compliance with the NSW RFS 'Asset protection zone standards' (see Appendix 4); a clear area of low-cut lawn or pavement is maintained adjacent to the house; fencing is constructed in accordance with section 7.6; and trees and shrubs are located so that: 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</p>	<p>Complies – The APZ will be managed as an Inner Protection Area within the boundaries of the subject Lot. Developed land on neighbouring Lots to the North, South and East and West meet the standards outlined in Section 3.2 and Appendix 4 of PBP 2019 in relation to APZ Standards.</p>

Table 4 – Compliance with Table 7.4a of PBP 2019.

Furthermore, the proposal must also comply with Section 7.5 - Additional construction requirements of PBP 2019. To ensure the performance criteria for construction standards given in Section 7.4 of PBP can be met, PBP adopts additional measures over and above AS 3959-2018 and NASH Standard.

The following variations to AS 3959 apply in NSW for the purposes of NSW G5.2(a)(i) of Volume One and NSW 3.10.5.0(c)(i) of Volume Two of the NCC:

- Clause 3.10 of AS 3959 is deleted and any sarking used for BAL-12.5, BAL-19, BAL-29 or BAL-40 shall: be non-combustible; or comply with AS/NZS 4200.1, be installed on the outside of the frame and have a flammability index of not more than 5 as determined by AS 1530.2; and
- Clause 5.2 and 6.2 of AS 3959 is replaced by clause 7.2 of AS 3959, except that any wall enclosing the subfloor space need only comply with the wall requirements for the respective BAL; and

- Clause 5.7 and 6.7 of AS 3959 is replaced by clause 7.7 of AS 3959 for verandas, decks, steps, ramps, and landings.

7 Recommendations

- The proposed alterations and additions have been assessed as BAL-19 and must be constructed to meet the requirements of Sections 3, 5 & 6 of AS3959 2018.
- The proposed stairs, landings and all decking/verandas are rated as BAL-29 as per Section 7.5 – Additional Construction Standards of PBP 2019 and therefore will be constructed to meet the requirements of Section 7 of AS3959-2018.
- The entire site is deemed an Inner Protection Area and as such any landscaping gardens and the like should comply with Appendix 4 PBP 2019.
- The occupants develop a Bushfire Emergency Plan to be able to be prepared for a bushfire event in the vicinity.

It is recommended Northern Beaches Council and the NSW Rural Fire Service approve the proposed alterations and additions to the existing dwelling and, the installation of a swimming pool with associated decking at 49 Binburra Ave, Avalon. NSW 2107 in respect to Bush Fire Requirements.

7.1 Environmental Impact of any proposed bushfire measures

Measure	Environmental Impact	Comment
APZ	Minimal	APZ already in existence and no change planned
Construction	No Impact	Constructed on existing envelope
Water Supply	No Impact	Dedicated supply for firefighting
Utilities	No Impact	Existing supplies
Vehicle Access	No Impact	Direct access to road

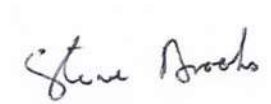
8. Conclusion

The proposed development at 49 Binburra Ave, Avalon. NSW 2107 can meet the planning requirements of *Planning for Bush Fire Protection* 2019 (NSW RFS 2019) and, are capable of meeting Australian Standard AS3959-2018 and the *Building Code of Australia* in relation to construction (ABCB 2015).

In accordance with the bushfire measures contained with this report and the site-specific assessment as per PBP and AS3959, it is our opinion that combined will provide a satisfactory level of bush fire safety to the property and satisfies the requirements of the RFS and Councils obligations for this area.

*The **Council** can determine the matter as complying with the specifications and requirements Planning for Bush Fire Protection and Section 4.14 of the EP&A Act* (NSW RFS 2006)

Prepared by Steve Brooks



BPAD - Certification No. 40765

Graduate Diploma Bushfire Planning and Design (UWS)

Graduate Certificate in Fire Investigation (CSU)



FPA Australia Corporate Member

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- NSW Government E-Planning Spatial Viewer 2021
- NSW Government Six Maps 2021

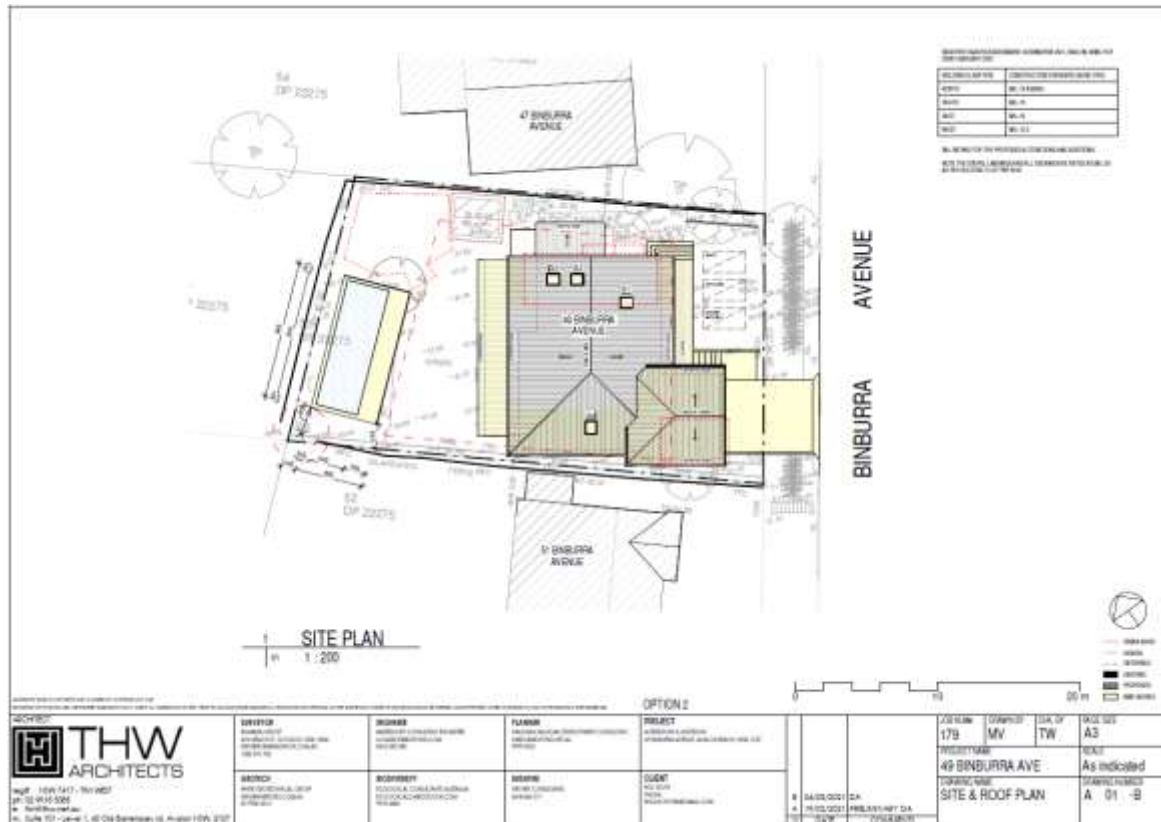
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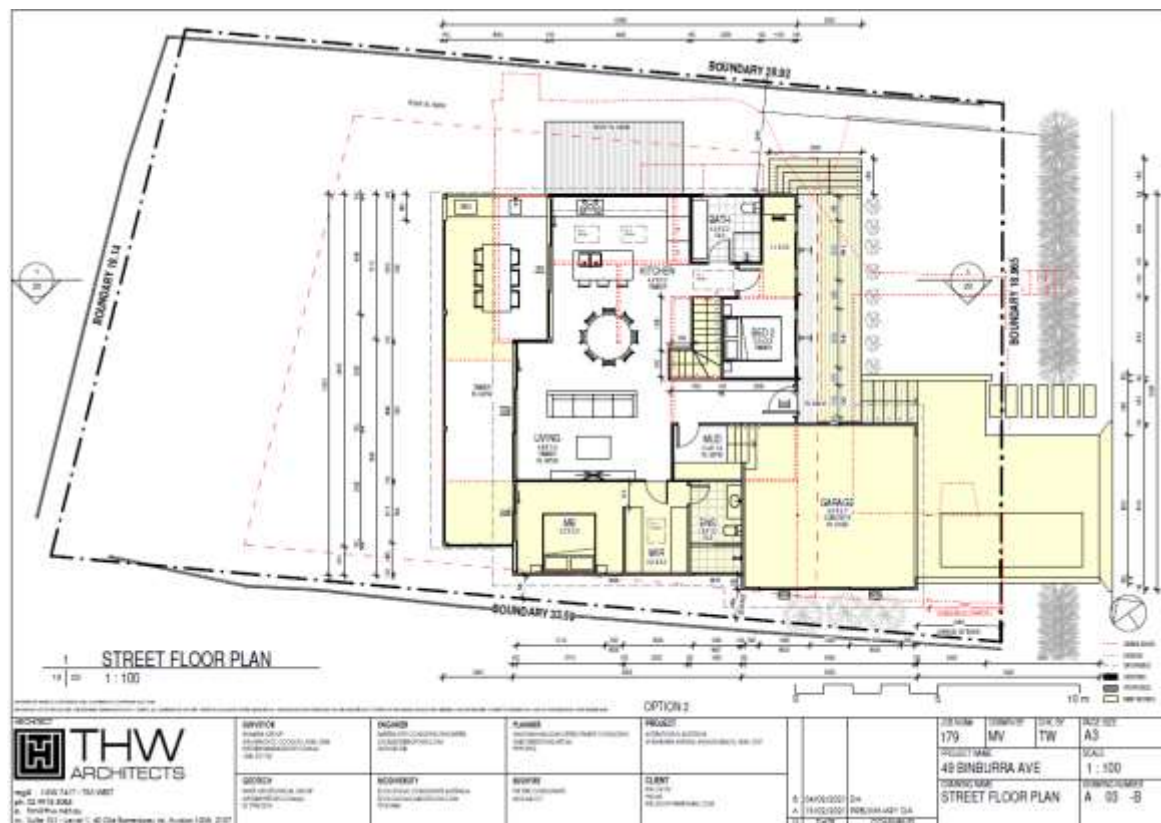
Disclaimer: Quote from Planning for Bushfire Protection, “notwithstanding the precautions adopted, it should always be remembered that bushfires burn under a wide range of conditions and an element of risk, no matter how small always remains”. Although the standard is designed to improve the performance of the building, there can be no guarantee, because of the variable nature of bushfires that any one building will withstand bushfire attack on every occasion.

The opinions and assessment in regard to bushfire development in a Bushfire Prone Area given by TFC are therefore given in good faith.

Appendix 1

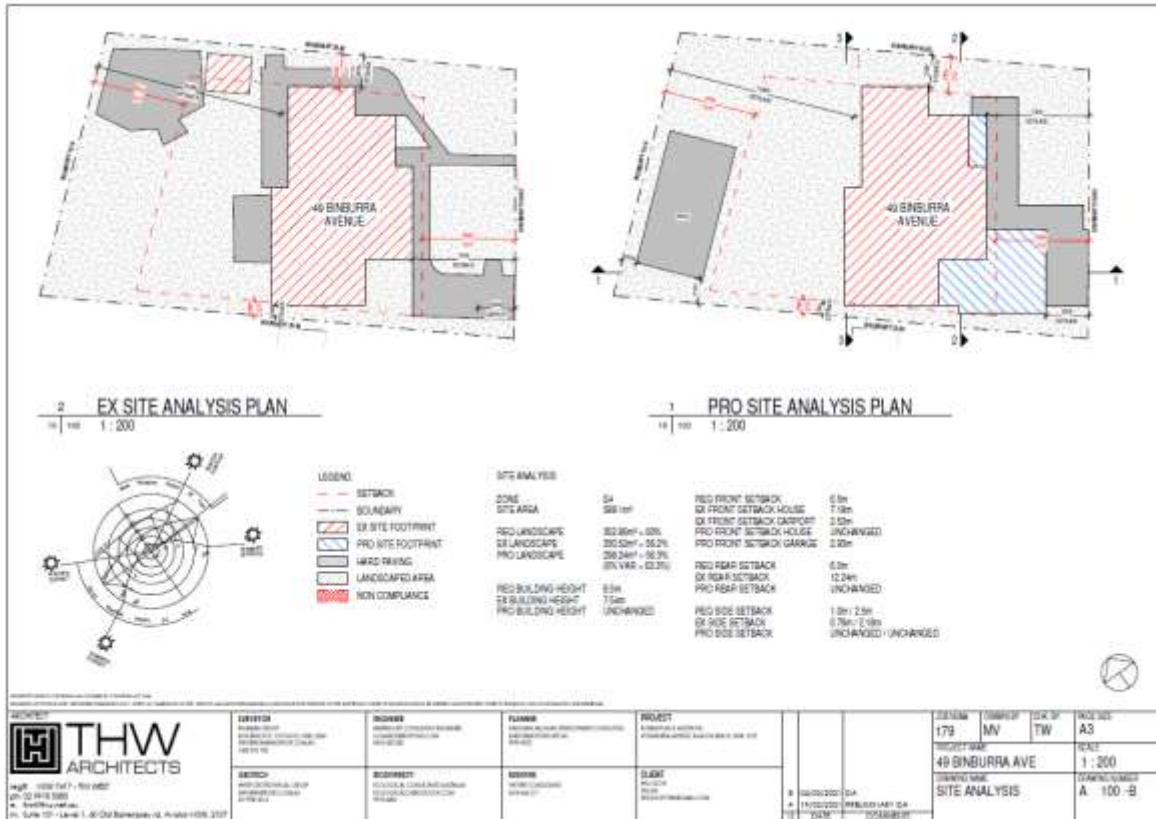
Site Plans











Appendix 2

Site Photos



Photo 1 – Indicates the Tall Heath Classified Vegetation and Binburra Ave looking East (Steve Brooks 2021)



Photo 2 – Indicates Tall Heath Classified Vegetation across Binburra Ave from the proposal (Steve Brooks 2021)



Photo 3 – Indicates the Tall Heath Classified Vegetation beyond residences to the South-East of the proposal (Steve Brooks 2019)