



Bush Fire Hazard Assessment Report

**For Proposed; Alterations and Additions with Swimming Pool and
associated decking**

977-979 Barrenjoey Rd, Palm Beach NSW 2108



27th November 2019

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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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977-979 Barrenjoey Rd	1	30/11/2019	S. Brooks	Complete

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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 along with the construction of a swimming pool and associated decking at 977-979 Barrenjoey Rd, Palm Beach. NSW 2108 in the Northern Beaches Council LGA.

The proposal is “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 2006). The nearest Bushfire Hazard Vegetation, Category 1, is Forest Classified Vegetation and has been found to be 73m East of the proposal.

The proposed alterations and additions have been found to be in the BAL – 12.5 range as per Table 2.4.2 AS3959-2009. It will also need to meet the requirements of Planning for Bush Fire Protection (NSW RFS 2006). The BAL rating for the decking and verandah extensions is rated as BAL-29.

It is important to note that Addendum Appendix 3 of PBP 2010 stipulates “*For BAL -12.5 and BAL-19, Clause 5.7 and 6.7 shall be replaced by the provisions of clause 7.7.*”. That is to say that the minimum BAL Rating for a Verandah or Deck is BAL-29 Section 7 Construction Standards of AS3959-2009.

This report makes recommendations to approve the proposal as it meets and exceeds the requirements of both the Building Code of Australia 2009 and Planning for Bushfire Protection 2006.

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

Table 1 – AS3959-2009 Construction Standards for the proposed alterations and additions

Building Elevation	Construction Standard (Bush Fire)
North	BAL -29 AS3959
South	BAL -29
East	BAL -29
West	BAL -29

Table 2 – AS3959-2009 Construction Standards for the proposed Verandah extensions and decking associated with the swimming pool.

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 (2006). This report has been prepared in accordance with the submission requirements of Appendix 4 of Planning for Bush Fire Protection (NSW RFS 2006). The site is identified as being within a Buffer-Zone of Category 1 Bushfire Hazard Vegetation as per Northern Beaches Council's 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 construction of a swimming pool and associated decking on the subject Lot.

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 2006 (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: 977-979 Barrenjoey Rd, Palm Beach. NSW 2108

Lot 52 DP 13620 – No.977
Lot 101 DP 509808 – No.979

Site Area: 1222sqm approx.

Zoning E4 – Environmental Living

3. Proposal

The proponent seeks to construct alterations and additions to the existing dwelling and install a swimming pool and associated decking at 977-979 Barrenjoey Rd, Palm Beach. NSW 2108. The proponents desire to maintain the weatherboard and brick masonry façades in the alterations and additions.

The site is also known as Lot 52 DP 13620 (No. 977) and Lot 101 DP 509808 (No.979). It is bounded by residential development to the North, South and East. To the West is the waters of Pittwater.

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 “infill” development as defined and as such must meet the specifications and requirements in Chapter 4 (section 4.3.5) of *Planning for Bush Fire Protection* (NSW RFS 2006).

Type of Proposal PBP 2006

<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 (2006) NSW RFS (PBP), the Building Code of Australia (BCA) and AS3959 2009-Construction of buildings in Bush Fire Prone Areas. The methodology for this report is based PBP (specifically Appendix 3) and AS3959-2009. 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).



Image 1 - 977-979 Barrenjoey Rd, Palm Beach. NSW 2108 Bushfire Prone Land Map (NSW Government 2019).

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.

Hazard

Bushfire Prone Land

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



Image 2: Aerial View of the subject Lot (NSW Government 2019)

6. Bush Fire Hazard Assessment

6.1 Preface.

This bushfire hazard assessment has been done according to the guidelines of Planning for Bushfire Protection 2006 (NSWRFS) and AS3959-2009, Construction of Buildings in Bushfire Prone Areas. 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 install a swimming pool with associated decking which is infill development and as such, must comply with Section 4.14 of the EP&A Act 1979 and PBP 2006.

The proponents desire to maintain the weatherboard and brick masonry façades in the alterations and additions.

The property is known as 977-979 Barrenjoey Rd, Palm Beach. NSW 2108 (Lot 52 DP 13620 – No 977 & Lot 101 DP 509808 – No. 979) and is within a residential area in the Northern Beaches Council Local Government Area. The property has direct access to Barrenjoey Rd which runs to the East of the subject Lot. The Classified Bushfire Hazard Vegetation (Forest) that is a potential bushfire hazard is at least 73m East of the proposal.

6.2 Location



Image 3 - Site Aerial. (NSW Government 2019)

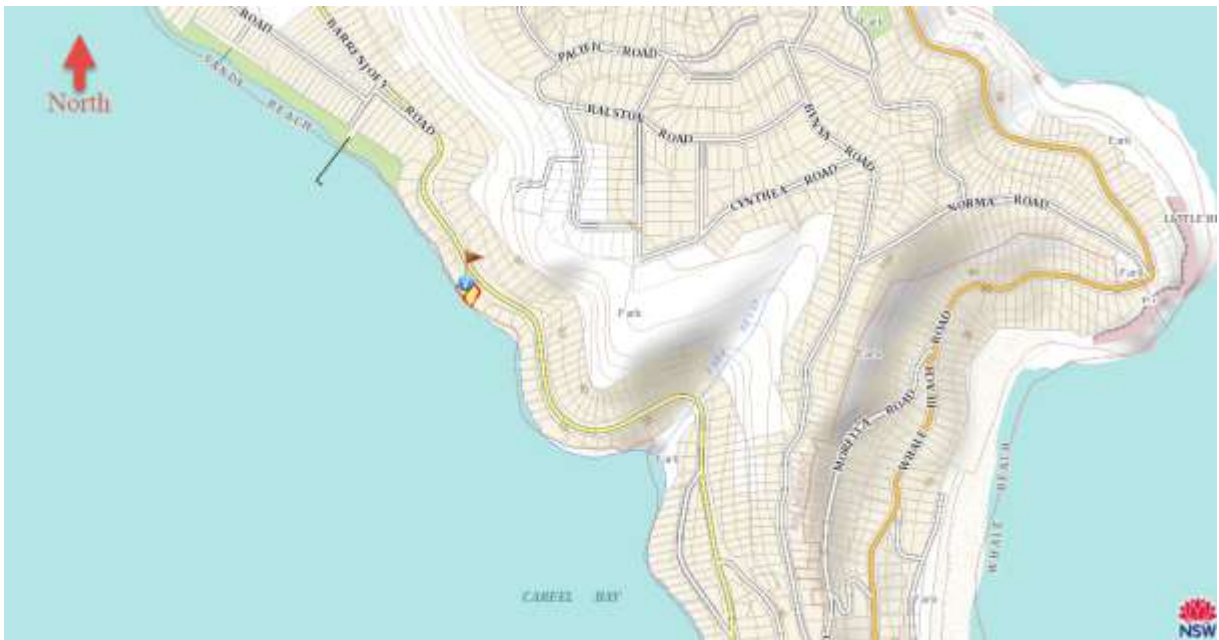


Figure 1 -Street Location of Property (NSW Government 2019)

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 Forest Classified Vegetation to the East of the proposal within the boundaries of Mackay Reserve.

The property is located within other residential properties to the North, South and East. To the West is a waterway (Pittwater). To the East, at a distance of at least 73m, is Forest 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 any hazard upon it. The separation distance to the hazard is assessed as follows;

Direction	Distance to Hazard
North	100+m
South	100+m
East	73m minimum
West	100+m

Table 3 – Distances to hazardous vegetation



Image 4 - Indicates that the separation distance to the Forest Classified Bushfire Hazard Vegetation (NSW Government 2019).



Image 5 - Indicates that the separation distance to the Forest Classified Bushfire Hazard Vegetation – 73m (NSW Government 2019).

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 Forest Classified Vegetation to the East is Upslope/Flat of the proposed alterations and additions to the existing dwelling and the installation of a swimming pool and associated decking.

Therefore, the “effective” slope has been assessed as Upslope/Flat under Forest Classified Bushfire Hazard Vegetation 73m East of the proposal.

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

Table 4 – Degree of slope under hazardous vegetation



Figure 2 - Indicates the degree of slope under the nearest Bushfire Hazard Vegetation – Forest 73m East of the proposal (NSW Government 2019)

6.5 Asset Protection Zones (APZ)

The APZ for the proposed alterations and additions to the existing dwelling, and the installation of a swimming pool and associated decking, is 100+m to the North, 100+m to the South, 100+m to the West and 73m (minimum) to the East 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 2.4	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/Waterway	Managed Land	Yes
East	Upslope/Flat	73m	20m	Residential/Bushland	Forest	Yes
West	N/A	100+m	N/A	Waterway	Waterway	Yes

Table 5 - APZ distances



Image 6 – 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 Barrenjoey Rd which allows an egress route to safety. Barrenjoey Rd is 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 Barrenjoey Rd. The nearest Reticulated Mains Pressure Hydrants is located outside No.985 Barrenjoey Rd. Water supply is therefore considered suitable.

6.8 Electricity Services

The site is provided with electricity via existing supply. Electricity supply is therefore considered suitable.

6.9 Gas Services

Any Gas services are to be maintained in accordance with AS1596, metal piping should be used. Gas supply is therefore considered suitable.

6.10 Environmental Impact

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

6.11 Hazard Assessment Determination

PBP refers to the appropriate construction standard for a development as determined by Tables contained within AS3959- 2009 "Construction of buildings in Bush Fire Prone Areas." 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 977-979 Barrenjoey Rd, Palm Beach. NSW 2108

FDI Appropriate to Development – Northern Beaches Council LGA 100
AS3959 Table 2.4.2

Direction/ Aspect	Distance to Vegetation	Vegetation Formation	Slope in degrees	Construction Requirements AS3959-2009
North	100+metres	N/A	N/A	BAL-LOW
South	100+metres	N/A	N/A	BAL-LOW
East	73 metres	Forest	Upslope/Flat	BAL-12.5
West	100+m	N/A	N/A	BAL-LOW

Table 6 - Summary of Building Compliance Requirements AS3959-2009 for the proposed alterations and additions.

The site has been found to be in the BAL-12.5 range and will have to comply with requirements for BAL Construction -Sections 3 & 5 of AS3959-2009 "*Construction of buildings in Bush Fire Prone Areas*".

The proposed verandah extensions and decking around the swimming pool have been found to be in the BAL-29 range and will therefore have to comply Section 7 Construction Standards of AS3959-2009.

As stated previously, it is important to note that Addendum Appendix 3 of PBP 2010 stipulates "*For BAL -12.5 and BAL-19, Clause 5.7 and 6.7 shall be replaced by the provisions of clause 7.7.*". That is to say that the minimum BAL Rating for a verandah or deck is BAL-29 Section 7 Construction Standards of AS3959-2009.

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.

The proposed alterations and additions to the existing dwelling and installation of a swimming pool and associated decking must also comply with the specification and requirements of Section 4.3.5 of *Planning for Bush Fire Protection 2006, Infill development*. This assessment is provided below in detail.

Performance Criteria Chapter 4 PBP 2006	Acceptable Solution	Compliance
in relation to Asset Protection Zones: <ul style="list-style-type: none"> • A defensible space is provided onsite. • An asset protection zone is provided and maintained for the life of the development. 	APZ determined in accordance with Appendix 2 and Section 3.3 Exceptional Circumstances for APZs.	Yes – existing structure is in a cleared area allowing for firefighting on all sides and a defensible space
in relation to siting and design: <ul style="list-style-type: none"> • The existing building are sited and designed to minimise the risk of bush fire attack. 	Buildings are designed and sited in accordance with the siting and design principles in this section (see also figure 4.7).	Yes – the proposed swimming pool & decking and, alterations and additions is in a cleared area allowing for firefighting on all sides and evacuation
in relation to construction standards: <ul style="list-style-type: none"> • It is demonstrated that the proposed building can withstand bush fire attack in the form of wind, smoke, embers, radiant heat and flame contact. 	Construction determined in accordance with Appendix 3	Yes – The BAL is determined as being BAL-12.5 in all aspects for the proposed alterations and additions. The BAL is determined as BAL-29 for the proposed verandah extensions and decking in all aspects.
in relation to access requirements: <ul style="list-style-type: none"> • safe, operational access is provided (and maintained) for emergency services personnel in suppressing a bush fire while residents are seeking to relocate, in advance of a bush fire. 	<p>Compliance with section 4.1.3 for property access roads.</p> <p>Compliance with section 4.2.7 for access standards for internal roads.</p>	<p>Yes - Existing Road system and driveway meet the requirements and does not place Firefighters at risk</p> <p>Access available away from hazard.</p>
in relation to water and utility services: <ul style="list-style-type: none"> • adequate water and electricity services are provided for fire- fighting operations • gas and electricity services are located so as not to contribute to the risk of fire to a building. 	Compliance with section 4.1.3 for services - water, electricity and gas.	<p>Yes- The site is connected to mains pressure reticulated water supply</p> <p>Electrical supply as per existing.</p> <p>Gas not exposed to radiant heat or flame nor landscaping elements for embers.</p>

in relation to landscaping: • it is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind driven embers to cause ignitions.	Compliance with Appendix 5 of <i>Planning for Bush Fire Protection</i> (2006)	Yes No significant planting under windows or other exposed elements of house – considered acceptable.
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Table 7: Compliance with Specifications and Requirements of *Planning for Bush Fire Protection*.
Chapter 4

Compliance with Specific Objectives PBP as per 4.3.2

Objective	Details
Ensure that the bushfire risk to adjoining land is not increased	The development does not add to the bushfire risk
Provide Minimum Defendable Space	A defendable space is provided
Provide better bushfire protection, on a redevelopment site, than the existing situation. This should not result in any new works being exposed to a greater risk than the existing building.	The proposed alterations and additions will be built to BAL-12.5 Construction Standards, whilst the verandah extensions and proposed decking will be built to BAL-29 Construction Standards. The construction will provide a better bushfire protection and will not expose the occupants to great risk.
Ensure the footprint of the proposed building does not extend towards the hazard beyond existing building lines on neighbouring land.	The development is to construct alterations and additions to the existing dwelling along with the installation of a swimming pool with associated decking on the subject Lot and does not extend towards the hazard.
Not result in an increased bushfire management and maintenance responsibility on adjoining landowners unless they have agreed to the development	The development does not increase hazard or bushfire management on adjoining lands
Ensure Building design and construction enhance the chances of occupant and building survival	The recommendations enhance the existing structure and occupant survival

7 Recommendations

•The proposed alterations and additions have been assessed as BAL-12.5 and must be constructed to meet the requirements of Sections 3 & 5 Construction Standards of AS3959 2009.

*The proposed verandah extensions and proposed decking has been assessed as BAL-29 and must be constructed to meet the requirements of Section 7 of AS3959-2009.

*The proposed decking subfloor (frame etc) is to be enclosed therefore, there are no construction requirements recommended.

*The decking timbers must be a bushfire resisting timber and the proponents have selected Blackbutt which meets the criteria outlined in Table E1 of AS3959-2009.

*The proponents have requested that the Bi-fold doors not be protected by either screens or bushfire shutters. Therefore, the doors must comply with the following;

1) Doors shall be:

a) Non-combustible; or

b) A solid timber door, having a minimum thickness of 35mm for the first 400mm from the threshold; or

c) A door, including a hollow core door, with a non-combustible kickplate on the first 400mm above the threshold; or

d) A fully framed glazed door, where the framing is made from materials required for bushfire shutters, or from a timber species listed in Table E2 of AS3959-2009.

2) Where doors incorporate glazing, the glazing shall comply with the glazing requirements for windows.

3) Doors shall be tight-fitting to the door frame and to an abutting door, if applicable.

4) Where any part of the door is less than 100mm from the ground, deck or verandah that part of the door assembly shall be made from one of the following:

a) A bushfire resisting timber; or

b) A timber species listed in Table E2 of AS3959-2009; or

c) Metal; or

d) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion resistant steel and the door assembly shall satisfy the design load, performance and structural strength of the member.

*The weatherboards to be used in the alterations and additions shall be a bushfire resistant timber from the list indicated by Table E1 of AS3959-2009.

- The entire site is deemed an Inner Protection Area and as such any landscaping gardens and the like should comply with Appendix 5 PBP 2006

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 977-979 Barrenjoey Rd, Palm Beach. NSW 2108 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

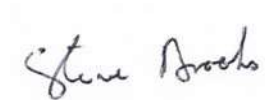
8. Conclusion

The proposed alterations and additions to the existing dwelling and the installation of a swimming pool and associated decking at 977-979 Barrenjoey Rd, Palm Beach. NSW 2108 can meet the planning requirements of *Planning for Bush Fire Protection* (NSW RFS 2006) and, are capable of meeting Australian Standard AS3959-2009 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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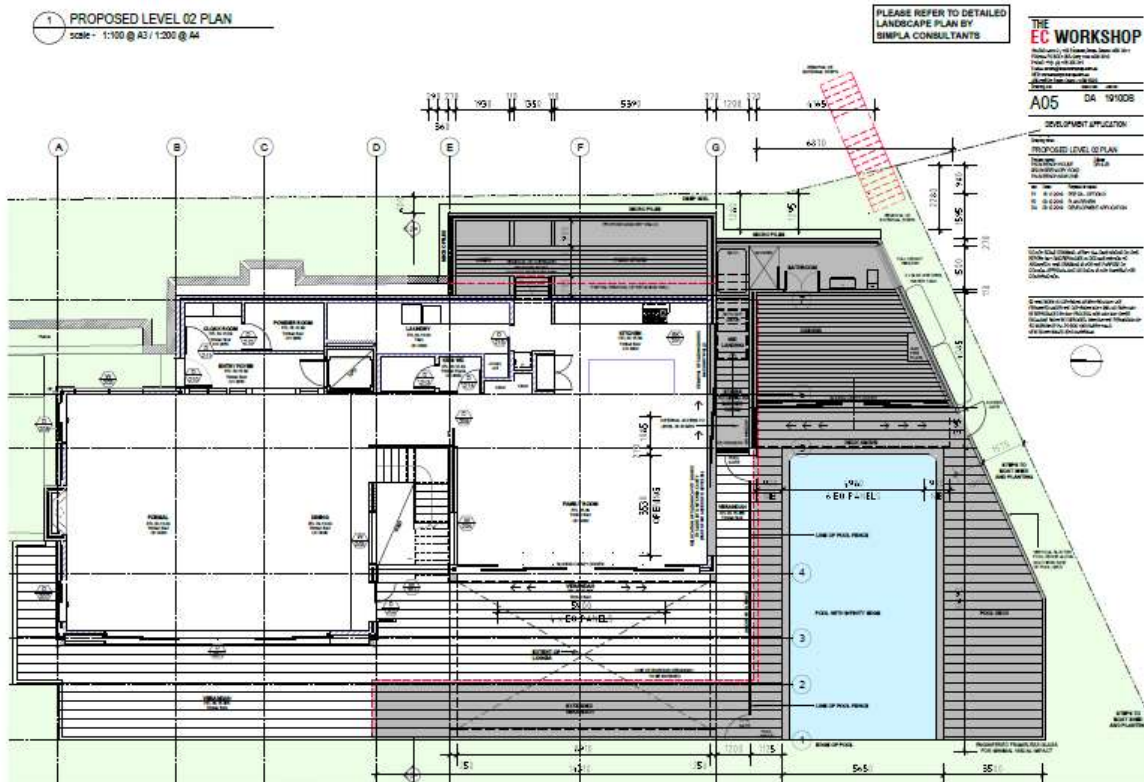
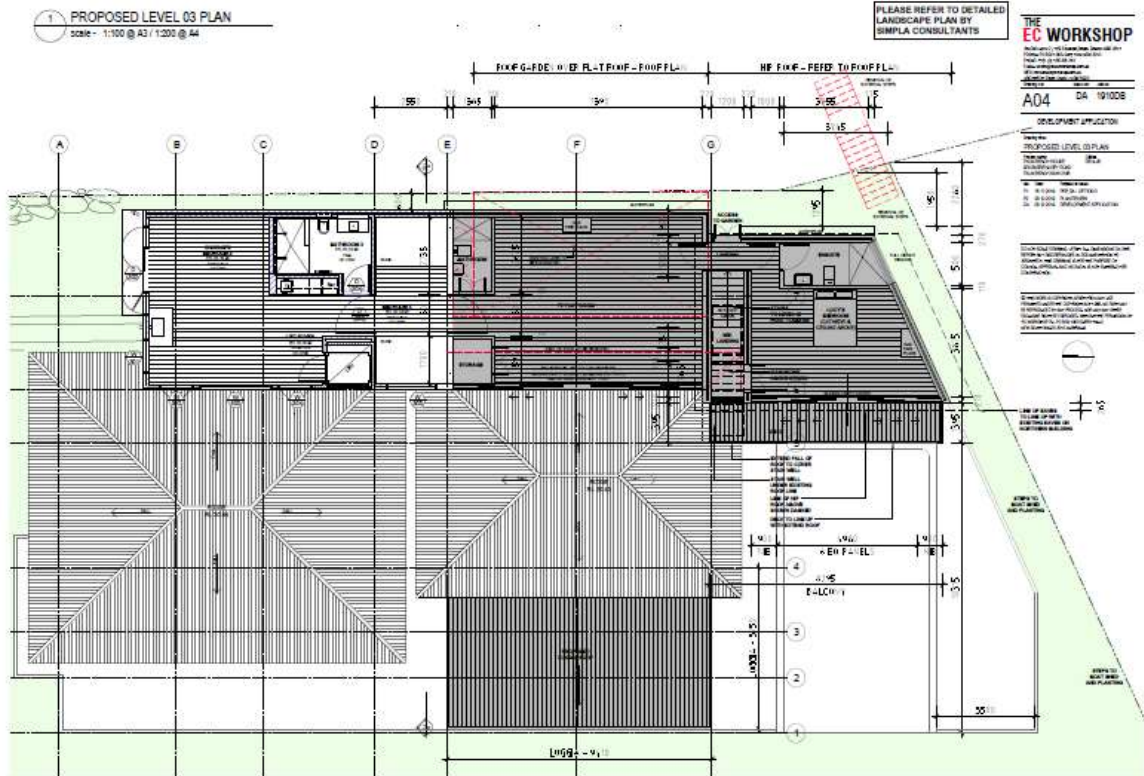
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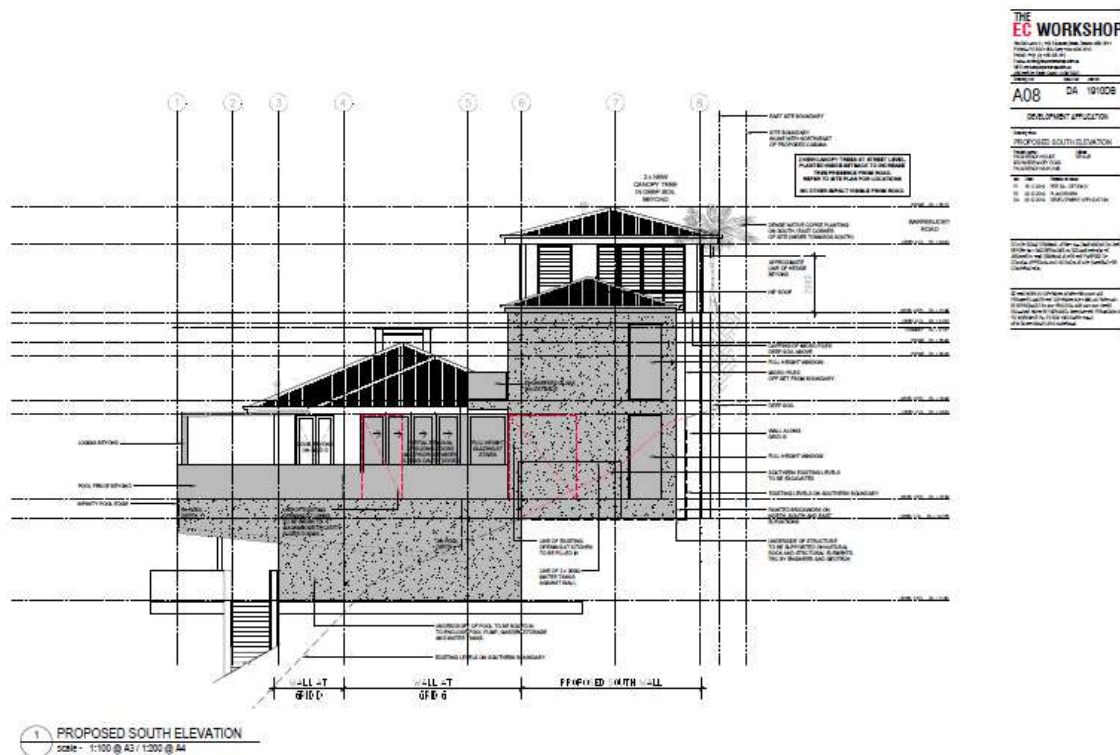
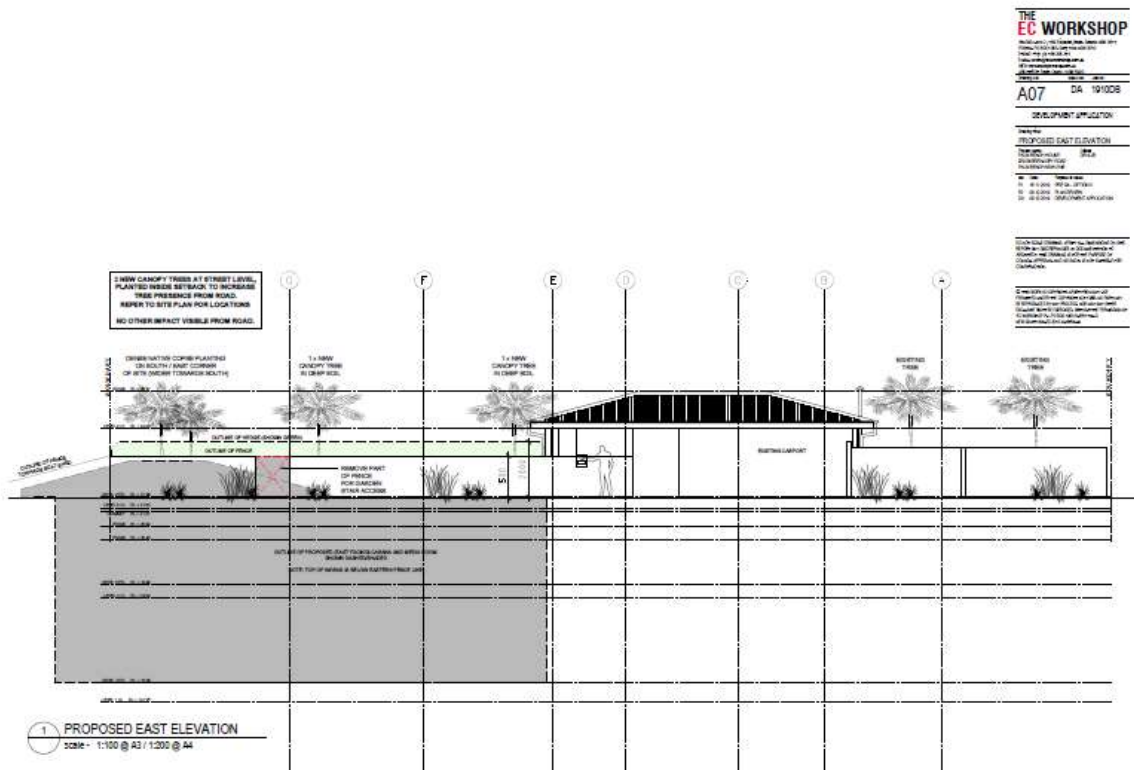
Disclaimer

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 Plans from the applicant





Appendix 2 Site Photos



Photo 1 - Indicates Barrenjoey Rd looking South (Steve Brooks 2019).



Photo 2 – Indicates the reticulated mains pressure fire hydrants located outside No.985 Barrenjoey Rd (Steve Brooks 2019).