



Member of the Fire Protection Association of Australia

102 Wakehurst Parkway, Elanora Heights NSW 2101.

Tuesday, 2 October 2018

Prepared and certified by:	Matthew Willis BPAD – Level 3 Certified Practitioner Certification No: BPD-PA 09337		2/10/2018
Can this proposal comply with AS3959-2009 (inc PBP addendum 3)?	Yes		
Is referral to the RFS required?	Yes. Integrated development		
Can this development comply with the requirements of PBP?	Yes		
Plans by High Design.	(Attached)		

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Bushfire Risk Assessment

Tuesday, 2 October 2018

Contact

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High Design

102 Wakehurst Parkway

Elanora Heights NSW 2101

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Subject Property

Lot 12, DP 1014199

102 Wakehurst Parkway

Elanora Heights NSW 2101

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2. Executive summary.

Bushfire Planning Services has been requested to supply a bushfire compliance report on Lot 12, DP 1014199, number 102 Wakehurst Parkway, Elanora Heights, NSW 2101.

The proposal is for the subdivision of an existing lot into two new lots and the construction of a new dwelling and integrated garage on the new lot and the extension to the existing house and a new detached garage for that dwelling. It is noted that several of the neighbouring lots have been divided in a similar manner

The hazard to the proposal is to the south at a distance of at least 51m from the front of the proposed and at least 89m from the closest part of the proposed new dwelling on the new lot.

The entire proposal can comply with the setback requirements of table A2.4 of Planning for Bushfire Protection. In addition, the highest BAL level for any of the new work is BAL-19 on the front of the existing dwelling, all other proposed work can achieve a BAL of 12.5.

All other aspects of this proposal can comply with the acceptable solutions for subdivision as outlined in Planning for Bushfire Protection.

Based on the assumptions and measurements contained within this assessment the development is considered to be able to meet the requirements of clause 44 of the Rural Fires Regulation 2008 and the RFS requirements as outlined in Planning for Bushfire Protection.

3. General.

As this proposal is for the subdivision of land the proposal is considered to be "integrated development" and is required under section 91 of the Environmental Planning and Assessment Act to obtain a section 100B Bushfire Safety Authority from the Rural Fire Service.

For the Rural Fire Service to issue the 100B Bushfire Safety Authority it must be satisfied that the proposal can meet the requirements of clause 44 of the Rural Fires Regulation.

This assessment is based around the requirements of clause 44 and indicates if and how the proposal meets these requirements.

The following text in italics is a copy of clause 44 of the Rural Fires Regulation 2008;

44 Application for bush fire safety authority

For the purposes of section 100B (4) of the Act, an application for a bush fire safety authority must be made in writing and must include the following:

- (a) a description (including the address) of the property on which the development the subject of the application is proposed to be carried out,
- (b) a classification of the vegetation on and surrounding the property (out to a distance of 140 metres from the boundaries of the property) in accordance with the system for classification of vegetation contained in Planning for Bush Fire Protection,
- (c) an assessment of the slope of the land on and surrounding the property (out to a distance of 100 metres from the boundaries of the property),
- (d) identification of any significant environmental features on the property,
- (e) the details of any threatened species, population or ecological community identified under the Threatened Species Conservation Act 1995 that is known to the applicant to exist on the property,
- (f) the details and location of any Aboriginal object (within the meaning of the National Parks and Wildlife Act 1974) or Aboriginal place (within the meaning of that Act) that is known to the applicant to be situated on the property,
- (g) a bush fire assessment for the proposed development (including the methodology used in the assessment) that addresses the following matters:
 - (i) the extent to which the development is to provide for setbacks, including asset protection zones,
 - (ii) the siting and adequacy of water supplies for firefighting,
 - (iii) the capacity of public roads in the vicinity to handle increased volumes of traffic in the event of a bush fire emergency,
 - (iv) whether or not public roads in the vicinity that link with the fire trail network have two-way access,
 - (v) the adequacy of arrangements for access to and egress from the development site for the purposes of an emergency response,
 - (vi) the adequacy of bush fire maintenance plans and fire emergency procedures for the development site,
 - (vii) the construction standards to be used for building elements in the development,
 - (viii) the adequacy of sprinkler systems and other fire protection measures to be incorporated into the development,
- (h) an assessment of the extent to which the proposed development conforms with or deviates from the standards, specific objectives and performance criteria set out in Chapter 4 (Performance Based Controls) of Planning for Bush Fire Protection.

Any wording that appears in *blue italics* are quotes from Planning for Bushfire Protection 2006 (PBP).

Some of the distance measurements used in this report have been taken from aerial photographs and as such are approximate only. If doubt exists, the distances should be verified by survey.

4. Block description

Clause 44 requirement. "a description (including the address) of the property on which the development the subject of the application is proposed to be carried out"

The subject lot is a long, thin allotment with a narrow road frontage onto the Wakehurst Parkway.

There is existing residential development to the East and West with the identified hazard across the Wakehurst Parkway to the south. The rear of the lot and its neighbouring allotments to the east and west contain a steep escarpment that rises up from the lot. The top of this escarpment contains an area of unmanaged vegetation however this area is no longer mapped as a hazard.

- Lot 12,
- DP 1014199,
- 102 Wakehurst Parkway
- Elanora Heights
- Northern Beaches LGA.

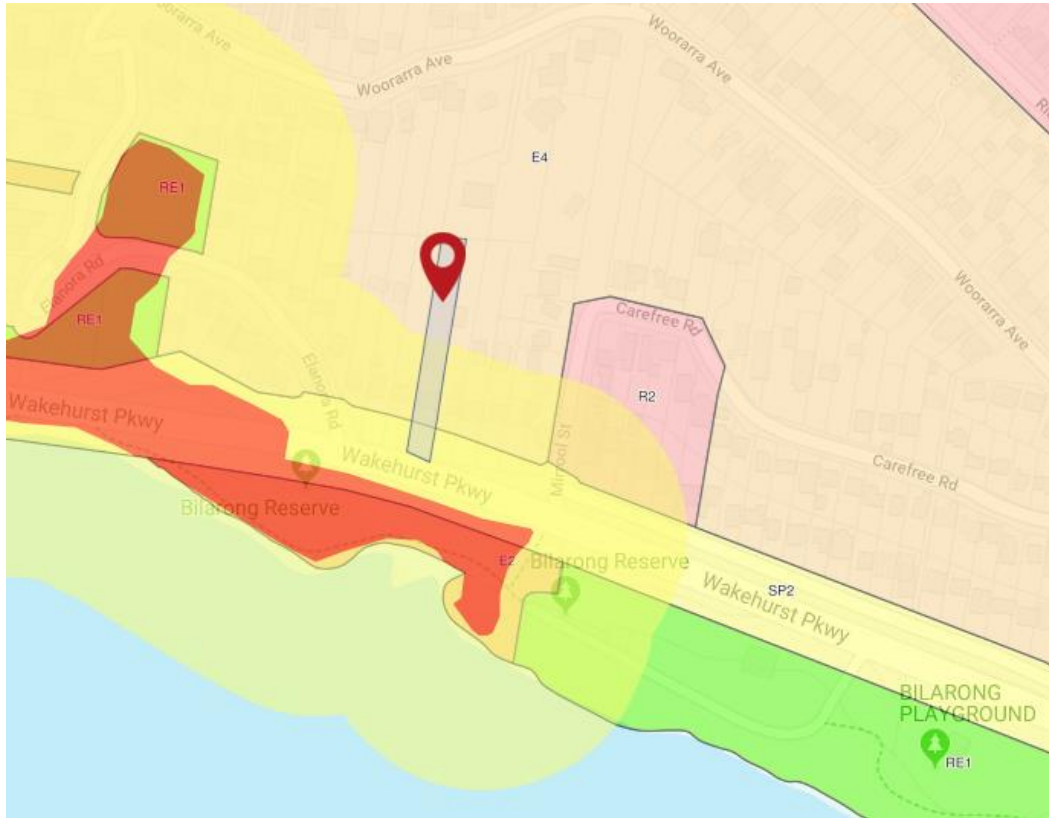
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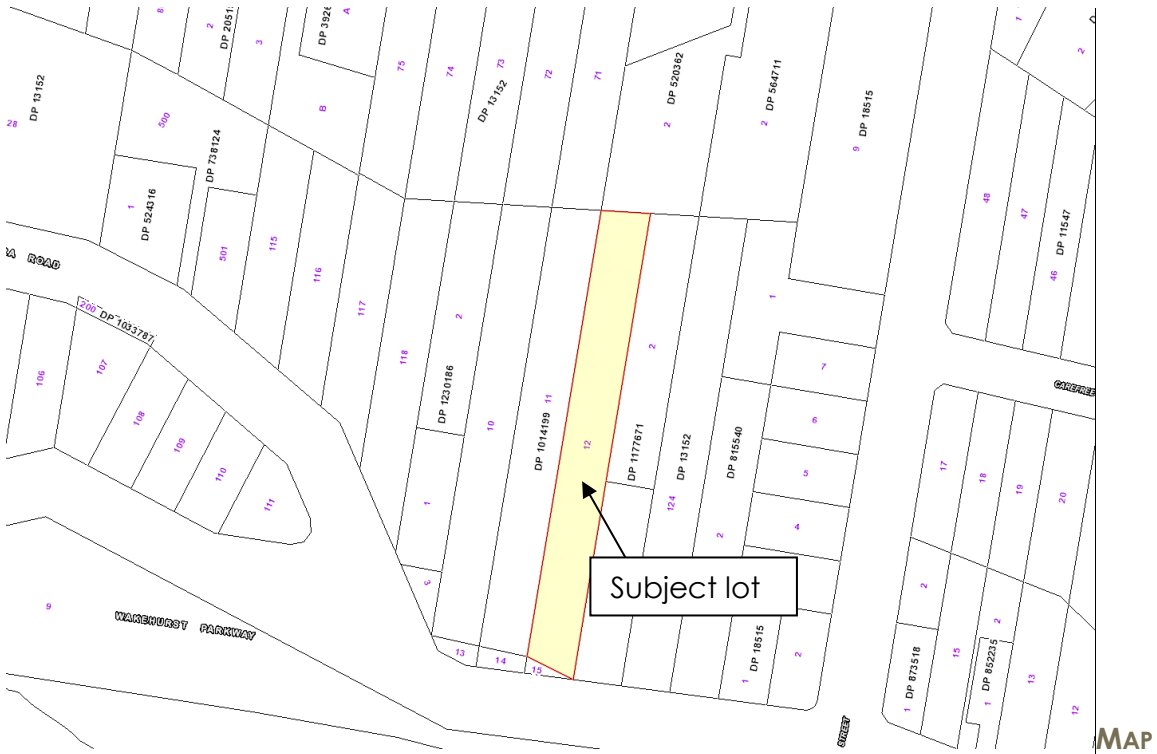
PHOTO 1 (ABOVE) SHOWS A GENERAL OVERVIEW OF THE SURROUNDING AREA.



PHOTO 2 IS A CLOSER VIEW OF THE SUBJECT AREA.



MAP 1 IS AN EXTRACT FROM THE COUNCIL'S BUSHFIRE PRONE LAND MAP.



2 ABOVE SHOWS THE CURRENT CADASTRAL DATA FOR THE DEVELOPMENT AND SURROUNDING BLOCKS.

5. Vegetation

Clause 44 requirement “a classification of the vegetation on and surrounding the property (out to a distance of 140 metres from the boundaries of the property) in accordance with the system for classification of vegetation contained in Planning for Bush Fire Protection”

The study area for the vegetation is 140m surrounding the development site. The vegetation assessment has been undertaken using the methodology of “Ocean Shores to Desert Dunes, Native Vegetation of New South Wales and the ACT” by David Keith and the SydneyMetroArea_v3_2016_E_4489 vegetation data set as available from the Office of Environment and Heritage (OEH).

The vegetation within the study area for this proposal comprises of urban landscaping containing residential housing and gardens.

The vegetation that is mapped as the hazard to this proposal is to the south of the subject lot.

The hazard is a strip of foreshore vegetation along the northern side of Narrabeen Lake.

The vegetation classification has been identified as Estuarine Swamp Oak Forest which is a Saline Wetland.



This vegetation structure contains species such as;

- *Casuarina glauca*
- *Casuarina glauca*, *Avicennia marina*, *Goodenia ovata*, *Suaeda Australis*

- *Juncus kraussii*, *Baumea juncea*, *Samolus repens*, *Phragmites australis*, *Sporobolus virginicus*, *Atriplex australasica* and
- *Tetragonia tetragonioides*

The identified vegetation structure occurs from mangroves to terrestrial sclerophyll and mesophyll forests and woodlands, Estuarine Swamp Oak Forest occurs immediately above tidal influence. It fringes the margins of saline waterbodies that include rivers, lagoons and tidal lakes.

Swamp oak (*Casuarina glauca*) forms dense monospecific stands above a thick ground cover of salt-tolerant herbs, rushes and sedges. The shrub layer is low-growing and sparse, comprising a mix of terrestrial species while others typical of wetlands. It is a community of relatively low species diversity.

Estuarine Swamp Oak Forest is widespread along the coast of the Sydney basin where it is rarely found at more than two meters above sea level.

For the purpose of compliance with Planning for Bushfire Protection the hazardous vegetation is considered as Forest.



6. Slope

Clause 44 requirement – “an assessment of the slope of the land on and surrounding the property (out to a distance of 100 metres from the boundaries of the property)”.

The slope analysis for this proposal was undertaken using contours derived from 1m LIDAR DEM. This elevation data has been processed to achieve ‘Category 1’ DEM products as described by the ICSM Guidelines for Digital Elevation Data which specifies accuracies not exceeding 30cm with 2 sigma or 95% confidence.

For the purpose of the slope analysis for this proposal 3 slope runs beneath the identified hazard to the south has been evaluated. The runs are shown on the following topographical map and the run details are shown in table 1.



TABLE 1. THE ABOVE TABLE SHOWS THE PARTICULARS OF THE SLOPE RUNS USED IN THIS ASSESSMENT.

Slope run	Starting height (m)	Finish height (m)	Length of run (m)	Height difference (m)	Slope (deg)
1	2.41	.99	36.61	-1.41	-2.21
2	2.05	.69	78.32	-1.35	-0.99
3	2.54	1.11	93.88	-1.43	-.87

7. Significant features

Clause 44 requirement "identification of any significant environmental features on the property"

I have not been informed of any significant environmental features that would be affected by this proposal.

8. Threatened Species

Clause 44 requirement "the details of any threatened species, population or ecological community identified under the [Threatened Species Conservation Act 1995](#) that is known to the applicant to exist on the property,"

I have not been informed of any threatened species that would be affected by this proposal.

9. Aboriginal Heritage

Clause 44 requirement "the details and location of any Aboriginal object (within the meaning of the [National Parks and Wildlife Act 1974](#)) or Aboriginal place (within the meaning of that Act) that is known to the applicant to be situated on the property,"

I have not been informed of any places of cultural significance that would be affected by this proposal.

10. Bushfire Assessment Methodology

Clause 44 requirement "a bush fire assessment for the proposed development (including the methodology used in the assessment) that addresses the following matters:

The methodology used in the assessment of bushfire threat to the subject property is outlined in;

- *Planning for Bushfire Protection 2006 as published by the New South Wales Rural Fire Service, and*
- *Australian Standard 3959-2009, Construction of buildings in Bushfire Prone Areas.*

11. Setbacks

- (i) **Clause 44 requirement** “the extent to which the development is to provide for setbacks, including Asset Protection Zones,”

The available setbacks between the proposal and the hazard have been taken from the southern boundary of the subject lot to the southern face of the existing and proposed new building and from the southern boundary of the subject lot, across Wakehurst Parkway to the edge of the managed land to the south.

The following setbacks have been used in this assessment. The setback:

- across the Wakehurst Parkway is 20m
- from the front of the subject lot to the closest part of the new work is 31m (1)
- From the front of the subject lot to the closest part of the proposed new dwelling is 69m (2)

See attached plans for details of setback within the lot.

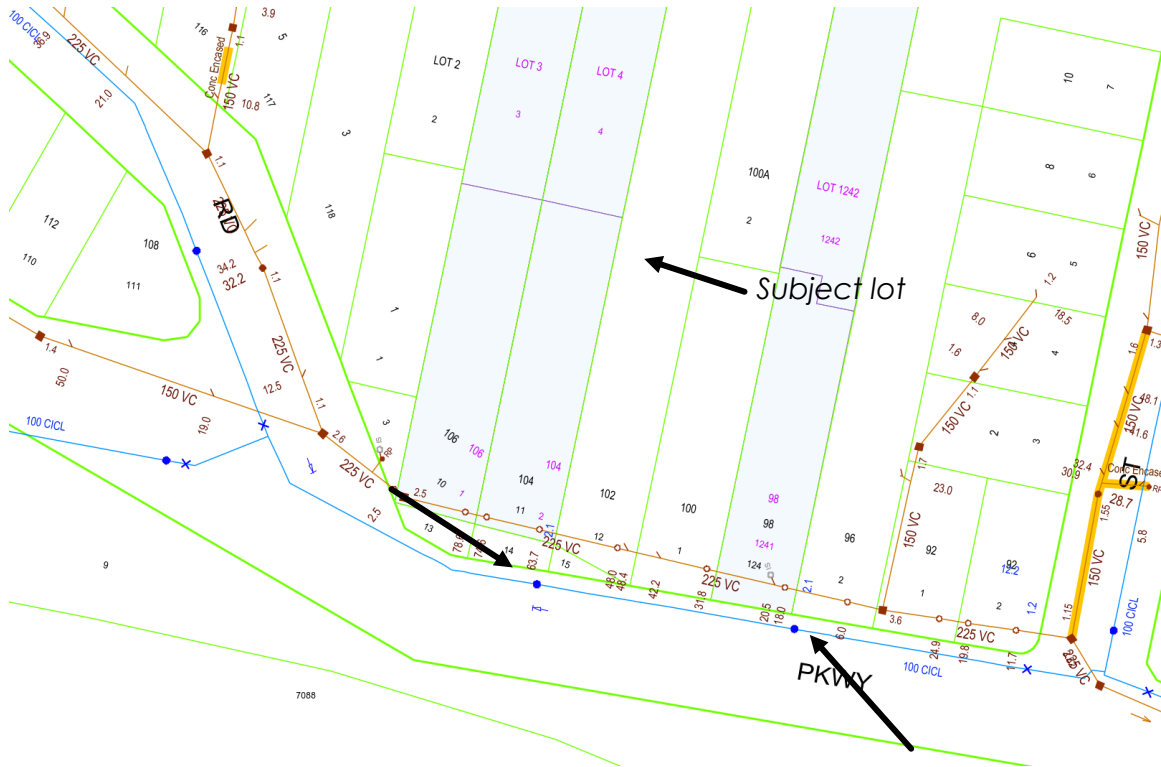
Run	Setback within the lot	Setback outside lot	Available distance
1	31 m	20 m	51 m
2	69 m	20 m	89 m

12. Water

- (ii) **Clause 44 requirement** “the sighting and adequacy of water supplies for firefighting,”

The following map is an extract from the Sydney Water hydrant map for the area. Hydrants are shown as blue dots on a blue line.

As can be seen there is at least one hydrant indicated around the subject lot.



13. Access

(iii) **Clause 44 requirement** “the capacity of public roads in the vicinity to handle increased volumes of traffic in the event of a bush fire emergency,”

The subject lot has road frontage onto Wakehurst Parkway. Wakehurst Parkway is a two-way road that is considered to be capable of handling emergency service vehicles.

14. Fire trails

(iv) **Clause 44 requirement** “whether or not public roads in the vicinity that link with the fire trail network have two-way access,”

Fire trails are not planned or recommended as part of this development proposal. All roads in the vicinity have two-way access.

15. Property Access

- (v) **Clause 44 requirement** “the adequacy of arrangements for access to and egress from the development site for the purposes of an emergency response,”

With appropriate design the access can comply with the acceptable solutions of PBP.

16. Maintenance plans

- (vi) **Clause 44 requirement** “the adequacy of bush fire maintenance plans and fire emergency procedures for the development site”

No additional advice or information regarding bushfire maintenance plans & fire emergency procedures has been provided by the proponent.

Under the Rural Fires Act 1997 sect 52, the local council's bushfire management committees are required to prepare and submit management plans for the rural fire district or part of the state which it is constituted.

The plan covers the following,

- a plan of operations and
- a bushfire risk management plan.

The plan of operations must be reviewed within every 2 years and the bushfire risk plan must be reviewed within each 5 years.

Should a bushfire emergency impact upon this area, the implementation of the existing councils Sect. 52 Operations & Risk Plan should be adequate for bushfire suppression, hazard management and maintenance.

I have not been informed of any site-specific bushfire plans.

17. Building construction standards

- (vii) **Clause 44 requirement** “the construction standards to be used for building elements in the development,”

Table 2.4.2 of AS 3959-2009 ‘Construction of Buildings in a Bushfire Prone Area’ outlines the appropriate level of construction to be used once analysis has been undertaken in accordance with the methodology of that standard.

Given the variables of slope, vegetation classification and achievable setback distances from the classified vegetation have been considered the resultant BAL (Bushfire Attack Level) for this proposal has been determined as being less than or equal to BAL 29.

The appropriate construction standards for construction in bushfire prone areas are;

- AS 3959-2009 (amendment 3) Construction of Buildings in Bushfire Prone Areas.
- Building Code of Australia and the applicable referenced standards.

The addendum to appendix 3 of Planning for Bushfire Protection.

18. Sprinkler systems

(viii) **Clause 44 requirement** “the adequacy of sprinkler systems and other fire protection measures to be incorporated into the development,”

Currently sprinklers are not considered as necessary in the design of the development.

19. Compliance with chapter 4 of PBP

Clause 44 requirement “assessment of the extent to which the proposed development conforms with or deviates from the standards, specific objectives and performance criteria set out in Chapter 4 (Performance Based Controls) of Planning for Bush Fire Protection.”

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
Radiant heat levels at any point on a proposed building will not exceed 29 kW/m²	an APZ is provided in accordance with the relevant tables and figures in PBP	Yes	In accordance with table A2.4 of Planning for Bushfire Protection.
	the APZ is wholly within the boundaries of the development site	No	The APZ for this development is contained within the subject lot and on the neighbouring developed or otherwise historically managed lands.
Applicants demonstrate that issues relating to slope are addressed: maintenance is practical, soil stability is not compromised and the potential for crown fires is negated	the APZ is not located on lands with a slope exceeding 18 degrees	Yes	There is no area of APZ proposed on land that has a slope greater than 18 degrees.

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
APZs are managed and maintained to prevent the spread of a fire towards the building	in accordance with the requirements of 'Standards for Asset Protection Zones (RFS 2005)	Achievable	APZ's used in this assessment are all developed land or otherwise historically managed.
Fire fighters are provided with safe all-weather access to structures (thus allowing more efficient use of firefighting resources)	public roads are two-wheel drive, all weather roads	Yes	Existing roads provide this.
Public road widths and design that allow safe access for fire fighters while residents are evacuating an area	urban perimeter roads are two-way, that is, at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb), allowing traffic to pass in opposite directions	N/A	The subject development does not incorporate any new or redesigned public roadway.
	Non-perimeter roads comply with Table 4.1 – Road widths for Category 1 Tanker (Medium Rigid Vehicle)	N/A	
	the perimeter road is linked to the internal road system at an interval of no greater than 500 metres in urban areas	N/A	
	roads are through roads. Dead end roads are not more than 200 metres in length from a through road, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end	N/A	
	traffic management devices are constructed to facilitate access by emergency services vehicles	N/A	
	there is a minimum vertical clearance to a height of four metres above the road at all times	N/A	
	curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress	N/A	
	the minimum distance between inner and outer curves is six metres	N/A	

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
	maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient.	N/A	
	Public roads have a cross fall not exceeding 3 degrees	N/A	
	the internal road surfaces and bridges have a capacity to carry fully-loaded fire fighting vehicles (15 tonnes)	N/A	
The capacity of public road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles	the capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles (approximately 15 tonnes for areas with reticulated water, 28 tonnes or 9 tonnes per axle for all other areas). Bridges clearly indicate load rating	N/A	
Roads that are clearly sign-posted (with easily distinguishable names) and buildings/properties that are clearly numbered	public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression	N/A	
	public roads between 6.5 metres and 8 metres wide are No Parking on one side with the services (hydrants) located on this side to ensure accessibility to reticulated water for fire suppression	N/A	
There is clear access to reticulated water supply	public roads up to 6.5 metres wide provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression	Yes	There are several hydrants located in the surrounding area.
	one way only public access roads are no less than 3.5 metres wide and provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression	No	
Parking does not obstruct the minimum paved width	parking bays are a minimum of 2.6 metres wide from kerb edge to road pavement. No services or	N/A	

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
	hydrants are located within the parking bays		
	public roads directly interfacing the bush fire hazard vegetation provide roll top kerbing to the hazard side of the road	N/A	
Access to properties is provided in recognition of the risk to fire fighters and/ or evacuating occupants	at least one alternative property access road is provided for individual dwellings (or groups of dwellings) that are located more than 200 metres from a public through road	N/A	
The capacity of property access road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles	bridges clearly indicate load rating and pavements and bridges are capable of carrying a load of 15 tonnes	N/A	
All weather access is provided	roads do not traverse a wetland or other land potentially subject to periodic inundation (other than a flood or storm surge)	N/A	
Property road widths and design enable safe access for vehicles	Note: No specific access requirements apply in a urban area where a 70 metres unobstructed path can be demonstrated 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 fire fighting vehicles (i.e. a hydrant or water supply)	N/A	The nearest hydrant is greater than 70m from the furthest part of the proposed new dwelling.
	in forest, woodland and heath situations, rural property access roads have passing bays every 200 metres that are 20 metres long by two metres wide, making a minimum trafficable width of six metres at the passing bay	N/A	The property access is less than 200m
	a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches	Achievable	
	internal roads for rural properties provide a loop road around any dwelling or incorporate a turning circle with a minimum 12 metre outer radius	N/A	

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
	curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress	N/A	
	the minimum distance between inner and outer curves is six metres	N/A	
	the cross-fall is not more than 10 degrees	N/A	
	maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads Note: Some short constrictions in the access may be accepted where they are not less than the minimum (3.5m), extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above	N/A	
	access to a development comprising more than three dwellings have formalised access by dedication of a road and not by right of way	N/A	
The width and design of the fire trails enables safe and ready access for fire fighting vehicles	a minimum carriageway width of four metres with an additional one metre wide strip on each side of the trail (clear of bushes and long grass) is provided	N/A	The subject development does not incorporate nor require any new or redesigned fire trail access.
	the trail is a maximum grade of 15 degrees if sealed and not more than 10 degrees if unsealed	N/A	
	a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches is provided	N/A	
	the cross-fall of the trail is not more than 10 degrees	N/A	

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
	<p>the trail has the capacity for passing by:</p> <ul style="list-style-type: none"> - reversing bays using the access to properties to reverse fire tankers, which are six metres wide and eight metres deep to any gates, with an inner minimum turning radius of six metres and outer minimum radius of 12 metres; and/or - a passing bay every 200 metres, 20 metres long by three metres wide, making a minimum trafficable width of seven metres at the passing bay 	N/A	
Fire trails are trafficable under all weather conditions. Where the fire trail joins a public road, access shall be controlled to prevent use by non-authorised persons	the fire trail is accessible to fire fighters and maintained in a serviceable condition by the owner of the land	N/A	The subject development does not incorporate nor require any new or redesigned fire trail access.
	appropriate drainage and erosion controls are provided	N/A	
	the fire trail system is connected to the property access road and/or to the through road system at frequent intervals of 200 metres or less	N/A	
	fire trails do not traverse a wetlands or other land potentially subject to periodic inundation (other than a flood or storm surge)	N/A	
	gates for fire trails are provided and locked with a key/lock system authorised by the local RFS	N/A	
Fire trails designed to prevent weed infestation, soil erosion and other land degradation	fire trail design does not adversely impact on natural hydrological flows	N/A	The subject development does not incorporate nor require any new or redesigned fire trail access.
	fire trail design acts as an effective barrier to the spread of weeds and nutrients	N/A	
	fire trail construction does not expose acid-sulphate soils	N/A	
(Reticulated water supplies) Water supplies are easily accessible and located at regular intervals	reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads	N/A	This proposal will utilise existing water infrastructure.
	fire hydrant spacing, sizing and pressures comply with AS 2419.1	Assumed	

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
	<p>– 2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles</p>		
	<p>hydrants are not located within any road carriageway</p>	<p>N/A</p>	
	<p>all above ground water and gas service pipes external to the building are metal, including and up to any taps</p>	<p>N/A</p>	
	<p>the provisions of parking on public roads are met</p>	<p>N/A</p>	
<p>(Non-reticulated water supply areas) For rural-residential and rural developments (or settlements) in bush fire prone areas, a water supply reserve dedicated to firefighting purposes is installed and maintained. The supply of water can be an amalgam of minimum quantities for each lot in the subdivision (community titled subdivisions), or held individually on each lot</p>	<p>the minimum dedicated water supply required for firefighting purposes for each occupied building excluding drenching systems, is provided in accordance with [PBP] Table 4.2</p>	<p>N/A</p>	
	<p>a suitable connection for firefighting purposes is made available and located within the IPA and away from the structure. A 65mm Storz outlet with a Gate or Ball valve is provided</p>	<p>N/A</p>	
	<p>Gate or Ball valve and pipes are adequate for water flow and are metal rather than plastic</p>	<p>N/A</p>	
	<p>underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank. A hardened ground surface for truck access is supplied within 4 metres of the access hole</p>	<p>N/A</p>	
	<p>above ground tanks are manufactured of concrete or metal and raised tanks have their stands protected. Plastic tanks are not used. Tanks on the hazard side of a building are</p>	<p>N/A</p>	

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
	provided with adequate shielding for the protection of fire fighters		
	all above ground water pipes external to the building are metal including and up to any taps. Pumps are shielded	N/A	
(Electricity Services) Location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings Regular inspection of lines is undertaken to ensure they are not fouled by branches.	where practicable, electrical transmission lines are underground	Achievable	
	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 accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002)	Achievable	
(Gas Services) Location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities. Metal piping is to be used	Achievable	
	all fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation	Achievable	
	if gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal	Achievable	
	polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used	Achievable	

Explanation of terms;

- **'Achievable'**. *With appropriate design, this aspect can achieve the acceptable solution.*
- **'Assumed'**. *It is considered reasonable to assume this requirement has been met.*
- **'N/A'**. *This item is not considered as relevant to this proposal.*
- **'Yes'**. *This item can/does comply with the acceptable solution.*

20. Building recommendations.

Recommendation; all new work to the front of the existing dwelling.

1. New construction on the front of the existing dwelling shall comply with the requirements of section 3 of Australian Standard AS3959-2009 "Construction of buildings in bush fire-prone areas" and,
2. New construction on the front of the existing dwelling shall also comply with the requirements of BAL-19 Australian Standard AS3959-2009 "Construction of buildings in bush fire-prone areas" and section A3.7 Addendum Appendix 3 of "Planning for Bush fire Protection".

Recommendation; all new work to the rear of the existing dwelling and the garage associated with the existing dwelling.

3. New construction on the rear of the existing dwelling and the garage associated with the existing dwelling shall comply with the requirements of section 3 of Australian Standard AS3959-2009 "Construction of buildings in bush fire-prone areas" and,
4. New construction on the rear of the existing dwelling and the garage associated with the existing dwelling shall also comply with the requirements of BAL-12.5 and Australian Standard AS3959-2009 "Construction of buildings in bush fire-prone areas" and section A3.7 Addendum Appendix 3 of "Planning for Bush fire Protection".
5. The existing building is required to be upgraded to improve ember protection. This is to be achieved by enclosing all openings (excluding roof tile spaces) or covering openings with a non-corrosive metal screen mesh with a maximum aperture of 2mm. Where applicable, this includes any sub floor areas, openable windows, vents, weepholes and eaves. External doors are to be fitted with draft excluders.

Recommendation; all new work for the proposed new lot.

6. New construction on the proposed new lot shall comply with the requirements of section 3 of Australian Standard AS3959-2009 "Construction of buildings in bush fire-prone areas" and,
7. New construction on the proposed new lot shall also comply with the requirements of BAL-12.5 and Australian Standard AS3959-2009 "Construction of buildings in bush fire-prone areas" and section A3.7 Addendum Appendix 3 of "Planning for Bush fire Protection".

Recommendation; entire proposal.

8. Any new fencing to be property should be in accordance with Rural Fire Service "Fast Fact 2/06".
9. New roofing valleys and guttering should be fitted with a non-combustible leaf protection to stop the accumulation of debris.

21. Conclusions

It is shown through this assessment that this proposal either has or can incorporate all the necessary requirements to meet the conditions of clause 44 of the Rural Fires Regulations and that it is reasonable to expect that the Rural Fire Service will issue a section 100B Bushfire Safety Authority for this development.

The proposal has sufficient setback from the hazardous vegetation to achieve a BAL of less than or equal to BAL-29.

Bushfires are affected by many external influences such as climactic conditions, vegetation type, moisture content of the fuel, slope of the land and human intervention to name a few and are difficult to predict.

This report does not intend to provide a guarantee that the subject property will survive if a bushfire should impact the surrounding area. The purpose of this report is to show the developments level of compliance or in some cases non-compliance with the New South Wales legislation regarding building in bushfire prone areas.

Where non-compliance is found measures will be suggested that should make the building less susceptible to the various attack mechanisms of a bushfire and comply with the performance requirements of the Building Code of Australia.

The opinions expressed in this report are based on the writers experience and interpretation of the relevant guidelines and standards.

Notwithstanding the above, these guidelines and standards are open to interpretation. All care has been taken to ensure that the opinions expressed in this report are consistent with past successful outcomes.

If any further clarification is required for this report please do not hesitate to contact me using the details above.

Yours Sincerely

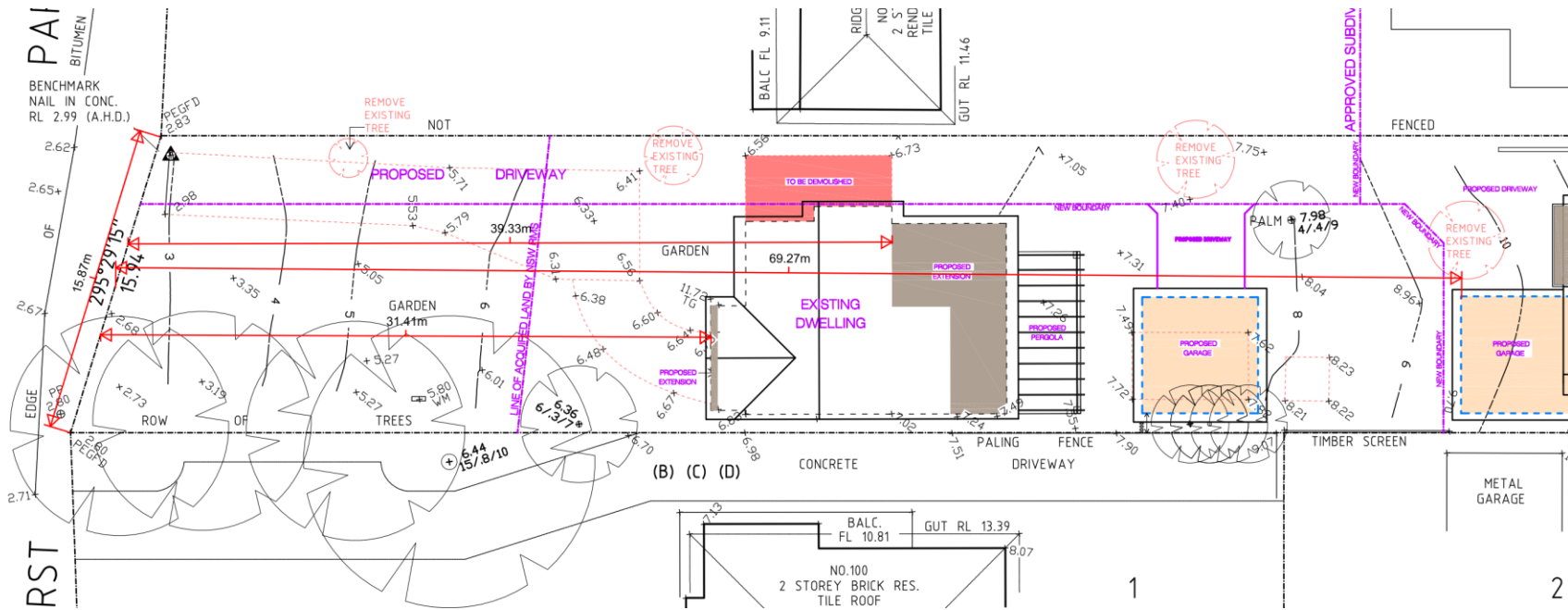
A handwritten signature in blue ink, appearing to read 'Matthew Willis', is positioned above the typed name.

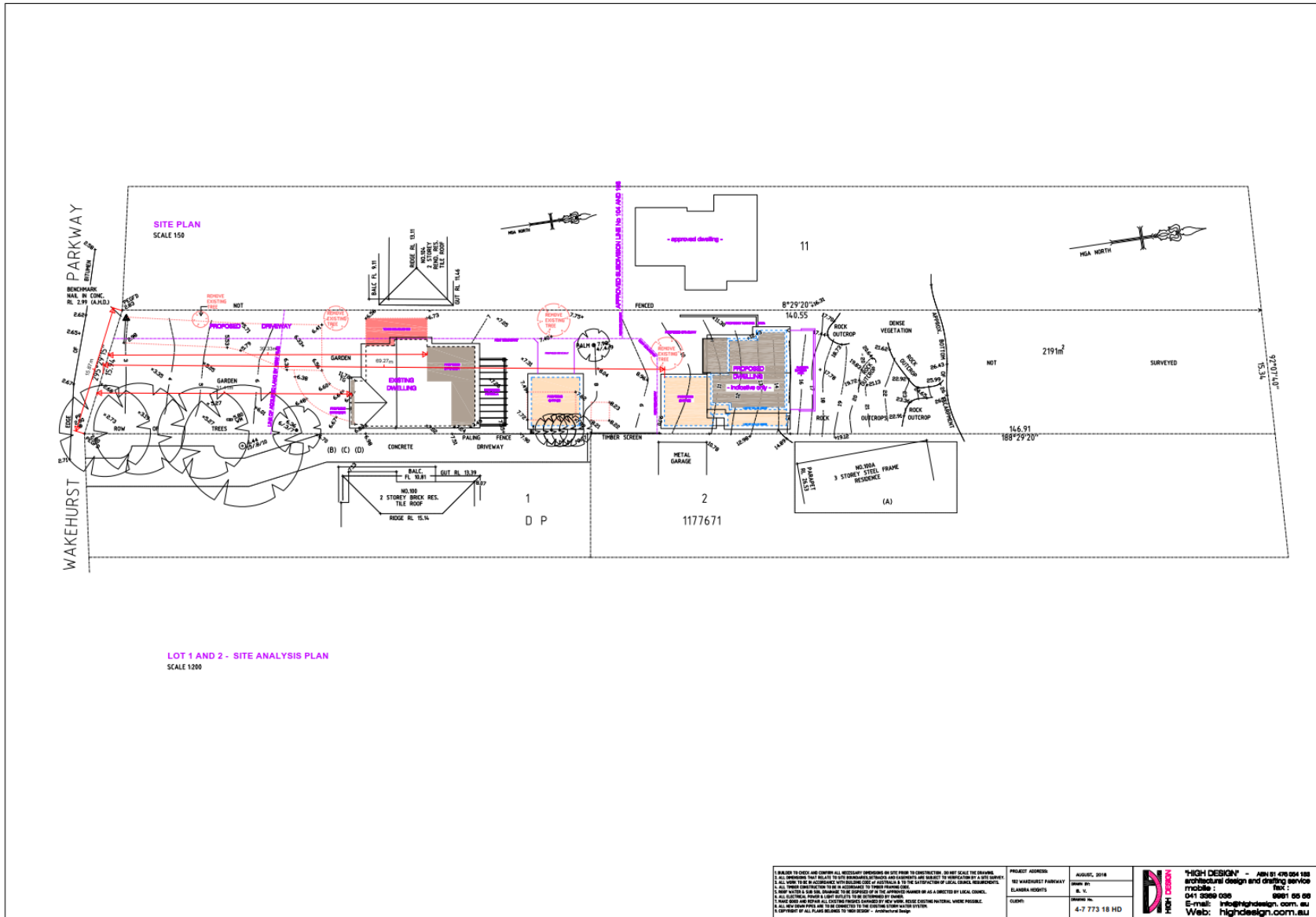
Matthew Willis

Grad Dip Planning for Bushfire Prone Areas

Bushfire Planning Services Pty Limited.

22. Appendix 1 Plans





LOT 1 AND 2 - SITE ANALYSIS PLAN
SCALE 1:200

1. DESIGN TO BE DONE AND CHECKED FOR ALL NECESSARY INFORMATION ON SITE PRIOR TO CONSTRUCTION. DO NOT SCALE THE DRAWING.
2. ALL DIMENSIONS SHOWN SHALL BE TO FACE UNLESS OTHERWISE SPECIFIED AND DIMENSIONS ARE SUBJECT TO MODIFICATION BY A SITE SURVEY.
3. ALL WORK TO BE IN ACCORDANCE WITH THE CODE OF PRACTICE 1 & 2 TO THE SATISFACTION OF LOCAL COUNCIL MEMBERS.
4. ALL WORK TO BE DONE IN ACCORDANCE WITH THE CODE OF PRACTICE 1 & 2 TO THE SATISFACTION OF LOCAL COUNCIL MEMBERS.
5. ALL WORK TO BE DONE IN ACCORDANCE WITH THE CODE OF PRACTICE 1 & 2 TO THE SATISFACTION OF LOCAL COUNCIL MEMBERS.
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10. ALL WORK TO BE DONE IN ACCORDANCE WITH THE CODE OF PRACTICE 1 & 2 TO THE SATISFACTION OF LOCAL COUNCIL MEMBERS.

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23. References

Australian Building Codes Board

Building Code of Australia

Volumes 1&2

Canprint

New South Wales Rural Fires Act 1997

Section 100b

Planning NSW [2006]

Planning for Bushfire Protection

A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners

Standards Australia [2009]

Australian Standards 3959

Australian Building Code Board

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Clause 44