Member of the Fire Protection Association of Australia

Lot 12 Dp 1014199, 102 Wakehurst Parkway and lot 2, Dp1177671, 100A Wakehurst Parkway, Elanora Heights NSW 2101.

Tuesday, 2 May 2023

Prepared and certified by:	*Matthew Willis BPAD – Level 3 Certified Practitioner Certification No: BPD-PA 09337*		*02/05/2023*
Can this proposal comply with AS3959-2018	*Yes*		
Is referral to the RFS required?	*Yes. Integrated development*		
Can this development comply with the requirements of PBP?	*Yes*		
Plans by High Design.	*March 2023*		

Bushfire Planning Services

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Bushfire Risk Assessment

Tuesday, 2 May 2023

Contact

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High Design

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Subject Property

Lot 12 Dp 1014199, 102 Wakehurst Parkway and

lot 2, Dp117767, 100a Wakehurst Parkway

Elanora Heights NSW 2101

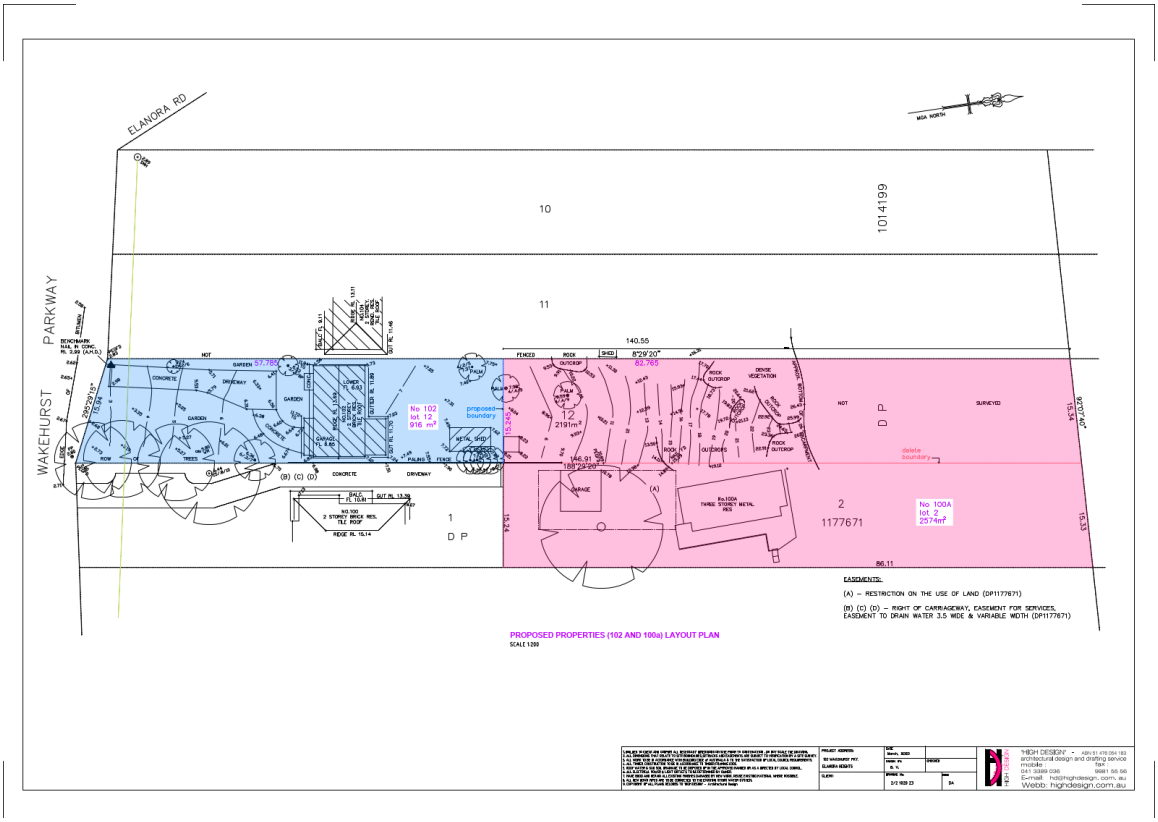
Contents

1. Executive summary.

Bushfire Planning Services has been requested to supply a bushfire compliance report on lot 12, DP 1014199, 102 Wakehurst Parkway and lot 2, DP 1177671, 100A Wakehurst Parkway Elanora Heights, NSW 2101.

The proposal is for a boundary adjustment where the northern portion of lot 102 is to be added to the side of the neighbouring lot, lot 2, , see attached plans for details.

There is no new building work proposed as part of this boundary adjustment.



Given the variables and assumptions as outlined in this assessment the proposal can exceed the setback requirements of table A1.12.2 of Planning for Bushfire Protection 2019.

Most 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 45 of the Rural Fires Regulation 2022 and the majority of the RFS requirements as outlined in Planning for Bushfire Protection 2019.

As this proposal is for a residential subdivision the RFS will consider the proposal as Integrated Development for the purposes of compliance with section 4.46 of the Environmental Planning and Assessment Act (EPA act) (in combination with the Rural Fires Act requirement for a section 100B Bushfire Safety Authority).

To achieve a section 100B Bushfire Safety Authority from the Rural Fire Service the proposal needs to comply with the requirements of clause 45 of the Rural Fires Regulations 2022.

This assessment addresses the requirements of clause 45 of the Rural Fires Regulations and the proposals level of compliance/non-compliance with the requirements of that clause.

Given the variables as outlined in this assessment the proposal can achieve the less than 29kw/m2 radiant threshold required for compliance with Planning for Bushfire Protection 2019.

All other aspects of this proposal can comply with the acceptable solutions for a residential subdivision as outlined in Planning for Bushfire Protection 2019.

Based on the assumptions and measurements contained within this assessment the development is considered to be able to meet the requirements of clause 45 of the Rural Fires Regulation 2022 and the RFS requirements for residential subdivision as outlined in Planning for Bushfire Protection 2019.

2. General.

As this proposal is for the subdivision of land the proposal is considered to be "integrated development" and is required under section 4.46 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 45 of the Rural Fires Regulation 2022.

This assessment is based around the requirements of clause 45 and indicates if and how the proposal meets these requirements.

The following text in italics is a copy of clause 45 of the Rural Fires Regulation 2022;

45 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 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 100 metres from the boundaries of the property),

(d) identification of any significant environmental features on the property,

(e) The details of a threatened species or threatened ecological community under the Biodiversity Conservation Act 2016 that the applicant knows to exist on the property,

(f) the details and location of an Aboriginal object or place, within the meaning of the National Parks and Wildlife Act 1974, that the applicant knows 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 Planning for Bush Fire Protection.

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.

3. Block description

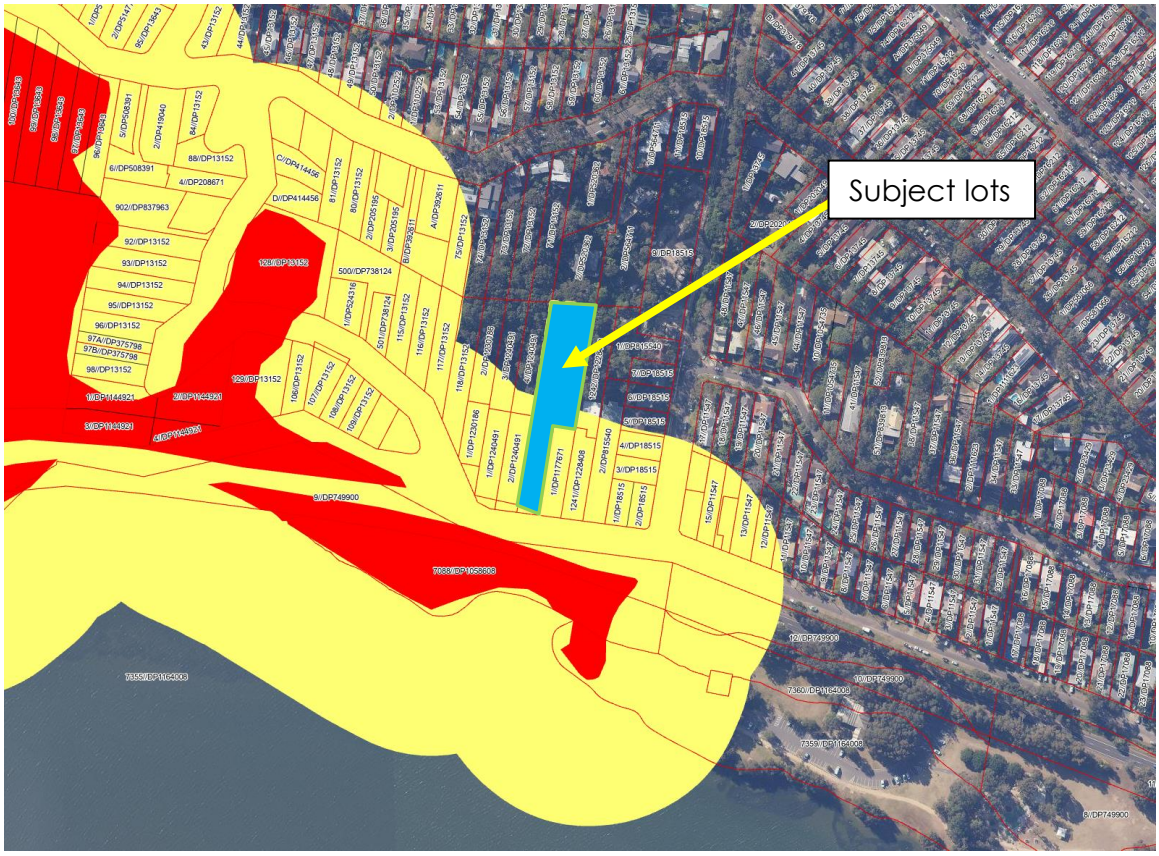
Clause 45 requirement. "a description, including the address, of the property on which the development the subject of the application is proposed to be carried out".

Lot 102 is a long and narrow lot which extends from Wakehurst Parkway, uphill in a northerly direction. There is an existing dwelling towards the southern end of the lot. The lot is approximately 140m deep and approximately the southern 77mof the lot is managed. The remainder of the lot contains unmanaged vegetation which is not mapped as a hazard.

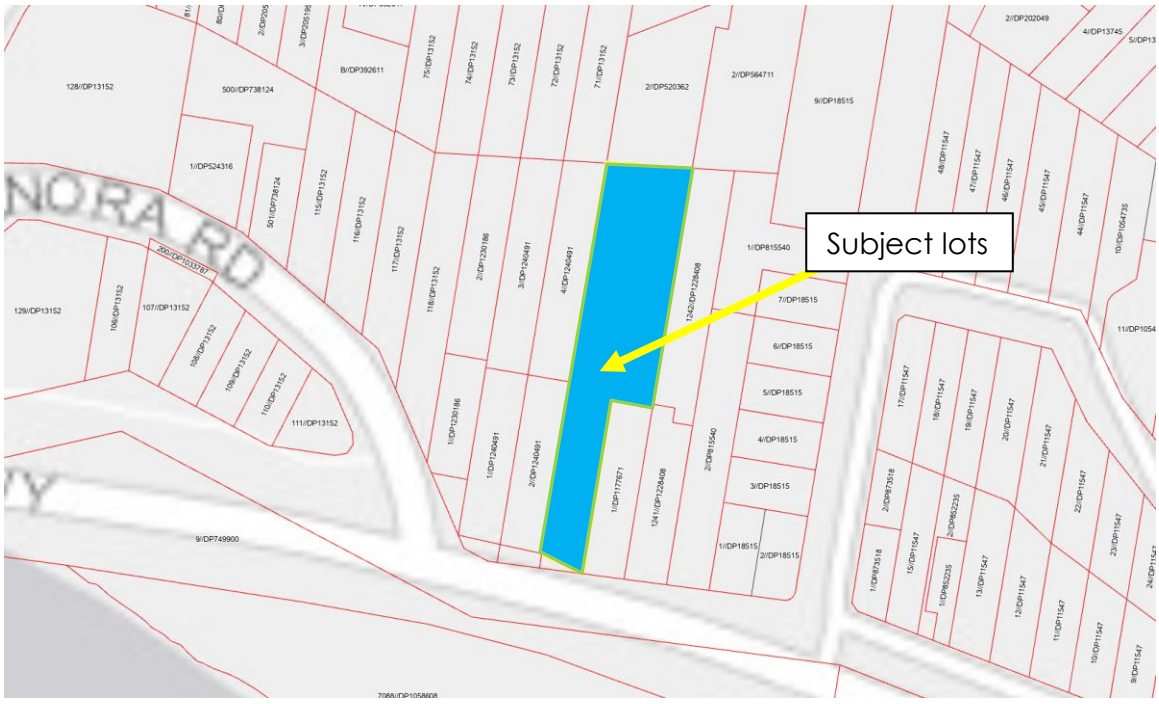
The second lot, lot 2, DP 1177671 is a land locked allotment with access from The Wakehurst Parkway via a concrete drive running along the western side of the lot in front (south), lot 1, DP1177671.

- *Lot; 12, DP; 1014199,*
- *102, Wakehurst Parkway and*
- *Lot 2, DP 1177671,*
- *100A Wakehurst Parkway*
- *Suburb; Elanora Heights,*
- *LGA; Northern Beaches,*

PHOTO 1 (ABOVE) SHOWS A GENERAL OVERVIEW OF THE SURROUNDING AREA. THE SUBJECT LOTS ARE INDICATED BY THE WHITE ARROW.



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



MAP 2 ABOVE SHOWS THE CURRENT CADASTRAL DATA FOR THE SURROUNDING BLOCKS.

4. Vegetation

Clause 45 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.

The vegetation to the south of the subject lot has been identified as Estuarine Swamp Oak Twig-rush Forest with a vegetation form of Forested Wetland and a vegetation class of Coastal Floodplain Wetland.

The remaining vegetation within the study area is either beyond 100m of the lots of not mapped as a hazard.

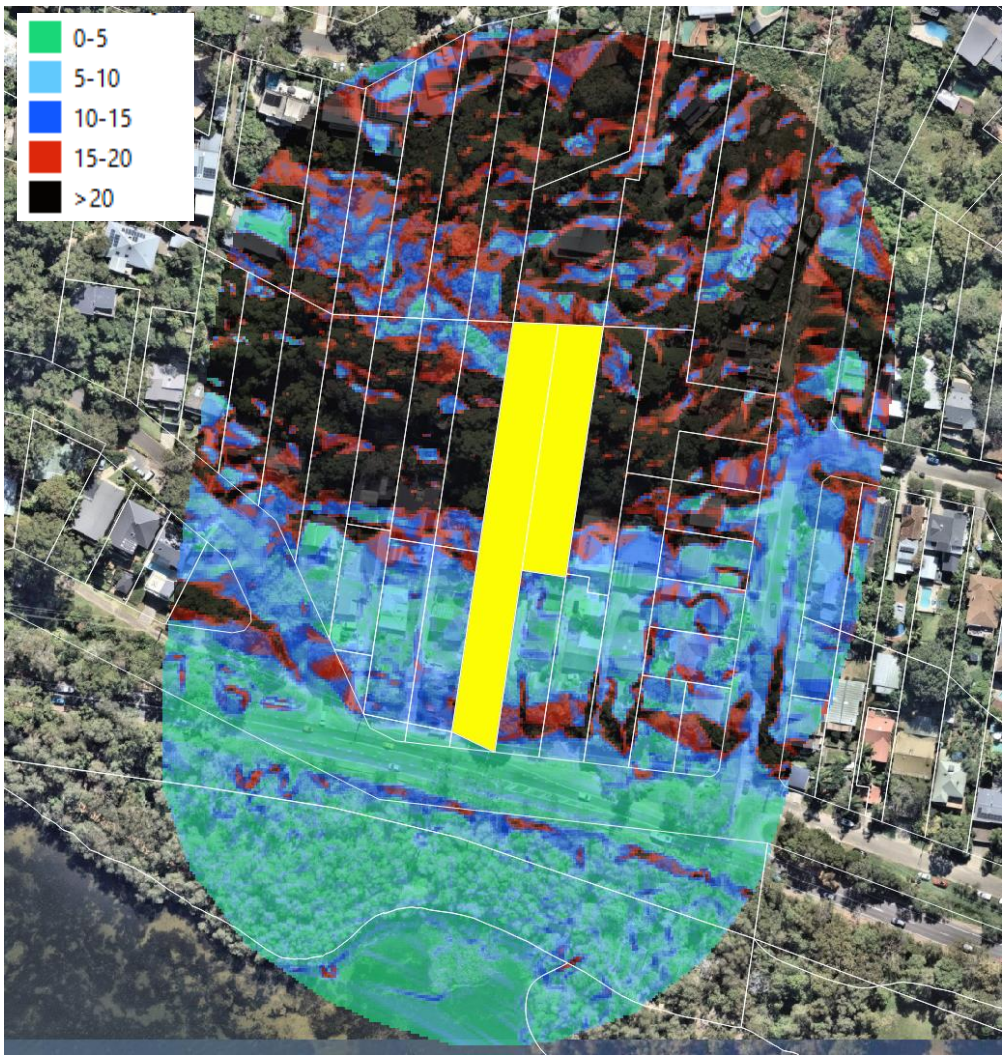
MAP 3. THE ABOVE MAP IS A RECENT AERIAL IMAGE OF THE SITE AND SURROUNDING AREA.

5. Slope

Clause 45 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 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.

The following image/map is a categorised slope map of the area out to 100m from the property boundaries. The different coloured areas represent the different slopes within the study area. The different colours are explained in the attached legend.



MAP 4. THE ABOVE MAP IS A CATEGORISED SLOPE MAP OF THE AREA OUT TO 100M FROM THE PROPERTY BOUNDARIES.

The following map is a 1m topographical map of the area. The yellow dashed line shows the hazard interface to the south and the numbered arrows are the slope transects used for the slope analysis of this assessment. The details of each transect are shown in the following table.

ID	Start	End	Length	Diff	Degrees
1	2.35	1.00	71.59	-1.35	-1.08
2	1.97	1.13	62.12	-0.84	-0.77
3	1.65	1.14	60.69	-0.51	-0.48

6. Significant features

Clause 45 requirement "identification of significant environmental features on the property"

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

7. Threatened Species

Clause 45 requirement "The details of a threatened species or threatened ecological community under the Biodiversity Conservation Act 2016 that the applicant knows to exist on the property,"

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

8. Aboriginal Heritage

Clause 45 requirement "The details and location of an Aboriginal object or place, within the meaning of the National Parks and Wildlife Act 1974, that the applicant knows to be situated on the property".

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

9. Bushfire Assessment Methodology

Clause 45 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 2019 as published by the New South Wales Rural Fire Service, and*
- *Australian Standard 3959-2018, Construction of buildings in Bushfire Prone Areas.*

10. Setbacks

(i) Clause 45 requirement "the extent to which the development is to provide for setbacks, including Asset Protection Zones,"

Based on the variables as previously outlined in this assessment the different coloured bands within the following image indicates where the different BAL's occur within the lots.

MAP 5. IMAGE SHOWING AVAILABLE BAL'S WITHIN THE SUBJECT LOTS.

11. Water

(ii)	*Clause 45 requirement "the sighting and adequacy of water supplies for firefighting,"*

The subject block will be serviced by a reticulated water supply. The following image is an extract from Sydney Waters hydrant map. Hydrants are shown as a blue dot on a blue line.

As can be seen there are several hydrants indicated within the general area of the proposal.

The existing dwelling on lot 2 is beyond the maximum allowable distance from the nearest hydrant.

12. Access

(iii)	*Clause 45 requirement "The capacity of nearby public roads to handle increased volumes of traffic when a bush fire emergency occurs."*

All roads in the vicinity are considered to be capable of handling increased traffic.

13. Fire trails

(iv)	*Clause 45 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.

14. Property Access

(v)	*Clause 45 requirement "the adequacy of arrangements for access to and egress from the development site for the purposes of an emergency response,"*

Property access from Wakehurst Parkway will be via a private driveway to lot 102 and a shared drive to lot 2. Access to lot 2 is problematic for firefighting purposes.

15. Maintenance plans

(vi)	*Clause 45 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.

16. Building construction standards

(vii)	*Clause 45 requirement "the construction standards to be used for building elements in the development,"*

No new building works are proposed for this development. The image on the following page shows where the different BAL's occur within the subject lot.

17. Sprinkler systems

(viii)	*Clause 45 requirement "the adequacy of sprinkler systems and other fire protection measures to be incorporated into the development,"*

Sprinkler systems for bushfire suppression are not required for this development.

18. Compliance with Chapter 5 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 5 (Performance Based Controls) of Planning for Bush Fire Protection."*

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	Compliant?
The intent may be achieved where:		
ASSET PROTECTION ZONES		
› *potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m² on each proposed lot*	› *APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI.*	*N/A. No new building footprints are proposed.*
› *APZs are managed and maintained to prevent the spread of a fire towards the building.*	› *APZs are managed in accordance with the requirements of Appendix 4.*	*Achievable.*
› *the APZs is provided in perpetuity.*	› *APZs are wholly within the boundaries of the development site*	*No. The APZ's for this proposal utilise the subject lots and other neighbouring developed land.*
› *APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is*	› *APZs are located on lands with a slope less than 18 degrees.*	*There are some areas within the lots that*

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	Compliant?
The intent may be achieved where:		
minimised.		*contain lands over 18 degrees however these lands do not contain a mapped hazard.*
	LANDSCAPING	
› *landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.*	› *landscaping is in accordance with Appendix 4; and* › *fencing is constructed in accordance with section 7. 6.*	*No new landscaping is proposed.*

	ACCESS (GENERAL REQUIREMENTS)	
› *Firefighting vehicles are provided with safe, all-weather access to structures.*	› *property access roads are two-wheel drive, all-weather roads;* › *perimeter roads are provided for residential subdivisions of three or more allotments;* › *traffic management devices are constructed to not prohibit access by emergency services vehicles;*	*Access to the subject lot is via already established public roads and is considered to be adequate to achieve the*

		• *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;* • *all roads are through roads;* • *dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end;* • *where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road;* • *where access/egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system; 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.*	*performance criteria of this measure.*
	• *The capacity of access roads is adequate for firefighting vehicles.*	• *the capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/causeways are to clearly indicate load rating.*	*Access to the subject lot is via already established roads.*

	• *There is appropriate access to water supply.*	• *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 – Fire hydrant installations System design, installation and commissioning; and* • *there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.*	*The hydrants in the area are already established.*
	PERIMETER ROADS		
	• *access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.*	• *are two-way sealed roads;* • *minimum 8m carriageway width kerb to kerb;* • *parking is provided outside of the carriageway width;* • *hydrants are located clear of parking areas;* • *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*	*N/A.* *The development utilises existing road infrastructure.*

	branches, is provided.	

NON-PERIMETER ROADS		
› *access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.*	› *minimum 5.5m carriageway width kerb to kerb;* › *parking is provided outside of the carriageway width;* › *hydrants are located clear of parking areas;* › *roads 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 road crossfall does not exceed 3 degrees; and* › *a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.*	*N/A.* *The development utilises existing road infrastructure.*

PROPERTY ACCESS		
› *firefighting vehicles can access the dwelling and exit the property safely.*	› *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 house on lot 102 is reasonably within the*

		the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.	*requirements of PBP. The dwelling on lot 2 is beyond the distance required by PBP.*
		In circumstances where this cannot occur, the following requirements apply:	*The following applies to lot 2 only.*
		› *minimum 4m carriageway width;*	*Carriage width is approx. 3.6m*
		› *in forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay;*	*N/A*
		› *a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;*	*Achievable*
		› *provide a suitable turning area in accordance with Appendix 3;*	*No*
		› *curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;*	*N/A, access is straight.*
		› *the minimum distance between inner and outer curves is 6m;*	*As above*
		› *the crossfall is not more than 10 degrees;*	*C/F<10deg*

	• maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and • a development comprising more than three dwellings has access by dedication of a road and not by right of way. Note: Some short constrictions in the access may be accepted where they are not less than 3.5m wide, 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.	M/G<15deg N/A
WATER SUPPLIES		
• adequate water supplies is provided for firefighting purposes.	• reticulated water is to be provided to the development where available; • a static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and • static water supplies shall comply with Table 5.3d.	Yes No Achievable
• water supplies are located at regular intervals; and • the water supply is accessible and reliable for firefighting operations	• fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard 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	Assumed

• *flows and pressure are appropriate.*	• *fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.*	*Assumed*
• *the integrity of the water supply is maintained*	• *all above-ground water service pipes are metal, including and up to any taps; and* • *above-ground water storage tanks shall be of concrete or metal.*	*N/A*
ELECTRICITY SERVICES		

• *location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.*	• *where practicable, electrical transmission lines are underground;*
	• *where overhead, electrical transmission lines are proposed as follows:*
	  • *lines are installed with short pole spacing of 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 ISSC3 Guideline for Managing Vegetation Near Power Lines.*
		Achievable

GAS SERVICES		
• *location and design 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/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;* • *polymer-sheathed flexible gas supply lines are not use; and* • *above-ground gas service pipes are metal, including and up to any outlets.*	*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/can been met.*
- ***'N/A'.*** *This item is not considered as relevant to this proposal.*
- ***'Yes'.*** *This item can/does comply with the acceptable solution*

19. Conclusions

This proposal is for a simple boundary adjustment, no new works are proposed for either lot. The site is in a low risk area with the potential BAL's within the development lots ranging from BAL-19 to BAL-LOW, the vast majority of the lots achieve BAL-12.5 or BAL-LOW.

The existing dwelling on lot 2 does not comply with the water or access provisions of Planning for Bushfire Protection however the dwelling is already approved and if this proposal is refused the opportunity to create a better outcome for the existing dwelling will be lost.

Historically, The RFS has approved similar developments and conditioned the approval to create a better outcome for the existing buildings.

Improving access to lot 2 is not considered feasible however the provision of a Static Water Supply and ember upgrading for the existing buildings would be beneficial and provide an enhanced level of protection to both buildings and the neighbouring properties.

There is nothing to be gained from refusing this proposal and considerable benefit to be gained by its approval.

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.

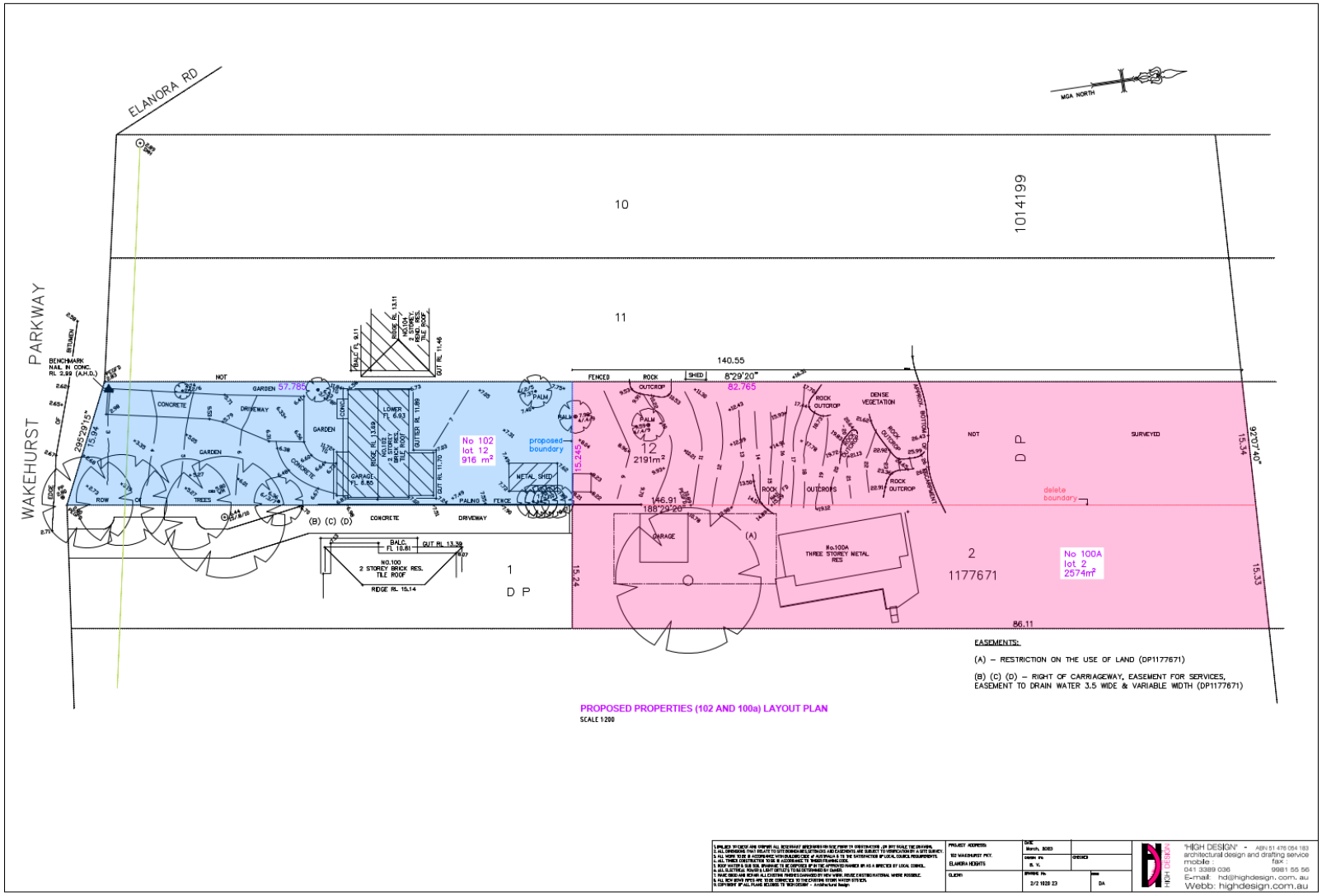
The opinions expressed in this report are based on the writers' experience and interpretation of the relevant guidelines and standards. Notwithstanding the above, these guidelines and standards are open to interpretation. All care has been taken to ensure that the opinions expressed in this report are 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

Matthew Willis
Grad Dip Planning for Bushfire Prone Areas
Bushfire Planning Services Pty Limited

20. Appendix 1 Plans



PROPOSED PROPERTIES (102 AND 100a) LAYOUT PLAN
SCALE 1:200

21. References.

- *Australian Building Codes Board (2019). National Construction Code Volume One - Building Code of Australia. ABCB*
- *Australian Building Codes Board (2019). National Construction Code Volume Two - Building Code of Australia. ABCB.*
- *Keith, D.A. (2004). Ocean Shores to Desert Dunes: The Native Vegetation of New South Wales and the ACT. NSW Department of Environment and Conservation.*
- *National Association of Steel Framed Housing (2014). "Steel Framed Construction in Bush Fire Areas. NASH*
- *Ramsay, C and Rudolph, L (2003) "Landscape and Building Design for Bush fire Areas". CSIRO Publishing, Collingwood.*
- *Resources and Energy NSW (2016). ISSC 3 Guide for the Managing Vegetation in the Vicinity of Electrical Assets. NSW Government*
- *Rural Fire Service NSW (2005) "Standards for Asset Protection Zones"*
- *Standards Australia (2018). "AS 3959, Construction of buildings in bush fire prone areas".*
- *Standards Australia (2018). "AS/NZS 1530.8.1 Methods for fire tests on building materials, components and structures - Tests on elements of construction for buildings exposed to simulated bush fire attack - Radiant heat and small flaming sources".*
- *Standards Australia (2018). "AS/NZS 1530.8.2 Methods for fire tests on building materials, components and structures - Tests on elements of construction for buildings exposed to simulated bush fire attack - Large flaming sources".*
- *Standards Australia (2014). "AS/NZS 1596 The storage and handling of LP Gas".*