

Bushfire Hazard Assessment Report

Site Compatibility Assessment

At:
Elanora Country Club
154 – 156 Elanora Road
Elanora Height NSW

Reference Number: 170230

Prepared For:
URBIS

28th July 2017



Prepared By:
**Building Code & Bushfire
Hazard Solutions Pty Limited**

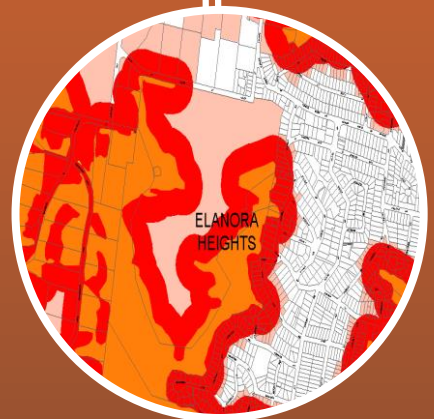
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List of Abbreviations:

APZ	Asset Protection Zone
AS3959	Australian Standard 3959 – 2009 as amended.
BAL	Bushfire Attack Level
BPMs	Bushfire Protection Measures
BPLM	Bushfire Prone Land Map
Council	Northern Beaches Council
DA	Development Application
EP&A Act	<i>Environmental Planning and Assessment Act - 1979</i>
ESD	Ecologically Sustainable Development
FRNSW	Fire and Rescue NSW
IPA	Inner Protection Area
LEP	Local Environmental Plan
NCC	National Construction Code
NSP	Neighbourhood Safer Place
OPA	Outer Protection Area
PBP	<i>Planning for Bush Fire Protection – 2006</i>
ROW	Right of Way
RF Act	<i>Rural Fires Act - 1997</i>
RFS	NSW Rural Fire Service
SCC	Site Compatibilities Certificate
SEPP	State Environmental Planning Policy
SFPP	Special Fire Protection Purpose
SWS	Static Water Supply

1.0 Introduction

The subject site is known as 154 - 156 Elanora Road, Elanora Heights (Lot 2 DP 538508, Lot 1 DP 201384, Lot 8 DP 22281 and Lot 145 & 146 DP 22670) and is within Northern Beaches Council's local government area.

This report accompanies an application for a Site Compatibilities Certificate (SCC) to the Secretary General in accordance with *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*.

The overall site is accessed from Elanora Road to the east, abuts Wilga Street to the north, private residential allotments to the east and southeast, rural-residential allotments to the west and Lumeah Reserve to the southwest.

The development site is located on the eastern side of the property, being bounded by the main entry/ exit road to Elanora Country Club to the north and residential allotments to the east and south. The vegetation identified as being a potential bushfire hazard to the proposed development is located within the overall site.

North Beaches Council's Bushfire Prone Land Map identifies that the subject site contains designated Category 1 Vegetation and the associated 100 metre buffer zone therefore the application of *Planning for Bush Fire Protection 2006* (PBP) is required. Demonstration that future development can comply with the requirements of PBP 2006 will be included herein.

2.0 Purpose of Report

The purpose of this Bushfire Assessment Report is to provide an independent bushfire hazard determination together of the subject site and surrounding area and to determine if the SCC and subsequently the future development applications for the establishment of a seniors housing development will comply with the requirements of *Planning for Bush Fire Protection 2006*.

3.0 Scope of this Report

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

4.0 Referenced Documents and Persons

Comments provided are based on the requirements of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), the *Rural Fires Act 1997*, *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*, the *Rural Fires Regulation 2013*, the RFS document known as '*Planning for Bush Fire Protection 2006*' for the purposes of bushfire hazard determination and Australian Standard 3959 2009 titled 'Construction of buildings in bushfire-prone areas' as amended for building/structural provisions.

A company representative has made an inspection of the site and the surrounding area.

The Master Plan prepared by CM+A, Drawing No. SK 101, Dated July 20, 2017 has been relied upon for this assessment.

5.0 Site Zone



Image 01: Zone plan extract from NSW Planning & Environment

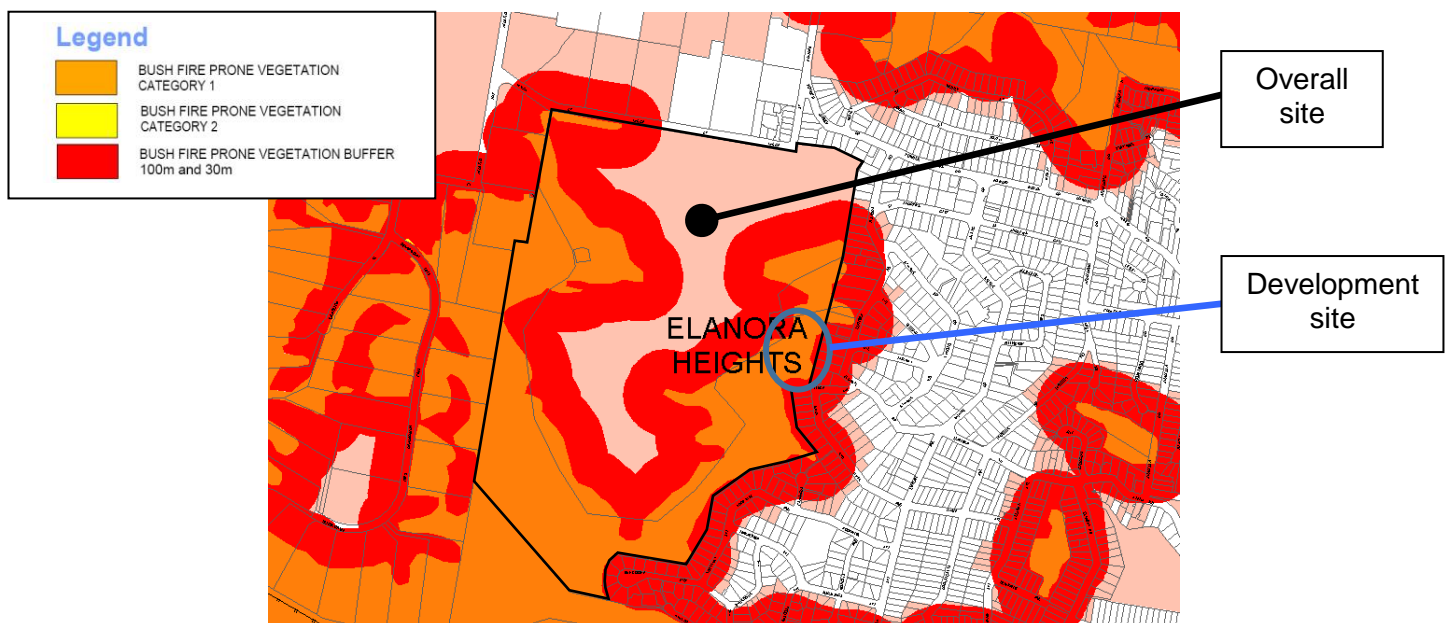


Image 02: Extract from Northern Beaches Council's Bushfire Prone Land Map

6.0 Aerial view of the subject allotment

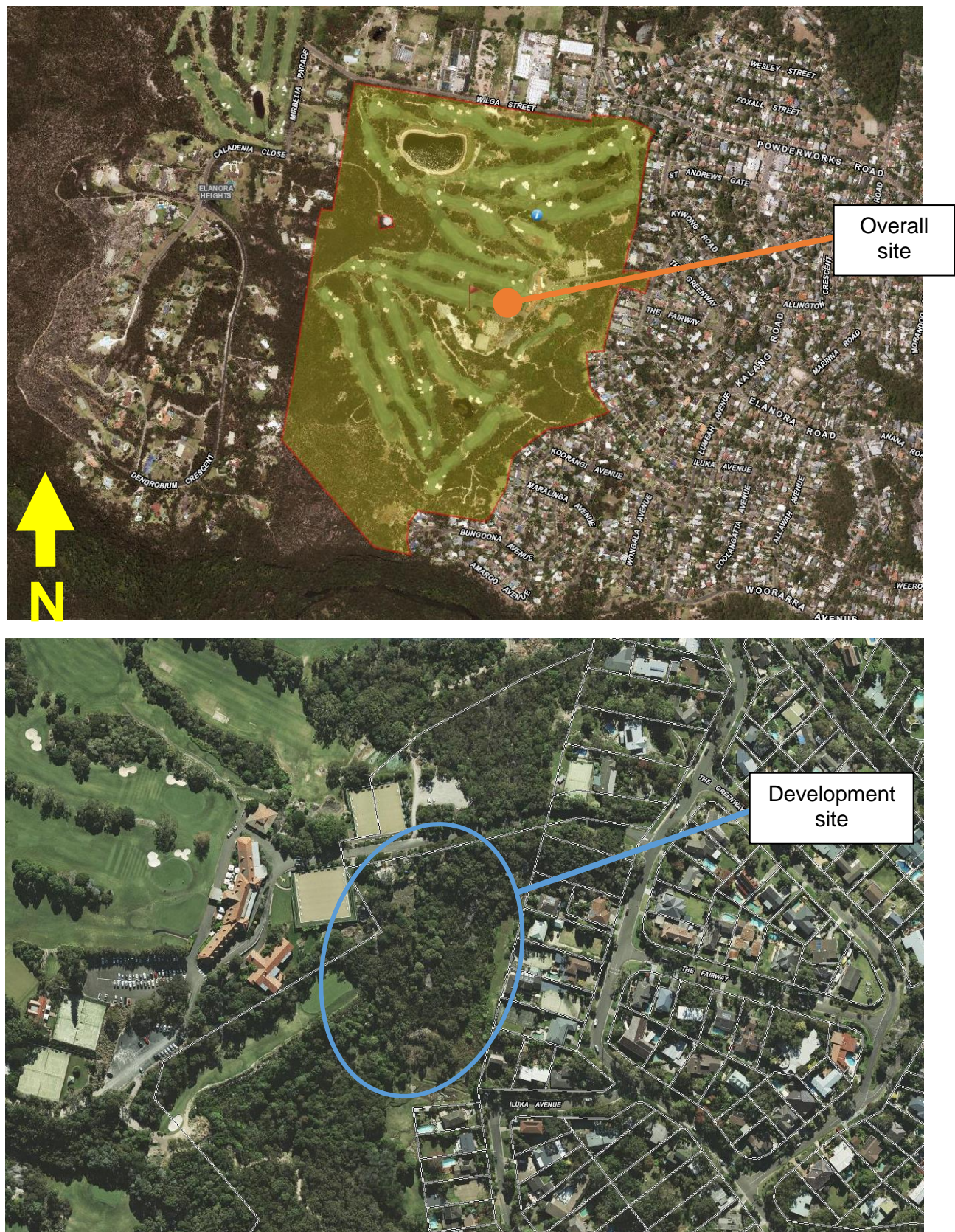


Image 03 & 04: Aerial view of the subject area, extract from NSW Dept. Lands SIXMaps database.

7.0 Bushfire Hazard Assessment

7.01 Preface

Properties considered to be affected by possible bushfire impact are determined from the local Bushfire Prone Land Map as prepared by Council and or the Rural Fire Service. All property development within affected areas is subject to the conditions detailed in the document '*Planning for Bush Fire Protection 2006*' (PBP). Set back distances for the purpose of creating Asset Protection Zones (APZ's) must be applied and any buildings must then conform to corresponding regulations detailed in Australian Standard 3959 'Construction of buildings in bushfire prone areas' 2009.

Planning for Bush Fire Protection 2006, (PBP) formally adopted on the 1st March 2007 and amended May 2010 (Appendix 3) provides for the protection of property and life (including fire-fighters and emergency service personnel) from bushfire impact.

The thrust of the document is to ensure that developers of new properties or sub-divisions include the constraints associated with the construction of buildings in bushfire prone areas within their proposed development sites. PBP is applicable to proposed development inside determined Category 1 or 2 areas and also inside a buffer zone radius of 100m from a Category 1 bushfire area or 30m from a Category 2 bushfire area.

The document also acknowledges 'infill' developments associated with re-development of existing properties and allows some higher levels of building safety where the increased 'set backs' (APZ's) may not be achievable.

This report accompanies an application for a Site Compatibilities Certificate (SCC) to the Director General in accordance with *State Environmental Planning Policy (Housing for Seniors or People with a Disability)* 2004 to expand the permitted uses of the subject site to allow for a future seniors living development.

The future development application will relate to the construction of a seniors living development. To accord with PBP the future application is classified as integrated development and will be assessed under section 100B of the *Rural Fires Act 1997* as Special Fire Protection Purpose development. A Bushfire Safety Authority will be required from the Commissioner of the NSW Rural Fire Service at that time.

In accordance with Chapter 3, Part 2, Clause 27, Subclause (1) of *State Environmental Planning Policy (Housing for Seniors or People with a Disability)* 2004 the subject site has been assessed against the relevant specifications and requirements of *Planning for Bush Fire Protection*, ISBN 0 9751033 2 6, prepared by the NSW Rural Fire Service in co-operation with the Department of Planning, dated December 2006.

7.02 Location

The subject site is known as 154 - 156 Elanora Road, Elanora Heights (Lot 2 DP 538508, Lot 1 DP 201384, Lot 8 DP 22281 and Lot 145 & 146 DP 22670) and is within Northern Beaches Council's local government area.

The overall site is accessed from Elanora Road to the east, abuts Wilga Street to the north, private residential allotments to the east and southeast, rural-residential allotments to the west and Lumeah Reserve to the southwest.

The development site is located on the eastern side of the property, being bounded by the main entry/ exit road to Elanora Country Club to the north and residential allotments to the east and south.

The vegetation identified as being a potential bushfire hazard to the proposed development is located within the subject site to the north, northeast, south and west.

The subject site is located in a mixed use area of nursery's, large lot rural / residential and residential allotments.

The Ingleside Rural Fire Service station is located less than 2 km to the north of the subject site off Powder Works Road.



Image 05: Extract from street-directory.com.au

7.03 Vegetation

The predominant vegetation within subject property was found to consist of mown lawns, fairways and defined gardens. The overall site was found to have a band of natural bushland along the eastern, southern and western boundaries primarily within Lot 1 DP 201384 & Lot 8 DP 22281.

The predominate vegetation within the neighbouring private residential allotments to the east was found to consist of maintained lawns and gardens.

The vegetation posing a hazard to the development site was found to be located to the north, northeast, south and west of the within retained vegetation in Elanora Country Club grounds (overall site).

The vegetation posing a hazard to the north was found to consist of trees 5 - 15 metres in height with an understorey of low trees, shrubs and grasses.

The vegetation posing a hazard to the south was found to consist of trees and shrubs to 5 metres in height with an understorey of low trees and shrubs.

The vegetation posing a hazard to the northeast and west was found to be less than a hectare in size and therefore in accordance with A2.3 of PBP has been assessed as a Remnant hazard.

For the purpose of assessment under Planning for Bush Fire Protection 2006 the vegetation posing a hazard to the north was determined to be Forest.

The vegetation posing a hazard to the south was determined to be Scrub before transitioning to Forest further south. The highest hazard to this aspect was determined to be Scrub.

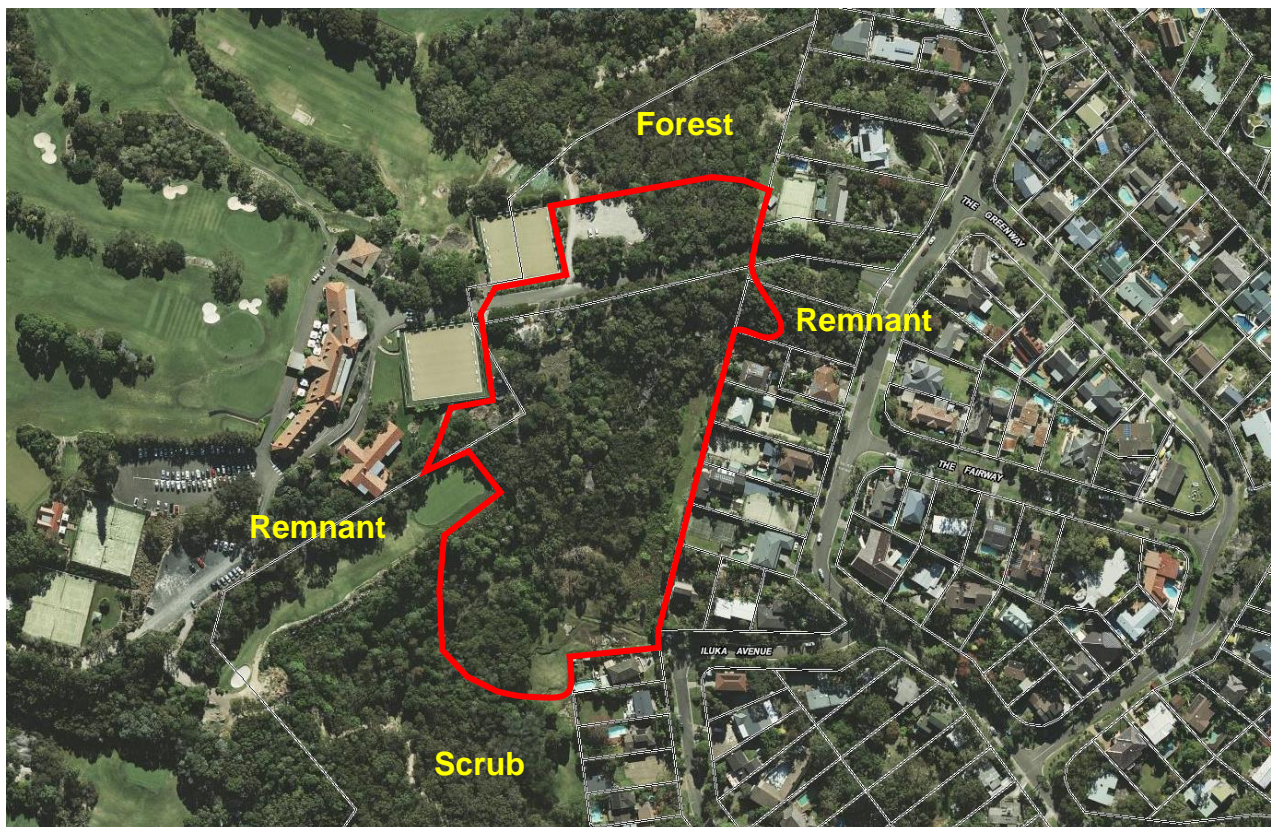


Image 06: Approx. location of development site inclusive of APZs

7.04 Slope and Topography

The slope that would most significantly affect bushfire behaviour must be assessed for at least 100 metres within the hazard to determine the required Asset Protection Zones. The slope that would most significantly influence bushfire behaviour was determined onsite and verified from topographic mapping to be:

- 5 - 10 degrees down slope within the hazard to the north
- 0 - 5 degrees down slope within the hazard to the northeast and south
- 0 degrees across slope within the hazard to the west

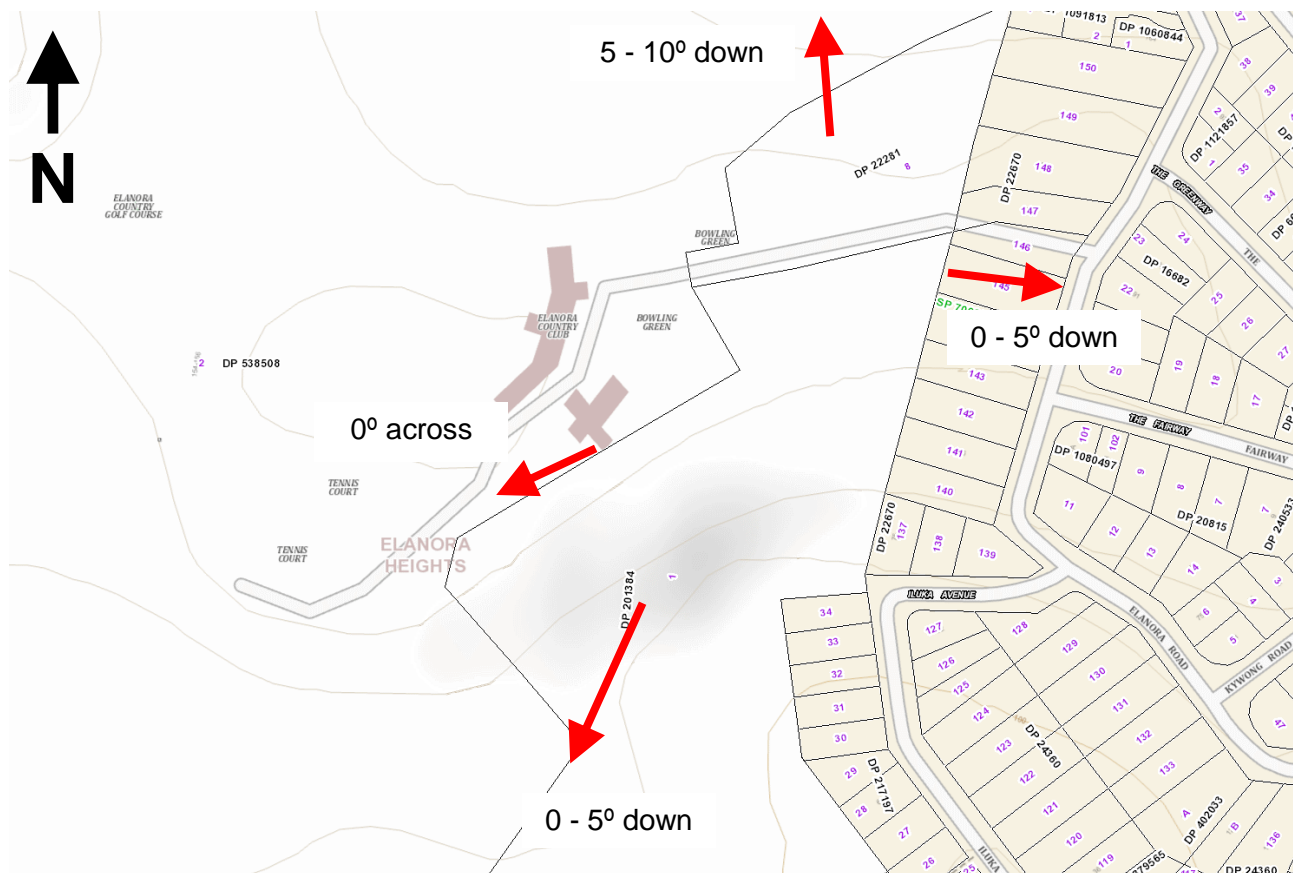


Image 07: Extract from NSW Dept. Lands SIXMaps database

7.05 Asset Protection Zones

Asset Protection Zones (APZ's) for Special Fire Protection Purpose development are determined from Table A2.6 of PBP or bushfire design modelling achieving a radiant heat impact of no more than 10 kW/m^2 at a building footprint. The required APZ's were determined to be;

- 85 metres from the hazard to the north (Table A2.6)
- 40 metres from the hazard to the northeast (Table A2.6)
- 50 metres from the hazard to the south (Table A2.6)
- 30 metres from the hazards to the west (Table A2.6)

The nominated APZs around the proposed development site will be required to be maintained in accordance with the requirements for an APZ (Inner Protection Area and Outer Protection Area) as described in the NSW Rural Fire Service's document 'Standards for Asset Protection Zones'.

The proposed APZs are located entirely within the overall site.

The building footprint as shown on APZ overlay prepared by Building Code and Bushfire Hazard Solution with the plans prepared by CM+A, Drawing No. SK 101, Dated July 20, 2017 achieves the minimum required Asset Protection Zones under Appendix 2 of Planning for Bush Fire Protection 2006, this is inserted below.



Image 08: APZ Overlay

7.06 Fire Fighting Water Supply

Hydrants are available along Elanora Road Avenue and Wilga Street for the replenishment of attending fire services.

Elanora Country Club is connected to the existing reticulated towns water for its commercial purposes. It also has a storage tank, of approximately 50,000 litres providing for fire sprinkler and fire hydrant services via separate booster pumps.

A new fire hydrant system was recently constructed in accordance with the BCA AS2914-2008 and AS2419.1-2005.

The complying fire hydrant system consists of the following;

- Connection to the existing 250mm CICL Sydney Water Main traversing through the property and connecting to the fire hydrant service protecting Elanora Country Club.
- Double check detector assembly in accordance with Sydney Waters Requirements.
- Fire hydrant booster assembly within 20m of the driveway (hardstand).
- Combined fire hydrant/sprinkler diesel pump to AS2941-2008.
- Fire hydrant ring main installed around the perimeter of the Elanora Country Club
- External hydrants around the perimeter of Elanora Country Club situated further than 10m from the building. The external hydrants provide the required internal fire hydrant coverage to the existing building.

The water supply requirements under section 4.2.7 of Planning for Bush Fire Protection 2006 are applicable for any new development and can be achieved in two ways, being:

- The existing fire hydrant system can be extended into the seniors housing development and will satisfy the requirements for Water Supply under section 4.2.7 of Planning for Bush Fire Protection 2006, with the sizing, spacing and pressures complying with AS2419.1-2005

Or

- The provision of a 10,000 litre static water supply (e.g. tank) per occupied building.

A future seniors housing development has the capability of complying with the water supply requirements of PBP 2006.

7.07 Property Access – Fire Services & Evacuation

The subject site has street access to Elanora Road to the east via an existing access road.

Planning for Bush Fire Protection addresses design considerations for Internal Roads for Special Fire Protection Purpose development determined to be bushfire prone. Any new Internal Road for a future aged care development will need to comply with the requirements for 'Internal Roads' as detailed in section 4.2.7 of Planning for Bush Fire Protection 2006.

The proposal includes the construction of a new internal road from the existing private road servicing Elanora Country Club to the north of the development site along the eastern boundary and through to Iluka Avenue to the south.

This access road will provide substantially shielded egress from the development site to Iluka Avenue. The entry / exit point from Iluka Avenue is exposed to a radiant heat flux of less than 10kW/m² for emergency services entering or exiting the development site.

The proposal also includes a driveway off this new main road to provide access to the parking / garages. This driveway provides a minimum 6.5 metre carriageway and will provide direct access to a proposed new fire trail.

The proposed fire trail will provide through access along the western perimeter of the development site out to Iluka Avenue and will also link back to the existing trail network within the subject site. It will be recommended that hydrants are installed along the fire trail where it is adjacent the development site facilitating full coverage of the new buildings for attending fire services.

It is of our opinion that a future seniors housing development has the capability of complying with the access requirements of PBP 2006.

7.08 Broader Considerations

In accordance with Chapter 3, Part 2, Clause 27, Subclause (2) of *State Environmental Planning Policy (Housing for Seniors or People with a Disability)* 2004 broader considerations have also been considered at a strategic level, including impact on local road infrastructure during emergencies and fires services.

The subject site is located on the eastern side of a large golf course, which provides further separation from larger hazards to the south and west. It has been demonstrated herein a future development can incorporate a package of bushfire protection measures that mitigate the onsite threat. The inclusion of the bushfire protection measure package detailed herein would significantly reduce the likelihood of the facility requiring a total evacuation during times of bushfire impact.

Where emergency services elect to order evacuations from the area this would occur systematically to reduce congestion, ensure those at greatest risk are relocated first and ensure residents are not on the roadways during the time of impact. It would also occur under a controlled environment with emergency services policing intersections.

The subject area has good fire service coverage with ten (10) fire stations (RFS and FRNSW) within 10 kilometres of the subject site (measured in direct line of sight).

We are of the opinion that at a strategic level the future seniors living development will not result in an unsatisfactory impact to surrounding existing development or fire services.

8.0 Site & Bushfire Hazard Determination

8.01 Planning for Bush Fire Protection - 2006

Planning for Bush Fire Protection – 2006 (PBP) is applicable to those lands determined as being within a 'bushfire prone area' in accordance with a local Bushfire Prone Land Map as provided by the Rural Fire Service and Council.

The most appropriate method of determining site bushfire hazard under the terms of PBP is to consider the site in a singular form.

Bushfire prone areas are defined as those areas;

- *within or within 100m of high or medium bushfire hazards; or*
- *within or within 30m of low bushfire hazards.*

In this instance the subject site has been identified as being bushfire prone land therefore it is appropriate to apply PBP and AS3959 – 2009 (for any building construction).

8.02 Australian Standard AS 3959 – 2009 'Construction of buildings in bushfire –prone areas'

Australian Standard 3959 – 2009 'Construction of buildings in bushfire-prone areas' provides for six (6) levels of building construction these being BAL - Low, BAL - 12.5, BAL - 19, BAL - 29, BAL - 40 and BAL - FZ. The Australian Standard 3959 specifies construction standards for buildings within various Bushfire Attack Levels as determined by the *Planning for Bush Fire Protection – 2006* document. The NSW Rural Fire Service will not accept deemed to satisfy provisions for BAL Flame Zone and therefore have a NSW variation to the listed standard provisions of BAL FZ under AS3959 - 2009.

8.03 Correlation between bushfire impact and AS3959

Bushfire Attack Level	Maximum radiant heat impact (kW/m ²)	Level of construction under AS3959-2009
Low		No special construction requirements
12.5	≤12.5	BAL - 12.5
19	12.6 to 19.0	BAL - 19
29	19.1 to 29.0	BAL - 29
40	29.1 to 40.0	BAL - 40
Flame Zone	>40.0	BAL FZ No deemed to satisfy provisions

8.04 Site Specific Bushfire Hazard Determination

All property development must be assessed on an individual basis as broad-brush approaches of documents such as PBP may not be applicable in every instance. The proposed future development located at Elanora Country Club, 154 – 156 Elanora Road, Elanora Heights was assessed against the requirements of *Planning for Bush Fire Protection* 2006 noting the following:

- The building footprints can meet or exceed the minimum required Asset Protection Zones.
- Recommendations to maintain the Asset Protection Zones within the subject property can be included in future development consent.
- Future water supply can satisfy the requirements for services as detailed in section 4.2.7 of PBP.
- The proposed access roads can satisfy the requirements for internal as detailed in section 4.2.7 of PBP.

8.05 Viable Construction Method

The objectives of *Planning for Bush Fire Protection* – 2006 are for the protection of life including fire fighters. Provided these objectives can be met the construction of buildings is feasible and both the Rural Fire Service and Council should be in a position to consider such applications.

The highest Bushfire Attack Level to the proposed building footprints was determined to be 'BAL 12.5'. The proposed seniors housing development will be required to comply with section 3 and BAL 12.5 under section 5 of AS 3959 – 2009 and Appendix 3 under PBP 2006.

8.06 Risk Rating

In assessing the bushfire threat to the site and its structures it is important to have a holistic approach and assess the risk of a bushfire occurring and impacting the subject site. It is also important to include the risk the site poses to neighbouring properties.

Table 01 is an overview of risk to any future SFPP building. This model takes a holistic approach and assesses the risk of a bushfire occurring and impacting the site. This risk level can be reduced by either an increase in preparedness by the owners/occupants of the dwellings (e.g. good housekeeping, maintained lawns & bushfire awareness) and/or hazard reduction activities by local fire agencies. Alternatively this risk level can increase if the preparedness level decreases and/or hazard reduction activities are neglected for the area.

The below matrix is for risk only, it does not reflect the Bushfire Attack Level determined within PBP 2006.

		CONSEQUENCE			
		Minor	Moderate	Major	Catastrophic
L I K E L I H O O D	Almost Certain	High	Very High	Extreme	Extreme
	Likely	Medium	High	Very High	Extreme
	Possible	Low	Medium	High	Very High
	Unlikely	Low	Low	Medium	High

Table 01: Risk Matrix

9.0 Conclusion

Given that the property is deemed bushfire prone under Northern Beaches Council's Bushfire Prone Land Map any future development would need to meet the requirements of *Planning for Bush Fire Protection* 2006 and of the construction requirements of Australian Standard 3959 'Construction of buildings in bushfire-prone areas' 2009 if any are applicable. The determination of any bushfire hazard must be made on a site-specific basis that includes an assessment of the local bushland area and its possible impact to the subject site.

The subject site is known as Elanora Country Club, 154 – 156 Elanora Road, Elanora Heights and is within Northern Beaches Council's local government area.

This report accompanies an application for a Site Compatibilities Certificate (SCC) to the Secretary General in accordance with *State Environmental Planning Policy (Housing for Seniors or People with a Disability)* 2004. This site is identified as RE2 – Private Recreation.

The vegetation identified as being a potential bushfire hazard is located to the north, northeast, south and west of the proposed development site, within the overall site.

The required Asset Protection Zones (APZ) for the future development were determined from Table A2.6 of *Planning for Bush Fire Protection* 2006. The building footprint shown on the plans prepared by CM+A, Drawing No. SK 101, Dated July 20, 2017 comply with or exceed the minimum requirements of PBP 2006.

The highest Bushfire Attack Level to the building footprints was determined to be 'BAL 12.5'. The future buildings will be required to comply with section 3 and BAL 12.5 under section 5 of AS 3959 – 2009 and Appendix 3 under PBP 2006.

The access design and the provisions of future services (water, gas and electricity) can also meet the requirements of section 4.2.7 of PBP 2006.

In accordance with the bushfire safety measures contained in this report, and consideration of the site specific bushfire risk assessment it is our opinion that the site and the proposed future development provided as part of this Site Compatibilities Certificate has the capacity to comply with the requirements of PBP 2006 and provide a satisfactory level of bushfire protection to the subject development.

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

Prepared by
Building Code & Bushfire Hazard Solutions



Duncan Armour
Bushfire Consultant

Reviewed and endorsed by
Building Code & Bushfire Hazard Solutions P/L



Stuart McMonnies

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Fire Protection Association of Australia BPAD – L3 Accredited Practitioner
Accreditation number – BPAD 9400



10.0 Annexure 01

List of Referenced Documents

- a) *Environmental Planning and Assessment Act 1979*
- b) *Rural Fires Act 1997* as amended
- c) '*Planning for Bush Fire Protection*' 2006 - NSW Rural Fire Services & Planning NSW
- d) 'Construction of buildings in bushfire prone areas' - AS 3959 – 2009 (as - amended) – Standards Australia
- e) 'Northern Beaches Council's Bushfire Prone Land Map'
- f) Acknowledgements to:
NSW Department of Lands – SIXMaps
Street-directory.com.au
- g) Master Plan prepared by CM+A, Drawing No. SK 101, Dated July 20, 2017

Attachments

Attachment 01: Nil