



## **Bushfire Assessment**

### **Planning Proposal**

### **Former Manly Hospital**

### **Advisory & Transaction, Property & Development NSW**

**19 April 2022**

**(Ref: 18027)**

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report by  
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# Executive summary

## **Objective**

This Bushfire Assessment Report was commissioned by Advisory & Transaction, Property & Development NSW (Department of Planning & Environment) to inform a Planning Proposal application seeking to amend planning controls at the former Manly Hospital site (150 Darley Road, Manly) to facilitate redevelopment allowing new uses such as health and well-being, seniors housing, education and training facilities and retail/café uses. The objective was to assess the bushfire hazard and risk and recommend bushfire protection measures commensurate with the risk to achieve compliance with the relevant specifications and requirements for protection against bushfires.

## **Compliance with legislation and policy**

A Planning Proposal on bushfire prone land must have regard to the *Environmental Planning and Assessment Act 1979* Section 9.2 Ministerial Direction No. 4.4 – ‘Planning for Bush Fire Protection’, referring to the document *Planning for Bush Fire Protection 2019*.

## **Bushfire hazard, threat and risk**

The hazard consists of forest, tall heath and rainforest vegetation within adjoining National Park. The Manly, Mosman, North Sydney Bush Fire Risk Management Plan (Manly, Mosman, North Sydney Bush Fire Risk Management Committee 2010) states that the former Manly Hospital site is at ‘medium’ bushfire risk with a low priority for mitigation consideration. The risk rating of future development facilitated by the introduction of additional permitted uses by the Planning Proposal would not be higher than current rating. The bushfire landscape and vulnerability of the future occupants will remain the same. In addition, future development will have compliant bushfire protection measures not provided to the previous use.

## **Measures to achieve compliance**

Bushfire protection measures for future development recommended within this report to achieve the requirements are listed below:

- Provision of compliant APZs between future building envelopes and bushfire hazards.
- Provision of BAL mapping to guide compliant building construction.
- Adequate access for emergency response and evacuation.
- Compliant road widths and design.
- Perimeter road between buildings and bushfire hazards.
- Adequate water supply to allow fire-fighting operations by fire authorities.
- Appropriate vegetation management within the APZ and landscaping across the site.

## **Conclusion**

The proposal is not considered incompatible with the surrounding environment and bushfire risk. With sound bushfire management, the proposal can exist adjacent the bushland setting. and redevelopment of the site under the Planning Proposal will provide a better bushfire protection outcome than the previous hospital use.

The report concludes that the Planning Proposal together with the recommended bushfire protection measures satisfies the specifications and requirements of Ministerial Direction No. 4.4 and *Planning for Bush Fire Protection 2019*.

# 1 Introduction

## 1.1 Background

Advisory & Transaction, Property & Development NSW (Department of Planning & Environment) commissioned Peterson Bushfire to prepare a Bushfire Assessment Report to accompany a Planning Proposal to amend planning controls to facilitate redevelopment of the former Manly Hospital site. This report addresses the requirements for assessment of Planning Proposals involving bushfire prone land, namely the *Environmental Planning and Assessment Act 1979* Section 9.2 Ministerial Direction 4.4 – ‘Planning for Bush Fire Protection’.

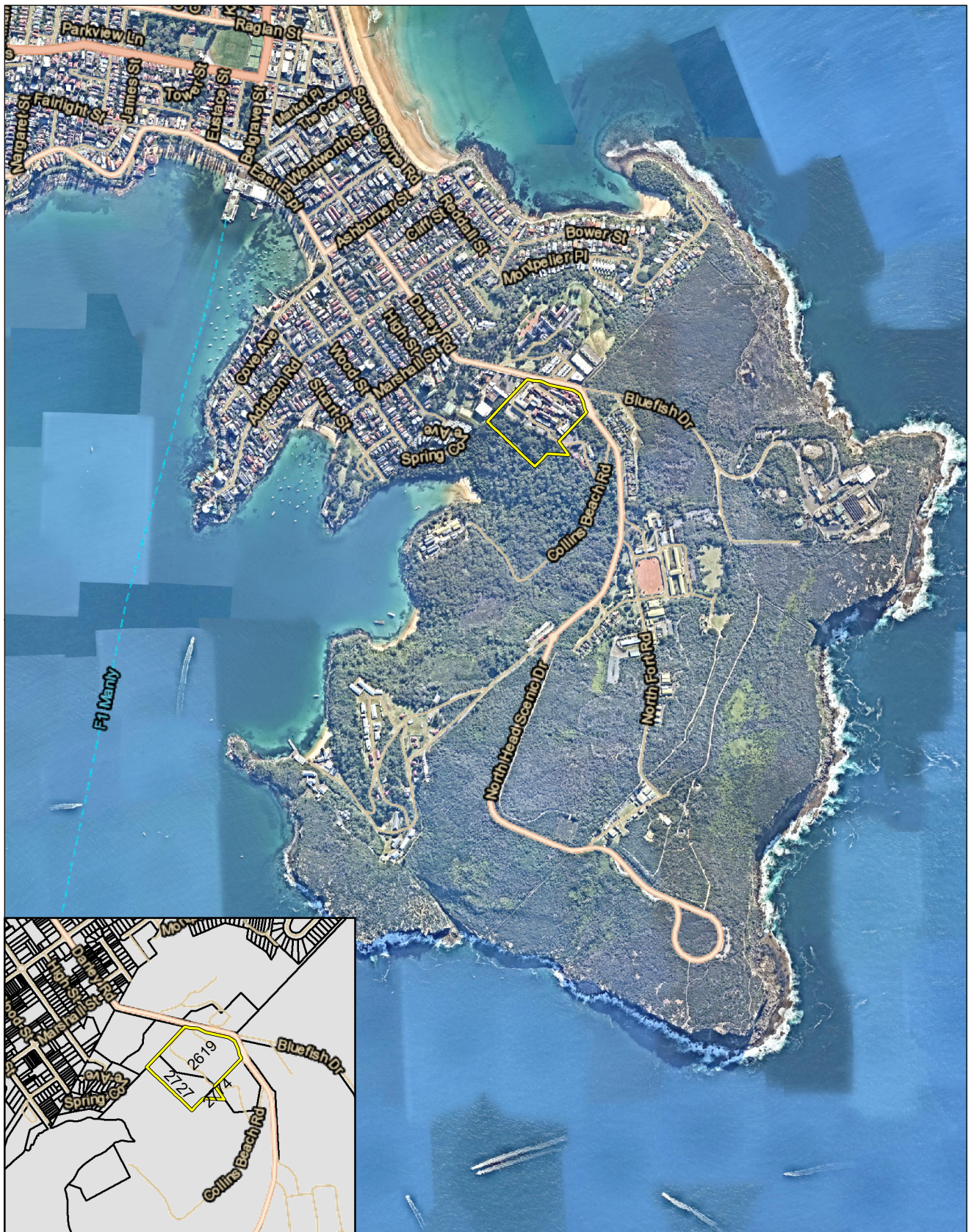
## 1.2 Location of subject land

The subject land is located at 150 Darley Road, Manly (Lot 2619, 2727, and 2774 DP 752038) as shown on Figure 1. At just over 4.5 hectares in size, the subject land is bounded by Sydney Harbour National Park to the south, St Pauls Catholic College to the west and Darley Road and North Head Scenic Drive to the north and east, respectively.


## 1.3 The proposal

The subject land is currently zoned SP2 Infrastructure - Health Services Facility and E2 - Environmental Conservation. The Planning Proposal seeks to amend the planning controls to facilitate redevelopment. The intent of the Planning Proposal is to amend the site’s zoning controls to allow for additional uses to be permitted at the site including health and well-being uses, seniors housing, education and training facilities, and retail/café uses.

A master plan showing the possible built form is included as Figure 2.



### Legend

 Subject Land



Date: 12/08/2020

0 125 250 500  
Metres


Figure 1: Location of the Subject Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



## Legend

 Subject Land



Date: 8/03/2022

0 20 40 80  
Metres

Figure 2: Master Plan

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

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## 2 Assessment requirements

The subject land is identified as 'bush fire prone land' as shown on Figure 2. Planning Proposal submissions involving bush fire prone land must have regard to Section 9.1(2) Direction 4.4 – 'Planning for Bush Fire Protection' of the *Environmental Planning and Assessment Act 1979* as well as the NSW Rural Fire Service document 'Planning for Bush Fire Protection 2019' (referred to as 'PBP' throughout this report).

### 2.1 Direction 4.4 requirements

The objectives of Direction 4.4 are:

- *To protect life, property and the environment from bushfire hazards, by discouraging the establishment of incompatible land uses in bushfire prone areas; and*
- *To encourage sound management of bushfire prone areas.*

Direction 4.4 instructs councils on the bushfire matters which need to be addressed when drafting and amending Local Environmental Plans (LEP). They are as follows:

- *A draft LEP shall:*
  - *have regard to the document Planning for Bush Fire Protection 2006;*
  - *introduce controls that avoid placing inappropriate developments in hazardous areas; and*
  - *ensure that bushfire hazard reduction is not prohibited within the asset protection zone.*
- *A draft LEP shall, where development is proposed, comply with the following provisions, as appropriate:*
  - *provide an asset protection zone incorporating at a minimum:*
    - *an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and,*
    - *an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road.*
  - *for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the draft LEP permit Special Fire Protection Purposes (as defined*

*under Section 100B of the Rural Fires Act 1997), the APZ provisions must be complied with,*

- *contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks,*
- *contain provisions for adequate water supply for fire-fighting purposes,*
- *minimise the perimeter of the area of land interfacing the hazard which may be developed,*
- *introduce controls on the placement of combustible materials in the Inner Protection Area.*






## **2.2 Planning for Bush Fire Protection 2019 (PBP) requirements**

Most of the Direction 4.4 provisions regarding Asset Protection Zones and access are specified within PBP. This report addresses both Direction 4.4 and PBP, combining responses to requirements where there is overlap.

PBP also specifies the type of bushfire assessment and level of information and detail required for Planning Proposal submissions. PBP Section 4 'Strategic Planning' outlines the submission requirements. The Planning Proposal is to be assessed in accordance with PBP Section 4.4.1 whereby the nature, scale and risk of the proposal and its potential impact on the wider infrastructure network is such that a Strategic Bush Fire Study (SBFS) is not required in accordance with PBP Section 4.2. A SBFS is required for strategic development proposals whereby new uses are proposed or new areas are to be developed. The Planning Proposal does not seek to introduce uses with a higher risk profile than the former use of a hospital. The former and proposed uses are equally classified as 'Special Fire Protection Purpose' (SFPP) development, with new lesser-risk ancillary development included (such as retail).



### Legend

	Subject Land	<b>Bushfire Prone Land</b>		Vegetation Category 2
	Vegetation Buffer			Vegetation Category 3
	Vegetation Category 1			



Date: 8/03/2022

0 125 250 500  
Metres

Figure 3: Bushfire Prone Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

### 3 Bushfire hazard assessment

An analysis of the bushfire environment, or parameters that give rise to the bushfire hazard, threat and risk, provides the foundation for determining compliance with Direction 4.4 and the relevant specifications and requirements of PBP. Parameters to be analysed are discussed in the following subsections and consist of bushfire hazard (comprising vegetation and topography) and the risk of fire impacting on the site.

Figure 1 shows the wider landscape influencing a bushfire approaching the site. The bushfire hazard consists of the forests and scrub on North Head within Sydney Harbour National Park (and other properties) located to the north-east, east, south and south-west of the site.

#### 3.1 Vegetation communities

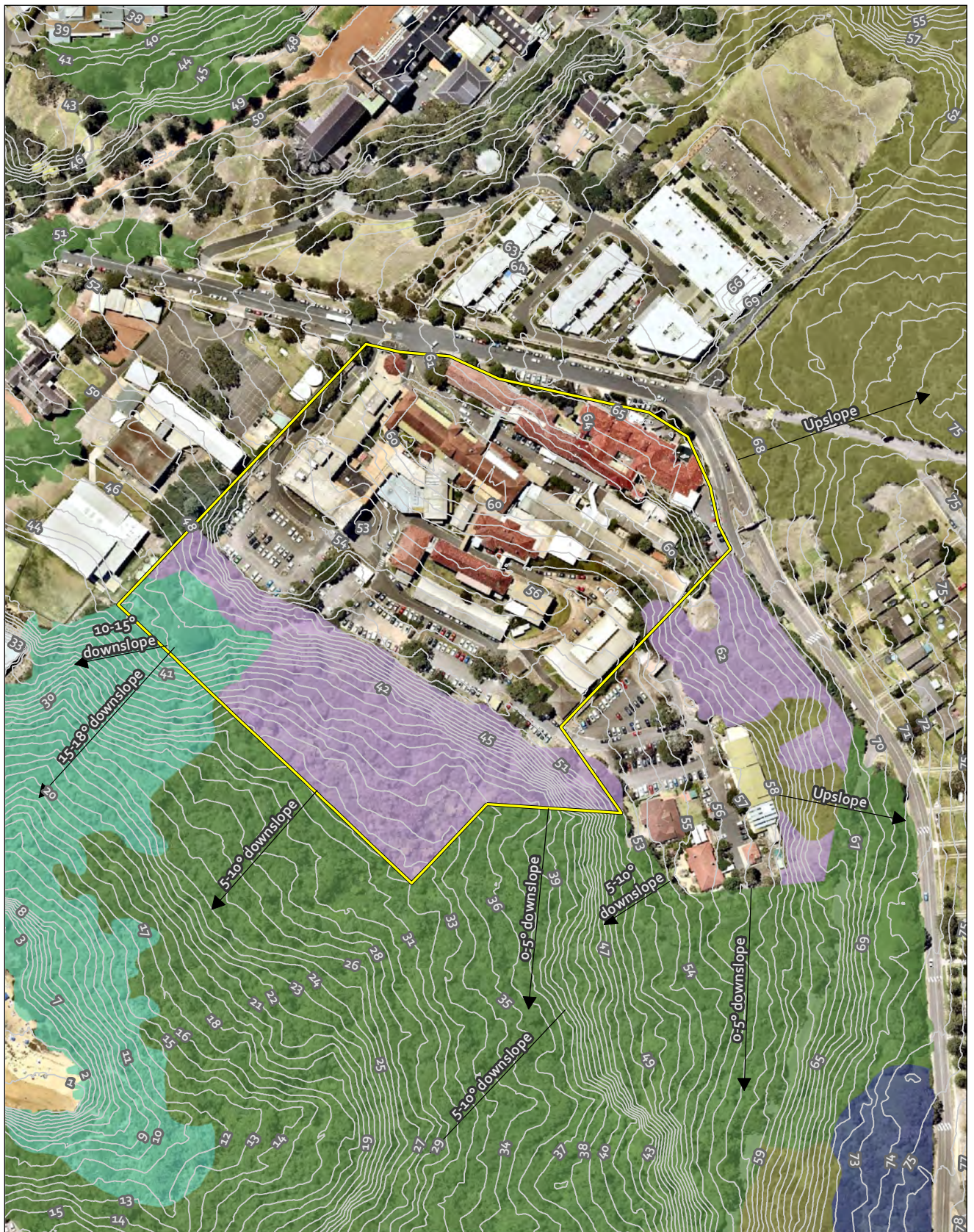
The predominant vegetation communities surrounding the site have been assessed in accordance with PBP. There are three vegetation structural formations as listed in Table 1 below and mapped on Figure 4.

The hazard is situated primarily within National Park adjacent to the south and to the north-east beyond North Head Scenic Drive. Lot 2727 and 2774, owned by Property & Development NSW, supports vegetation with connectivity to the National Park, however the vegetation is highly weed infested. Similarly, adjacent Lot 2728 to the south-east contain weed infested vegetation. Lot 2728 is owned and managed by Health Infrastructure and are also undergoing planning for redevelopment to construct an Adolescent and Young Adult Hospice (AYAH).

Apart from the rainforest and tall heath areas of high ecological constraint as assessed by Narla (2020a), Lots 2727 and 2774 within the site and adjacent Lot 2728 (managed by Health Infrastructure) will be managed as an Asset Protection Zone under the guidance of a VMP (Narla 2020b). The areas to be managed and the residual hazard are mapped on Figure 4.

**Table 1: Predominant vegetation classification adjacent the site**

Structural formation/classification	Location
Tall Heath	North-east of site within National Park beyond North Head Scenic Drive, and small patch within eastern end of site.
Forest	Within south-western portion of the site and downslope of site within National Park generally to the south.
Rainforest	Within south-west corner of site and downslope of site within National Park.



### Legend

Subject Land

Contour - 1m

Dry Sclerophyll Forests

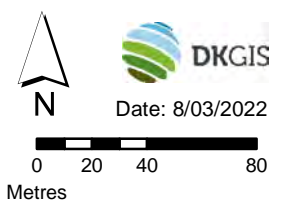
Freshwater Wetlands

Tall Heath

Rainforests

To be Managed as APZ

Vegetation Formations



**Figure 4: Bushfire Hazard Analysis**

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

### 3.2 Topography

Figure 4 shows the pattern of the terrain across the immediate landscape. The predominant feature is the moderate to steep downslopes in the south-west direction towards Collins Beach and the Harbour. Conversely, the hazard to the north-east is on an upslope beyond North Head Scenic Drive. The slope classes are mapped on Figure 4 and the vegetation and slope combinations are listed in Table 2.

The slope classes were derived from a contour layer with 1 m intervals based on the future hazard management of the vegetation within the site and adjoining Lot 2728. That is, apart from the rainforest and tall heath conservation areas, the hazard for which the slope assessment was performed is located adjacent the site within the National Park.

The slope most significantly influencing the fire behaviour approaching the site was determined to be the effective slope. This is the steepest slope, except in the case of south-west of Lot 2728 where a sandstone scarp was not included in the slope assessment as it would grossly exaggerate the average slope calculation. The steepest slope profile above and below the scarp was used in this instance.

**Table 2: Predominant vegetation and effective slope classes affecting the site**

Direction	Vegetation	Slope classes
South-west	Rainforest	Downslope 10-15°
		Downslope 15-20°
South	Forest	Upslope/Flat
		Downslope 0-5°
		Downslope 5-10°
East	Tall heath	Upslope/Flat

### 3.3 Bushfire risk

Bushfire risk is defined (Manly, Mosman, North Sydney Bush Fire Management Committee 2010) as the chance of a bushfire igniting, spreading and causing damage to assets of value. Therefore, risk is analysed not only in terms of the existence of an adjacent hazard, but also the potential for ignition, fire spread, but also factors contributing to fire control and response. The Manly, Mosman, North Sydney Bush Fire Risk Management Plan (Manly, Mosman, North Sydney Bush Fire Management Committee 2010) states that the former Manly Hospital site (Asset No. 75) is at 'medium' bushfire risk and number '4' priority out of a possible scale of 1 to 5, with 1 being the highest priority. The Plan also states that the level of risk acceptability in the district is 'high', meaning areas of medium and low risk do not require specific treatments and are likely to be managed by routine procedures.

Relatively speaking, the risk rating of future development facilitated by the introduction of additional permitted uses by the Planning Proposal would not be higher than current rating. This is because the bushfire landscape and vulnerability of the future occupants will remain the

same. In addition, the future development will have compliant bushfire protection measures not provided to the current use. Therefore, the risk to future development could be argued to be lower than the existing situation. Required measures to achieve compliance are discussed in the following Section 4 – ‘Addressing Compliance’.

## 4 Addressing compliance

This section details how compliance with the assessment requirements listed in Section 2 are addressed. The response to requirements is set out following the structure of Direction 4.4, followed by PBP. There is duplication of requirements between Direction 4.4 and PBP; in these cases, the relevant report subsection is referred to for the appropriate response.

### 4.1 Direction 4.4

The objectives of Direction 4.4 can only be satisfied once the provisions are achieved. Demonstration of achieving the provisions is provided below (Section 4.1.2). Statements of how the objectives are achieved are as follows:

#### 4.1.1 Objectives

##### Objective 1

*“To protect life, property and the environment from bushfire hazards, by discouraging the establishment of incompatible land uses in bushfire prone areas”*

The intention of the objective is to avoid a development outcome that is faced by or poses a risk that cannot be managed to an acceptable level. The assessment of ‘incompatible’, ‘inappropriate’ and ‘acceptable’ is a subjective one, and one that is not defined within PBP, legislation or related policy. To guide an assessment, reference should be made to the measures specified by *Planning for Bush Fire Protection 2019* (see Section 4.2), such as the ability to establish and maintain an adequate Asset Protection Zone (APZ), and the assurance of acceptable access and evacuation.

Section 3.3 demonstrates that the current use at the site is faced by a risk that is considered acceptable under the Manly, Mosman, North Sydney Bush Fire Risk Management Plan (Manly, Mosman, North Sydney Bush Fire Management Committee 2010). The risk to future development of similar vulnerability (i.e. SFPP development) will be further managed by implementing the requirements of PBP (refer to Section 4.2) therefore making it compatible with the surrounding bushfire prone area.

The proposed use is not considered incompatible with the surrounding bushfire prone area. Compliant APZs coupled with adequate access designed to address the bushfire risk produces a use not incompatible with the surrounding environment.

##### Objective 2

*“To encourage sound management of bushfire prone areas”*

The recommended bushfire protection measures demonstrate sound management of the of the site for the intended use. The provisions and how they are to be addressed are listed in Section 4.1.2.

### 4.1.2 Provisions

#### Provision 1

“have regard to Planning for Bush Fire Protection”

Addressing this provision is detailed in Section 4.2. The Planning Proposal complies with PBP.

#### Provision 2

“introduce controls that avoid placing inappropriate developments in hazardous areas”

The proposed land use is similar to the current use and is not considered inappropriate. Controls (bushfire protection measures) will be set in place to ensure compliance with PBP. For example, a new APZ will be put in place that will set the buildings further back from the hazard than the current situation. The controls are set out in Section 4.2.

#### Provision 3

“ensure that bushfire hazard reduction is not prohibited within the asset protection zone”

The APZ will be contained wholly within the site and within the routinely managed portion of North Head Scenic Drive. Where on the site, the APZ will be guided by a detailed Vegetation Management Plan (VMP) prepared by Narla (2020b). The VMP objective is to remove weed species and manage the natural vegetation community within the confines of APZ fuel management standards.

#### Provision 4

“provide an asset protection zone incorporating at a minimum:

- an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and,
- an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road”

An APZ will be provided to comply with the distances prescribed by PBP as detailed in Section 4.2. A perimeter road is also proposed.

#### Provision 5

“for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the draft LEP permit Special Fire Protection Purposes (as defined under Section 100B of the Rural Fires Act 1997), the APZ provisions must be complied with”

Section 4.2 details how a compliant APZ has been accommodated across the site.

### **Provision 6**

“contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks”

Future development will feature a loop road accessed from Darley Road that will also act as a perimeter road. More detail on the proposed access is detailed in Section 4.2.

### **Provision 7**

“contain provisions for adequate water supply for fire-fighting purposes”

All aspects of future development will have a hydrant supply that complies with PBP. More details are provided at Section 4.2.

### **Provision 8**

“minimise the perimeter of the area of land interfacing the hazard which may be developed”

The hazard interface is uniform and is fixed in the landscape set by the boundary with the National Park. The perimeter is not excessive and does not create ‘pinch-points’ or ‘bottle-necks’ amongst the hazard.

### **Provision 9**

“introduce controls on the placement of combustible materials in the Inner Protection Area”

Section 4.2 details the how the site and any APZs are to be maintained.

## **4.2 Planning for Bush Fire Protection 2019 (PBP)**

Compliance with *Planning for Bush Fire Protection 2019* (PBP) is achieved by addressing the standards for bushfire protection. The standards consist of ‘Acceptable Solutions’ and corresponding ‘Performance Criteria’ for the provision of APZs, access and services (e.g. water supply). Discussion on the standards and statements on how each protection measure can be complied with are listed in the subsections below.

### **4.2.1 Asset Protection Zones (APZ)**

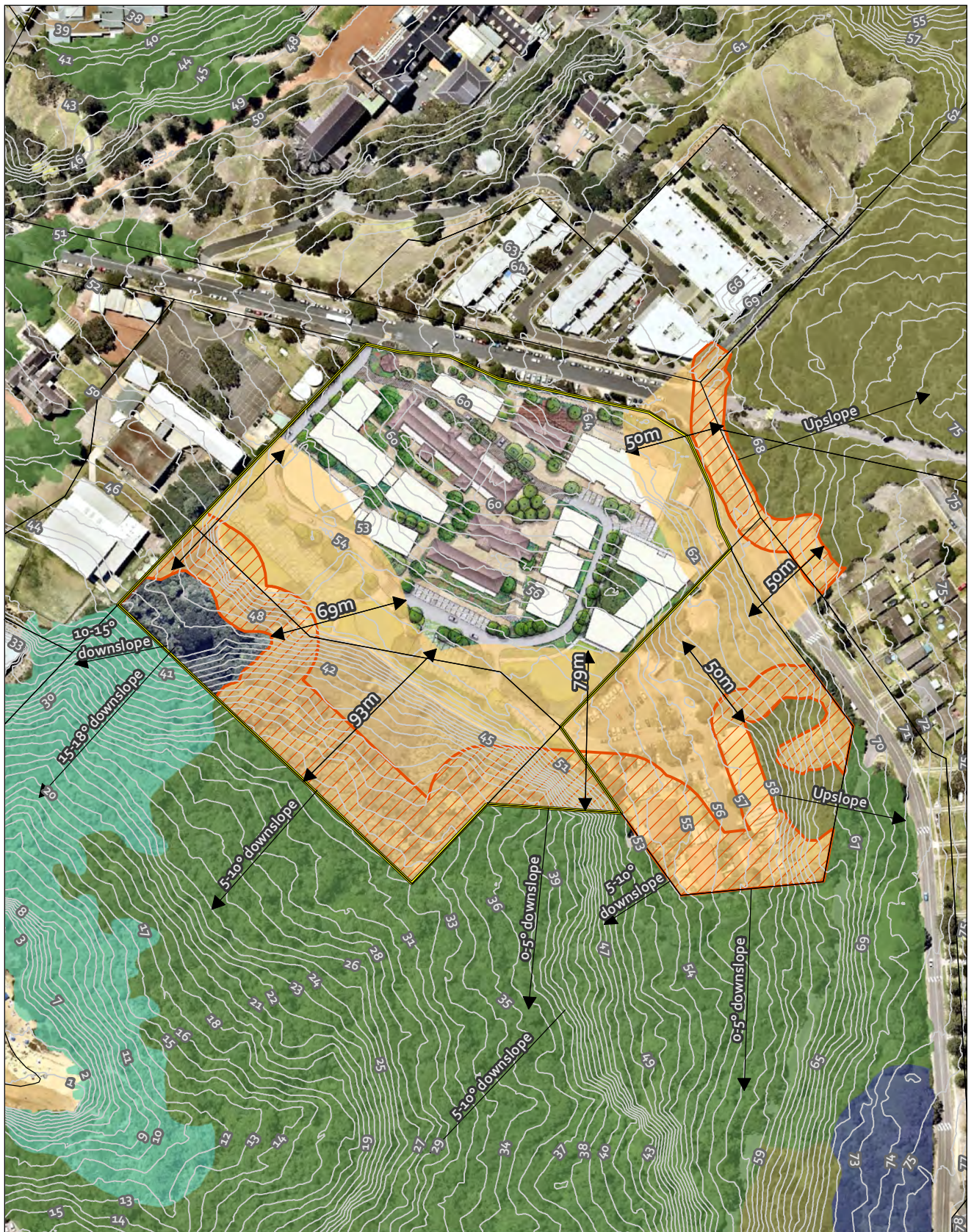
Using the hazard parameters of vegetation and slope discussed in Section 3, APZ distances have been determined (see Table 3 below and Figure 5).

The former hospital site has been treated as a complete redevelopment which will introduce new SFPP uses and hence requires compliance with the Acceptable Solution APZ distances specified by PBP Table A1.12.1. Compliant APZs will ensure that new buildings with SFPP use will not be exposed to a radiant heat flux greater than 10 kW/m<sup>2</sup> (calculated using a flame temperature of 1200 K). Buildings with uses other than those defined as SFPP have will an APZ based on the Acceptable Solution APZ distances specified by PBP Table A1.12.2 which will ensure buildings will not be exposed to a radiant heat flux greater than 29 kW/m<sup>2</sup> (calculated using a flame temperature of 1000 K).

The APZ will consist of the site and the routinely managed portion of North Head Scenic Drive. With regards to the site, the APZ will require management of the existing vegetation as detailed within Section 4.2.2 below.

**Table 3: APZ calculation**

Direction	Vegetation	Slope classes	SFPP APZ	Other uses APZ
South-west	Rainforest	Downslope 10-15°	69 m	23 m
		Downslope 15-20°	81 m	30 m
South	Forest	Upslope/Flat	67 m	24 m
		Downslope 0-5°	79 m	29 m
		Downslope 5-10°	93 m	36 m
East	Tall heath	Upslope/Flat	50 m	16 m
North-east				



### Legend

Lot	<b>Vegetation Formations</b>	Freshwater Wetlands
Subject Land	Dry Sclerophyll Forests	Tall Heath
Contour - 1m	Rainforests	

Asset Protection Zone - SFPP - PBP 2019
Other Use APZ



Date: 8/03/2022

0 20 40 80  
Metres

**Figure 5: Asset Protection Zone**

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

#### 4.2.2 Vegetation management

Vegetation management across the entire site and adjacent Lot 2728 is to occur prior to the commencement of any development.

Vegetation management within the APZ will be guided by the VMP prepared by Narla (2020b). The VMP specifications have been formulated to ensure the performance objectives of an APZ are achieved via a process of removing weed infestations and restoring native vegetation, within the confines of APZ specifications, to ensure sustainable APZ and site maintenance that will reduce weed proliferation and potential for soil erosion. The recommended APZ specifications have been formulated to comply with the following RFS documents which guide APZ establishment and maintenance:

- *Planning for Bush Fire Protection 2019* Appendix 4; and
- *Standards for Asset Protection Zones*.

The treatment of the APZ is divided between the vegetated and cleared areas as follows:

##### 1. Vegetated areas:

- a. Canopy: Trees are to have a discontinuous canopy by achieving gaps between crowns of 2 to 5 m. Small clumps of trees can remain forming one larger crown providing larger gaps to the next adjacent crown of minimum 5 m is achieved.
- b. Understorey: Understorey shrubs and saplings are to be limited and form no more than 10% of the ground cover in the APZ.
- c. Groundcover: Groundcovers are to be regularly managed to ensure growth heights are maintained. Groundcovers may consist of naturally occurring species such as *Dianella* spp to ensure adequate groundcover which will limit soil erosion and suppress weed regeneration.

##### 2. Cleared areas:

- a. Canopy: Trees are to have a sparse canopy by achieving gaps between crowns of 2 to 5 m and ensuring a direct path from the vegetated area to the buildings is not created.
- b. Understorey: Shrubs and landscaping to only be within defined and well-managed garden beds separated from the buildings.
- c. Groundcover treatment: Groundcovers such as grasses are to be maintained to a short height (i.e. 100 mm).

### **4.2.3 Bushfire Attack Level (BAL) for construction of buildings**

The BALs affecting the site have been determined and mapped (refer to Figure 6) in accordance with PBP Table A1.12.5.

New buildings are required to be designed and constructed in accordance with the relevant BAL. The BAL relates to a suite of construction specifications listed within Australian Standard AS 3959-2018 *Construction of buildings in bushfire prone areas* (SAI Global 2018).

Existing buildings that will be retained are required to have ember protection installed to the standard of 'minimal protection measures' as listed within the RFS policy note 'Upgrading of existing buildings' (RFS n.d.).

### **4.2.4 Access**

#### ***Alternate access and egress***

PBP requires an access design that enables safe evacuation whilst facilitating adequate emergency and operational response.

The site currently benefits from an access road from Darley Road in the north. The access road will be upgraded to form a continuous loop road and to ensure compliance with the PBP design and construction standards (see design and construction standards below).

The proposed internal access road and single access point off Darley Road satisfies the PBP performance criteria for access in terms of evacuation and emergency response. This has been confirmed by RFS in February 2022.

The Transport Assessment by JMT Consulting (2022) included a bushfire evacuation analysis which found that the forecast volume of traffic using Darley Road to evacuate future development during a bushfire emergency is predicted to be lower than the road carrying capacity of Darley Road, concluding that Darley Road would have sufficient capacity to support traffic movements in the event of a major bushfire event.

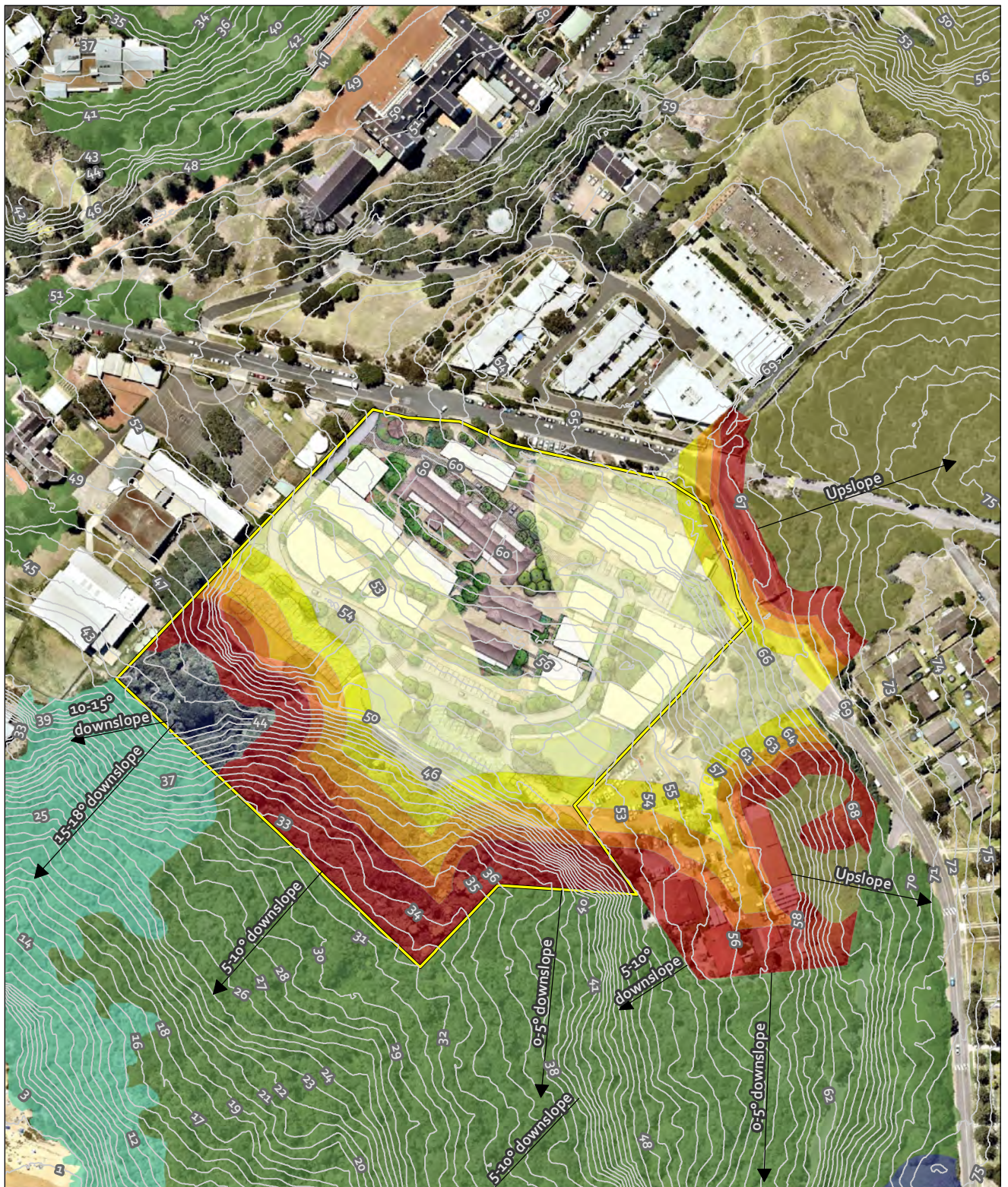
Figure 7 shows the proposed access strategy.

#### ***Perimeter access***

The access road will also act as a continuous perimeter road along the length of the bushfire hazard interface. The road will be upgraded to ensure compliance with the PBP design and construction standards for perimeter roads (see design and construction standards below).

#### ***Design and construction standards***

The access road will be designed in accordance with the PBP Acceptable Solutions for the design and construction of roads in SFPP facilities as required by PBP Table 6.8b. The requirements are listed following Figure 7.



## Legend

Contour - 1m

Subject Land

### Vegetation Formations

Dry Sclerophyll Forests

Freshwater Wetlands

Tall Heath

Rainforests

### Bushfire Attack Level

BAL Flame Zone

BAL 40

BAL 29

BAL 19

BAL 12.5



Date: 8/03/2022

0 20 40 80  
Metres

Figure 6: Bushfire Attack Level


Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



## Legend

 Access

 Subject Land



Date: 8/03/2022

0 20 40 80  
Metres

**Figure 7: Access Strategy**

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

PBP Acceptable Solution design standards for internal roads servicing SFPP developments:

- *SFPP access roads are two-wheel drive, all weather roads.*
- *Access is provided to all structures.*
- *Traffic management devices are constructed to not prohibit access by emergency service vehicles.*
- *Access roads must provide suitable turning areas in accordance with Appendix 3 of PBP.*
- *One way only public access roads are no less than 3.5 m wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.*
- *The capacity of road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); Bridges and causeways are to clearly indicate load rating.*
- *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.*
- *There is suitable access for a Category 1 fire appliance to within 4 m of the static water supply where no reticulated supply is available.*
- *Perimeter roads are:*
  - *there are two-way sealed roads;*
  - *minimum 8 m carriageway width kerb to kerb;*
  - *parking is provided outside of the carriageway width;*
  - *hydrants are to be located clear of parking areas;*
  - *there are through roads, and these are linked to the internal road system at an interval of no greater than 500 m;*
  - *curves of roads have a minimum inner radius of 6 m;*
  - *the maximum road grade is 15° and average grade of not more than 10°;*
  - *the road crossfall does not exceed 3°;*
  - *a minimum vertical clearance of 4 m to any overhanging obstruction, including tree branches, is provided.*

- *Non-perimeter roads are:*
  - *Minimum 5.5 m carriageway width kerb to kerb;*
  - *parking is provided outside of the carriageway width;*
  - *hydrants are located clear of parking areas;*
  - *there are through roads, and these are linked to the internal road system at an interval of no greater than 500 m;*
  - *curves of roads have a minimum inner radius of 6 m;*
  - *the maximum road grade is 15° and average grade of not more than 10°;*
  - *the road crossfall does not exceed 3°;*
  - *a minimum vertical clearance of 4 m to any overhanging obstruction, including tree branches, is provided.*

#### **4.2.5 Evacuation and emergency management**

A 'Bushfire Emergency Management and Evacuation Plan' is to be prepared for all aspects of future development prior to occupation of buildings. Plans are to be prepared in accordance with the NSW Rural Fire Service document 'A Guide to Developing a Bushfire Emergency Management and Evacuation Plan' (RFS 2014).

#### **4.2.6 Water supply for fire-fighting**

Future development will require fire hydrants to be installed to comply with AS 2419.1 – 2005 *Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419) so that all sides of a building envelope are within 70 m of a hydrant by lay of the hose (or 90 m with a tanker parked in-line maximum 20 m from the hydrant).

### **4.3 Increased bushfire protection outcome**

The Planning Proposal creates an increased bushfire protection outcome across the entire site through the application of APZ setbacks, vegetation management, BAL compliant construction, and improved access, water supply and emergency management arrangements. The existing Manly Hospital was developed prior to the enactment of bushfire protection legislation and did not comply with any of the bushfire protection measures of PBP. The level of bushfire protection will be greatly improved for future SFPP uses at the site.

## 5 Conclusion and recommendations

The information presented in this Bushfire Assessment Report demonstrates that the proposal to amend the zoning controls of the former Manly Hospital site to allow for additional uses (health and well-being, seniors housing, education and training facilities and retail/café uses) can satisfy the Ministerial Direction No. 4.4 – ‘Planning for Bush Fire Protection’ and the requirements of *Planning for Bush Fire Protection 2019*. This is achieved by bushfire protection measures, such as APZs and access roads, that are compliant with the Acceptable Solutions of *Planning for Bush Fire Protection 2019*.

The proposal is not considered incompatible with the surrounding environment and bushfire risk. The proposal has the same risk rating as the previous hospital and does not involve the introduction of uses with increased vulnerabilities or development of previously undeveloped areas. With sound bushfire management, the proposal can exist adjacent the bushland setting, and redevelopment of the site under the Planning Proposal will provide a better bushfire protection outcome than the previous hospital use, consisting of compliant bushfire protection measures.

Bushfire protection measures for future development recommended within this report to achieve the requirements are listed below:

- Provision of compliant APZs between buildings and bushfire hazards.
- Provision of BAL mapping to guide compliant building construction and ember protection upgrades.
- Adequate access for emergency response and evacuation.
- Compliant road widths and design.
- Perimeter road between buildings and bushfire hazards.
- Adequate water supply to allow fire-fighting operations by fire authorities.
- Appropriate vegetation management within the APZ and landscaping across the site.



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