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Bushfire Assessment Report for the EIS

Lang Walker AO Medical Research Centre Building – Macarthur

Prepared for
BVN Architecture Pty Ltd

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

5 November 2021
Version 1.2

Document Tracking

Project Name	Bushfire Hazard Assessment Lang Walker AO Medical Research Centre Building – Macarthur
Client Details	BVN Architecture Pty Ltd 255 Pitt Street Sydney, NSW 2000
Project Address	100 Parkside Crescent, Campbelltown Part Lot 6 DP 1058047

BlackAsh Contact Details

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Document Control

Version	Primary Author	Description	Date Completed
1.2	Lew Short	Final	5 November 2021

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

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Fire Protection Association of Australia BPAD Level 3 Accredited (BPD-L3-28853)

Contents

Glossary of Terms

APZ	Asset Protection Zone
AS2419	*Australian Standard – Fire hydrant installations*
AS3745	*Australian Standard – Planning for emergencies in facilities*
AS3959	*Australian Standard – Construction of buildings in bushfire-prone areas 2009*
BAL	*Bushfire Attack Level*
BCA	*Building Code of Australia*
BFSA	Bush Fire Safety Authority
EPA Act	*Environmental Planning & Assessment Act 1979*
FDI	Fire Danger Index
ha	Hectare
m	Metres
PBP 2019	*Planning for Bush Fire Protection 2019*
RF Act	*Rural Fires Act 1997*

1. Summary

Development Type	Integrated development Health Research Facility treated as Special Fire Protection Purpose Lang Walker AO Medical Research Centre Building – Macarthur
Application	For a Bushfire Safety Authority
Project Address	100 Parkside Crescent, Campbelltown Part Lot 6 DP 1058047
Local Government Area	Hawkesbury Council
Assessment	☐ *Planning for Bushfire Protection 2006* ☒ *Planning for Bushfire Protection 2019* ☒ Meets the deemed to satisfy provisions ☐ Alternate solution/ performance-based assessment
Site inspection	No due to Covid restrictions

2. Introduction

BVN Architecture Pty Ltd have commissioned Blackash Bushfire Consulting (Blackash) to prepare a Bushfire Hazard Assessment for the proposed development of the Macarthur Medical Research Centre (the Project) to accompany an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act, 1979 (EPA Act) in support of an application for a State Significant Development Application (SSDA) (SSDA 17491477).

The purpose of this technical paper is to address specialist study requirements associated with bushfire risk in accordance with the Secretary's Environmental Assessment Requirements (SEARS) issued by the Department of Planning, Industry and Environment (DPIE)).

The site is at 100 Parkside Crescent (the site), Campbelltown (Figure 1) and is on designated Bushfire Prone Land.

The proposal combines people-centred health research with public engagement spaces, the Lang Walker AO Medical Research Centre Building Macarthur (MMRC) will create a unique and exciting opportunity for community interaction and ownership. Located on the Campbelltown Hospital Campus, the research centre will be shared facility bringing together the following partner organisations:

- Western Sydney University (WSU)
- South Western Sydney Local Health District (SWSLHD)
- Ingham Institute for Applied Medical Research (IIAMR)
- University of New South Wales (UNSW)
- Health Infrastructure (HI)

Embedding the MMRC within the existing hospital campus will enable opportunities for translational research outcomes directly improving the health outcomes for the local population to be realised. The MMRC is a Class 5 building in accordance with the Building Code of Australia (BCA) with 82 full time equivalent; 57 new staff and 25 non-staff visitors.

A hospital is categorised by Section 100B of the Rural Fires Act 1997 (RF Act) as being a Special Fire Protection Purpose Development (SFPP) development. Section 4.46 of the EPA Act identifies integrated development, that in order for it to be carried out, requires development consent from Council and approval from the NSW Rural Fire Service (RFS).

The SEARs requirement is to provide a bushfire assessment that details proposed bushfire protection measures and demonstrates compliance with Planning for Bush Fire Protection (NSW RFS, 2019) and

design the proposed building footprint to attain compliance with the relevant asset protection zone requirements of *Planning for Bush Fire Protection 2019* (PBP 2019). We have completed an assessment against PBP 2019 including standards regarding setbacks for asset protection zones, access, construction requirements, bushfire risk, provision of water supply and other measures in combination considered by the Commissioner necessary to protect persons, property or the environment from danger that may arise from a bushfire. The proposal meets the requirements of PBP 2019.

Clause 44 of the Rural Fires Regulation (RF Reg) prescribes the requirements for an application for a BFSA. This Bushfire Hazard Assessment has been completed in accordance with the RF Reg and the requirements of PBP 2019. This assessment has been prepared by Lew Short, Director Blackash Bushfire Consulting (FPAA BPAD Level 3 Certified Practitioner No. BPD-L3-28853) who is recognised by the NSW Rural Fire Service (**RFS**) as qualified in bushfire risk assessment and have been accredited by the Fire Protection Association of Australia as a suitably qualified consultant to undertake alternative solution proposals.

Figure 1 Site Location

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Legend

hydroline

Subject Land

N

DKGIS

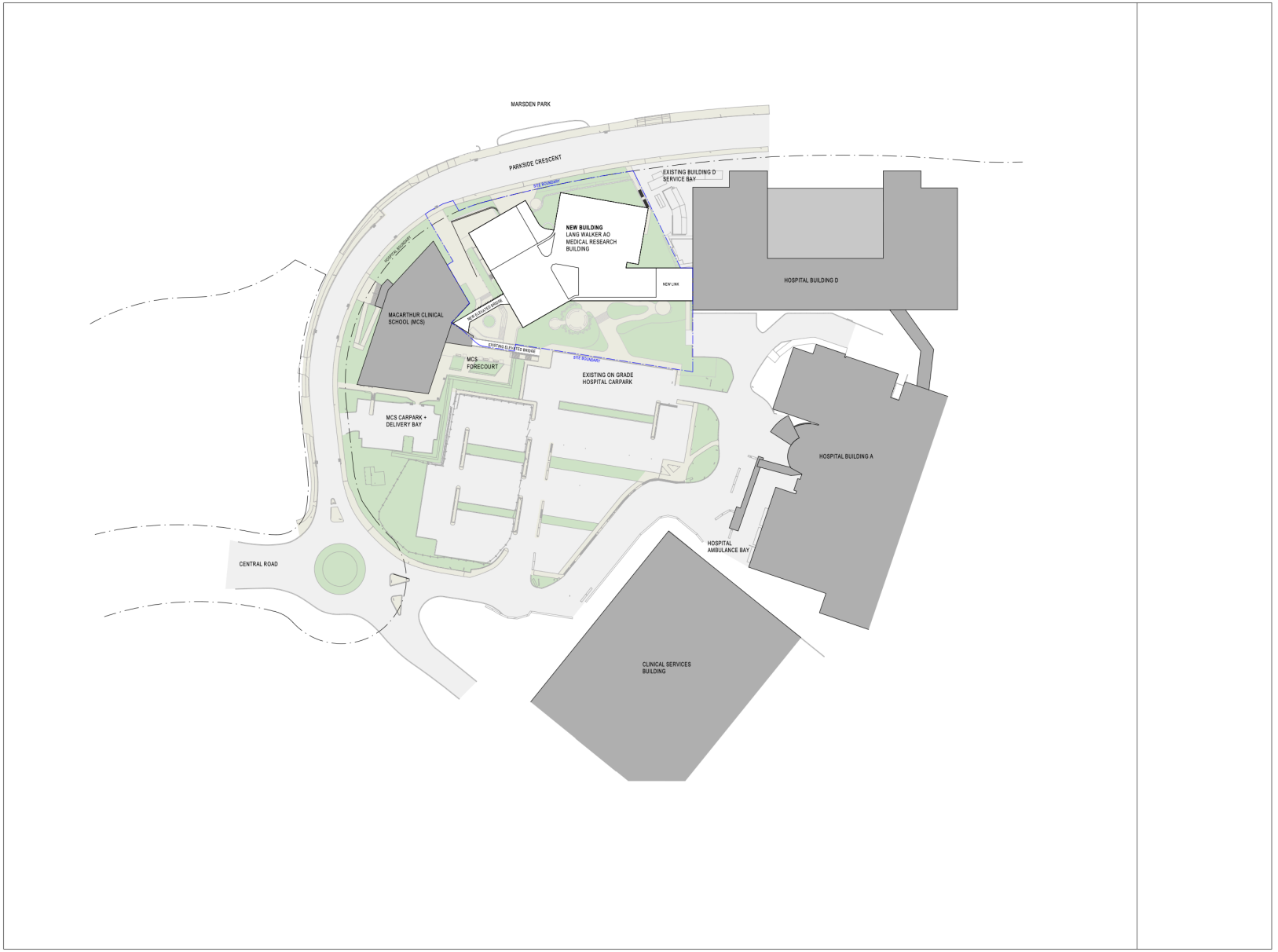
Date: 1/09/2021

0 250 500 1,000

Metres

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



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ISSUE	DATE	FOR
01	03/09/2021	SCHEMATIC DESIGN
02	07/10/2021	SSDA ISSUE
03	14/10/2021	SSDA SUBMISSION

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PROJECT
LANG WALKER AO MEDICAL RESEARCH BUILDING - MACARTHUR, CAMPBELLTOWN

BVN PROJECT NUMBER
2011004

DRAWING KEY

TRUE NORTH
PROJECT NORTH

GRAPHIC SCALE
0
10000
25000

SCALE
1 : 500@A1

STATUS
FOR INFORMATION

DRAWING
PROPOSED SITE PLAN

AR-BVN-AR-10A
A00-003

ISSUE
03

Figure 2 Precinct Plan

Figure 3 Existing site and helipad

3. The Site

The site is currently utilised as a helipad serving the Campbelltown Hospital Campus. The allotment is characterised by slopes from the south-east corner to the north-west corner, with a cross fall of approximately 30 metres towards Marsden Park (Park Central). The site itself is locally elevated to accommodate the existing helipad and is considered managed land in accordance with PBP 2019.

The site is bound to the north by the existing Macarthur Cancer Therapy Clinic, to the west by Campbelltown Hospital and carparking and to the south by Macarthur Clinical School.

4. Project Description

The proposed SSDA will facilitate the development of a new world-class health research facility which will support the needs of the local Campbelltown & Macarthur population. Embedding the MMRC within the existing Hospital Campus will enable opportunities for translational research outcomes directly improving the health outcomes for the local population to be realised.
Five key research themes have been identified for the site:

- Diabetes/Obesity
- Mental Health
- Pediatrics and Adolescents,
- Indigenous Heath, and
- Addiction to medicine.

The MMRC will become an important linking piece on the Campus, with proposed bridge connections into Building D and the Macarthur Clinical School (MCS), helping to facilitate an interconnected internal pedestrian network and strengthening relationships between clinical, research and educational spaces.
The functional spaces include the following:

- Shared Public,
- Dry Research,
- Shared Support and Research Assessment Zone, and
- Logistics and support

The Site is positioned between Western Sydney University Macarthur Clinical School and Building D along Parkside Crescent. This places the site at the western end of the Campbelltown Hospital Precinct.

The Campbelltown Hospital master plan includes future plans for a Village Green/Common area, which would front the MMRC on its eastern side.

The site is serviced by and is near transport services and key road links including the M5 Southwestern Motorway off Appin Road. The site is located between Campbelltown and Macarthur railways stations, the closest being Macarthur, which is within walking distance approximately 1.2km northwest of the site.

The site can be accessed from both Parkside Crescent at the west, and from the future Village Green/Common at the east, which sits approximately 7m higher in the elevation.

Numerous carparks are located across the hospital campus including dedicated areas for public and staff.

Remnant native vegetation occurs to the west of the site which is managed parklands. The bushfire risk to the Project is minimal with a small area of remnant Bushfire Prone Land to the southwest of the site (beyond 100m).

5. Bushfire Context

The bushfire season in the Sydney Basin generally runs from October to March. Prevailing weather conditions associated with the bushfire season in the area are strong northwest winds, low humidity and high temperatures. These conditions combined with dry vegetation dramatically influence the behaviour of bushfires in the area. Although bushfires may occur at any time of the year, the highest probability of bushfires occurs in December and January. However, the trend in recent years has seen the fire season stretch with significant fires being recorded in early September that lengthens the potential for high intensity fires from October through to April.

Contiguous areas of forest or unmanaged vegetation do not run into the site. The surrounding land is effectively managed as part of the hospital precinct and Marsden Park Central to the west which consists of managed parklands with waterways which is managed lands and is not mapped as being Bushfire Prone Land.

Parkside Crescent provides a perimeter road to the west of the site and encapsulates the Marsden Park (Park Central). Within the hospital precinct, the grounds are well managed and meet the RFS standards for asset protection zones.

Radiant heat is the primary cause of death or serious injury in a bushfire. However, given the separation from the unmanaged vegetation to the southwest, this is unlikely. Wind conditions can lift embers associated with the fire that can travel large distances. This report takes a balanced approach to considering bushfire risk and has assumed a credible worst case fire scenario burning up to a Catastrophic Fire Danger Rating (FDR) as required by PBP 2019. The risk-based approach used in this assessment is that provided by PBP 2019 with a credible worst-case scenario of FFDI 100 or a 1:50 year bushfire event.

6. Legislative Framework

The statutory requirements outline the relevant statutory and regulatory obligations relevant to bushfire risk management for the project. This section also includes relevant policies, standards, and guidelines for the consideration of bushfire risk for new development.

Environmental Planning and Assessment Act 1979

The (NSW) EP&A Act requires that any development on bushfire-prone land (BPL) for any purpose complies with the aim and objectives of PBP 2019 (see section 4.14). State significant infrastructure is exempt from this requirement but is generally encouraged to comply with PBP 2019.

Environmental Planning and Assessment Act, 1979 (EP&A Act): Part 5

The project is subject to Division 5.2 of the EP&A Act, which requires the preparation of an EIS and the approval of the NSW Minister for Planning and Public Spaces. An EIS has been prepared for the planning approval application for the project.

Environmental Planning and Assessment Act, 1979: Section 10.3 Bushfire Prone Land

The designation of Bushfire Prone Land (BPL) in NSW is required under the EP&A Act (s.10.3). BPL Maps provide the trigger for the various development assessment provisions. The BPL Map is a trigger for the consideration of bushfire matters for new development. It is not intended as a detailed measure of risk. The map does not form part of the site assessment process.

Rural Fires Act, 1997

The (NSW) Rural Fires Act 1997 (RF Act) establishes the NSW Rural Fire Service, defines its functions, and makes provision for the prevention, mitigation, and suppression of rural fires. Section 63 of the RF Act requires public authorities and owners and occupiers of land to prevent bushfires and to manage land they are responsible for:

The RF Act states that it is the duty of public authorities, landowners, and occupiers to take all notified and practical steps to prevent ignition and minimise spread on or from their land. Permits are required to light fires for bushfire fuel hazard reduction or to clear fire breaks. The Act reiterates that certain instruments under the EP&A Act, NPW Act, Local Government Act 1993, Biodiversity Conservation Act 2016, and the Local Land Services Act 2013 do not apply when responding to fire emergencies.

The RF Act provides for the RFS Commissioner to declare the bushfire danger period which generally runs from October to March (inclusive), which can be modified by the RFS. Total fire bans (TOBANs) may be issued by the RFS Commissioner in the interests of public safety.

Under the Act, network operators are public authorities and therefore have the associated rights and responsibilities.

Section 63 places ongoing bushfire management requirement on Water NSW to mitigate the risk of bushfire within the project site.

7. Government plans, policies, standards and guidelines

The relevant guidelines and requirements in NSW for the consideration of bushfire risk for new development are:

Planning for Bushfire Protection 2019 NSW Rural Fire Service

This document contains specifications for planning and building on land identified as bushfire prone. As designated critical state significant infrastructure, the project is exempt from the requirement under the EP&A Act to comply with PBP 2019. However, the level of bushfire risk to and from the project means PBP 2019 should inform the bushfire management of the project in the design, construction, and operational phases.

PBP 2019 seeks to provide for human safety (including fire fighters) during bushfire events and minimise the effects of bushfires on property while considering development potential, site characteristics and protection of the environment.

The document sets standards for SFPP developments, the intent of which is to reduce bushfire risk to nearby buildings or surrounding bush and structures.

Standards for Asset Protection Zones NSW Rural Fire Service

This document provides standards for the establishment and maintenance of asset protection zones.

Guide for Bush Fire Prone Land Mapping

The identification of bushfire prone land (BPL) in NSW is required under the EP&A Act. It is the responsibility of local government to prepare the Bushfire Prone Land Map (BPLM) for the local government area. The RFS Commissioner certifies the BPL according to RFS document *Guide for Bush Fire Prone Land Mapping* (2015).

8. Assessment Framework

Hospital development is identified as Special Fire Protection Purpose (SFPP) development in section 100B of the RF Act. They are required to obtain a Bush Fire Safety Authority (BFSA) from the RFS and are also "integrated developments" under section 4.45 of the EP&A Act.

Clause 44 of the Rural Fires Regulation (**RF Reg**) prescribes the requirements for an application for a BFSA. This Bushfire Assessment Report has been completed in accordance with the RF Reg and the requirements of PBP 2019. It has considered the requirements of PBP 2019 to inform the client of the modern planning and building controls to reduce the impact of bushfire on the proposed development.

PBP 2019 also provides specific objectives for SFPP developments that include provision for safe emergency evacuation procedures. A bushfire emergency management and evacuation plan is required prior to completion of the works.

9. Bushfire Prone Land

The site is identified as being within the 100m buffer 'bushfire prone land' (see Figure 4) as mapped by Council for the purposes of Section 146 of the EPA Act and the legislative requirements for building on bushfire prone lands are applicable.

Bushfire prone land maps provide a trigger for the development assessment provisions and consideration of sites that are bushfire prone. Bushfire prone land (BPL) is land that has been identified by council, which can support a bushfire or is subject to bushfire attack. Bushfire prone land maps are prepared by local council and certified by the Commissioner of the RFS.

Figure 4 shows that the site has bushfire prone Category 1 to the southwest. This remnant vegetation is fragmented and has existing development to the east, south and west. Access paths separate the remnant vegetation from managed areas to the north.

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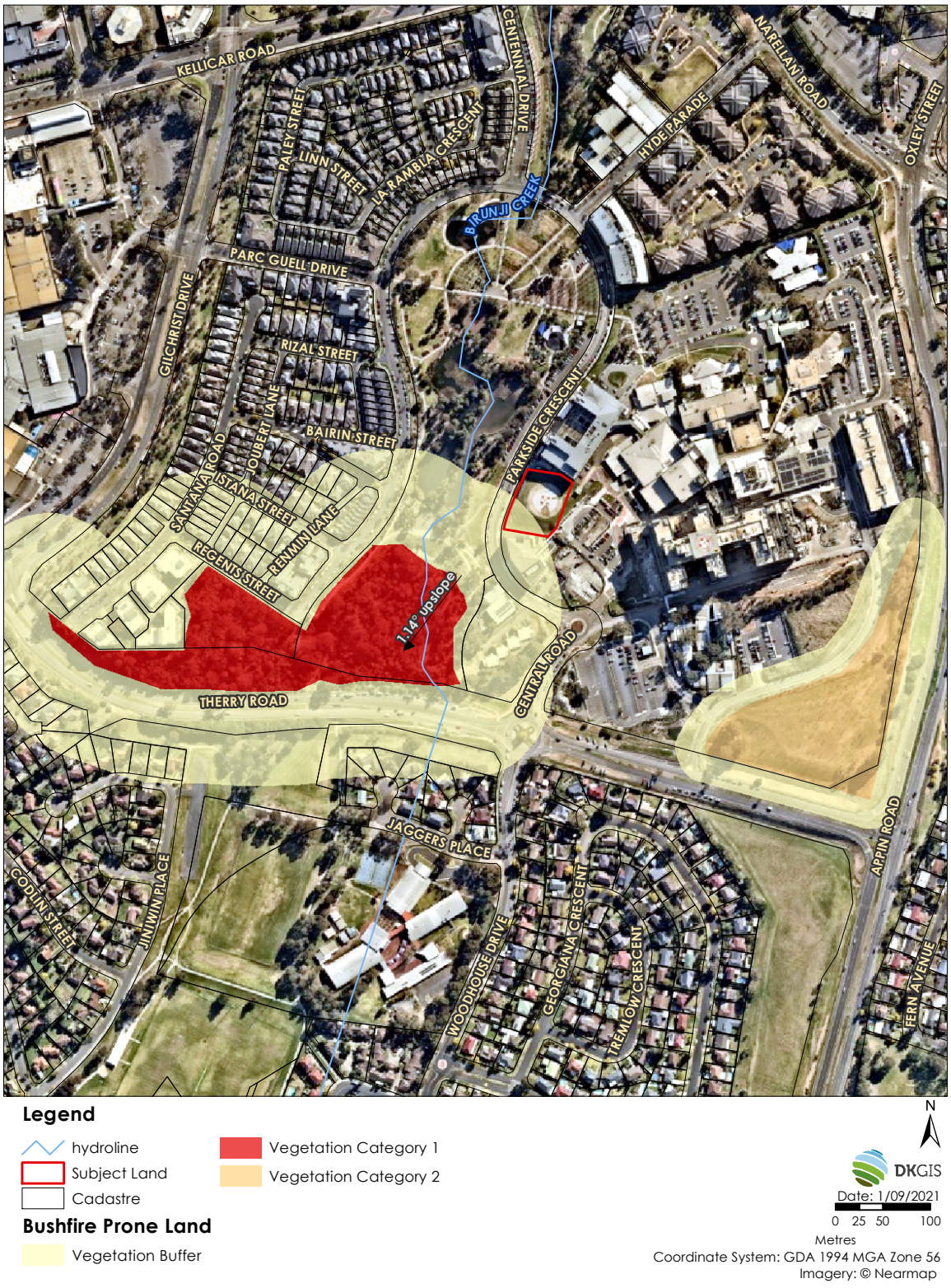

Figure 4 Bushfire Prone Land Map

10. Bushfire Threat Assessment

10.1. Methodology

PBP 2019 provides a methodology to determine the size of any APZ that may be required to offset possible bushfire attack. These elements include the potential hazardous landscape that may affect the site and the effective slope within that hazardous vegetation.

The following assessment is prepared in accordance with Section 100B of the RF Act, Clause 44 of the RF Reg and PBP 2019. This assessment is based on both a site inspection, detailed GIS mapping and desktop assessment of the site assessment utilising the following resources:

- Planning for Bushfire Protection (NSW RFS, 2019);
- Council Bushfire Prone Land Map;
- Aerial mapping;
- Detailed GIS analysis;
- Site inspection.

The methodology used in this assessment is in accordance with PBP 2019 and is outlined in the following sections.

10.2. Fire Weather

The fire weather is dictated by PBP 2019 and assumes a credible worst-case scenario and an absence of any other mitigating factors relating to aspect or prevailing winds.

The site has a Fire Danger Index (FDI) of 100 as per PBP 2019.

10.3. Bushfire Hazard

An assessment of the Bushfire Prone Land is necessary to determine the application of bushfire protection measures such as Asset Protection Zone (**APZ**) locations and future building construction levels.

The vegetation formations (bushfire fuels) and the topography (effective slope) combine to create the bushfire threat that may affect bushfire behaviour at the site, and which determine the planning and building response of PBP 2019.

10.4. Vegetation Assessment

The RF Regulation requires 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 PBP 2019.

Predominant Vegetation is classified by structure or formation using the system adopted by Keith (2004) and by the general description using PBP 2019.

Vegetation types give rise to radiant heat and fire behaviour characteristics. The predominant vegetation is determined over a distance of at least 140 metres in all directions from the proposed site boundary or building footprint on the development site. Where a mix of vegetation types exist, the type providing the greater hazard is said to predominate.

The vegetation affecting the site (see Figure 6) is:

- remnant forest to the south east (0.8ha) (see Photo 1 and 2) and north west (.58ha) of the buildings;
- a small portion of woodland (2.87ha) to the south west of the buildings;
- remaining areas being grassland. The grassland areas are grazed and could be considered managed.

An area of forest vegetation (6.95ha) is to the north west of the site impinging on the access road into the site. The *Emergency Management and Evacuation Plan* will provide for trigger points for refuge within the site or to evacuate the site. This will include provisions for bushfire to the north of the site.

Remnant vegetation is a parcel of vegetation with a size of less than 1 Ha or a shape that provides a potential fire run directly toward buildings not exceeding 50m. These remnants are considered a low hazard and APZ setbacks and building construction standards for these will be the same as for

rainforests (PBP p. 52). The vegetation within the remnant portion is well managed. There is no mid story vegetation and the ground fuels are slashed and managed to APZ Standards. The remnant trees are important to the hospital to provide shade and outlook for patients.

For the purposes of assessment by the RFS, the following are not considered a hazard or as a predominant vegetation class/ formation and can be included within an asset protection zone:

> *(a) non-vegetated areas including roads, footpaths, cycleways, waterways, buildings, rocky outcrops and the like; and*
>
> *(b) reduced vegetation including maintained lawns, golf course fairways, playgrounds or sports fields, vineyards, orchards, cultivated ornamental gardens and commercial nurseries.*

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Figure 5 Vegetation and Slope Assessment

10.5. Slopes Influencing Bushfire Behavior

The RF Reg requires 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 or from the proposed development footprint.

The effective slope' influencing fire behaviour approaching the sites has been assessed in accordance with the methodology specified within PBP 2019.

This is conducted by measuring the worst-case scenario slope where the vegetation occurs over a 100m transect measured outwards from the development boundary or the existing/ proposed buildings. Figure 5 shows the effective slopes relevant to the proposal and are 1.14 degrees upslope from the proposal.

10.6. Asset Protection Zone

An asset protection Zone (APZ) is a buffer zone between a bush fire hazard and buildings. The APZ is managed to minimise fuel loads and reduce potential radiant heat levels, flame, localised smoke and ember attack. The appropriate APZ distance is based on vegetation type, slope (assessed above) and the nature of the development.

The APZ can include roads or properties managed to be consistent with APZ standards set out in the NSW RFS document *Standards for Asset Protection Zones*. A fuel-reduced, physical separation between buildings and bush fire hazards is a key element in the suite of bush fire measures and has a major influence on the type of construction necessary to mitigate bushfire attack.

Large APZs are required for SFPP development because of the characteristics of occupants. This means a lower radiant heat threshold is required to allow for evacuation of occupants and emergency services to operate in support of the most at-risk members of the community. For SFPP developments, 10kW/m^2 (calculated on a flame temperature of 1200 Kelvin) is the maximum exposure at any point of the building wall or façade and where emergency services may be supporting or evacuating occupants from the building.

A fundamental premise for APZs is that they are provided within the property in such a way that the owner/occupant will be able to maintain the area in perpetuity or in surrounding managed lands. Buildings should be sited to reduce exposure to bushfire attack and provide suitable defendable space around a building that will influence landscaping.

The required APZ from the BPL to the southwest is determined by Table A1.12.1 within PBP 2019 (Figure 6) which requires a APZ of 67 metres from the unmanaged vegetation to the southwest. The required APZ to achieve 10kW is shown in Figure 7 which can be achieved for the proposal. Land within the site is currently managed for the helipad and no environmental impact is expected for the ongoing management of the APZ associated with the proposal. The proposal does not require management of vegetation within the designated Category 1 vegetation to the southwest of the site.

Table A1.12.1

Minimum distances for APZs – SFPP developments (≤10kW/m², 1200K)

KEITH VEGETATION FORMATION	EFFECTIVE SLOPE				
	Up slopes and flat	>0°-5°	>5°-10°	>10°-15°	>15°-20°
	Distance (m) from the asset to the predominant vegetation formation				
Rainforest	38	47	57	69	81
Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	67	79	93	100	100
Grassy and Semi-Arid Woodland (including Mallee)	42	50	60	72	85
Forested Wetland (excluding Coastal Swamp Forest)	34	42	51	62	73
Tall Heath	50	56	61	67	72
Short Heath	33	37	41	45	49
Arid-Shrublands (acacia and chenopod)	24	27	30	34	37
Freshwater Wetlands	19	22	25	28	30
Grassland	36	40	45	50	55

Figure 6 Minimum distances for APZ (source PBP 2019 p. 89)

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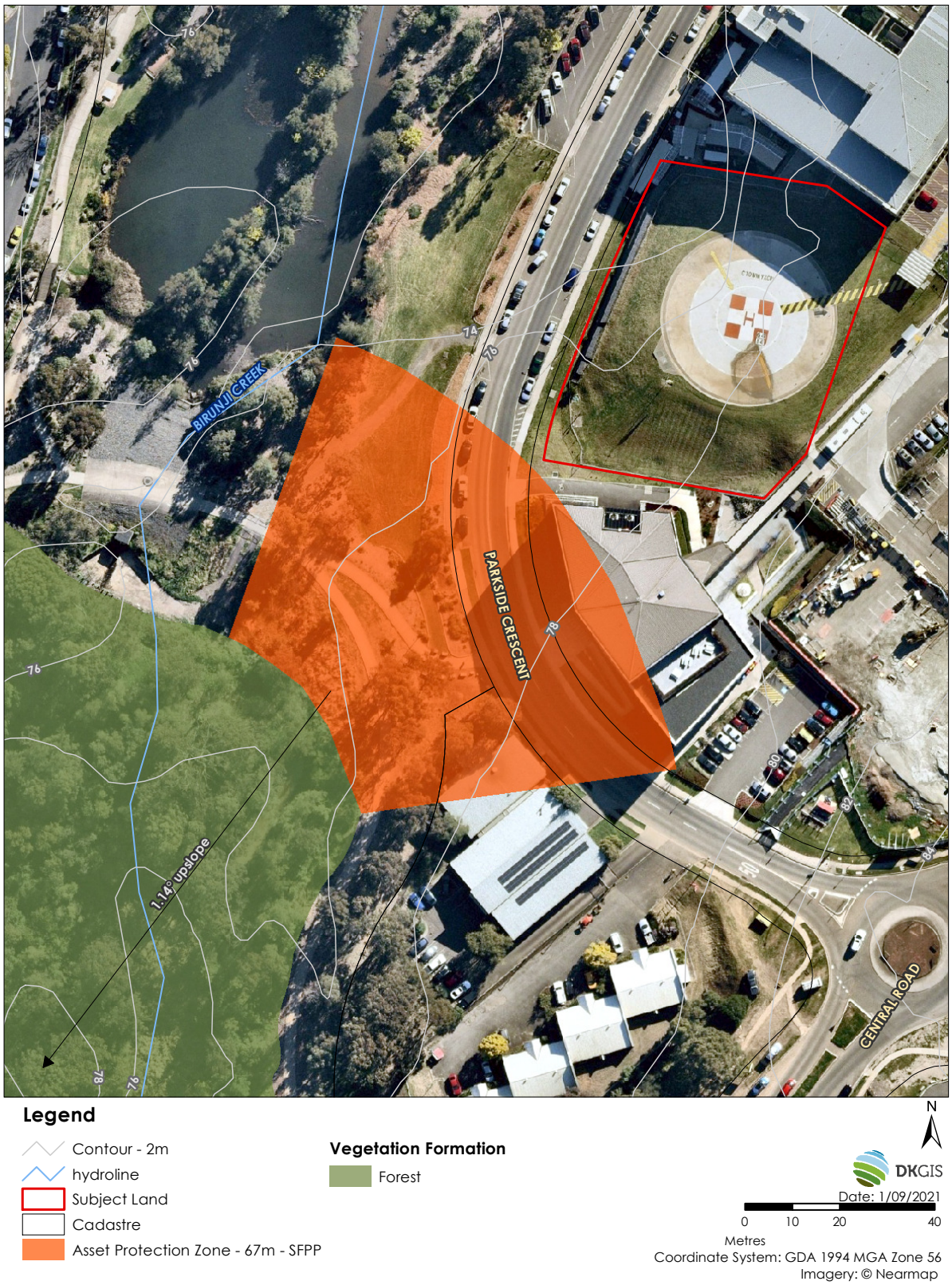

Figure 7 Asset Protection Zone Requirements

11. Bushfire Attack Level

The building construction levels for new development are determined using the *Australian Standards for Construction of Buildings in Bushfire Prone Areas* (AS3959). AS3959 is primarily concerned with improving the ability of a building in a bushfire prone area to better withstand bushfire attack (ember, radiant heat, smoke, and direct flame contact), thus giving a measure of protection to the building and occupants until the fire front passes.

Improving the design and construction of buildings in bushfire prone areas is a fundamental aspect of good bushfire planning. Importantly, AS3959 will not guarantee that a building will survive the impact of a bushfire, but it will increase the resilience of the building to a point where it should survive the passage of the fire.

The AS3959 provides an accepted way of determining the Bushfire Attack Level (BAL) that a building may be subject to. The BAL is a measure of severity of a building's potential exposure to ember attack, radiant heat and direct flame contact using increments of radiant heat expressed in kilowatts per metre squared and is the basis of establishing requirements for constriction of buildings in bushfire prone areas. The AS3959 requires the provision of bushfire mitigation measures out to 100 metres from unmanaged vegetation. As such, the proposal will need to provide BAL 12.5 construction to all facades.

Given the location of the site in western Sydney, the retention of trees within the site is important to provide shade. This is a fundamental aspect of providing reduced heat stress to the buildings and occupants. The bushfire risk for the site coupled with the potential fire behavior is limited and a fire will not get into the crown of the trees. It is expected that the entire site will continue to be managed as an APZ to Inner Protection Area Standards. However, the landscaping will need to consider the requirements of the APZ.

12. Services – Water, Gas and electrical supplies

The existing facility is connected to mains supplied power and water. Any gas services are to be installed and maintained in accordance with Australian Standard AS/NZS 1596 'The storage and handling of LP Gas' (Standards Australia 2008). This complies with PBP.

13. Access

No new roads are proposed. The existing road network provides good linkage and opportunities for heavy fire tankers to access the site and turn around. Fire fighters can stage appliances off the roadways and can readily gain access between the buildings to adjacent areas as necessary.

Roads associated with the project will need to comply with section 4.2.7 of PBP and the objectives within section 1.2, for internal roads and provision of safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area (PBP p 34).

14. Fire Maintenance Plan and Emergency Procedures

A *Bush Fire Emergency Management and Evacuation Plan* should be provided for construction and occupation of the proposal consistent with the NSW RFS publication: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan*, and the AS 3745:2010.

15. Environmental Features

The management of these ecological features/considerations shall be managed in accordance with the relevant consent authority and the relevant experts, and are not anticipated to compromise the bushfire protection outcomes for the proposed development. No trees are required to be removed.

16. Threatened Species

The management of these ecological features/considerations shall be managed in accordance with the relevant consent authority and the relevant experts, and are not anticipated to compromise the bushfire protection outcomes for the proposed development.

17. Assessment Against the Aim and Objective of PBP

The RF Reg requires 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 PBP 2018.

All development in Bushfire Prone Areas needs to comply with the aim and objectives of PBP.

Table 2 shows the compliance with PBP.

Table 2 Compliance with Aim & Objectives of PBP

Aim	Meets Criteria	Comment
The aim of PBP is to use the NSW development assessment system to provide for the protection of human life (including fire fighters) and to minimise impacts on property from the threat of bushfire, while having due regard to development potential, onsite amenity and the protection of the environment.	Yes	Landscaping, defendable space, access and egress, emergency risk management and construction standards can be undertaken in accordance with the requirements of PBP and the aims of PBP have been achieved. Construction is to BAL 12.5 in accordance with AS3959
Objectives	**Meets Criteria**	**Comment**
Afford occupants of any building adequate protection from exposure to a bushfire.	Yes	A bushfire risk assessment has bene completed for the site. The Bushfire Attack Level is shown in Table 1. Detailed emergency management arrangements will be put in place to avoid the threat of bushfire to occupants.
Provide for defendable space to be located around buildings.	Yes	Defendable space is provided on all sides of the proposed development.
Provide appropriate separation between a hazard and buildings, which, in combination with other measures, prevent direct flame contact and material ignition.	Yes	An asset protection zone to the site boundaries for the new works commensurate with the BAL has been provided.
Ensure that safe operational access and egress for emergency service personnel and occupants is available.	Yes	The site has direct access to internal and public roads, and access and egress for emergency vehicles and evacuation is adequate.
Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads, in the asset protection zone	Yes	Ongoing vegetation management within the site can be completed.
Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bushfire fighting).	Yes	Fire services can be provided within the buildings and on site.

18. How potential impacts have been avoided/minimised

The project is afforded significant space for the provision of APZs. The potential impacts of bushfire impacting the project and of fire being started by the project are assessed in this section. The mitigation strategies articulate requirements for sufficient space to ensure that radiant heat levels do not exceed critical limits for the project and mitigation strategies for workers during the construction phase of the project.

Landscaping and vegetation management can be provided in accordance with PBP 2019 requirements.

Potential environmental impacts of bushfire protection measures

The potential environmental impacts of the proposed bushfire protection measures are confined to the provision of APZs that are within the existing cleared and managed areas. Vegetation clearance is incorporated into the initial planning of the project and no additional clearing is proposed or required as part of this bushfire assessment.

Fire Fighting Vehicle Access

PBP 2019 requires that the location and design of access roads enables safe access and egress for people attempting to leave the area while emergency service personnel are arriving to undertake firefighting operations. Firefighters rely on public roads, trails, and other tracks on public and private land to access the landscape to prevent and contain bushfires. Access to the site within the existing road network meets PBP 2019.

Water for fire fighting

An adequate supply of water is essential for first response firefighting purposes in accordance with PBP 2019. The site is services by reticulated mains and hydrants can be provided in accordance with PBP 2019.

Emergency management during construction

The Fire and Rescue NSW is the primary emergency response agency for any fire incident affecting the project area. In case of a fire igniting in/around the project area:

- Personnel who are present should attempt to extinguish the fire if safe to do so
- Others present on site should be alerted to the presence of the fire

- Contact emergency services on 000
- Evacuate personnel to a safe location

A comprehensive Bushfire Emergency Management and Evacuation Plan should be completed for the construction and operational phase of the project. The bushfire evacuation procedures should be completed in accordance with RFS Guide to Developing A Bushfire Emergency Management Plan and meet the requirements of Australian Standard AS 3745-2010 – Planning for Emergencies in facilities. On-site and off-site evacuation procedures should be included. The focus of the Bushfire Emergency Management and Evacuation Plan should be to put in place strategies that do not expose the workers to the effects of bushfire attack and focus on eliminating exposure to bushfire.

19. Recommendations

The following recommendations are made:

1. **Asset Protection Zones:** At the commencement of building works and in perpetuity, Asset Protection Zone shall be established to the property boundaries. These APZs shall be established and maintained as an inner protection area as outlined within PBP 2019 and the NSW RFS document '*Standards for Asset Protection Zones*'.

2. **Construction:** The proposed Macarthur Medical Research Centre is built to BAL 12.5 in accordance with the Australian Standard Construction of buildings in bushfire-prone areas.

3. **Services:** Any gas services are to be installed and maintained in accordance with *Australian Standard AS/NZS 1596 'The storage and handling of LP Gas'* (Standards Australia 2008).

4. **Emergency Plan**: A comprehensive Bushfire Emergency Management and Evacuation Plan would be completed for the construction and operational phase of the project. The bushfire evacuation procedures would be completed in accordance with NSW Rural Fire Service Guide to *Developing A Bushfire Emergency Management Plan* and meet the requirements of Australian Standard AS 3745-2010 – Planning for Emergencies in facilities.

20. Conclusion

Blackash Bushfire Consulting has been engaged to undertake a bushfire risk assessment for a new research centre for Western Sydney University, namely the Macarthur Medical Research Centre. The Macarthur Medical Research Centre will be located within the campus of Campbelltown Hospital, along Parkside Crescent, between the WSU Macarthur Clinical School and Hospital Building D. The site is currently occupied by the hospital helipad which will be relocated as part of the Stage 2 Redevelopment works for Campbelltown Hospital.

The SEARs requirement is to provide a bushfire assessment that details proposed bushfire protection measures and demonstrates compliance with *Planning for Bush Fire Protection 2019* and design the proposed building footprint to attain compliance with the relevant asset protection zone requirements of *Planning for Bush Fire Protection 2019*. We have completed an assessment against PBP 2019 including standards regarding setbacks for asset protection zones, access, construction requirements, bushfire risk, provision of water supply and other measures in combination considered by the Commissioner necessary to protect persons, property or the environment from danger that may arise from a bushfire. The proposal meets the requirements of PBP 2019. The report has demonstrated that an appropriate combination of bushfire protection measures can be implemented to provide compliance with the intent and performance measures and the overall aim and objectives in Planning for Bushfire Protection 2019.

The bushfire risk to the new development is minimal and recommendations have been provided in Section 18 that will provide compliance with *Planning for Bush Fire Protection 2019* and is in keeping with the RFS comments. In the author's professional opinion, the bushfire protection measures demonstrated in this report comply with *Planning for Bush Fire Protection 2019* and the SEARs requirements.

Lew Short | Director
BlackAsh Bushfire Consulting

Appendix 1 - References

Councils of Standards Australia AS3959 (2009) – *Australian Standard Construction of buildings in bushfire-prone areas*

Keith, David (2004) – *Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT*. The Department of Environment and Climate Change

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NSW Government (1979) *Environmental Planning and Assessment Act 1979*. NSW Government Printer