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BUSHFIRE CONSULTING

Bushfire Hazard Assessment

Upgrade to Leppington Public School

Prepared for
NSW Department of Education

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

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Document Tracking

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Disclaimer

Contents

1. Executive Summary

1.1.Key Findings

This Bushfire Assessment Report has been prepared in accordance with the Guidelines for Division 5.1 assessments (the Guidelines) by the Department of Planning, Housing and Infrastructure (DPHI). The purpose of this report is to consider bushfire risk and assess the potential environmental impacts that could arise from the activity.

The activity is not on designated Bushfire Prone Land (BFPL).

The significance of a Review of Environmental Factors (REF) in relation to bushfire lies in its role in evaluating potential fire hazards and ensuring that proposed activities align with fire safety standards and mitigation strategies. This assessment is essential to protect life, property, and environmental values, reducing the likelihood and impact of bushfires on the project area and surrounding communities.

From a bushfire risk and mitigation perspective:

1. The extent and nature of potential impacts are low and will not have significant impact on the locality, community and/or the environment.
2. Potential impacts can be appropriately mitigated or managed to ensure that there is minimal impact on the locality, community and/or the environment.
3. Bushfire risk can be adequately mitigated through outlined measures.
4. Bushfire risk is low and is not considered to be a significant impact.

Mitigation measures are essential components of this Bushfire Assessment Report, aimed at assessing bushfire risk to the site and future occupants and reducing or eliminating potential environmental impacts associated with the proposed activity. These measures have been carefully developed based on rigorous bushfire assessments, applicable legislation, and the requirements of *Planning for Bushfire Protection 2019* to ensure bushfire protection while balancing protection of the environment and risk mitigation. By implementing these mitigation measures, the project seeks to address identified risks, enhance bushfire and environmental outcomes, and promote sustainable development practices, ensuring compliance with bushfire regulatory requirements and alignment with broader environmental objectives.

Mitigation measures are provided in Table 10 to ensure the activity is compliant with the NSW and national framework for bushfire mitigation.

The school buildings are not within designated Bushfire Prone Land and are not likely to be subject to bushfire attack and as such, Specification 43 of the National Construction Code is not applicable to the school buildings or within the site. There are no requirements for the provision of Specification 43.

1.1. Approvals and Licenses Required

Approvals and licenses for a Review of Environmental Factors (REF) ensure that proposed activities comply with relevant environmental legislation and regulatory requirements.

No approvals or licences are required for the activity in relation to bushfire.

2. Introduction

This Bushfire Assessment Report has been prepared to support a Review of Environmental Factors (REF) for the Department of Education for the upgrade of Leppington Public School (LPS) (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by *State Environmental Planning Policy (Transport and Infrastructure) 2021* (T&I SEPP) as "development permitted without consent" on land carried out by or on behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37A of the T&I SEPP.

The proposed activity is for upgrades to the existing LPS at 144 Rickard Road, Leppington, NSW, 2179 (the site) which is at Figure 1.

This document has been prepared in accordance with the *Guidelines for Division 5.1 assessments* (the Guidelines) by the NSW Department of Planning, Housing and Infrastructure (DPHI). The purpose of this report is to consider bushfire risk and assess the potential environmental impacts that could arise from the activity. Mitigation measures are provided to meet the requirements of *Planning for Bushfire Protection 2019* (PBP 2019) and the *National Construction Code* (NCC) as benchmarks for tolerable risk from bushfire, balancing potential harm and the benefits of the activity, while implementing reasonable measures to manage bushfire risk effectively.

The purpose of this report is to consider bushfire risk of the activity. As an existing school, the upgrade is infill SFPP development in accordance with PBP. However, the site is not on designated Bushfire Prone Land, nor is it affected by designated Bushfire Prone Land. At a meeting between the Department of Education and the Rural Fire Service (RFS) on 29 October 2024, the RFS confirmed that the site is low risk and will be treated accordingly with no requirement for compliance with PBP 2019, The National Construction Code (NCC) for *Specification 43* or the *Australian Standard for Construction of Buildings in Bushfire Prone Areas 2018* (AS3959).

3. Credentials and Approach to the Report.

This Bushfire Assessment Report has been prepared by Lew Short, Director at Blackash Bushfire Consulting (Level 3 FPAA BPAD-A Certified Practitioner No. BPD-PA-16373) who is recognised by the NSW Rural Fire Service (RFS) as qualified in bushfire risk assessment and has been accredited by the Fire Protection Association of Australia as a suitably qualified consultant to undertake alternative solution proposals.

This report has been independently prepared by a qualified bushfire expert to assess the proposed activity against relevant bushfire provisions, ensuring unbiased compliance with safety and bushfire standards and requirements. The assessment identifies potential bushfire risks and outlines measures to mitigate these risks in line with current bushfire management practices and regulations.

A site inspection was completed on 23 September 2024.

4. Project Proponent and Stakeholders

The Department of Education is the proponent and determining authority pursuant to Section 5.1 of the EP&A Act.

Blackash has not undertaken any agency consultation in the preparation of this report. However, the Department of Education have held numerous meetings with the RFS in relation to bushfire considerations and requirements.

At a meeting between the Department of Education and the RFS on 29 October 2024, the RFS confirmed that the site is low risk and will be treated accordingly with no bushfire requirements.

5. Legislative Framework and Planning Context

The site is not on designated Bushfire Prone Land.

The proposal is categorised as a Special Fire Protection Purpose (SFPP) development in accordance with Section 100B of the *Rural Fires Act, 1997* (RF Act). As the site is not on or affected by designated Bushfire Prone Land, no Bushfire Safety Authority or approval is required from the RFS.

The Department of Education is the proponent and determining authority pursuant to Section 5.1 of the EP&A Act. The Part 5 assessment is exempt from requiring a Bushfire Safety Authority from the RFS.

Under Part 5 of the EPA Act, the consultation process requires public authorities to assess the environmental impact of activities and consider potential risks before proceeding.

6. Site Description

LPS is located at 144 Rickard Road, Leppington on the eastern side of Rickard Road, north of Ingleburn Road and south of Byron Road. The site has an area of 3.013 ha and comprises 4 allotments, legally described as:

- Lot 1 DP 127446
- Lot 1 DP 439310
- Lot 38E DP 8979
- Lot 39C DP 8979

The site currently comprises an existing co-education primary (K-6) public school with:

- 14 permanent buildings;

- 11 demountable structures (including 2 male/female toilet blocks);
- interconnected paths;
- covered walkways;
- play areas; and
- at-grade parking.

The site also contains locally listed heritage buildings along its southern boundary.

The buildings are 1 storey in height and there is a sports oval in the eastern portion of the site. The existing buildings are clustered in the north-western part of the site.

The site is located immediately north of the proposed Leppington High School.

The site used for educational purposes which consists of managed land with some scattered trees.

Located in the South West Growth Area (SWGA), the site and surrounding areas are poised for substantial growth and densification. Leppington is undergoing significant change and transition following rezoning by the NSW Government. Further transformation is anticipated with the future rezoning of the Leppington Town Centre. The town centre is the focus of an active Planning Proposal which, if approved, is expected to greatly impact the character and context of the surrounding area. In addition, numerous residential subdivisions in both the immediate and broader vicinity are set to reshape the area, further contributing to the evolving landscape.

7. Summary of the Activity

The proposed activity involves upgrades to the existing LPS, including the following:

- Demolition of existing structures and trees;
- Erection of a new 3-storey teaching space along the northern boundary that includes 20 permanent teaching spaces and 3 support teaching spaces;
- Erection of a new hall and COLA comprising of a hall, canteen and OSHC hub towards the eastern boundary of site;
- Extension of the existing library (Building E) and adjoining playground;

- Upgraded sports and play facilities;
- Relocation of the Yarning Circle;
- Erection of a substation and upgrades to site services;
- Footpaths, fencing and associated works; and
- Landscaping.

The intent of the activity is to allow for upgrades to LPS that will provide a 'CORE 35' school standard in line with the Educational Facilities Standards and Guidelines (EFSG). The activity will increase the capacity of the school from 430 to 621 students. The proposed scope of works is illustrated in Figure 2.

The Review of Environmental Factors provides a full description of the proposed works.

A new draft plan for Leppington Town Centre has been prepared by Camden and Liverpool City Councils that includes the site and surrounding areas. If development were to proceed in accordance with the Leppington Town Centre masterplan, the surrounding areas would be completely developed (Figure 3) and bushfire risk would be removed from the landscape in the vicinity of the site. The site and surrounding areas are poised for substantial growth and densification. Leppington is undergoing significant change and transition following rezoning by the NSW Government. Further transformation is anticipated with the future rezoning of the Leppington Town Centre. This town centre is the focus of an active Planning Proposal which, if approved, is expected to greatly impact the character and context of the surrounding area.

As development progresses, the reduction in bushfire risk is a key outcome, with bushfire hazards being removed as urban areas expand and natural fuel loads are replaced with built infrastructure and managed areas. This urbanisation significantly mitigates the threat of bushfire to future and existing communities, including the activity.

Figure 1 Site Location

(source Gyde Consulting)

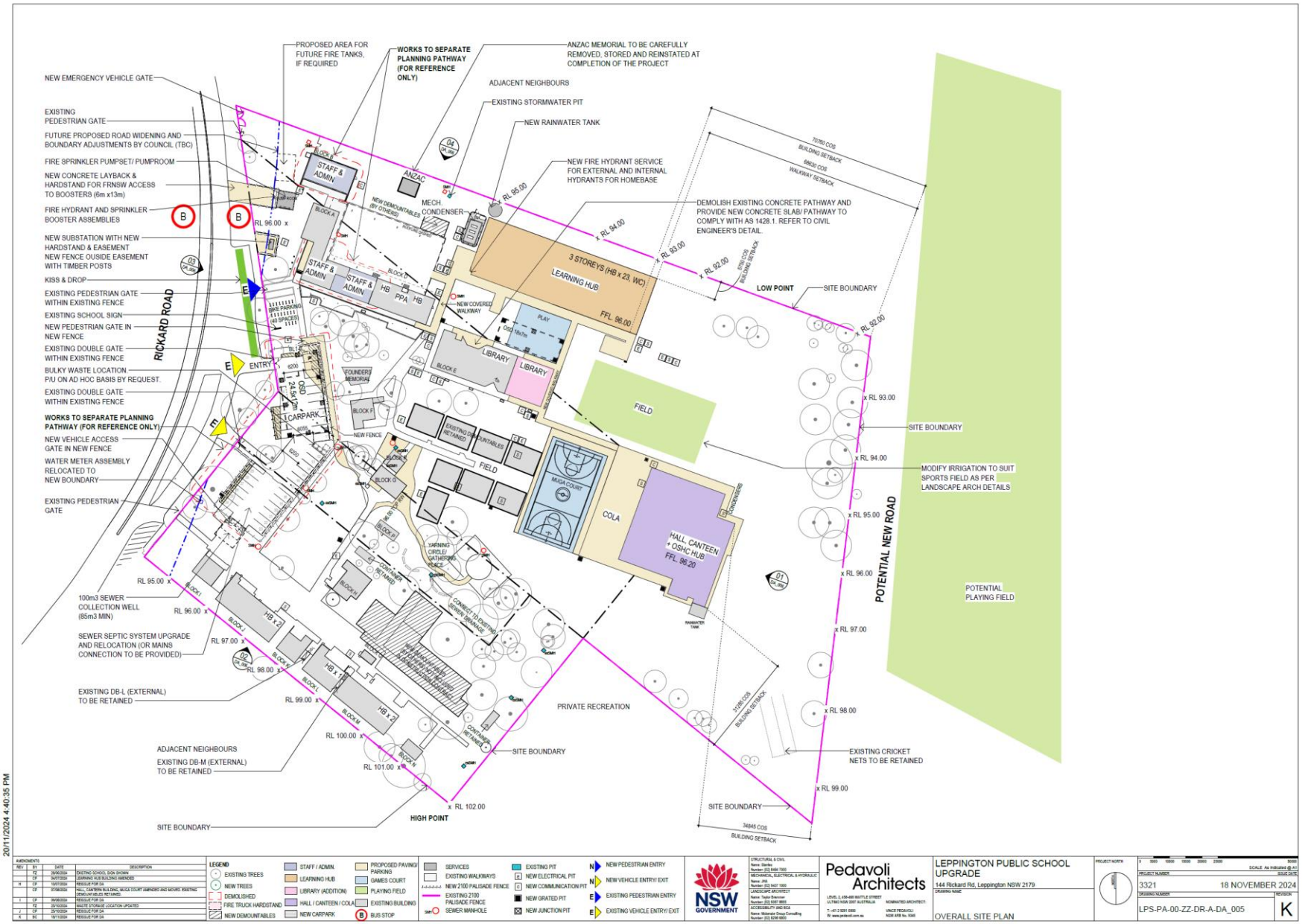


Figure 2 Site plan (source Gyde Consulting)

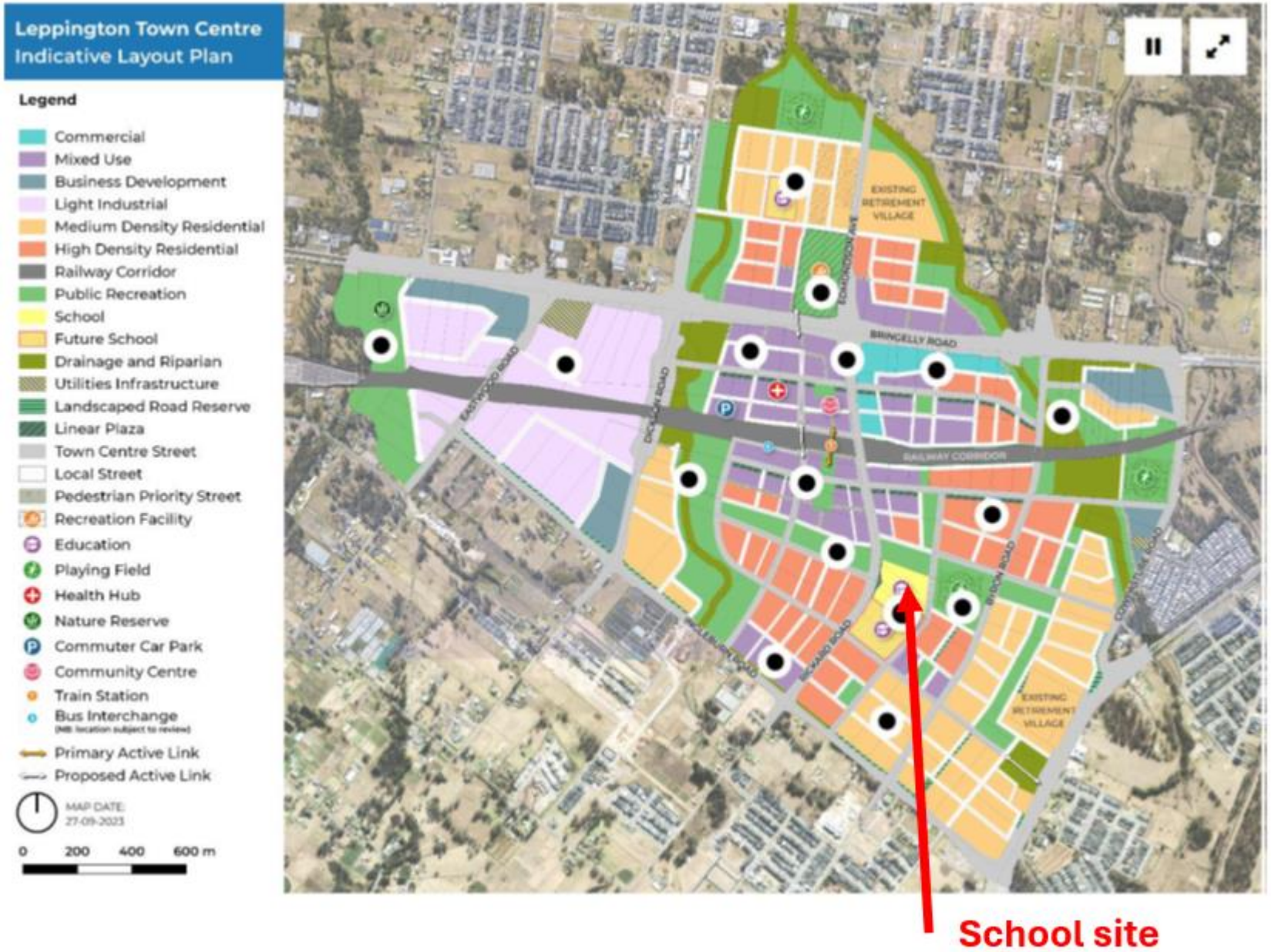


Figure 3 Leppington Town Centre ILP

8. Bushfire Assessment Framework

8.1.Planning for Bushfire Protection 2019

PBP 2019 is the formal NSW guideline which provides development standards for planning, designing and building on bushfire prone lands in NSW. PBP 2019 details specific provisions for SFPP development considering site specific risk, occupant vulnerability and the appropriate suite of bushfire protection measures (BPMs).

PBP 2019 sets out an overall framework consisting of an aim and objectives, specific objectives for defined development types, types of BPMs which may be employed in a development or risk assessment, and performance criteria for each BPM.

As the activity is for an upgrade of the existing school, the activity is "infill' Special Fire Protection Purpose (SFPP) development.

8.2. General Objectives of Planning for Bushfire Protection

All development on BFPL must satisfy the aim and objectives of PBP 2019. The aim of PBP 2019 is to *provide for the protection of human life and minimise impacts on property from the threat of bushfire, while having due regard to development potential, site characteristics and protection of the environment*. The objectives are to:

I. *afford buildings and their occupants protection from exposure to a bush fire;*
II. *provide for a defendable space to be located around buildings;*
III. *provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;*
IV. *ensure that appropriate operational access and egress for emergency service personnel and occupants is available;*
V. *provide for ongoing management and maintenance of BPMs; and*
VI. *ensure that utility services are adequate to meet the needs of firefighters.*

Compliance with the mitigation measures is at Table 10.

8.3. Specific Objectives for SFPP Development

The proposed school is a designated SFPP, defined in Section 100B(6) of the *Rural Fires Act* 1997. PBP 2019 states that:

"An SFPP development is one which is occupied by people who are identified as at-risk members of the community. In a bushfire event, these occupants may be more susceptible to the impacts of radiant heat and other bushfire effects. Evacuating at-risk members of the community is more challenging because they may be physically or psychologically less able to relocate themselves or are unfamiliar with their surroundings. Examples of SFPP developments are schools, hospitals, nursing homes and tourist accommodation."

The specific objectives within PBP 2019 for SFPP developments are to:

I. *minimise levels of radiant heat, localised smoke and ember attack through increased APZ, building design and siting;*
II. *provide an appropriate operational environment for emergency service personnel during firefighting and emergency management;*
III. *ensure the capacity of existing infrastructure (such as roads and utilities) can accommodate the increase in demand during emergencies as a result of the development; and*
IV. *ensure emergency evacuation procedures and management which provides for the special characteristics and needs of occupants.*

By demonstrating compliance with PBP 2019, the Objectives and Specific Objectives are met.

8.4.Specification 43 Building Code of Australia

Specification 43 Bushfire protection for certain Class 9 buildings (Spec 43) is the acceptable solution within the National Construction Code 2022 (NCC) for certain Class 9 buildings including schools on designated bushfire prone areas. The 2022 edition of the NCC contains amendments to its bushfire protection provisions. This includes a suite of new provisions for Class 9 buildings on designated bushfire prone areas that accommodate. The Building Code of Australia component of NCC is given legal effect through the *EPA Act*.

In NSW, all new buildings and new building work must comply with the NCC. NCC contains bushfire protection requirements that operate in conjunction with the bushfire protection measures (BPMs) in PBP 2019. Accordingly, buildings on bushfire prone areas must comply with both the requirements of PBP 2019 and the NCC.

The RFS *Planning for Bushfire Protection – Addendum 2022* states (p. 5) that:

NCC 2022 identifies additional bush fire provisions for the construction, separation and access requirements for certain Class 9 buildings accommodating vulnerable occupants on bush fire prone land.

Class 9 buildings include some Special Fire Protection Purpose (SFPP) developments under section 100B of the Rural Fires Act 1997, such as Class 9a hospitals, Class 9b schools and child care centres and Class 9c residential care buildings.

Additional Performance Criteria and Acceptable Solutions relevant to BPMs within PBP for SFPP Class 9 buildings are identified in Appendix B of this Addendum. These Acceptable Solutions are consistent with the relevant provisions of NCC 2022.

Consistent with section 100B of the Rural Fires Act 1997, proposed SFPP ' s that are Class 9 Buildings in bush fire prone areas may be required to have bush fire protection measures additional to those specified in NCC 2022.

The site is not affected by designated Bushfire Prone Land. The school buildings are not subject to PBP 2019 or Specification 43.

9. Significant Environmental Issues

The subject site (Figure 1) is cleared and managed with some remnant scattered trees.

An assessment of significant environmental features, threatened species, population or ecological communities under the *Biodiversity Conservation Act 2016* that may potentially be affected by the proposed bushfire protection measures has not been undertaken in this report as it is covered by other technical deliverables (if required) prepared to support the REF. The site is biocertified land.

The site will be managed as an asset protection zone.

10. Bushfire Prone Land Mapping

Bushfire Prone Land (BPL) is designated in accordance with s.10.3 of the EP&A Act. BPL is land which can support a bushfire or is subject to bushfire attack, that has been identified and mapped by the local council and certified by the Commissioner of the RFS. The BPL map provides a trigger for formal assessment of new development and compliance with PBP 2019.

The site is **not** identified as 'bush fire prone land' (see Figure 4) for the purposes of Section 10.3 of the EPA Act and the legislative requirements for PBP 2019 are not applicable. As such, there is no requirement for compliance with *Planning for Bushfire Protection 2019*, The *National Construction Code* (NCC) for *Specification 43* or the *Australian Standard for Construction of Buildings in Bushfire Prone Areas 2018* (AS3959).

The Camden Council BPL map was Certified by the RFS Commissioner on 7 January 2021 (Appendix 3) in accordance with *RFS Bushfire Prone Mapping Guidelines 2015 (*RFS Mapping Guidelines*)*. The requirement for grassland areas to be considered as BPL was documented in the 2015 RFS Mapping Guidelines which includes Category 3 grassland. The Camden Council BPL map is current and has been Certified.

The site in context is at Appendix 3 which shows a small area of remnant areas of Category 2 vegetation to the northwest of the site which is less than 1ha in size. This does not impact or cause a bushfire risk to the site. The Category 2 vegetation is separated from the site by developed agricultural areas. Road to the west provides a non-combustible surface and managed road reserve to limit fire spread and intensity.

For the purposes of this Bushfire Hazard Assessment, the revised Bushfire Prone Land Map has been used as a base for assessment, although the vegetation assessment has been completed independent of the Bushfire Prone Land map as is required by PBP 2019.

Figure 4 Certified Bush Fire Prone Land Map

source ePlanning spatial viewer accessed 30 January 2025 2024

11. Landscape Scale Assessment

A bushfire landscape assessment considers the likelihood of a bushfire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape.

The site does not have record of wildfire or hazard reduction burn since records have been kept in 1902.

Bushfires in western Sydney are primarily driven by prevailing westerly to north westerly winds and fuelled by dense vegetation. Potential fire runs into the site cannot occur from the northwest or the south. Land surrounding the site has been developed or has been cleared for development.

The site has direct access to existing developed areas to the west, north, east and south of the site. These areas offer refuge potential with multiple access and emergency egress routes out of the area.

11.1.Blackash Landscape Scale Assessment Tool

The bushfire landscape assessment considers the likelihood of a bushfire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape. The likelihood of a bushfire, its severity and intensity, and the potential impact on life and property varies depending on where a site is located in the landscape. Two types of considerations are relevant in terms of assessing the bushfire hazard including:

- landscape scale hazard – where large expanses of vegetation over tens to hundreds of hectares are located in immediate proximity to, and may traverse, urban periphery suburbs/townships
- localised hazard – which is most commonly presented by fragmented areas of vegetation larger than 1 hectare in size

The Blackash Landscape Scale Assessment Tool (LSAT) combines quantitative and qualitative techniques which are scaffolded by the Landscape Scale Threat Assessment and associated documentation. The LSAT is shown in Table 1 and uses elements of the Bayesian decision making model and Expert Judgment techniques backed by data. Bayesian decision making has been used where there is both objective and subjective data to analyse, and decisions need to be made on the probability of successful outcomes where there are high levels of uncertainty. Expert Judgement has been used in the assessment and determination of the landscape scale risk.

- Key considerations in our assessment have included:

- extent and continuity of vegetation
- topography
- prevailing winds
- the potential fire run and area that is likely to be impacted by the fire
- the impact on evacuation routes to safer places considering road networks, distances, and landscape factors
- the location and exposure of the development to bushfire
- the ability to seek bushfire shelter on site or at alternative locations
- the extent of neighbourhood-scale damage the bushfire may produce.

Landscape scale fires are those that can span many kilometres or tens of kilometres, and that burn for days or weeks at a time. Typically, these fires can be many thousands of hectares in size with fire fronts many kilometres in length. On the east coast of Australia this scale of fire is only possible where there are very large areas of forested vegetation, typically National Parks and State Forests that also adjoin substantial areas of private bushland.

There is no potential for a landscape scale bushfire to affect the site.

Land to the west, east and south adjoining the site has been developed for agricultural purposes and is not a risk (also see Section 11.2). Land to the north is managed land.

The LSAT is heavily weighted to life safety and places significant emphasis on the ability for the future community to be able to shelter in place or evacuate safely, whilst emergency services can access the site at the same time. When the individual factors are scored, after consideration of the landscape context, the site design complying with PBP 2019, and the large urban area, the overall Landscape Scale Threat for the site is assessed as **Low Risk**. The summary and weighted scores are presented in Table 1 below.

Table 1 Landscape Scale Risk Assessment

Landscape Scale Assessment Tool					
Parameter	Low landscape scale threat	Moderate landscape scale threat	High landscape scale threat	Extreme landscape scape threat	Rating
1. Surrounding Vegetation	Bushfire cannot directly approach the site as it is surrounded by urban development and non-mapped vegetation or managed land.	Bushfire can only approach from one aspect and the site is within a suburban, township or urban area considered managed land. Typically an island of bushfire vegetation within a wider urban development area or interface site impacted only by linear vegetation corridors of 100m width or less.	Bushfire can approach from more than one aspect and site is on the bushland-urban interface with the developed area considered as managed land. Typically contigous bushfire vegetation with a typical fire run in any direction of 0.1-2.0 km distance.	Bushfire can approach from more than one aspect and/or fires have many hours or days to grow and develop before impacting and/or site is surrounded by significant unmanaged vegetation. Typically large areas of contigous bushland with fire runs of more than 2 km possible.	Low
2. Bushfire Behaviour	Extreme bushfire behaviour at the site is not possible given the broader landscape.	Extreme bushfire behaviour at the site is unlikely in this broader landscape due to combination of factors of vegetation type, vegetation fragmentation, aspect and topography.	Extreme bushfire behaviour at the site is likely in this broader landscape due to combination of factors of vegetation type, vegetation fragmentation, aspect and topography.	Extreme bushfire behaviour is very likely in this broader landscape due to combination of factors of vegetation type, vegetation fragmentation, aspect and topography.	Low
3. Impact of severe fire behaviour (FFDI 80 or 100 as relevant) coming onto site from wider fire catchment	There is little vegetation beyond 150 metres of the site (except grasslands and low-threat vegetation) and will not result in neighbourhood scale destruction of the site.	The type and extent of vegetation beyond 150m from the site may result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to the site.	The type and extent of vegetation beyond 150m is likely to result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to the site.	The type and extent of vegetation beyond 150m will result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to the site.	Low
4. Vegetation Corridors	Vegetation within the site cannot enable fire to enter and move through the site by a continuous fire path from the primary fire source.	Vegetation within the site is unlikely to enable fire to enter and move through the site by a continuous fire path from the primary fire source.	Vegetation within the site may enable fire to enter and move through the site by a continuous fire path from the primary fire source.	Vegetation corridors on site provide for passage of fire to enter and move through the site from the primary fire source.	Low
5. Separation	Hazard separation between extreme bushfire hazard and buildings of greater than 100m. Extreme bushfire hazard does not include vegetated corridors of less than 100m width or grasslands.	Hazard separation between extreme bushfire hazard and buildings of 50-100m. Extreme bushfire hazard does not include vegetated corridors of less than 100m width or grasslands.	Hazard separation between extreme bushfire hazard and buildings of 20-50m. Extreme bushfire hazard does not include vegetated corridors of less than 100m width or grasslands.	Hazard separation between extreme bushfire hazard and buildings of <20m. Extreme bushfire hazard does not include vegetated corridors of less than 100m width or grasslands.	Low
6. Shelter	Immediate access is available to a place that provides shelter from bushfire. This includes existing or proposed buildings on site constructed in accordance with PBP.	Access is readily available to a place that provides shelter from bushfire. This will often be the surrounding developed area.	Access to a place that provides shelter from bushfire is not certain during a wildfire and existing buildings are not built to PBP standards.	Access to a place that provides shelter from bushfire is not possible during a wildfire.	Low
7. Evacuation	Multiple evacuation routes are available and unlikely to be impacted by fire.	Evacuation to alternate location that provides life safety refuge is <1km and can be completed by foot or vehicle.	Evacuation to alternate location that provides life safety refuge is 1km-10km.	Evacuation to alternate location that provides life safety refuge is > 10km.	Low
8. Isolation and emergency services	Seamless integration with existing settlement - no impact on evacuation or access for emergency services.	Short bushland pinch points that may carry fire across roads and restrict access briefly during passage of fire. Unlikely impact on evacuation or access for emergency services.	Short bushland pinch points that are likely to carry fire across roads and restrict access temporarily. Likely impact on evacuation or access for emergency services.	Large areas of bushland or multiple pinch points that are likely to carry fire across roads in forest areas and will block evacuation or emergency service access routes for extended time.	Low
9. Firefighting water supplies	Site is within urban area and has access to reticulated water supply OR site has dedicated firefighting water supply in accordance with PBP requirements.	Site is on the periphery of urban area and has access to reticulated water supply that may be more susceptible to interuption.	Site is outside urban area and relies on an on site water supply not in accordance with PBP.	Site is in an isolated area and relies on an on site water supply not in accordance with PBP.	Low
		Overall Threat Rating	Low Risk	Total	90

11.2.Cumberland Bush Fire Risk Management Plan

The Macarthur Bush Fire Management Committee *Bush Fire Risk Management Plan* (February 2012) does not identify the site or surrounds as being at bushfire risk (Figure 5). The site or surrounding area is not designated as presenting a bushfire risk that warrants mitigation. This supports the landscape scale assessment (Section 11.1) as being assessed as low bushfire risk.

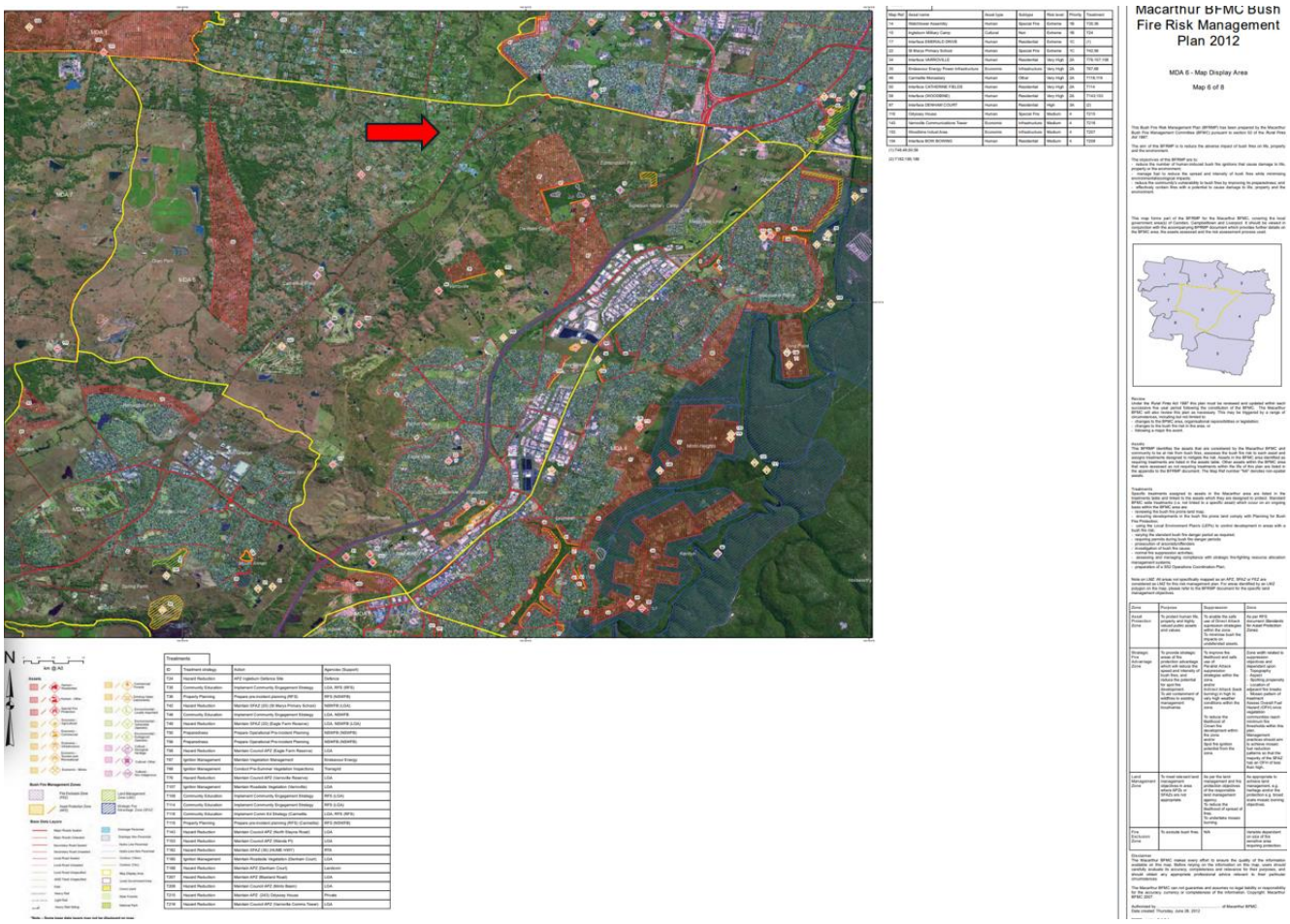


Figure 5 Macarthur Bushfire Risk Management Plan

12. Site Specific Assessment

12.1. Methodology

PBP 2019 provides a methodology to determine the bushfire threat and commensurate size of any asset protection zone (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 the following resources:

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

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

12.2. Bushfire Hazard

An assessment of the Bushfire Prone Land is necessary to determine the application of bushfire protection measures such as 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 behavior at the site, and which determine the planning and building response of PBP 2019.

12.3. 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.

12.4. Vegetation Assessment

The RF Regulation requires a classification of the vegetation on and surrounding the property (out to 140 metres from the boundaries of the property) in accordance with the system for classification of vegetation contained in 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. There are 7 vegetation formations (with sub-formations) identified in PBP 2019.

The predominant vegetation has been determined over a distance of at least 140 metres in all directions from the property boundary on the site. Where a mix of vegetation types exist, the type providing the greater hazard is said to predominate.

The site has some remnant trees within the managed school site. A small patch of remnant Category 2 vegetation classified as Cumberland Shale Plains Woodland (ID 3320) is to the north west of the site. Figure 6 shows the base GIS data assessment of the predominant vegetation within 100m of the site is cleared land with some retained trees that are mapped as Cumberland Shale Plains Woodland (PCT ID 3320). Areas not containing Cumberland Shale Plains Woodland are not designated in the state mapping and are classified as “non native vegetation” supporting the cleared and agricultural nature of the land. The site has biodiversity certification.

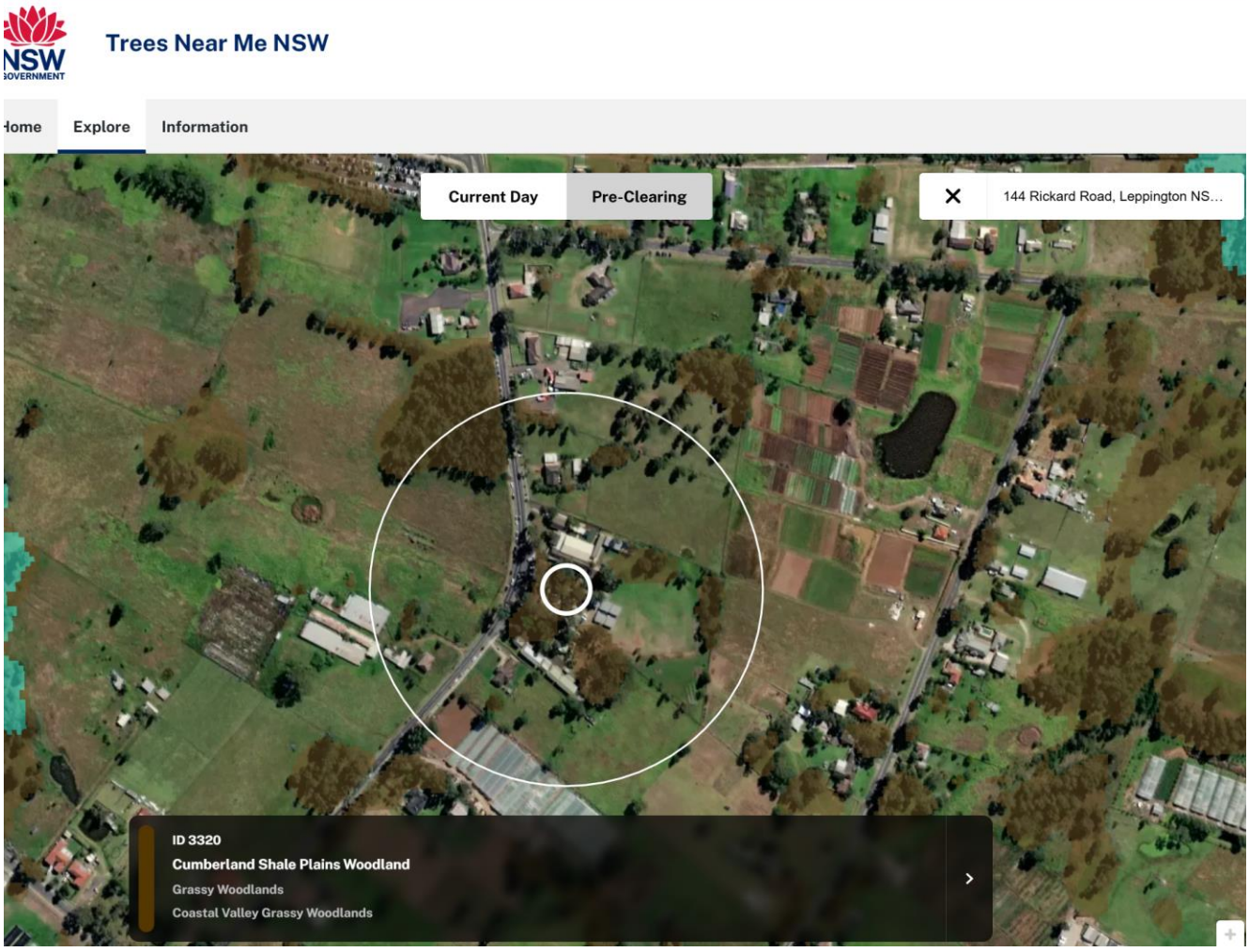


Figure 6 Trees Near Me of the site and surrounds showing cleared land within the site

12.5.Ecological Issues

The site is cleared and managed with some scattered remnant trees. There are no known ecological issues on site.

12.6. Slopes Influencing Bushfire Behaviour

The RF Reg requires an assessment of the slope of the land on and surrounding the property (out to 100 metres from the boundaries of the property or from the proposed development footprint).

The effective slope' influencing fire behavior approaching the sites has been assessed in accordance with the methodology specified within PBP 2019. The effective slope is the slope of the ground under the

hazard (vegetation). It is not the slope between the vegetation and the building (slope located between the asset and vegetation is the site slope).

The land is gently undulating with a slight rise to the remnant vegetation to the north west. For assessment purposes, the slope to the north west is flat.

12.7.Asset Protection Zones

An APZ is a fuel-reduced area surrounding a built asset or structure which provides a buffer zone between a bushfire hazard and an asset. The APZ includes a defendable space within which firefighting operations can be carried out. An APZ is land that has vegetation removed or maintained to a level that limits the spread and impact of bushfire. This may include:

- developed land (residential, commercial, or industrial),
- permanent roads, bike paths, parking areas,
- golf course fairways, playgrounds, sports fields,
- vineyards, orchards, cultivated ornamental gardens and commercial nurseries,
- most common will be gardens and lawns within curtilage of buildings.

For new SFPP developments, the APZ requirements must result in radiant heat levels at new buildings being below 10kW/m².

Land surrounding the site consists of managed land to the north and south within existing development, managed land to the west within the Rickard Road corridor and managed land to the east within the adjoining land. Land to the south will be developed for the Leppington High School and is currently managed lands. These areas do not present a hazard to the site. No APZs are required within the site. APZ compliance is at Table 2.

Table 2 APZ Compliance

Intent of Measures **PBP Table 6.8a** **APZ**	*to provide suitable building design, construction and sufficient space to ensure that radiant heat levels do not exceed critical limits for firefighters and other emergency services personnel undertaking operations, including supporting or evacuating occupants.*	
Performance Criteria	**Acceptable Solution as per PBP**	**Compliance**

Radiant heat levels of greater than 10kW/m² (calculated at 1200K) will not be experienced on any part of the building.	*the building is provided with an APZ in accordance with Table A1.12.1 in Appendix 1.*	**No APZ required**
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	*APZs are located on lands with a slope less than 18 degrees.*	**Complies** APZ is not located on slopes greater than 18°.
APZs are managed and maintained to prevent the spread of fire to the building. *the APZ is provided in perpetuity.*	*the APZ is managed in accordance with the requirements of Appendix 4 of this document, and is wholly within the boundaries of the development site;* *APZ are wholly within the boundaries of the development site; and* *other structures located within the APZ need to be located further than 6m from the refuge building.*	**No APZ required**

12.8.Bushfire Attack Levels

The Bushfire Attack Level or BAL is a means of measuring the severity of a building's potential exposure to ember attack, from ember attack, radiant heat and direct flame contact. In the NCC, the BAL is used as the basis for establishing the requirements for construction to improve protection of building elements. The BAL levels are shown in Table 3.

Table 3 Bushfire Attack Levels and Bushfire Attack

BAL	1Heat flux threshold (kW/m^2)	Predicted bushfire attack and level of exposure
BAL-12.5	≤ 12.5	Significant ember attack, burning debris and radiant heat up to a level of 12.5 kW/m2.
BAL-19	12.5 – 19	Increasing levels of ember attack, burning debris and radiant heat up to a level of 19 kW/m2.
BAL-29	19 – 29	Increasing levels of ember attack, burning debris and radiant heat up to a level of 29 kW/m2.
BAL-40	29 – 40	Increasing levels of ember attack, burning debris and radiant heat up to a level of 40 kW/m2. Flames from the bushfire front may intermittently contact the building.
BAL-FZ	≥ 40	Increasing levels of ember attack, burning debris and radiant heat in excess of 40 kW/m2. Flames from the bushfire front are likely to engulf part or all of the building.

The BAL is determined in accordance with Appendix 1 of PBP 2019 or the site assessment methodology within AS3959. Both approaches are the same and rely on an assessment of vegetation and slope with the separation of a building to determine the BAL. The BAL for the site is BAL Low. APZ provided within adjoining managed lands to the north, east, south and west and as such, there is no BAL affecting the site as the site is greater than 50m from riparian areas and beyond the 30m buffer from the Category 2 vegetation. Table 4 is the construction consideration for the activity.

Table 4 Compliance Construction

Intent of Measures **PBP Table 6.8a** **Construction**	*to provide suitable building design, construction and sufficient space to ensure that radiant heat levels do not exceed critical limits for firefighters and other emergency services personnel undertaking operations, including supporting or evacuating occupants.*	
Performance Criteria	**Acceptable Solution**	**Compliance**
the proposed building can withstand bush fire attack in the form of wind, embers, radiant heat and flame contact.	*landscaping is in accordance with Appendix 4 of Planning for Bushfire Protection; and fencing is constructed in accordance with section 7.6 of Planning for Bushfire Protection.*	**Complies** No BAL affecting the activity as the site is greater than 50m from unmanaged grassland areas and greater than 100m from unmanaged forest or woodland areas. However, BAL 12.5 will be provided to all new buildings to enhance resilience.

12.9.Water Supplies

The Site is adequately supplied by installed water services associated with the existing developed areas. The site is services by reticulated water mains. The site is serviced by reticulated water supply, with hydrants located at regular intervals can comply with AS2419 and PBP 2019. All buildings are connected to the reticulated town's water main. No changes to the water supply are proposed. This complies with PBP 2019. Water compliance is at Table 5.

Table 5 Water Compliance

Intent of Measures **PBP Table 6.8c** **Water Supply**	*To provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.*

Performance Criteria	Acceptable Solution	Compliance
An adequate water supply for firefighting purposes is installed and maintained	*reticulated water is to be provided to the development, where available*	**Complies** Activity serviced by reticulated water supply.
water supplies are located at regular intervals. the water supply is accessible and reliable for firefighting operations.	*fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005; hydrants are not located within any road carriageway; and reticulated water supply to SFPPs uses a ring main system for areas with perimeter roads.*	**To Comply** Fire hydrants will be designed and installed in accordance with AS2419:2021.
flows and pressure are appropriate	*fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005*	**To Comply** Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005
the integrity of the water supply is maintained.	*all above-ground water service pipes external to the building are metal, including and up to any taps.*	**To Comply** All above-ground water service pipes external to the building are metal, including and up to any taps.
water supplies are adequate in areas where reticulated water is not available	NA	**To Comply** Mains water available

12.10.Gas and electrical supplies

The site is adequately supplied by services. Any gas services installed should be maintained in accordance with *Australian Standard AS/NZS 1596 'The storage and handling of LP Gas'* (Standards Australia 2008) and Table 6.

Table 6 Gas & Electricity Compliance

Intent of Measures **PBP Table 6.8c** **Gas and Electrical Supply**	*To provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.*	
Performance Criteria	**Acceptable Solution**	**Compliance**
location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	*where practicable, electrical transmission lines are underground*	**Can comply - to consult with Council & Power Authority regarding undergrounding of transmission lines.**
location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	• *reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used;* • *all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side;* • *connections to and from gas cylinders are metal; if*	**Can Comply**

	gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2m away from any combustible material, so they do not act as a catalyst to combustion; • *polymer-sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used; and* • *above-ground gas service pipes external to the building are metal, including and up to any outlets*	

12.11.Access

The site is serviced by Edmondson Ave to the west, Tenth Avenue to the north and Ninth Avenue to the south. These are existing two way public roads. Biffin Street has been recently completed to the east to service new subdivision areas directly to the east of the school. The existing public roads are able to accommodate Medium Rigid fire appliances. by Edmondson Ave and Tenth Avenue are utilised by buses. by Edmondson Ave and Tenth Avenue provide perimeter access and access for fire services.

As the site meets the access requirements of PBP 2019 and the buildings are beyond the distance required for any Bushfire Attack Level considerations, it is not deemed necessary to comply with the access provision of a perimeter road around each building in accordance with the acceptable solutions of Specification 43.

Table 7 Access Compliance

Intent of Measures **PBP Table 6.8.2** **Gas and Electrical Supply**	*To provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area.*
Performance Criteria	**Compliance**
firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	**No requirement Complies** The site is serviced by Edmondson Ave to the west, Tenth Avenue to the north and Ninth Avenue to the south. This complies with PBP 2019.

12.12. Landscaping

The site is not affected by Bushfire Prone Land. The site is to be managed to Inner Protection Area Standards. This complies with PBP 2019. Landscaping compliance is at Table 8.

Table 8 Landscaping Compliance

Intent of Measures **PBP Table 6.8a** **Landscaping**	*landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.*

Performance Criteria	Acceptable Solution	Compliance
landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	*landscaping is in accordance with Appendix 4 of Planning for Bushfire Protection; and* *fencing is constructed in accordance with section 7.6 of Planning for Bushfire Protection.*	**Can Comply** Landscaping designed and managed in accordance with Appendix 4 of Planning for Bushfire Protection.

12.13.Emergency Management Arrangements

PBP 2019 and the RFS require the preparation of a '*Bushfire Emergency Management and Evacuation Plan*' prior to occupation of new schools. Emergency management compliance is at Table 9.

Table 9 Emergency Management Compliance

Intent of Measures **PBP Table 6.8d** **Emergency Management Planning**	*To provide suitable emergency and evacuation arrangements for occupants of SFPP developments.*	
Performance Criteria	**Acceptable Solution**	**Compliance**
Bush Fire Emergency Management and Evacuation Plan is prepared	*Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the: The NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan;* *NSW RFS Schools Program Guide;* *Australian Standard AS 3745:2010 Planning for*	**To Comply**

	emergencies in facilities; and Australian Standard AS 4083:2010 Planning for emergencies – Health care facilities (where applicable).	
	the Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants.	**To Comply**
	A copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to the Local Emergency Management Committee for its information prior to occupation of the development.	**To Comply**

13. Specification 43 requirements

The school buildings are not within land affected by land that can support a bushfire or is likely to be subject to bushfire attack and as such, Specification 43 is not applicable to the school buildings. There are no requirements for the provision of Specification 43.

14. Risk Based Approach

Considering the site's low bushfire risk (see Section 11), no bushfire construction of mitigation measures are required. However, BAL 12.5 will be provided to all new buildings to enhance resilience and services will be provided to comply with PBP 2019. The site will be managed as an APZ.

A Bushfire Emergency Management and Evacuation Plan is to be provided to cater for Catastrophic Fire Danger weather to provide triggers for closure.

15. Mitigation Measures

Mitigation measures are essential components of this Bushfire Assessment Report, aimed at assessing bushfire risk to the site and future occupants and reducing or eliminating potential environmental impacts associated with the proposed activity. These measures have been carefully developed based on rigorous bushfire assessments, applicable legislation, and the requirements of PBP 2019 to ensure bushfire protection while balancing protection of the environment and risk mitigation. By implementing these mitigation measures, the project seeks to address identified risks, enhance bushfire and environmental outcomes, and promote sustainable development practices, ensuring compliance with bushfire regulatory requirements and alignment with broader environmental objectives.

The following mitigation measures in Table 10 have been made within this report to ensure the activity is compliant with the NSW and national framework for bushfire mitigation.

The school buildings are not within designated Bushfire Prone Land or is likely to be subject to bushfire attack (building are separated by 50m for grassland and 100m for woodland) and as such, Specification 43 is not applicable to the school buildings or within the site. There are no requirements for the provision of Specification 43.

Table 10 Mitigation Measures

Project No.	Project Stage Design Construction Operation	Mitigation Name	Mitigation Measure	Reason for Mitigation Measure
1.	Design Construction Operation	**Asset Protection Zone**	• The site is to be managed to Inner Protection Area Standards to the specifications detailed in Appendix 4 of PBP. APZ requirements are at Appendix 4 of this document. • No APZ required.	• Afford buildings and their occupants protection from exposure to a bushfire. • Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings.
2.	Design Construction Operation	**Construction**	• New buildings built to BAL 12.5	• The proposed building can withstand bushfire attack in the form of wind, embers, radiant heat and flame contact.
3.	Design Construction Operation	**Landscaping**	• Landscaping will be designed and managed in accordance with Appendix 4 of PBP. APZ requirements are at Appendix 4 of this document. • Landscaping will be designed and managed in accordance with Appendix 4 of PBP (Appendix 4).	• Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings.
4.	Design Construction Operation	**Access**	• The external (within the site) and internal (within the buildings) fire hydrants will be designed and installed in accordance with AS2419:2021 requirements.	• To ensure that appropriate operational access and egress for emergency service personnel and occupants is available.
5.	Design Construction Operation	**Services** **Water, Gas, Electricity**	• Fire hydrants are provided in accordance with AS2419:2021 • Electricity supply to be located underground. • Gas services (if installed) are installed and maintained in accordance with AS/NZS 1596:2014.	• To ensure that utility services are adequate to meet the needs of firefighters.

Project No.	Project Stage Design Construction Operation	Mitigation Name	Mitigation Measure	Reason for Mitigation Measure
6.	Operation	**Emergency Management Arrangements**	• Prior to occupation, a Bushfire Emergency Management and Evacuation Plan is 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).	• To ensure emergency evacuation procedures and management which provides for the special characteristics and needs of occupants

16. Cumulative Impact Assessment

The site and surrounding areas are poised for substantial growth and densification. Leppington is undergoing significant change and transition following rezoning by the NSW Government. Further transformation is anticipated with the future rezoning of the Leppington Town Centre. This town centre is the focus of an active Planning Proposal which, if approved, is expected to greatly impact the character and context of the surrounding area.

As development progresses, the reduction in bushfire risk is a key outcome, with bushfire hazards being removed as urban areas expand and natural fuel loads are replaced with built infrastructure and managed areas. This urbanisation significantly mitigates the threat of bushfire to future and existing communities, including the activity.

Additionally, the enhanced road network accompanying this growth, including the proposed Rickard Road widening and the proposed South Road by Council will play a vital role in facilitating improved access within the area. The development of new and upgraded roads not only supports efficient movement but also strengthens emergency response capabilities, ensuring safer and more resilient communities within this rapidly evolving landscape.

The cumulative impact of the planned growth and development within Leppington includes a combination of reduced bushfire risk, enhanced infrastructure, and significant changes to the area's natural and built environments. As urbanisation replaces bushfire-prone vegetation, the overall hazard will decline. The upgraded road network and infrastructure will improve connectivity and emergency response times.

The activity is not considered to negatively impact the surrounding area from a cumulative impact assessment perspective.

17. Evaluation of Environmental Impacts

The environmental impacts of the proposed activity have been systematically evaluated in this Bushfire Assessment Report to identify potential bushfire risks and ensure compliance with applicable bushfire legislation and standards. This assessment considers the site specific conditions that relate to the provision of bushfire requirements such as the provision of asset protection zones.

From a bushfire risk and mitigation perspective:

1. The extent and nature of potential bushfire impacts are low and will not have significant impact on the locality, community and/or the environment.
2. Potential impacts can be appropriately mitigated or managed to ensure that there is minimal impact on the locality, community and/or the environment.
3. Bushfire risk can be adequately mitigated through outlined mitigation measures.
4. Bushfire risk is low and not considered to be a significant impact.

18. Conclusion

This assessment has demonstrated that the proposed new school is able to meet the requirements of *Planning for Bushfire Protection 2019*. The activity is not on designated Bushfire Prone Land (BFPL). Mitigation measures have been provided that are required to mitigate bushfire to tolerable levels in accordance with *Planning for Bushfire Protection 2019*.

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Lew Short | Director
B.A., Grad. Dip. (Design for Bushfires), Grad. Cert. of Management (Macq), Grad. Cert. (Applied Management)

Appendix 1: References

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

Councils of Standards Australia AS2419 (200) – *Fire Hydrant Installations*

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

NSW Rural Fire Service (2015) *Guide for Bushfire Prone Land Mapping*

NSW Rural Fire Service (2019). *Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.* Draft for Public Exhibition

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

Appendix 2 Planning for Bushfire Protection – Addendum 2022

APPENDIX B

Performance Criteria and Acceptable Solutions for hospitals, schools, child care centres and residential care buildings

PBP 2019 identifies a suite of BPMs for SFPP's within tables 6.8a, 6.8b and 6.8c. Hospitals, schools, child care centres and residential care buildings have modified requirements in NCC 2022. These specific Performance Criteria and Acceptable Solutions are identified in Table 2, Table 3 and Table 4 below.

These requirements are to be used in conjunction with the existing BPMs in PBP 2019.

Table 2: SFPP Development Construction Standards – Specific requirements for hospitals, schools, child care centres and residential care buildings

	PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
CONSTRUCTION STANDARDS	› The proposed building can withstand bush fire attack in the form of wind, embers, radiant heat and flame contact.	› A construction level of BAL-19 or greater under AS 3959 and section 7.5 of PBP is applied.

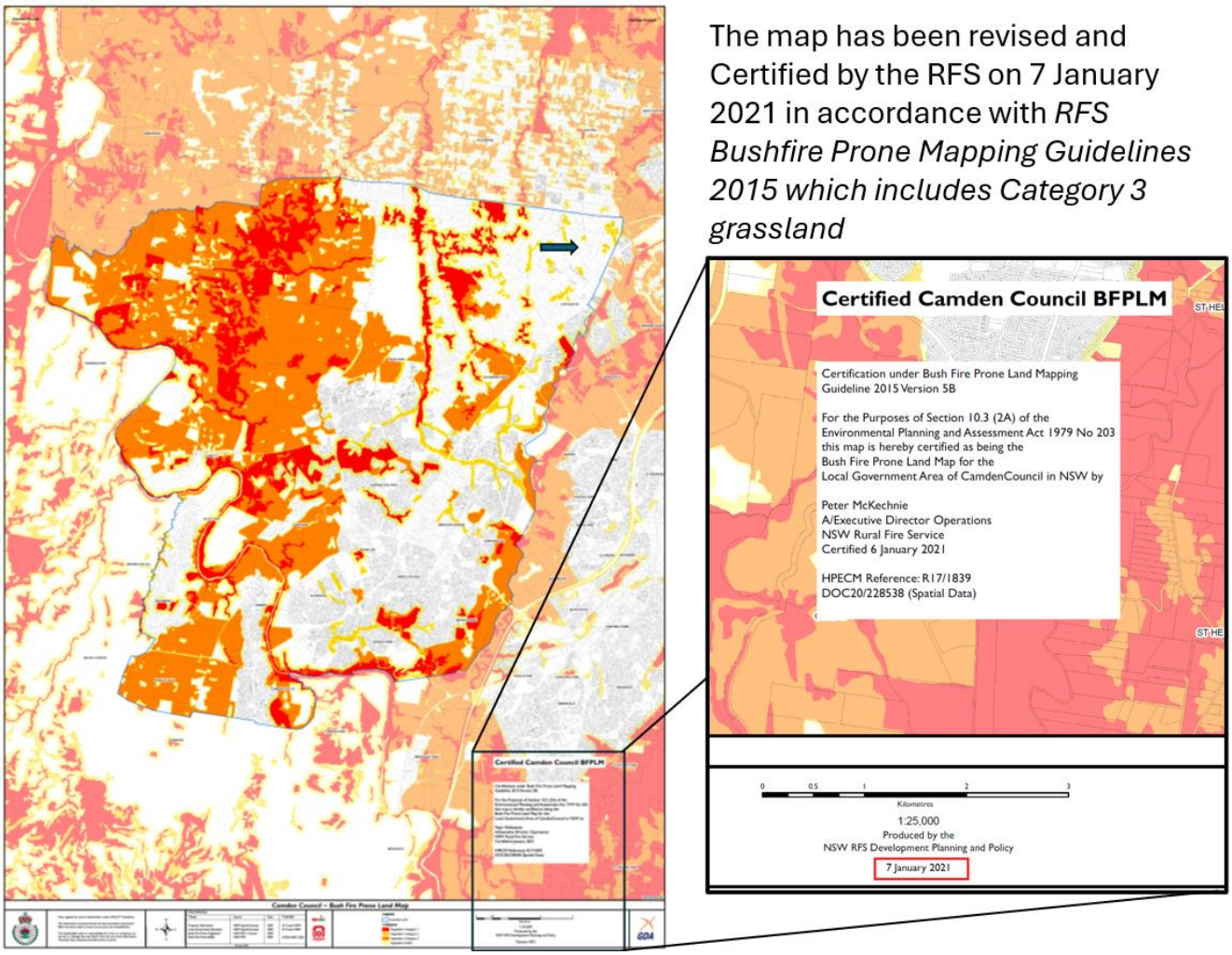
Table 3: SFPP Development Access – Specific requirements for hospitals, schools, child care centres and residential care buildings

	PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
ACCESS	› Firefighting vehicles are provided with safe, all-weather access to structures and hazardous vegetation.	› Vehicular access must be capable of providing continuous access for emergency vehicles to enable travel in a forward direction from a public road around the entire building; and › Must have a minimum unobstructed width of 6m with no part of its furthest boundary more than 18m from the building and in no part of the 6m width be built upon or used for any purpose other than vehicular or pedestrian movement; and › Must provide reasonable pedestrian access from the vehicular access to the building; and › Must have a load bearing capacity and unobstructed height to permit the operation and passage of fire fighting vehicles; and › Must be wholly within the allotment except that a public road complying with above may serve as the vehicular access or part thereof.

Table 4: SFPP Development Water Supply – Specific requirements for hospitals, schools, child care centres and residential care buildings

	PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
WATER SUPPLY	An adequate water supply for firefighting purposes is installed and maintained.	Reticulated water is to be provided to the development, where available; and Water for firefighting purposes must be made available and consist of – A fire hydrant system installed in accordance with AS2419.1; or Where no reticulated water is available, a static water supply consisting of tanks, swimming pools, dams or the like, or a combination of these, together with suitable pumps, hoses and fittings, determined in consultation with NSW RFS that – is capable of providing the required flow rate for a period of not less than 4 hours or has a volume of 10,000 litres for each occupied building.

Appendix 3 Camden Council Certified Bushfire Prone Land Map



The map has been revised and Certified by the RFS on 7 January 2021 in accordance with *RFS Bushfire Prone Mapping Guidelines 2015 which includes Category 3 grassland*

Appendix 4 Landscaping Guidelines (source Planning for Bushfire Protection 2019 p. 107)

A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defendable space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

Trees

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

Shrubs

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.