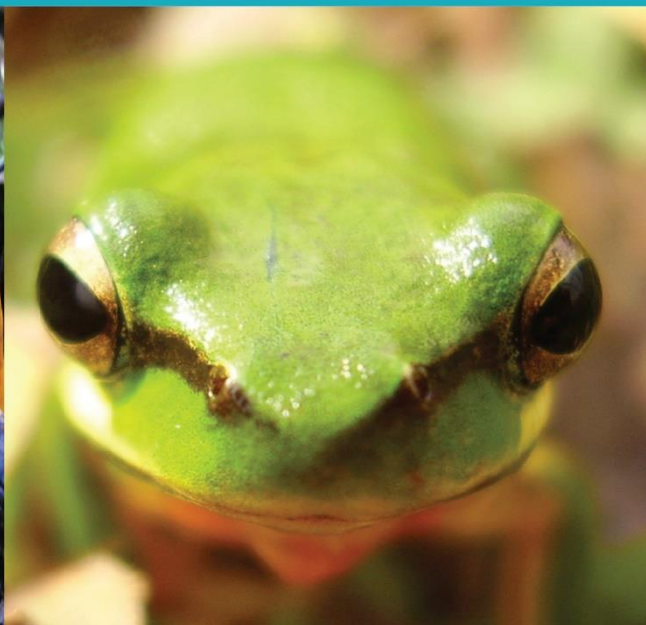




TRAVERS BUSHFIRE & ECOLOGY

A TBE ENVIRONMENTAL COMPANY



BUSHFIRE PROTECTION ASSESSMENT

Proposed Douglas Park Memorial – Concept Plan and
Stage 1

Lot 2 DP250359

430-490 Douglas Park Drive

Douglas Park

State Significant Development

30 May 2025

(REF: HTB03BF)



BUSHFIRE PROTECTION ASSESSMENT

Proposed Douglas Park Memorial Park – Concept Plan and Stage 1

430-490 Douglas Park Drive, Douglas Park

Preliminary assessment by:	Luke Simpson – Bushfire Consultant Jess Bowditch – Bushfire Consultant
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Approved by:	Dr. Grahame Douglas – Principal Bushfire Consultant
Date:	30/05/25
File:	HTB03BF
Version:	9.0



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Generative AI has not been used in the production of this report.

CONSULTANT DECLARATION

Project Details	
Douglas Park Memorial Park – Concept Plan and Stage 1	
Application number	SSD-68287712.
Address of subject-land	430-490 Douglas Park Drive, Douglas Park.
Lot/ DP	Lot 2 in DP 250359.
Applicant Details	
Applicant name	Benima Pty Ltd.
Applicant address	N/A.
Report Details	
Name of report this declaration relates	Bushfire Protection Assessment – Douglas Park Memorial Park – Concept Plan and Stage 1.
Report reference no	HTB03BF.
Report date	13 May 2025.
Company name (ABN/ ACN)	Travers bushfire & ecology (ABN: 85 624 419 8700/ ACN: 624 419 870).
Author name	Dr. Grahame Douglas
Author qualifications	B.App. Sc (Env Bio), M.Env Stud., Grad. Dip. Bushfire Des., PhD
Author address	52 The Avenue, Kariong NSW 2262
Declaration By Consultant	
Name	Dr. Grahame Douglas
Registration no.	Not applicable
Organisation registered with	Not applicable

Project Details

Declaration

The undersigned declares that the Bushfire Protection Assessment – Douglas Park Memorial Park Concept Plan and Stage 1 Report:

- Has been declared in accordance with the following policy, guidelines, or legislative requirements:
 - *AS 2419.1: 2021 - Fire Hydrant Installations – System Design, Installation and Commissioning.*
 - *AS 3959:2018 - Construction of buildings in bushfire-prone areas.*
 - *AS/NZS 1596: 2008 – The Storage and handling of LP Gas.*
 - *Planning for Bush Fire Protection 2019.*
 - *National Construction Code Volume One: Class 2 to 9 Buildings.*
- Contains all available information relevant to the environmental assessment of the development, activity or infrastructure to which the Bushfire Protection Assessment – Douglas Park Memorial Park Report relates.
- Does not contain information that is false or misleading.
- Identifies and addresses the relevant Planning Secretary's environmental assessment requirements (SEARs) for the project.
- Identifies and addresses the relevant statutory requirements for the project, including any relevant matters for consideration in environmental planning instruments to which the Bushfire Protection Assessment – Douglas Park Memorial Park Report relates.
- Contains a consolidated summary of the proposed or necessary mitigation measures.

Signature



Date

13/05/2025

EXECUTIVE SUMMARY

Travers bushfire & ecology (TBE) has been engaged by HT Building to prepare a bushfire protection assessment for the proposed Douglas Park Memorial Park – Concept Plan and Stage 1, located at Lot 2 DP250359, 430-490 Douglas Park Drive, Douglas Park. The project will involve the construction of an Administration building, Chapel, Crematorium and a Storage Shed/ Garage. The outer perimeter of the development will also be a memorial forest (grassy woodland formation).

The proposed development is categorised by the NSW Rural Fire Service (NSW RFS) planning policy document *Planning for Bush Fire Protection 2019 (PBP)* as ‘other development’, which includes Class 5-8 Buildings, Class 9b Public Assembly Buildings and Class 10a Buildings (non-habitable).

For this type of development, the NSW RFS requires that development applications should satisfy the aims and objectives of *PBP*, meet the specific objectives and performance criteria for ‘infill’ residential development, as well as propose an appropriate combination of bushfire protection measures and evidence that the intent of each measure can be satisfied. In accordance with *Section 8.3.11* of *PBP*, the Chapel Building is treated ‘as if’ it is a special fire protection purpose (SFPP) development due to its classification as a Class 9b public assembly building and its gross floor area (GFA) exceeding 500m².

This assessment has found that bushfire can potentially affect the development from bushland to the north, south and west and from the future memorial forest (grassy woodland formation) around its perimeter. More specifically, bushfire can potentially affect the proposed Administration, Chapel and Crematorium, building footprints, potentially resulting in future buildings being exposed to potential radiant heat and ember attack.

This assessment has found that the current design of all three building footprints DOES meet the minimum asset protection zone (APZ) setbacks required by *PBP*. Furthermore, in accordance with *Section 8.3.2* of *PBP*, the Storage Shed/ Garage does not require bushfire protection measures because it is a non-habitable Class 10a building and not located within 6m of other habitable buildings.

In recognition of the bushfire risk posed to the development by the surrounding bushland, *TBE* recommend the following combination of bushfire measures to ensure that the development is in accordance with, or greater than, the requirements of *PBP*:

The following recommendations should form part for the development consent for the project if approved.

Recommendation 1 – The development and APZs is as generally indicated on the attached SCHEDULE 1 – Bushfire Protection Measures and plans for the development provided in this report.

Recommendation 2 – The entire subject-land, excluding the proposed memorial forest (grassy woodland formation) around its perimeter, must be managed as an inner protection area (IPA) throughout the lifetime of the development in accordance with *Appendix 4* of *PBP* and Schedule 2 of this report. This includes ensuring trees do not touch or overhang buildings, tree canopies are not continuous and are separated by at least 2m, and shrubs are not planted beneath trees.

Recommendation 3 – Access provisions in-line with Section 3.2 of this report; including the provision of road curves with an inner radius of 6m. Maximum Road grades should not exceed 15 degrees and have an average of no more than 10 degrees. Road cross falls to not exceed 3 degrees when finalising the detailed civil plans.

Recommendation 4 –No parking signage is recommended to be installed on all internal vehicular access roads unless carparking is formalised outside of the carriageway to prevent firefighting vehicles being obstructed during an emergency. A vertical clearance of 4m must be maintained, free of obstructions such as tree branches.

Recommendation 5 – Reticulated water is to be provided consistent with section *Table 7.4a* of *PBP*. Hydrant spacing, design, sizing, flows & pressures must comply with the relevant clauses of AS 2419. Relevant documentation must be provided to the certifier upon commissioning.

Recommendation 6 – If any gas tanks are to be utilised, they will need to be located away from any building (8m minimum) and shielded from any potential bush fire. All piping must also be constructed from metal.

Recommendation 7 – The Bushfire Emergency Evacuation Plan (BEEP) for the development accompanying this report, is required to be updated annually before the official bushfire season on October 1 in conjunction with an overall site assessment of buildings and grounds. All staff are to have training in relation to the BEEP after the BEEP is updated.

Recommendation 8 – All buildings shall be constructed to the BALs outlined within Section 2.5 of this report and in accordance with the BAL construction requirements of AS3959 and *Section 7.5* of *PBP*.

GLOSSARY OF TERMS

AHIMS	Aboriginal Heritage Information System
APZ	Asset Protection Zone
AS1596	<i>Australian Standard – The storage and handling of LP Gas</i>
AS2419	<i>Australian Standard – Fire hydrant installations</i>
AS3745	<i>Australian Standard – Planning for emergencies in facilities</i>
AS3959	<i>Australian Standard – Construction of buildings in bushfire-prone areas 2018</i>
BAL	<i>Bushfire Attack Level</i>
BCA	<i>Building Code of Australia</i>
BFSA	Bush Fire Safety Authority
DA	Development application
TEC	Threatened Ecological Community
EP&A Act	<i>Environmental Planning & Assessment Act 1979</i>
FDI	Fire Danger Index
Ha	Hectares
IPA	Inner Protection Area
LEP	Local Environmental Plan
LGA	Local Government area
m	Metres
NCC	<i>National Construction Code</i>
OPA	Outer Protection Area
PBP	<i>Planning for Bush Fire Protection 2019</i>
PCT	Plant Community Type
RF Act	<i>Rural Fires Act 1997</i>
RFS	NSW Rural Fire Service
RF Reg	<i>Rural Fires Regulation 2022</i>
SFPP	Special Fire Protection Purpose
Subject-land	Lot 2 DP250359 at 430-490 Douglas Park Drive, Douglas Park
SSD	State Significant Development
SSDA	State Significant Development Application
TBE	<i>Travers bushfire & ecology</i>

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1. INTRODUCTION

Travers bushfire & ecology (TBE) has been engaged by *Benima Pty Ltd* to prepare a bushfire protection assessment for a combined Concept Plan approval and Stage 1 detailed works for a new multi-denominational cemetery located at Lot 2 DP250359, 430-490 Douglas Park Drive, Douglas Park (referred to as the ‘subject-land’ here-after).

The project is classified as State Significant Development (SSD) and therefore falls under the requirements of *Section 4.36* of the *Environmental Planning & Assessment Act 1979 (EP&A Act)*. This includes *Item 26* within the *Planning Secretary’s Environmental Assessment Requirements (SEARS)* for SSD-68287712. (Refer to Table 1-1).

Table 1-1 – Secretary’s Environmental Assessment Requirements (Bush Fire Risk)

Item	SEARS requirement	Relevant section of report
Concept Masterplan (Item 24)	If the development is on mapped bushfire prone land, or a bushfire threat is identified on or adjoining the site, provide a bush fire assessment that details proposed bush fire protection measures and demonstrates compliance with <i>Planning for Bush Fire Protection 2019</i> .	2.5 Bushfire attack assessment.
		3.1 Asset protection zones (APZs).
		3.2 Access for firefighting operations.
		3.3 Water supplies.
Stage 1 (Item 26)		3.4 Gas.
		3.5 Electricity.
		3.6 Construction standards.
		3.7 Emergency and evacuation planning.

The subject-land is identified as being situated on Bush Fire Prone Land (BFPL) mapped by Wollondilly Shire Council. (Refer to Figure 1-1). The proposed Douglas Park Memorial Park Development footprint is also situated on BFPL. Therefore, the Douglas Park Memorial Park Development must be assessed in accordance with the provisions outlined in *Planning for Bush Fire Protection 2019 (PBP)*. The NSW Rural Fire Service’s (NSWRFS) advice to the NSW Department of Planning, Housing and Infrastructure (DPHI) on 22 March 2024 outlined the requirements for the development as outlined within Table 1-2 below (NSWRFS 2024)

Table 1-2 – Agency Advice

Agency	Agency requirement	Relevant section of report
NSW Rural Fire Service (NSWRFS)	A report prepared by a suitably qualified consultant should be prepared to demonstrate the proposed development compliance with the requirements of <i>Planning for Bush Fire Protection 2019</i> . In this regard, the report may need to demonstrate compliance with <i>Section 8.3.1 – Buildings of Class 5 to 8</i> under the NCC and <i>8.3.11 Public assembly buildings</i>	2.5 Bushfire attack assessment.
		3.1 Asset protection zones (APZs).
		3.2 Access for firefighting operations.
		3.3 Water supplies.
		3.4 Gas.
		3.5 Electricity.
		3.6 Construction standards.
		3.7 Emergency and evacuation planning.

Correspondence was made with Nika Fomin, (Manager for Planning & Environmental Services Built & Natural Environment) via email on 5 May 2027 at 3pm. The NSWRFS was asked if they had any additional comments regarding the proposal as a response to the NSWRFS initial correspondence with the Department of Planning, Housing and Infrastructure (DPHI) on 22 March 2024. (Refer to Schedule 3).



Figure 1-1 – Bushfire prone land map

(Source: NSW Planning Portal, dated: 17/06/2024. Light blue= subject-land)

An inspection of the subject-land and surrounds was undertaken by Luke Simpson on 24 May 2024 to assess the topography, slopes, aspect, drainage, vegetation, and adjoining land use. The identification of existing bushfire measures and a visual appraisal of bushfire hazard and risk were also undertaken.

1.1 Aims of the assessment

The aims of a bushfire protection assessment are to:

- Review the bushfire threat to the development.
- Undertake a bushfire attack assessment in accordance with *PBP*.
- Propose a suitable package of bushfire protection measures commensurate with the level of risk to the development.
- Assess the degree to which the proposed package of bushfire protection measures meets the aim and objectives of *PBP* and any relevant performance criteria.

This bushfire protection assessment is suitable for use as part of a development application (DA) and is not intended for use as part of a planning proposal nor does not serve as a bushfire management plan.

1.2 Site description

Photos of the subject-land are shown below within Figures 1-2 to 1-8.

The subject-land is located at 430-490 Douglas Park Drive, Douglas Park within the Wollondilly Local Government Area (LGA). The site is irregular in shape with a total size of 16,794m². It is legally described as Lot 2 in DP 250359. The subject-land is mostly vacant with scattered vegetation and a single, residential dwelling with driveway accessible from Douglas Park Drive.

The adjoining land to the north consists of a narrow strip of bushland, followed by the M31 Hume Motorway. To the east, on the opposite side of Mitchell Place, are semi-rural residential properties followed by further bushland. The land to the west, south and southeast of the subject-land, on the opposite side of Douglas Park Drive, includes a mixture of bushland and cleared land.

The subject-land also has an undulating topography but generally slopes downward in all directions from its peak elevation in the centre of the property. (Refer to the discussion in Section 2.3).



Figure 1-2 – Aerial appraisal

(Source: NearMap Aerial Photography, dated: 17/06/2024)



Figure 1-3 – Mitchell Place to the east
(Source: TBE)



Figure 1-4 – Douglas Park Drive to the west
(Source: TBE)



Figure 1-5 – Property access from Douglas Park Drive to the west
(Source: TBE)



Figure 1-6 – Existing dwelling and ancillary structures
(Source: TBE)



Figure 1-7 – Existing paddock with livestock
(Source: TBE)



Figure 1-8 – Existing dam
(Source: TBE)

1.3 Proposal

This report accompanies a State Significant Development Application (SSD-68287712) that seeks approval for a combined Concept Plan approval and Stage 1 detailed works for a new multi-denominational cemetery.

Concept approval is sought for the use and operation of the site as a cemetery with a maximum, staged capacity of up to 37,107 burial plots including a Crematorium, Chapel, Administration Building, Vaults, Remembrance Sanctuaries, general site layout, and all associated groundworks, roads, parking pathways, landscaping and ancillary buildings. (Refer to Figure 1-9).

The Stage 1 works comprise the following:

- All preparatory site works including vegetation protection, enhancement and removal, demolition of existing structures, bulk excavation for burial zones, general ground works and utility service augmentation.
- Vehicular access/ egress from Douglas Park Drive with separate vehicular egress only to Mitchell Place.
- Construction of internal roads, pathways and parking area for approximately 118 car parking spaces inclusive of 1 hearse car parking space.
- Perimeter memorial pedestrian pathway with remembrance sanctuaries.
- Burial zones with a maximum capacity of 15,447 comprising shallow, single and triple layered burial plots.
- Construction of a single storey chapel, single storey administration building and single storey storage shed and garage.
- Site landscaping, fencing, lighting and entry signage.
- The cemetery operating hours, including public access, will be between the hours of 6:00am and 6:00pm, 7 days a week. The opening hours of the Chapel and Administration Building (including café) will be between 8:00am and 5:00pm, 7 days a week.

The burial zone preparation works within Stage 1 will be carried out sequentially within each burial zone and will be based on the demand for burial plots. (Refer to Figure 1-10).



Figure 1-9 – Concept site plan

(Source: Arcadia Landscaping Architecture, provided by the client in May 2025)



Figure 1-10 – Extent of Stage 1 works

(Source: Arcadia Landscape Architecture, provided by the client in May 2025)

1.4 Legislation and planning instruments

Table 1-3 – Legislative and planning instruments summary

Is the site mapped as bushfire prone?	Yes. (Refer to Figure 1-1).
Proposed development type	• Crematorium – Class 9b public assembly building/ ‘Other development’ (PBP). • Administration and café – Class 6 building/ ‘Other development’ (PBP); and • Chapel – Class 9b public assembly building/ ‘Other development’ (PBP). • Storage Shed/ Garage – Class 10a non-habitable building/ ‘Other development’ (PBP).
Is the development considered integrated for the purposes of Section 100B of the <i>Rural Fires Act 1997</i> ?	No. The development is considered <u>State Significant Development (SSD)</u> , subject to the Minister for Planning and Public Spaces as a consent authority.
Is the proposal located in an Urban Release Area as defined under Clause 273 of the EP&A Regulations?	No.
Zoning	RU2 – Rural Landscape. (Refer to Figure 1-11).
Does the proposal rely on a performance solution?	No.

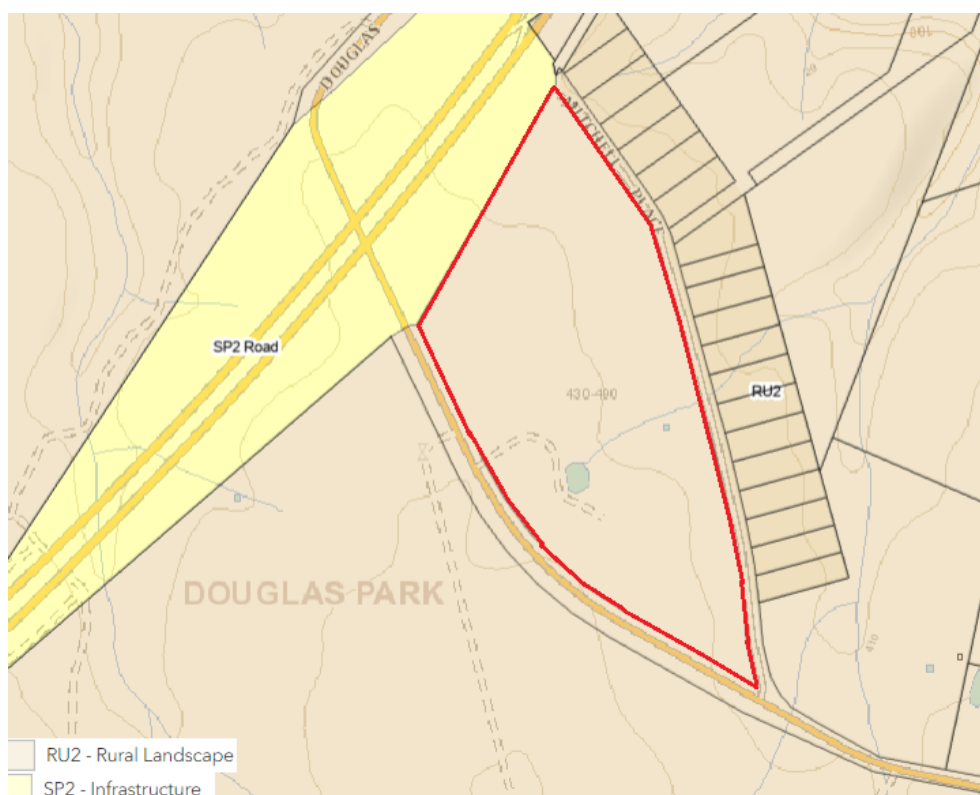


Figure 1-11 – Zoning (RU2 rural landscape)

(Source: NSW Planning Portal, dated: 18/06/2024. Red= subject-land)

1.4.1 Wollondilly Local Environmental Plan 2011 (Wollondilly LEP)

Under the *Wollondilly LEP* the subject-land is currently zoned as RU2 – Rural Landscape. Under the LEP's *Land Use Table* for such zoning: cemeteries, community facilities, crematoria, dwelling houses, environmental protection works, function centres, funeral homes, mortuaries, places of public worship, recreation areas, restaurants or cafes and roads are permitted with consent. Therefore, the LEP identifies that the proposed Douglas Park Memorial Park is permissible development with consent from council.

1.4.2 Planning for Bush Fire Protection 2019 (PBP)

PBP outlines the bushfire protection measures required to be assessed for new development in bush fire prone areas.

The aim of *PBP* is to provide for the protection of human life and minimise impacts on property from the threat of bush fire while having due regard to development potential, site characteristics and protection of the environment.

The general objectives for any proposal are to:

- Afford buildings and their visitors' protection from exposure to a bush fire.
- Provide for defendable space to be located around buildings.
- Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings.
- Ensure that appropriate operational access and access for emergency services personnel and occupants is available.
- Provide for ongoing management and maintenance of bushfire protection measures (BPMS).
- Ensure that utility services are adequate to meet the needs of firefighters. (*PBP*, p.10)

All State significant developments (SSD) are to be assessed against the requirements of *PBP*.

(a) State significant development and infrastructure.

Applications for state significant projects are not required to obtain a *Bush Fire Safety Authority (BFS)* but are required to consult with the RFS and are required to be assessed under S.4.38 of the *EP&A Act*.

Because of their size, complexity, importance and/ or potential impact, the NSW Department of Planning, Housing, and Infrastructure (DPHI) is predominantly responsible for addressing these DAs. The Minister for Planning and Public Spaces is the consent authority for SSI and SSD applications.

(b) Class 5 to 8 buildings

For buildings identified from Class 5 to 8 under the *NCC*, the following (additional) objectives will be applied in relation to access, water supply and services, and emergency and evacuation planning:

- To provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation.
- To provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development.
- To provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.

- Provide for the storage of hazardous materials away from the hazard wherever possible.

In accordance with *Section 8.3.10* of *PBP* a suitable package of BPMs should be proposed commensurate with the level of risk to the development. The provisions of *Chapter 7* of *PBP* should be used as a base for the development of this package of measures.

(c) Public assembly buildings

Public assembly buildings are not defined as being a special fire protection purpose (SFPP) by the *Rural Fires Regulation 2022 (RF Reg)*. However, buildings used for public assembly with a gross floor space area (GFA) of greater than 500m² are required to consider bush fire ‘as if’ they are an SFPP. These developments will therefore be treated technically as SFPP developments due to the evacuation challenges presented by large numbers of occupants.

Assembly buildings can accommodate large numbers of occupants of various physical capabilities. Emergency management planning for these developments must account for the total number of occupants and be commensurate with the level of risk. These developments should not experience radiant heat levels of greater than 10kW/m² on any part of the building. Assembly buildings include places of worship.

Due to the variation in risk associated with the occupants of assembly buildings, a variety of bush fire safety solutions may apply based on the merits of the situation.

(d) Class 10 structures

The *NCC* defines a Class 10 building as a non-habitable building or structure such as a:

- Class 10a – a non-habitable building being a private garage, carport, shed or the like.
- Class 10b – a structure being a fence, mast, antenna, retaining or free-standing wall, swimming pool, or the like.
- Class 10c – a private bush fire shelter.

There are no bush fire protection measures for Class 10a buildings located more than 6m from a dwelling in bush fire prone areas. Where a Class 10a building is located within 6m of a dwelling it must be constructed in accordance with the *NCC*.

1.5 Environmental and Aboriginal heritage constraints

The submission requirements outline significant Aboriginal heritage and environmental considerations that could constrain the implementation of Asset Protection Zones (APZs) within the subject-land. These considerations may necessitate further assessments before construction can proceed on the subject-land:

- Identification of any significant environmental features on the property.
- The details of any threatened species, population or ecological community identified under the *Biodiversity Conservation Act 2016 (BC Act)* that is known to the Applicant to exist on the property; and
- The details and location of any Aboriginal object (within the meaning of the *National Parks and Wildlife Act 1974*) or Aboriginal place (within the meaning of that Act) that is known to the Applicant to be situated on the property.

The following sources databases were reviewed to determine whether any environmental and Aboriginal heritage constraints were present within the proposed site:

Table 1-4 – Source databases for environmental and cultural heritage.

Potential constraint	Database
Aboriginal Heritage significant sites and places	Aboriginal Heritage Information Management System (AHIMS)
Threatened Ecological Communities (TECs)	Threaten Ecological Communities Greater Sydney Dataset (NSW SEED Portal)
Threatened Species (flora and fauna)	NSW BioNet Species Sightings Data Collection (NSW SEED Portal)
Watercourses	NSW Hydrography Dataset (NSW SEED portal)

A basic search of the AHIMS database identified no-known significant Aboriginal sites or places within a 50m buffer of the subject-land. Consequently, there are no-known Aboriginal heritage sites or places that are anticipated to function as a constraint to implementing APZs. For further information regarding the Aboriginal Heritage values of the subject land, please refer to the Aboriginal Cultural Heritage Assessment Report prepared by TBE (TBE 2024).

The following Plant Community Types (PCTS) were identified within the subject-land:

- PCT 3321 Cumberland Shale – Sandstone Ironbark Forest (High Sandstone Influence) – Equivalent to the CEEC Cumberland Shale – Sandstone Transition Forest listed under the *BC Act* and the *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)*.
- PCT 3321 Cumberland Shale – Sandstone Ironbark Forest (Low Sandstone Influence) – Equivalent to the CEEC Cumberland Shale – Sandstone Transition Forest listed under the *BC Act* and the *EPBC Act*.
- PCT 3321 Cumberland – Shale Sandstone Ironbark Forest (Regrowth) – Equivalent to the CEEC Cumberland Shale – Sandstone Transition Forest listed under the *BC Act* and the *EPBC Act*
- PCT 3320 Cumberland Shale Plains Woodland – equivalent to the CEEC Cumberland Plain Woodland listed under the *BC Act* and the *EPBC Act*.
- PCT 3320 Cumberland Shale Plains Woodland (Derived Native Grassland) listed under the *BC Act*.

Additionally, two flora species listed under the *BC Act* and *EPBC Act* were recorded:

- *Grevillea parviflora subsp. parviflora* (Small-flower Grevillea); and
- *Persoonia bargoensis* (Bargo Geebung).

Fauna species recorded onsite include:

- *BC Act* listed fauna: Four threatened species:
 - *Glossopsitta pusilla* (Little Lorikeet).
 - *Pteropus poliocephalus* (Grey-headed Flying-fox).
 - *Miniopterus orinae oceanensis* (Eastern Bentwing-bat); and
 - *Falsistrellus tasmaniensis* (Eastern Falsistrelle).
- *EPBC Act* listed fauna: One threatened species:
 - *Pteropus poliocephalus* (Grey-headed flying-fox).
 - No protected migratory birds were identified.

2. BUSHFIRE THREAT ASSESSMENT

To assess the bushfire threat and to determine the required width of an APZ for a development, an assessment of the predominant vegetation and the effective slope within the vegetation is required. The subject-land's fire history and regional fire weather are also considered.

2.1 Fire history

A fire history search of the subject-land and its surrounding areas was conducted using the NSW National Parks and Wildlife Services (NPWS) 'NPWS Fire History- Wildfires and Prescribed Burns' database within the NSW SEED Portal.

Between 1964 and 2024, a total of 246 fires were recorded within a 15km radius of the subject-lands boundaries. These included 101 prescribed burns and 145 wildfires. The extent of the wildfires ranged from less than a hectare to 277 881 hectares in area. Most of the wildfire activity occurred to the south of the subject-land in bushland areas north of Wilton, further south and southeast in areas such as the Upper Nepean State Conservation Area and Sydney Water Catchment Area, and to the east in Dharawal National Park. (Refer to Figure 2-1).

No-known wildfire activity is recorded to have directly impacted the subject-land itself. The closest wildfire was the 2003-04 Condell Park wildfire, which burned up to the St Mary Towers Retreat Centre south of the subject-land, on the opposite side of Douglas Park Drive, covering a total burnt area of 644 ha. Additionally, the smaller 2003-04 Douglas Park wildfire burned 4 ha slightly north of the subject-land, on the opposite side of the Hume Motorway.

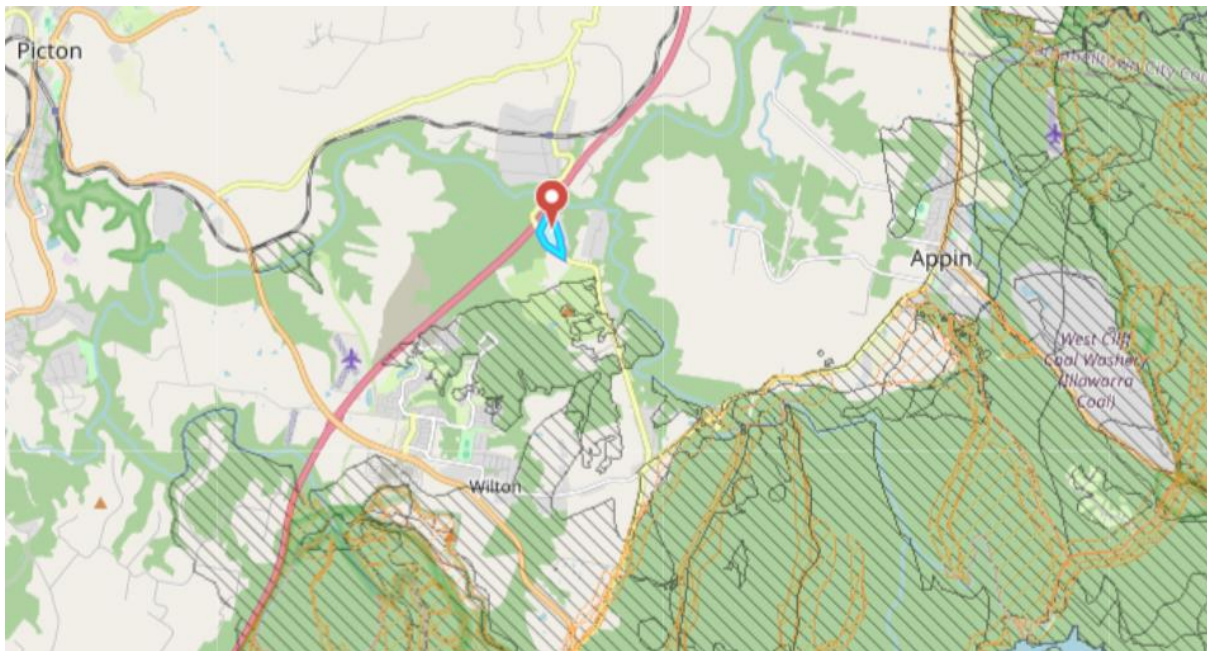


Figure 2-1 – Fire history
 (Source: NSW SEED Portal, dated: 18/06/2024)

2.2 Predominant vegetation

PBP requires the identification of the predominant vegetation formation in accordance with David Keith (2004) when using the simplified acceptable solutions in *PBP*. The vegetation is calculated for a distance of at least 140m from a proposed building envelope. The identified vegetation within 140m of the site was identified from the Geocortex viewer within the NSW SEED Portal which includes layers relating to NSW BioNet PCT sites and NSW State Vegetation Mapping. The vegetation formations were then assessed considering *Appendix 1* of *PBP* and at a site visit. The vegetation within 140m posing a bushfire threat to the proposed development includes:

Table 2-1 – Vegetation

Vegetation community	Vegetation classification	Vegetation formation	<i>PBP</i> classification
Cumberland Shale Plains Woodland (PCT 3320)	Coastal Valley Grassy Woodlands	Grassy Woodlands	
Cumberland Shale-Sandstone Ironbark Forest (PCT 3321)	Coastal Valley Grassy Woodlands	Grassy Woodlands	
Sydney Hinterland Apple-Blackbutt Gully Forest (PCT 3615)	Sydney Hinterland Dry Sclerophyll Forests	Dry Sclerophyll Forests (shrubby)	Forest
Sydney Hinterland Grey Gum Transition Forest (PCT 3616)	Sydney Hinterland Dry Sclerophyll Forests	Dry Sclerophyll Forests (shrubby)	Forest
Unmanaged Grassland	Grassland		

Photos of the predominant vegetation within the 140m assessable area are shown below within Figure 2-2 to Figure 2-7.

The existing vegetation within the subject-land consists of two distinct large patches of unmanaged grassy paddocks used for grazing livestock, located in the central and southern sections. The northern section contains tall heath vegetation with emergent Eucalypt trees. This tall heath formation is a result previous land disturbance and the slower regrowth of the shrub layer relative to the tree canopy. Additionally, there are sections of grassy woodland vegetation around the perimeter and throughout the centre of subject-land.

According to *TBE's* biodiversity development assessment report's (BDAR) flora and fauna survey efforts and results mapping for the development, the predominant vegetation communities within the subject-land are grassy woodland, specifically PCT's 3320 and 3321, as shown in table 2-1 above (*Travers bushfire & ecology*, 2024). The development site plan identifies that the entire outer perimeter of the subject-land will be an ecological area, assumed to be restored to grassy woodland vegetation. (Refer to Figure 1-9 and Schedule 1). The PCT's are discussed further in Section 1.5.

Bushland adjacent to the northern boundary of the subject-land lies between this boundary and the Hume Motorway. While the NSW SEED Portal maps this vegetation as grassy woodland, it is conservatively classified as forest. Forest vegetation is also present to the west and south of the subject-land, located on the opposite sides of Douglas Park Drive and Mitchell Place, respectively.



Figure 2-2 – Existing grassland / paddock within the centre of the subject-land
(Source: TBE)



Figure 2-3 – Existing tall heath formation with emergent Eucalypts in the northern section of the subject-land
(Source: TBE)



Figure 2-4 – Existing grassy woodland vegetation along the subject-lands eastern boundary
(Source: TBE)



Figure 2-5 – Forest vegetation north of the subject-land
(Source: TBE)



Figure 2-6 – Forest vegetation south of the subject-land on the opposite side of Mitchell Place
(Source: TBE)



Figure 2-7 – Forest vegetation west of the subject-land on the opposite side of Douglas Park Drive
(Source: TBE)

2.3 Effective slope

The subject-land has an undulating topography, with a peak elevation in its centre. From this central peak, the landscape generally slopes downward in all directions, meaning all vegetation is downslope with respect to the development.

The effective slope has been assessed for up to 100m from the building footprints. Effective slope refers to that slope which provides the most effect upon fire behaviour. A mean average slope may not in all cases provide sufficient information such that an appropriate assessment can be determined.

The effective slope within the predominant vegetation is described in detail within Section 2.5 below.

2.4 Climatic region

The subject-land is situated within the Wollondilly LGA, which falls under the broader Illawarra/Shoalhaven Fire Weather Region. The Fire Danger Index (FDI) for this region is assessed at 100 for bushfire planning purposes. FDI 100 converts to a Forest Fire Danger Index (FFDI) of 100.

2.5 Bushfire attack assessment

The bushfire attack assessment for the Douglas Park Memorial Park Development follows the principles outlined in *Appendix 1* of *PBP*. This includes calculating the minimum required APZ setbacks and determining the BAL requirements for all buildings.

Using the methodology in *Tables A1.12.1* and *A1.12.2* of *PBP* for SFPP and non-SFPP/ 'Other Development' respectively, the minimum APZ setbacks were calculated. These setback requirements are depicted in Schedule 1, specifying the minimum APZ distances required within the subject-land, measured from the perimeter vegetation.

Additionally, the BAL rating for all buildings were determined using the methods in *Table A1.12.5* of *PBP*. Section 3.5 of the AS 3959 specifies that the BAL for a building on BFPL cannot be reduced below BAL-12.5.

Section 8.3.11 of *PBP* specifies that Class 9b public assembly buildings, including places of worship with a gross floor area (GFA) greater than 500m², are treated 'as if' they are a special fire protection purpose (SFPP) development. These buildings must ensure that the footprint is not exposed to a radiant heat-flux exceeding 10kW/m².

APZs must also be within the subject-site boundaries and should not rely on being on adjoining land. Neither the NSWRFs nor Wollondilly Shire Council has the authority to impose an APZ on an adjoining landowner for new development. However, APZs can extend beyond the subject-lands boundaries in cases where structures or features of a landscape are considered permanent and function as barriers against fire spread. Examples are road carriageways, urban landscapes or land with vegetation that is considered managed (described as managed land).

The bushfire attack assessment for the Douglas Park Memorial Park Development is detailed below. The bushfire attack assessment assumes that the edge of the perimeter vegetation (memorial forest) is measured from the perimeter fencing as shown in Schedule 1.

2.5.1 Crematorium building

The Crematorium building will be situated in the western section of the subject-land, adjacent to the proposed memorial forest (grassy woodland formation), and will be the northern most building along the western perimeter of the development. Under *PBP*, the Crematorium is classified as a Class 9b assembly building ('other development'). With a gross floor area (GFA) of 353.80m², as outlined in the concept floor plan (Design Cubicle 2024), it is considered a non-SFPP development. Consequently, the building footprint must ensure it is not exposed to a radiant heat-flux exceeding 29kW/m².

Table 2-2 – Crematorium bushfire attack level

Aspect	Vegetation	Slope	Minimum APZ required (<29kW/m ²)	APZ available	BAL
East	Managed land.	N/A			N/A
North, west and south	Grassy Woodland	0-5° downslope	16m	24m	BAL-19

In summary, the Crematorium building footprint will include APZs designed to limit the exposure to a radiant heat-flux exceeding 29kW/m². The Crematorium will be constructed to BAL-19 standards and as such will be able to comply with the *PBP*'s minimum APZ setback and BAL requirements.

2.5.2 Chapel building

The Chapel Building is situated in the western section of the subject-land, adjacent to the Crematorium and Administration buildings. Classified as a Class 9b public assembly building and 'other development' under *PBP*, the Chapel building footprint has a proposed GFA of 676.55m². As this exceeds 500m², it must be treated 'as if' it is an SFPP development. Consequently, the building footprint is required to have APZs that ensure that it is not exposed to a radiant heat-flux exceeding 10kW/m².

Table 2-3 – Chapel building bushfire attack assessment

Aspect	Vegetation	Slope	Minimum APZ required (<10kW/m ²)	APZ available	BAL
North	Grassy Woodland	>0-5° downslope	50m	76m	BAL-12.5
West & South	Grassy Woodland	>0-5° downslope	50m	60m	BAL-12.5
East	Grassy Woodland	>0-5° downslope	50m	>100m	BAL-12.5

**The eastern aspect is also required to be constructed to a minimum BAL-12.5 construction level as required by Section 3.5 of the AS 3959.*

In summary, the Chapel building footprint will include APZ setbacks that limit radiant heat exposure to less than 10kW/m². Additionally, all aspects of the building must be constructed to a BAL-12.5 construction level as required by *Table 6.8a* of *PBP* for all SFPP development. As such, the Chapel building will be able to satisfy the minimum APZ setback and BAL requirements of *PBP*.

2.5.3 Administration building

The Administration building will be in the western section of the subject-land, adjacent to both the Crematorium and Chapel buildings. Classified as a Class 5 and 6 building due to the office and café components which are described as 'other development' under *PBP*. This building will be required to ensure the building footprint is not exposed to a radiant heat-flux exceeding 29kW/m².

Table 2-4 – Administration building bushfire attack assessment

Aspect	Vegetation	Slope	Minimum APZ required (<29kW/m ²)	APZ available	BAL
North, West and South	Grassy Woodland	>0-5° downslope	16m	16m	BAL-19
East	Grassy Woodland	>0-5° downslope	16m	>100m	BAL-12.5*

**The eastern aspect is also required to be constructed to a minimum BAL-12.5 construction level as required by Section 3.5 of the AS 3959.*

In summary, the Administration building will include minimum APZ setbacks that will ensure the building footprint is not exposed to a radiant heat-flux exceeding 29kW/m². The building is required to be built to BAL-19 construction standards. Therefore, the Administration building will be able to satisfy the minimum APZ and BAL requirements of *PBP*.

2.5.4 Storage shed / garage

The proposed Storage Shed/ Garage building in the eastern part of the subject-land is considered a Class 10a building and a 'other development' under *PBP*. The Storage Shed/ Garage has no bushfire protection requirements, as it is not situated within 6m of other habitable buildings as per *Section 8.3.2* of *PBP*.

3. BUSHFIRE PROTECTION MEASURES

The intent of bushfire protection measures for this development is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.

In accordance with *Section 8.3.10* of *PBP* a suitable package of bushfire protection measures should be proposed commensurate with the level of risk to the development, with the provisions of *Chapter 7* of *PBP* (related to Residential Infill) to be used as a base package of measures for the Crematorium and Administration Building components of the Douglas Park Memorial Park – Concept Plan and Stage 1 Development. In accordance with *Section 8.11* of *PBP*, the Chapel building will be treated ‘as if’ it is an SFPP development due its GFA exceeding 500m². As such, it will be provided with a suite of bushfire protection measures in line with *Chapter 6* of *PBP*.

This section outlines the proposed package of bushfire protection measures and where possible assesses their compliance with the relevant performance criteria by comparison to the acceptable solutions for residential infill development.

Where issues listed for the specific development purpose have no specific performance criteria the proposed performance solutions are assessed by comparison to the relevant Australian Standards.

3.1 Asset protection zones (APZs)

The intent of bush fire protection measures for APZs is to minimise the risk of bush fire attack and provide protection for emergency services personnel, occupants and others assisting firefighting activities. Furthermore, the entire subject-land, excluding the memorial forest vegetation around the perimeter, must be managed as an Inner Protection Area (IPA) in accordance with *Appendix 4* of *PBP* and as detailed in Schedule 2 of this report. This requirement is to be maintained in perpetuity or until all bushfire threats are fully mitigated.

The proposal’s compliance with the acceptable solutions outlined in *PBP* is detailed within Table 3-1 below.

Table 3-1 – Requirements for asset protection zones (PBP)

Performance criteria	Acceptable solutions	Compliance	Comment
For SFPP development, radiant heat levels of greater than 10kW/ m² (calculated at 1200K) will not be experienced on any part of the building. For non-SFPP development, radiant heat levels of greater than 29kW/m² (calculated at 1090K) will not be experienced on any wall of the building.	The buildings are provided with an APZ in accordance with <i>Table A1.12.1</i> (SFPP) & <i>A1.12.2</i> (non-SFPP) in <i>Appendix 1</i> of <i>PBP</i>.	☒	Complies. The Crematorium and Administration building footprints will not be exposed to a radiant heat-flux exceeding 29kW/m². The Chapel building footprint will not be exposed to a radiant heat-flux exceeding 10kW/m². (Refer to Section 2.5).
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. All slopes are less than 18°.
APZs are managed and maintained to prevent the spread of fire to the building.	APZs are managed in accordance with the requirements of <i>Appendix 4</i> of <i>PBP</i> and is within the boundaries of the development site.	☒	Overall Complies. It is noted that there is an area of dense plantings near the main Administration and Chapel buildings. Care should be applied to reduce the density of plantings in this location to meet IPA requirements. (Refer to Figure 1-10).
The APZs is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	☒	Complies. APZs will be wholly within the subject-lands boundaries. (Refer to Schedule 1).
	Other structures located within the APZ need to be located further than 6m from the refuge building.	☒	Complies. No structures are located within 6m of all buildings. (Refer to Figure 1-10).
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-	Compliance with <i>Appendix 4</i> of <i>PBP</i>.	☒	Overall Complies. Trees associated with retained natural areas within the development form a continuous canopy. Roadside and carpark plantings are satisfactory. Density of plantings should be reduced in the vicinity of the Administration building and Chapel.

Performance criteria	Acceptable solutions	Compliance	Comment
driven embers to cause ignitions.	A clear area of low-cut lawn or pavement is maintained adjacent to the (building).	☑	Complies. Adjacent to all buildings, a combination of pavement and lawn is proposed (Design Cubicle Architectural Solutions 2024). Lawn areas must be kept mown to a height no greater than 100mm.
	Fencing is constructed in accordance with <i>section 7.6 of PBP</i> .	☑	Complies. Perimeter fencing is proposed to be constructed from painted palisade steel and recycled sandstone. All proposed gates must be constructed from non-combustible materials.
	Trees and shrubs are located so that: ➤ The branches will not overhang the roof. ➤ The tree canopy is not continuous; and ➤ Any proposed windbreak is located on the elevation from which fires are likely to approach.	☒	Complies. Tree branches do not touch or overhang buildings. Overall, tree canopies are mostly separated. Roadside and car parking plantings are sufficient for stage 1 works. (Refer to Figure 1-10).

Considerations:

The key considerations for the Douglas Park Memorial Park Development compliance with APZs and landscaping requirements of *PBP* are:

- Trees should not overhang or be within proximity to buildings to prevent the spread of fire and flame contact to buildings.
- Tree canopies should not be continuous, with at least 2m of separation, to limit fire spread through the crown layer.
- Shrubs should not be located under trees prevent creating a fuel pathway from the ground to the crown layer.
- APZs to be maintained as IPA in accordance with Appendix 4 of *PBP* and this report.

3.2 Access for firefighting operations

The intent of measures for access is to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.

The proposal's compliance with the acceptable solutions for general access requirements outlined in *PBP* is detailed within Table 3-2 below.

Table 3-2 – Requirements for general access (PBP)

Performance criteria	Acceptable solutions	Compliance	Comment
Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	Access roads are two-wheel drive, all-weather roads.	☑	Complies. All roads will be sealed two-way all-weather roads.
	Access is provided to all structures.	☑	Complies. Access is provided to all structures. (Refer to Figure 1-10)
	Traffic management devices are constructed to not prohibit access by emergency services vehicles.	☑	Must comply. This must be considered during the finalisation of detailed civil plans.
	Access roads must provide suitable turning areas in accordance with <i>Appendix 3 of PBP</i> .	☑	Complies. No dead-end roads are proposed. (Refer to Figure 1-10).
	One way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	☑	Complies. The masterplan options outlined in the landscape report for the development specify that all internal roads will be 6m wide (ARCADIA 2024). The hydrant layout for the development is yet to be finalised; however, hydrants must not be positioned within road carriageways or parking areas.
The capacity of access roads is adequate for firefighting vehicles.	The capacity of road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.	☑	Complies. Capacities are to meet council requirements for roads. No causeway or bridges are proposed.

The requirements for perimeter and non-perimeter roads are only applicable to the SFPP component of the development as per *Table 6.8b* of *PBP*. The Chapel building, classified as a Class 9b public assembly building with a GFA exceeding 500m², is treated 'as if' it is an SFPP development in accordance with *Section 8.3.11* of *PBP*.

The proposal's compliance with the acceptable solutions for perimeter and non-perimeter roads outlined in *PBP* is detailed within *Table 3-3* below.

Table 3-3 – Requirements for perimeter and non-perimeter roads (PBP)

Performance criteria	Acceptable solutions	Compliance	Comment
Perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	Perimeter roads are two-way sealed roads.	☑	Complies. Two-way sealed access is provided to a hazardous vegetation onsite or on adjoining land to the south along the perimeter. Perimeter roads are not proposed in the masterplan options of the landscape report (ARCADIA 2024) as the site is bound by Mitchell Place to the north (and existing residential lots) and Douglas Park Road to the south.
	Perimeter roads have a minimum 8m carriageway width kerb to kerb.	☒	Deviates. Only applicable to the Chapel Building being treated 'as if' it is an SFPP due to having a GFA greater than 500m ² . All perimeter roads will be 6m wide kerb to kerb. No parking signage on all access roads is recommended as a solution. (Refer to considerations below).
	Non-perimeter roads have a minimum 5.5m carriageway width kerb to kerb.	☑	Complies. All vehicular access roads are proposed to be 6m wide kerb to kerb.
Non-perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating.	Parking is provided outside of the carriageway width.	☑	Complies Parking is proposed to be provided outside of the road carriageway in some locations. There is multiple designated parking areas proposed throughout the development. It is recommended that 'no parking' signage is provided on all roads where parking is not designated to avoid the risk of parked vehicles obstructing firefighting vehicles during an emergency.

Performance criteria	Acceptable solutions	Compliance	Comment
	There are through roads, and these are linked to the internal road system at an interval of no greater than 500m.	☑	Complies. All roads are through roads and linked at intervals no greater than 500m.
	Curves of roads have a minimum inner radius of 6m.	☑	Must comply. Detailed civil plans to be finalised. Turning circle at Burial Zone A to be confirmed for 12m outer radius. These can be readily achieved subject to Council's requirements.
	The maximum grade road is 15 degrees and average grade of not more than 10 degrees.	☑	
	The road crossfall does not exceed 3 degrees.	☑	
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	☑	

Considerations:

The key considerations for the Douglas Park Memorial Park Development compliance with perimeter and non-perimeter road access requirements of *PBP* are:

- Install no parking signage on all vehicular access roads to prevent obstructing firefighting vehicles during emergencies.
- Ensure curves of roads to have an inner radius of at least 6m (12m outer radius for turning circle) when finalised detailed civil plans.
- Maximum grades of roads to be no more than 15 degrees and an average grade of not more than 10 degrees when detailed civil plans are finalised.
 - Road crossfalls of roads to not exceed 3 degrees when detailed civil plans are finalised.
- All roads are provided with a vertical clearance of 4m to ensure firefighting vehicles are not obstructed.

3.3 Water supplies

The intent of measures is to provide adequate services of water for the protection of buildings during and after the passage of bushfire. Table 3-4 outlines the proposal's compliance with the acceptable solutions for reticulated water supply.

Table 3-4 – Requirements for water supplies (PBP)

Performance criteria	Acceptable solutions	Compliance	Comment
Adequate water supply is provided for firefighting purposes.	Reticulated water is to be provided to the development.	☑	Complies. Reticulated water will be provided to the development.
	For non-SFPP development, a static water supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed	☑	Not applicable as reticulated water will be supplied to the development.
	For SFPP development, a 10,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available.	☑	Complies.
Water supplies are located at regular intervals.	Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2021.	☑	BESTEC's infrastructure requirements and utility report states in <i>Section 6.2.1</i> that Sydney Water maintain the existing water infrastructure within the subject-land is adequate to supply the project domestic and fire protection water requirements without the need for onsite water storage tanks or pumps. (BESTEC 2025)
The water supply is accessible and reliable for firefighting operations.	Hydrants are not located within any road carriageway.	☑	
	Reticulated water supply to urban subdivisions uses a ring main system for areas for areas with perimeter roads.	☑	
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2021.	☑	
The integrity of the water supply is maintained.	All above-ground water service pipes are metal, including and up to any taps.	☑	Must comply where applicable.

Performance criteria	Acceptable solutions	Compliance	Comment
Considerations: The key considerations for the Douglas Park Memorial Park Development compliance with the water supply requirements of <i>PBP</i> are: Ensure all above-ground tanks where proposed are constructed from non-combustible materials, such as concrete or metal, including service pipes and taps. Relevant documentation to be provided to the certifier upon.			

3.4 Gas

The intent of measures is to locate natural/LPG gas so as not to contribute to the risk of fire to a building.

The gas plans for the proposed Douglas Park development are yet to be finalised. However, it is understood due to the nature of the development, gas supply may be a necessary component to operating the crematorium.

Table 3-5 outlines the required acceptable solutions for gas supply.

Table 3-5 – Requirements for gas supplies (PBP)

Performance criteria	Acceptable solutions	Compliance	Comment
Location of gas services will not lead to the ignition of surrounding bushland or the fabric of buildings.	Reticulated or bottled gas are to be installed and maintained in accordance with <i>AS/NZS 1596 (2014)</i> , the requirements of relevant authorities and metal piping is to be used.	☑	Complies. Gas supply is not proposed for Stage 1 works, with the entire development being a fully electric site. Gas supply to the future crematorium will be confirmed at a later stage as part of a separate DA. (BESTEC 2025).
	All fixed gas cylinders are to be kept clear of flammable materials to 10m and shielded on the hazard side.	☑	
	Connections to and from gas cylinders are metal.	☑	
	Polymer sheathed flexible gas supply lines are not used.	☑	
	Above ground gas service pipes are metal, including and up to any outlets.	☑	

3.5 Electricity

The intent of measures is to locate electricity so as not to contribute to the risk of fire to a building. Table 3-6 outlines the required acceptable solutions for the cemetery's electricity supply.

Table 3-6 – Requirements for electricity services (PBP)

Performance criteria	Acceptable solutions	Compliance	Comment
Location of electricity services limit the possibility of ignition of surrounding bushland or the fabric of buildings.	Where practicable, electrical transmission lines are underground.	☑	Complies. Existing electrical transmission lines are overhead. Electrical transmission lines for Stage 1 works will be underground from overhead powerlines to the subject-land. All new HV cabling will be inground, installed in conduits and buried underground. (BESTEC 2025).
	Where overhead electrical transmission lines are proposed: lines are installed with short pole spacing (30m), unless crossing gullies, gorges, or riparian areas; and no part of a tree is closer to a power line than the distance set out in ISSC3 Guideline for Managing Vegetation Near Power Lines.	☑	Not applicable. Electrical transmission lines will be underground.

3.6 Construction standards

The NCC does not provide any bushfire specific requirements for buildings of Class 5-8 and as such AS 3959 is not considered as a set of Deemed to Satisfy provisions. Compliance with the AS3959 Standard must, however, be considered when meeting the aims and objectives of PBP for 'Other Classes of Buildings'. Bushfire construction recommendations are dependent on the level of bushfire risk and the provision of adequate access opportunities. Table 3-7 outlines the proposed solution and compliance with the performance criteria for construction standard. Section 2.5 identifies the relevant APZs and associated BALs.

Table 3-7 – Requirements for construction standards (PBP)

Performance criteria	Acceptable solutions	Compliance	Comment
The proposed building can withstand bush fire attack in the form of embers, radiant heat, and flame contact.	BAL for non-SFPP buildings is determined in accordance with <i>Table A1.12.5 of PBP</i> .	☑	Must comply. The BALs for the Administration and Crematorium has been determined within <u>Section 2.5</u> of this report.
	For SFPP development, a construction level of BAL-12.5 under AS 3959 and <i>Section 7.5 of PBP</i> is applied.	☑	Must comply. The Chapel building must apply BAL 12.5 construction standards in accordance with the bushfire attack assessment. (Refer to Section 2.5).
	Construction provided in accordance with the NCC and as modified by section 7.5 (please see advice on construction in the flame zone).	☑	Must comply. All buildings must be provided with ember protection measures as per <i>Section 7.5 of PBP</i> . All weepholes and gaps in buildings are recommended to be sealed with non-combustible, corrosion-resistant mesh with an aperture size no greater than 2mm. Sarking is to be installed and should be non-combustible. All buildings should also install architecturally integrated gutter guards and valley guards.
Proposed fences and gates are designed to minimise the spread of bush fire.	Fencing and gates are constructed in accordance with <i>Section 7.6 of PBP</i> .	☑	Must comply. Fencing is proposed to be a combination of recycled sandstone retainer walls and painted palisade steel. All proposed gates must be constructed of non-combustible materials.
Proposed Class 10a buildings are designed to minimise the spread of bush fire.	Class 10a buildings are constructed in accordance with <i>Section 8.3.2 of PBP</i> .	☑	Must comply where closer than 6m to any other building.

Considerations:

The key considerations for the Douglas Park Memorial Park Development compliance with Construction Standards requirements of *PBP* are:

- All buildings must be constructed in accordance with the BALs for all buildings outlined within Section 2.5 of this report.
- All weepholes and gaps in buildings are recommended to be sealed with non-combustible, non-corrosive mesh with an aperture size no greater than 2mm.
 - Sarking is required and should be non-combustible.
- Gutter and valley guards (non-combustible) are to be installed on all gutters and valleys.
 - All proposed gates must be constructed from non-combustible materials.

3.7 Emergency and evacuation planning

The intent of measures for emergency and evacuation planning is to provide suitable emergency and evacuation arrangements for visitors and staff.

Table 3.7 outlines the required performance criteria for the proposal's emergency procedures.

Table 3-8 – Requirements for emergency and evacuation planning (PBP)

Performance criteria	Acceptable solutions	Compliance	Comment
A bushfire emergency and evacuation management plan are prepared	A bushfire emergency management and evacuation plan are prepared consistent with the: • The NSW RFS document: <i>A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan</i> • NSW RFS <i>Schools Program Guide</i> (where applicable) • Australian Standard AS 3745:2010 <i>Planning for emergencies in facilities</i>; and • Australian Standard AS 4083:2010 <i>Planning for emergencies – Health care facilities</i> (where applicable),	☑	Must comply. A Bushfire Emergency Management and Evacuation is being completed by TBE in coordination with this bushfire protection assessment for the proposed Douglas Park Memorial Park development.
Note: A copy of the Bushfire Emergency Evacuation Plan should be provided to the Local Emergency Management Committee for its information prior to occupation of the development.			
Suitable management arrangements are established for consultation and implementation of the emergency and evacuation plan.	An Emergency Planning Committee is established to consult with residents (and their families in the case of aged care accommodation and schools) and staff in developing and implementing an Emergency Procedures Manual. Detailed plans of all emergency assembly areas including 'on-site' and 'off-site' arrangements as stated in AS 3745 are clearly displayed, and an annual (as a minimum) trial emergency evacuation is conducted.	☑	Must comply. Will be specified in the BEEP for the development. Subject to a condition of consent. BEEP to be updated annually, including site inspection and training of Emergency Planning Group prior to the 1 October in any year.

3.8 Buildings of Class 5 to 8 under the NCC

Whilst bush fire is not captured in the NCC for Class 5-8 buildings, the following objectives will be applied in relation to access, water supply and services, and emergency and evacuation planning. Table 3-9 outlines the proposals compliance to PBP's objectives for Class 5 to 8 buildings under the NCC.

Table 3-9 – Objectives for Class 5 to 8 Buildings under the NCC (Section 8.3.1 of PBP)

Objective	Compliance	Comment
To provide safe access to/ from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation.	☑	Complies. The development will have two access and egress points from Douglas Park Drive to the south and Mitchell Place to the east based on the Concept Site Plan. All buildings (Administration, Chapel and Crematorium Buildings) have property access for firefighting vehicles. (Refer to Figure 1-9).
To provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development.	☑	Complies. TBE have completed a BEEP for the proposed Douglas Park Memorial Park Development with a recommendation to be updated annually prior to the commencement of the official bushfire season in October and is subject to a condition of consent. (Refer to the discussion in Section 3.7).
To provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.	☑	Complies. The development will be provided with reticulated water. Sydney Water have also confirmed the water infrastructure provided to the development is adequate for fire protection. Electrical transmission lines will be underground from the current overhead transmission lines to the development. Gas is not proposed for Stage 1 Works and will be confirmed for the Crematorium at a later stage of the development. (Refer to the discussion in Sections 3.3 to 3.5).
Provide for the storage of hazardous materials away from the hazard wherever possible.	☑	Must comply where applicable. If hazardous materials are proposed, they must be stored in a secure location away from all bushfire hazards.

4. CONCLUSION & RECOMMENDATIONS

4.1 Conclusion

This bushfire protection assessment has been undertaken for the proposed Douglas Park Memorial Park – Concept Works and Stage 1 Development located at Lot 2 DP250359, 430-490 Douglas Park Drive, Douglas Park. This report accompanies a State Significant Development Application that seeks approval for a combined Concept Plan approval and Stage 1 detailed works for a new multi-denominational cemetery.

This assessment has found that bushfire can potentially affect the development from bushland to the north, south and west and from the future perimeter memorial forest (grassy woodland formation) around its perimeter. More specifically, bushfire can potentially affect the proposed Administration, Chapel and Crematorium building footprints, potentially resulting in future buildings being exposed to potential radiant heat and ember attack. This assessment has found that the current design of all four building footprints DOES meet the minimum APZ setbacks required by *PBP*. There is no construction requirements for the Storage Shed/ Garage because it is a non-habitable Class 10a Building.

In recognition of the bushfire risk posed to the site by the surrounding bushland, *TBE* recommend the following combination of mitigation measures and recommendations to ensure that the development is in accordance with, or greater than, the requirements of *PBP*.

Table 4-1 – Mitigation measures

Project Stage Design (D) Construction (C) Operation (O)	Mitigation Measures	Relevant Section of Report
D, C & O	Asset Protection Zones (APZs)	3.1 Asset protection zones (APZs)
D, C & O	Appropriate access for firefighting operations and egress for evacuation of occupants.	3.2 Access for firefighting operations
D, C & O	Provision of adequate services of water for the protection of buildings during and after the passage of bushfire.	3.3 Water supplies
D, C & O	To locate gas so that it does not contribute to the risk of fire to a building.	3.4 Gas
D, C & O	To locate electricity so that it does not contribute to the risk of fire in a building.	3.5 Electricity
D, C & O	Provision of appropriate design and construction to enhance the building's survival from bushfires.	3.6 Construction standards
D, C & O	Provision of suitable emergency and evacuation arrangements for occupants.	3.7 Emergency and evacuation planning

4.2 Recommendations

The following recommendations should form part for the development consent for the project if approved.

Recommendation 1 – The development and APZs is as generally indicated on the attached SCHEDULE 1 – Bushfire Protection Measures and plans for the development provided in this report.

Recommendation 2 – The entire subject-land, excluding the proposed memorial forest (grassy woodland formation) around its perimeter, must be managed as an inner protection area (IPA) throughout the lifetime of the development, as per *Appendix 4* of *PBP* and Schedule 2 of this report. This includes ensuring trees do not touch or overhang buildings, tree canopies are not continuous and are separated by at least 2m, and shrubs are not planted beneath trees.

Recommendation 3 – Access provisions in-line with Section 3.2 of this report; including the provision of road curves with an inner radius of 6m. Maximum Road grades should not exceed 15 degrees and have an average of no more than 10 degrees. Road cross falls to not exceed 3 degrees when finalising the detailed civil plans.

Recommendation 4 – No parking signage is recommended to be installed on all internal vehicular access roads unless carparking is formalised outside of the carriageway to prevent firefighting vehicles being obstructed during an emergency. A vertical clearance of 4m must be maintained, free of obstructions such as tree branches.

Recommendation 5 – Reticulated water is to be provided consistent with section *Table 7.4a* of *PBP*. Hydrant spacing, design, sizing, flows & pressures must comply with the relevant clauses of AS 2419. Relevant documentation must be provided to the certifier upon commissioning.

Recommendation 6 – All gas tanks will need to be located away from any building (8m minimum) and shielded from any potential bush fire. All piping must also be constructed from metal.

Recommendation 7 – The Bushfire Emergency Evacuation Plan (BEEP) for the development accompanying this report, is required to be updated annually before the official bushfire season on October 1 in conjunction with an overall site assessment of buildings and grounds. All staff are to have training in relation to the BEEP after the BEEP is updated.

Recommendation 8 – All buildings shall be constructed to the BALs outlined within Section 2.5 of this report and in accordance with the BAL construction requirements of AS3959 and *Section 7.5* of *PBP*.

5. INFORMATION SOURCES

5.1 Information collation

- 1) Aboriginal Heritage Information Management System (AHIMS).
- 2) BESTEC 2025. *'Douglas Park Cemetery – Infrastructure Requirements and Utility Report – Electrical, Communications and Hydraulic Services'*, rev. 02, dated: 31.03.2025.
- 3) Design Cubicle Architectural Solutions 2024. *'Proposed Multi – Denominational Cemetery at Lot 2, 430-490 Douglas Park Drive, Douglas Park'*, no. 180911, issue. B dated: 18.11.2024.
- 4) Design Cubicle Architectural Solutions 2024. *'Chapel Floor Plan – Proposed Multi – Denominational Cemetery at Lot 2, 430 – 490 Douglas Park Drive, Douglas Park'*, no. 180911 DA 203, issue. 1, dated: 25.06.2024.
- 5) Mecone Mosaic.
- 6) Nearmap Aerial Photography.
- 7) NSW Department of Planning, Housing and Infrastructure (DPHI) 2024. *'Planning Secretary's Environmental Assessment Requirements'*, no. SSD-68287712, dated: 4 April 2024.
- 8) NSW Planning Portal.
- 9) NSW Rural Fire Service 2017. *'NSW Local Government Areas FDI'*, dated: May 2017.
- 10) NSW Rural Fire Service 2024. *'RE: Development Application – State Significant – SEARS – Cemetery – Douglas Park Cemetery – Concept Plan and Stage 1 430-490 Douglas Park Drive Douglas Park NSW 2569, 2//DP250359, ref. DA20240307000953-SEARS-1, dated: 22 March 2024.*
- 11) NSW SEED Portal.
- 12) Travers bushfire & ecology 2019. *'Bushfire Protection Assessment – For a proposed cemetery – Lot 2 DP 250359 – 430-490 Douglas Park Drive, Douglas Park'*, ref. A18018B, dated: July 2019.
- 13) Wollondilly Local Environmental Plan 2011 (Wollondilly LEP)
- 14) Wollondilly Shire Council 2020. *'Notice of Determination by the Wollondilly Shire Local Planning Panel Under the Environmental Planning & Assessment Act – Integrated Development Application no. DA/2018/780/1'*, dated: 13 August 2020.

5.2 Bibliography

- Australian Building Codes Board (2022) – *Building Code of Australia, Class 2 to 9 Buildings Housing Provisions Volume 1*
- Australian Building Codes Board (2022) – *Building Code of Australia, Class 1, and Class 10 Buildings Housing Provisions Volume 2.*
- Councils of Standards Australia AS3959 (2018) – *Australian Standard Construction of buildings in bush fire-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.
- Rural Fire Service (2019) – *Planning for bushfire protection – a guide for councils, planners, fire authorities and developers.* NSW Rural Fire Service.

SCHEDULE 1. PLAN OF BUSHFIRE PROTECTION MEASURES



DISCLAIMER: CAD not georeferenced & has been aligned to LPI boundaries. Verification by a registered surveyor required for construction purposes.

Legend

Study area

140m assesment buffer

Contour 1m (source:LiDAR)

Existing structures to be demolished

Proposed buildings

Administration

Maintenance Shed

Chapel

Crematorium

Managed land

Asset Protection Zone (<29kW/m²)/IPA

Area to be managed as an inner protection area (IPA)

Vegetation Formation

Forest

Grassland

Grassy woodland



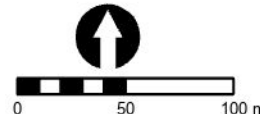
PROJECT & MXD REFERENCE
Douglas Park Dr, Douglas Park
HTB03_BF001

DATE & ISSUE NUMBER
28/05/2025
Issue 1

SC

SCALE & COORDINATE SYSTEM
1:3,500 @ A3
GDA2020 MGA Zone 56

TITLE
Schedule 1 - Bushfire Protection Measures

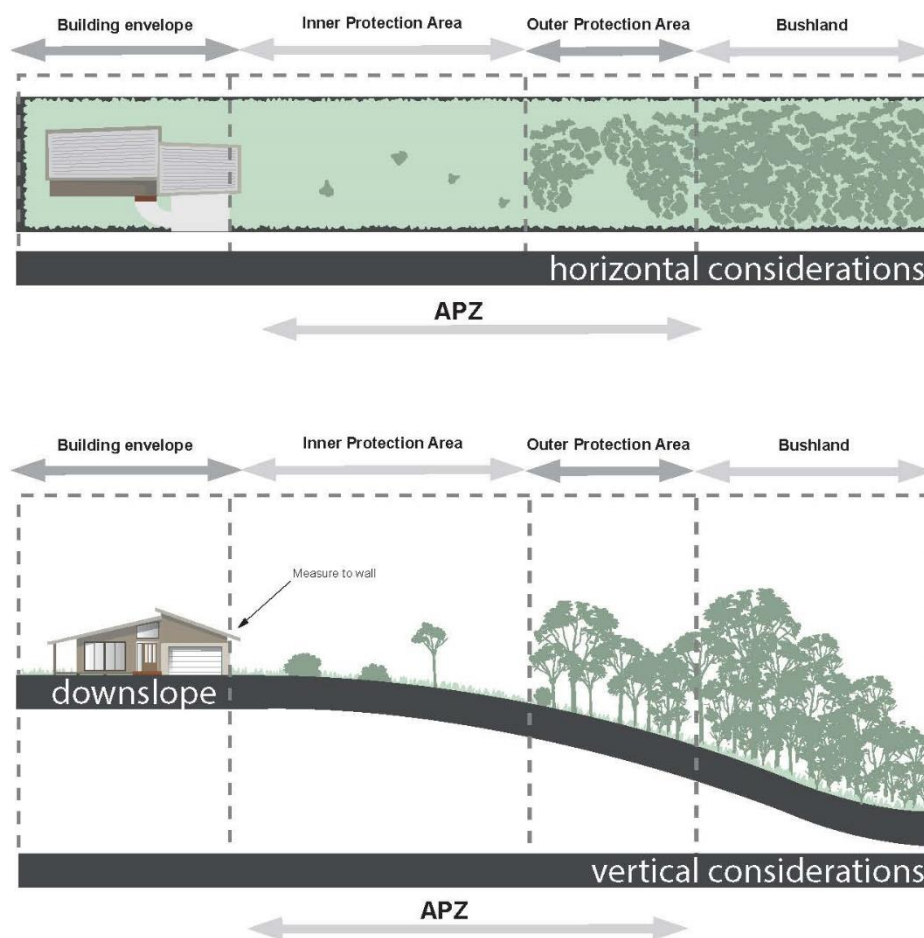


Disclaimer: The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.

SCHEDULE 2. MANAGEMENT OF ASSET PROTECTION ZONES

The RFS provides basic advice in respect of managing APZs through documents such as, *Standards for Asset Protection Zones* (RFS, 2005), with landscaping to comply with Appendix 4 of *PBP*.

The APZ generally consists of two subordinate areas, an inner protection area (IPA) and an outer protection area (OPA). The OPA is closest to the bush and the IPA is closest to the dwellings. The property is to be managed to IPA standards only. A typical APZ is graphically represented below.



APZs and progressive reduction in fuel loads
 (Source: *PBP*, 2019)

Note: Vegetation management as shown is for illustrative purposes only. Specific advice is to be sought regarding vegetation removal and retention from a qualified and experienced expert to ensure APZs comply with the RFS performance criteria.

The following table adapted from *PBP* provides maintenance advice for vegetation within the IPA and OPA. The APZ is to be maintained in perpetuity and maintenance should be undertaken regularly, particularly in advance of the bushfire season.

	Inner Protection Area	Outer Protection Area
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 retaining smooth barked and evergreen trees.	➤ Tree canopy cover should be less than 30%; and ➤ Canopies should be separated by 2 to 5m.
Shrubs	➤ Large discontinuities or gaps in the vegetation should be provided to slow down or break the progress of fire towards buildings. ➤ Shrubs should not be located under trees. ➤ Shrubs should form less 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.	➤ Shrubs should not form a continuous canopy; and ➤ Shrubs should form less than 20% of ground cover.
Grass and Leaf Litter	➤ Grass should be kept mown to a height of less than 100mm; and ➤ Leaves and other debris should be removed	➤ Grass should be kept mown to a height of less than 100mm; and ➤ Leaf and other debris should be removed.
	All Management Zones	
Weeds	➤ All weeds should be removed in accordance with best practice guidelines, and measures taken to prevent their further spread	
Landscaping	➤ Suitable impervious areas being provided immediately surrounding the building such as courtyards, paths, and driveways. ➤ Restrict planting in the immediate vicinity of the building which may over time and if not properly maintained come into contact with the building. ➤ When considering landscape species consideration needs to be given to estimated size of the plant at maturity. ➤ Avoid species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopies. ➤ Use smooth bark species of trees species which generally do not carry a fire up the bark into the crown. ➤ Avoid planting of deciduous species that may increase fuel at surface / ground level (i.e. leaf litter). ➤ Avoid climbing species to walls and pergolas. ➤ Locate combustible materials such as woodchips / mulch, flammable fuel stores away from the building. ➤ Locate combustible structures such as garden sheds, pergolas, and materials such timber garden furniture way from the building; and ➤ Use of low flammability vegetation species.	

SCHEDULE 3. NSW RFS CORRESPONDENCE WITH THE DEPARTMENT OF PLANNING, HOUSING & INFRASTRUCTURE (DPHI) ON 22 MARCH 2024

Department of Planning, Housing & Infrastructure
(Parramatta)
Locked Bag 5022,
PARRAMATTA NSW 2124
Australia

Your reference: SSD-68287712
Our reference: DA20240307000953-SEARS-1

ATTENTION: Tuongvi Doan

Date: Friday 22 March 2024

Dear Sir/Madam,

Development Application
State Significant – SEARS – Cemetery
Douglas Park Cemetery - Concept Plan and Stage 1 430-490 Douglas Park Drive Douglas Park NSW 2569, 2//DP250359

I refer to your correspondence regarding the above proposal which was received by the NSW Rural Fire Service on 07/03/2024.

A report prepared by a suitably qualified bush fire consultant should be prepared to demonstrate the proposed developments compliance with the requirements of *Planning for Bush Fire Protection*. In this regard, the report may need to demonstrate compliance with section 8.3.1 - *Buildings of Class 5 to 8 under the NCC* and 8.3.11 *Public assembly buildings*.

For any queries regarding this correspondence, please contact Adam Small on 1300 NSW RFS.

Yours sincerely,

Nika Fomin
Manager Planning & Environment Services
Built & Natural Environment

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