

## Bush Fire Assessment Report

in relation to the proposed continued use of Everglades  
House and Gardens for Small Activities, Performance  
Activities and Open Day Activities at:



**Lot 1 DP 1167262**

**37-49 Everglades Avenue Leura**

**(subject site)**

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## Document Tracking

Item	Detail
Project Name	Bush Fire Assessment Report, proposed continued use of Everglades House and Gardens for Small Activities, Performance Activities and Open Day Activities
Project Address	Lot 1 DP 1167262, 37-49 Everglades Avenue Leura
Client Name	The National Trust of Australia (New South Wales)
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Prepared by	Nicole van Dorst
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## Document Control

Version	Primary Author	Description	Date Completed
1	Nicole van Dorst	Draft	03/02/2023
2	Catherine Gorrie	Peer Review	03/02/2023
3	Nicole van Dorst	Final	10/02/2023
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**NOTE:** *This bush fire assessment shall remain valid for 12 months from the latest version date of issue.*

## Executive Summary

Bushfire Consulting Services was commissioned by The National Trust of Australia (New South Wales) to provide a bush fire assessment for the proposed continued use of Everglades House and Gardens for Small Activities, Performance Activities and Open Day Activities at Lot 1 DP 1167262, 37-49 Everglades Avenue Leura. The subject site is mapped as designated bush fire prone land by Blue Mountains City Council and is located within 100 metres of bush fire prone (hazardous) vegetation.

Everglades Gardens is owned and managed by the National Trust and is recognised as one of the most significant heritage properties in the Blue Mountains. The site is listed as a State significant heritage item and supports significant vegetation communities on steep slopes zoned C2 – Environmental Conservation. As a result the implementation of bushfire protection measures such as asset protection zones and building upgrades must acknowledge these constraints.

The proposal involves the continuation of Small Activities e.g. wedding ceremonies (not receptions) wakes and social gatherings like picnics and baby showers, Performance Activities e.g. arts, music, theatre and entertainment) in the gardens, and Open Day Activities.


All activities will take place in the gardens and there are no building works proposed. Whilst not a form of Special Fire Protection Purpose under the *Rural Fires (RF) Act* section 100B (s.100B), and a Bush Fire Safety Authority (BFSA) from the NSW RFS is not required, the proposal may be referred to the NSW Rural Fire Service under *EP&A Act s4.14* and will be treated technically as though it were an SFPP, due to the possibility of hosting larger numbers of people that may include a vulnerable population or those who are unfamiliar with their surroundings. Outdoor Activities are given additional consideration under Section 8.3.8 of PBP. As a result, an appropriate combination of Bushfire Protection Measures (BPMs) are proposed.

This report makes recommendations in accordance with the aim, specific objectives, the intent and performance criteria of Chapter 6 and 8.3.8 of the NSW RFS document 'Planning for Bush Fire Protection' (PBP) (NSW RFS 2019). The recommendations address these, including:

- Cancelling of events on Catastrophic Fire Danger Rating days
- Consideration of access and egress routes for emergency services and patrons in the event that evacuation is required, and expected evacuation timeframes
- An offsite safe refuge with suitable capacity to contain all participants and staff that complies with the NSW RFS Neighbourhood Safer Place Guidelines
- minimise levels of radiant heat, localised smoke and ember attack through APZ management
- provide an appropriate operational environment for emergency service personnel during firefighting and emergency management
- ensure the capacity of existing infrastructure (such as roads, water supply and utilities) can accommodate the increase in demand during emergencies as a result of the development
- ensure emergency evacuation procedures and management which provides for the special characteristics and needs of occupants.

Where all recommendations are implemented, the report concludes that the proposal can comply with the relevant aim and objectives of PBP.

## Compliance Summary

This Assessment has been Certified by: Nicole van Dorst BPAD-Level 3 Accredited Practitioner FPAA Cert No: BPAD23610	
This Version of the Assessment has Certified by: Catherine Gorrie BPAD-Level 3 Accredited Practitioner FPAA Cert No: BPAD20751	
Does this development comply with the aim and objectives of PBP?	Yes
Is referral to the NSW Rural Fire Service (RFS) required?	At Council Discretion

## List of Abbreviations

APZ	Asset Protection Zone
AS3959	Australian Standard 3959 – 2018, <i>Construction of Buildings in Bushfire Prone Areas</i>
BAL	Bushfire Attack Level
BPAD	Bushfire Planning and Design (Accreditation Scheme)
BPMs	Bushfire Protection Measures
BPLM	Bushfire Prone Land Map
Council	Blue Mountains City Council
DA	Development Application
DEM	Digital Elevation Model
EP&A Act	<i>Environmental Planning and Assessment Act – 1979</i>
FDI	Fire Danger Index
FPAA	Fire Protection Association of Australia
IPA	Inner Protection Area
kW/m <sup>2</sup>	Kilowatts per metre squared
LiDAR	Light Detection and Ranging
LPMA	Land & Property Management Authority
NCC	National Construction Code
OP	Operational Plan
PBP	<i>Planning for Bush Fire Protection 2019</i>
RF Act	<i>Rural Fires Act – 1997</i>
RFS	NSW Rural Fire Service
SEPP	State Environmental Planning Policy
SIX	Spatial Information Exchange



## 1. Introduction

This report has been commissioned by The National Trust of Australia (New South Wales) to provide a bush fire assessment for the proposed continued use of Everglades House and Gardens for Small Activities, Performance Activities and Open Day Activities at Lot 1 DP 1167262, 37-49 Everglades Avenue Leura.

The subject property is “bushfire prone land” as per the local Council bushfire prone land map (Figure 4) as defined by section 10.3 (s10.3) of the *Environmental Planning & Assessment Act* (EP&A) 1979 and therefore the requirements stipulated by legislation apply to any new development on the site.

Everglades Gardens is owned and managed by the National Trust and is recognised as one of the most significant heritage properties in the Blue Mountains. The site is listed as a State significant heritage item and supports significant vegetation communities on steep slopes zoned C2 – Environmental Conservation. As a result, the implementation of bushfire protection measures such as asset protection zones and building upgrades must acknowledge these constraints.

*Planning for Bush Fire Protection 2019* (Chapter 6) describes this type of development as a Special Fire Protection Purpose and therefore the aim and objectives of Chapter 6 applies, due to the possibility of hosting larger numbers of people that may include a vulnerable population or those who are unfamiliar with their surroundings. Outdoor Activities are given additional consideration under Section 8.3.8 of PBP.

The bush fire assessment and recommendations are derived from the Rural Fire Service document *Planning for Bush Fire Protection 2019*.

## 2. Purpose of this Report

The purpose of this report is to provide the owners, the Consent Authority and the Certifier with a description of the proposed development as well as the vegetation type, slope and any other factors influencing the likely bushfire behaviour, sufficient to show that the

development will be protected from the likely bushfire threat as outlined in current legislation.

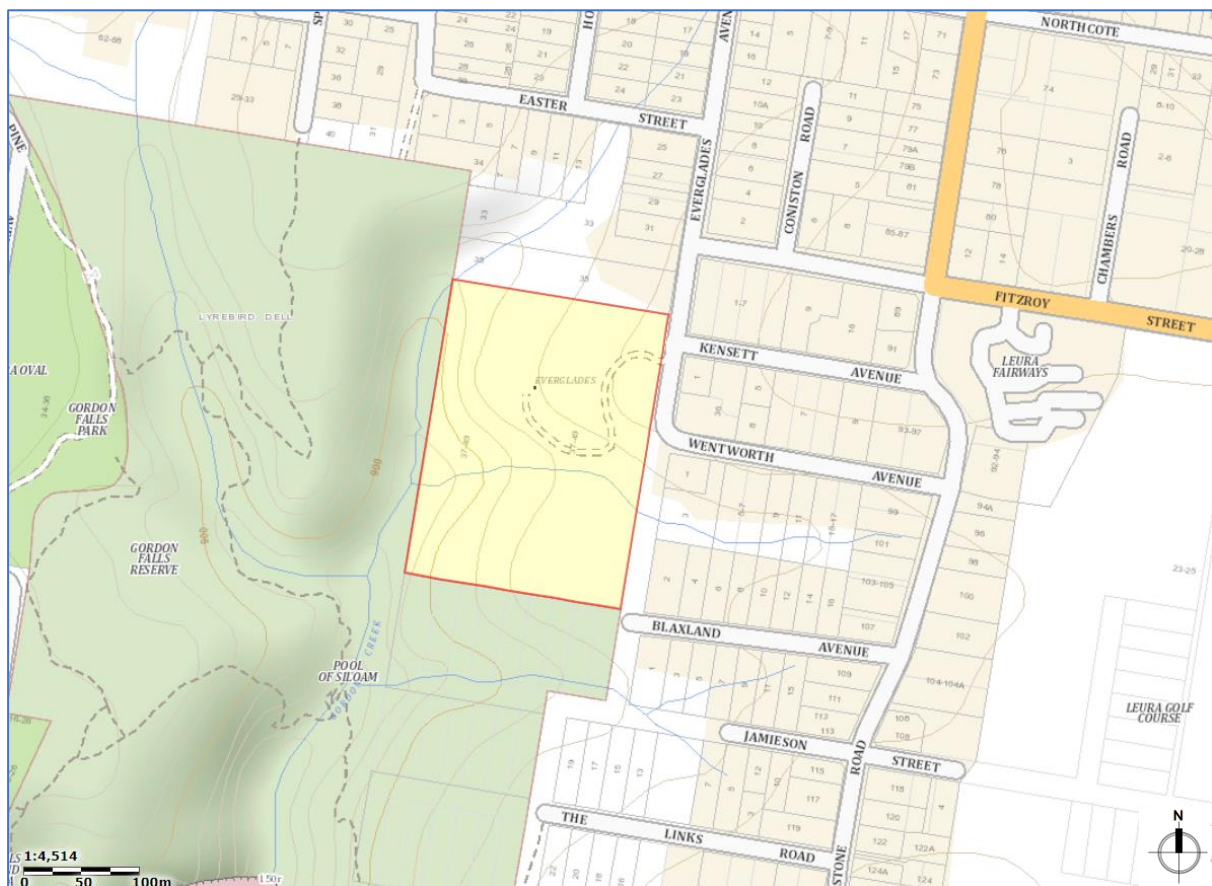
This version of the report supports the reduced Public Programs and has further defined APZ recommendations following consultation with the site's Head Gardener.

This assessment includes an analysis of the hazard, threat and subsequent risk to the development and provides recommendations that satisfy the aim and objectives of Planning for Bush Fire Protection.

### 3. Location

The site is located and known as Lot 1 DP 1167262, 37-49 Everglades Avenue Leura. The property is part of the Blue Mountains City local government area.

**Figure 1. Location Map. Source: LPMA SIX Viewer (NSW Government 2023a)**



*Site location outlined in red*

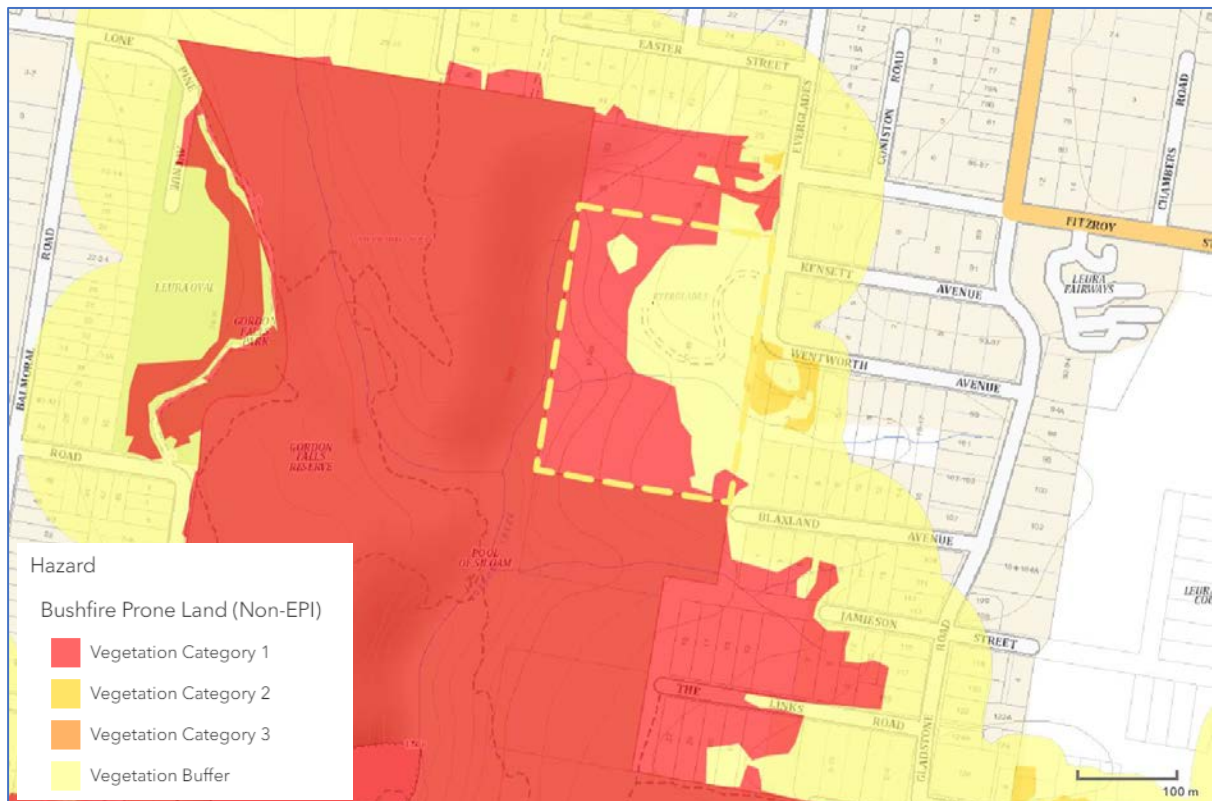
**Figure 2. Aerial Map. Source: LPMA SIX Viewer (NSW Government 2023a)**



*Site location outlined in red*



**Figure 3. Bushfire Prone Land Map. Source: NSW Government Planning Viewer (NSW Government 2023b)**



*Site location denoted by pin*

## 4. Property Description

The property is comprised of Lot 1 DP 1167262, 37-49 Everglades Avenue Leura, covering approximately 49,460.04m<sup>2</sup> in area (Figure 2).

The site is located at the southern end of Everglades Avenue between Blaxland Road and Kensett Avenue within an established residential area. The site is bound by residential development to the north and east with Blue Mountains National Park located to the south and west of the site.

The Everglades contains a number of individual buildings including a house museum and cafe, offices, visitors centre, outdoor garden theatre, a squash court converted to an art gallery and associated outbuildings (log cabin, brick shelter). A visitor car park is located adjacent to the visitors centre with staff car park access also available from Blaxland Avenue in the southeast. The formal landscaped gardens are considered to be of national significance as one of the most important examples of the work of Paul Sorensen.

Historically, the site has been the location for community activities and outdoor theatre since the late 1930s. In 1962 the property was acquired by the National Trust of Australia (NSW) with the objective of public use, and the site has been open to the public, for tours and open days, occasional performances and activities, and small scale venue hire since then.

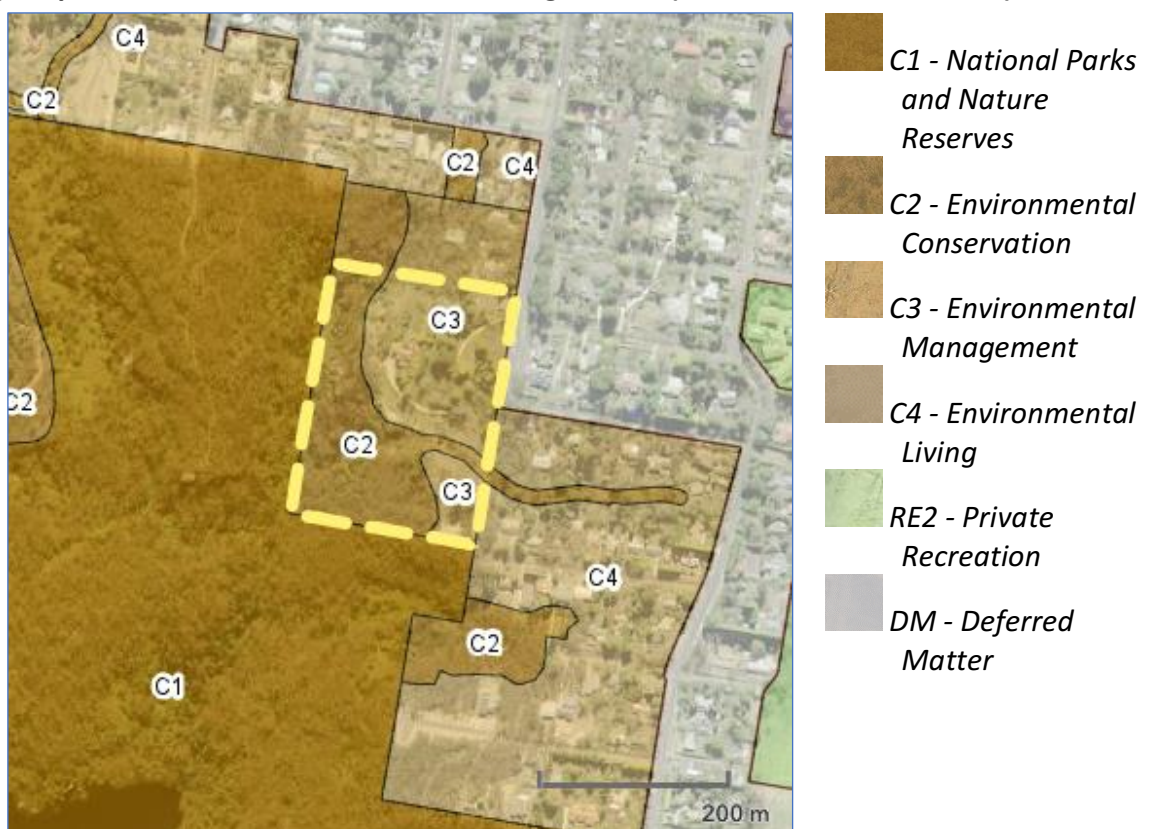
The site's main entrance gate is a pedestrian only entrance at Everglades Avenue and is the site of the Visitor Centre approved by Council in 2010.

## 4.1 Zoning

The land is zoned C2: Environmental Conservation and C3: Environmental Management under Blue Mountains Local Environmental Plan 2015 (Figure 4).

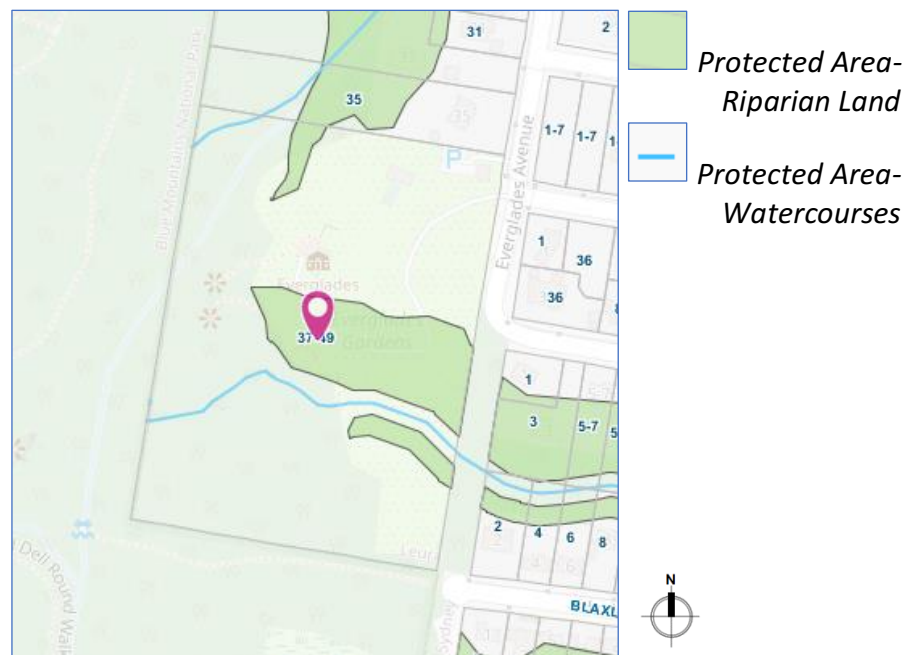
The lot is affected by a Protected Area – Watercourse, Protected Area - Riparian Land (16.23%) and Protected Area - Slope Constraint Area (25.42%) (Figures 5 & 6).

**Figure 4. Zoning Map. Source: NSW Government Planning Viewer (NSW Government 2023c)**



*Site location outlined in yellow*

**Figure 5: Protected Area – Watercourse and Riparian Land Source: BMCC Mapping**



**Figure 6: Protected Area – Slope Constraint Source: BMCC Mapping**



## 4.2 Environmental and Biodiversity Values

A search of the NSW Office of Heritage and Environment and Heritage's Biodiversity Values Map (NSW Government 2023c) has been carried out and has not revealed any high biodiversity values on the land.



The site is however subject to a Conservation Agreement under Part 4 Division 12 of the National Parks and Wildlife Act 1974. The conservation area is approximately 2.136ha and is to be managed to protect and restore the Conservation Values. The conservation area contains landscape elements including the grotto, formal paths, stone walls and lookout which are components of Everglades House and Gardens, listed on the NSW State Heritage Register.

**Figure 7: Conservation Area Source: Conservation Agreement**



### 4.3 The Proposal

The proposed development is for the continued delivery of Small activities, Performance and Open Day activities that was up until now considered a temporary use. No physical building works are proposed, and all operations will be conducted in accordance with the Operational Plan (OP) that accompanies the DA. The OP states that the use of the site for Small activities, Performance and Open Day activities is proposed initially in line with existing operations, with the frequency of activities to rise gradually and incrementally over time. The site will not achieve operations at the maximum capacity sought under the Development Application for some time.

The proposed development relates to Temporary Activities (Small Activities, Performance Activities and Open Days) that occur on the site and have been previously approved by Council pursuant to XM/534/2016 as modified. Attaining ongoing approval for these activities is intrinsic to the site's viability as a place for public enjoyment of State heritage significance. The DA seeks approval for Temporary Activities on the site as follows:

Description	Capacity	Frequency (maximum only)	Hours of operation
Small Activities	120	90 days per year	9am to 7pm (daylight hours)
Performance Activities	250	20 days per year	9 am – 10.30 pm (amplified sound to cease at 10pm)
Open Day Activity	600	2 days per year	9am to 7pm (daylight hours)

Business as Usual Activities have occurred on site since the 1960s and there have been a range of previous approvals. These include Open Days, where the House is open to the public daily including house tours, garden tours, house and garden tours as well as space/venue hire and ancillary food and beverage. Activities include a range of special programs for visitors, including guided tours, lectures, exhibitions, and special activities. Normal days of occupancy



are Monday to Sunday 8am to 5pm with onsite staff supported by the National Trust head office team. Everglades has an on-site manager during all operations.

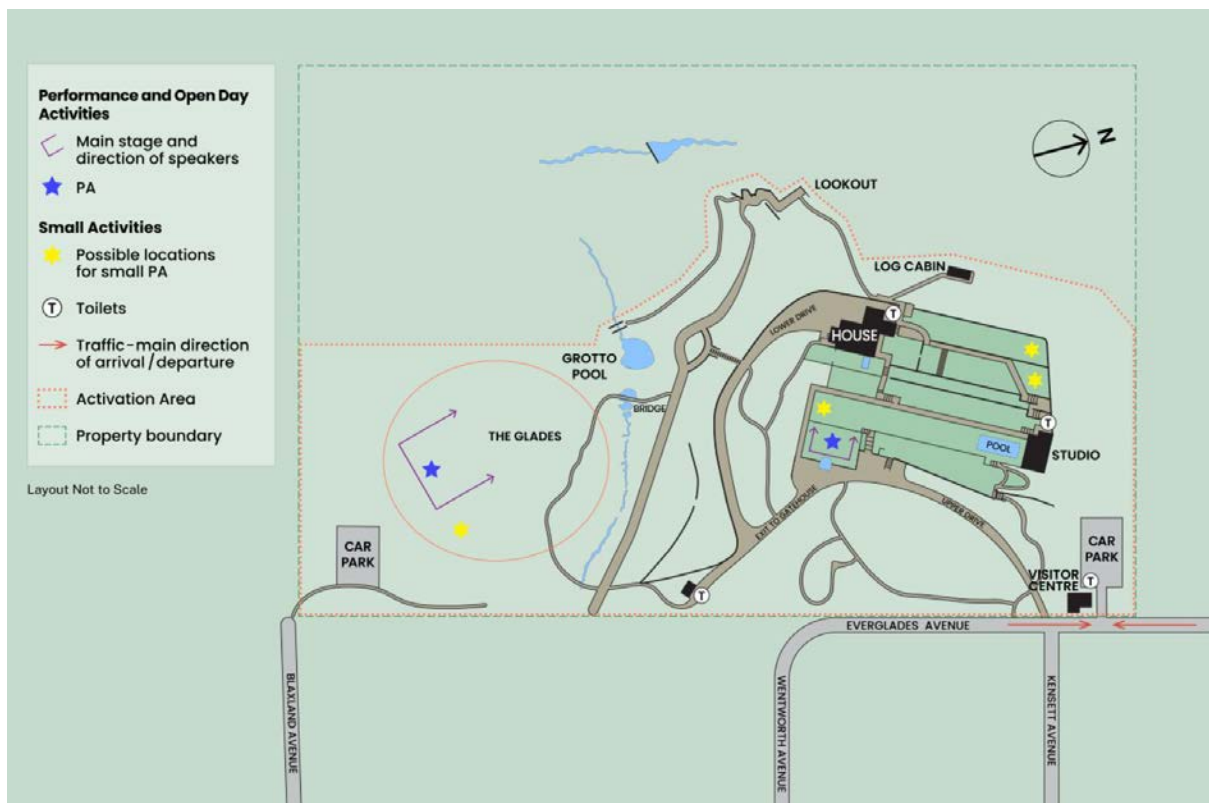
Vehicular access to the site is from Everglades Avenue into the car park (15 vehicles) at the site frontage. A staff car park and service vehicle (garbage truck) access is also available from Blaxland Avenue (maximum of 14 vehicles). Pedestrian access is the principal means of accessing the site and is achievable via the gatehouse on Everglades Avenue.

The development is considered to be a Special Fire Protection Purpose and also supports outdoor activities which requires additional consideration under Section 8.3.8 of PBP.

Proposed community activities are limited to 250 people and public community activities to 750 people during Open Days. For the purpose of assessing the potential worst-case scenarios, these patron numbers are adopted, though it is unlikely that all patrons would be present on the site at any one time.

Whilst not a form of Special Fire Protection Purpose under the *Rural Fires (RF) Act* section 100B (s.100B), and a Bush Fire Safety Authority (BFSA) from the NSW RFS is not required, the proposal may require a referral to the NSW Rural Fire Service under *EP&A Act s4.14*.

Figure 8: Site Plan



## 5. Site Assessment

Bushfire Consulting Services Pty Ltd attended the site on 20 January 2023. The assessment relates to the existing and continued use of the site for public activities. The NSW Spatial Services mapping website has also been used as a reference (NSW Government 2023a), and 'Ocean Shores to Desert Dunes' by David Keith (Keith 2004), in determining the vegetation type.

## 6. Bush Fire Attack Assessment

### 6.8 Determine Vegetation Formations

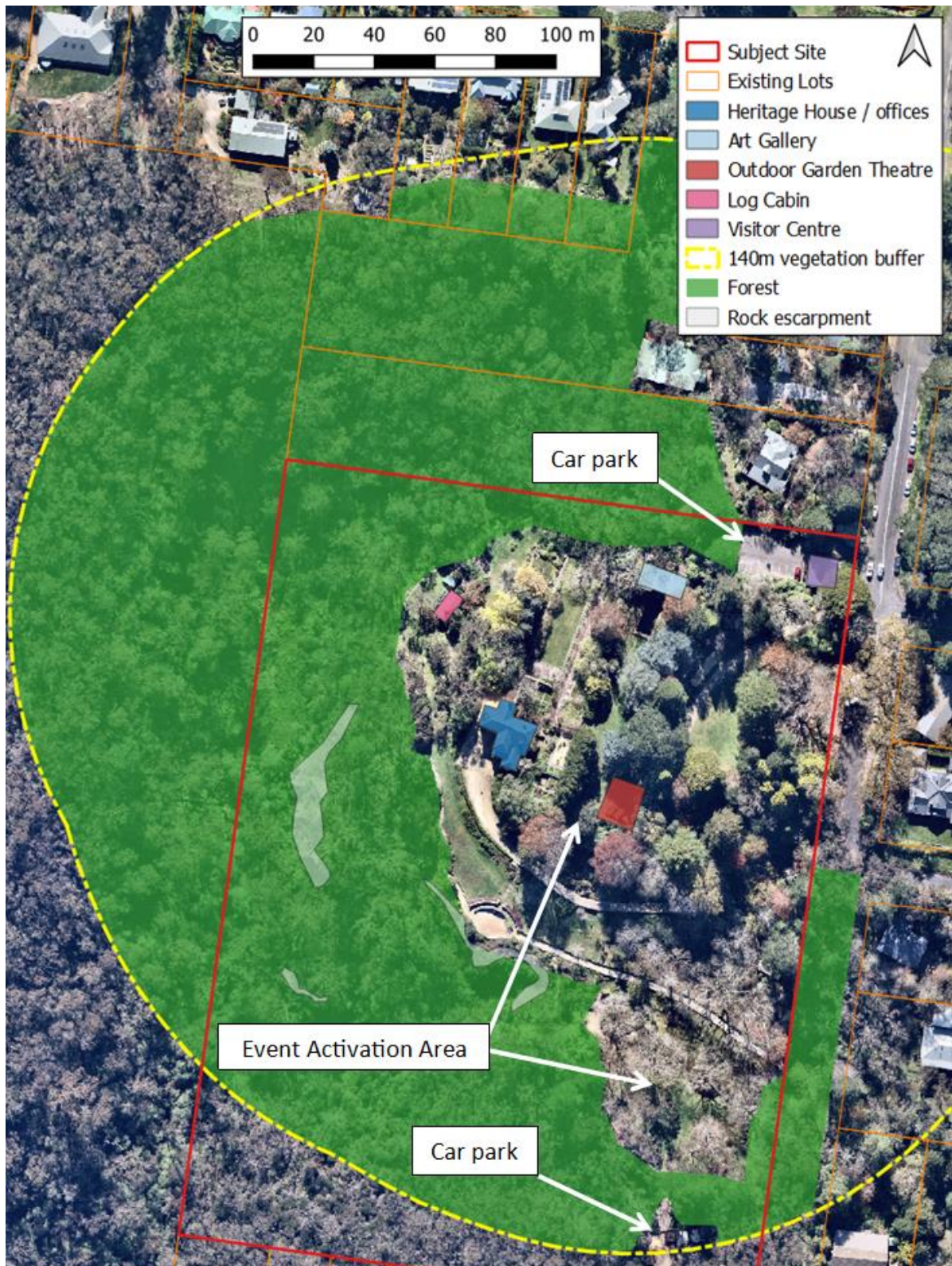
The hazardous vegetation formations for each aspect of the development within 140m of the asset have been identified according to Keith (2004). The bushfire threat emanates from bushland located to the west, north and south-west of the site. This vegetation is located within and external to the subject site boundaries.

Apart from the hazard, within 140m of the site, lots to the northeast and east contain existing residential developments with curtilages comprising lawns, shrubs and occasional trees, which do not constitute a hazard.

Based on a site visit and determination of vegetation formation using the Keith (2004) Identification Key, the primary bushland vegetation having the potential to affect the subject building is most representative of Forest (Sydney Coastal Dry Sclerophyll Forest) with tall heath associated with the creek line to west.



Figure 9. Hazardous vegetation affecting the property. Source: NearMap (2023) with overlays by BFCS P/L



Subject site outlined in red. Vegetation was assessed to a distance of 140m from the buildings

## 6.9 The effective slope

The slope of the land under the classified vegetation has a direct influence on the rate of fire spread, the intensity of the fire and the level of radiant heat flux. The effective slope of the land from the existing buildings for a distance of 100m is derived from a site assessment combined with the most detailed contour data available. The slope is then categorised into one of following classes, relative to the location of the hazard:

- all upslope vegetation (considered 0 degrees)
- >0 to 5 degrees downslope vegetation
- >5 degrees to 10 degrees downslope vegetation
- >10 degrees to 15 degrees downslope vegetation, and
- >15 degrees to 20 degrees downslope vegetation.

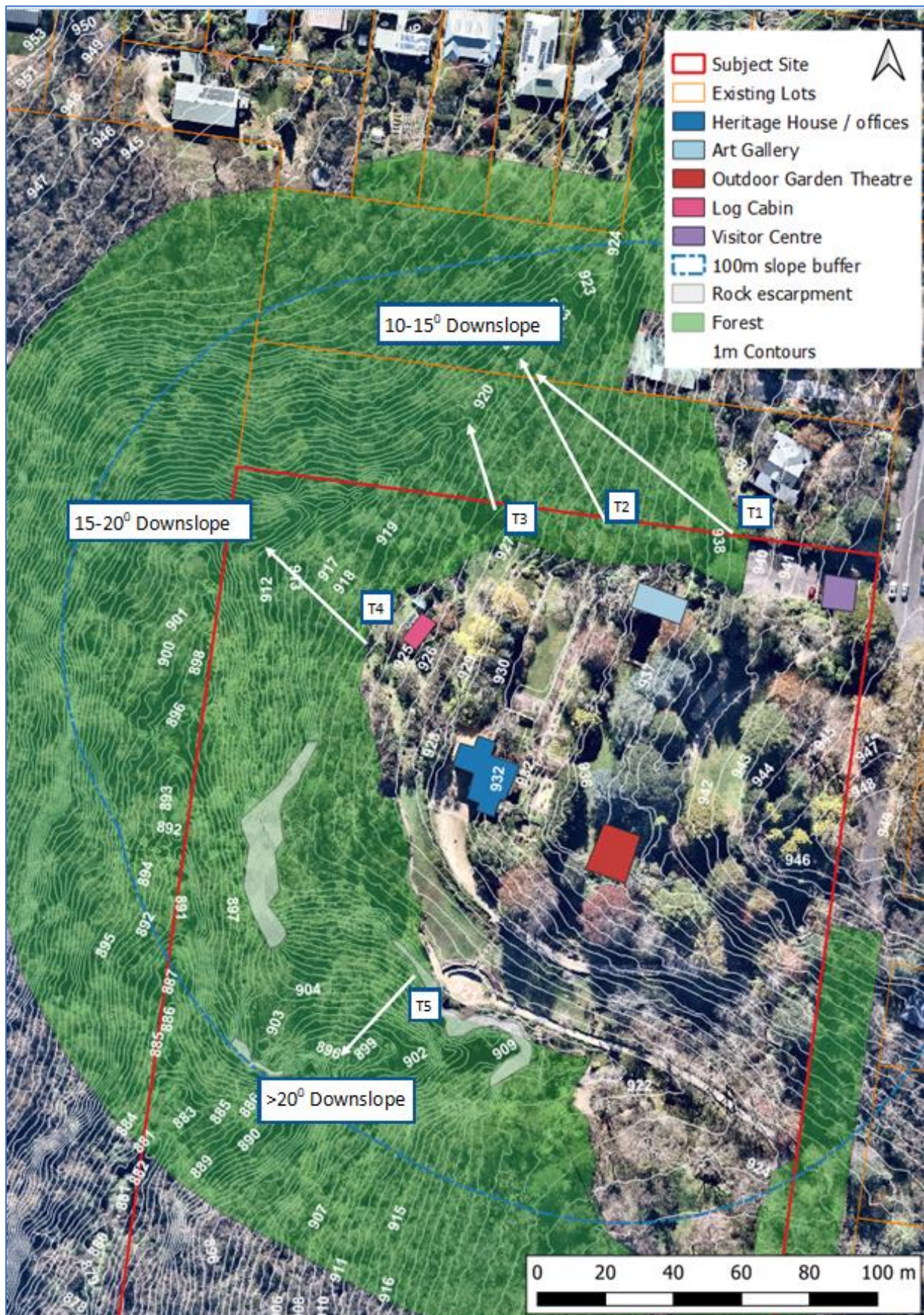
1m DEM data is sourced from NSW Spatial Services which is captured using LiDAR and has a horizontal accuracy of 0.3m and vertical accuracy of 0.8m at 95%.

The effective slope has been measured manually on site over a distance of 100m from the proposed development where accessible, under the classified vegetation community constituting the hazard. The slope was found to be consistent with the topographical information from NSW Spatial Services LiDAR data.

Direction from Building Footprint	Slope Description
North	Downslope > 10 - 15°
East	N/A
South & southwest	Downslope > 20°
Northwest	Downslope > 15 - 18°



Figure 10. Slope Diagram. Source: NearMap (2023) and LiDAR (NSW Government 2023a)  
with overlays by BFCS P/L





*T1 slope is  $((939-920)/81) \times 1/\tan = \text{downslope } 13.20^\circ$*

*T2 slope is  $((931-920)/55) \times 1/\tan = \text{downslope } 11.3^\circ$*

*T3 slope is  $((928-923)/29) \times 1/\tan = \text{downslope } 10^\circ$*

*T4 slope is  $((922-908)/41) \times 1/\tan = \text{downslope } 18.78^\circ$*

*T5 slope is  $((913-896)/35) \times 1/\tan = \text{downslope } 25.91^\circ$*

## 6.10 Fire Weather

The development is located in the Blue Mountains City Council area, a part of the Greater Sydney Region, which has a Fire Danger Index of 100.

## 6.11 Determination of APZs

An Asset Protection Zone (APZ) is a fuel-reduced area surrounding a built asset or structure. An APZ provides a buffer zone between a bush fire hazard and an asset and an area of reduced bush fire fuel that allows suppression of fire. It also provides an area from which backburning or hazard reduction can be conducted, and allows emergency services access as well as providing a relatively safe area for firefighters and home owners to defend their property.

Potential bush fire fuels should be minimised within an APZ. This is so that the vegetation within the planned zone does not provide a path for the transfer of fire to the asset either from the ground level or through the tree canopy. PBP has minimum specifications for APZs to be established around a dwelling to be managed as an Inner Protection Area (IPA), and in Forest situations, there is also an allowable Outer Protection Area (OPA).

An IPA should provide a tree canopy cover of less than 15% and have minimal fine fuel at ground level, the grass mowed on a frequent basis, trees and shrubs retained as clumps or islands and do not take up more than 20% of the area, trees and shrubs located far enough from buildings so that they will not ignite the building, garden beds with flammable shrubs not located under trees or within 10 metres of any windows or doors, minimal plant species that keep dead material or drop large quantities of ground fuel, tree canopies not located within 2 metres of the building, trees separated by 2-5 metres and do not provide a continuous canopy from the hazard to the building, and lower limbs of trees removed up to a height of 2 metres above the ground.

Ideally PBP requires APZs for new SFPP developments to meet a radiant heat level of less than 10kW/m<sup>2</sup> and for outdoor public gatherings to meet radiant heat levels of less than 2kW/m<sup>2</sup>. However, this is an existing use and due to lot boundary, environmental and heritage constraints it is not possible to meet the 10kW/m<sup>2</sup> standard and therefore the aim is to achieve the greatest possible separation from the hazard, combined with appropriate bushfire protection measures to improve the overall situation.

To calculate the expected radiant heat impact, the relevant FFDI, vegetation formation and effective slope are matched using AS3959-2018 Appendix B Method 2 calculations.

#### **Expected radiant heat impact, FFDI 100 areas ( 1200K)**

Aspect	Distance from hazard	Vegetation Classification	Slope Under Classified Vegetation	APZ required (Table A1.12.1) & calculated radiant heat exposure
North (visitor centre & art gallery)	18-24m	Forest	Downslope >10- 15°	100m >49kW/m <sup>2</sup>
West (Heritage House)	28m	Forest	Downslope >15- 20°	100m >57kW/m <sup>2</sup>
South & West (outdoor garden theatre)	54-60m	Forest	Downslope >15- 20°	100m >24kW/m <sup>2</sup>

As outlined above the required 100m APZ cannot be provided within the site based on environmental and heritage constraints. It is recommended that the site is managed as per the Bushfire Management Plan provided in Figure 11 to improve the bushfire protection measures afforded to the site.



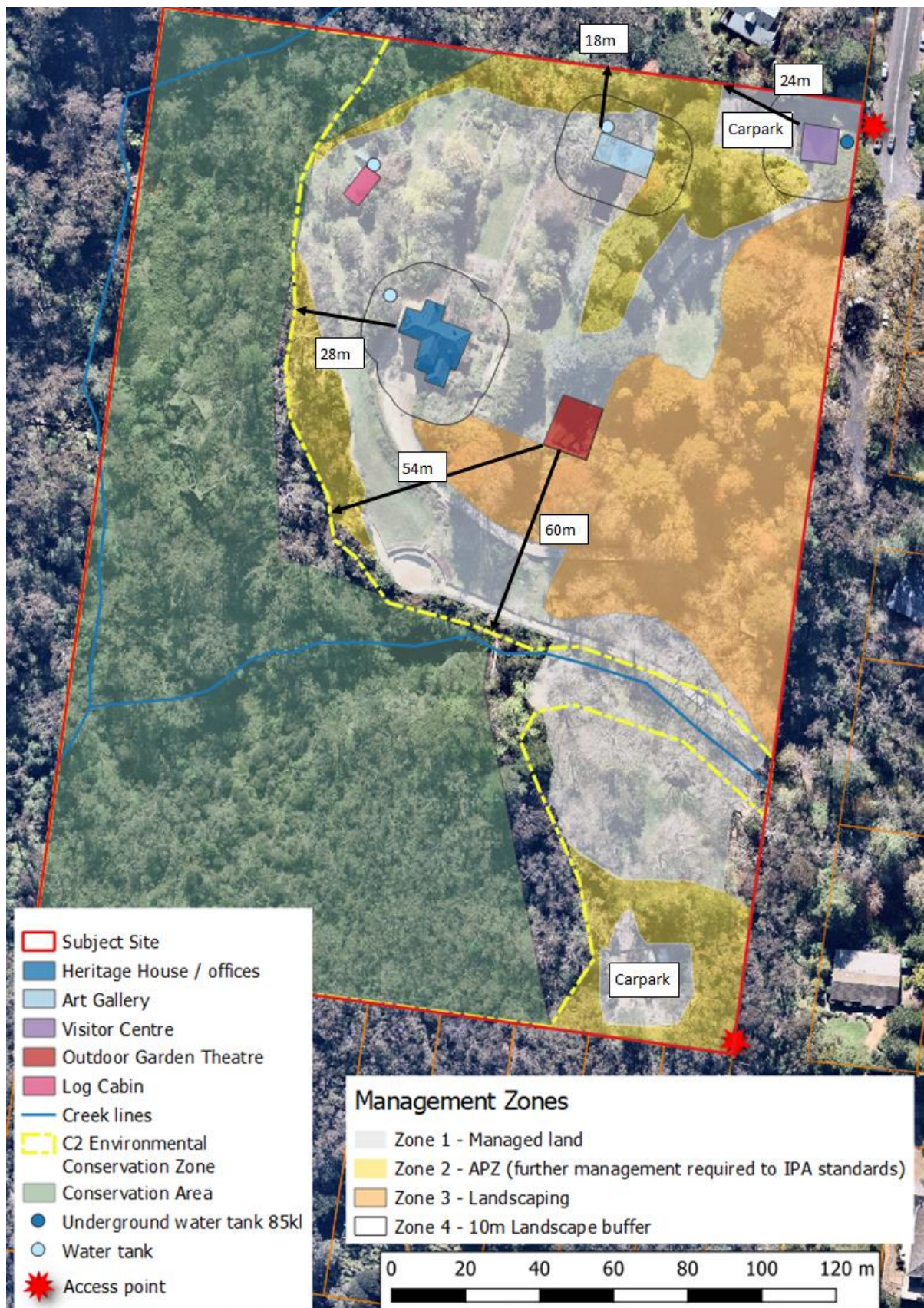
## 7. Bushfire Protection Measures

### 7.1 APZs and building construction

Intent of measures: 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 Solutions
Radiant heat levels of greater than 10kW/m <sup>2</sup> (calculated at 1200K) will not be experienced on any part of the building	Not achieved based on site constraints. Further vegetation management is recommended to provide for a better bushfire protection outcome (refer Figure 7)
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
APZs are managed to prevent the spread of fire to the building	APZs are managed in accordance with PBP Appendix 4 and in accordance with the zone objectives below.
APZs are provided in perpetuity	The APZ is wholly within the boundaries of the development site
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 surrounding each building (for a distance of 10m) is in accordance with the recommendations of this report
The proposed building can withstand bush fire attack in the form of wind, embers, radiant heat and flame contact	Not applicable. There are no proposed changes to the existing buildings. The applicant should refer to the link below to consider building upgrades for ember protection (subject to heritage constraints)
<a href="https://www.rfs.nsw.gov.au/_data/assets/pdf_file/0018/4365/Building-Best-Practice-Guide.pdf">https://www.rfs.nsw.gov.au/_data/assets/pdf_file/0018/4365/Building-Best-Practice-Guide.pdf</a>	

**Figure 11. Bush Fire Management Plan. Source: NearMap (2023) and LiDAR (NSW Government 2023a) with overlays by BFCS P/L**



## 7.2 Management Zones

### **Zone 1 – Managed land**

This includes existing mown and managed land with canopy trees only. It is recommended that these areas maintain existing management regimes with additional considerations for the 10m landscape buffer (refer below).

### **Zone 2 – APZ**

It is recommended that further management is undertaken to comply with the standards of an Inner Protection Area (IPA). These areas are confined to the site boundary in the north and to the C2 zone line and/or conservation area to the west. It also includes the existing landscaped area to the south of visitor centre to provide clear access / egress for patrons and fire fighting operations. The following standards apply for Zone 2, except for a few trees very close to buildings that cannot be removed or hard pruned due to conservation value. These are located at the Log Cabin, Gallery and Visitor Centre.

Separation of canopies to 2-5 metres is also difficult or not possible in the majority of zone 2 due to pruning would adversely affect the structure, stability and conservation value of the trees.

There are some smooth barked and evergreen trees in these zones, but the area is mostly deciduous trees such as Oak, Copper Beech, Ash and Maples.

#### Trees

- 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 ground
- 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
- shrubs should not form more than 10% ground cover



- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation or regularly pruned and replaced with low flammability species progressively over time.

#### Grass

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

### **Zone 3 – Landscaping**

This heritage landscaped area does not comply with the standards required for an IPA as outlined above. This is due to canopy connectivity and shrub layer. It is recommended that fuel loads in the landscaping area are reduced by ensuring leaf and vegetation debris are removed, removal of lower limbs of trees (up to a height of 2m above ground) and limiting planting around the base of trees to minimise potential for vertical spread of fire.

### **Zone 4 – 10m Landscape Buffer**

Landscaping within 10m of the heritage house, visitor centre and gallery must following the principles below.

- trees should not touch or overhang the building
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation or regularly [pruned and replaced with low flammability species progressively over time
- Planting is limited in the immediate vicinity of the building
- Planting does not provide a continuous canopy to the building (i.e. trees or shrubs are isolated or located in small clusters)
- Avoid species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopies
- 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 as timber garden furniture away from the building
- Low flammability vegetation species are used.

### 7.3 Access

Vehicular access is available to the carparking areas internal to the site and adjacent to the Visitor Centre and the cleared area within the south-eastern corner of the site. The remainder of the site is access via pedestrian access only. The current Development Consent includes a requirement for written notification to be provided to Emergency Services including the RFS for activities. This requirement is to continue to apply for all Performance Activities and Open Days.

As outlined in the Operational Plan, for daytime activities, all staff, event organisers, stall holders, performers, musicians, actors, stagehands etc, are generally required to park in the staff car park accessed off Blaxland Road at the south eastern corner of the property. Parking attendants are available at all activities.

All buses and coaches attending the site drop off passengers, and then park elsewhere. They return at an appointed time to collect passengers.

In the event of bushfire it is expected that the abovementioned buses and coaches will be on standby and can collect passengers with 1 – 2 hours' notice. This will be detailed in any specific bushfire emergency evacuation plan.

### 7.4 Water supply

The site is serviced by a static water supply with tanks located adjacent to the visitor centre, art gallery, log cabin and heritage house as generally depicted in Figure 10. The 85kl tank is located beneath the forecourt of the new visitor centre / entry point and approximately half the volume in these tanks is retained for firefighting purposes.

In addition to the tanks the property has a trolley based petrol powered fire pump with 2 hoses which can attach to any of the tanks via a storz connection. Access within the site is limited to pedestrian only and therefore it is recommended that each tank complies the following acceptable solutions.

Performance Criteria	Acceptable Solutions/Comment
water supplies are adequate in areas where reticulated water is not available	<p>A 65mm Storz outlet with a ball valve is fitted to the outlet</p> <p>Ball valve and pipes are adequate for water flow and are metal</p> <p>Supply pipes from tank to ball valve have the same bore size to ensure flow volume</p> <p>Underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank</p> <p>Above-ground tanks are manufactured from concrete or metal</p> <p>Unobstructed access is provided at all times</p> <p>Tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters</p> <p>underground tanks are clearly marked</p> <p>All exposed water pipes external to the building are metal, including any fittings</p> <p>Where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack</p> <p>Any hose and reel for firefighting connected to the pump shall be 19mm internal diameter</p> <p>Any fire hose reels are constructed in accordance with AS/NZS 1221:1997 <i>Fire hose reels</i>, and installed in accordance with the relevant clauses of AS 2441:2005 <i>Installation of fire hose reels</i></p>

## 7.5 Gas Services

There are gas bottles associated with the BBQ which is stored within the heritage building and away from the direct threat of bushfire. Gas services are to comply with the following acceptable solutions.

Performance Criteria	Acceptable Solutions/Comment
Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	<p>Where applicable, 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.</p> <p>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</p> <p>if 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</p> <p>Polymer-sheathed flexible gas supply lines are not used, and above-ground gas service pipes are metal, including and up to any outlets</p>

## 7.6 Emergency management planning

Intent of measures: to provide suitable emergency and evacuation arrangements for occupants of SFPP developments

Performance Criteria	Acceptable Solutions/Comment
A Bush Fire Emergency Management and Evacuation Plan is prepared	<p>A Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the:</p> <p>The NSW RFS document: <i>A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan</i></p> <p>The Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants.</p>

Performance Criteria	Acceptable Solutions/Comment
	<i>Note: A copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to the Local Emergency Management Committee for its information.</i>
Appropriate and adequate management arrangements are established for consultation and implementation of the Bush Fire Emergency Management and Evacuation Plan	An Emergency Planning Committee is established to consult with 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 3745:2010 are clearly displayed, and an annual emergency evacuation is conducted

## 8. Relevant objectives of PBP

Everglades House and Garden was acquired by the National Trust in 1962 and has heritage and environmental constraints which prevents management of the site to the standards required for an Asset Protection Zone. Everglades falls under the following listings:

- NSW State Heritage Register, Item #01498
- Blue Mountains Local Environment Plan, Heritage Item #LA005
- Located inside the Jamison Valley Heritage Conservation Area (Blue Mountains LEP 2015)
- Landscaped gardens zoned C3 Environment Management
- Bushland setting zoned C2 Environmental Conservation
- National Trust listing of the Everglade Group, comprising of the house, studio, log cabin, garden theatre, and bacchus fountain, and brick shelter

Therefore management of the vegetation and upgrades to the buildings for ember protection need to be carefully considered with guidelines provided in Section 7.1 of this report.

The objectives for buildings of Class 9b are outlined in PBP Chapter 1, 6 and 8.



Objective	Comment
Minimise levels of radiant heat, localised smoke and ember attack through increased APZ, building design and siting	There is no change to the existing building footprint and additional vegetation management has been recommended within the site to take into account heritage and environmental constraints
Provide an appropriate operational environment for emergency service personnel during firefighting and emergency management	Static water supply is provided and upgrades should be considered to comply with the acceptable solutions outlined in Section 7.4  Where applicable, 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
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	The proposal seeks to continue its existing use. Access to the site during activities is largely by private vehicle and to a lesser extent by coaches and buses, and therefore the capacity of existing infrastructure is considered adequate

#### Objectives for existing SFPPs

Objective	Comment
Provide an appropriate defensible space	There is no change to the existing building footprint and additional vegetation management has been recommended within the site to consider heritage and environmental constraints
provide a better bush fire protection outcome for existing buildings	Upgrades to existing buildings for ember protection need to be carefully considered with guidelines provided in Section 7.2 of this report

Objective	Comment
Ensure there is no increase in bush fire management and maintenance responsibility on adjoining land owners without their written confirmation	There is no burden on adjoining land owners
Ensure building design and construction enhances the chances of occupant and building survival	The proposal relates to the ongoing use of Everglades for Small activities, Performance and Open Day activities that have previously been approved as a Temporary Use. No physical building works are proposed
Provide for safe emergency evacuation procedures including capacity of existing infrastructure	<p>A Bush Fire Emergency Management and Evacuation Plan is to be prepared consistent with the NSW RFS document: <i>A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan</i>.</p> <p>An Emergency Plan has been prepared for Everglades House and Gardens, by <i>Compliance Emergency Planning Pty Ltd</i>, dated 19th August 2019. This plan has been prepared for emergencies related to bomb, medical, armed confrontation, terrorism and external emergencies such as severe storms, earthquakes and bushfire. The plan outlines the roles of wardens, actions to take depending on the fire danger rating, steps to be taken to prepare the property for bushfire and states that consideration should be given to evacuating to the following Neighbourhood Safer Places as a last resort</p> <ul style="list-style-type: none"> <li>• Open space – intersection of Fitzroy Street and Chambers Road, Leura</li> <li>• Open Space, Megalong Street (Leura Mall, Leura)</li> </ul> <p>The plan also outlines procedures if occupants cannot leave and the property is to be defended. It is recommended that the plan is updated in accordance</p>

Objective	Comment
	<p>with the NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan and should include planning for the early relocation of occupants</p> <p><i>Note: 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</i></p>

## 9. Recommendations

The site is significantly constrained by environmental and heritage values which prevents strict compliance with the requirements for asset protection zones and building design. The low visitor numbers (i.e. <500 people) at any one time, and the cancelling of activities on Catastrophic Fire Danger Rating days will address the inherent bushfire risk posed to the site.

The following recommendations are made for the bushfire measures for the proposed continued use of Everglades House & Gardens for Small activities, Performance and Open Day activities at Lot 1 DP 1167262, 37-49 Everglades Avenue Leura, and are based upon the relevant provisions of the NSW Rural Fire Service Guideline entitled *Planning for Bush Fire Protection 2019*.

### 1. Asset Protection Zones

At the commencement of the development, and in perpetuity, the zones identified as on the Bushfire Management Plan shall be managed as follows;

#### **Zone 1 – Managed land**

This includes existing mown and managed land with canopy trees only. It is recommended that these areas maintain existing management regimes with additional considerations for the 10m landscape buffer (refer below).

#### **Zone 2 – APZ**

It is recommended that further management is undertaken to comply with the standards of an Inner Protection Area (IPA). These areas are confined to the site boundary in the north and to the C2 zone line and/or conservation area to the west. It also includes the existing landscaped area to the south of visitor centre to provide clear access / egress for patrons and fire fighting operations. The following standards apply for Zone 2, except for a few trees very close to buildings that cannot be removed or hard pruned due to conservation value. These are located at the Log Cabin, Gallery and Visitor Centre.

#### Trees

- 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 ground
- 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
- shrubs should not form more than 10% ground cover
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation or regularly pruned and replaced with low flammability species progressively over time.

#### Grass

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

### **Zone 3 – Landscaping**

This heritage landscaped area does not comply with the standards required for an IPA as outlined above. This is due to canopy connectivity and shrub layer. It is recommended that fuel loads in the landscaping area are reduced by ensuring leaf and vegetation debris are removed, removal of lower limbs of trees (up to a height of 2m above ground) and limiting planting around the base of trees to minimise potential for vertical spread of fire.

### **Zone 4 – 10m Landscape Buffer**

Landscaping within 10m of the heritage house, visitor centre and gallery must following the principles below.

- trees should not touch or overhang the building
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation or regularly [pruned and replaced with low flammability species progressively over time
- Planting is limited in the immediate vicinity of the building

- Planting does not provide a continuous canopy to the building (i.e. trees or shrubs are isolated or located in small clusters)
- Avoid species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopies
- 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 as timber garden furniture away from the building
- Low flammability vegetation species are used.

## 2. Gas Services

Where applicable, reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 *The storage and handling of LP Gas* 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.

Polymer-sheathed flexible gas supply lines are not used, and above-ground gas service pipes are metal, including and up to any outlets.

## 3. Water Supply

The existing tanks are to comply with the following:

- A 65mm Storz outlet with a ball valve is fitted to the outlet
- Ball valve and pipes are adequate for water flow and are metal
- Supply pipes from tank to ball valve have the same bore size to ensure flow volume;
- Underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank
- Above-ground tanks are manufactured from concrete or metal
- Unobstructed access is provided at all times

- vii. Tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters
- viii. underground tanks are clearly marked
- ix. All exposed water pipes external to the building are metal, including any fittings
- x. Where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack
- xi. Any hose and reel for firefighting connected to the pump shall be 19mm internal diameter
- xii. Any fire hose reels are constructed in accordance with AS/NZS 1221:1997 *Fire hose reels*, and installed in accordance with the relevant clauses of AS 2441:2005 *Installation of fire hose reels*.

#### 4. Emergency and Evacuation Planning

A Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan. The Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants.

Note: 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.

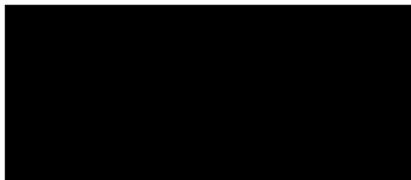
## 10. Summary

This report consists of a bush fire assessment for the proposed continued use of Everglades House and Gardens for Small Activities, Performance Activities and Open Day Activities at Lot 1 DP 1167262, 37-49 Everglades Avenue Leura. The report concludes that the proposed development is on designated bushfire prone land and the legislative requirements for development in bushfire prone areas are applicable.

This report has considered all the elements of bushfire attack and finds that the development satisfies the aim and objectives of 'Planning for Bush Fire Protection' 2019, applicable to the development, subject to implementation of the recommendations made by this report.

*Notwithstanding the precautions adopted, it should always be remembered that bushfires burn under a wide range of conditions and an element of risk, no matter how small, always remains and although the standard is designed to improve the performance of such buildings, there can be no guarantee because of the variable nature of bushfires that any one building will withstand bushfire attack on every occasion.*

*This report is a bush fire assessment that provides the required information to assist local Council and the Rural Fire Service in determining compliance in accordance with Planning for Bush Fire Protection. The local Council is the final consenting authority and the proposed activities in the application must comply with the recommendations included in the Council's conditions of consent.*



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## 11. References

Keith D 2004, *Ocean Shores to Desert Dunes, the Native Vegetation of NSW and the ACT*, Department of Environment and Conservation, Sydney

NearMap 2023, *NearMap Photomap Aerial Imagery*, NearMap Australia, Barrangaroo, NSW

NSW Government 2023a, *NSW Spatial Services*, NSW Department of Finance, Services and Innovation.

NSW Government 2023b, *NSW Planning Portal*, NSW Department of Planning and Environment.

NSW Government 2023c, *Biodiversity Values Map*, NSW Department of Environment and Heritage.

NSW RFS 2019, *Planning for Bush Fire Protection*, NSW Rural Fire Service, Sydney.

Standards Australia 2018, *Australian Standard AS 3959-2018 'Construction of Buildings in Bushfire Prone Areas'*, SAI Global, Australia.

## 12. Legislation

*Environmental Planning & Assessment Act 1979*

*Rural Fires Act 1997*

*Rural Fires Regulation 2013*

## Appendix 1 – Photos of Site and Surrounds

Source: BFCS P/L 20/01/2023



*Heritage House (southern elevation)*



*Heritage House (northern elevation)*





*Heritage house (eastern elevation) – recommend removal / pruning of shrubs at trees as per recommendation 1 of report*



*Art Gallery (southern elevation)*





*Garden Theatre*



*Visitor Centre (western elevation)*





*Visitor Centre (southern elevation)*



*Log Cabin (eastern elevation)*





*Forest vegetation approximately 60m to the west of the heritage building  
(photo taken from look out)*



*Rock escarpment to the west*





*Rock escarpment to the south*



*Managed creek line to the south*





*Vegetation to the west, approximately 20m from the heritage house – Recommend further management to APZ standards*



*Vegetation to the north, approximately 5m from the art gallery – Recommend further management of vegetation up to site boundary to APZ standards*





Static water supply to the rear of the Art Gallery





*Static water supply to the rear of the Log Cabin*