REF: 6124BF

Date: 4/4/25

Valid to 4/4/26

BUSHFIRE HAZARD ASSESSMENT

PROPOSED ART GALLERY

74 MENINYA STREET, MOAMA, NSW

LGA: Murray River

Lot 2, DP 1293868

Applicant: Lynn Gillard

HARRIS ENVIRONMENTAL CONSULTING

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Version Control

Date Created	31/3/25			
Version Number	Name	Issue Detail	Date Modified	Status
1.0	BJ	Report	13/6/23	Complete
1.1	CRH	Amended Report	3/4/25	Complete
2.0	KH	Final	4/4/25	Complete

Bushfire Hazard Assessment

Property Address:	74 Meninya Street, Moama, NSW, Lot 2, DP 1293868
Description of Proposal:	Proposed Art Gallery
Plan Reference:	Project Number; 185PC. Project name: MOAMA BAP, Client: Bridge Art Project, 74 Meninya St, Moama NSW 2731. Proposed Ground Floor Plan, Drawn by TZ, Checked by TZ. Drawing Number: SD-20, Rev: B.
Highest BAL Rating:	BAL 29
Performance-Based Solution	Yes, RFS provided pre-da advice allowing for a BAL 29 construction in conjunction with egress to the road via a front door exposed to 10 K/w m^2. Method 2 modelling used for radiant heat thresholds
Bushfire Assessment Reference:	6124BF
Report Date:	4/4/25

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DISCLAIMER

The recommendations provided in the summary of this report are a result of the analysis of the proposal in relation to the requirements of Planning for Bushfire Protection 2019. Utmost care has been taken in the preparation of this report however there is no guarantee of human error. The intention of this report is to address the submission requirements for Development Applications on bushfire prone land. There is no implied assurance or guarantee the summary conditions will be accepted in the final consent and there is no way Harris Environmental Consulting is liable for any financial losses incurred should the recommendations in this report not be accepted in the final conditions of consent. This bushfire assessment provides a risk assessment of the bushfire hazard as outlined in the PBP 2019 and AS3959 2018. It does not provide protection against any damages or losses resulting from a bushfire event.

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EXECUTIVE SUMMARY

This report provides a Bushfire Hazard Assessment involving a proposal to amend the original approved Art Gallery at 74 Meninya Street, Moama, NSW (DA 10.2023.210. 1 PAN-359340). A site visit was not conducted, however videos, photos and several teams meeting were held to ensure an understanding of the site

Due to funding issues the original design has now been amended in size from approximately 1000m^2 down to 600 m^2. Therefore under 8.3.11 PBP 2019, the building is still to be treated technically as a SFPP.

As this amended building is reduced in size from the original approved, this amended proposal is:

- now located in BAL 29 whereas the approved design was BAL 40 for the entire roof, subfloor, western and southern and northwestern facades.
- no longer requiring APZ legal easement on the adjoining lots of Lot 2 DP 1168208 and Lot 3 DP 1168208.

Pre- DA was sought for the original approved DA, and the advice summary was provided on 26 June 2023, and an excerpt is provided below.
Excerpt of Pre- DA Advice (entire document attached as Appendix v):

Assessor's response

- Method 2 modelling for south-western (rear) elevation has been verified
- Unmanaged vegetation to the north & south of the proposal (No's 76 & 72 Meninya St respectively) are to be shown in report as how they are managed currently and in perpetuity of the development
- Defendable spaces around the proposal are to be shown
- Access arrangements for fire fighting purposes are to shown
- Entry/exit points to show that proposal achieves <10Kw/m2
- Agreement for any 88B instrument proposed on adjoining lots is to be confirmed
- It appears that the proposal lies across a boundary line, a boundary adjustment via SEPP or Council is to be confirmed

Outcome -

Please provide some further information regarding the Pre-DA advice:

1. Provide agreement for all 88B instruments proposed regarding off site APZ's for the proposal – show in report.
2. Defendable spaces are to be shown in report/diagrams
3. Provided access arrangements for emergency personnel in line with PBP requirements
4. Provide calculations regarding how the entry/exit points of the proposal meet <10Kw/m2
5. A boundary adjustment approval is to be sought, which may form part of this DA, dependant on Council decision

This assessment demonstrates that the RFS response is still satisfied.

To determine radiant heat from the south-western, north-western and south-eastern elevations Method 2 AS3959 has been used to calculate the radiant heat emission utilising the Bushfire Attack Assessor Program licensed by Newcastle Bushfire Consulting (*NBC 2020*). The main entry/exit point of the building is exposed to radiant heat thresholds of less than 10kW/m^2.

The bushfire prone land within 140 m of the proposed development and APZ setbacks are:

Aspect	Vegetation Classification and slope	Distance from the nearest part of the external wall
South-West	0-5° Downslope Forested Wetland	24.1 m
South-East	Flatland Forested Wetland	9.3 m
North-West	Flatland Forested Wetland	10.6 m

The proposed art gallery is proposed to be constructed to **BAL 29** (Section 7 and Section 3) as specified by AS3959 - 2018 Construction for Bushfire Prone Areas and/or *NASH Standard Steel Framed Construction in Bushfire Areas* (2014). New construction must also comply with the construction requirements in Section 7.5 of *Planning for Bush Fire Protection 2019*.

A BAL 29 APZ should be established from the commencement of building works and maintained for perpetuity for the following distances:

- 8 m to the northeast, southeast and northwest; and
- 10 m to the southwest

The subject lot is located on Meninya Street. This is a two-wheel drive, all weather through road. Road surfaces and bridges are sufficient to carry fully loaded firefighting vehicles.

Access currently exists as a legal easement in between Lot 2 and Lot 5. The total length of this access is approximately 72 m and has a maximum width of approximately 6.4 m. This internal access is required to comply with the PBP- Property Access Table 7.4a. This includes:

- A minimum carriageway width of four metres.
- Curves a minimum inner radius of six metres.
- The minimum distance between inner and outer curves is six metres.
- The cross fall is not more than 10 degrees.
- Maximum grades for sealed roads do not exceed 15 degrees (28 per cent) and not more than 10 degrees (18 percent) for unsealed roads.
- The internal road surfaces and bridges have a capacity to carry fully loaded firefighting vehicles (23 tonnes) and provide signage that clearly indicates the bridge capacity; and
- There is suitable access for a Category 1 fire appliance to within 4 m of the static water supply where no reticulated supply is available.

If reticulated water is supplied to the development, it must comply with Table 6.8c of PBP 2019:

- fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005;
- hydrants are not located within any road carriageway; and
- reticulated water supply to SFPPs uses a ring main system for areas with perimeter roads
- fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.

Should a hydrant not be located within 70 m of the furthest extent, the applicant should ensure at least a 10,000-litre water supply is available for firefighting purposes. Water supply is required to comply with PBP 2019 including:

- all above-ground water service pipes external to the building are metal, including and up to any taps.
- a connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure; 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;
- a hardened ground surface for truck access is supplied within 4m of the access hole;
- above-ground tanks are manufactured from concrete or metal;
- raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F AS 3959);
- unobstructed access is provided at all times;
- tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters; and
- underground tanks are clearly marked.

Any bottled gas will be installed and maintained under AS1596 and the relevant authority's requirements. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used. Electrical transmission lines, if above ground, will be managed under specifications issued by the respective energy supplier.

1 PROPOSAL

The owners of 74 Meninya Street, Moama, NSW, propose to amend the approved DA (DA 10.2023.210. 1 PAN-359340) for the Art Gallery. This amendment results in the size being decreased from approximately 1000 m^2 to 600 m^2 and now meeting BAL 29 without any APZ legal easements on adjoining land. This assessment demonstrates that the amended plan can satisfy the relevant specifications and requirements of EP&A Act s4.14 on Lot 2, DP 1293868. The assessment confirms the subject lot is mapped as bushfire prone.

Harris Environmental Consulting was commissioned to provide this bushfire assessment.

Figure 1 shows the subject lot location.

Figure 2 provides a broad scale aerial view of the subject site.

Figure 3 shows a close up of the subject lot.

Figure 4 shows the proposed plans.

Figure 1 Site location

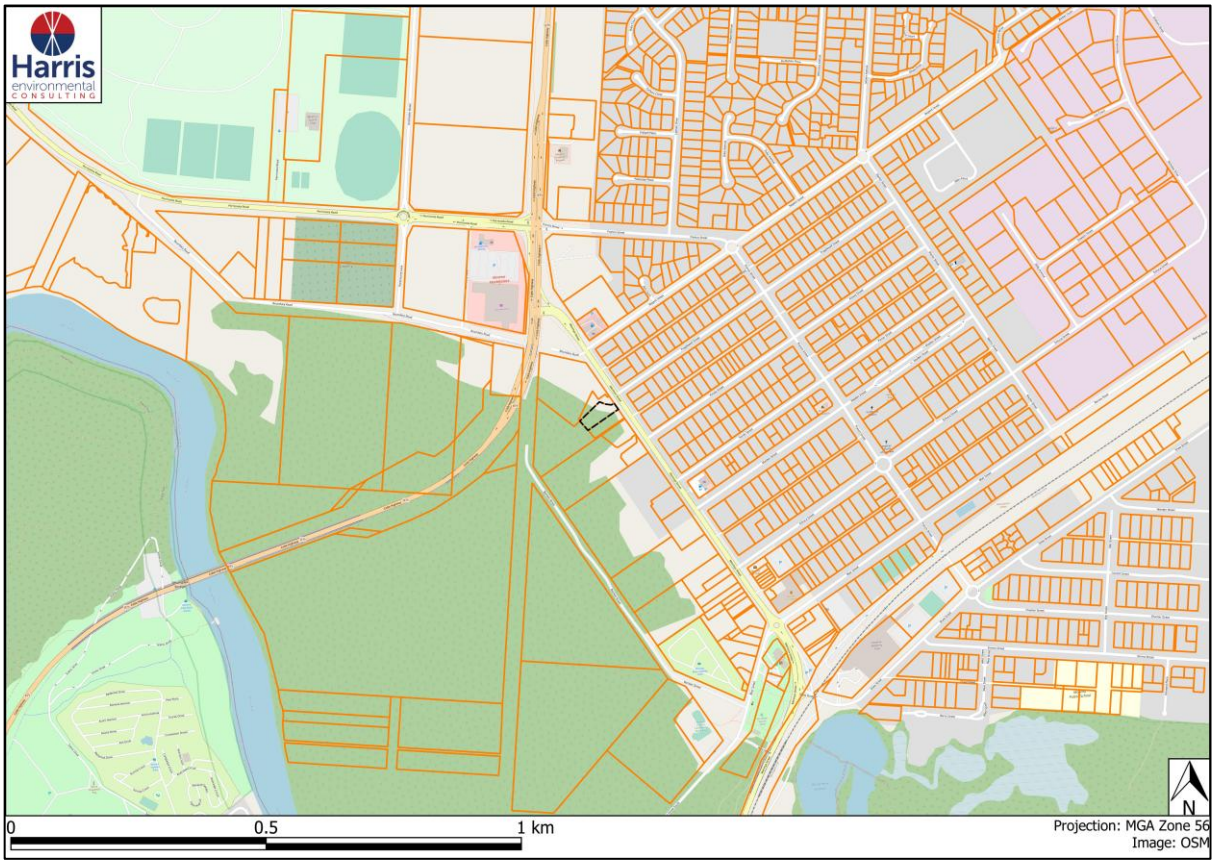


Figure 2 Broad scale aerial view of the subject site

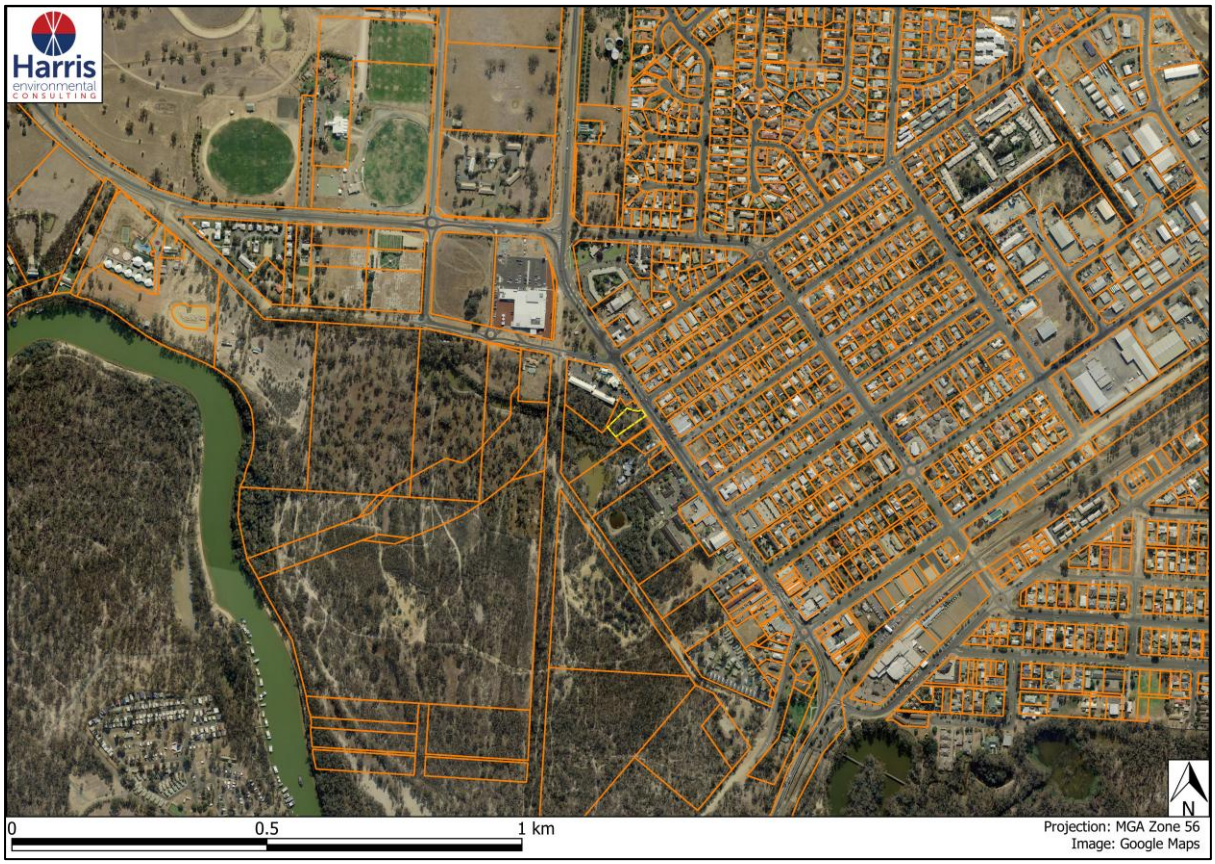


Figure 3 Close up view of Subject Lot

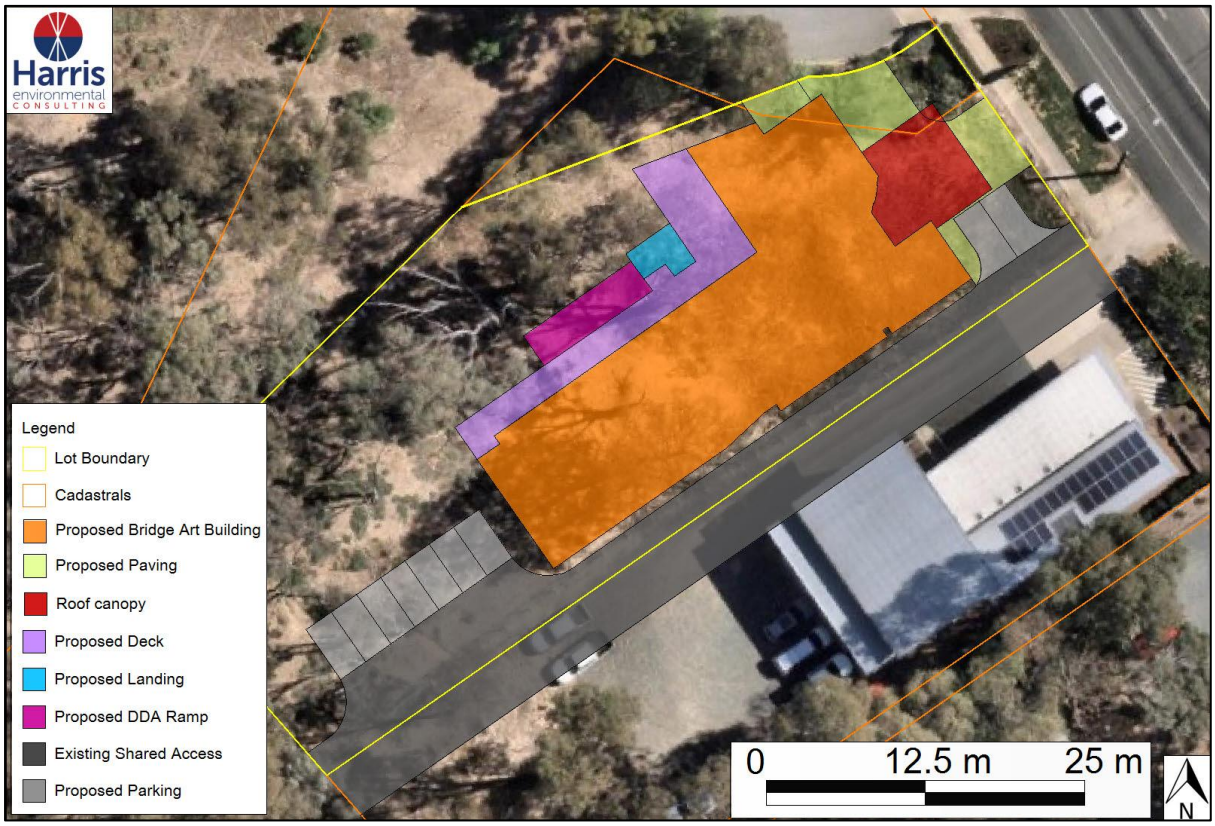
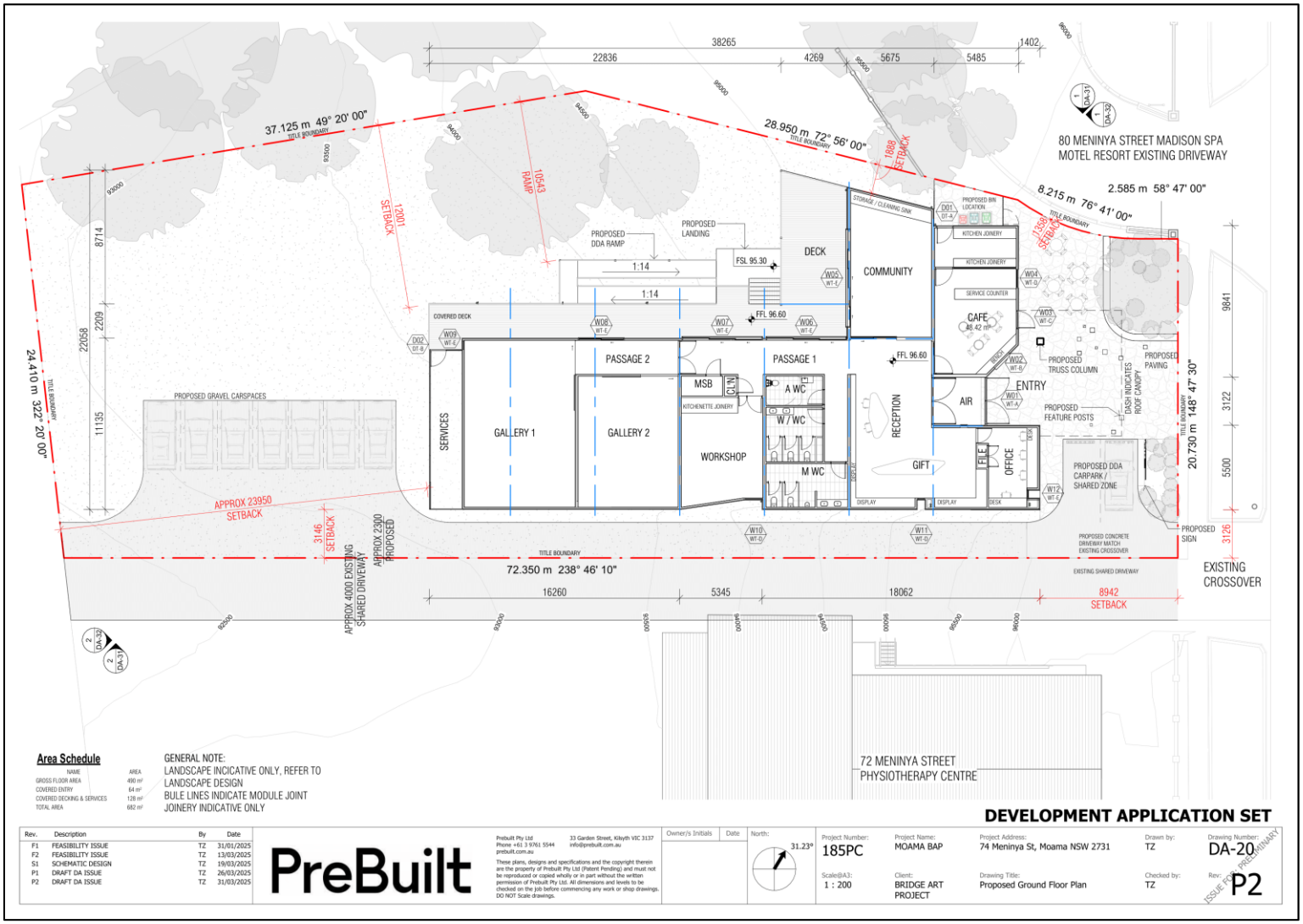


Figure 4 Proposed Ground Floor Plan



2 PLANNING LAYERS

The following planning layers are described in Table 1 and shown in the Figures below:

Table 1 Planning Layers

MAP	FIGURE	DESCRIPTION
Bushfire Prone Land Map	5	The subject site is mapped as “Vegetation Category 1” and “Vegetation Buffer”.
LEP Zone Map	6	The subject lot is zoned as “B2 Local Centre”.
Vegetation Mapping	7	The vegetation is mapped as “Inland Floodplain Swamps” and “Inland Riverine Forests”.
Biodiversity Values Map	Appendix iii	As of 1/4/25, there is no land identified within the subject lot as having high biodiversity value under the Biodiversity Offsets Scheme under the Biodiversity Conservation Act 2016.

Figure 5 Bushfire Prone Map

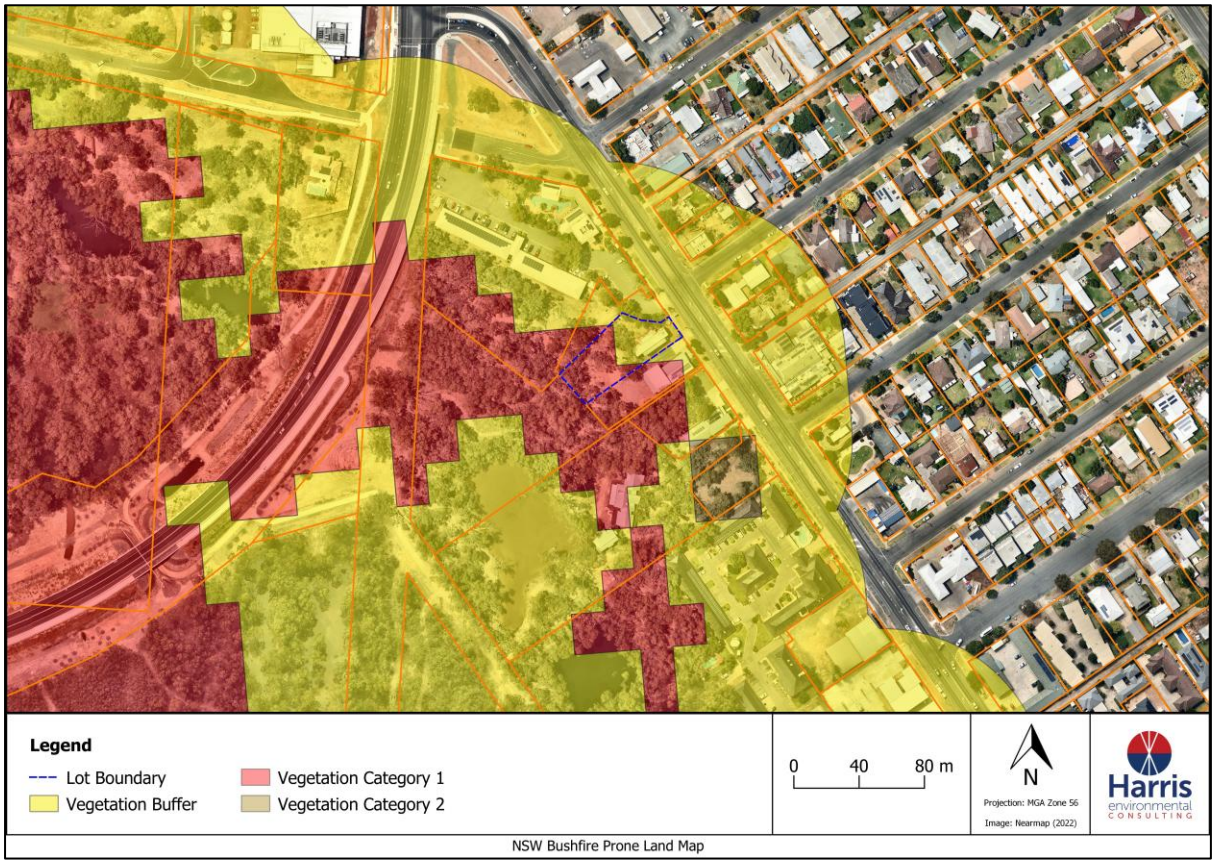


Figure 6 LEP Zone Map

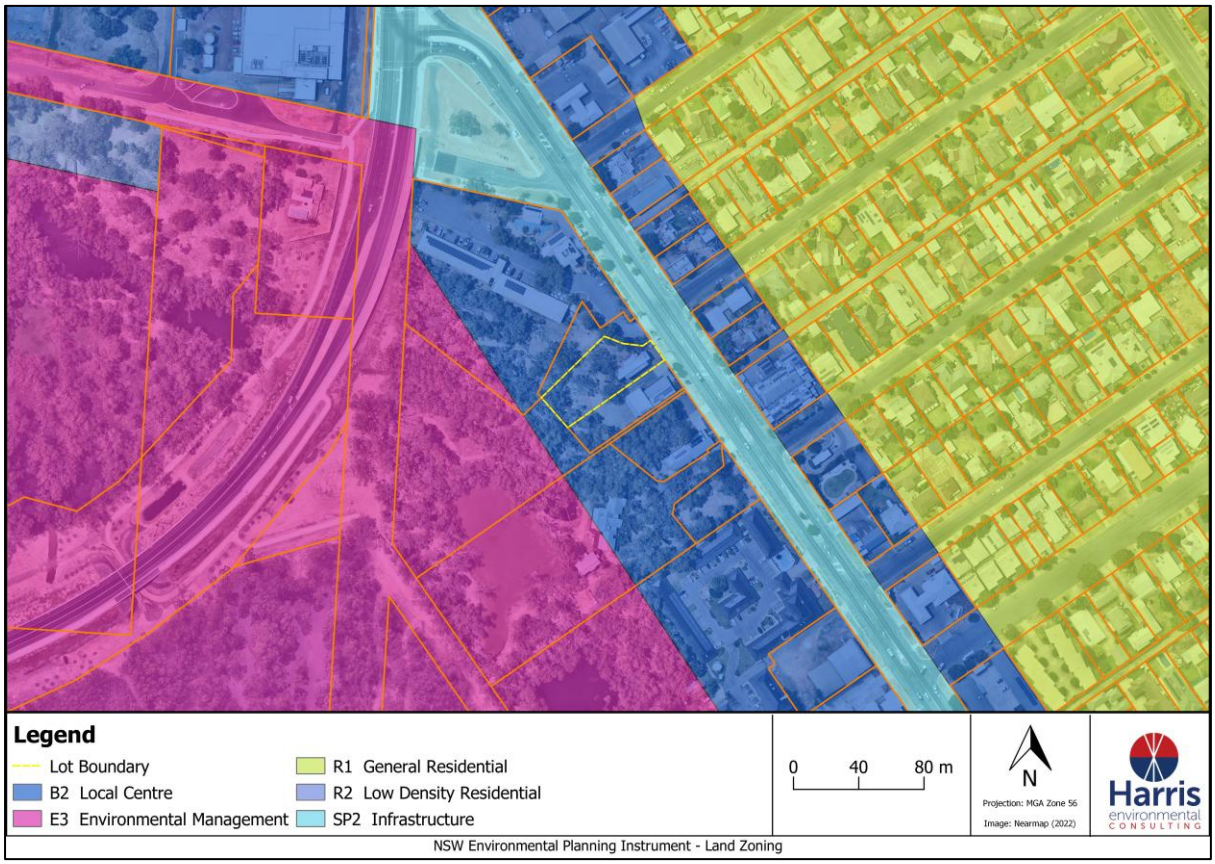
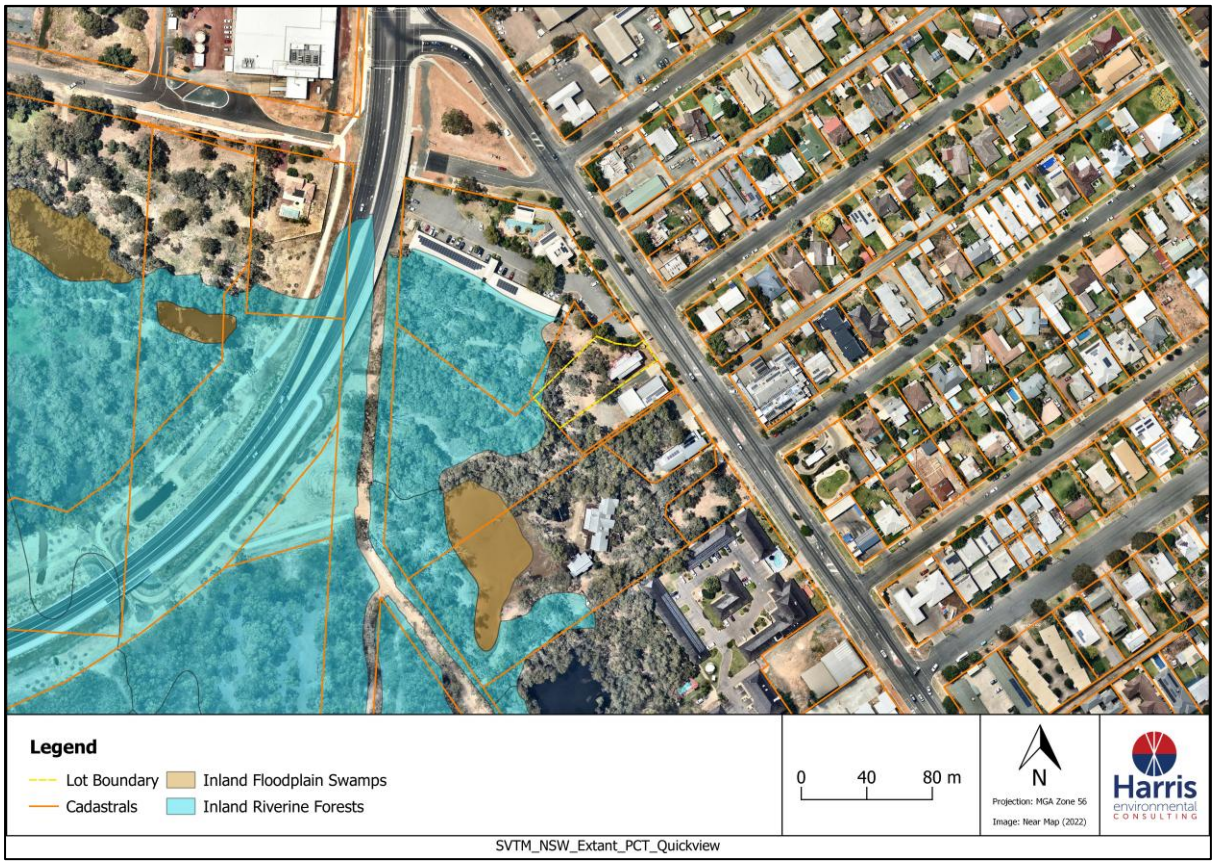


Figure 7 Vegetation Mapping



3 SITE DESCRIPTION

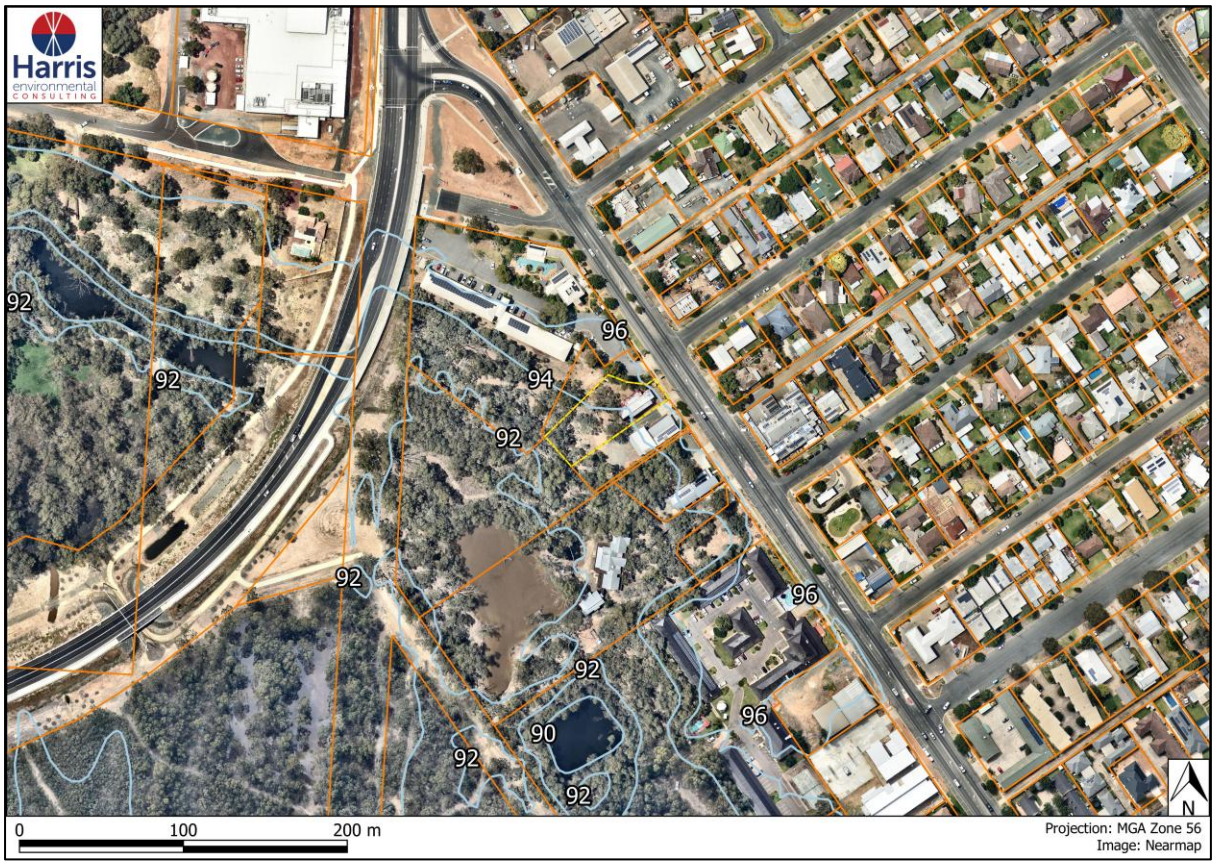
3.1 Slope and Aspect of the Site within 100m

The slope that most significantly influenced fire behaviour was determined over a distance of 100 m out from the proposed development. This assessment used 2 m contour intervals.

The Australian Standard AS3959 - 2018 and PBP 2019 identify that the slope of the land under the classified vegetation is much more important than the slope between the site and the edge of the classified vegetation.

As can be seen in Figure 8, the subject lot is located on land that slopes gently downwards on the western elevations.

Figure 8 Slope



3.2 Vegetation Formation Within 140m of Proposed Development

Figure 9 shows the managed and unmanaged land within 140 m of the proposed development.

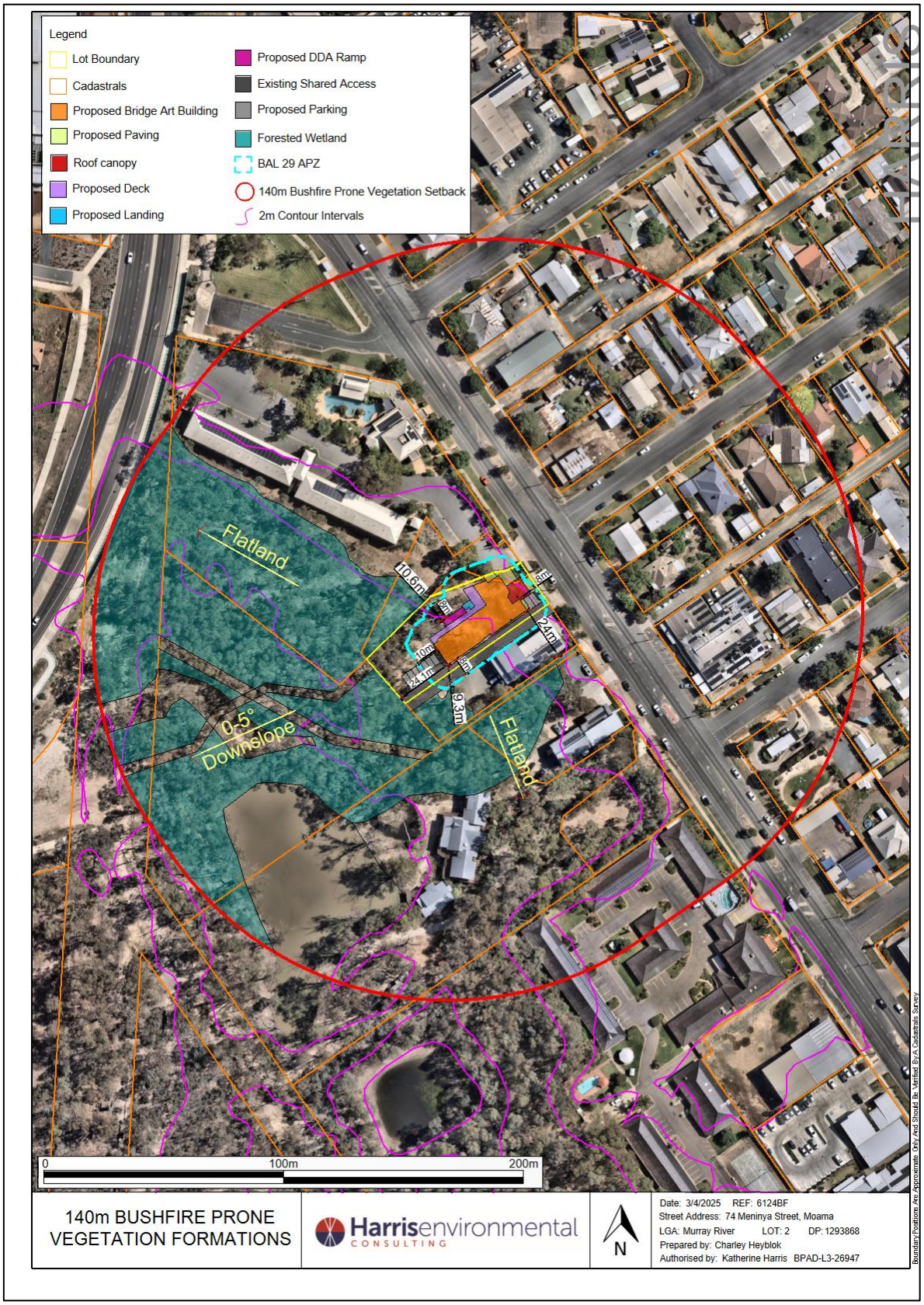
The vegetation formations are described below and summarised in Table 2.

The vegetation on the western and southern elevation is mapped predominantly as “Inland Riverine Forests”. In accordance with the *Planning for Bushfire Protection 2019*, the vegetation has been classified as ‘Forested Wetland’.

Table 2 Predominate Vegetation Classification

	Vegetation Formation	Effective Slope	Distance from façade to hazard
South-West	Forested Wetland	0-5° Downslope	24.1 m
South-East	Forested Wetland	Flatland	9.3 m
North-West	Forested Wetland	Flatland	10.6 m

Figure 9 Bushfire Prone Vegetation within 140 metres of the Proposed Art Gallery



4 BUSHFIRE THREAT ASSESSMENT

4.1. Asset Protection Zones (APZ)

Table A1.12.5 *Planning for Bush Fire Protection 2019* and *Method 2 AS3959* has been used to determine the width of the required APZ for the proposed development using the vegetation and slope data identified.

Table 3, Table 4 and Figures 10-13 below shows the APZ and BAL Determination.

To determine radiant heat from the south-western, north-western and south-eastern elevations Method 2 AS3959 has been used to calculate the radiant heat emission utilising the Bushfire Attack Assessor Program licensed by Newcastle Bushfire Consulting (*NBC 2020*). Full details of the assessment are in Appendix iii, and the summarised findings are presented in Table 4.

Please note that both adjacent lots on the north and south are currently being developed with unknown landscaping plans for the future.

A BAL 29 APZ should be established from the commencement of building works and maintained for perpetuity for the following distances:

- 8 m to the northeast, southeast and northwest; and
- 10 m to the southwest

Table 3 APZ and BAL Determination

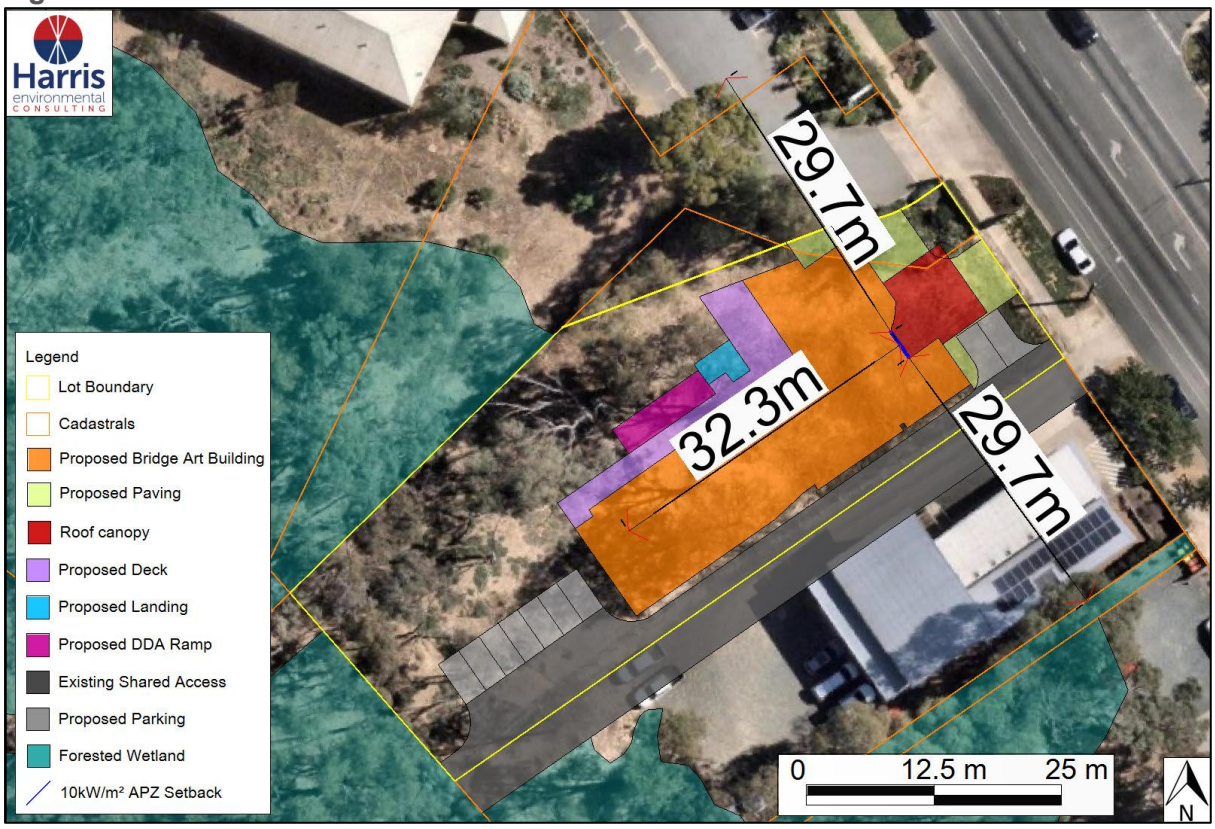
	SOUTH-WEST	***SOUTH-EAST***	***NORTH-WEST***
Vegetation	Forested Wetland	Forested Wetland	Forested Wetland
Gradient	0-5° Downslope	Flatland	Flatland
Distance between façade and hazard	24.1 m	9.3 m	10.6 m
BAL 29 required APZ	10 -< 15 m	8 -< 12 m	8 -< 12 m
Method 2 AS3959 10kW/m² Setback (1200K)		> 29 m	>29 m
BAL Required	**BAL 29**	**BAL 29**	**BAL 29**

Table 4 APZ and BAL Determination using NBC (2020)

	South-Western Elevation	North-Western Elevation	South-Eastern Elevation
Fuel Load	Forested Wetland	Forested Wetland	Forested Wetland
Vegetation Slope	2˚ Downslope	Level	Level
Site Slope	1˚ Downslope	Level	Level
Distance to Vegetation from the façade	32.3 m	29.7 m	29 .7m
Radiant Heat Threshold for 10kW/m^2 (1200K)	**9.96 m**	**9.99**	**9.99 m**

Figure 10 APZ Determination

Figure 11 10kW/m² Setbacks



4.2. Relevant Construction Standard

The Australian Standard AS3959 – 2018 *and NASH Standard Steel Framed Construction in Bushfire Areas* (2014) are the enabling standards that address the performance requirements of both parts 2.3.4 and Part GF5.1 of the Building Code of Australia for the Construction of Class 1, 2 and Class 3 buildings within a designated Bushfire Prone Area.

The following was determined for this site:

Relevant fire danger index……FDI 80
Flame temperature ……1090 K & 1200 K

The proposed art gallery can be constructed to **BAL 29** (Section 7 and Section 3) as specified by AS3959 - 2018 Construction for Buildings in Bushfire Prone Areas and/or *NASH Standard Steel Framed Construction in Bushfire Areas* (2014). New construction must also comply with the construction requirements in Section 7.5 of *Planning for Bush Fire Protection 2019*.

Figure 11 shows the measurements for 10kW/m^2 setbacks from the entryway.

4.3. Emergency Management

The owners are advised to obtain the *NSW Rural Fire Service – "Guidelines for the Preparation of Bush Fire Evacuation Plans" & 'Bush Fire Survival Plan'* In the event of an emergency, the owners should ensure they are familiar with the RFS Bush Fire Alert Levels and use their Bush Fire Survival Plan.

4.4. Adequate Water and Utility Services

If reticulated water is supplied to the development, it must comply with Table 6.8c of PBP 2019:

- fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005;
- hydrants are not located within any road carriageway; and
- reticulated water supply to SFPPs uses a ring main system for areas with perimeter roads
- fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.

Should a hydrant not be located within 70 m of the furthest extent, the applicant should ensure at least a 10,000-litre water supply is available for firefighting purposes. Water supply is required to comply with PBP 2019 including:

- all above-ground water service pipes external to the building are metal, including and up to any taps.
- a connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure; 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;
- a hardened ground surface for truck access is supplied within 4m of the access hole;
- above-ground tanks are manufactured from concrete or metal;

- raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F AS 3959);
- unobstructed access is provided at all times;
- tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters; and
- underground tanks are clearly marked.

Any bottled gas will be installed and maintained under AS1596 and the relevant authority's requirements. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

Electrical transmission lines, if above ground, will be managed under specifications issued by the respective energy supplier.

4.5. Safe Operational Access

The *Planning for Bushfire Protection 2019* requires safe operational access to structures and water supply for emergency services while residents are seeking to evacuate from an area.

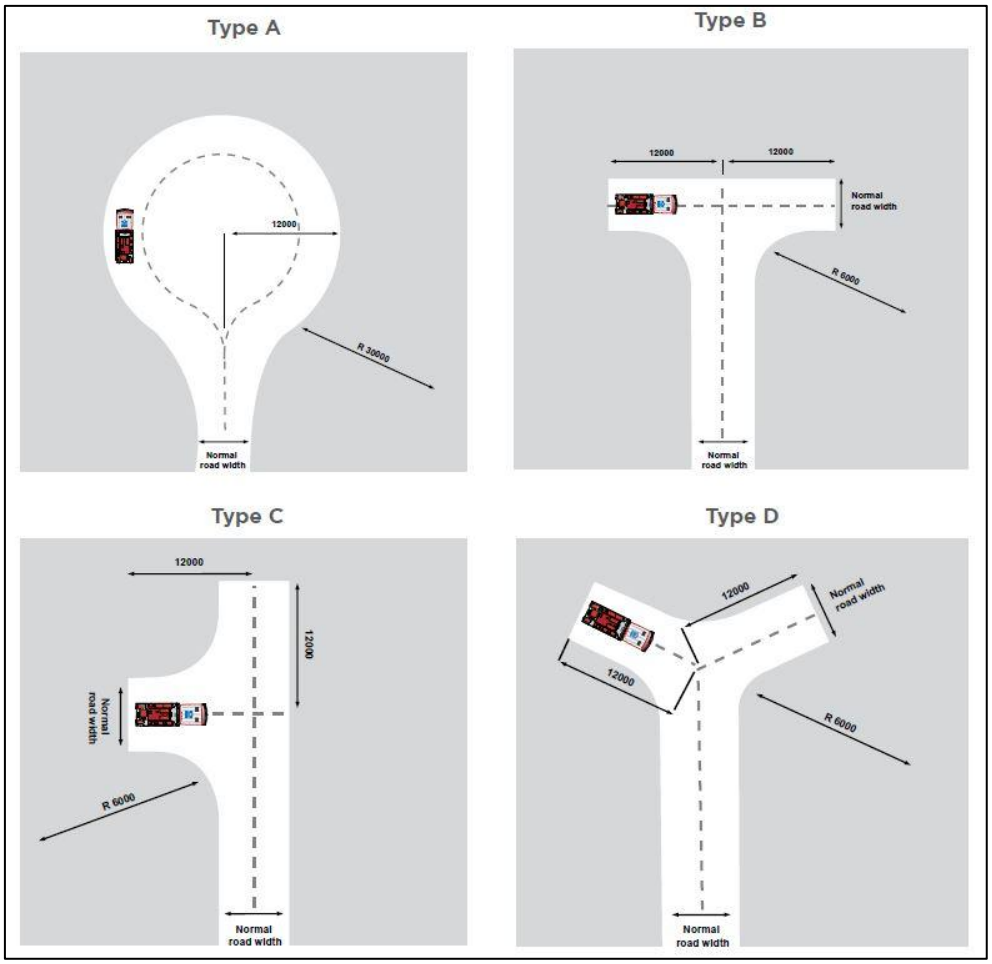
The subject lot is located on Meninya Street. This is a two-wheel drive, all weather through road. Road surfaces and bridges are sufficient to carry fully loaded firefighting vehicles.

Access currently exists as a legal easement in between Lot 2 and Lot 5. The total length of this access is approximately 72 m and has a maximum width of approximately 6.4 m. The internal access is required to comply with the PBP- Property Access Table 7.4a. This includes:

- A minimum carriageway width of four metres;
- Curves a minimum inner radius of six metres;
- The minimum distance between inner and outer curves is six metres;
- The cross fall is not more than 10 degrees;
- Maximum grades for sealed roads do not exceed 15 degrees (28 per cent) and not more than 10 degrees (18 percent) for unsealed roads;
- The internal road surfaces and bridges have a capacity to carry fully loaded firefighting vehicles (23 tonnes) and provide signage that clearly indicates the bridge capacity; and
- There is suitable access for a Category 1 fire appliance to within 4 m of the static water supply where no reticulated supply is available.

Figure 12 Access

Figure 13 Multipoint turning options



5 LANDSCAPING

The APZ is required to be established and should be maintained in perpetuity.
When landscaping, vegetation should be located greater than 2 m from any part of the roofline of a dwelling or the shed. Garden beds of flammable shrubs are not to be located under trees and should be no closer than 10 m from an exposed window or door. Trees should have lower limbs removed up to a height of 2 m above the ground.

Appendix 4 (*PBP 2019*) provides guidelines for landscaping and Bushfire Provisions within the APZ. To incorporate bushfire protection measures into future development, the owner is advised to consider the following:

- Avoid planting trees species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopy.
- Avoid planting deciduous species that may increase fuel at surface/ground level by the fall of leaves.
- Avoid climbing species to walls and pergolas.
- Locate combustible materials such as woodchips/mulch, flammable fuel stores (LPG gas bottles) away from the building.
- Locate combustible structures such as garden sheds, pergolas, and materials such as timber furniture away from the building.
- Ensure any vegetation planted around the house is a suitable distance away so these plants do not come into physical contact with the house as they mature.
- The property should be developed to incorporate suitable impervious area surrounding the house, including courtyards, paths, and driveways.

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defendable space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.
In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well-maintained gardens.
When establishing and maintaining an IPA the following requirements apply:

Trees

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

Shrubs

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

Grass

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

6 SUMMARY

- The proposed art gallery is proposed to be constructed to **BAL 29** (Section 7 and Section 3) as specified by AS3959 - 2018 Construction for Buildings in Bushfire Prone Areas and/or *NASH Standard Steel Framed Construction in Bushfire Areas* (2014). New construction must also comply with the construction requirements in Section 7.5 of *Planning for Bush Fire Protection 2019*.

- A BAL 29 APZ should be established from the commencement of building works and maintained for perpetuity for the following distances:
  - 8 m to the northeast, southeast and northwest; and
  - 10 m to the southwest

- The subject lot is located on Meninya Street. This is a two-wheel drive, all weather, through road. Road surfaces and bridges are sufficient to carry fully loaded firefighting vehicles.

- Access currently exists as a legal easement in between Lot 2 and Lot 5. The total length of this access is approximately 72 m and has a maximum width of approximately 6.4 m. The internal access is required to comply with the PBP- Property Access Table 7.4a. This includes:
  - A minimum carriageway width of four metres;
  - Curves a minimum inner radius of six metres;
  - The minimum distance between inner and outer curves is six metres;
  - The cross fall is not more than 10 degrees;
  - Maximum grades for sealed roads do not exceed 15 degrees (28 per cent) and not more than 10 degrees (18 percent) for unsealed roads;
  - The internal road surfaces and bridges have a capacity to carry fully loaded firefighting vehicles (23 tonnes) and provide signage that clearly indicates the bridge capacity; and
  - There is suitable access for a Category 1 fire appliance to within 4 m of the static water supply where no reticulated supply is available.

- If reticulated water is supplied to the development, it must comply with Table 6.8c of PBP 2019:
  - fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005;
  - hydrants are not located within any road carriageway; and
  - reticulated water supply to SFPPs uses a ring main system for areas with perimeter roads
  - fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.

- Should a hydrant not be located within 70 m of the furthest extent, the applicant should ensure at least a 10,000-litre water supply is available for firefighting purposes. Water supply is required to comply with PBP 2019 including:
  - all above-ground water service pipes external to the building are metal, including and up to any taps.
  - a connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure; 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;
- a hardened ground surface for truck access is supplied within 4m of the access hole;
- above-ground tanks are manufactured from concrete or metal;
- raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F AS 3959);
- unobstructed access is provided at all times;
- tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters; and
- underground tanks are clearly marked.

- Any bottled gas should be installed and maintained under AS1596 and the relevant authority's requirements. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

- Electrical transmission lines, if above ground, will be managed under specifications issued by the respective energy supplier.

7 REFERENCES

Keith, D. (2004). "*Ocean Shores to Desert Dunes*" Department of Environment and Conservation, Sydney

National Association of Steel-Framed Housing (2014) *NASH Standard Steel Framed Construction in Bushfire Areas*

NSW Department of Environment, Climate Change and Water (2010) Southeast NSW Native Vegetation Classification and Mapping - SCIVI VIS_ID 2230 20030101. Bioregional Assessment Source Dataset. Viewed 18 June 2018, http://data.bioregionalassessments.gov.au/dataset/0f1aeb33-1b49-4839-88fa-8b635cf9d3ab.

NSW Department of Planning and Environment. Planning Portal. Accessed at: https://www.planningportal.nsw.gov.au/

NSW Office of Environment and Heritage (2020). Biodiversity Value Map. Accessed at: https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BVMap

NSW Rural Fire Service (2019). *Planning for Bushfire Protection. A Guide for Councils, Planners, Fire Authorities and Developers*. *November 2019*

Standards Australia (2018). *AS3959, Construction of buildings in bushfire-prone areas.*

Tozer MG, Turner K, Keith DA, Tindall D, Pennay C, Simpson C, MacKenzie B, Beukers P, Cox S (2010). *Native Vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands*. Cunninghania 11:359-406.

Appendix i Definition of Asset Protection Zones

Vegetation within the APZ should be managed in accordance with APZ specifications for the purposes of limiting the travel of a fire, reducing the likelihood of direct flame contact, and removing additional hazards or ignition sources. The following outlines some general vegetation management principles for APZs:

1) Discontinuous shrub layer (clumps or islands of shrubs not rows);

2) Vertical separation between vegetation stratums;

3) Tree canopies not overhanging structures;

4) Management and trimming of trees and other vegetation in the vicinity of power lines and tower lines in accordance with the specifications in "Vegetation Safety Clearances" issued by Energy Australia (NS179, April 2002);

5) Maintain low ground covers by mowing / whipper snipper / slashing; and

6) Noncombustible mulch e.g., stones and removing stores of combustible materials;

7) Vegetation to be planted should consist of fire retardant/ less flammable species strategically located to reduce attack from embers (i.e., as ember traps when in small clumps and short wind breaks).

APPENDIX II DEFINITION & ABBREVIATIONS

Asset Protection Zone- A fuel reduced area surrounding a buffer zone between a bushfire hazard and an asset. The APZ includes a defendable space within which firefighting operations can be carried out. The size of the required APZ varies with slope, vegetation and FFDI.

AS3959-2019: Australian Standard AS 3959:2018 Construction of buildings in bush fire-prone areas.

Bush fire prone area- an area of land that can support a bush fire or is likely to be subject to bushfire attack, as designated on a bush fir prone land map

Bush fire prone vegetation (BFPV) – A map prepared by Council in accordance with RFS guidelines and defining area of vegetation by BFPV categories

Bushfire prone land map (BFPL) A map prepared in accordance with RFS guidelines and certified by the Commissioner of the NSW RFS under section 146 (2) of the Environmental Planning and Assessment Act (1979)

BFSA: Bush fire safety authority.

Effective Slope: The land beneath the vegetation which most significantly effects fire behaviour, having regard to the vegetation present.

Fire Danger Index (FDI) The chance of a fire starting, its rate of spread, its intensity and the difficulty potential for its suppression, according to various combinations of air temperature, relative humidity, wind speed and both the long- and short term drought effects.

Fire hazard: the potential for land o carry a bush fire, utilizing materials or fuels that can be ignited

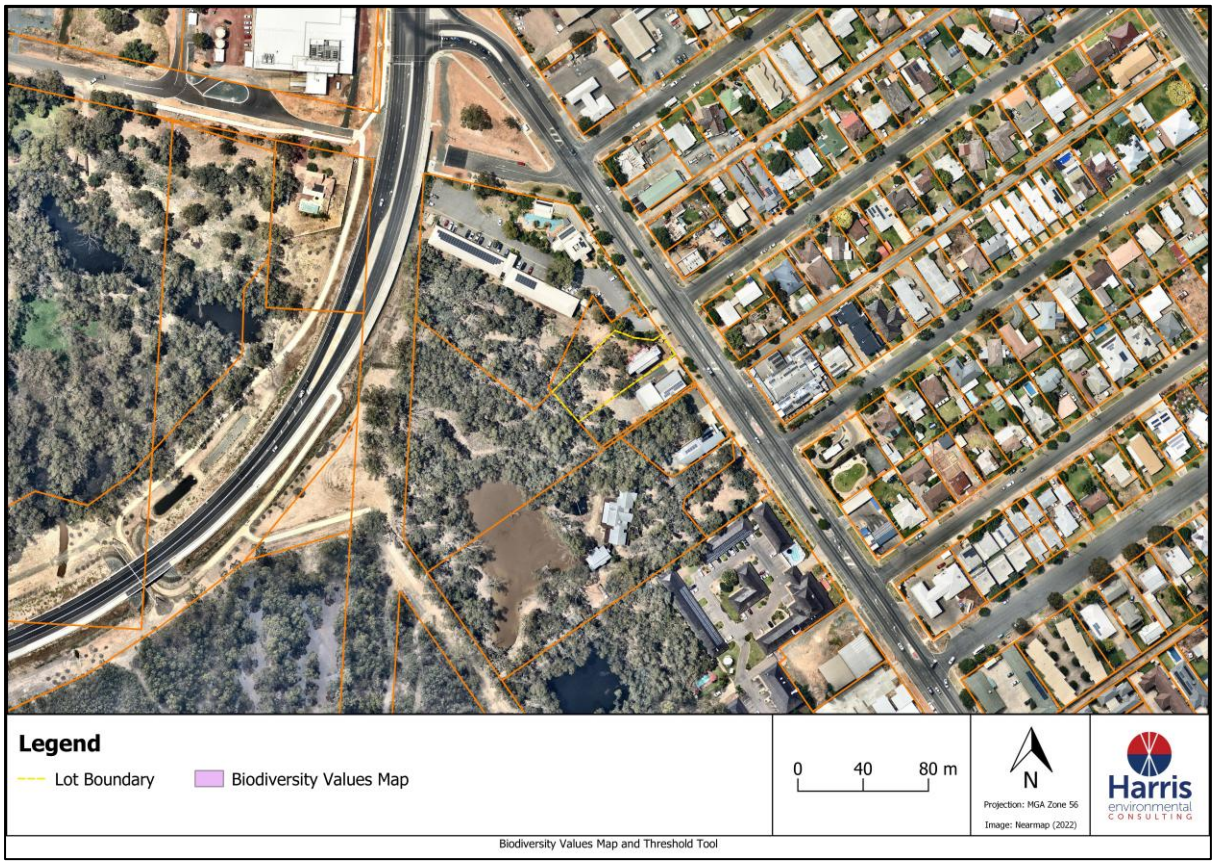
Grasslands- Grassed areas capable of sustaining a fire. Under Australia standard 3959 Construction of buildings in bushfire -prone areas, identified as low open shrubland, hummock grassland, closed tussock grassland, tussock grassland, open tussock, sparse open tussock, dense sown pasture, sown pasture, open herbfield and sparse open herb field. Grass, whether exotic or native, which is regularly maintained at or below 10 cm in height (includes maintained lawns, golf course, maintained public reserves, parklands, nature strips and commercial nurseries) are regarded as managed land

Inner Protection Area (IPA): the component of an APZ which closest to the asset (measured from unmanaged vegetation). It consists of an area maintained to minimal fuel loads so that a fire path is not created between the hazard and the building.

Managed land- Managed land is land that has vegetation removed or maintained to limit the spread and impact of bushfire. It may include existing developed land (i.e. residential, commercial or industrial) roads, golf course fairways, playgrounds or sports fields, vineyards, orchards, cultivated ornamental gardens, and commercial nurseries.

PBP 2019: Planning for Bushfire Protection 2019.

Appendix iiii Biodiversity Values Map



Appendix iv Bushfire Attack Modelling (NBC 2020)

NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

Print Date: 21/03/2025 **Assessment Date:** 21/03/2025

Site Street Address: 74 Meninya Street, Moama

Assessor: Katherine Harris; Harris Environmental Consulting

Local Government Area: Murray River **Alpine Area:** No

Equations Used

Transmissivity: Fuss and Hammins, 2002
Flame Length: RFS PBP, 2001/Vesta/Catchpole
Rate of Fire Spread: Noble et al., 1980
Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005
Peak Elevation of Receiver: Tan et al., 2005
Peak Flame Angle: Tan et al., 2005

Run Description: North West (10kW)

Vegetation Information

Vegetation Type:	Inland Riverine Forests		
Vegetation Group:	Forested Wetlands		
Vegetation Slope:	0 Degrees	**Vegetation Slope Type:**	Level
Surface Fuel Load(t/ha):	8.2	**Overall Fuel Load(t/ha):**	15.1
Vegetation Height(m):	0.9	Only Applicable to Shrub/Scrub and Vesta	

Site Information

Site Slope	0 Degrees	**Site Slope Type:**	Level
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	29.7

Fire Inputs

Veg./Flame Width(m):	100	**Flame Temp(K):**	1200

Calculation Parameters

Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	80

Program Outputs

Level of Construction	BAL 12.5	**Peak Elevation of Receiver(m):**	3.43
Radiant Heat(kW/m2):	9.99	**Flame Angle (degrees):**	82
Flame Length(m):	6.93	**Maximum View Factor:**	0.11
Rate Of Spread (km/h):	0.79	**Inner Protection Area(m):**	30
Transmissivity:	0.816	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	6141		

Run Description:	South East (10kW)		
Vegetation Information			
Vegetation Type:	Inland Riverine Forests		
Vegetation Group:	Forested Wetlands		
Vegetation Slope:	0 Degrees	**Vegetation Slope Type:**	Level
Surface Fuel Load(t/ha):	8.2	**Overall Fuel Load(t/ha):**	15.1
Vegetation Height(m):	0.9	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope	0 Degrees	**Site Slope Type:**	Level
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	29.7
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1200
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	80
Program Outputs			
Level of Construction	BAL 12.5	**Peak Elevation of Receiver(m):**	3.43
Radiant Heat(kW/m2):	9.99	**Flame Angle (degrees):**	82
Flame Length(m):	6.93	**Maximum View Factor:**	0.11
Rate Of Spread (km/h):	0.79	**Inner Protection Area(m):**	30
Transmissivity:	0.816	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	6141		

Run Description:	South West (10kW)		
Vegetation Information			
Vegetation Type:	Inland Riverine Forests		
Vegetation Group:	Forested Wetlands		
Vegetation Slope:	2 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	8.2	**Overall Fuel Load(t/ha):**	15.1
Vegetation Height(m):	0.9	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope	1 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	32.3
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1200
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	80
Program Outputs			
Level of Construction	BAL 12.5	**Peak Elevation of Receiver(m):**	3.25
Radiant Heat(kW/m2):	9.96	**Flame Angle (degrees):**	83
Flame Length(m):	7.69	**Maximum View Factor:**	0.11
Rate Of Spread (km/h):	0.9	**Inner Protection Area(m):**	32
Transmissivity:	0.81	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	7050		

Appendix iv Pre DA Advice

NSW RURAL FIRE SERVICE

NSW GOVERNMENT

PRE-DA ADVICE MEETING SUMMARY

Attendees:

Kate Harris – Harris Environmental Consulting Pty Ltd

Subject: PRE-DA20230618000107

74 Meninya St, Moama, NSW, 2731

Time and date: 9:30am 26/06/2023 **Location:**Teams online meeting

Details of the proposal:

- ☐ SFPP — Technically assessed as SFPP as per Section 8.3.11, PBP 2019
- ☐ Residential subdivision
- ☑ Other – Art Gallery

Bush fire protection issues discussed:

- ☑ Hazard Assessment — Modelling submitted along with 88B instrument proposed
- ☑ Asset Protection Zones
- ☑ Access
- ☑ Construction Standards
- ☑ Services
- ☑ Emergency and Evacuation Planning

Applicant Summary:

- The art gallery is greater than 500 m2. According to Section 8.3.11, the building should be treated technically as an SFPP development.
- The predominant bushfire threat, the Forested Wetland, is located west of the subject lot, primarily within the adjacent Lot 2 DP 116828.
- The proposed development can only achieve **BAL 29** (FDI 80) with an 88B legal easement on Lot 2 DP 1168208.
- Adjacent lots -Lot 5 DP 1168208 and Lot 3 DP 1168208 are proposed to be cleared for future developments.
- This pre-da requests a performance-based solution where the APZ can meet BAL 29, through a 88B in conjunction with a BAL 40 construction on the exposed building but a BAL 29 on the building where the radiant heat meets 12.5 kW/m2. It is also noted that the bushfire hazard is located on the opposite side of the access and that a defendable space will be provided between the hazard and the building.

NSW RURAL FIRE SERVICE – PRE-DA ADVICE MEETING SUMMARY 1 of 2

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Assessor's response

- Method 2 modelling for south-western (rear) elevation has been verified
- Unmanaged vegetation to the north & south of the proposal (No's 76 & 72 Meninya St respectively) are to be shown in report as how they are managed currently and in perpetuity of the development
- Defendable spaces around the proposal are to be shown
- Access arrangements for fire fighting purposes are to shown
- Entry/exit points to show that proposal achieves <10Kw/m2
- Agreement for any 88B instrument proposed on adjoining lots is to be confirmed
- It appears that the proposal lies across a boundary line, a boundary adjustment via SEPP or Council is to be confirmed

Outcome -

Please provide some further information regarding the Pre-DA advice:

1. Provide agreement for all 88B instruments proposed regarding off site APZ's for the proposal – show in report.
2. Defendable spaces are to be shown in report/diagrams
3. Provided access arrangements for emergency personnel in line with PBP requirements
4. Provide calculations regarding how the entry/exit points of the proposal meet <10Kw/m2
5. A boundary adjustment approval is to be sought, which may form part of this DA, dependant on Council decision

Disclaimer
RFS advice is based on information provided and policy and legislative requirements applicable at the time. The advice should be copied into, or referenced in, any subsequent development application.

All efforts are made to identify issues of relevance and likely concern with the preliminary proposal. However, the comments and views in this document are based only on the plans and information submitted for preliminary assessment and discussion at the pre-DA meeting. You are advised that: -

- The views expressed may vary once detailed plans and information are submitted and formally assessed in the development application process, or as a result of issues contained in submissions by interested parties;
- Given the complexity of issues often involved and the limited time for full assessment, no guarantee is given that every issue of relevance will be identified;
- Amending one aspect of the proposal could result in changes which would create a different set of impacts from the original plans and therefore require further assessment and advice;

The Pre-DA advice given does not bind Council officers, the elected Council members, or other parties to the DA process.

Signed:

Jamie Winter
Development Assessment and Planning Officer

Anna Jones
Supervisor,
Development Assessment and Planning

NSW RURAL FIRE SERVICE – PRE-DA ADVICE MEETING SUMMARY 2 of 2

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