# Bushfire Protection Assessment

**Master Plan Subdivision**

**Macarthur Gardens North - Masterplan**

Landcom

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## DOCUMENT TRACKING

| | |
|---|---|
| **Project Name** | Bushfire Protection Assessment: Master Plan Subdivision – Macarthur Gardens North - Masterplan |
| **Project Number** | 20SYD_16415 |
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| **Status** | **Final** |
| **Version Number** | **1** |
| **Last saved on** | **30 November 2021** |

This report should be cited as 'Eco Logical Australia (ELA). 2021. *Bushfire Protection Assessment: Master Plan Subdivision – Macarthur Gardens North - Masterplan*. Prepared for Landcom.'

### LIMITATIONS

The bushfire protection measures recommended in this report do not completely remove the risk to life and property, and they do not guarantee that a development will not be impacted by a bushfire event. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions.

### ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from Landcom.



Template 2.8.1

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# Abbreviations

| Abbreviation | Description |
|---|---|
| AS 3959 | Australian Standard AS 3959-2018 *Construction of buildings in bushfire-prone areas* |
| APZ | Asset Protection Zone |
| BAL | Bushfire Attack Level |
| BFPL | Bush Fire Prone Land |
| CDC | Complying Development Certificate |
| DA | Development Application |
| DtS | Deemed-to-Satisfy |
| EP&A Act | *Environmental Planning and Assessment Act 1979* |
| FDI | Fire Danger Index |
| IPA | Inner Protection Area |
| NCC | National Construction Code |
| PBP | Planning for Bush fire Protection 2019 |
| RFS | NSW Rural Fire Service |

# 1. Property and Proposal

Table 1 identifies the subject property and outlines the type of development proposed.

**Table 1: Subject site and development proposal summary**

| | |
|---|---|
| Street address: | Goldsmith Avenue, Campbelltown |
| Postcode: | 2560 |
| Lot/DP no: | Part Lot 1097 DP 1182558 |
| Local Government Area: | Campbelltown City Council |
| Fire Danger Index (FDI) | 100 |
| Current land zoning: | R4 Medium Density Residential and B4 Commercial Core |
| Type of development proposed: | Master Plan Subdivision |

## 1.1 Description of Proposal

The proposal is for subdivision of 1 lot into 7 lots and the construction of associated roads and infrastructure (Figure 1).

The proposed master plan subdivision is the Macarthur Garden North Terrace Precinct of 15.8 ha as part of Macarthur Garden Precinct, a greenfield site of approximately 18.52 ha. A large portion of the site will be retained as undeveloped to retain existing native vegetation.

The site is bounded by 2 major roads on the north and east and the rail corridor to the south. The Macarthur Garden Precinct provides expanding residential areas within the Macarthur region amongst growth areas of retail, tertiary education and health services.

Future development for the purpose of this assessment is considered to include residential and commercial use.

The subdivision is located on land identified as Bush Fire Prone Land (BFPL) on the Bushfire Prone Land layer within the ePlanning Spatial Viewer[1].

## 1.2 Assessment Process

The proposal was assessed in accordance with Section 100B of the *Rural Fires Act 1997,* Clause 44 of the *Rural Fires Regulation 2013* and *Planning for Bush fire Protection* (RFS 2019), herein referred to as PBP.

This assessment is based on the following information sources:

- Background documentation provided by Landcom;
- Information contained within the site plan from Landcom (Project No. P0013280 dated 18 November 2021);
- GIS analysis including online spatial resources (i.e. Google Earth, SIX Maps, Nearmap and the NSW Government Planning Portal); and

[1] https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address

- Site inspection undertaken on 4 January 2019.

Table 2 identifies the bushfire protection measures assessed and whether an acceptable or performance based solution is proposed.

**Table 2: Summary of bushfire protection measures assessed**

| Bushfire Protection Measure | Acceptable Solution | Performance Solution | Report Section |
|---|---|---|---|
| Asset Protection Zones | ☑ | ☐ | 3.1 |
| Landscaping | ☑ | ☐ | 3.2 |
| Construction standard | ☑ | ☐ | 3.3 |
| Access | ☑ | ☑ | 3.4 |
| Water supply | ☑ | ☐ | 3.5 |
| Electrical services | ☑ | ☐ | 3.6 |
| Gas services | ☑ | ☐ | 3.7 |
| Multi-storey Development | N/A | N/A | 4 |

## 1.3 Significant Environmental Features

An assessment of significant environmental features, threatened species, populations or ecological communities under the *Biodiversity Conservation Act 2016* that may potentially be affected by the proposed bushfire protection measures has been undertaken as part of this development proposal and addressed in a separate report (ELA 2021).

The impact footprint of the bushfire protection measures (e.g. Asset Protection Zone [APZ]) is identified within this report and therefore capable of being assessed by a suitably qualified person. Campbelltown City Council is the determining authority for this development; they will assess more thoroughly any potential environmental issues.

## 1.4 Aboriginal Cultural Heritage

An assessment of any Aboriginal cultural heritage objects (within the meaning of the *National Parks and Wildlife Act 1974*) that may potentially be affected by the proposed bushfire protection measures has not been undertaken in this report as it is covered by other parts of the Development Application (DA) process.

The impact footprint of the bushfire protection measures (e.g. APZ) is identified within this report and therefore capable of being assessed by a suitably qualified person. Campbelltown City Council is the determining authority for this development; they will assess more thoroughly any potential Aboriginal cultural heritage issues.


**Figure 1: Subdivision Layout**

# 2. Bushfire Hazard Assessment

## 2.1 Process

The site assessment methodology from Appendix 1 of PBP has been applied in this assessment to determine the required APZ requirements.

Figure 2 and Table 3 show the effective slope and predominant vegetation representing the highest bushfire threat potentially posed to the subdivision from various directions.

## 2.2 Vegetation Assessment

In accordance with PBP, the predominant vegetation formation has been assessed for a distance of at least 140 m from the subject land in all directions.

The predominant vegetation has been determined from the associated Vegetation Management Plan (VMP; Travers 2019).

## 2.3 Slope Assessment

In accordance with PBP, the slope that would most significantly influence fire behaviour was determined over a distance of 100 m from the boundary of the proposed development under the classified vegetation.

The effective slope has been determined from 2 m contour data.

## 2.4 Summary of Assessment

As shown in Figure 2 the bushfire prone vegetation affecting the proposed development is located to the south within the riparian corridor. The vegetation within the corridor is in poor condition and will be revegetated in accordance with the VMP prepared (Travers 2019). Cumberland Plain Woodland will be the predominant vegetation and is classified as 'woodland' under PBP. The effective slope under the vegetation falls into the slope category of '>0-5 degrees downslope'.

In all other directions there are managed lands. To the east there are managed road reserve and sporting fields and to the north and north-west, the land consists of managed gardens, fields and nature strips within Gilchrist Oval and Campbelltown TAFE.

**Table 3: Bushfire hazard assessment, APZ requirements and BALs**

| Transect # | Slope | Vegetation Formation | Required APZ | Proposed APZ | Comments |
|---|---|---|---|---|---|
| T1 | >0° to 5° downslope | Woodland | 16 m | ≥16 m | APZ provided wholly within development site. |
| T2 | >0° to 5° downslope | Woodland | 16 m | ≥16 m | As above |

| Transect # | Slope | Vegetation Formation | Required APZ | Proposed APZ | Comments |
|---|---|---|---|---|---|
| T3 | >0° to 5° downslope | Woodland | 16 m | ≥16 m | As above |
| T4 | >0° to 5° downslope | Woodland | 16 m | ≥16 m | As above |
| All other directions | | | | | |

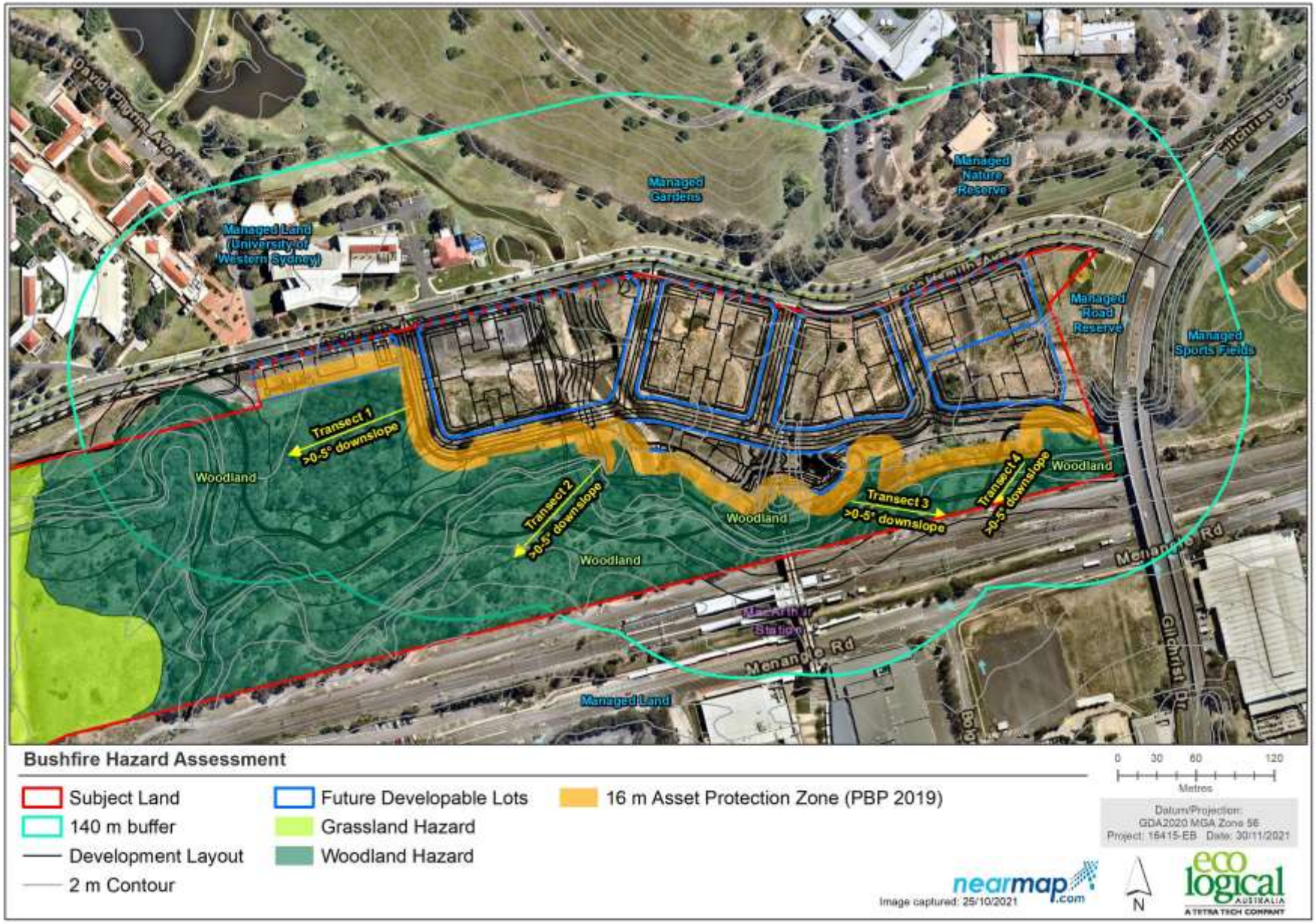



**Figure 2: Bushfire Hazard Assessment**

# 3. Bushfire Protection Measures

## 3.1 Asset Protection Zones

Table 3 shows the dimensions of the required APZ and where relevant, information on how the APZ is to be provided is included. The footprint of the APZ is also shown on Figure 2.

The compliance of the proposed APZ with Section 5.3.1 of PBP is documented in Table 4.

**Table 4: APZ requirements and compliance (adapted from Table 5.3a of PBP)**

| Performance Criteria | Acceptable Solutions | Compliance Notes |
|---|---|---|
| The intent may be achieved where: | | |
| Potential building footprints will not be exposed to radiant heat levels exceeding 29 kW/m² on each proposed lot. | APZs are provided in accordance with tables A1.12.2 and A1.12.3 based on the FDI. | **Complies**<br>APZ provided in accordance with Table A1.12.2 as shown in Table 3 and Figure 2. |
| APZs are managed and maintained to prevent the spread of a fire towards the building. | APZs are managed in accordance with the requirements of Appendix 4 of PBP. | **To comply**<br>APZ to be managed in accordance with PBP.<br>Fuel management specifications provided in Appendix A. |
| The APZ is provided in perpetuity. | APZs are wholly within the boundaries of the development site. | **Complies**<br>APZ located wholly within development site. |
| 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**<br>APZ is not located on slopes greater than 18°. |

## 3.2 Landscaping

The compliance of the proposed landscaping with Section 5.3.1 of PBP is documented in Table 5.

**Table 5: Landscaping requirements and compliance (adopted from Table 5.3a of PBP)**

| Performance Criteria | Acceptable Solutions | Compliance Notes |
|---|---|---|
| The intent may be achieved where: | | |
| Landscaping is managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions. | Landscaping is in accordance with Appendix 4 of PBP; and | **To comply**<br>APZ / Landscaping is to be managed in accordance with PBP. Landscaping specifications provided in Appendix A. |
| | Fencing is constructed in accordance with Section 7.6 of PBP. | **To comply**<br>Fencing to be constructed in accordance with Section |

| Performance Criteria | Acceptable Solutions | Compliance Notes |
|---|---|---|
| | | 7.6 of PBP (see Section 3.3.1 for further details). |

## 3.3 Construction Standards

The Bushfire Attack Level (BAL) for future dwellings within the proposed subdivision will be determined during the individual dwelling Complying Development Certificate (CDC) or DA process, however, a maximum of BAL-29 is provided by the subdivision design.

### 3.3.1 Fences and Gates

To comply with Section 7.6 of PBP, all fencing and gates are to be constructed of hardwood or non-combustible material. Where fencing is within 6 m of a building or in areas of BAL-29 or greater, they should be made of non-combustible material only.

### 3.3.2 Class 10a Buildings (sheds etc.)

To comply with section 8.3.2 of PBP, future Class 10a structures within 6 m of any proposed residential buildings must be constructed in accordance with the NCC. Where the structure is greater than 6 m, no bushfire requirements apply.

## 3.4 Access

Public road access to the subdivision is via multiple points off Goldsmith Avenue in the north and Gilchrist Drive in the east.

Figure 1 and Figure 2 show the internal and perimeter access within the subdivision. The performance criteria and acceptable solutions for each of these access types are shown in Table 14, Table 15 and Table 16 (Appendix B), along with comment on the subdivision design compliance or otherwise.

A summary of the compliance assessment with PBP can be found in Table 6 below whilst the performance solution for perimeter access for the future plaza is addressed in Table 7.

**Table 6: Access summary of compliance**

| Access type | Acceptable Solution | Performance Solution | Further details |
|---|---|---|---|
| General | ☑ | ☐ | Table 14 |
| Perimeter road | ☑ | ☑ | Table 7 and Table 15 |
| Non-perimeter road | ☑ | ☐ | Table 16 |
| Property Access | ☑ | ☐ | Not applicable – no property access roads proposed. |

**Table 7: Access performance solution**

| Access Type | Description | Performance Criteria | Acceptable Solution | Comments |
|---|---|---|---|---|
| Perimeter Roads | Emergency Access south of plaza. | Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface. | Are two-way sealed roads; and<br>Minimum 8m carriageway width kerb to kerb; | All perimeter roads within the proposed development are minimum 8 m wide, two-way sealed carriageways aside from the perimeter emergency access to the south of the future plaza (Figure 3).<br>The emergency access design provides:<br>• 4 m sealed road with 1 m clear either side that is also trafficable;<br>• Carrying capacity up to 23 tonnes; and<br>• 2 connection points to the public road network in the north (Figure 1).<br><br>How the Performance Criteria is satisfied:<br>• The emergency access will not be a public road and will not be used by residents to evacuate. All egress by residents within the broader subdivision would be away from the hazard and fire in a northward direction through a built-up area on the internal egress roads;<br>• Residents of the future plaza will not use the emergency access to evacuate, the building will provide basement level carparking with vehicular access/egress from the north-west of the building onto the proposed road north of the building and pedestrian access north onto proposed northern road; therefore<br>• Safe access and egress is available for firefighters on the emergency access while residents evacuate northward on the internal roads.<br>• *"a safe operational environment for emergency service personnel during firefighting and emergency management on the interface"* is provided by:<br>○ a 6 m wide non-combustible trafficable surface comfortably allowing fire vehicles of 2.4 m to pass; and<br>○ emergency access 145 m in length providing two (2) connection points to the public road network in the north away from the hazard.<br><br>All other acceptable solution design requirements for Perimeter Roads are met (see Table 15). |

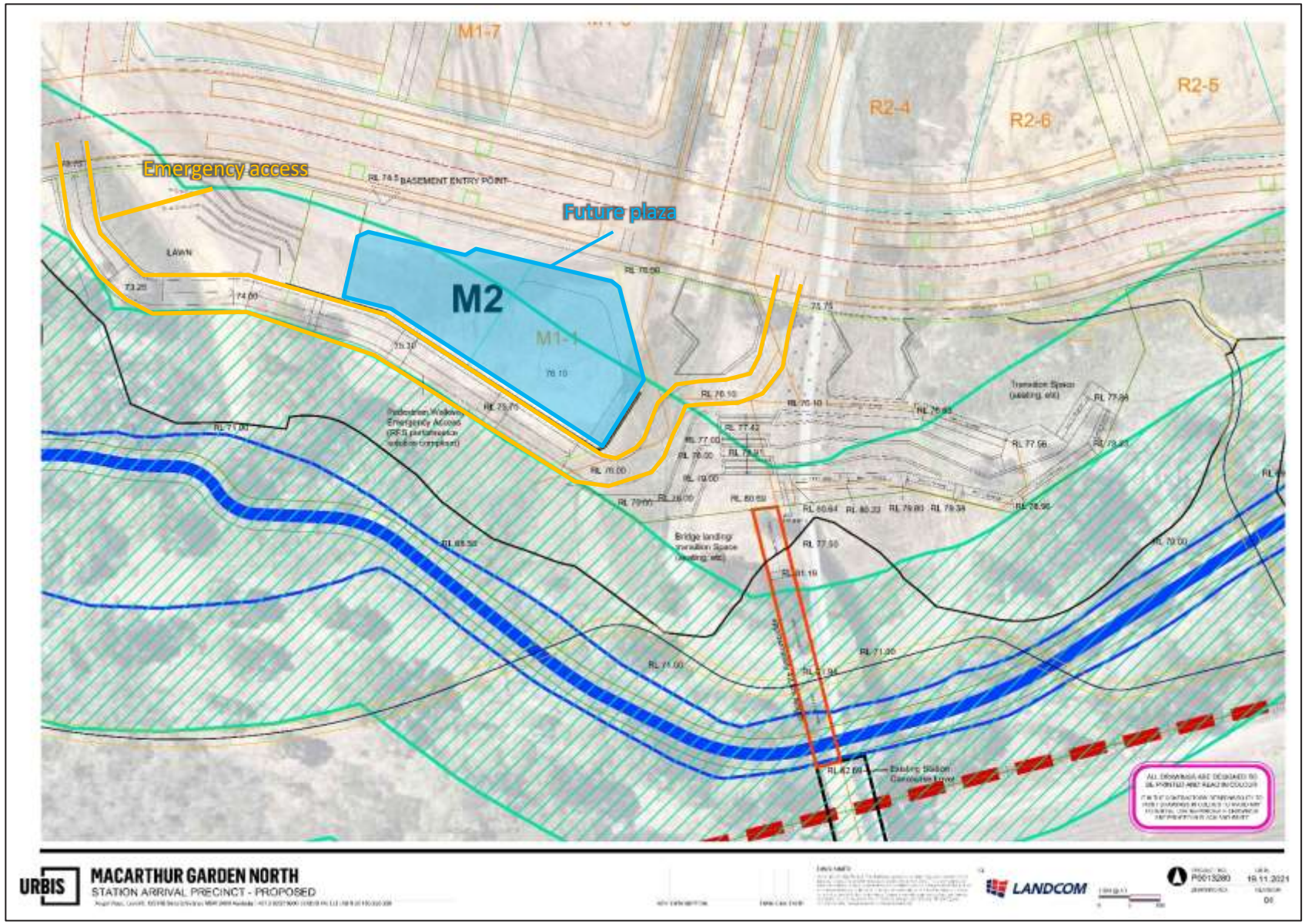



**Figure 3: Emergency access south of future plaza**

## 3.5 Water Supplies

The compliance assessment of the proposed water supply with Section 5.3.3 of PBP is documented in Table 8.

**Table 8: Assessment of requirements for the supply of water services (adapted from Table 5.3c of PBP)**

| Performance Criteria | Acceptable Solution | Compliance Notes |
|---|---|---|
| Adequate water supplies is provided for firefighting purposes. | Reticulated water is to be provided to the development where available;<br>A static water supply and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and<br>Static water supplies shall comply with Table 5.3d of PBP. | **Complies**<br>Proposal serviced by a reticulated water supply. |
| Water supplies are located at regular intervals; and<br>The water supply is accessible and reliable for firefighting operations. | Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1 (SA 2005);<br>Hydrants are not located within any road carriageway; and<br>Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads. | **To comply**<br>The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and table 5.3c and table 5.3d of PBP. |
| Flows and pressure are appropriate. | Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1 (SA 2005). | |
| The integrity of the water supply is maintained. | All above-ground water service pipes are metal, including and up to any taps; and<br>Above-ground water storage tanks shall be of concrete or metal. | |

## 3.6 Electricity Services

The compliance assessment of the proposed supply of electricity services with Section 5.3.4 of PBP is documented in Table 9.

**Table 9: Assessment of requirements for the supply of Electricity services (adapted from Table 5.3c of PBP)**

| Performance Criteria | Acceptable Solution | Compliance Notes |
|---|---|---|
| Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings. | Where practicable, electrical transmission lines are underground; | **Complies**<br>Electricity services to the subject site are located underground. |
| | Where overhead, electrical transmission lines are proposed as follows:<br>Lines are installed with short pole spacing (30 m), unless crossing gullies, gorges or riparian areas; and<br>No part of a tree is closer to a power line than the distance set out in ISSC3 Guide for the Management of Vegetation in the Vicinity of Electricity Assets (ISSC3 2016). | **Not applicable** |

## 3.7 Gas Services

The compliance assessment of the proposed supply of gas services (reticulated or bottle gas) with Section 5.3.4 of PBP is documented in Table 10.

**Table 10: Assessment of requirements for the supply of gas services (adapted from Table 5.3c of PBP)**

| Performance Criteria | Acceptable Solution | Compliance Notes |
|---|---|---|
| Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings. | Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 – The Storage and handling of LP gas, the requirements of relevant authorities, and metal piping is used;<br>All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 m and shielded on the hazard side;<br>Connections to and from gas cylinders are metal;<br>Polymer-sheathed flexible gas supply lines are not used; and<br>Above-ground gas service pipes are metal, including and up to any outlets. | **To comply**<br>The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and table 5.3c of PBP. |

## 3.8 Staged Development

The proposed subdivision will not be staged.

# 4. Multi-storey development response

The proposal is for Master Plan development approval only, no construction of buildings is proposed. DA for construction of buildings to be submitted in a future separate application. Future buildings within the Master Plan will be considered 'multi-storey' and likely consisting of the future plaza (6 stories and a basement carpark) and residential apartment buildings (9 storeys). Given the building designs are not complete, this DA is for subdivision only and specific construction detail is lacking, limited responses are provided in Table 11 to document how the development can address Table 8.2.2 of PBP.

**Table 11: Multi-storey development requirements (adopted from Table 8.2.2 of PBP)**

| Issue | Specific Concern | Technical Considerations | Future Plaza Response | Future Apartment Buildings Response |
|---|---|---|---|---|
| Population | Impact on existing community and infrastructure. | What capacity does the existing infrastructure have to allow evacuation of existing and proposed residents in the event of a bush fire? | • In the event of fire, Emergency Services have direct access to the bushfire hazard from the proposed emergency access south of the plaza, the proposed perimeter road north of the bushfire hazard and rail service tracks along the south of the hazard.<br>• The building will provide basement level carparking with access/egress in the most north-western point of the building onto the proposed road north of building away from the bushfire hazard.<br>• Any future Emergency and Evacuation Plan that will be developed for the site would include triggers to be considered for the stay on site and/or evacuation options.<br>• In the event evacuation is required, residents would evacuate from the north-west access/egress (vehicular) or the north (pedestrian) away from the hazard with emergency services | Note: Specific design detail i.e. basement carparking exit locations are not known at this stage therefore evacuation of proposed residents cannot be detailed at this stage.<br>• In the event of fire, Emergency Services have direct access to the bushfire hazard from the proposed southern perimeter road north of the bushfire hazard and rail service tracks along the south of the hazard.<br>• Any future Emergency and Evacuation Plan that will be developed for the site would include triggers to be considered for the stay on site and/or evacuation options. |

| Issue | Specific Concern | Technical Considerations | Future Plaza Response | Future Apartment Buildings Response |
|---|---|---|---|---|
| | | | accessing the hazard via the emergency access. | |
| Location of Building | Locating on ridge tops emphasises the risk of convective plume interaction and wind related impacts. | Can the building be located away from ridge tops to areas that have a reduced bush fire exposure?<br>If unavoidable, what is the impact on modelling and risk to the building?<br>Is this risk appropriate for the building and occupant numbers? | • The development is situated on moderate slopes of >0-5 degree downslope, not on a ridgetop.<br>• The RL of the terrace lawn area to the east has a variance of 3.75 m over 15 m.<br>• The site achieves the minimum required BAL-29 APZ (16 m) in accordance with Chapter 5 and Table A1.12.2 of PBP.<br>• The bushfire hazard is disjointed with pathways (creek walk), creeks and embankments which will break up the speed and intensity of any fire within the riparian area. The hazard directly south of the development is only narrow (approx. 10 m wide) separated from the broader bushfire hazard by the creek. | |
| Design Fire | Different elements of the flame could have different impacts on different levels of the building; and<br>The whole building could be impacted by ember attack and multiple floors could be alight simultaneously. | What are the flame dimensions including the flame angle?<br>Where is the hottest part of the flame located? How would this impact on the proposed building?<br>How would the warning and suppression systems in the building cope with this? | • Proposed development meets minimum required residential APZ (16 m) under Table A1.12.2 of PBP.<br>• Other BPM to be addressed in future DA response for building construction which will include appropriate landscaping, BAL-29 construction and access to all structures within the development.<br>• Flame contact highly unlikely due to >16 m separation distance (minimum required residential APZ) between the bushfire hazard and development to the south with extensive managed areas within the development to the east and west.<br>• Warning and suppression systems will need to meet requirements under NCC. | |
| Egress | Elevations exposed to bush fire risk. | How does the emergency evacuation procedure take account of the location of bush fire prone vegetation? | • Future Emergency and Evacuation planning should consider the guidance within the NSW RFS document: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan*;<br>• The development meets the minimum required residential APZ (16 m) under Table A1.12.2 of PBP; and<br>• Residents would evacuate to the north of the development away from the bushfire hazard. | |
| Building Construction | Performance of the building façade in a bush fire scenario. | What wall and cladding materials are proposed and what is proposed for the | Development is at master plan stage only with no building design concept. Future proposed design will consider building materials appropriate with Bushfire Attack Level (BAL). | |

| Issue | Specific Concern | Technical Considerations | Future Plaza Response | Future Apartment Buildings Response |
|---|---|---|---|---|
| | | openings/penetrations (i.e. windows and doors)?<br>How does the proposed building construction deal with fire spread from the vegetation to the inside of the building?<br>Is compliance with AS 3959 sufficient to ensure that the bush fire risk is mitigated?<br>Is this appropriate for the design fire scenario? | | |
| | Balconies may contain external features which could ignite and contribute to building ignition and fuel loads | Are there balconies proposed?<br>What may be stored on the balconies?<br>Can there be restrictions on what is stored on the balconies due to fire risk? | Development is at master plan stage only with no building design concept. Future proposed design will need to consider contributions to building ignitions from items stored on any balconies (should they be proposed). | |
| Car Parking | Lower storey car park could be subject to ember attack and high radiant heat loads. | Is the warning and suppression system designed to take account of bush fire impact?<br>Where are exits located? Are they guiding occupants away from the car park? | • Carparking for the development is at basement level with exit at the ground level at the north-west corner of the building heading away from the bushfire hazard.<br>• Emergency vehicles carrying out operational activities at the hazard interface along emergency access would not be obstructed by residents which would be evacuating via exit in the north.<br>• Carparking and sprinkler system will be required to meet the NCC standards. | Note: Specific design detail i.e. basement carparking exit locations are not known at this stage therefore evacuation of proposed residents cannot be detailed at this stage.<br>• Carparking and sprinkler system will be required to meet the NCC standards. |
| Other Engineering Considerations | Access for fire fighters may be restricted or challenging; and | What would this mean for fire suppression?<br>How would warning and suppression systems take account of this? | • Emergency access will be provided between the building and bushfire hazard as shown in **Figure 1**. | Note: Specific design detail is known at this stage.<br>• Pedestrian access provided around all buildings. |

| Issue | Specific Concern | Technical Considerations | Future Plaza Response | Future Apartment Buildings Response |
|---|---|---|---|---|
| | | What would this mean for evacuation? | • Pedestrian access provided around all buildings.<br>• Future development will need to comply with NCC and any fire engineering requirements. | • Future development will need to comply with NCC and any fire engineering requirements. |
| | Risk implications of floor to floor fire spread. | | • Sprinkler systems will need to comply with NCC standards. | |

# 5. Conclusion

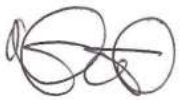
The proposed master plan subdivision has been assessed against the specifications and requirements of '*Planning for Bush Fire Protection 2019*', as outlined in Table 12.

**Table 12: Development Bushfire protection measures and associated recommendations**

| Bushfire Protection Measures | Recommendations | Acceptable Solution | Performance Solution | Report Section |
|---|---|---|---|---|
| Asset Protection Zones | APZ dimensions are detailed in Table 3 and shown in Figure 2.<br>Identified APZ to be maintained in perpetuity to the specifications detailed in Appendix A. | ☑ | ☐ | 3.1 |
| Landscaping | Any future landscaping meets the requirements of PBP listed in Appendix A. | ☑ | ☐ | 3.2 |
| Construction standard | BAL for dwellings to be determined at individual CDC/DA stage however, a maximum of BAL-29 is achievable. | ☑ | ☐ | 3.3 |
| Access | Access to meet standards summarised in Table 6.<br>Performance solution detailed in Table 7 addresses the requirement for an 8 m wide perimeter road to the future plaza. | ☑ | ☑ | 3.4 |
| Water supply | Reticulated water supply to meet PBP acceptable solution specifications for a subdivision. | ☑ | ☐ | 3.5 |
| Electricity service | Electricity supply located underground. | ☑ | ☐ | 3.6 |
| Gas service | Gas services are to be installed and maintained in accordance with AS/NZS 1596:2014. | ☑ | ☐ | 3.7 |
| Multi-storey development | All the above BPM meet or exceed the Chapter 5 performance criteria and addresses the other considerations in Chapter 8.2.2. | ☐ | ☑ | 4 |

# 6. Recommendations

It is recommended that the subdivision be issued a Bush Fire Safety Authority.



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**Insert BPAD number**

# 7. References

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# Appendix A - Asset Protection Zone and Landscaping Standards

The following APZ management specifications apply to the APZs specified in Table 3 and shown in Figure 2. The identified APZs are to be maintained in perpetuity and management undertaken on an annual basis (as a minimum) and prior to the commencement of the bushfire season.

These APZ management specifications should be considered for any future landscaping and maintenance.

Further details on APZ implementation and management can be found on the NSW RFS website (https://www.rfs.nsw.gov.au/resources/publications).

**Table 13: APZ management specifications**

| Vegetation Strata | Inner Protection Area (IPA) |
|---|---|
| Trees | • Tree canopy cover should be less than 15% at maturity;<br>• Trees (at maturity) should not touch or overhang the building;<br>• Lower limbs should be removed up to a height of 2 m above ground;<br>• Canopies should be separated by 2 to 5 m; and<br>• 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;<br>• Shrubs should not be located under trees;<br>• Shrubs should not form more than 10% ground cover; and<br>• Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation. |
| Grass | • Should be kept mown (as a guide grass should be kept to no more than 100 mm in height); and<br>• Leaves and vegetation debris should be removed. |

# Appendix B - Access Standards

**Table 14: General access requirements (adapted from Table 5.3b of PBP)**

| Performance Criteria | Acceptable Solutions | Compliance notes |
|---|---|---|
| The intent may be achieved where: | | |
| Firefighting vehicles are provided with safe, all-weather access to structures. | Property access roads are two-wheel drive, all-weather roads; | **Not applicable** No property access roads proposed. |
| | Perimeter roads are provided for residential subdivisions of three or more allotments; | **Complies** Perimeter roads proposed for the entire development. |
| | Subdivisions of three or more allotments have more than one access in and out of the development; | **Complies** Multiple access/egress points off Goldsmith Avenue and Gilchrist Drive provided. |
| | Traffic management devices are constructed to not prohibit access by emergency services vehicles; | **To comply** Any proposed traffic management devices to ensure emergency services access is not prohibited. |
| | Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient; | **To comply** Detail not provided at this stage. |
| | All roads are through roads; | **Complies** All roads are 'through roads'. |
| | Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end; | **Complies** All roads are 'through roads'. |
| | Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road; | **To comply** Detail not provided at this stage. |
| | Where access/egress can only be achieved through forest, woodland or heath vegetation, secondary access shall be provided to an alternate point on the existing public road system; | **Complies** Multiple secondary access points provided. |
| | 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. | **Not applicable** No one way public access roads proposed. |

| | | |
|---|---|---|
| The capacity of access roads is adequate for firefighting vehicles. | The capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/causeways are to clearly indicate load rating. | **To comply**<br>Detail not provided at this stage. |
| There is appropriate access to water supply. | Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression; | **To comply**<br>Detail not provided at this stage. |
| | Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2017 – Fire hydrant installations system design, installation and commissioning; and | **To comply**<br>Detail not provided at this stage. |
| | There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available. | **Not applicable** |

**Table 15: Perimeter road requirements (adapted from Table 5.3b of PBP)**

| Performance Criteria | Acceptable Solutions | Compliance Notes |
|---|---|---|
| The intent may be achieved where: | | |
| Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface. | Are two-way sealed roads; | Complies with performance criteria<br>Performance solution detailed in **Error! Reference source not found.**. |
| | Minimum 8m carriageway width kerb to kerb; | Complies with performance criteria<br>Performance solution detailed in **Error! Reference source not found.**. |
| | Parking provided outside of the carriageway width; | **To comply**<br>Detail not provided at this stage. |
| | Hydrants are located clear of parking areas; | **To comply**<br>Detail not provided at this stage. |
| | There are through roads, and these are linked to the internal road system at an internal of no greater than 500m; | **Complies**<br>All perimeter roads are through roads and connect with internal road network at intervals <500m. |
| | Curves of roads have a minimum inner radius of 6m; | **To comply**<br>The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and Table 5.3b of PBP. |
| | The maximum grade road is 15 degrees and average grade is 10 degrees; | |
| | The road crossfall does not exceed 3 degrees; | |
| | A minimum vertical cleared of 4m to any overhanging obstructions, including tree branches, is provided. | |

**Table 16: Non-perimeter road requirements (adapted from Table 5.3b of PBP)**

| Performance Criteria | Acceptable Solutions | Compliance notes |
|---|---|---|
| The intent may be achieved where: | | |
| Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating. | Minimum 5.5m width kerb to kerb; | **Complies**<br>All non-perimeter roads will be >5.5 m. |
| | Parking is provided outside of the carriageway width; | **To comply**<br>Detail not provided at this stage. |
| | Hydrants are located clear of parking areas; | **To comply**<br>Detail not provided at this stage. |
| | Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m; | **Complies**<br>All non-perimeter roads are through roads and connect with internal road network at intervals <500m. |
| | Curves of roads have a minimum inner radius of 6m | **To comply**<br>The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and Table 5.3b of PBP. |
| | The road crossfall does not exceed 3 degrees; | |
| | A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided. | |

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