



**Premise**

# **Bushfire Risk Assessment**

STAGE 14 CAERLEON ESTATE

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## 1. INTRODUCTION

Premise has been commissioned by Caerleon Mudgee Pty Ltd to prepare a Bushfire Risk Assessment to accompany a Development Application (DA) for a proposed subdivision in relation to land at 26 Hone Creek Drive, Caerleon (also known as Lot 535 DP1272615). The development is described as Stage 14 and comprises a subdivision creating 237 residential Torrens title lots, two super lots, one basin lot, one channel lot and associated civil works and dedication of roads to Council as shown in **Figure 1**.

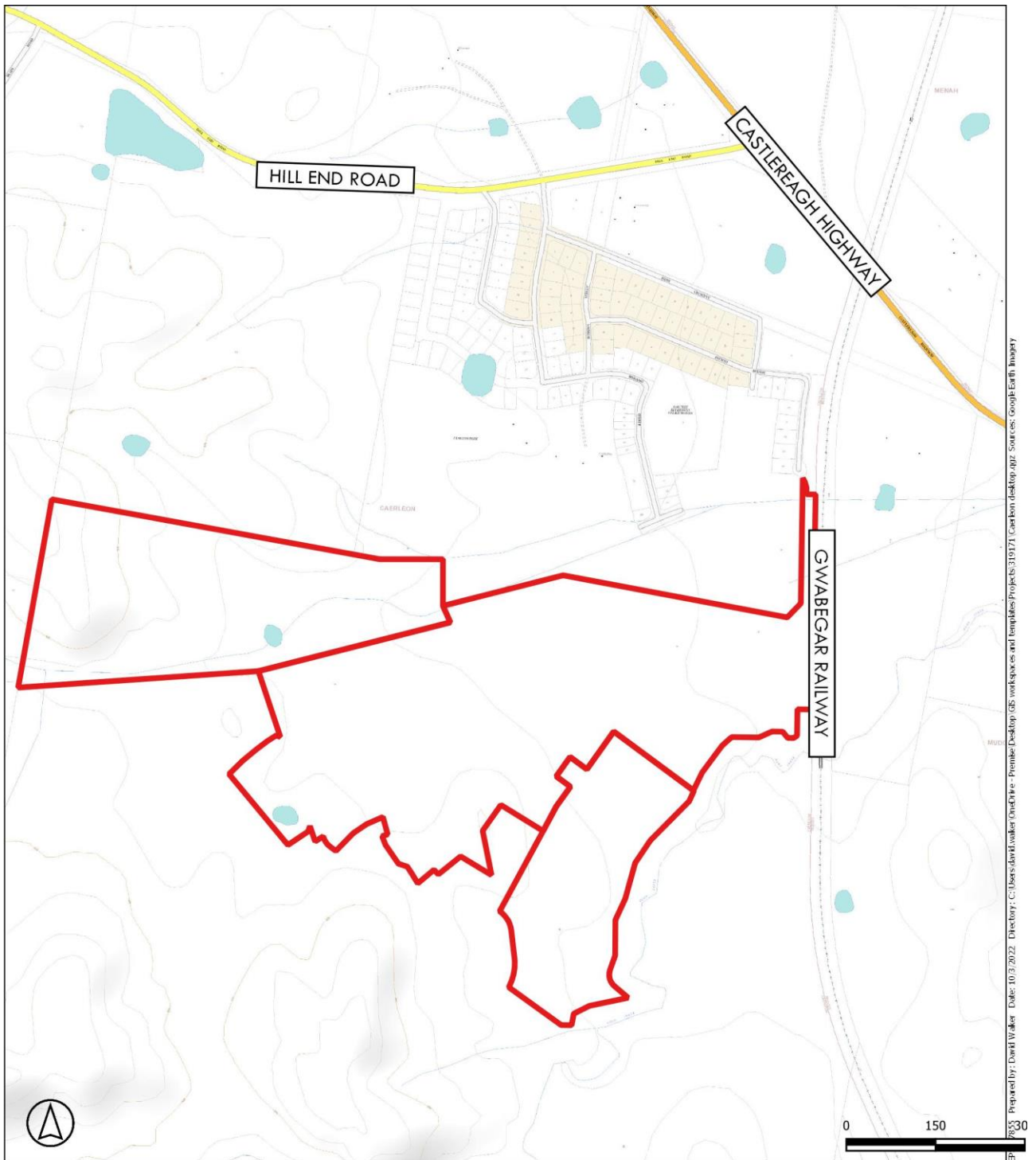
In accordance with Clause 4.46(1) of the *Environmental Planning and Assessment Act 1979*, the proposed development requires authorisation under Section 100B of the *Rural Fires Act 1997* by way of a Bush Fire Safety Authority (BFSA). In accordance with Section 100B of the *Rural Fires Act 1997*, a BFSA is required to be obtained prior to developing bush fire prone land for the purpose of residential or rural residential subdivision.

The proposal is for the subdivision of bushfire prone land for residential purposes. Section 100B (4) of the *Rural Fires Act 1997* requires an application for such an authority to be made to the Commissioner of the NSW Fire Service in accordance with Clause 44 of the *Rural Fires Regulation 2013*. The NSW Rural Fire Service is the agency authorised to issue a BFSA.

This report has been prepared in accordance with the requirements of Planning for Bush Fire Protection 2019 and the application is made pursuant to Clause 44 of the *Rural Fires Regulation 2013* and the NSW Rural Fire Services' "Submission Requirements". This report is set out in the following format:

- **Section 2** provides a description of the site subject to the DA.
- **Section 3** provides a description of significant environmental features at the site.
- **Section 4** provides a Bushfire Risk Assessment for the proposed development.
- **Section 5** concludes the report.

Figure 1 – Subject site



- LEGEND
- Lot boundaries
  - Stage 14



**PROPOSED DEVELOPMENT**  
**Caerleon Estate Stage 14**

## 2. BACKGROUND

### 2.1 The Site

The site on which this application is made is Lot 535 DP1272615, known as 26 Hone Creek Drive, Caerleon. The site is a residue lot created as part of a previous development application associated with earlier stages of the Caerleon residential development. The site is located south of Hill End Road and the existing residential lots/dwellings constructed as part of earlier stages of the Caerleon development.

The subject site is an irregular shaped parcel and will have access from Hone Creek Road to the north. Hone Creek Road connects with Hill End Road, which in turn connects with the Castlereagh Highway.

## 3. THE DEVELOPMENT

### 3.1 Proposed Development and Zoning

The proposed development comprises a subdivision creating 237 residential Torrens title lots, two super lots, one basin lot and one channel lot to be known as Stage 14. The proposed subdivision involves construction of roads, earthworks, servicing, and stormwater works. All lots within Stage 14 are located on bushfire prone land, however this report demonstrates the proposed subdivision complies with the requirements for creating a residential subdivision on bushfire prone land.

Proposed Stage 14 is zoned a combination of R1 – General Residential, B4 – Mixed use, C3 – Environmental Management and RE1 – General Residential pursuant to the *Mid-Western Regional Local Environmental Plan 2012* (LEP). Residential lots are limited to the R1 zone.

### 3.2 Vegetation

By reference to the Biodiversity Development Assessment Report (BDAR) prepared to support this DA, vegetation formations within Caerleon Estate development consist of:

- PCT266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion.
- PCT 281 – Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion.

Native vegetation to be removed has been classified via the BDAR into five vegetation zones:

- White Box Woodland (PCT 266) in good condition – three patches (0.93 ha)
- Derived Native Grassland (PCT 266) in good condition – two patches (2.64 ha)
- Derived Native Grassland (PCT 266) in poor condition – one patch (5.28 ha)
- Rough-barked Apple Woodland (PCT 281) in moderate condition – one patch (0.64 ha)
- Exotic Grassland (PCT 281) in poor condition – one patch (20.39 ha)

Paddock trees include Blakely's Red Gum, Rough barked Apple and White box. Hone Creek borders the south-eastern extent of Stage 14, consisting riparian vegetation. The area of the creek is excluded from application of the stage 14 DA.

Intact bushfire prone vegetation on the western and southwestern portion of Lot 535 currently consists of small patches of woodland and large areas of grassland heavily impacted by ongoing grazing/agricultural use of the

land. For the purposes of PBFP2019, the vegetation formations across the majority of the site is considered as "Grassland" whilst the smaller areas of woodland were assessed as "Woodland (Grassy)"

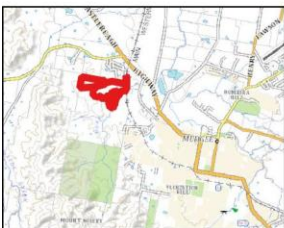
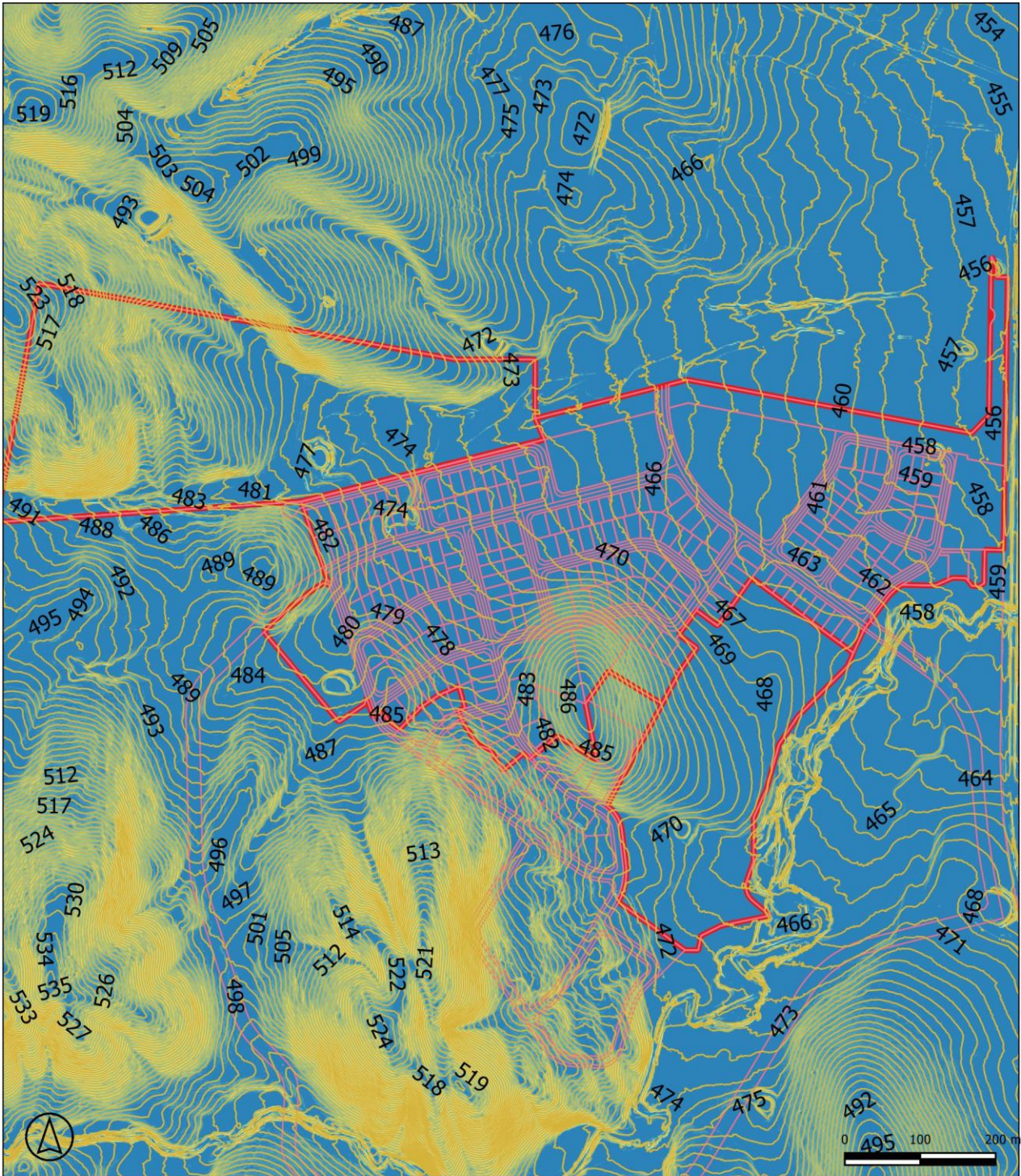
### 3.3 Slope

Slopes across the site are generally minor. The site is located upslope from the vegetation on the property to the west so the bushfire threat from this property is reduced. Residential lots will be directly adjoining the property to the west which are located at 482 metres AHD. The distance from the vegetation to the furthest residential lot is 283 metres which is located at 468 metres AHD, resulting in an average slope of 4.9 percent.

**Figure 2** depicts slope at the site.



Figure 2 – Slope at the Subject Site



LEGEND

Lot boundaries	Slope 0-5	10-15
1m contours	5-10	10-20
		20-25

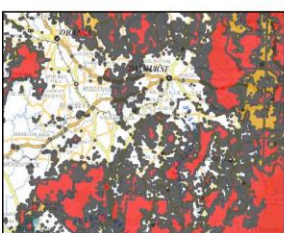
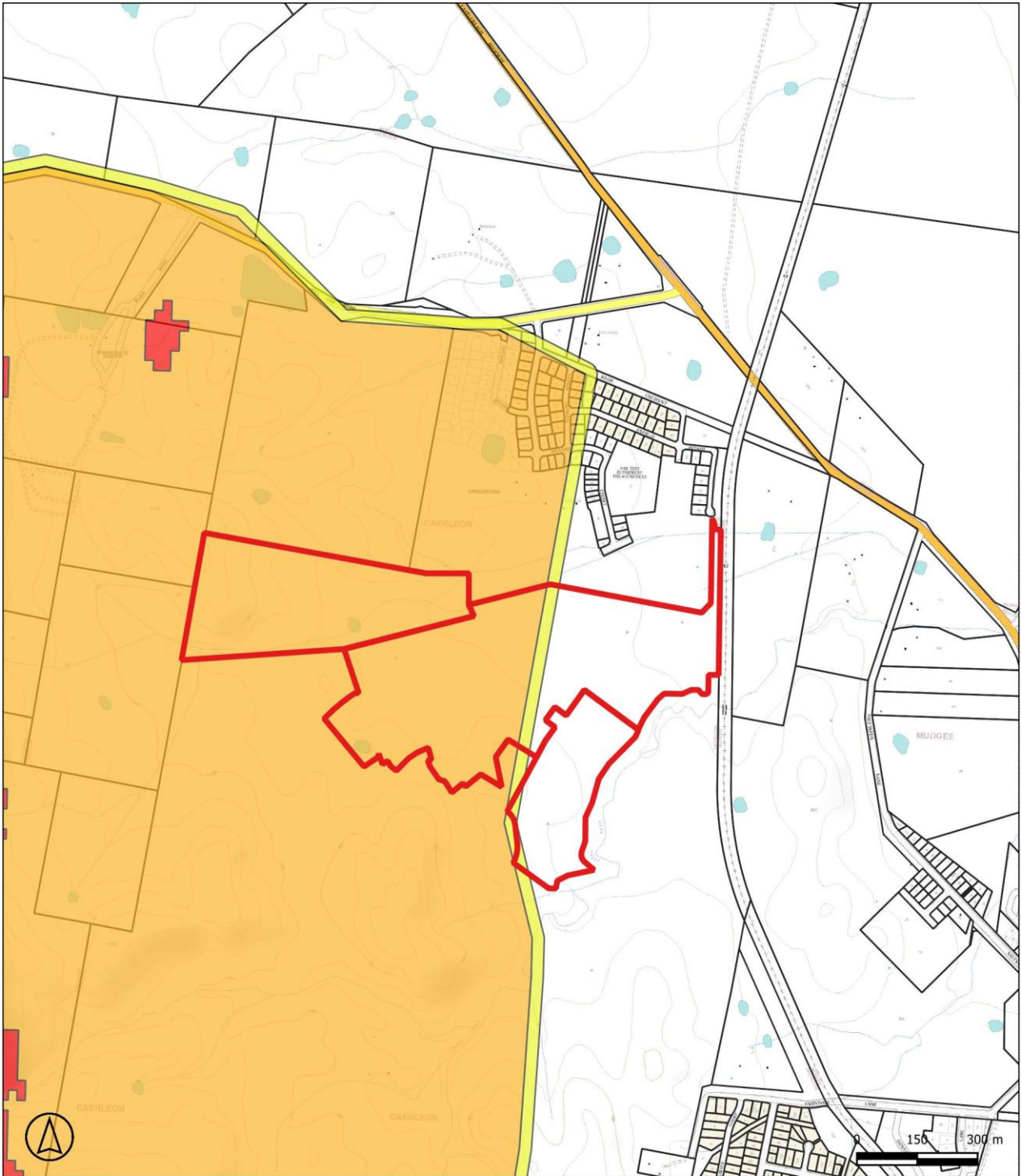
**PROPOSED DEVELOPMENT**  
**Caerleon Estate Stage 14**



### 3.4 Bushfire Prone Land

Proposed Stage 14 contains land in the western extent mapped as vegetation category 2 and vegetation buffer. There is no land within 140 metres of the site identified as vegetation Category 1. The site and surrounds are predominantly located in areas of grassland which have been zoned and partly developed for residential development. The vegetation on the adjoining property to the west consists of scattered trees and does not provide a connecting canopy. The proposal will result in residential lots directly adjoining the bushfire source, which is consistent with approved Stages 5, 8 and 9 and proposed Stage 13 to the north. As per **Figure 3** below, the majority of the site is not mapped as bushfire prone. The Mid-Western LGA is located within a Forest Fire Danger Index (FFDI) 80 area.

Figure 3 – Bushfire Prone Land



- LEGEND**
-  Lot boundaries
  - Bush Fire Prone Land**
  -  Buffer
  -  Category 1
  -  Category 2

## 4. SIGNIFICANT ENVIRONMENTAL FEATURES

### 4.1 Ecology

The site has been the subject of strategic planning by Mid-Western Regional Council and has been predominantly zoned for urban development, sufficient to meet the growth needs of the town of Mudgee.

The site has been the subject of a BDAR which has identified areas of the site that will be avoided, mitigation measures to reduce impacts, and offsetting to managing residual clearing of vegetation. The extent of proposed Stage 14 is predominantly characterised by low quality groundcover with a number of areas of more significant vegetation, including a number of isolated paddock trees.

The BDAR for the site concludes:

*The Caerleon Stage 14 subdivision would result in the loss of 0.93 ha of PCT 266 Woodland (good), 2.64 ha of PCT 266 DNG (good), 5.28 ha of PCT 266 DNG (poor), 0.64 ha of PCT 281 Woodland (moderate) and 20.39 ha of PCT 281 Exotic Grassland (poor). The future VI score will be zero for all areas.*

*The BAM Credit Calculator valued the losses of:*

- 0.93 ha of PCT 266 Woodland (good) at 25 credits*
- 2.64 ha of PCT 266 DNG (good) at 42 credits*
- 5.28 ha of PCT 266 DNG (poor) at 0 credits*
- 0.64 ha of PCT 281 Woodland (moderate) at 15 credits*
- 20.39 ha of PCT 281 Exotic Grassland (poor) at 0 credits*

*giving a total of 82 Ecosystem Credits.*

*The proposed Caerleon Stage 14 residential subdivision will result in Ecosystem Credits and Species Credits for native vegetation removal as calculated by the BAM credit calculator. Caerleon Mudgee Pty Ltd is committed to satisfying the biodiversity credit requirements using offset mechanisms allowed by the NSW Biodiversity Offsets Scheme (i.e. contribution to the Biodiversity Trust Fund administered by the NSW Biodiversity Conservation Trust, purchase of existing credits on the market, funding of a biodiversity conservation action and retirement of biodiversity credits).*

The land to the north has been approved or is currently subject to a development application for residential subdivision. These will result in the removal of the unmanaged exotic grassland and construction of new roads and residential lots with future dwelling construction and managed landscaped surrounds. The site is bounded to the west by the Gwabegar Railway Line. The adjoining land to the west and south-east will be developed as Stages 15 and 16 in the scheme, consisting of urban residential lots.

### 4.2 Indigenous Heritage

The site has been the subject of an Aboriginal heritage Due Diligence assessment, completed by Kelleher in 2012, and a more recent site survey by the Murong Gialinga Aboriginal & Torres Strait Islander Corporation.

Additionally, a search of the subject site (including a 50 m buffer) of the Aboriginal Heritage Information Management System (AHIMS) did not identify any recorded Aboriginal sites or places within the extent of Stage 14.

There are mapped items proximal to Stage 14 (refer **Figure 4**), however the proposal will not result in any impact on this item.

No Aboriginal places were identified on or near the extent of Stage 14 in the Office of Environment and Heritage's NSW Atlas of Aboriginal Places. No Aboriginal places or objects were identified on or near the site in the State Heritage Register (SHR).

### 4.3 Extractive Resources

A review of the MinView DIGS database confirms no current exploration or mining leases (or applications) cover the subject site.

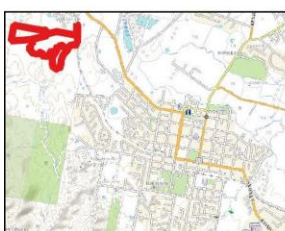
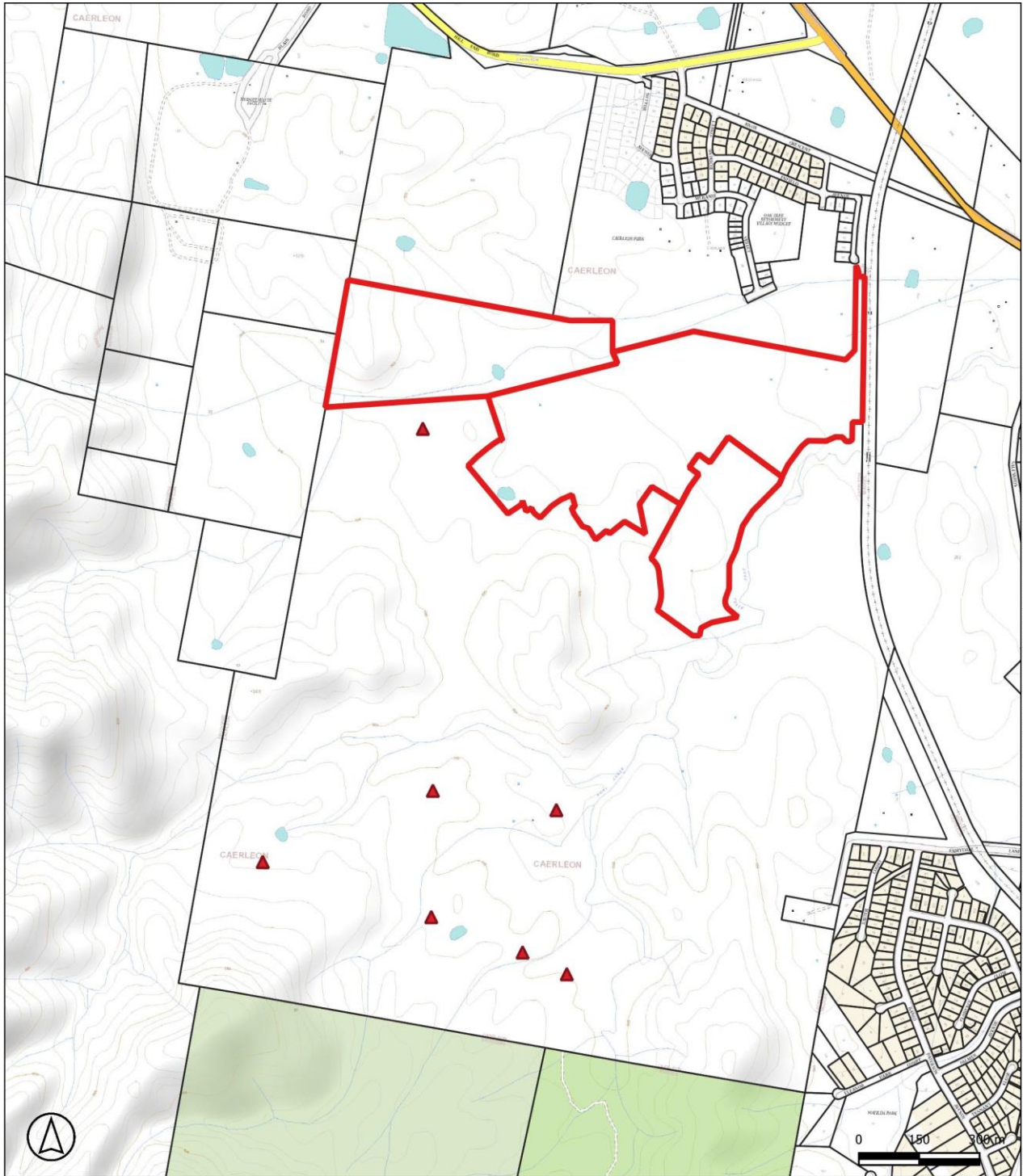
### 4.4 Contamination

A Phase 1 Contamination assessment of the site was completed in 2012 in relation to the rezoning of the land. No areas of potential contamination were identified within the extent of Stage 14.

A review of available database information, including the EPA contaminated land record and the List of NSW Contaminated Sites Notified to EPA as of 15 March 2021 (both accessed on 15/03/21) confirms the site is not known or likely to contain instances of contamination that would require remediation.



Figure 4 – Aboriginal heritage items



- LEGEND
- Lot boundaries
  - Proposed Stage 14
  - AHIMS search results



**PROPOSED DEVELOPMENT**  
**Caerleon Estate Stage 14**

## 5. BUSHFIRE RISK ASSESSMENT

### 5.1 Introduction

There are currently no dwellings within the extent of proposed Lot 14. The proposed subdivision would allow for residential development within Stage 14 of Caerleon estate.

### 5.2 Asset Protection Zones

#### 5.2.1 DEFINITIONS

An Asset Protection Zone (APZ) is defined under *Planning for Bushfire Protection 2019* (PBP) as:

An APZ is a buffer zone between a bush fire hazard and buildings. The APZ is managed to minimise fuel loads and reduce potential radiant heat levels, flame, localised smoke, and ember attack. The appropriate APZ distance is based on vegetation type, slope, and the nature of the development (NSW RFS 2019).

APZs consist of:

- Inner Protection Area (IPA): The component of an APZ which is 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.
- Outer Protection Area (OPA): located between the IPA and the unmanaged vegetation. The outer component of an APZ, where fuel loads are maintained at a level where the intensity of an approaching bush fire would be significantly reduced.
- A defensible space: an area within the Inner Protection Area (IPA) of an APZ adjoining a building. This space provides a safe working environment in which efforts can be undertaken to defend the structure, before and after the passage of a bush fire (NSW RFS 2019).

#### 5.2.2 OBJECTIVES

Table 5.3a of *Planning for Bushfire Protection 2019* (PBF) identifies the performance criteria and acceptable solution applicable for determining appropriate APZ's for rural and residential subdivision. These are summarised and addressed in **Table 1**.

**Table 1 – Asset Protection Zones**

Performance Criteria	Acceptable Solutions	Assessment
Potential building footprints must not be exposed to radiant heat levels exceeding 29 kw/m <sup>2</sup> on each proposed lot.	APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI.	The proposal entails the development of an urban landscape with roads and infrastructure, and land for future dwellings. This will, in effect, remove the fire source feature for all lots except those on the western flank of the stage. A number of lots within the stage (being lots 140, 141, 226, 227 and 231) will be incapable of providing the necessary APZ's within the boundary of the lot. As such, an 88b instrument will be applied to the residue lot to ensure that owners of adjacent land can legally enter this land for the purposes of maintaining/managing vegetation and implement their APZ. This will be a temporary measure until such time as the adjacent land is developed for

Performance Criteria	Acceptable Solutions	Assessment
		residential purposes, at which time the 88b instruments will be removed. All other lots are surrounded by cleared/managed land consisting of residential lots, roads and areas of stormwater management. The majority of the lots (excluding this listed above) will have a BAL_LOW.
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 PBFP.	This would be achieved by reference to the above.
The APZs is provided in perpetuity.	APZs are wholly within the boundaries of the development site	This would be achieved extent to the extent explained above.
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.	✓
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	<ul style="list-style-type: none"> <li>– Landscaping is in accordance with Appendix 4 of PBFP; and</li> <li>– Fencing is constructed in accordance with section 7.6 of PBFP.</li> </ul>	This is capable of being achieved in relation to future residential developments on the land.

### 5.2.3 REQUIRED SETBACKS

Appendix 1 of PFBP provides the procedure for determining bush fire attack assessment on a building within a designated bushfire prone area. The requirements and assessed outcomes are discussed in **Table 2**.

**Table 2 – Bushfire assessment**

Setback assessment	Assessment response
Determine vegetation formation in all directions around the building to a distance of 140 metres (refer to A1.2).	The vegetation within 140 metres of the subject site is predominantly grassland with some residual scattered woodland, as per the BDAR.
Determine the effective slope of the land from the building for a distance of 100 metres (refer to A1.4 and A1.5).	<p>Slope is variable across the land (as outlined <b>Figure 2</b>), as follows:</p> <ul style="list-style-type: none"> <li>- North -Downslope – 0-5 degrees</li> <li>- West -Upslope</li> <li>- South -Downslope – 0-5 degrees</li> <li>- East – N/A</li> </ul>
Determine the relevant FFDI for the council area in which the development is to be undertaken (refer to A1.6); and	The FFDI is 80

Setback assessment	Assessment response
Match the relevant FFDI, vegetation formation and effective slope to determine the APZ required from the appropriate table of this Appendix (refer to A1.7).	By reference to the above, the following APZ's are required: <ul style="list-style-type: none"> <li>- North – 11 metres</li> <li>- West – 10 metres</li> <li>- South – 11-13 metres</li> <li>- East – N/A</li> </ul>

All dwellings on lots within Stage 14 will achieve BAL-29 or less by reference to Table A1.12.6 (NSW RFS 2019) prior to, and once the surrounding land has been developed.

The land immediately to the north of Stage 14 is proposed via the application for use as a stormwater drainage channel. The channel will capture water from the upstream catchment, control flows and discharge to an existing culvert under the Gwabegar Railway Line at velocities/flows consistent with current rates. The area of the stormwater channel would be managed as grass or landscaped depending on the climate/time of year. This area is considered to represent managed land by reference to PBDP 2019.

With reference to Table A1.12.6 (NSW RFS 2019), some of the proposed lots will be located within 100 metres of the nearest grassland/ bushfire threat. It should be noted the Bushfire Prone Land Map above is not reflective of the actual bushfire threat and requires updating.

The land to the north and south will continue to be developed which will further increase the setback from the proposed lots to the threat of bushfire, however the threat to the west will remain in the long term and this assessment has considered the impact.

The following lots will require a section 88b instrument to be implemented that provides rights of access to the adjacent land to enable APZ standards to be maintained until such time as the adjacent land is developed for residential purposes (as is proposed).

The proposed lots affected by this recommendation are:

- 140-141,
- 226-227 and
- 231.

All other lots within the scheme are bounded by roads or other forms of managed land or are large enough in their own right to wholly accommodate a required APZ on the subject land.

Subject to this short term requirement, the development is capable of achieving the necessary APZ to ensure that future dwellings can achieve BAL-29 standards.

### 5.3 Construction Standards

Part 2.3.4 of the Building Code of Australia states a Class 1 building which is constructed in a *designated bushfire prone area* must be designed and constructed to reduce the risk of ignition from a bushfire while the fire front passes.

Australian Standard A.S. 3959 - 2009 is the enabling standard which addresses the performance requirements of Part 2.3.4 of the Building Code of Australia.

Therefore, Class 1 buildings within the development shall be constructed to comply with the specifications of this Standard.



Identify construction requirements:

1. Follow steps 1 - 4 in Section 5.2.3 of this report.
2. Determine the separation distance by measuring from the edge of the unmanaged vegetation to the closest external wall.
3. Match the relevant FFDI, appropriate vegetation, distance, and effective slope to determine the appropriate BAL using the relevant tables at the end of this section (A1.12.5, A1.12.6 and A1.12.7); and
4. Refer to Section 3 in AS 3959 and NASH Standard to identify appropriate construction requirements for the calculated BAL.

There are five levels of bushfire construction with deemed-to-satisfy arrangements accepted by the NSW Rural Fire Service. These are BAL 12.5; BAL 19; BAL 29, BAL 40 and BAL Flame Zone as defined by A.S 3959 – 2018.

The resulting BAL determines the nature of the construction standard which applies to a development by reference to the provisions of AS3595-2018.

All future dwellings have been calculated to achieve at least BAL-29 status. This is due to the immediate bushfire threat to those lots on the periphery of the subdivision adjacent to the residue lot. The remainder of the subdivision satisfies the definition of managed land and thus lots not on the edge of the subdivision do not require APZ's or applicable construction standards. The land within the stage is assessed as being developed land, with the opportunity for a temporary asset protection zone in the interim until that land is developed.

The Asset Protection Zones (APZ) provided to the dwellings on all lots have been determined to mitigate the impact of bushfires to the extent that radiant heat levels will be less than 29 kW/m<sup>2</sup>.

### 5.3.1 ASSOCIATED STRUCTURES

No structures form part of the development application.

## 5.4 ACCESS

PBFP provides control in relation to site access in relation to new roads, property access and fire trails. As no fire trails are required or proposed, the focus of this element of the assessment is new roads and property access.

**Table 3** outlines the performance criteria and acceptable solutions for property access. The table also outlines how the proposed development achieves the requirements.

**Table 3 – Property Access**

Performance Criteria	Acceptable Solutions	Comments	Compliance
ACCESS (GENERAL REQUIREMENTS)			
Firefighting vehicles are provided with safe, all-weather access to structures.	Property access roads are two-wheel drive, all-weather roads;	Individual property access would be addressed in subsequent DAs for dwelling construction on each lot.	✓
	Perimeter roads are provided for residential subdivisions of three or more allotments;	Access to Stage 14 is via Hone Creek Drive to the north, and then onwards to the Castlereagh Highway. No perimeter roads are proposed noting that this stage is in the centre of the estate, with	N/A

Performance Criteria	Acceptable Solutions	Comments	Compliance
		subsequent stages to be developed to the south, south-east and west.	
	Subdivisions of three or more allotments have more than one access in and out of the development;	A single, central access road is provided in the short term. Future access roads will be provided with the development of the estate. The proposed subdivision will provide a through connection to Hone Creek Drive with Stage 9 to the north of the site.	✓
	Traffic management devices are constructed to not prohibit access by emergency services vehicles;	Emergency vehicle access would not be prohibited in any form.	✓
	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;	The grade of the proposed roads would not exceed 15 degrees, or an average of 10 degrees.	✓
	All roads are through roads;	The proposed roads are not a through road in the short term. Temporary turning heads will be provided where required and roads will be constructed to maintain suitable access.	✓
	Dead end roads are not recommended, but if unavoidable, 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:	The proposed roads are generally connected with temporary turning heads provided as required. Connections to future stages are facilitated by the design, ensuring safe vehicular access.	✓
	Where kerb and guttering are provided on perimeter roads, roll top kerbing should be used to the hazard side of the road;	A perimeter road is not required or provided to the subject site.	✓
	Where access/egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system; and	Access and egress are achieved via proposed formed public roads.	✓

Performance Criteria	Acceptable Solutions	Comments	Compliance
	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.	Access roads would be two-way and meet the 10m width requirements.	✓
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.	Roads will be constructed to support fully loaded firefighting vehicles (up to 23 tonnes).	✓
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;	This will be achieved.	✓
	Hydrants are provided in accordance with the relevant clauses of as 2419.1:2005 - fire hydrant installations system design, installation, and commissioning; and	This will be achieved.	✓
	There is suitable access for a category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	This will be achieved.	✓
<b>PERIMETER ROADS</b>			
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;	No perimeter roads are proposed	N/A
	Minimum 8m carriageway width kerb to kerb;	As above	N/A
	Parking is provided outside of the carriageway width;	As above	N/A
	Hydrants are located clear of parking areas;	As above	N/A
	Are through roads, and these are linked to the internal road system at an interval of no greater than 500m;	As above	N/A
	Curves of roads have a minimum inner radius of 6m;	As above	N/A

Performance Criteria	Acceptable Solutions	Comments	Compliance
	The maximum grade road is 15 degrees and average grade of not more than 10 degrees;	As above	N/A
	The road crossfall does not exceed 3 degrees; and	As above	N/A
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	As above	N/A
<b>NON-PERIMETER ROADS</b>			
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5m carriageway width kerb to kerb;	Carriageways will achieve the 5.5m minimum.	✓
	Parking is provided outside of the carriageway width;	This will be achieved.	✓
	Hydrants are located clear of parking areas;	This will be achieved.	✓
	Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m;	The proposal provides a range of roads that service proposed lots and connect to Hone Creek Drive, for onward connection to the Castlereagh Highway. Safe access/egress for evacuation and firefighting vehicles is provided.	x
	Curves of roads have a minimum inner radius of 6m;	This will be achieved.	✓
	The road crossfall does not exceed 3 degrees; and	This will be achieved.	✓
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	This will be achieved.	✓

## 5.5 SERVICES

All proposed lots have adequate access to required services (provided by extension of the existing services adjoining the site).

The intent of the measures for services, including water, electricity and gas is:

*to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building. (NSW RFS 2019:47).*

**Table 4** outlines the performance criteria and acceptable solutions for services.



Table 4 – Services

Performance Criteria	Acceptable Solutions	Comments	Compliance
<b>WATER SUPPLIES</b>			
Adequate water supplies are provided for firefighting purposes.	Reticulated water is to be provided to the development where available;	The site is in an area with existing reticulated water availability which is capable of being connected to service the development.	✓
	A static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and	Reticulated water would be provided.	N/A
	Static water supplies shall comply with Table 5.3d.	This would be addressed during development of each individual lot.	N/A
<ul style="list-style-type: none"> <li>– Water supplies are located at regular intervals; and</li> <li>– The water supply is accessible and reliable for firefighting operations</li> </ul>	Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian standard as 2419.1:2005;	This will be achieved.	✓
	Hydrants are not located within any road carriageway; and	This will be achieved.	✓
	Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	This will be achieved.	✓
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses Of as 2419.1:2005.	This will be achieved.	✓
The integrity of the water supply is maintained.	All above-ground water service pipes are metal, including and up to any taps; and	All pipes will be underground.	N/A
	Above-ground water storage tanks shall be of concrete or metal.	N/A	N/A
<b>ELECTRICITY SERVICES</b>			
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;	This will be achieved.	✓
	Where overhead, electrical transmission lines are proposed as follows: <ul style="list-style-type: none"> <li>– Lines are installed with short pole spacing of 30m, unless</li> </ul>	No overhead power lines are proposed. Existing overhead lines will be underground where possible, subject to	N/A

Performance Criteria	Acceptable Solutions	Comments	Compliance
	crossing gullies, gorges, or riparian areas; and – No part of a tree is closer to a power line than the distance set out in ISSC3 Guideline for Managing Vegetation Near Power Lines.	agreement with electricity authorities.	
<b>GAS SERVICES</b>			
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;	This will be achieved.	✓
	All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side;	Gas connections to buildings do not form part of the proposal.	N/A
	Connections to and from gas cylinders are metal;	Gas connections to buildings do not form part of the proposal.	N/A
	Polymer-sheathed flexible gas supply lines are not used; and	Gas connections to buildings do not form part of the proposal.	N/A
	Above-ground gas service pipes are metal, including and up to any outlets.	Gas connections to buildings do not form part of the proposal.	N/A

## 5.6 ON-GOING MANAGEMENT

On-going maintenance of the APZs (if required) is to ensure regrowth and fuel load replacement does not occur. This will be the responsibility of the property owners and would be required as a condition of consent for dwellings on the proposed lots and imposed as a restriction to user on new land titles.

As noted, each lot created with this development will be cleared of any vegetation. Any future landscaping of each lot will be maintained to ensure there is no fuel load present.

Lots on the western and north-western extent would feature s.88b instruments providing legal access to adjacent land for the purposes of maintaining required asset protection zones. These instruments will be removed when subsequent stages are developed and the need for APZ's is removed.

## 6. CONCLUSION

As the site has been identified as being bushfire prone land, an assessment of the site has been undertaken in accordance with PBFP (NSW RFS 2019). The results of this assessment are outlined in this report indicate the site is suitable for the proposed residential development from a bushfire perspective. Each lot can achieve compliance with the requirements of PBFP.

## 7. REFERENCES

Table 5 – References

<p><b>NSW Department of Planning and Environment (DPE), n.d.</b> NSW Planning Portal. [ONLINE] Available at: <a href="https://www.planningportal.nsw.gov.au/">https://www.planningportal.nsw.gov.au/</a> [Accessed 20 October 2020]</p>
<p><b>NSW Office of Environment and Heritage (OEH), n.d.</b> <i>Aboriginal Heritage Information Management System (AHIMS)</i>. [ONLINE] Available at: <a href="http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm">http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm</a> [Accessed 15 March 2021]</p>
<p><b>Rural Fire Service, 2019</b> <i>Planning for Bush Fire Protection</i>, RFS, Sydney.</p>
<p><b>Standards Australia, 2018.</b> <i>Australian Standard: Construction of buildings in bushfire-prone areas (AS 3959-2018)</i>.</p>



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