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# Bushfire Protection Assessment

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## Subdivision and Dwelling Construction

5 Croydon Close, Thornton

Urban Living Design Pty Ltd

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## DOCUMENT TRACKING

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## 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

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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
BPM	Bushfire protection measures
DA	Development Application
DtS	Deemed-to-Satisfy
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
FDI	Fire Danger Index
IPA	Inner Protection Area
NASH	National Association of Steel-framed Housing
NCC	National Construction Code
PBP	'Planning for Bush Fire Protection 2019' and 'Planning for Bush Fire Protection Addendum November 2022'
RF Act	<i>Rural Fires Act 1997</i>

# 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:	5 Croydon Close, Thornton
Postcode:	2322
Lot/DP no:	Lot 114 DP 1284569
Local Government Area:	Maitland City Council
Fire Danger Index (FDI)	100
Current land zoning:	R1 – General Residential
Type of development proposed:	Residential subdivision and dwelling construction

## 1.1 Description of Proposal

The proposal is for a residential subdivision of one lot into three lots and the construction of three dwellings (Figure 1).

The subdivision is located on land identified as bush fire prone land (BFPL) on the Bushfire Prone Land layer, within the ePlanning Spatial Viewer<sup>1</sup>.

## 1.2 Assessment Process

The proposal was assessed in accordance with Section 100B of the *Rural Fires Act 1997* and Clause 45 of the *Rural Fires Regulation 2022* along with ‘Planning for Bush Fire Protection 2019’ (RFS 2019) and ‘Planning for Bush Fire Protection Addendum November 2022’, herein collectively referred to as ‘PBP’.

This assessment is based on the following information sources:

- Background documentation provided by Urban Living Designs;
- Maitland City Council (MCC) 2019, Notice of Determination (Amended Consent) DA150474-1 – 508 Raymond Terrace Road, Thornton, dated 19 February 2019;
- Information contained within the site plan from Reward Homes (Job no. REW, Issue B, dated 28 August 2023; and
- GIS analysis including online spatial resources (i.e. Google Earth, SIX Maps, Nearmap and the NSW Government Planning Portal).

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

<sup>1</sup> <https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address>

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

Bushfire Protection Measure	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3.1
Landscaping	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.2
Construction standard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.3
Access	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.4
Water supply	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5
Electrical services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.6
Gas services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.7

### 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 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. Asset Protection Zones [APZ]) is identified within this report and therefore capable of being assessed by a suitably qualified person. Maitland 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. Maitland City Council is the determining authority for this development; they will assess more thoroughly any potential Aboriginal cultural heritage issues.

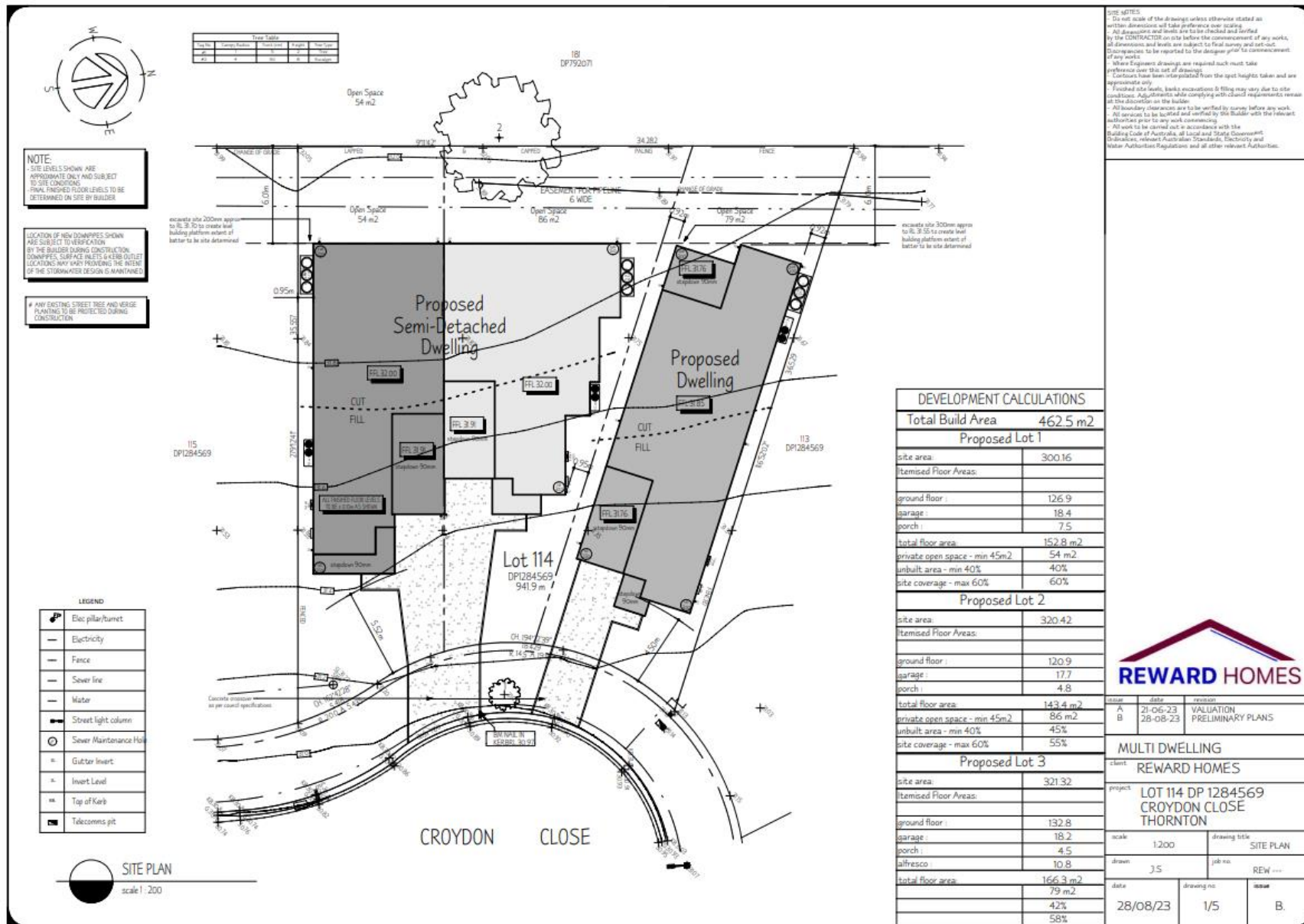


Figure 1: Subdivision and dwelling layout



## 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 APZ and construction requirements.

Figure 2 and Table 3 show the effective slope and predominant vegetation representing the highest bushfire threat potentially posed to the subdivision and dwellings 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 Department of Planning and Environment (DPE) State Vegetation Type Map (SVTM; DPE 2022).

### 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, there are bushfire hazards located to the west and north of the subject land.

The vegetation to the south-west and north-west of the subject land is identified as 'Hunter Coastal Foothills Spotted Gum-Ironbark Grassy Forest' (DPE 2022) which falls within the 'Hunter-Macleay Dry Sclerophyll Forests' (Keith 2004) and is classified as 'forest' by PBP.

Unmanaged grassland is located to the north beyond Raymond Terrace Road which is classified as 'grassland' by PBP but this vegetation is located greater than 50 m from the proposed development. To the north-east there are scattered trees within a private property with a slashed understorey which most closely approximates 'grassy woodland' in accordance with PBP, however, this vegetation is located greater than 100 m from the proposed development.

The vegetation to the west of the proposed development was classified as managed land within the bushfire report for the subdivision that created the subject land (Blackash Bushfire Consulting 2020) as shown in the BAL map excerpt in Appendix A. No APZs were specified within Lots 114-116 as per Condition 39 of the Notice of Determination from Maitland City Council (MCC 2019). Consequently, the vegetation to the west of the subject land within the northern portion of 484 Raymond Terrace Road, Thornton is considered managed land.

The effective slope under the bushfire hazard to the south-west falls into the PBP slope category 'downslope >0-5 degrees' while the slope under the forest to the north-west falls into the PBP slope category 'all upslopes and flat land'.

In all other directions, there are managed lands in the form of land cleared for future residential development associated with the subdivision construction and public road infrastructure.

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

Transect #	Slope	Vegetation Formation	Required APZ	Proposed APZ	Bushfire Attack Level (BAL)	Comments
T1 South-west	>0° to 5° downslope	Forest	29 m	≥62 m	BAL-12.5	APZ in place for dwellings within building setback and land cleared for residential development.
T2 North-west	All upslopes and flat land	Forest	24 m	≥69 m	BAL-12.5	APZ in place for dwellings within building setback, land cleared for residential development and public road infrastructure being Raymond Terrace Road.
All other directions				Managed land		



Figure 2: Bushfire hazard assessment showing Bushfire Attack Level (BAL)

### 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/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 FDI.	<b>Complies</b> 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.	<b>To comply</b> APZ to be managed in accordance with PBP. Fuel management specifications provided in Appendix A.
The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	<b>Satisfies performance criterion</b> APZ is provided by public roads managed by Maitland City Council and land cleared for surrounding residential development.
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.	<b>Complies</b> 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	<b>To comply</b> Landscaping within the three residential lots is to comply with Appendix 4 of PBP.
	Fencing is constructed in accordance with Section 7.6 of PBP.	<b>To comply</b> Fencing to be constructed in accordance with Section 7.6 of PBP (see Section 3.3.4 for further details).

### 3.3 Construction Standards

A preliminary BHA map is provided in Figure 2 demonstrating the potential exposure of the proposed dwellings to differing BALs. The proposed dwellings within all three lots are exposed to **BAL-12.5**.

The building construction standard for the proposed dwellings is determined by their Bushfire Attack Level (BAL) and then applying the appropriate construction specifications. The separation distances for different BALs are provided in Table 3.

The compliance of the construction of the proposed dwellings with Section 7.4 of PBP is documented in Table 6.

**Table 6: Construction requirements (adapted from Table 7.4a of PBP)**

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
The proposed building can withstand bush fire attack in the form of embers, radiant heat and flame contact.	BAL is determined in accordance with tables A1.12.5 to A1.12.7 of PBP.	<b>Complies</b> BAL determined using Table A1.12.5 of PBP.
	Construction provided in accordance with the National Construction Code (NCC) and as modified Section 7.5 of PBP.	<b>To comply</b> Construction in accordance with AS 3959 OR NASH standard as modified by Section 7.5 of PBP is required.
Proposed fences and gates are designed to minimise the spread of bush fire.	Fencing and gates are constructed in accordance with Section 7.6 of PBP.	<b>To comply</b> Specification detailed in Section 3.3.4 of this report.
Proposed Class 10a buildings are designed to minimise the spread of bush fire.	Class 10a buildings are constructed in accordance with Section 8.3.2 of PBP.	<b>To comply</b> Specification detailed in Section 3.3.5 of this report.

### 3.3.1 Bushfire Attack Level (BAL)

The building construction standard is based on the determination of the BAL in accordance with Appendix 1 of PBP. The BAL is based on known vegetation type, effective slope and managed separation distance between the development and the bushfire hazard.

The proposed dwellings are exposed to **BAL-12.5** as identified in Table 3 and Figure 2.

### 3.3.2 Construction Requirements

The Deemed-to-Satisfy (DtS) provisions of the NCC for construction requirements for buildings in designated bush fire prone areas are specified in:

- AS 3959:2018 Construction of buildings in bushfire prone areas (SA 2018); and
- NASH Standard: Steel Framed Construction in Bushfire Areas 2021 (NASH 2021).

Construction of the three dwellings shall comply with Sections (Construction General) of AS 3959:2018 and with Section 5 (BAL-12.5) or NASH Standard as appropriate.

### 3.3.3 Additional Construction Requirements

Additional construction measures over and above that required under AS 3959:2018 and NASH, including ember protection provisions, are identified in Section 7.5 of PBP, and may apply to the proposed dwellings.

### 3.3.4 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.

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

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

### 3.4 Access

No additional public roads are proposed as access to the proposed dwellings. Access will be via standard residential driveways off Croydon Close for all three dwellings. A fire tanker or pumper would attend to a fire at any of the dwellings from the hardstand surface of Croydon Close which is within 70 m of the furthest point of the proposed dwellings. Additional access provisions for bushfire protection are not required to support this proposal as per Table 5.3b of PBP (extract below):

*Note: There are no specific access requirements in an urban area where an unobstructed path (no greater than 70 m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70 kph) that supports the operational use of emergency firefighting vehicles.*

### 3.5 Water Supplies

The compliance assessment of the proposed water supply with Section 5.3.3 of PBP is documented in Table 7.

**Table 7: 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; A static water supply and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and Static water supplies shall comply with Table 5.3d of PBP.	<b>Complies</b> Proposal serviced by a reticulated water supply.
Water supplies are located at regular intervals; and 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); Hydrants are not located within any road carriageway; and Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	<b>Not applicable</b> Proposed allotments are located within an existing PBP compliant subdivision with hydrants located in Croydon Close.
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 Above-ground water storage tanks shall be of concrete or metal.	<b>To comply</b> <b>Not applicable</b>

### 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 8.

**Table 8: 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.	<ul style="list-style-type: none"> <li>• Where practicable, electrical transmission lines are underground;</li> <li>• Where overhead, electrical transmission lines are proposed as follows:                             <ul style="list-style-type: none"> <li>○ Lines are installed with short pole spacing (30 m), unless crossing gullies, gorges or riparian areas; and</li> <li>○ 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).</li> </ul> </li> </ul>	<p><b>Complies</b></p> <p>Electricity services to the subject site are underground.</p> <p><b>Not applicable</b></p>

### 3.7 Gas Services

The compliance assessment of the proposed supply of gas services (reticulated or bottled gas) with Section 5.3.4 of PBP is documented in Table 9.

**Table 9: 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.	<ul style="list-style-type: none"> <li>• Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 'The storage and handling of LP gas' (SA 2014), the requirements of relevant authorities, and metal piping is used;</li> <li>• All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 m and shielded on the hazard side;</li> <li>• Connections to and from gas cylinders are metal;</li> <li>• Polymer-sheathed flexible gas supply lines are not used; and</li> <li>• Above-ground gas service pipes are metal, including and up to any outlets.</li> </ul>	<p><b>To comply</b> (if installed)</p> <p>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.</p>

### 3.8 Staged Development

The proposed development will not be staged.



## 4. Conclusion

The proposed three lot residential subdivision and construction of three new dwellings has been assessed against the specifications and requirements of 'Planning for Bush Fire Protection 2019' and 'Planning for Bush Fire Protection Addendum 2022' as outlined in Table 10.

**Table 10: Development bushfire protection measures and associated recommendations**

Bushfire Protection Measures	Recommendations	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	All proposed allotments to be managed to Inner Protection Areas (IPA) standards as outlined in Appendix A.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3.1
Landscaping	Any future landscaping is to meet the requirements of PBP listed in Appendix A.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.2
Construction standard	The proposed dwellings are to be constructed entirely to <b>BAL-12.5</b> including PBP 7.5.2 requirements as applicable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.3
Access	No specific access requirements as summarised in Section 3.4.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.4
Water supply	Existing reticulated water supply.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5
Electricity service	Electricity supply located underground which complies with PBP.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.6
Gas service	Any proposed gas services are to be installed and maintained in accordance with AS/NZS 1596:2014.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.7

## 5. Recommendations

It is recommended that the proposed subdivision be issued a Bush Fire Safety Authority and the three proposed dwellings be approved in accordance with the recommendations outlined in Table 10.



Tahlia Thompson  
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## 6. References

Blackash Bushfire Consulting, 2020. Bushfire Protection Assessment, Proposed Residential Subdivision, 508 Raymond Terrace Road, Thornton. Blackash, Sydney.

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Standards Australia (SA). 2014. *The storage and handling of LP Gas*, AS/NZS 1596:2014. SAI Global, Sydney.

Standards Australia (SA). 2018. *Construction of buildings in bushfire-prone areas*, AS 3959:2018. SAI Global, Sydney.

Appendix A- Blackash Bushfire Consulting BAL map



## Appendix B - Asset Protection Zone and Landscaping Standards

The following APZ management specifications apply to the entire proposed allotments. The lots are to be maintained in perpetuity as inner protection areas (IPA)s within each lot in accordance with Appendix 4 of PBP and summarised in Table 11 below.

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 11: APZ management specifications**

Vegetation Strata	Inner Protection Area (IPA)
Trees	<ul style="list-style-type: none"> <li>• Tree canopy cover should be less than 15% at maturity;</li> <li>• Trees (at maturity) should not touch or overhang the building;</li> <li>• Lower limbs should be removed up to a height of 2 m above ground;</li> <li>• Canopies should be separated by 2 to 5 m; and</li> <li>• Preference should be given to smooth barked and evergreen trees.</li> </ul>
Shrubs	<ul style="list-style-type: none"> <li>• Create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;</li> <li>• Shrubs should not be located under trees;</li> <li>• Shrubs should not form more than 10% ground cover; and</li> <li>• Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.</li> </ul>
Grass	<ul style="list-style-type: none"> <li>• Should be kept mown (as a guide grass should be kept to no more than 100 mm in height); and</li> <li>• Leaves and vegetation debris should be removed.</li> </ul>

