BUSHFIRE PRONE PLANNING

Local Government Use

Bushfire Attack Level (BAL) Assessment Report

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APPLICATION REF

A007144147



139 Armisfield Road, Doolandella

Brisbane City Council

16 September 2026

Job Reference No: 260795

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The protection measures to be implemented based on information presented in this Bushfire Attack Level Assessment Report are minimum requirements for management of the relevant risks.

The applied protection measures do not guarantee that during a bushfire event, no buildings or infrastructure will be damaged, persons injured, or fatalities occur - either on the subject site or off the site when evacuating.

This is substantially due to the unpredictable nature of fire weather conditions, bushfire behaviour and the actions of landowners and/or operators – including the correct implementation and ongoing maintenance of required and recommended protection measures (including bushfire resistant construction) and complying with public bushfire warnings and directions from emergency services - over which Bushfire Prone Planning has no control.

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BAL Report Template v16.1

Bushfire Attack Level Assessment Report

Prepared by a BPAD Accredited Practitioner

This report has been prepared - or supervised and reviewed - by an appropriately accredited BPAD practitioner.

The assessment is conducted applying the bushfire attack level determination methodology established by AS 3959:2018 using either the simplified procedure (Method1 – Section 2) and/or the detailed procedure Method 2 – Appendix B).

FPA Australia as the accrediting body makes no warranties as to the accuracy of the information provided in the report. All enquiries related to the information and conclusions presented in this report must be made to the BPAD Accredited Practitioner.

BPAD ACCREDITED PRACTITIONER STATEMENT AND DETAILS	
I have taken all reasonable steps to ensure the information provided is correct and reflects the conditions and factors evident on the day of the assessment, including vegetation and ground slopes.	
Name	Hamish Rogerson Dip.AppSci
Supervisor and Reviewer:	Lucy Ford BappSci, BEnvSci(Hons)

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Reliance on the assessment and determination of the Bushfire Attack Level contained in this report should not extend beyond a period of 12 months from the date of issue of the report. If this report was issued more than 12 months ago, it is recommended that the validity of the determination be confirmed with the accredited practitioner and where required an updated report and/or BAL certificate issued.

REPORT DETAILS			
Version	Assessment Date	Report Date	Reason
1.1	9 September 2026	16 September 2026	Original

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1 PROPERTY DETAILS AND DESCRIPTION OF BUILDING WORKS

PROPERTY DETAILS	
Address Details	139 Armisfield Road, Doolandella/ Lot 92 SP264886
Subject Lot Size (Area)	1,017 m^2
Applicable Local Government	Brisbane City Council

DESCRIPTION OF WORKS	
Primary Construction Works	Construction of a new ancillary dwelling
BCA Classification(s)	Class 1a (House)
Additional Details: Per Section 3.2.3 of AS3959:2018, where any garage, carport or similar roofed structure on the subject allotment is not attached to the main building, that structure shall conform with the construction requirements of this standard OR alternatively the adjacent structure shall be separated from the subject building at a distance of not less than 6m from the building required to conform with AS3959:2018.	

BUILDING WORKS PLANS AND DRAWINGS RELIED ON TO DETERMINE THE BUSHFIRE ATTACK LEVEL		
Type	Relevant to Proposed Works	Reference
Site Plan (top down view of building footprint): The identified 'developer' provided site plan is relied upon (in determining the bushfire attack level) to locate the proposed building works - in the horizontal plane - relative to identified bushfire hazards.	Yes	Figure 1
Building Drawings (specific construction detail including floor plans, elevations and sections as relevant): The identified 'developer' provided drawings are relied upon (in determining the bushfire attack level) to model the potential radiant heat impact on the existing/proposed building. The drawings establish the detail providing important calculation input variable information that must be accounted for and can include: • Connectivity of building elements; • Height above ground level of specific building elements; and • Specific building elements that will present differing levels of vulnerability (resistance) to flame and radiant heat.	No	N/a

Figure 1: Site plan



2 BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT

2.1 BAL Assessment Results

BUSHFIRE ATTACK LEVEL (BAL) [1]			
ASSESSED BUILDING(S) / STRUCTURE(S)	DESCRIPTION	BAL STATUS	BAL
Proposed Building Works	Secondary/Ancillary dwelling	**INDICATIVE**	**BAL-40 – BAL-19**
Note 1: Refer to Appendix B1 for guidance understanding BAL ratings.			

IDENTIFICATION OF SHIELDED ELEVATION(S) – REDUCTION IN CONSTRUCTION REQUIREMENTS	
In accordance with AS 3959:2018 Clause 3.5 (and applying the improved explanation from the draft 2025 version), where an elevation is not exposed to the sources of bushfire attack (i.e. all straight lines between that elevation and the sources of bushfire attack are obstructed by another part of the same building), then the construction requirements for that elevation can reduce to the next lower BAL, but not below BAL-12.5. This shall apply to all elements of the wall, including openings, but shall not apply to subfloors or roofs.	
ASSESSED BUILDING(S) / STRUCTURE(S)	ASSESSMENT OUTCOME
Existing Building	The shielding provisions are not applied.

2.2 Applied BAL Assessment Data

THE AS 3959:2018 BAL DETERMINATION METHODOLOGY APPLIED [1]					
Method 1 (Simplified Procedure) AS 3959:2018 Section 2	Yes	Method 2 (Detailed Procedure) AS 3959:2018 Appendix B	No	Method 1 & 2	No
REASONS FOR THE APPLICATION OF THE METHOD 2 PROCEDURE					
1.	N/A				
Note 1: Refer to Appendix A2 for information regarding available BAL determination procedures.					

Table 1: Site Assessment Data Applied to Deriving the Bushfire Attack Level

SITE ASSESSMENT DATA APPLIED TO DERIVING THE INDICITATIVE BUSHFIRE ATTACK LEVEL (BAL) [1]								
The Receiver of Radiant Heat Relevant Building(s) / Structure(s) and Their Location	Vegetation Classification		Effective Slope		Separation Distance		FDI	Bushfire Attack Level (AS 3959:2018 Table 2.5)
			Determined [2]	Applied Range	Planning Setback from Lot Boundary [3]	Total		
	Area	Class	degrees	degree range	metres			
Lot boundary and proposed building	1	(A) Forest	5- d/slope	Downslope >0-5	N/A	13	40	BAL-40
	1	(A) Forest	5- d/slope	Downslope >0-5	3	17		BAL-29
	1	(A) Forest	5- d/slope	Downslope >0-5	11	24		BAL -19
	2	Excluded cl 2.2.3.2(f)	N/A	N/A	N/A	-		BAL-LOW
						Indicative Bushfire Attack Level		**BAL-40 – BAL 19**

Note1: All information supporting the determination of the classifications and values stated in this table and any associated justification, is presented in Appendix A.

Note 2: Determined effective slope values are applied to one decimal place - downslopes rounded up – upslopes rounded down (to present the worst case).

Note 3: This is the minimum building setback (i.e. the distance from a proposed building to the lot boundary) that is established by either the applicable R-code setback or another mechanism (e.g. restricted covenant), that is to apply to the proposed building/structure on the relevant lot. It is identified here when necessary to assist with bushfire planning assessment considerations. It is a fixed component of the total separation distance from classified vegetation when its application is important to be identified (it establishes the closest distance to the lot boundary that a building/structure can legally exist i.e. it identifies the part of the lot on which development cannot occur). When it is not critical to a planning assessment for this distance to be identified, just the total separation distance is stated.



Figure 2.1

Classified Vegetation and Topography

Lot 92 SP264886
139 Armisfield Street
Doolandella
Brisbane City

------ LEGEND ------

- Subject Site
- 150m Assessment Area
- 100m_Assessment_Area
- Photos
- Vegetation Distance (m)
- 5m Contour

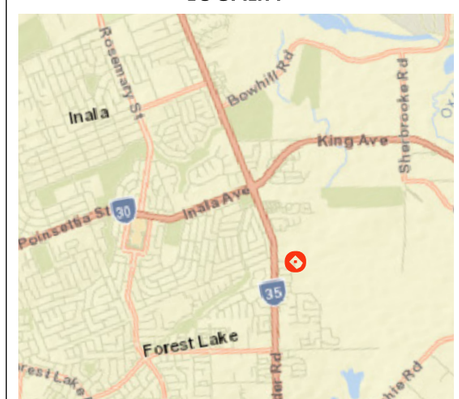
Classified Vegetation Slope Range

- Class A - Forest
- Exclusion 2.2.3.2

0 20 40 60 80

Metres

------ LOCALITY ------



AERIAL IMAGERY: Queensland Spatial Services

Coordinate System: GDA 2020 MGA 56
Projection: Universal Transverse Merctaor Units: Metre
Map by: HR 16-09-2026
SCALE (A3):

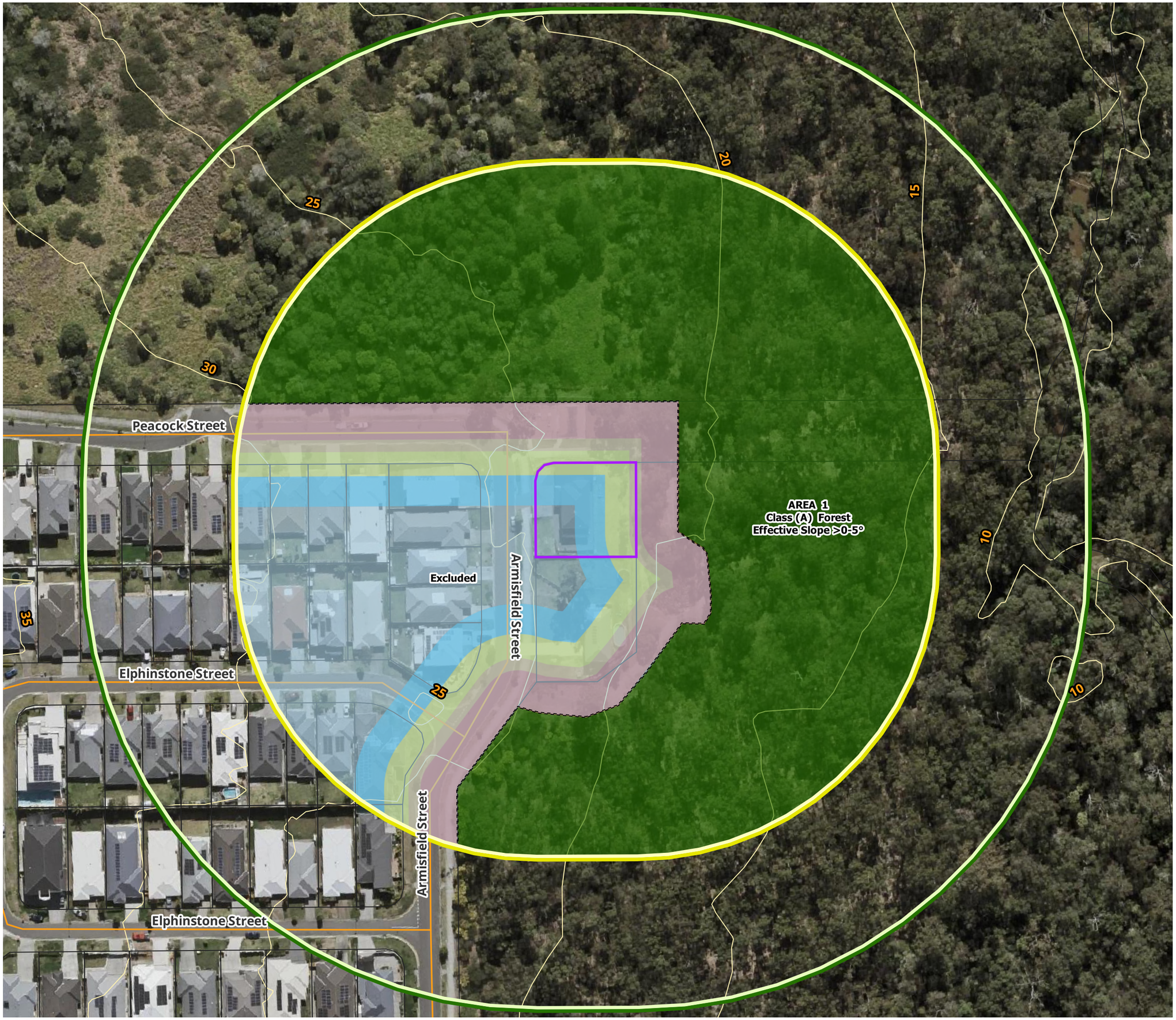
Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

BAL Contour Mapping

Figure 3.1

BAL Contour Map

Lot 92 SP264886
139 Armisfield Street
Doolandella
Brisbane City



------ LEGEND ------

- Subject Site
- 150m Assessment Area
- 100m_Assessment_Area
- 5m Contour

Classified Vegetation Slope Range

- Class A - Forest
- Exclusion 2.2.3.2

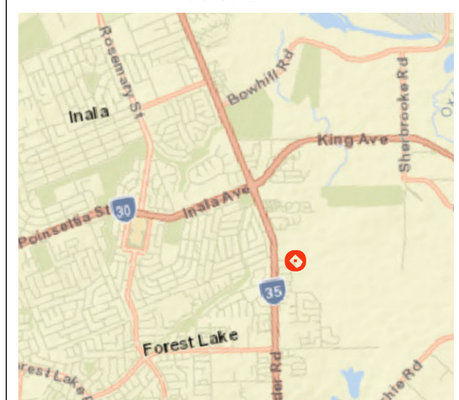
BAL Contour

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19

0 20 40 60 80

Metres

------ LOCALITY ------



AERIAL IMAGERY: Queensland Spatial Services

Coordinate System: GDA 2020 MGA 56
Projection: Universal Transverse Merctaor Units: Metre
Map by: HR 16-09-2026
SCALE (A3):

Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

APPENDIX A: DETAILED BAL ASSESSMENT DATA AND SUPPORTING INFORMATION

A1: BAL Assessment Inputs Common to the Method 1 and Method 2 Procedures

A1.1: FIRE DANGER INDEX (FDI)

FIRE DANGER INDEX APPLIED						
The Bushfire Resilient Communities mapping provides estimated spatially explicit 5% annual exceedance probability (AEP) fire weather event FFDI values for Queensland. Unlike Queensland's adoption of AS 3959–2018, that uses a single FFDI value for all of Queensland (40), the estimate of fire weather severity in Queensland recognises that weather conditions vary across the state. Values for Queensland vary from 50 in Southeast Queensland and Cape York bioregions to 130 in the south-western parts of the state.						
Relevant Jurisdiction:	Qld	Region:	FFDI Contours	Method 1	Applied FDI:	N/A
				Method 2	Applied FFDI:	40
					Applied GFDI:	N/A

A1.2: VEGETATION ASSESSMENT AND CLASSIFICATION

CLASSIFIED VEGETATION – APPLICATION OF METHODOLOGY	
Vegetation Types and Classification In accordance with AS 3959:2018 and the BRC all vegetation types within 150 metres of the site, are identified and classified. Any vegetation more than 100 metres from the site that has influenced the classification of vegetation within 100 metres of the site, is identified and noted. The States BRC Vegetation Hazard Class (VHC) mapping has been used to identify potentially hazardous vegetation. VHCs are based on the Queensland Herbarium's statewide regional ecosystem mapping at the broad vegetation group level, and several other mapping data sets such as foliage projective cover mapping. Ground truthing of vegetation to confirm understory and species composition is conducted to determine post development VHC. **Modified Vegetation** The vegetation types have been assessed as they will be in their natural mature states, rather than what might be observed on the day. Vegetation destroyed or damaged by a bushfire or other natural disaster has been assessed on its expected re-generated mature state. Modified areas of vegetation can be excluded from classification if they consist of low threat vegetation and that any required active management can be expected to continue in perpetuity, and this can be adequately justified. **The Influence of Ground Slope** Where significant variation in effective slope exists under a consistent vegetation type, these will be delineated as separate vegetation areas to account for the difference in potential bushfire behaviour, in accordance with AS 3959:2018 clauses 2.2.5 and C2.2.5.	
THE INFLUENCE OF VEGETATION GREATER THAN 100 METRES FROM THE SUBJECT SITE	
Vegetation area(s) within 100m of the site whose classification has been influenced by the existence of bushfire prone vegetation from 100m – 200m from the site:	None
Assessment Statement:	No vegetation types exist close enough, or to a sufficient extent, within the relevant area to influence classification of vegetation within 100 metres of the subject site.

VEGETATION AREA 1						
Classification	**A. FOREST**					
Effective Slope	Measured	d/slope 5 degrees	Applied Range (Method 1)	Downslope >0-5 degrees		
Foliage Cover (all layers)	30-70%	Shrub/Heath Height	Up to 6m	Tree Height	Up to 30m	
Justification Comments:	Open Eucalypt Forest with a mixed understory of exotic grasses and native shrubs. Mature Eucalyptus siderophloia, Corymbia intermedia and a mix of melaleuca species are present in the canopy. understory vegetation consists of a mix of native shrubs and young trees (ie, Alphitonia excelsa and juvenile eucalyptus).					

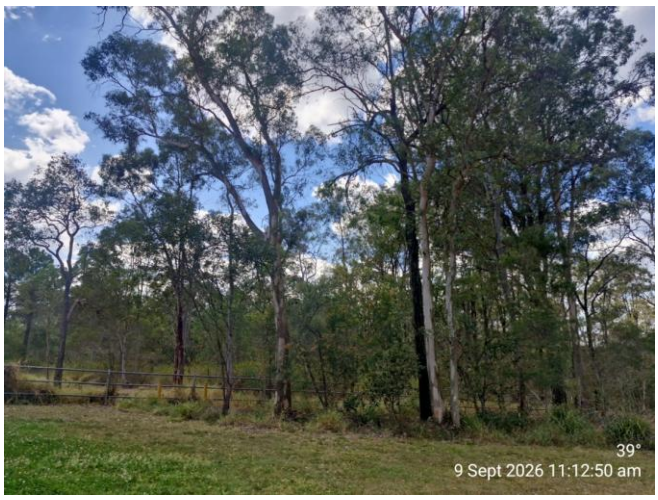


PHOTO ID: 1



PHOTO ID: 2



PHOTO ID :3



PHOTO ID: 4

VEGETATION AREA 2						
Classification	**Low vegetation cover**					
Exclusion Clause	2.2.3.2 (e) Non-vegetated areas and (f) Low threat vegetation - minimal fuel condition.					
Effective Slope	Measured	-	Applied Range (Method 1)	Upslope or flat 0 degrees		
Foliage Cover (all layers)	<30%	Shrub/Heath Height	<2m	Tree Height	Up to 30m	
Justification Comments:	Vegetation within this area was identified as mown grass and maintained gardens surrounded by roads and buildings. This vegetation type holds a low fuel load with a potential fire line intensity <4000kW/m^2. This area is consistent with the low threat vegetation type set out in Section 2.2.3.2 of the AS3959:2018.					



PHOTO ID: 5



PHOTO ID: 6



PHOTO ID: 7

A1.3: EFFECTIVE SLOPE

EFFECTIVE SLOPE

DEFINITION

Effective slope is "the slope under that classified vegetation which most influences the bushfire attack" (AS 3959:2018, Clause 1.5.11).

"The effective slope under the classified vegetation is not the same as the average slope for the land surrounding the site of the proposed building. The effective slope is that slope which most significantly influences bushfire behaviour" (AS 3959:2018, Clause CB4).

The slope is described as upslope, flat or downslope when viewed from an exposed element (e.g., building) and looking towards the vegetation. It is measured in degrees.

COMPOUND SLOPES UNDER VEGETATION AND DETERMINING SLOPE SIGNIFICANCE - EXPLAINING THE ASSESSMENT METHODOLOGY APPLIED BY BUSHFIRE PRONE PLANNING

[Note: Additional relevant guidance provided by AS 3959:2018 and NSW RFS, Planning for Bushfire Protection (2019) is incorporated into the applied assessment methodology and is presented at the end of this explanation.]

Non-Linear Slopes: When the slope of ground under the vegetation out to the distance to be assessed (100 m or further if necessary), is not a straight line or nearly straight line slope, then it is made up of several different slopes i.e., it is a compound slope. The different slope angles and lengths must be factored into the determination of the effective slope value to be applied. Different slopes will potentially influence the bushfire rate of spread and intensity, both increasing and decreasing it.

Significant Slope: The AS 3959:2018 bushfire attack level determination methodology, with default inputs, models a fully developed bushfire. Therefore, a 'significant' slope is one that will significantly influence bushfire behaviour. To be 'significant' the length of the slope must be 'sufficient' to support a fully developed fire on that slope. The angle of a significant slope could be the determined effective slope for the area of classified vegetation if it is the one that 'most influences the bushfire attack'.

Sufficient Slope Length: Is a slope that will, as a minimum, allow the entire flame depth (flaming zone) of a fully developed fire (100m flame width) to exist on that slope.

The expected flame depth of a fully developed bushfire is a function of the length of time the flaming phase will exist on a section of the fuel bed (the 'residence time') and the bushfire's 'rate of spread'. For a given rate of spread, longer residence times result in greater flame depths. Greater flame depths are correlated with greater flame temperatures and greater flows of radiant heat.

The primary factors that will increase the residence time are:

- Heavier fine fuel loads of grass, leaf litter, twigs, bark etc less than 6mm in width and existing within the surface and near surface layers (and elevated fuel layers when contiguous with the base layers); and
- A greater percentage of larger fine fuels within the fuel load.

The primary factors that increase the rate of spread (apart from fire weather factors), include finer fuels, drier fuels, horizonal continuity of fuel and steeper upward ground slope in the direction of fire travel.

Example values:

- Residence Time: Grassfire 5 – 15 seconds, Forest fire 25 -50 seconds.
- Rate of Spread: Grassfires of a few km/hr are considered fast moving, 5-10 km/hr is common and fastest in the order of 25km/hr. Forest fire typically recorded in metres/hour with 1-1.5 km/hr being considered fast moving and fastest in the order of 3–4 km/hr.
- Flame Depth: More typically, a few metres for grasses to tens of metres for forest fires.

An Isolated Slope: For scenarios where there is a single significant slope (based on the above criteria) additional consideration would need to be given to the time and distance consumed by a bushfire still in its 'developing' phase. This will require due consideration be given to how it is potentially ignited i.e., from a single or multiple points, as this will influence the time and distance required to fully develop. For such scenarios, a normally significant slope may not be sufficiently long. It may be necessary to determine the potential bushfire impact more accurately by justifying the application of a lesser effective slope, or a lower threat vegetation classification, or calculating a reduced head fire width (using short fire run modelling).

Determined Effective Slope: Only a 'significant' slope can potentially be the effective slope by itself. In which case, for a defined area of classified vegetation area, the worst significant slope under that vegetation is to apply.

The table below presents Bushfire Prone Planning's considerations applied to assessing short and/or compound slopes in determining the effective slope.

Slope Length (m)	Considered a Significant Slope	Considerations in Determining the Effective Slope
< 5	No	Where these short slopes exist as part of a compound slope under an area of classified vegetation, they can be ignored as they will not influence the fire behaviour in that vegetation.
5-20	Will Vary	These slopes will have a range of influence on fire behaviour from very little to a degree of influence that must be accounted for to some extent by the effective slope value that is applied (i.e., with a greater length - apply to a greater extent). But the actual slope of these shorter slopes is less likely to be applied as it is not a 'significant' length.
20-30	Possibly - Likely	The same considerations applied to the 5-20m slope lengths should be applied here. However, more justification would need to be presented to support an assessment of not 'significant'. For these slope lengths, consideration must be given more broadly to the potential level of risks associated with a bushfire event in this location. The risk level will be a function of the bushfire hazard threat levels (direct attack mechanisms) within the immediate and broader assessment area as influenced by local topography, vegetation extents and types and the exposure and vulnerability of persons and/or buildings/structures to these threats. Higher consequent risk levels require greater precaution meaning these length slopes should be considered 'significant', and vice versa. Consider the potential for a bushfire on adjoining or nearby land be a source of ignition and/or pre-heating to vegetation on the subject slope. Consider if vegetation on the slope is likely be ignited by a single ignition point or is multipoint ignition possible from bushfire an adjoining slopes or the surrounding area. Single point ignition will require a fire to travel further before being fully developed (DFES considers less than 100m fire runs may be considered a short fire run for forest, woodland and scrub vegetation classifications, RFS NSW applies 150m). Isolated slopes of this length are less likely to be considered significant as compared to when part of a compound slope.
>30	Yes	Likely to always be a significant slope unless isolated (i.e., exists alone) – in which case, justifying the application of a lesser effective slope, or a lower threat vegetation classification, or calculating a reduced head fire width, are approaches that may justifiably be applied.

BPP Approach - Slope Variation Within Areas of Vegetation

When multiple 'significant' slope lengths with large differences in degrees of effective slope (or different applicable slope ranges when AS 3959:2018 Method 1 is applied), exists under a single vegetation classification, these will be

delineated as separate vegetation areas of classified vegetation to account for the difference in potential bushfire behaviour and impact, in accordance with AS 3959:2018 clauses 2.2.5 and C2.2.5.

Effective Slope Variation Due to Multiple Development Sites

When the effective slope, under a single area of bushfire prone vegetation, will vary significantly relative to multiple proposed development sites (exposed elements), then the effective slopes corresponding to each of the different locations, are separately identified. The relevant (worst case) effective slope is determined in the direction corresponding to the potential directions of fire spread towards the subject building(s).

AS 3959:2018 EFFECTIVE SLOPE DETERMINATION - GUIDANCE

The Standard presents a broad set of guidance statements that indicate the intent of deriving an effective slope value for use in calculations, rather than detailing the 'in the field' determination process. These include:

- Highlighting the importance of the value by stating "The slope of the land under the classified vegetation has a direct influence on the rate of fire spread the severity of the fire and the ultimate level of radiant heat flux" (Clause C2.2.5). [Note: A common rule of thumb is that for every 10 degrees of upslope, a fire will double its rate of spread if moving in the direction of the prevailing wind].

- "It may be necessary to consider the slope under the classified vegetation for distances greater than 100 m in order to determine the effective slope for that vegetation classification) … (i.e. the vegetation within 100 m) (Clause C2.2.5).

- "Where there is more than one slope within the classified vegetation, each slope shall be individually assessed, and the worst case Bushfire Attack Level shall apply" (Clause 2.2.5).

QLD BRC 2019, SECTION 5.4. – HAZARD ASSESSMENT 5.4.2 Procedure Step 3

- "where multiple combinations of VHC and slope exist, a conservative approach should be adopted to ensure the risk of bushfire attack, particularly flame attack, is adequately assessed".

- "Where multiple slopes occur in relation to a proposed development or site boundary, the maximum slope under hazardous vegetation is used."

SECTION 7.6 Parametric Constraints and Variations

- "Effective fire slope inputs are limited to values between 1 and 20 degrees for downslope and 15 degrees for upslope. Site slope inputs are limited to values between 1 and 20 degrees. Fireline intensity and radiant heat calculations for locations with an effective slope of greater than 20 degrees (downslope) or 15 degrees (upslope) may be unreliable. ***In these locations, specialist assessment is warranted***.".
- "**Maximum landscape slope** – the maximum potential slope of the landscape, over a 25-metre distance, that could influence the rate of fire spread. This term is synonymous with 'effective slope' in this document."

SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

The effective slopes have been determined from the site assessment. The assessed values are stated in the data Table 1, presented in Section 2.2 of this report.

When additional information is required to justify the applied values, this is provided on the following pages and includes any necessary diagrams and images.

For the subject planning proposal, it is determined there is no requirement for additional information.

A1.4: SEPARATION DISTANCE

SEPARATION DISTANCE

DEFINITION AND MEASURING

The separation distance is the distance in the horizontal plane between the receiver (building/structure or area of land being considered) and the edge of the classified vegetation (AS 3959:2018, clause 2.2.4)

The relevant parts of a building/structure from which the measurement is taken is the nearest part of an external wall or where a wall does not exist, the supporting posts or columns. Certain parts of buildings are excluded including eaves and roof overhangs.

The edge of the vegetation, for forests and woodlands, will be determined by the unmanaged understorey rather than either the canopy (drip line) or the trunk (AS 3959:2018, clause C2.2.5).

MEASURED SEPARATION DISTANCE AS A CALCULATION INPUT

If a separation distance can be measured because the location of the building/structure relative to the edge of the relevant classified vegetation is known, this figure can be entered into the BAL calculation. The result is a determined BAL rating.

ASSUMED SEPARATION DISTANCE AS A CALCULATION INPUT

When the building/structure location within the lot is not known, an assumed building location will be applied based on a factor that puts a restriction on a building location such as:

- An established setback from the boundary of a lot, such as a residential design code setback or some other mechanism that establishes an appropriate location limitation; or
- Within an established building envelope.

The resultant BAL rating would be indicative and require later confirmation (via a Compliance Report) of the building/structure actual location relative to the vegetation to establish the determined BAL rating.

SEPARATION DISTANCE AS A CALCULATION OUTPUT

With the necessary site specific assessment inputs and using the AS 3959:2018 bushfire modelling equations, the range of separation distances that will correspond to each BAL rating can be calculated. This has application for bushfire planning scenarios such as:

- When the separation distance cannot be measured because the exact location of the exposed element (i.e., the building/structure, area or persons), relative to classified vegetation, is yet to be determined.

  In this scenario, the required information is the identification of locations on-site that will correspond to each BAL rating (or a specific level radiant heat). Indicative BAL ratings can be derived for a variety of potential locations; or

- The separation distance is known for a given building, structure or area (and a determined BAL rating can be derived), but additional information is required regarding the level of exposure to radiant heat from a bushfire to buildings or persons, that will exist at different locations within a subject site.

The calculated range of separation distances corresponding to each BAL rating can be presented in a table and/or illustrated as a BAL Contour Map – whichever is determined to best fit the purpose of the assessment.

For additional information refer Appendix B.

SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

The separation distances have been determined from the site assessment. The assessed values are stated in the data Table 1, presented in Section 2.2 of this report.

When additional information is required to justify the applied values, this is provided on the following pages and includes any necessary diagrams, images and when relevant, other regulated building setbacks being applied.

For the subject planning proposal, it is determined there is no requirement for additional information.

A1.5: FLAMESOL METHOD 1 MODEL

FLAMESOL
FPA AUSTRALIA

Bushfire Attack Level lookup tool

Using the simplified method of AS 3959 (Method 1);

At 13 m from the classified vegetation type of Forest (downslope >0 to 5 degrees), the relevant Bushfire Attack Level is BAL-40.

This is reflected in the extract of Table 2.4.5 - FDI 40 (1090 K) below.

Vegetation Classification	**Bushfire Attack Levels (BALs)**				
	BAL-FZ	**BAL-40**	BAL-29	BAL-19	BAL-12.5
	Distance (m) of the site to the predominant vegetation class				
	Downslope >0 to 5 degrees				
Forest	<12	12 - <16	16 - <24	24 - <34	34 - <100

APPENDIX B: GUIDANCE – ASSET PROTECTION ZONES AND BUSHFIRE ATTACK LEVELS

B1: The Asset Protection Zone (APZ)

THE APZ – DESCRIPTION, DIMENSION AND TECHNICAL REQUIREMENTS

DESCRIPTION AND PURPOSE

An asset protection zone (APZ) is an area surrounding a habitable or specified building that is not vegetated and/or supports retained or planted vegetation that can be considered to present a low bushfire threat as a result of flammability and/or moisture content characteristics and/or minimal fuel loads (either naturally or as a result of continual maintenance).

The primary objectives of establishing an APZ are to ensure:

1. A reduction in the exposure of the building/structure to bushfire direct attack mechanisms (threats) of flame contact, radiant heat transfer and ember attack, by establishing appropriate separation from each area of classified vegetation. [The required APZ dimensions will be dependent on site specific conditions and the use of the site and are measured from the nearest part of an external wall and/or supporting posts of building parts without external walls]; and
2. A reduction in the exposure of the building/structure to bushfire indirect attack mechanisms (threats) by:
    - Preventing surface fire spreading to the building/structure;
    - Minimising the potential for tree strike; and
    - Limiting the potential for consequential fire to impact the building/structure by eliminating, reducing and/or shielding consequential fire fuels. These fuels include accumulated debris, stored combustible/flammable items and constructed combustible items. Consequential fire, typically ignited by embers, is the primary cause of building loss in a bushfire event; and
3. To provide a defendable space for firefighting activities.

DIMENSIONS

Established by the Guidelines

No APZ dimensions are established by the BRC. For planning approval purposes, it only needs to be demonstrated that a BAL-29 dimensioned APZ can be appropriately established, surrounding a building/structure for the specific development site conditions.

For certain vulnerable land uses, evidence of the ability to implement a larger APZ may be required to inform planning decisions. These include dimensions corresponding to radiant heat impact levels of 10 kW/m^2 and calculated using a flame temperature of 1200 K rather than 1090 K.

Established by the 'Determined' BAL Rating

The dimensions of the APZ that will be the responsibility of a landowner to implement and maintain around a habitable or specified building - to align the building's bushfire resistance construction level, to its level of exposure to flames, radiant heat and embers - will be those corresponding to the building's 'determined' BAL rating.

This rating will account for the relevant physical characteristics of a specific site and the applicable building's separation distance from classified vegetation, the type of vegetation it is exposed to and the slope of the ground supporting that vegetation.

Variations to these dimensions (i.e. vegetation separation distances) will only exist as the result of either:

- A requirement presented within an associated Bushfire Management Plan to increase the size of the APZ as part of a required additional protection measure; or

B2: Vegetation Excluded from Classification – Ensure Continued Low Threat Status

MAINTAINING THE LOW THREAT STATUS OF EXCLUDED VEGETATION

A new methodology for statewide mapping of bushfire prone areas in Queensland (CSIRO, 2014) used to produce the current statewide Bushfire Prone Area map.

This report outlines the methodology for determining the potential fireline intensity and defines the areas that are identified as potentially low, medium, high and very high bushfire hazards.

Vegetated parts of the landscape that would carry a vegetation fire at an intensity lower than **4,000 kW/m** are categorised as grass fire prone land or low hazard areas (e.g. rainforest or water or non-vegetated urban areas).

Potential Bushfire Intensity Class	Potential Fireline Intensity
1. Very high	40,000 + kW/m
2. High	20,000 – 39,999 kW/m
3. Medium	4,000 – 19,999kW/m

Vegetation will be excluded from classification as a potential bushfire hazard where the fireline intensity is lower than 4000kW/m or are defined in the 'Vegetation Hazard Class descriptions and 80th percentile potential fuel loads' as Prone Type 3 'low hazard'.

Determination of 'low threat' vegetation is based on factors such as - proximity to the subject site / small areas of vegetation / low flammability / higher moisture content / low fuel load.

Aside from a naturally occurring low fuel load, vegetation maintained in a minimal fuel condition through active management can be excluded. The associated key requisite is that the active management can be expected to continue in perpetuity, and this can be adequately justified.

B3: BAL Ratings – Corresponding Threats and Construction References

BAL [1]	DESCRIPTION OF PREDICTED BUSHFIRE DIRECT ATTACK MECHANISMS (THREATS) AND LEVELS OF EXPOSURE	REFERENCES FOR CONSTRUCTION REQUIREMENTS	
		AS 3959:2018 Construction of Buildings in Bushfire Prone Areas	**The NASH Standard (2021) – Steel Framed Construction in Bushfire Areas**
		Referenced by the Building Code of Australia for Building Classes 1, 2, 3 & 10a	Referenced by the Building Code of Australia for Building Classes 1 & 10a
BAL – LOW	There is insufficient risk to warrant specific construction requirements but there is still some risk. *(Note: DFES recommend that ember attack protection features be incorporated into the design where practicable).*	Section 4. No Requirements	No Requirements
BAL – 12.5	There is a risk of ember attack. Construction elements are expected to be exposed to heat flux not greater than 12.5 kW/m^2	Sections 3 & 5.	All construction requirements for BAL-12.5 to BAL-40 are the same except for windows and external doors, which must comply with AS 3959. The construction requirements are set out as essentially non-combustible construction systems for each of the following building elements: Section 1.4: General Requirements Section 2: Roof and Ceiling System Section 3: External Wall System Section 4: Floor System Section 5: Carports Verandahs and Decks.
BAL – 19	There is a risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to radiant heat. The construction elements are expected to be exposed to a heat flux not greater than 19 kW/m^2.	Sections 3 & 6	
BAL – 29	There is an increased risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to an increased level radiant heat. The construction elements are expected to be exposed to heat flux not greater than 29 kW/m^2.	Sections 3 & 7.	
BAL – 40	There is a much-increased risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to a high level of radiant heat and some likelihood of direct exposure to flames from the fire front. The construction elements are expected to be exposed to a heat flux not greater than 40kW/m^2.	Sections 3 & 8.	
BAL – FZ (Flame Zone)	There is an extremely high risk of ember attack and burning debris ignited by windborne embers, and a likelihood of exposure to an extreme level of radiant heat and direct exposure to flames from the fire front. The construction elements are expected to be exposed to a heat flux greater than 40 kW/m^2.	Sections 3 & 9.	The construction requirements are set out in Sections 1-5 and differ from the requirements for all other BAL ratings.

[1] AS 3959:2018 *Construction of buildings in bushfire prone areas,* defines a Bushfire Attack Level (BAL) as a *"means of measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat flux expressed in kW/m^2, and is the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire."*