

Bushfire Management Plan Coversheet

Site address: Lot 977 Nancarrow Way Ravenswood

Site visit / date: Yes No 13 January 2026

Report author or reviewer: Mike Scott

Not accredited Level 1 BAL assessor Level 2 practitioner Level 3 practitioner

BPAD accreditation number: 27795 Accreditation expiry – month / year August 2026

Bushfire Management Plan - version / date: V1.0 16 February 2026

If one or more of the following responses are yes, then these should be automatically referred to DFES.	Yes	No
Strategic planning is required to address SPP 3.7 and the Guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>
The application is a vulnerable land use	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If one or more of the following responses are yes, and the decision-maker requires input from DFES, then the application can be referred.	Yes	No
The BAL rating has been calculated by a method other than Method 1 as prescribed by AS 3959	<input checked="" type="checkbox"/>	<input type="checkbox"/>
An outcomes-based approach has been submitted to demonstrate compliance with the bushfire protection criteria	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Note: If a subdivision or development application meets all the acceptable solutions and does not otherwise trigger a referral as listed above, seeking advice from DFES on SPP 3.7 or other matters is at the discretion of the decision-maker.

The information provided within this bushfire management plan, to the best of my knowledge, is true and correct:

Dated signature of report author or reviewer:  16 February 2026



Ravenswood Childcare Centre

Bushfire Management Plan

(PREPARED FOR PLANNING APPLICATION ASSESSMENT PURPOSES)



Compiled in accordance with State Planning Policy 3.7 Bushfire and the Planning for Bushfire Guidelines

Lot 977 Nancarrow Way Ravenswood

Shire of Murray

Development Application - Vulnerable Land Uses

16 February 2026

Job Reference No: 260023

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DOCUMENT CONTROL

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VERSION HISTORY					
Version	Status/Details		Date		
1.0	Original		16 February 2026		
DISTRIBUTION					
Destination		Version	No. Copies	Hard Copy	Electronic Copy
Person	Email				
Michael Abrusci	mja@gamacapital.com.au	1.0		<input type="checkbox"/>	<input checked="" type="checkbox"/>
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BMP (Master) Template v10.1					

LIMITATIONS AND DISCLAIMER

Management of Risks Associated with Bushfire

For the subject planning proposal, the protection measures to be implemented based on information presented in this Bushfire Management Plan, prepared for land-use planning purposes, are the 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.

Provision of Mapping Data

All maps included herein are indicative in nature and are not to be used for accurate calculations. This data has been prepared for bushfire risk management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey.

Bushfire Prone Planning does not guarantee that this data is without flaw of any kind and disclaims all liability for any errors, loss or other consequence arising from relying on any information depicted.

When the separate provision of Digital Geographic Data (GIS Files) is an agreed project deliverable, these should be used in conjunction with the relevant information presented in the associated report. Areas and/or Dimensions specified in the report will have priority over digital data transmitted and must correspond to the final 'as-built' location of the applicable buildings, other structures or boundaries.

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All surveys, forecasts, projections and recommendations made in this report, associated with the subject planning proposal, are made in good faith based on information available to Bushfire Prone Planning at the time.

Notwithstanding anything contained therein, Bushfire Prone Planning will not, except as the law may require, be liable for any loss or other consequences whether or not due to the negligence of their consultants, their servants or agents, arising out of the services provided by their consultants.

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STATEMENT OF PURPOSE – THE ‘PLANNING’ BUSHFIRE MANAGEMENT PLAN

EXPLANATORY INFORMATION

SITE/USE PLANNING

This BMP is produced to present the information necessary for a planning proposal's assessment against the State's bushfire planning requirements. The developed information is to inform and assist decision-making authorities, planners, landowners/proponents and referral agencies in their implementation WA's State Planning Policy 3.7 Bushfire – and where relevant, any supplementary provisions of a local planning scheme or policy.

Policy Document Versions Applied in This BMP	State Planning Policy 3.7 Bushfire (SPP 3.7)	November 2024	Planning for Bushfire Guidelines (supporting SPP 3.7)	November 2024
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The Stated Intent of SPP 3.7 is to *implement effective, risk based land use planning and development which in the first instance avoids bushfire risk, but where unavoidable, manages and/or mitigates the risk to people, property and infrastructure to an acceptable level. The preservation of life and the management of bushfire impact are paramount.*

SITE OPERATIONS

This BMP is not an 'operational' BMP for property and operations management. Such a BMP would apply additional and more specific bushfire protection measures to more comprehensively reduce the level of risks associated with a bushfire event. These being the potential loss of life, injury, or destroyed or damaged assets which results in personal loss and economic loss.

However, this 'planning' BMP does establish certain responsibilities for the implementation and maintenance of the bushfire protection measures that are considered the minimum for bushfire planning decision making.

BUSHFIRE RESISTENT CONSTRUCTION

This 'planning' BMP is not required to consider the requirement to construct certain buildings, in designated bushfire prone areas, to the standard corresponding to the Bushfire Attack Level (BAL) they are subject to. This requirement is dealt with under the State Building Act 2011/Building Regulations 2012 and the referenced Building Code of Australia.

DETERMINED BUSHFIRE ATTACK LEVEL (BAL) RATINGS AND CONSTRUCTION – CAUTION!

For construction purposes a determined (not indicative) BAL rating is required to be known and a BAL Certificate produced for submission with a building application. This establishes the construction design and materials that are to be complied with in accordance with AS 3959 Construction in bushfire prone areas (as amended) and/or NS 300 NASH Standard Steel Framed Construction in Bushfire Areas (as amended).

This 'planning' BMP cannot necessarily determine a BAL rating that will apply to a future building. All variables required for that calculation may not be known at the assessed stage of planning. For example, actual location of a building footprint on a lot and/or any classified vegetation that will remain, at the time of construction, within the lot or on neighbouring lots.

This 'planning' BMP is only required to identify if a viable sized building can be located on a lot and be subject to a BAL rating not exceeding BAL-29, based on certain allowable assumptions. This is a planning requirement not a building requirement and a BAL contour map can be used to illustrate this information as an 'indicative' BAL rating.

Be aware that typically you cannot derive the determined BAL rating for a future building(s) on a specific lot from a BAL contour map (when presented in a BMP prepared for planning approval purposes). This is only possible in limited circumstances.

Planning assessment requirements are different to building assessment requirements. Refer to explanatory information above and Appendix B1 and B2 for additional information.

1 THE PLANNING PROPOSAL

1.1 Details, Plans and Maps

SUBJECT LAND AND PROPONENT (LANDOWNER)	
Address Details	Lot 977 Nancarrow Way Ravenswood
Applicable Local Government	Shire of Murray
Proponent	Michael Abrusci
Entity Commissioning Production of the BMP	Acquest Investments Pty Ltd
THE PLANNING PROPOSAL STAGE AND TYPE	
Strategic Planning Document	<input type="checkbox"/> N/A
Structure Plan	<input type="checkbox"/> N/A
Subdivision Application	<input type="checkbox"/> N/A
Development Application	<input checked="" type="checkbox"/> Construction of a habitable building and/or a vulnerable use that is subject to bushfire planning requirements.
DESCRIPTION	
<p>Construction of the Ravenswood Childcare Centre, located between Jolly Rambler Boulevard, Jones Lane and Nancarrow Way. The proposed building is a class 9b childcare building which is identified as one of the types of class 9 buildings subject to the NCC 2022 specification 43 requirements. As a childcare building, the proposal is not currently required to comply with the updated requirements unless as a voluntary measure. Due to offsite vegetation, meeting the NCC vegetation separation distances would not be possible, therefore the vegetation will not be assessed in relation to the NCC requirements, however, the Bushfire Protection Criteria (BPC) relating to "certain class 9 buildings" will be assessed.</p>	
Primary Proposed or Intended Construction	
EXPLANATORY INFORMATION	
<p>Note: A habitable building is defined in the <i>WA Planning and Development (LPS) Regulations 2015</i> to mean: A permanent or temporary structure on land that:</p> <ul style="list-style-type: none"> (a) Is fully or partially enclosed; and (b) Has at least one wall of solid material and a roof of solid material; and (c) Is used for a purpose that involves the use of the interior of the structure by people for living, working, studying or being entertained. 	
Primary Type(s)	New Building(s)
BCA Classification	Class 9b (assembly building)

Vulnerable Land Use Determination

Applying the definition established in SPP 3.7:

- | | |
|---|-------------------------------------|
| <ul style="list-style-type: none"> • A land use which is designed to accommodate people who are less physically or mentally able and likely to present evacuation challenges; and/or | <input checked="" type="checkbox"/> |
| <ul style="list-style-type: none"> • A land use which due to the building design or use, or the number of people accommodated, likely to present evacuation challenges; and/or | <input checked="" type="checkbox"/> |
| <ul style="list-style-type: none"> • A land use which involves visitors who are unfamiliar with the surroundings. | <input type="checkbox"/> |

In applying the Guidelines, Appendix B5 and DPLH officer level advice, consideration is also given to:

- | | |
|---|-------------------------------------|
| <ul style="list-style-type: none"> • The location and to the number of employees and visitors on-site at any one time; and | <input checked="" type="checkbox"/> |
| <ul style="list-style-type: none"> • If the decision-maker considers that the preparation of a bushfire emergency plan is warranted, then the use should be considered vulnerable. | <input checked="" type="checkbox"/> |
| <ul style="list-style-type: none"> • Grouped dwellings for older persons (e.g. Lifestyle / over 55's) where there is no nursing care component, may not need to be considered a vulnerable use (including when a Class 3 but not a Class 9c building). | <input type="checkbox"/> |

Assessment Supporting Details:

The proposed development comprises a childcare centre, which has been assessed against the definition of vulnerable land use under State Planning Policy 3.7 – Planning for Bushfire Risk Management.

In accordance with SPP 3.7, a vulnerable land use includes uses that accommodate occupants who are less physically or mentally able, are likely to present evacuation challenges, and/or involve visitors unfamiliar with the surroundings. Based on this definition, the proposed childcare centre is considered a vulnerable land use for the following reasons:

- The childcare centre is designed to accommodate young children who are not capable of self-evacuation and are reliant on staff for movement and emergency response, which presents significant evacuation challenges during a bushfire event.
- Due to the building design and operational characteristics, including multiple activity rooms, outdoor play areas, and the number of children and staff present at any one time, the use is likely to present complex and time-critical evacuation constraints.
- The development involves parents, guardians, and visitors who are unfamiliar with the site layout and surrounding road network, increasing the potential for confusion or congestion during an emergency.

In applying the Guidelines for Planning in Bushfire Prone Areas, including Appendix B5 and DPLH officer-level advice, the following additional considerations are noted:

- While staff are present on-site during operating hours, the ratio of staff to children and the dependence of children on adult supervision means that evacuation cannot be undertaken rapidly or independently, reinforcing the vulnerability of the use.
- Given the identified evacuation challenges and the vulnerable nature of the occupants, the preparation and implementation of a Bushfire Emergency Plan (BEP) is warranted and required, which further confirms the classification of the childcare centre as a vulnerable land use.
- The development does not fall within any exclusions under the Guidelines (such as grouped dwellings for older persons without a nursing care component) and must therefore be assessed as a vulnerable use.

Development Type - Establishing the Applicable Bushfire Protection Criteria			
Class 9 Vulnerable Use Buildings	Construction, and/or use of, or additions to the certain NCC 2022 Class 9 buildings subject to bushfire construction provisions and considered by the Guidelines to be relevant vulnerable land uses for the purpose of bushfire planning. <i>[Guidelines s8]</i>	Class 9a health-care building	<input type="checkbox"/>
		Class 9b early childhood centre and primary or secondary school	<input checked="" type="checkbox"/>
		Class 9c residential care building	<input type="checkbox"/>
		Class 10a building or deck within 6 m of the relevant Class 9 building.	<input type="checkbox"/>
<p><u>Assessment Supporting Details:</u></p> <p>The proposed childcare centre, as a Class 9b vulnerable use building, is required to comply with the AS 3959 bushfire construction standards for the site's determined BAL – BAL29. These requirements provide a mandatory level of protection against radiant heat, flame contact, and ember attack, and form an integral component of the outcomes-based bushfire risk mitigation measures where site constraints prevent full compliance with SPP 3.7 Deemed-to-Comply solutions.</p>			



Figure 1.1: Proposed site plan.

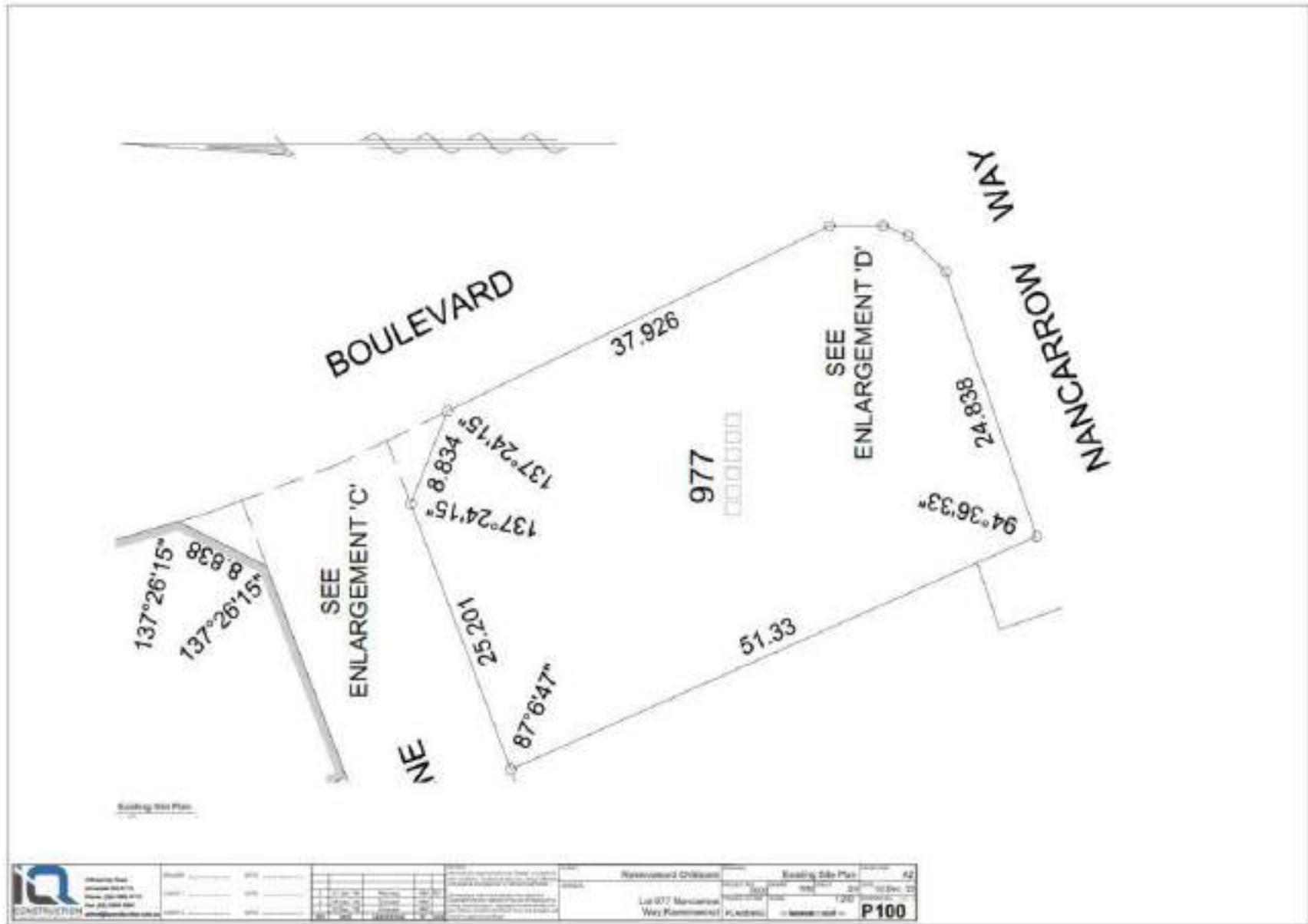


Figure 1.2: Proposed development map.

Figure 1.3
Location Map

Lot 977 on Plan / Diagram 411195, Area:
 1619.53
 Nancarrow Way
 Ravenswood
 Shire of Murray

----- **LEGEND** -----

-  Subject Site
-  Cadastral
-  150m Assessment Area
-  100m Assessment Area

0 20 40 60 80 100



Metres

----- **LOCALITY** -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map by: Simone Eaton 19-02-2026
 SCALE (A3): 1 : 5000



1.2 The Planning Proposal and its Requirement to Address Bushfire Risk

EXPLANATORY INFORMATION

For the subject planning proposal, the intent of this section is to:

- Identify the relevant statutory bushfire planning provisions that have established its requirement to address bushfire risk;
- Identify the relevant policy/guideline 'triggers' to apply SPP 3.7 Bushfire;
- Identify when a local government, as the decision maker, has established additional 'triggers' to apply defined bushfire planning assessments; and
- Identify the consideration of any relevant exemptions from application of SPP 3.7 Bushfire.

Relevant Terms

Development means the development or use of any land, including (a) any demolition, erection, construction, alteration of or addition to any building or structure on the land (b) the carrying out on the land of any excavation or other works (Planning and Development Act 2005, Part1, s.4; and

Habitable building means a permanent or temporary structure on land that:

- (a) is fully or partially enclosed; and
- (b) has at least one wall of solid material and a roof of solid material; and
- (c) is used for a purpose that involves the use of the interior of the structure by people for living, working, studying or being entertained;

Specified building means a structure of a kind specified in this Scheme as a kind of structure to which this Part applies in addition to its application to habitable buildings.

Development site means that part of a lot on which a building that is the subject of development stands or is to be constructed - Planning and Development (LPS) Regulations 2015, s.78A.

Construction of a building includes the erection, assembly or placement of a building but does not include the renovation, alteration, extension, improvement or repair of a building;

1.2.1 Applied Statutory Bushfire Provisions Requiring a Planning Application

A PLANNING APPLICATION IS TO BE SUBMITTED TO WAPC FOR DETERMINATION

The proposed development (construction and/or use) is a category for which WAPC is the decision maker rather than the local government.

Determination will be made under the Planning and Development Act 2005, its relevant subsidiary legislation and associated State Planning Policies.

As the subject site is wholly or partly within a designated bushfire prone area (Map of Bushfire Prone Areas), due regard must be given to State Planning Policy 3.7 Bushfire.

A PLANNING APPLICATION IS TO BE SUBMITTED TO THE LOCAL GOVERNMENT FOR DETERMINATION

For the proposed development (construction and/or use) the local government is the decision maker. The local government determination will be made under:

- The Planning and Development Act 2005, its relevant subsidiary legislation (e.g. Regulations) and associated policies that establish the objectives and high-level guidance; and/or
- The local government's local planning scheme and associated policies that establishes objectives and guidance, specific to the jurisdiction, in addressing the requirements established by the above legislation and associated policy.

WHERE PRE-DEVELOPMENT BUSHFIRE ATTACK LEVEL (BAL) OF RELEVANT BUILDINGS IS BAL-40 OR BAL-FZ

The Deemed Provisions in Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015, Part 10A – Bushfire risk management, establish:

1. If the proposed development is:
 - (a) The construction or use, or construction and use, of a single house or ancillary dwelling on a lot or lots with a total area of 1,100 m² or more; or
 - (b) The construction or use, or construction and use, of
 - (i) a habitable building other than a single house or ancillary dwelling; or
 - (ii) a specified building; and
 - (c) Is not the use of a dwelling as hosted or unhosted short-term rental accommodation (STRA) which is specifically excluded; and
2. The development site is wholly or partly within a designated bushfire prone area (Map of Bushfire Prone Areas), requiring the developer to have prepared a BAL assessment for the development site: then
3. Where the pre-development (before the establishment of an APZ), calculated bushfire attack level of the development site is BAL-40 or BAL-FZ, then the developer must have development approval to commence any development on the development site.

✓

Assessment Supporting Details:

None required.

1.2.2 Applied Triggers to Apply State Planning Policy 3.7 Bushfire

EXPLANATORY INFORMATION

State Planning Policy 3.7 Bushfire (SPP 3.7) provides broad objectives and high-level guidance for how planning proposals and development applications within bushfire prone areas should be considered. Implementation is supported by more detailed instructions within the *Planning for Bushfire Guidelines*.

The following table identifies the guidance that has resulted in the planning proposal being required to apply SPP 3.7.

Inconsistent Information (as of December 2024):

- There are inconsistencies between the provisions of the applicable legislation (Planning and Development (LPS) Regulations 2015), the clauses of the associated policy (SPP 3.7 Bushfire) and its associated guidance (Planning for Bushfire Guidelines Nov. 2024).
- This has resulted in inconsistencies in the establishment of the 'triggers' to lodge proposals, plans and applications for planning approval sourced from these documents.

Until legislation/policy/guideline amendments are completed, the advice from WAPC/DPLH is that the decision maker should apply SPP 3.7 and the Guidelines as they deem necessary. (Source: Explanatory Note SPP 3.7, DPLH, 25/11/24)

Bushfire Prone Planning's Current Approach:

- To apply the 'triggers' for application of SPP 3.7/Guidelines in accordance with the current version of the Guidelines (Planning for Bushfire Guidelines, November 2024), in Sections 6, 7 and 8 - as this is best aligned with the current version (3 Nov 2024) of the LPS Regulations 2015; unless
- The relevant decision maker has determined, and confirmed in writing to the proponent, that SPP 3.7/Guidelines is to be applied.

SPP 3.7 AND THE GUIDELINES - ESTABLISHING THE NEED TO GIVE DUE REGARD TO SPP 3.7		APPLICABLE
1	THE LAND SUBJECT TO THE PLANNING PROPOSAL IS:	
	Designated bushfire prone and 'Area 1 (Urban)' on the Map of Bushfire Prone Areas (refer to Figure 1.4); or	No
	Designated bushfire prone and 'Area 2' on the Map of Bushfire Prone Areas (refer to Figure 1.4).	Yes
AND		
2	THE PLANNING PROPOSAL WILL:	
	Result in the intensification of development (or land use); or	Yes
	Result in an increase of visitors, residents or employees; or	Yes
	Adversely impact or increase the bushfire risk to the subject or surrounding site(s).	No
AND		

3	<p>(Source: SPP 3.7, Part 4) A <u>development application for construction and/or use of a habitable building (other than a single house or ancillary dwelling), for a vulnerable land use</u> and where the development site(s) has a BAL rating above BAL-LOW.</p>	<p>Currently not triggered by legislation - BUT – the relevant decision-maker has established the requirement to apply SPP 3.7</p>
	<p>(Source: Guidelines s.8) This section applies to <u>development applications</u> in areas designated as Area 1 (Urban) or Area 2 on the Map of BPA for the <u>construction and/or use of, or additions</u> to a habitable building for a vulnerable Class 9 building identified within the 2022 edition of the Building Code of Australia (BCA).</p> <p>Note: A development application for <u>additions</u> to a vulnerable land use <u>should address the bushfire protection criteria for the entire site</u>. It should be noted that there are no requirements under SPP 3.7 or the Guidelines to retrofit existing buildings to the appropriate bushfire construction standard, or any requirement for these existing buildings to be located within an area with a radiant heat impact not exceeding 29 kW/m² (BAL-29).</p>	
<p><u>Assessment Supporting Details:</u></p> <p>While a legislated trigger under SPP 3.7 does not strictly apply to the proposal, the local government's requirement for a BMP is considered reasonable and appropriate given the vulnerable nature of the childcare centre, the bushfire prone location, and the need to demonstrate that bushfire risk can be acceptably managed. The application of SPP 3.7 in this instance supports informed decision-making and aligns with best-practice bushfire risk management for the following reasons:</p> <ul style="list-style-type: none"> • The proposed development is a childcare centre, which is classified as a vulnerable land use under SPP 3.7 due to the presence of young children who are unable to self-evacuate and are reliant on staff assistance during emergencies. • The subject site is located within a designated Bushfire Prone Area, as shown on the Map of Bushfire Prone Areas, thereby warranting consideration of bushfire risk as part of both planning and building assessment processes. • The nature of the use, combined with the number of occupants, evacuation complexity, and limited warning times associated with bushfire events, justifies the application of bushfire planning principles to demonstrate that risks can be adequately mitigated. <p>The submission of a BMP provides clarity and certainty to the proponent and decision-maker by documenting site-specific bushfire risk, mitigation measures, access, water supply, and emergency management arrangements consistent with the intent of SPP 3.7.</p>		

1.2.3 Applied Triggers Established by the Local Government as the Decision Maker

EXPLANATORY INFORMATION

The applicable local government is required to give due regard to the following:

The Deemed Provisions in Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015, where:

- Part 2 cl. 3 provides for the local government to prepare a local planning policy; and
- Part 9 cl. 67(q & r) establishes the local government must give due regard to:
 - The suitability of the land for the development taking into account the possible risk of flooding, tidal inundation, subsidence, landslip, bush fire, soil erosion, land degradation or any other risk.
 - The suitability of the land for the development taking into account the possible risk to human health or safety.

Under these general provisions, in addition to the specific statutory bushfire provisions identified in Section 1.2.1, the local government may have bushfire planning policy/information (under the local planning scheme) which is to be addressed in this BMP. This is identified below as relevant.

ESTABLISHING THE NEED TO APPLY LOCAL GOVERNMENT DEFINED BUSHFIRE PLANNING REQUIREMENTS

Identification of the Relevant Instrument

Local Planning Policy

RELEVANT DETAILS OF LOCAL PLANNING BUSHFIRE POLICY

Planning and development (local planning schemes) Regulations 2015, part 10A – Bushfire Risk Management

Includes deemed provisions that apply to all local planning schemes and are designed to help protect lives and property against bushfire threats by ensuring that development proposals within bushfire prone area demonstrate a Bushfire Attack Level (BAL) of 29 or below.

State Planning Policy 3.7 Planning for Bushfire and Guidelines

Provides support for decision makers in specifying the requirements to address SPP3.7 at each stage of the planning process; assists in determining appropriate land use and development, including construction standards and siting within a designated bushfire prone area; and provides an assessment framework to demonstrate compliance with the bushfire protection criteria.

Shire of Murray Local Planning Scheme No. 4

Aims to protect the health, safety and welfare of residents, manage land uses, protect local natural areas of flora and fauna, protect natural water sources, and provide land for housing employment, community recreation and facilities, amongst others. Special Control Areas that are shown on a scheme map apply in addition to deemed provisions.

RELEVANT DETAILS OF THE LOCAL PLANNING BUSHFIRE INFORMATION

Shire of Murray Bushfire Compliance Notice under s33 of the Bushfires Act 1954

Outlines requirements for the maintenance of firebreaks, removal of flammable materials from land, and trimming trees and bushes that overhand accessways, driveways, buildings and fire breaks.

WAPC Planning Bulletin 111/2016 Planning for Bushfire

Outlines key reforms to help protect lives and property against bushfire, assisting in the interpretation and implementation of local bushfire strategies.

Shire of Murray Bushfire Risk Management Plan

Coordinates community approach to managing bushfire risk.

1.2.4 Identified Exemptions

EXPLANATORY INFORMATION	
<p>The following situations provide for an exemption from the application of SPP 3.7/Guidelines. They are established by the stated sources and are presented below as:</p> <ul style="list-style-type: none"> Evidence they have been considered when relevant; and Justification for the application of SPP 3.7/Guidelines despite a relevant exemption applying to part or all of the planning proposal. 	
EXEMPTION SCENARIOS	APPLICABLE
(Source: LPS Regulations 2015 Part 10A - Bushfire risk management) Does not apply to land where there is no existing local planning scheme or where a local planning scheme has ceased to have legal effect.	N/A
(Source: Guidelines s1.2.1) For a structure plan or subdivision application, for proposed lot(s) that: <ul style="list-style-type: none"> Are not designated as bushfire prone; Or where there is no increase in the development potential and therefore no intensification of land use or bushfire risk, such as a boundary realignment, that does not restrict the ability to establish or maintain an APZ; and does not restrict vehicular access to any existing or future habitable building. 	N/A
(Source: Guidelines s1.2.1) - For incidental non- habitable buildings or structures located not less than six metres from the habitable building, including but not limited to private garages, carports, patios, storage sheds, outbuildings, swimming pools, spa pools and fences.	N/A
(Source: Guidelines s1.2.1) - For a change of use, minor renovations, extensions, alterations, improvements or repair of an existing habitable building where: <ul style="list-style-type: none"> The application does not result in an increase of occupants onsite; and/or There is no increase in the bushfire risk, such as an extension being further away from the bushfire hazard, or the extension does not restrict vehicular access or the provision of water for the development. 	N/A
<p><u>Assessment Supporting Details:</u></p> <p>None required.</p>	

Figure 1.4

Bushfire Prone Area

Lot 977 on Plan / Diagram 411195, Area:
1619.53
Nancarrow Way
Ravenswood
Shire of Murray

----- LEGEND -----

-  Subject Site
-  Cadastral
-  Buildings
-  Hydrants
-  150m Assessment Area
-  100m Assessment Area



Metres

----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map by: Simone Eaton 06-02-2026
 SCALE (A3): 1 : 1500



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.

1.3 Required 'Bushfire Planning' Assessments and Documents

INFORMATION PRESENTED IN THIS 'PLANNING' BMP (OR THE BEP) - PROVIDED TO ACCOMPANY THE PROPONENT'S PLANNING SUBMISSION						
The requirements are established by SPP 3.7 Part 4, Guidelines Section 1.2, 4.4, 5.5, 6.4, 7.2, 8.3 and A1.2. The green highlighted column identifies the required information for the subject planning proposal.		Strategic Planning Document	Structure Plan / Subdivision Application		Development Application	
Required Information	Details	Map of Bushfire Prone Areas Designation				
		Area 1 (Urban)	Area 2	Area 1 (Urban)	Area 2	Areas 1 & 2
Environment - Identification of environmental, biodiversity or conservation values on subject site(s)	Presented in the BMP. Identifies how proposal siting and design avoids and/or minimises clearing of native vegetation in applying required bushfire protection measures.	BUSHFIRE PLANNING ASSESSMENTS ARE NOT REQUIRED	✓	✓	✓	✓
BLA - Broader Landscape Assessment (see note below)	Presented in the BMP. Considers subject site suitability based on exposure to bushfire hazards, potential for landscape scale bushfire, road network and suitable evacuation destinations.		✓	-	✓	-
BHL - Bushfire Hazard Level Assessment (pre-development)	Presented in the BMP. Can include detail of treatments required to achieve BHL of moderate and/or low.		✓	-	-	-
BAL - Bushfire Attack Level Assessment	Presented in the BMP in BAL contour map format as a requirement and in table format as an additional option.		-	✓	✓	-
	Presented in the BMP in table format and/or BAL contour map format – dependant on which is more efficient and effective at presenting the results (e.g. BAL contour map for multiple buildings).		-	-	-	✓
BPC - Assessment against the relevant Elements (E1 – E4) of the Bushfire Protection Criteria	Presented in the BMP. Strategic planning will necessarily focus on Element 1: Location. Can demonstrate compliance using acceptable solutions and/or an outcomes-based approach.		✓	✓	✓	✓
				Excluding E1		Excluding E1
BEP - Bushfire Emergency Plan	For vulnerable land uses only. Provided as a separate document or an addition / modification to an existing BEP or site Emergency Management Plan.		-	-	-	✓
LMP – Landscape Management Plan	For vulnerable land uses only. Provided as a separate document or an addendum to the BMP.					

1.4 Other Documents Relevant to Preparing the BMP

EXPLANATORY INFORMATION					
<p>This section identifies any known assessments, reports or plans that have been conducted and prepared previously, or are being prepared concurrently, and are relevant to the subject planning proposal.</p> <p>They may have implications for the assessment of bushfire hazard threats and the identification and implementation of the bushfire protection measures that are established by this BMP.</p>					
RELEVANT DOCUMENTS					
Document	Relevant	Exists	To Be Concurrently Developed	Copy Provided by Proponent / Developer	Title
Structure Plan	Yes	Yes	N/A	No	Ravenswood West Local Structure Plan
<p><u>Implications for the BMP:</u></p> <p>Structure plans are relevant because they define future road layouts and access networks that influence emergency evacuation routes and emergency service access in the BMP; and outline public open space and conservation area locations which can influence bushfire hazard interfaces and fuel treatments.</p>					
Bushfire Management Plan	N/A	No	N/A	N/A	Being prepared
Preliminary bushfire advice (may include a BAL contour map)	Yes	Yes	No	No	Bushfire impact advice provided by letter 14/1/26.
<p><u>Implications for the BMP:</u></p> <p>The BMP must define site-specific setbacks from the lot boundary or classified vegetation required to achieve BAL-29. Multiple modelling scenarios (1–4) provide options ranging from 13.5 m down to 4 m, depending on assumptions and vegetation treatment.</p> <p>The relevant section of the Bushfire Impact Advice is provided as Addendum 1. Also refer to Figure 3.2.</p>					
Bushfire Emergency Plan	N/A	No	Yes	N/A	Being prepared with the BMP
<p><u>Implications for the BMP:</u></p> <p>The preparation of a Bushfire Emergency Plan materially strengthens the Bushfire Management Plan by addressing operational response, evacuation and sheltering considerations that cannot be resolved through design measures alone. The BEP enables a more comprehensive assessment of residual bushfire risk and supports the application of an outcomes-based approach under SPP 3.7, particularly for vulnerable land uses and sites where full compliance with acceptable solutions is not achievable.</p>					
Bushfire Risk Report	Yes	Yes	N/A	No	Shire of Murray, Bushfire Risk Management Plan 2021-2026
<p><u>Implications for the BMP:</u></p> <p>The Shire of Murray's Bushfire Risk Management Plan provides the strategic and operational context that should inform and under-pin a development-level BMP. While the BRM Plan does not replace the technical bushfire protection criteria of SPP 3.7 and the Guidelines, it ensures that the development's bushfire mitigation measures fit cohesively within the broader community risk management framework and support coordinated, long-term bushfire risk reduction across the local government area.</p>					

Environmental Asset or Vegetation Survey	Yes	Yes	N/A	No	Local Biodiversity Strategy and Environmental Sustainability Strategy 2024 – 2025
<p>The Shire of Murray Local Biodiversity Strategy and Environmental Sustainability Strategy 2024–2025 requires that bushfire risk management measures be carefully balanced against the protection of native vegetation, wetlands and ecological values. Accordingly, the Bushfire Management Plan adopts a targeted, outcomes-based approach that minimises vegetation clearing, relies on long-term management of low-threat vegetation, and prioritises siting, design and construction measures to achieve acceptable bushfire safety outcomes while remaining consistent with the Shire's environmental and sustainability objectives.</p>					
Landscape Management Plan	Yes	Yes	No	Yes	Landscape plan for subject lot
<p>A Landscape Management Plan underpins the effectiveness of the Bushfire Management Plan by translating vegetation-based bushfire protection measures into enforceable, long-term management actions. Where vegetation modification and fuel management are relied upon to achieve acceptable bushfire outcomes, the LMP is essential to demonstrate ongoing compliance with SPP 3.7 and to ensure residual bushfire risk remains tolerable over the life of the development. Addendum 3.</p>					
Revegetation Plan	No	N/A	N/A	N/A	-
<p>There is no revegetation required.</p>					

2 ENVIRONMENTAL CONSIDERATIONS – NATIVE VEGETATION

EXPLANATORY INFORMATION

Some bushfire prone areas also have high biodiversity values. SPP3.7 objective 5.4 prioritises the retention of native vegetation for biodiversity conservation, environmental protection and landscape amenity.

Clearing or modification of native vegetation for the purpose of land use or development is assessed under **State Planning Policy 2: Environment (SPP 2)**, **State Planning Policy 2.8: Bushland policy for the Perth Metropolitan Region (SPP 2.8)** and relevant environmental legislation. A key objective of these policies is to avoid development that may result in unacceptable environmental damage.

Any 'modification' or 'clearing' of vegetation to reduce bushfire risk is considered 'clearing' under the **Environmental Protection Act 1986** (EP Act) and requires a clearing permit under the **Environmental Protection (Clearing of Native Vegetation) Regulations 2004** (Clearing Regulations) – unless for an exempt purpose.

Clearing native vegetation is an offence, unless done under a clearing permit or the clearing is for an exempt purpose. Exemptions are contained in the EP Act or are prescribed in the Clearing Regulations (note: these exemptions do not apply in environmentally sensitive areas).

The **Department of Water and Environmental Regulation** (DWER) is responsible for issuing 'clearing' permits and the framework for the regulation of clearing. Approvals under other legislation, from other agencies, may also be required, dependent on the type of flora or fauna present.

Local Planning Policy or Local Biodiversity Strategy: Natural areas that are not protected by the above Act and Regulation (or any other National or State Acts) may be protected by a local planning policy or local biodiversity strategy. Permission from the local government will be required for any modification or removal of native vegetation in these Local Natural Areas (LNA's). Refer to the relevant local government for detail.

For further information refer to [Native vegetation clearing permits | Western Australian Government](#), the Planning for Bushfire Guidelines (as amended) and the Bushfire and Vegetation Factsheet - WAPC, Dec 2021.

2.1 Biodiversity or Conservation Values Identified

EXPLANATORY INFORMATION

The required information, relevant to bushfire planning and informing the production of this BMP, is sourced and presented as indicated below.

Note that where a 'desktop' assessment has been conducted, this should not be considered a replacement for a full Environmental Impact Assessment. It is a summary of potential biodiversity or conservation values at the subject site, inferred from information contained in public available datasets and/or reports, which are only current to the date of last modification.

The information provided in the BMP should be considered indicative where the subject site has not previously been subject to a site-specific environmental assessment by an appropriate professional.

The required information is sourced from the environmental/planning consultant report developed for the subject site and provided to the bushfire consultant (details below when applicable).

The information it contains is not repeated in this BMP as it will accompany the planning submission. The implications for the subject planning proposal and this BMP are stated below when relevant.

No Report Available / Provided

Not applicable.

The required information is sourced by the bushfire consultant as a 'desktop' assessment from publicly available data bases and/or a local government's local biodiversity strategy or local planning strategy.

When applicable, this information is presented on the following pages of this BMP.

Yes - Fully

IDENTIFICATION OF RELEVANT BIODIVERSITY OR CONSERVATION VALUES							
Dataset	Relevant to Subject Planning Proposal	Influence on Bushfire Threat Levels and / or Application of Bushfire Protection Measures	Information Source(s) Applied			Further Action Required by Proponent	
			WA Govt. Agency Dataset (ID)	Landowner or Developer Statements	Environmental Asset or Vegetation Survey Report		
Department of Biodiversity, Conservation and Attractions (DBCA) Datasets							
Conservation Category Wetlands and Buffer (geomorphic wetlands – relevant area)	N/A	Unlikely	<input checked="" type="checkbox"/>	DBCA-018, 019	<input type="checkbox"/>	<input type="checkbox"/>	Confirm with relevant agency
RAMSAR Sites (wetlands of international importance)	N/A	No	<input checked="" type="checkbox"/>	DBCA-010	<input type="checkbox"/>	<input type="checkbox"/>	None
Threatened and Priority Flora	N/A	No	Restricted Scale of Data Available (security)	DBCA-036	<input type="checkbox"/>	<input type="checkbox"/>	None
Threatened Ecological Communities	N/A	No		DBCA-038	<input type="checkbox"/>	<input type="checkbox"/>	None
Legislated Lands and Waters (national/conservation parks, nature/crown reserves, state forest)	N/A	No	<input checked="" type="checkbox"/>	DBCA-011	<input type="checkbox"/>	<input type="checkbox"/>	None
Department of Planning, Lands and Heritage (DPLH) Datasets							
Bush Forever Areas 2000	N/A	No	<input checked="" type="checkbox"/>	DPLH-019, 022 and MRS Bush Forever	<input type="checkbox"/>	<input type="checkbox"/>	None
Department of Water and Environmental Resources (DWER) Datasets							
Clearing Regulations – Environmentally Sensitive Areas	N/A	No	<input checked="" type="checkbox"/>	DWER-046	<input type="checkbox"/>	<input type="checkbox"/>	None
Swan Bioplan Regionally Significant Natural Areas 2010	N/A	No	<input checked="" type="checkbox"/>	DWER-070	<input type="checkbox"/>	<input type="checkbox"/>	None

ADDITIONAL INFORMATION

Palusplain wetlands are typically seasonally inundated, low-lying wetlands with high ecological and hydrological significance, and often fall under Conservation Category Wetland (CCW) or Local Natural Area (LNA) protections, however, conservation is not indicated within council mapping services or other documentation for the subject site.

2.2 Vegetation Management Plans with Implications for the BMP

EXPLANATORY INFORMATION

This section identifies the area(s) of land (supporting vegetation), within or near the subject site (i.e. onsite or offsite) to which one or more of the following scenarios and their corresponding management actions applies.

If none of these scenarios is relevant to the subject planning proposal, this is stated.

1. Area(s) subject to a **LANDSCAPE PLAN THAT RESULTS IN RELEVANT ELEMENTS AT RISK BEING EXPOSED TO A LOW BUSHFIRE THREAT LEVEL** from existing or planned area(s) of vegetation and establishes the following management actions:
 - (a) To apply landscaping design (including the modification and/or establishment of plants/shrubs/trees), that will enable the area(s) to be excluded from classification under AS 3959 BAL determination methodology;
 - (b) To actively manage the area(s) to maintain the low bushfire threat level in perpetuity. Thereby ensuring the applicable bushfire protection measures, applied in accordance with the BMP, remain effective;
 - (c) To achieve and maintain the low threat state through using a combination of mechanisms including:
 - (i) Minimising vegetation fuel loads through design and ongoing management;
 - (ii) Using low flammability and/or higher moisture content species;
 - (iii) Incorporating non-vegetated elements; and
 - (d) To identify the entity responsible for ensuring the landscape plan is complied with in perpetuity and when required, will contain written confirmation of their acceptance of the responsibility.

2. Area(s) subject to a **LANDSCAPE PLAN THAT RESULTS IN RELEVANT ELEMENTS AT RISK BEING EXPOSED TO A REDUCED BUSHFIRE THREAT LEVEL** from existing or planned area(s) of vegetation and establishes the following management actions:
 - (a) To apply landscaping design involving the removal and/or modification of existing vegetation that will enable the area(s) to be classified as a lower threat class under AS 3959:2018 BAL determination methodology;
 - (b) To actively manage the area(s) to maintain the reduced bushfire threat level in perpetuity. Thereby ensuring the applicable bushfire protection measures, applied in accordance with the BMP, remain effective;
 - (c) To identify the entity responsible for ensuring the landscape plan is complied with in perpetuity and when required, will contain written confirmation of their acceptance of the responsibility.

3. Area(s) subject to a **REVEGETATION PLAN THAT MAY RESULT IN RELEVANT ELEMENTS AT RISK BEING EXPOSED TO AN ADDITIONAL BUSHFIRE HAZARD AND/OR AN INCREASED BUSHFIRE THREAT LEVEL** from an existing area(s) of vegetation and establishes the following information:
 - (a) The location of the areas to be revegetated (as distinct from natural regeneration which is accounted for in the vegetation classification under AS 3959 BAL determination methodology); and
 - (b) A description of the planned design regarding density and species of plants/shrubs/trees to inform the bushfire consultant's classification of the vegetation under AS 3959:2018 BAL determination methodology.

Relevance of the Stated Scenarios to the Subject Planning Proposal

Only Scenario 1 is relevant.

2.2.1 Landscape Management Plan – Reduced Bushfire Threat Level

PLANNED LANDSCAPING – REDUCED BUSHFIRE THREAT LEVEL			
Assessment Details			Relevant
The area of land that is to be subject to a Landscape Management Plan is within the subject site (onsite).			No
The area of land that is to be subject to a Landscape Management Plan is outside the subject site (offsite).			Yes
The landscape plan is recommended as a bushfire protection measure by the bushfire consultant for the reasons identified in the 'Additional Bushfire Protection Measures of this BMP.			Yes
The area of land subject to the landscape management plan will have its classification under AS 3959 (as amended) BAL determination methodology changed to a lower threat classification than that which currently applies.			Yes
Responsibility for Ongoing Management of the Landscaped Area			
Landscaped Area	Persons / Agency		A Requirement Exists for Written Authority and/or Agreement to Remove/Modify/Manage Vegetation
Onsite	Landowner	Yes	Yes
	Local Government	N/A	N/A
Offsite	Landowner	N/A	N/A
	Local Government	Yes	Yes
	DBCA	N/A	N/A
	Main Roads WA	N/A	N/A
An approved landscape management plan and/or written confirmation exists and is provided to demonstrate that agencies responsible for the ongoing management understand and support the vegetation classification assigned to the subject area and its resulting ongoing management implications on the agency.			No
A written authority and management agreement exists and is provided to demonstrate an arrangement between adjoining landowners as to the responsibility for establishment and ongoing management of the defined area of land subject to a Landscape Management Plan.			No
<p>Modify the vegetation area and fuel loads by modifying/clearing an area of vegetation adjoining and parallel to the subject lot boundary for a depth of 6 metres.</p> <p>The modified area must be maintained in a low bushfire threat state, able to be excluded from classification for BAL assessment purposes, managed in perpetuity and for which a formal acknowledgement of responsibility is established, or cleared of vegetation and ensure regrowth is not possible.</p>			
Identification of the Area(s) of Land Subject to a Landscape Management Plan			
The subject lot.			
Location of the Landscape Management Plan / Authority / Confirmation / Agreement for Reference			
Land subject to the written authority/agreement is Lot 976 Nancarrow Way Ravenswood.			

Implications for the BMP
None required

Figure 2.1

Managed Vegetation on Adjoining Lot

Lot 977 on Plan / Diagram 411195, Area: 1619.53
Nancarrow Way
Ravenswood
Shire of Murray

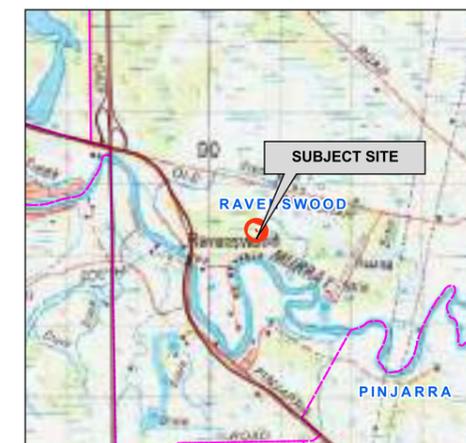
----- LEGEND -----

-  Subject Site
-  Cadastral
-  Hydrants
-  150m Assessment Area
-  100m Assessment Area
- Buildings**
-  Building
-  Managed Vegetation

0 20 40 60 80 100

Metres

----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map by: Simone Eaton 19-02-2026
 SCALE (A3): 1 : 1500

3 THE BUSHFIRE HAZARD – POTENTIAL IMPACT - LANDSCAPE AND VEGETATION DATA

3.1 Bushfire Attack Level (BAL) Assessment Summary

EXPLANATORY INFORMATION

Caution! Future building works require a 'determined' BAL rating for building permit applications.

The BAL ratings identified from the map will more likely be only 'indicative' of what can be achieved – with planning compliance for this factor being achieved when BAL-29 is indicated.

Otherwise, an additional assessment of the site data for building application purposes is required, and potentially approval will need to be obtained for native vegetation modification and/or removal from the relevant authority.

3.1.1 BAL Determination Methodology and Location of Data and Results

LOCATION OF DATA & RESULTS					
BAL Determination Methodology		Location of the Site Assessment Data			Location of the Results
AS 3959:2018	Applied to Assessment	Classified Vegetation and Topography Map(s)	Calculation Input Variables		Assessed Bushfire Attack Levels and/or Radiant Heat Levels
			Summary Data	Detailed Data with Explanatory and Supporting Information	
Method 1 (Simplified)	Yes	Figure 3.1	Table 3.2	Appendix A1	Table 3.1 Table 3.3 / Figure 3.2
Method 2 (Detailed)	Yes	Figure 3.1	Table 3.2	Appendix A2	

3.1.2 BAL Ratings Derived from Figure 3.2

Table 3.1: Indicative and determined BAL(s) for future buildings/structures on the proposed lots.

BUSHFIRE ATTACK LEVEL FOR FUTURE BUILDINGS / STRUCTURES ON STATED LOT ¹		
Lot No.	Future Buildings / Structure	
	Indicative BAL ²	Determined BAL ²
New building	BAL-29	N/A

¹ The assessment data used to derive the BAL ratings is sourced from Table 3.1 and Figure 3.2.
² Refer to the start of Section 3 for an explanation of indicative versus determined BAL ratings.

3.1.3 Site Assessment Data Applied to Construction of Figure 3.2

RELEVANT CLASSIFIED VEGETATION	
Identification of Classified Vegetation that is Relevant to the Production of Figure 3.2	Relevant Vegetation Map
<p>The relevant vegetation is the classified vegetation external to the lot boundaries. All identified classified vegetation areas, or portions of areas, within the subject lot are excluded.</p> <p>This approach is applied to indicate the achievable bushfire attack levels within the specified lot and the resultant area of developable land where buildings will be subject to BAL-29 or less. It is based on the following assumptions:</p> <ol style="list-style-type: none"> 1. Any classified vegetation within a lot can potentially be managed or removed by the landowner to meet asset protection zone standards; and 2. Future development and consequent removal/management of vegetation that may take place on any adjoining lot cannot be part of considerations for the subject lot, unless by formal agreement 	Figure 3.1
<p>Supporting Assessment Details:</p> <p>Land outside the subject lot will be subject to a vegetation management to ensure that BAL-29 for the subject site can be achieved and maintained in perpetuity. Refer to Figure 3.2.</p>	

Table 3.2: Calculation inputs applied to deriving the vegetation separation distances corresponding to different levels of potential radiant heat transfer.

DATA APPLIED TO CALCULATE THE SITE SPECIFIC VEGETATION SEPARATION DISTANCES CORRESPONDING TO POTENTIAL RADIANT HEAT TRANSFER LEVELS ¹												
Applied BAL Determination Method		METHOD 1 - SIMPLIFIED PROCEDURE (AS 3959:2018 CLAUSE 2.2) AND METHOD 2 - DETAILED PROCEDURE (AS 3959:2018 APPENDIX B)										
The Calculation Input Variables - Corresponding to the Applied BAL Determination Method ²												
Methods 1 and 2		Method 1			Method 2							
Vegetation Classification		FDI	Effective Slope		Site Slope	FFDI or GFDI	Flame Temp.	Elevation of Receiver	Flame Width	Fireline Intensity	Flame Length	Modified View Factor
			Applied Range	Measured								
Area	Class		degree range	degrees	degrees		K	metres	metres	kW/m	metres	% Reduction
1	Excluded cl 2.2.3.2(f)	80	-	-								
2	Excluded cl 2.2.3.2(e)	80	-	-								
3	(D) Scrub	80	Upslope or flat 0	flat 0	Default	Default	Default	Default	10	Default	26	Default
4	Excluded cl 2.2.3.2(a)	80	-	-								
5	(G) Grassland	80	Upslope or flat 0	flat 0								

Note 1: The values used to indicate levels of potential radiant heat transfer (from fire in bushfire prone vegetation to exposed elements at risk), will be stated in subsequent tables as either as a bushfire attack level (BAL) and/or as kilowatts per square metre (kW/m²), as relevant to the application of the value and the type and use of the element at risk.

Note 2: All data and information supporting the determination of the classifications and values stated in this table is presented in Appendix A. Where the values are stated as 'default' these are either the values stated in AS 3959:2018, Table B1 or the values calculated as intermediate or final outputs through application of the equations of the AS 3959:2018 BAL determination methodology. They are not values derived by the assessor.

Table 3.3: Vegetation separation distances corresponding to the stated levels of potential radiant heat transfer.

THE CALCULATED (SITE SPECIFIC) VEGETATION SEPARATION DISTANCES CORRESPONDING TO THE STATED LEVEL OF POTENTIAL RADIANT HEAT TRANSFER (METRES) ¹									
Vegetation Classification		Maximum Radiant Heat Transfer (Flux)						10 kW/m ²	2 kW/m ²
		>40 kW/m ²	40 kW/m ²	29 kW/m ²	19 kW/m ²	12.5 kW/m ²	N/A ²		
		Bushfire Attack Levels							
Area	Class	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW		
1	Excluded cl 2.2.3.2(f)	-	-	-	-	-	-	-	-
2	Excluded cl 2.2.3.2(e)	-	-	-	-	-	-	-	-
3	(D) Scrub	<8.4	8.4-<9.9	9.9-<12.1	12.1-<14.6	14.6-<100	>100	-	-
4	Excluded cl 2.2.3.2(a)	-	-	-	-	-	-	-	-
5	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<100	>100	-	-

Note 1: The calculated results are illustrated in Figure 3.2. All applied calculation input variables are presented in Table 3.2. A copy of the radiant heat calculator output for each area of classified vegetation is presented in Appendix A3.

Note 2: The BAL-LOW rating does not represent a maximum level of radiant heat transfer. The rating is applied when the separation distance is at least 100m from all classified vegetation except Grassland, for which 50m applies.

Figure 3.1
Classified Vegetation & Topography (Existing)

Lot 977 on Plan / Diagram 411195, Area:
 1619.53
 Nancarrow Way
 Ravenswood
 Shire of Murray

----- LEGEND -----

- Subject Site
 - Cadastral
 - Photo and Direction
 - Buildings
 - Hydrants
 - Vegetation Distance (m)
 - 150m Assessment Area
 - 100m Assessment Area
- Classified Vegetation**
- Woodland
 - Scrub
 - Grassland
 - Excluded 2,2,3,2 (e)
 - Excluded 2,2,3,2 (f)



Metres

----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map by: Simone Eaton 16-02-2026
 SCALE (A3): 1 : 1500

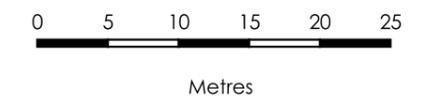


Figure 3.2
**Indicative 10m BAL-29
 Setback**

Lot 977 on Plan / Diagram 411195, Area:
 1619.53
 Nancarrow Way
 Ravenswood
 Shire of Murray

----- **LEGEND** -----

- Subject Site
- Cadastral
- Buildings**
- Building
- Managed Vegetation
- Indicative 10m BAL29 Setback
- Vegetation Distance (m)
- Classified Vegetation**
- Scrub
- Grassland
- Excluded 2,2,3,2 (e)
- Excluded 2,2,3,2 (f)



----- **LOCALITY** -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map by: Simone Eaton 19-02-2026
 SCALE (A3): 1 : 500



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.

4 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA (BPC)

EXPLANATORY INFORMATION

State Planning Policy 3.7 Bushfire (SPP 3.7) establishes policy outcomes (cl. 6) that "specify the role of planning and development in contributing to the overall objectives" of the policy.

The policy outcomes are incorporated into the four elements of the bushfire protection criteria established in the Planning for Bushfire Guidelines (Guidelines).

CONSEQUENTLY, TO SATISFY THE OBJECTIVES AND POLICY OUTCOMES OF SPP 3.7, A PLANNING PROPOSAL IN A DESIGNATED BUSHFIRE PRONE AREA IS REQUIRED TO DEMONSTRATE THAT COMPLIANCE WITH THE BUSHFIRE PROTECTION CRITERIA CAN BE ACHIEVED.

The Guidelines in Section 2.2.1 establish two pathways to demonstrate compliance:

1. The deemed to comply pathway - in which compliance is able to be demonstrated with all relevant acceptable solutions associated with each Element, for a specific planning stage or use; or
2. An alternative pathway when all relevant acceptable solutions cannot be fully achieved, which utilises either:
 - (a) The outcomes-based approach (established in SPP 3.7 cl. 6) alone; or
 - (b) A combination of the outcomes-based approach and the acceptable solutions.

For the subject planning proposal:

- The assessment applying the deemed to comply pathway assessment is presented in Section 5.3.
- When an assessment applying the alternative pathway is necessary, the required additional information is presented in Section 5.4.

4.1 Local Government Variations to Apply

EXPLANATORY INFORMATION

1. Local governments may add to or modify the acceptable solutions contained within the Guidelines to recognise special local or regional circumstances that reinforce the SPP 3.7 objectives and outcomes. This is achieved through regional or local variations that form part of a local planning strategy and/or local planning scheme via a scheme amendment or special control area.

This could include acceptable solutions that address topography, vegetation or climate to the satisfaction of the Western Australian Planning Commission (WAPC) that the modifications comply with the corresponding SPP 3.7 objectives and outcomes. (Planning for Bushfire Guidelines, s. 3.4, 2024).

2. Under the relevant state legislation (LPS Regulations 2015), SPP 3.7 does not apply to hosted or unhosted short-term rental accommodation. However, the local government under its Local Planning framework (i.e. Strategy / Scheme and Policy as applicable), may require that certain bushfire protection measures or variations to the measures (the bushfire protection criteria), established by SPP 3.7 and the Guidelines, are to be applied.

Endorsed regional or local variations to the acceptable solutions apply to the assessments against the Bushfire Protection Criteria for the planning proposal?

None known or identified

The proposed land use for hosted or unhosted short-term rental accommodation, and the local government requires certain bushfire protection measures, contained within the BPC, to be applied, that under the LPS Regulations 2015, would otherwise not be required?

N/A

4.2 Assessment Summary

PATHWAY APPLIED TO DEMONSTRATE ACHIEVING POLICY OUTCOMES OF SPP 3.7 BUSHFIRE ¹ INCLUDES SUMMARY OF THE PROPOSAL'S ASSESSMENT AGAINST THE BPC ACCEPTABLE SOLUTIONS			
DEVELOPMENT – CLASS 9 VULNERABLE USE BUILDINGS			
The Acceptable Solutions Corresponding to the Policy Outcomes of SPP 3.7 Bushfire as Incorporated into the Elements of the Bushfire Protection Criteria (Guidelines)	Acceptable Solutions Pathway	Alternative Pathway ²	
	Compliance Status	Outcomes-Based Approach Only	Combination of Pathways
ELEMENT 2: SITING AND DESIGN:	Fully Compliant		
A2.1 Siting and design	Fully Compliant		
A2.2 Asset Protection Zone (APZ)	Fully Compliant		
A2.3 Clearing of native vegetation	Fully Compliant		
A2.4 Landscape management plan	Fully Compliant		
A2.5 Onsite shelter (safer building) - schools	Not Applicable		
A2.6 Storage of hazardous, flammable and/or combustible materials	Not Applicable		
ELEMENT 3: VEHICULAR ACCESS:	Fully Compliant		
A3.1 Public roads	Fully Compliant		
A3.2 Access routes	Fully Compliant		
A3.3a No-through roads	Not Applicable		
A3.3b No-through roads technical requirements	Not Applicable		
A3.4 Emergency access way	Not Applicable		
A3.5 Fire service access route	Not Applicable		
A3.6 Internal vehicular access & private driveways	Not Applicable		
A3.7 Signage	Fully Compliant		
ELEMENT 4: WATER SUPPLY:	Fully Compliant		
A4.1 Water supply	Fully Compliant		
<p>Note 1: Achieving the objectives and policy outcomes of SPP 3.7 Bushfire can be demonstrated through either the acceptable solutions pathway, the outcomes- based approach only, or a combination of both pathways (refer to Guidelines s 2.2.1).</p> <p>Note 2: When applied, the required additional assessment details are provided in Section 5.4 of this BMP. The content and comprehensiveness of the assessment will vary dependant on the specific conditions of the broader landscape, the development site, its use and the degree to which any relevant acceptable solutions cannot be complied with.</p>			

4.3 BPC 8.1: Development – Class 9 Vulnerable Use Buildings - Acceptable Solutions Assessment

4.3.1 Element 2: Siting and Design

ELEMENT 2: SITING AND DESIGN (DEVELOPMENT – CLASS 9 VULNERABLE USE BUILDINGS)

IMPORTANT INFORMATION REGARDING ADDITIONAL BCA REQUIREMENTS

Be aware of the following when the proposed Class 9 vulnerable use building is required to comply with the bushfire resistance and additional requirements of the Building Code of Australia (BCA) contained within the National Construction Code 2022 (NCC 2022).

The Building Code of Australia is applied under the WA Building Act 2011/Building Regulations 2012. The BCA establishes that these buildings must have certain minimum separation distances from bushfire prone vegetation – with site specific conditions determining these distances.

The separation distances are significantly greater than the required minimum distances established by SPP 3.7/Guidelines under the Planning and Development Act 2005.

This BMP as a bushfire planning assessment is not required to determine the additional separation distances that are to apply to the subject planning proposal or its ability to comply with those requirements.

However, in consideration of the relevant provision in the LPS Regulations 2015 (see below), Bushfire Prone Planning is taking the approach of informing decision makers regarding the additional separations distances to be considered.

LPS Regulations 2015, Schedule 2, Part 10A – Bushfire risk management, cl. 78E (1) – “In considering an application for development approval for development to which this Part applies, the local government is to have regard to the bushfire resistant construction requirements of the Building Code”.

The separation distances from classified vegetation established by the BCA, when applicable to the subject planning proposal, are presented in this BMP as an addendum. Refer also to information provided in Appendix B3 of this BMP.

EXPLANATORY INFORMATION

Refer to Appendices B1 and B3 of this BMP for additional information and to *the bushfire protection measure implementation checklist in Section 6 for the APZ dimensions applicable to this planning proposal.*

The Planning Assessment and the APZ

This assessment is a 'planning assessment' being conducted for planning approval purposes only. All details of acceptable solution requirements are established in the Planning for Bushfire Guidelines (Guidelines) – WA Department of Planning, Lands and Heritage (DPLH, as amended).

Note the assessment is not conducted for building approval purposes. The derivation of 'determined' BAL ratings for building permit applications is not the intended outcome of this planning assessment. However, in limited situations, the presented indicative BAL rating might also be considered as 'determined'.

To comply with the relevant acceptable solutions contained in the 'Bushfire Planning Guidelines', the subject planning proposal must demonstrate that the required minimum sized asset protection zone (APZ) - subject to location constraints and allowances established by the Guidelines - can be installed surrounding a habitable or specified building.

Approved BMP's and the APZ Dimensions to be Implemented

An approved BMP, unless stated otherwise, is only approving the installation of an APZ comprised of:

- The minimum dimensions that ensure the radiant heat impact of a bushfire (on building works) does not exceed 29 kW/m² (BAL-29); or
- For specific 'vulnerable' land uses, the minimum dimensions that ensures the radiant heat impact of a bushfire (on building works) does not exceed the level of radiant heat exposure stated in the applicable acceptable solution; or
- The specific minimum dimensions that may be applied through the application of an outcomes-based approach.

Consequently, the 'minimum' dimensions of the approved APZ are also the 'maximum' approved dimensions when installation of the APZ will require the modification/removal of native vegetation. Installing a larger dimensioned APZ, to lower the determined BAL rating of specific building works, will need additional approval from the relevant planning authority.

The following bushfire planning policy and guidance potentially limit installed APZ dimensions:

- SPP 3.7 Bushfire, Policy Objectives, cl. 5.5 states – “Prioritise the retention of native vegetation for biodiversity conservation, environmental protection and landscape amenity.
- SPP 3.7 Bushfire, Policy Outcomes, cl. 6.2 - establishes that clearing of native vegetation is to be avoided or minimised in managing or mitigating bushfire risk.
- The Guidelines, Appendix B2, B.2.1 states - “clearing or modification of native vegetation to reduce the radiant heat impact below 29 kW/m² is generally not supported.”

The Outcome of State Planning Policy 3.7 Bushfire (and the BPC) to be Achieved	
O2	Ensure siting and design solutions: <ul style="list-style-type: none"> • Manage or mitigate the bushfire risk to people, property and infrastructure; and • Avoid, or where unavoidable, minimises the clearing of native vegetation. (SPP 3.7, 6.2)
E2	Acceptable Solutions Pathway - Compliance Statement
	The planning proposal is fully compliant with all applicable acceptable solutions and therefore achieves the required outcomes of this element.
	Alternative Pathway Applied to Demonstrate Ability to Achieve SPP 3.7 Outcomes
	N/A
ACCEPTABLE SOLUTIONS - ASSESSMENT STATEMENTS	
Check Box Legend: <input checked="" type="checkbox"/> Relevant & met <input checked="" type="checkbox"/> Relevant & not met <input type="checkbox"/> Not relevant	
A2.1 Siting and design	Applicable: Yes Compliant: Yes
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Every habitable building achieves a radiant heat impact not exceeding 29 kW/m ² (BAL-29).
<u>Assessment Supporting Details:</u> A formal agreement has been established with the local government for the management of a 6m strip of vegetation on their land, Lot 976 Nancarrow Way Ravenswood. <29kWm ² exposure on the proposed building can be achieved. Refer to Addendum 2.	

A2.2 Asset Protection Zone (APZ)	Applicable:	Yes	Compliant:	Yes
<p>Where a habitable building(s) cannot be wholly within an area with a radiant heat impact not exceeding 29 kW/m² (BAL-29) in its pre-development state, an indicative APZ is to be provided and meet the following requirements for width, location and management:</p> <p><input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> APZ Width: The APZ, when measured from any external wall or supporting post or column, is of sufficient size to ensure the radiant heat impact of a bushfire does not exceed 29 kW/m² (BAL-29) to any part of the building, in all circumstances.</p> <p><input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> APZ Location – Option 1: The indicative 'Planning BAL-29' APZ can be contained solely within the boundaries of the lot.</p> <p><input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> APZ Location – Option 2: The indicative 'Planning BAL-29' APZ cannot be contained solely within the boundaries of the lot. However, the relevant vegetation on the adjoining land / lot(s) is, and will continue to be, on an ongoing basis in perpetuity, low threat as per:</p> <ul style="list-style-type: none"> • Clause 2.2.3.2 of AS 3959 (including non-vegetated land such as a sealed or unsealed road, or a water body); or • The requirements of the Guidelines Appendix B.2, Table 9 – APZ technical requirements; or • The alternative standard in the local planning scheme (when it exists). <p><input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> APZ Management: The APZ is (or can and will be) managed in accordance with the requirements established in the Guidelines, Appendix B.2 or the alternative standard in the gazetted local planning scheme (when it exists).</p>				
<p><u>Assessment Supporting Details:</u></p> <p>The determined APZ satisfies the intent of AS 3959 and SPP 3.7 to ensure habitable buildings are protected from radiant heat impacts exceeding 29 kW/m².</p> <p>Where the APZ extends beyond the lot boundary, evidence of ongoing low-threat management of the adjoining land is required. Refer to agreement noted in Addendum 2.</p>				
A2.3 Clearing of native vegetation	Applicable:	Yes	Compliant:	Yes
<p><input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> The development avoids, or where unavoidable, minimises the clearing of native vegetation.</p>				
<p><u>Assessment Supporting Details:</u> There are no clearing requirements. Subject site is already cleared of vegetation.</p>				
A2.4 Landscape management plan	Applicable:	Yes	Compliant:	Yes
<p><input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> A landscape management plan has been prepared to identify ongoing onsite vegetation management.</p>				
<p><u>Assessment Supporting Details:</u> A landscape management plan has been developed. Refer to Addendum 3.</p>				
A2.5 Onsite shelter (safer building) - schools	Applicable:	No	Compliant:	-
<p><input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> An on-site shelter (safer building) is provided in accordance with the Principal's guide to bushfire: Prepare your school for the bushfire season (Department of Education: October 2022).</p>				
<p><u>Assessment Supporting Details:</u> None required.</p>				

A2.6 Storage of hazardous, flammable and/or combustible materials	Applicable:	No	Compliant:	-
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p>The proposed land use does not include the storage of hazardous, flammable and/or combustible materials as part of its ongoing day to day operations. Therefore, A2.6 is not applicable to the subject planning proposal.</p>			
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p>The proposed land use will include the storage of hazardous, flammable and/or combustible materials as part of its ongoing day to day operations. These will be a quantity that trigger the requirement for a licence under the <i>Dangerous Goods Safety Act 2004</i> or the <i>Environmental Protection Act 1986</i>. Consequently, the requirements under the above legislation will establish the storage requirements and therefore A2.6 is not applicable to the subject planning proposal.</p>			
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p>The proposed land use will include the storage of hazardous, flammable and/or combustible materials as part of its ongoing day to day operations. These are not at a quantity that trigger the requirement for a licence under the <i>Dangerous Goods Safety Act 2004</i> or the <i>Environmental Protection Act 1986</i>. Consequently, the following established storage area requirements can and will be applied:</p> <ul style="list-style-type: none"> <li data-bbox="296 824 1479 857">• The storage area is subject to a radiant heat impact not exceeding 29 kW/m² (BAL-29); and <li data-bbox="296 904 1479 1003">• The construction of the storage area is non-combustible and shields the materials to reduce their exposure to radiant heat from the bushfire to levels significantly lower than 29 kW/m² and prevents the entry of debris and embers; and <li data-bbox="296 1050 1479 1111">• The construction of the storage area limits to the degree necessary and practical, the escape of sources of ignition from the stored materials into bushfire prone vegetation. 			
<p><u>Assessment Supporting Details:</u> Not applicable.</p>				

4.3.2 Element 3: Vehicular Access

ELEMENT 3: VEHICULAR ACCESS (DEVELOPMENT – CLASS 9 VULNERABLE USE BUILDINGS)	
<p>All details of acceptable solution requirements are established in the Planning for Bushfire Guidelines (Guidelines) – WA Department of Planning, Lands and Heritage (DPLH, as amended). When relevant, the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (DPLH, 2021 Rev B), is also referenced.</p> <p>The technical construction requirements for access types and components are established in the Guidelines Appendix B.3, Table 10 (certain information is copied and presented in Appendix C of this BMP). The local government will advise the proponent where different requirements are to apply and when any additional specifications such as those for signage and gates are to apply. These are included as an appendix if requested by the local government.</p> <p>Note:</p> <p>The following understanding of what constitutes a 'road', and the stated definitions can be important considerations for assessments against an acceptable solution for Element 3.</p> <ul style="list-style-type: none"> Guidelines Appendix B3: Vehicular Access, identifies a 'road' as being either a public road (that includes a no-through road) or a perimeter road. All other access types (i.e. emergency access ways, fire service access routes, battle-axes and private driveways) are considered a different class of access i.e. they are not 'roads'. SPP 3.7 defines 'no-through road' as "a cul-de-sac or dead end road". SPP 3.7 defines 'two-way access' as "vehicular access from a site in two different directions to at least two different suitable destinations". This allows for required access to potentially be provided by an emergency access way. 	
The Outcome of State Planning Policy 3.7 Bushfire (and the BPC) to be Achieved	
O3	<p>Ensure the design and capacity of vehicular access and egress provide:</p> <ul style="list-style-type: none"> For efficient and effective evacuation to a suitable destination(s); and/or As a contingency measure for vulnerable land uses, an on-site shelter, where demonstrated appropriate, as a last resort option. (SPP 3.7, 6.3)
Acceptable Solutions Pathway - Compliance Statement	
E3	The planning proposal is fully compliant with all applicable acceptable solutions and therefore achieves the required outcomes of this element.
Alternative Pathway Applied to Demonstrate Ability to Achieve SPP 3.7 Outcomes	
N/A	
ACCEPTABLE SOLUTIONS - ASSESSMENT STATEMENTS	
<p>Check Box Legend: <input checked="" type="checkbox"/> Relevant & met <input checked="" type="checkbox"/> Relevant & not met <input type="checkbox"/> Not relevant</p>	

A3.1 Public roads		Applicable:	Yes	Compliant:	Yes
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Public roads meet (or can and will meet) the technical requirements for minimum vertical clearance (4.5 metres) and minimum weight capacity (15 tonnes - includes bridges, culverts).		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Public roads meet (or can and will meet) the technical requirement <u>recommended</u> in the Guidelines in Appendix B3, B3.1 for a minimum horizontal clearance of 6 metres.		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Public road technical requirements for minimum horizontal clearance, gradients and curves should be in accordance with the class of road as specified in the Public Works Engineering Australasia (IPWEA) subdivision guidelines, Liveable Neighbourhoods, Austroads Standards, any applicable or relevant Main Roads standards, supplements, policies and any applicable or relevant local government standards or policies.		
<u>Assessment Supporting Details:</u> None required.					
A3.2 Access routes		Applicable:	Yes	Compliant:	Yes
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	The subject site is in Area 1 (Urban) (Map of BPA). Public road access, with all-weather surfaces, is provided to at least one suitable destination.		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The subject site is in Area 2 (Map of BPA). Public road access, with all-weather surfaces, is provided in two different directions, to two different suitable destinations.		
<u>Assessment Supporting Details:</u> None required.					
A3.3a No-through roads		Applicable:	No	Compliant:	-
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	A3.3a is not applicable to the subject planning proposal because the planning proposal is sited in Area 1 (Urban) (Map of BPA), and there is no limitation on no-through road lengths.		
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	A3.3a is not applicable to the subject planning proposal because access to the subject site is via a private driveway from a public road providing two-way access. Consequently, vehicular access to the subject site does not have a no-through road component.		
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	The subject site is in Area 2 (Map of BPA): Access to the subject site is via a no-through public road that does not exceed the established maximum of 200 metres in length from the subject site boundary to an intersection where two-way access is provided.		
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<p>The subject site is in Area 2 (Map of BPA): Access to the subject site / lot(s) is via a no-through public road that exceeds the established maximum of 200 metres in length from the proposed lot(s) boundary to an intersection where two-way access is provided.</p> <p>It is demonstrated that there are site constraints and/or that there are no alternative design options to achieve the 200 metre maximum length.</p> <p>Compliant two-way access within 200 metres from the proposed lot(s) boundary will be established through the provision (or existence) of a compliant emergency access way through the application of acceptable solution A3.4: Emergency Access Way.</p>		
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	The subject site is in Area 2 (Map of BPA): Access to the subject site / lot(s) is via a no-through public road that exceeds the established maximum of 200 metres in length from the proposed lot(s) boundary to an intersection where two-way access is provided.		

However, the additional road length can be considered to satisfy the acceptable solution as the following established requirements can be met:

- It is demonstrated that that an alternative access, including an emergency access way, cannot be provided due to site constraints; and
- The no-through road travels towards a suitable destination; and
- The balance of the no-through road that is greater than 200 metres from the subject site is:
 - o Wholly within a residential built-out area; or
 - o Wholly within an area designated Area 1 (Urban) on Map of BPA; or
 - o Potentially subject to radiant heat levels from adjacent bushfire prone vegetation not exceeding 12.5 kW/m² / BAL-LOW (Guidelines Figure 29).

Assessment Supporting Details: None required.

A3.3b No-through roads technical requirements

Applicable:

No

Compliant:

-

- A3.3b is not applicable to the subject planning proposal because the assessment against A3.3a has established that vehicular access to the site does not have a no-through road component.
- The no-through road meets (or can and will meet) the public road technical requirements for minimum vertical clearance (4.5 metres) and minimum weight capacity (15 tonnes - includes bridges, culverts).
- The no-through road meets (or can and will meet) the public road technical requirement recommended in the Guidelines in Appendix B3, B3.1 for a minimum horizontal clearance of 6 metres.
- The no-through road (i.e. public road) technical requirements for minimum horizontal clearance (excluding perimeter road), gradients and curves should be in accordance with the class of road as specified in the Public Works Engineering Australasia (IPWEA) subdivision guidelines, Liveable Neighbourhoods, Austroads Standards, any applicable or relevant Main Roads standards, supplements, policies and any applicable or relevant local government standards or policies
- The turnaround area/head meets (or can and will meet) the design requirements established by the Guidelines, Figure 30.

Assessment Supporting Details: None required.

A3.4 Emergency access way		Applicable: No	Compliant: -
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A3.4 is not applicable to the subject planning proposal because it has been assessed as compliant with A3.2 (and A3.3a and A3.3b when applicable), and an emergency access way is not required.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	A3.4 is applicable to the subject planning proposal because an emergency access way currently exists and has been part of the subject planning proposal's ability to comply with A3.2. Consequently, it will apply with regard to meeting (or being able to meet), the specified technical requirements and ongoing management requirements, rather than its installation.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The requirements established for acceptable no-through road access to the subject site in A3.2 and A3.3a and/or A3.3b cannot be achieved. An emergency access way (EAW) is provided as the alternative access and can be considered as an acceptable solution, when the following established requirements are met:
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> It is demonstrated that site constraints prevent the requirements of A3.2 and A3.3 being met; and
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> The access way is no more than 500 metres in length, provides a through connection to a public road connecting to a public road network; and
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> The access way meets (or can and will meet) the technical requirements (Guidelines Appendix B3, Table 10) for minimum horizontal clearance (Map of BPA Area 1 (Urban) = 6 metres and Area 2 = 10 metres), minimum vertical clearance (4.5 metres), minimum weight capacity (15 tonnes - includes bridges, culverts) and minimum inner radius of road curves (8.5 metres); and
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> The access way meets (or can and will meet) the technical requirements (Guidelines Appendix B3, Table 10) for crossfalls and gradients for different surfaces and dips; and
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> The access way will be signposted and, if gated, gates will open for the whole carriageway width and remain unlocked; and
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> The proponent has obtained consent from the local government, that it will accept care, control and management responsibilities for the emergency access way.
Assessment Supporting Details: None required.			
A3.5 Fire service access route		Applicable: No	Compliant: -
Note To Decision Makers			
DPLH officer level advice has been received by BPP (email 18 November 2024) stating that this acceptable solution is applicable to a development application planning proposal when "it is necessary and serves a purpose" i.e. contributes meaningfully to mitigating risks associated with a bushfire event.			
The DPLH response indicates a flexibility with the application of this acceptable solution that typically does not exist with other acceptable solutions for development applications (other than access route signage).			
Consequently, what should apply as suitable firefighter access, in the opinion of the bushfire consultant, is presented as part of this acceptable solution assessment and there is no need to apply an outcomes-based assessment.			
Note the following that have also been considered in determining this approach:			
<ul style="list-style-type: none"> The wording of this acceptable solution (Guidelines BPC 8 A3.6) includes "Where <u>proposed</u> lots adjoin classified vegetation". This is better aligned with application to subdivision proposals than a single existing lot and a development application; 			

- The Guidelines explanatory note B3.6 establishes that the fire service access route (FSAR) “can be provided as either an easement in gross over private or Crown land or ceded to the Crown as a reserve. In both approaches management of the FSAR is by the local government as the grantee of the easement or management body of the reserve”.

This explanation indicates the application of this acceptable solution is better aligned with its application to subdivision proposals than a development application involving a single existing lot; and

- The management and technical requirements for a FSAR are likely to be impractical and/or excessive for development on the majority of individual lots.

Where the bushfire consultant's assessment establishes that suitable firefighter access to adjoining classified vegetation (excluding Class G Grassland) is “necessary and serves a purpose”, this assessment will identify that the acceptable solution is applicable and the appropriate requirements. The following is considered:

- If suitable firefighter access is required and currently exists or not;
- If suitable firefighter access is required and does not currently exist, the necessary physical requirements must give due regard to the use and scale of proposed development, the size of the lot and the identified bushfire hazard threat levels; and
- When is it appropriate to establish firefighter access that complies with the technical requirements for a FSAR (Guidelines Table 10).

A3.5 is not applicable to the subject planning proposal because the subject lot(s) do not adjoin classified vegetation or only adjoin Class G Grassland (classified under AS 3959).

A3.5 is not applicable to the subject planning proposal because the provision of suitable firefighter access within or external to the subject lot(s) is not necessary and would serve no purpose. It is not a practical response to any identified bushfire hazard associated with the subject planning proposal.

The subject lot(s) adjoin classified vegetation that is not Class G Grassland (classified under AS 3959). Suitable firefighter access, in the opinion of the bushfire consultant, is considered 'necessary and serves a purpose'.

Suitable firefighter access to the classified vegetation is currently available. This firefighter access achieves the intent of the acceptable solution but applies a more pragmatic design than that established by the FSAR technical requirements and is aligned with the specifics of the planning proposal's site and use.

The requirements for maintenance of the defined firefighter access are referenced in the landowner responsibility checklists of this BMP.

The subject lot(s) adjoin classified vegetation that is not Class G Grassland (classified under AS 3959). Suitable firefighter access, in the opinion of the bushfire consultant, is considered 'necessary and serves a purpose'.

Suitable firefighter access to the classified vegetation is currently not available.

The physical requirements of the suitable firefighter access are established by the bushfire consultant within the assessment supporting details below (these will align at a minimum with typical 'firebreak' requirements when installed for firefighter access).

This firefighter access achieves the intent of the acceptable solution but applies a more pragmatic design than that established by the FSAR technical requirements and aligned with the specifics of the planning proposal's site and use.

The requirements for implementation and maintenance of the firefighter access are referenced in the landowner responsibility checklists of this BMP.

The subject lot(s) adjoin classified vegetation that is not Class G Grassland (classified under AS 3959). A fire service access route is to be provided for firefighter access to this vegetation. It can and will meet the following established requirements:

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<ul style="list-style-type: none"> The fire service access route is a through-route with no dead-ends, no further than 500 metres from a public road and will be signposted; and
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<ul style="list-style-type: none"> The fire service access route meets (or can and will meet) the technical requirements (Guidelines Appendix B3, Table 10) for minimum horizontal clearance (Map of BPA Area 1 (Urban) = 6 metres and Area 2 = 10 metres), minimum vertical clearance (4.5 metres), minimum weight capacity (15 tonnes - includes bridges, culverts) and minimum inner radius of road curves (8.5 metres); and
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<ul style="list-style-type: none"> The fire service access route meets (or can and will meet) the technical requirements (Guidelines Appendix B3, Table 10) for crossfalls and gradients for different surfaces and dips; and
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<ul style="list-style-type: none"> When gated, gates will open the whole carriageway width and can be locked by the local government and/or the emergency services, when keys are provided for each gate; and
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<ul style="list-style-type: none"> The proponent has obtained consent from the local government, that it will accept care, control and management responsibilities for the fire service access route (unless it is a Crown reserve managed by another entity).

Assessment Supporting Details: None required.

A3.6 Internal vehicular access and private driveways	Applicable:	No	Compliant:	-
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<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A3.6 is not applicable to the subject planning proposal because the proposal does not contain internal vehicular access and private driveways longer than 70 metres.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	There are internal vehicular access and private driveways longer than 70 metres and the subject site meets (or can and will meet) all the following established requirements:
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<ul style="list-style-type: none"> The private driveway meets (or can and will meet) the technical requirements (Guidelines Appendix B3, Table 10) for minimum horizontal clearance (6 metres) or where not required to comply with the Guidelines width, it meets the requirements of the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision; and
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<ul style="list-style-type: none"> The private driveway meets (or can and will meet) the technical requirements (Guidelines Appendix B3, Table 10) for minimum vertical clearance (4.5 metres), minimum weight capacity (15 tonnes - includes bridges, culverts) and minimum inner radius of road curves (8.5 metres); and
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<ul style="list-style-type: none"> The private driveway meets (or can and will meet) the technical requirements (Guidelines Appendix B3, Table 10) for the gradients of different surfaces and dips; and
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<ul style="list-style-type: none"> Passing bays are (or can and will be) installed every 200 metres with a minimum length of 20 metres and a minimum additional carriageway width of 2 metres i.e. the combined carriageway width of the passing bay and constructed private driveway will be a minimum 6 metres; and
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<ul style="list-style-type: none"> The turnaround area/head meets (or can and will meet) the design and location (within 30m of main habitable building) requirements established by the Guidelines (refer to Figures 30 and 38).

Assessment Supporting Details: None required.

A3.7 Signage	Applicable:	Yes	Compliant:	Yes
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Note To Decision Makers

DPLH officer level advice has been received by BPP (email 18 November 2024) stating that this acceptable solution is applicable to a development application planning proposal when “it is necessary and serves a purpose” i.e. contributes meaningfully to mitigating risks associated with a bushfire event.

The DPLH response indicates a flexibility with the application of this acceptable solution that typically does not exist with other acceptable solutions for development applications (other than a fire service access route).

There are development application situations where this acceptable solution is unlikely to serve a purpose and would not contribute meaningfully to the reduction of bushfire risk.

This is likely to be the case for situations which have attributes such as; relatively small lot size, no or limited length no-through roads, good public road access network (surfaces, widths, gradients, visibility, connectivity etc), multiple suitable destinations easily, good road signage or in a built out areas or situations where persons are likely to be familiar with their surrounds.

Consequently, should the described signage requirements of the acceptable solution, in the opinion of the bushfire consultant, serve no purpose – justification for this position is presented as part of this acceptable solution assessment and there is no need to apply an outcomes-based assessment.

A3.8 is not applicable to the subject planning proposal because the provision of signage is, in the opinion of the bushfire consultant, not necessary and would serve no purpose. Signage would not meaningfully contribute to mitigating risks associated with a bushfire event, for the subject proposal.

Signage can and will be provided within the subject site, advising of where each access route travels to and the distance and general information on what to do in the event of a bushfire.

Assessment Supporting Details:

Support for Occupants and Visitors

Visitors to vulnerable land uses (e.g., childcare), may be unfamiliar with the site layout and access points. Signage informs them of the location of all access routes, their direction, distance, and evacuation procedures, improving the likelihood of safe egress.

Alignment with SPP 3.7 and Guidelines

SPP 3.7 identifies evacuation planning and safe access as key components of bushfire risk mitigation.

The Planning for Bushfire Guidelines (Appendix C.2) recommend clearly marked routes and communication measures for people on site during a bushfire. Signage directly supports this outcome.

Facilitation of Emergency Response

Signage assists fire and emergency services in navigating the site efficiently, particularly under stressful conditions or reduced visibility. This improves the speed and effectiveness of fire suppression and evacuation efforts.

Mitigation of Human Error and Risk

During a bushfire event, occupants may panic or become disoriented. Signage reduces the risk of taking unsafe routes, entering hazardous areas, or delaying evacuation, which is critical for vulnerable users.

4.3.3 Element 4: Water Supply

ELEMENT 4: WATER SUPPLY (DEVELOPMENT – CLASS 9 VULNERABLE USE BUILDINGS)	
All details of acceptable solution requirements are established in the Planning for Bushfire Guidelines (Guidelines) – WA Department of Planning, Lands and Heritage (DPLH, as amended). When relevant, the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (DPLH, 2021 Rev B), is also referenced.	
O4	The Outcome of State Planning Policy 3.7 Bushfire (and the BPC) to be Achieved
O4	Ensure that sufficient water is available and accessible for emergency services, to enable people, property and infrastructure to be defended from bushfire. (SPP 3.7, 6.4)
E4	Acceptable Solutions Pathway - Compliance Statement
E4	The planning proposal is fully compliant with all applicable acceptable solutions and therefore achieves the required outcomes of this element.
E4	Alternative Pathway Applied to Demonstrate Ability to Achieve SPP 3.7 Outcomes
E4	N/A
ACCEPTABLE SOLUTIONS - ASSESSMENT STATEMENTS	
Check Box Legend: <input checked="" type="checkbox"/> Relevant & met <input checked="" type="checkbox"/> Relevant & not met <input type="checkbox"/> Not relevant	
A4.1 Water supply	Applicable: Yes Compliant: Yes
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Evidence is provided that a reticulated water supply, available for firefighting purposes, exists or can be provided. Hydrant connection(s) will be provided in accordance with the specifications established by the relevant water supply authority (refer also to hydrant location information in Appendix D of this BMP).
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> The BPC Explanatory Notes in Appendix B.4: Water Supply introduce additional measure as best practice but voluntary. The following measure is adopted by the planning proposal: The subject site will have a <u>reticulated</u> water supply but is in an area designated as Area 2 on the Map of BPA and/or the local government area has known issues with water supply or pressure. Water supply tank(s) and fittings dedicated to firefighting purposes (noting that combining drinking and firefighting uses of water is not recommended and may be contrary to relevant provisions), that satisfy the construction and design requirements established in the Guidelines, Appendix B4: Water Supply, will be provided.
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> The BPC Explanatory Notes in Appendix B.4: Water Supply introduce additional measure as best practice but voluntary. The following measure is adopted by the planning proposal: The subject site is serviced by reticulated water. However, the distance from the public road (along which the fire hydrant is located) to the farthest part of the habitable building is greater than 70 metres, exceeding the reach of a hose reel. A water supply tank will be installed within the lot.
<u>Assessment Supporting Details:</u>	
A hydrant for access to the reticulated water supply is located directly opposite the proposed facility on Nancarrow Way.	

4.4 Required Additional Bushfire Protection Measures

EXPLANATORY INFORMATION

The following bushfire protection measures are additional to, or a variation of, those established by the relevant acceptable solutions of the bushfire protection criteria and applied to the planning proposal within Section 5.3 of this BMP.

The intent of their application is to improve the bushfire performance of the future development/use and reduce, for persons and property, the residual levels of the risks associated with a bushfire event.

The development of these additional and/or varied bushfire protection measures can originate from the following sources (not exhaustive). Their application to the subject planning proposal is indicated below and detailed within this section.

The implementation and maintenance responsibility for these additional protection measures is established in Section 6: Responsibility Checklists.

Source of the Required Additional Bushfire Protection Measures	Applicable to the Subject Planning Proposal
1. When the assessments within the BMP have applied an outcomes-based approach and established additional protection measures.	No
2. The operational documents generated through the process of developing a Bushfire Risk Report (Assessment and Management).	No
3. The operational documents generated through the process of developing a Bushfire Emergency Plan.	Yes
4. From a local government including: a) Variations to acceptable solutions; and/or b) Additional protection measures to be implemented, including through 'Conditions' which may be applied to a 'Planning Approval' or a 'Notice of Determination.	Yes
5. Any additional bushfire planning guidance documents or position statements issued by the WA Department of Planning, Lands and Heritage.	No
6. The application of a radiant heat barrier.	No

Additional protection measure:

THE REQUIREMENT FOR AND SUITABILITY OF ACCESS FOR EVACUATION TO A SUITABLE DESTINATION

Demonstrate availability of access to facilitate site evacuation – establish the implementation and maintenance requirements (routes and technical standards). Or demonstrate why not possible /practical.

Demonstrate site is designed to ensure vehicular access and traffic management allow for vehicles to quickly evacuate the site in the event of a bushfire

Evacuation not possible – staying on site may be the best option

Primary and secondary public road access routes to and from the site have been identified and comply with the Shire of Murray road standards and emergency access requirements.

Traffic management has been considered to ensure safe and efficient egress for occupants in the event of a bushfire.

Where evacuation may not be fully practical (as this is a childcare centre), residual risk is managed through site design, building construction (BAL-29), and designated safe areas.

THE REQUIREMENT FOR AND ABILITY TO PROVIDE A SUITABLE ONSITE SHELTER

When considered necessary, it is demonstrated that there are suitable options for onsite shelter in the event of a bushfire. This may include the use of bushfire construction solutions applying design and materials to increase bushfire resilience (this includes the non-combustible envelope approach of the NS 300 2021 Standard).

Refer below: Bushfire Emergency Plan

THE REQUIREMENT FOR A BUSHFIRE EMERGENCY PLAN

Establishes the requirement, or otherwise, for the preparation of a bushfire emergency plan to be submitted with the BMP.

A site-specific Bushfire Emergency Plan will be prepared in accordance with SPP 3.7 and DFES guidance.

The expectation is that children and staff can be safely evacuated in the event of a bushfire. Sheltering in place is proposed as a contingency measure and must adequately protect occupants from radiant heat, flame contact and ember attack, and compliant with AS3959:2018 construction standards.

The BEP will include:

- Evacuation procedures;
- Responsibilities of staff and occupants;
- Location of safe refuge areas and egress routes; and
- Communication protocols with emergency services.

THE REQUIREMENT FOR A LANDSCAPE MANAGEMENT PLAN (ONSITE VEGETATION)

Establishes the requirement, or otherwise, for the preparation of a landscape management plan to be submitted with the BMP. This might be considered when its design and application is required to additionally reduce the exposure of persons and property to potential bushfire impacts, when compared to implementation of an asset protection zone in accordance BPC 7, A2.2 (Guidelines).

A Landscape Management Plan (LMP) will be prepared and will guide the management of vegetation and fuel loads on-site, including:

- The maintenance of Asset Protection Zones (APZs);
- Ensuring areas surrounding the building are in a low bushfire threat state; and
- Outline long-term obligations for vegetation maintenance to support ongoing safety.

5 RESPONSIBILITY CHECKLISTS

EXPLANATORY INFORMATION

This section of the BMP sets out the responsibilities of the relevant entity or person for:

- The initial implementation of the required bushfire protection measures and their timing; and
- The ongoing maintenance of the required bushfire protection measures to ensure their continued effectiveness.

Note: Protection measures that may be recommended by the bushfire consultant in the BMP section titled ‘Additional Recommended Bushfire Protection Measures’ are not included in the Responsibility Checklists (at least initially).

The reason for this is the additional measure(s) are either:

- Provided as additional risk management advice to the proponent and it is up to them to choose to apply; or
- Part of an outcomes-based approach being applied to satisfy the required outcomes of SPP 3.7. Consequently, the need for their application (which would create a responsibility) is currently subject to assessment and approval by the decision maker.

When their application is established by planning approval, the responsibility checklists in this BMP will be required to be updated.

5.1 Protection Measure Implementation Checklist

TABLE 5.1
PROPONENT/LANDOWNER RESPONSIBILITIES PRIOR TO SALE/OCCUPANCY/OPERATION

No.	IMPLEMENTATION OF BUSHFIRE PROTECTION MEASURES Measures Established Under SPP 3.7 / Guidelines																																				
1	<p>Install an Asset Protection Zone (APZ) surrounding habitable buildings. It must:</p> <ol style="list-style-type: none"> 1. Consist of non-vegetated areas and low bushfire threat vegetation, able to be maintained in perpetuity in a low threat state, by complying with the established APZ technical requirements (refer to the Guidelines Appendix B2 and Appendix B3 of this BMP); and 2. Be located within the boundaries of the lot except for any allowable variances allowed and discussed in the assessment against the bushfire protection criteria in Section 5, Element 2: Siting and design, and the relevant APZ acceptable solution. (Refer also to the illustrated APZ on the Property Bushfire Management Statement in Section 6.3); and <ul style="list-style-type: none"> • Have dimensions equal to the minimum distances corresponding to the BAL-29 rating as these are the distances approved for implementation when this BMP is approved by the decision maker (refer to the insert table below for the BAL-29 dimensions). <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="7" style="text-align: center;">THE MINIMUM (SITE SPECIFIC) VEGETATION SEPARATION DISTANCES ESTABLISHING APZ DIMENSIONS ¹</th> </tr> <tr> <th rowspan="2" style="text-align: center;">Building / Structure</th> <th colspan="2" style="text-align: center;">Vegetation Classification ²</th> <th colspan="4" style="text-align: center;">Minimum Distances (metres) Corresponding to Potential Bushfire Impact</th> </tr> <tr> <th style="text-align: center;">Area / Class</th> <th></th> <th style="text-align: center;">2 kW/m²</th> <th style="text-align: center;">10 kW/m²</th> <th style="text-align: center;">BAL12.5</th> <th style="text-align: center;">BAL-19</th> <th style="text-align: center;">BAL-29</th> </tr> </thead> <tbody> <tr> <td rowspan="2" style="text-align: center;">Proposed building</td> <td style="text-align: center;">3</td> <td style="text-align: center;">(D) Scrub</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">14.6m</td> <td style="text-align: center;">12.1m</td> <td style="text-align: center;">10m</td> </tr> <tr> <td style="text-align: center;">5</td> <td style="text-align: center;">(G) Grassland</td> <td></td> <td></td> <td style="text-align: center;">17m</td> <td style="text-align: center;">12m</td> <td style="text-align: center;">8m</td> </tr> </tbody> </table> <p>Note 1: Refer to the Vegetation and Topography Map in Section 3.2.4</p>	THE MINIMUM (SITE SPECIFIC) VEGETATION SEPARATION DISTANCES ESTABLISHING APZ DIMENSIONS ¹							Building / Structure	Vegetation Classification ²		Minimum Distances (metres) Corresponding to Potential Bushfire Impact				Area / Class		2 kW/m ²	10 kW/m ²	BAL12.5	BAL-19	BAL-29	Proposed building	3	(D) Scrub	-	-	14.6m	12.1m	10m	5	(G) Grassland			17m	12m	8m
THE MINIMUM (SITE SPECIFIC) VEGETATION SEPARATION DISTANCES ESTABLISHING APZ DIMENSIONS ¹																																					
Building / Structure	Vegetation Classification ²		Minimum Distances (metres) Corresponding to Potential Bushfire Impact																																		
	Area / Class		2 kW/m ²	10 kW/m ²	BAL12.5	BAL-19	BAL-29																														
Proposed building	3	(D) Scrub	-	-	14.6m	12.1m	10m																														
	5	(G) Grassland			17m	12m	8m																														

2	<p>The development is a 'vulnerable land use'. Ensure the required signage is provided within the subject site, advising of where each access route travels to and the distance and general information on what to do in the event of a bushfire. Comply with the site specific requirements established in the BMP at Element 3: Vehicular access, A3.7 Signage.</p>
3	<p>A purchaser, occupier and/or operator of the site must be made aware of the existence of this approved BMP and provided with access to a copy and be informed of their ongoing responsibilities it contains.</p>
4	<p>The development is a 'vulnerable land use', and a Bushfire Emergency Plan (BEP) has been produced for site operations. Complete all relevant actions contained within the 'Site Preparation Procedure'.</p>
5	<p>The development is a 'vulnerable land use', and a Landscape Management Plan (LMP) has been prepared for site operations. Ensure the purchaser, occupier and/or operator of the site is made aware of the existence of the LMP and provided with access to a copy.</p>
<p>IMPLEMENTATION OF BUSHFIRE PROTECTION MEASURES</p> <p>Measures Established by this BMP as a Required Additional Measure in Section 4.4</p>	
6	<p>Implement the bushfire protection measures that have been established within Section 4.4: 'Required Additional Bushfire Protection Measures', that are additional to and/or a variation to those established by the applicable acceptable solutions of the bushfire protection criteria and that must be implemented '.</p> <p>In summary these are:</p> <ul style="list-style-type: none"> • Establish an agreement with the adjoining lot 976 for the implementation of the Landscape Management Plan. • Implement the BEP and train staff in its management.
<p>IMPLEMENTATION OF BUSHFIRE PROTECTION MEASURES</p> <p>Measures Established by the Building Code of Australia (Vol. 1 and 2 of the National Construction Code)</p>	
7	<p>Inform builders engaged to construct dwellings/additions and/or other relevant structures on a lot, of the existence of this approved Bushfire Management Plan (BMP).</p> <p>The existence of the BMP identifies that the development site is within a designated bushfire prone area. It indicates that bushfire construction standards (corresponding to an assessed bushfire attack level (BAL) for the building), may need to be applied to satisfy the bushfire performance requirements of the BCA.</p> <p>The BMP typically will only provide indicative BAL ratings. A separate assessment will likely be required to determine the applicable BAL rating (and produce a BAL Certificate), once site plans and conditions are established as the post development state.</p> <p>This BMP may also establish, as a 'Required Additional Bushfire Protection Measure', that bushfire construction requirements to be applied must be those corresponding to a specified higher BAL rating.</p> <p>Compliance with the current Building Code of Australia (Volumes 1 and 2 of the National Construction Code), will require certain bushfire resistant construction requirements be applied to residential buildings in bushfire prone areas (i.e., Class 1, 2 and 3 and associated Class 10a buildings and decks) and Class 9 vulnerable use buildings. Other classes of buildings may also be required to comply with these construction requirements when established by the relevant authority or if identified as a 'Required Additional Bushfire Protection Measure' bushfire protection measure within the BMP.</p>

	<p>The deemed to satisfy solutions that will meet the relevant bushfire performance requirements are found in AS 3959 – Construction of Building in Bushfire Prone Areas (as amended) and for Class 1 and associated Class 10a buildings only, the NASH Standard - Steel Framed Construction in Bushfire Areas (as amended).</p> <p><i>Note: This is not a requirement under the land use planning requirements established by SPP 3.7 Bushfire or the associated Guidelines. However, for informative purposes, the existence of this responsibility is noted in this and must be given due regard.</i></p>
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5.2 Protection Measure Maintenance Checklist

TABLE 5.2 LANDOWNER/OCCUPIER – MAINTENANCE OF BUSHFIRE PROTECTION MEASURES	
No.	MAINTENANCE OF BUSHFIRE PROTECTION MEASURES Measures Established Under SPP 3.7 / Guidelines
1	Annually review and enact the following maintenance responsibilities established in this approved BMP for the development site prior to the bushfire season.
2	The site's use is a 'vulnerable use', and a Bushfire Emergency Plan (BEP) has been produced for site operations. Complete all relevant actions contained within the 'Site Preparation Procedure' annually prior to the bushfire season.
3	Maintain the Asset Protection Zone (APZ) surrounding all habitable buildings by applying: <ol style="list-style-type: none"> 1. The Established APZ Technical Requirements: The APZ must consist of non-vegetated areas and low bushfire threat vegetation maintained in perpetuity in the low threat state by complying with the established APZ technical requirements (refer to the Guidelines Appendix B2 and Appendix B3 of this BMP); and 2. The Established APZ Dimensions: Refer to the first item of the protection measure <u>implementation</u> checklist in the preceding Table 6.1 in which the required dimensions have been established. 3. The dimensions corresponding to the determined BAL rating(s) applicable to the habitable building. This ensures the building's constructed bushfire resistance continues to align with its calculated potential exposure to flame contact and radiant heat.
4	The development is a 'vulnerable land use'. Maintain the required signage within the subject site, advising of where each access route travels to and the distance and general information on what to do in the event of a bushfire. Comply with the site specific requirements established in the BMP at Element 3: Vehicular access, A3.7 Signage.
5	When the property changes ownership or occupancy, to assist with the ongoing maintenance of the implemented bushfire protection measures, ensure that the relevant person(s) is aware of the BMP, and the responsibilities it contains. Provide access to a copy of the BMP and the Bushfire Emergency Plan (BEP).
MAINTENANCE OF BUSHFIRE PROTECTION MEASURES Measures Established by this BMP as a Required Additional Measure in Section 4.4	

6	<p>The proposal is considered a vulnerable land use. Additional bushfire protection measures have been established within Section 4.4: 'Required Additional Bushfire Protection Measures', that are additional to and/or a variation to those established by the applicable acceptable solutions of the bushfire protection criteria for development and must be maintained.</p> <p>In summary these are:</p> <ul style="list-style-type: none"> • Maintain onsite vegetation in a low fuel state. • Manage or monitor compliance with the Landscape Management Plan applicable to the adjoining lot.
<p>MAINTENANCE OF BUSHFIRE PROTECTION MEASURES</p> <p>Measures Established by a Local Government's Section 33 Notice Under the Bush Fires Act 1954</p>	
7	<p>Maintain the required firebreaks, providing emergency access within the lot, to the stated specifications established by the Shire of Murray, Bushfire Compliance Notice.</p> <p><i>Note: This is not a requirement under the land use planning requirements established by SPP 3.7 Bushfire or the associated Guidelines. However, for informative purposes, the existence of this responsibility is noted in this checklist and must be given due regard.</i></p>
<p>MAINTENANCE OF BUSHFIRE PROTECTION MEASURES</p> <p>Measures Established by the Building Code of Australia (Vol. 1 and 2 of the National Construction Code)</p>	
8	<p>Prior to any future building work, inform the builder of the existence of this approved Bushfire Management Plan (BMP).</p> <p>The BMP identifies that the development site is within a designated bushfire prone area and states the indicative (or determined) BAL rating(s) that may (or will) be applied to buildings/structures. A BAL assessment report may be required to confirm determined ratings and will be required when stated ratings are only indicative. BAL certificates will need to be produced to accompany building applications.</p> <p>Compliance with the current Building Code of Australia (Volumes 1 and 2 of the National Construction Code), will require certain bushfire resistant construction requirements be applied to residential buildings in bushfire prone areas (i.e., Class 1, 2 and 3 and associated Class 10a buildings and decks) and Class 9 vulnerable use buildings. Other classes of buildings may also be required to comply with these construction requirements when established by the relevant authority or if identified as a 'Required Additional Bushfire Protection Measure' bushfire protection measure within the BMP.</p> <p>The deemed to satisfy solutions that will meet the relevant bushfire performance requirements are found in AS 3959 – Construction of Building in Bushfire Prone Areas (as amended) and for Class 1 and associated Class 10a buildings only, the NASH Standard - Steel Framed Construction in Bushfire Areas (as amended).</p> <p><i>Note: This is not a requirement under the land use planning requirements established by SPP 3.7 Bushfire or the associated Guidelines. However, for informative purposes, the existence of this responsibility is noted in this checklist and must be given due regard.</i></p>

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 INDICES (FDI/FDI/GFDI)

When using Method 1 the relevant FDI value required to be applied for each state and region is established by AS 3959:2018, Table 2.1. Each FDI value applied in Tables 2.4 – 2.7 represents both the Forest Fire Danger Index (FFDI) and a deemed equivalent for the Grassland Fire Danger Index (GFDI), as per Table B2 in Appendix B. When using Method 2, the relevant FFDI and GFDI are applied.

The values may be able to be refined within a jurisdiction, where sufficient climatological data is available and in consultation with the relevant authority.

Relevant Jurisdiction:	WA	Region:	Whole State	Method 1	Applied FDI:	80
				Method 2	Applied FFDI:	80
					Applied GFDI:	110

A1.2: VEGETATION ASSESSMENT AND CLASSIFICATION

Vegetation Types and Classification

In accordance with AS 3959:2018 Clauses 2.2.3 and C2.2.3.1, all vegetation types within 100 metres of the 'site' (defined as "the part of the allotment of land on which a building stands or is to be erected"), 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 maximum excess distance is established by AS 3959: 2018 Clause 2.2.3.2 and is an additional 100 metres.

Classification is also guided by the Visual Guide for Bushfire Risk Assessment in WA (WA Department of Planning February 2016) and any relevant FPA Australia practice notes.

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 (refer to Appendix B) 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:

N/A

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 and 2							
Classification	N/A						
Types Identified	N/A		-			-	
Exclusion Clause	2.2.3.2 (e) Non-vegetated areas and (f) Low threat vegetation - minimal fuel condition.						
Effective Slope	Measured	N/A		Applied Range (Method 1)	N/A		
Foliage Cover (all layers)	N/A		Shrub/Heath Height	N/A		Tree Height	N/A
Dominant & Sub-Dominant Layers	Not applicable.						
Understorey	Not applicable.						
Justification Comments:	Areas exist of roadways, pavement and low or no vegetation areas that are of no threat.						
Post Development Assumptions:	Not required						
							
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VEGETATION AREA 3					
Classification	D. SCRUB				
Types Identified	Closed scrub D-13			Open scrub D-14	
Exclusion Clause	N/A				
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees	
Foliage Cover (all layers)	>30%	Shrub/Heath Height	>2m	Tree Height	Up to 30m
Dominant & Sub-Dominant Layers	Native scrub predominantly to 2m in height. Foliage cover > 30%.				
Understorey	Shrub and grass understorey.				
Justification Comments:	Some areas of public land appear to be maintained in accordance with the Shire of Murray, Bushfire Compliance Notice, and others not, so a Scrub (D) classification has been applied as a precaution.				
Post Development Assumptions:	Continued management in accordance with the Shire of Murray, Bushfire Compliance Notice.				
					
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PHOTO ID: 5			PHOTO ID: 6		

VEGETATION AREA 4					
Classification	N/A				
Types Identified	-				-
Exclusion Clause	2.2.3.2 (a) >100m from site				
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees	
Foliage Cover (all layers)	N/A	Shrub/Heath Height	N/A	Tree Height	N/A
Dominant & Sub-Dominant Layers	Not applicable.				
Understorey	Not applicable.				
Justification Comments:	Public open space area that appears well maintained and has therefore been excluded.				
Post Development Assumptions:	Continued management in accordance with Shire of Murray, Bushfire Compliance Notice.				

VEGETATION AREA 5					
Classification	G. GRASSLAND				
Types Identified	Open herbfield G-27				
Exclusion Clause	N/A				
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees	
Foliage Cover (all layers)	>30%	Shrub/Heath Height	N/A	Tree Height	N/A
Dominant & Sub-Dominant Layers	Open grassland situated directly opposite the subject site (north) on Jolly Rambler Boulevard.				
Understorey	Not applicable.				
Justification Comments:	None required.				
Post Development Assumptions:	Continued management in accordance with the Shire of Murray, Bushfire Compliance Notice.				



PHOTO ID: 7



PHOTO ID: 8

A1.3: EFFECTIVE SLOPE

EXPLAINING THE ASSESSMENT METHODOLOGY APPLIED BY BUSHFIRE PRONE PLANNING

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.

[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.]

COMPOUND SLOPES UNDER VEGETATION AND DETERMINING SLOPE SIGNIFICANCE

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, horizontal 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	<p>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'.</p> <p>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.</p> <p>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.</p> <p>Consider if vegetation on the slope is likely be ignited by a single ignition point or is multipoint ignition possible from bushfire on 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).</p> <p>Isolated slopes of this length are less likely to be considered significant as compared to when part of a compound slope.</p>
>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).

NSW RFS 2019, PLANNING FOR BUSHFIRE PROTECTION - APPENDIX A1.5 - ADDITIONAL DETERMINATION GUIDANCE

- "In identifying the effective slope - it may be found that there are a variety of slopes covering different distances within the vegetation. The effective slope is considered to be the slope under the vegetation which will most significantly influence the bushfire behaviour for each aspect. This is usually the steepest slope. In situations where this is not the case, the proposed approach must be justified".
- "Vegetation located closest to an asset may not necessarily be located on the effective slope".

SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

The effective slopes determined from the site assessment are recorded in Table 3.2 of this Bushfire Management Plan. Explanation and justification of their determination is presented below.

None required

A1.4: SEPARATION DISTANCE

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 may be applied that would establish the closest positioning of the building/structure relative to the relevant area of vegetation.

The assumed location would be 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 a restrictive covenant; 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 (each of which represents a range of radiant heat flux), 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 or area), relative to classified vegetation, is yet to be determined.

In this scenario, the required information is the identification of building locations onsite that will correspond to each BAL rating. That is, indicative BAL ratings can be derived for a variety of potential building/structure 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 exposure levels (to the transfer of radiant heat from a bushfire), of buildings or persons, that will exist at different points within the subject site.

The calculated range of separation distances corresponding to each BAL rating can be presented in a table and/or illustrated in Figure 3.2 – whichever is determined to best fit the purpose of the assessment.

SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

For the subject development/use the applicable separation distances values are derived from calculations applying the assessed site data. They are an output value, not an input value and therefore are not presented or justified in this appendix.

The derived values are presented in Section 3, Table 3.1 and illustrated in Figure 3.2.

A2: BAL Assessment Inputs Applied Using the Method 2 Procedure

STATING AND JUSTIFYING THE METHOD 2 CALCULATION INPUT VARIABLES APPLIED

As 3959:2018 Bal Determination Procedures: AS 3959:2018 establishes the official methodology to determine the radiant heat flux (RHF) a receiver (e.g., a building, structure, person or specified location), will potentially be exposed to from a fully developed bushfire within any adjacent classified vegetation. The methodology accounts for the configuration of a specific site and its surrounds.

The model calculations are complex. Consequently, AS 3959:2018 establishes two pathways to apply the methodology - a simplified procedure (Method 1) and a detailed procedure (Method 2).

Method 1: This procedure has limitations to both its scope and the degree to which site specific conditions can be applied. However, it requires minimal site assessment inputs and provides a standardised output that is satisfactory for many situations.

A moderate level of justification for some of the assessed inputs applied is required. This will demonstrate how the procedure detailed within AS 3959:2018 for Method 1 (Section 2) has been followed.

Method 2: This procedure is used when the site conditions are out of the scope of Method 1 or when it is necessary to produce a more specific result. Higher levels of justification will be required for many of the input variables that are able to be modified using Method 2 (AS 3959:2018 Appendix B).

Section A2.1 below identifies the input variables that have been assessed for the proposed development and indicates the level of justification required for their application. The information contained within this Appendix will provide this justification information to the degree necessary.

A2.1: SUMMARY OF CALCULATION INPUTS APPLIED AND THE LEVEL OF JUSTIFICATION REQUIRED

AS 3959:2018 BUSHFIRE ATTACK LEVEL (BAL) DETERMINATION PROCEDURES INPUT VARIABLES FOR THE FIRE BEHAVIOUR AND RADIATION MODELS						
✓	Indicates which site specific variables have been assessed and applied to the assessment of the proposed development/use.	IDENTIFICATION OF THE CALCULATION INPUT VARIABLES ASSESSED AND/OR MODIFIED FOR THE PROPOSED DEVELOPMENT/USE				
	Indicates an AS 3959 methodology or jurisdiction default variable (or a methodology calculated variable in the case of EOR or flame angle). No justification required.					
	Indicates a variable that either must or can have an assessor value applied. Requires justification.					
	Indicates a variable that can have an assessor value applied. Requires detailed justification.	Using Method 1	Using Method 2			
ASSESSOR QUALIFICATION REQUIRED ¹		BPAD Level 1	BPAD Level 3			
LEVEL OF JUSTIFICATION REQUIRED TO APPLY ²		None	Moderate	None	Moderate	High
Fire weather	Fire danger index (FDI/FFDI/GFDI)			X		
	Wind speed					
	Ambient temperature					
	Relative humidity					
Bushfire Prone Vegetation and slope of the land it grows on	Vegetation classification ³		X			
	Effective slope		X			
	Understorey and total fuel loads ⁴					
	Vegetation height					
	Fuel age					
Receiver (building) positioning parameters	Site slope					
	Separation distance		X			
	Elevation of the receiver (EOR).					
Bushfire flame parameters	Flame temperature ⁵			X		
	Flame width					X
	Flame angle					
	Flame emissivity					
	Heat of combustion					
INTERMEDIATE OUTPUT FROM THE FIRE BEHAVIOUR AND RADIATION MODELS						
Rate of Spread - derived from fuel loads, fuel type, fuel height, FDI, effective slope and wind speed.						
Fire Intensity – derived from fuel loads, rate of spread and heat of combustion ⁶						
Path Length – derived from flame angle and separation distance.						
Transmittance – derived from ambient temperature and relative humidity.						
View Factor – derived from flame length, flame width, flame angle, separation distance, elevation of receiver and site slope.						
FINAL OUTPUT OF THE FIRE BEHAVIOUR AND RADIATION MODELS						
Flame Length – derived from fuel loads, ROS (for Forest, Woodland) and fire intensity (for Scrub, Shrubland, Grassland) ⁶						
Radiant Heat Flux and the Corresponding Bushfire Attack Level (BAL) – derived from view factor, flame emissivity, flame temperature, transmittance and corresponding to the worst possible flame angle.						
TABLE NOTES (see next page)						

1 Authority to Use Method 2: Within WA, use of this procedure is restricted to bushfire practitioners who hold the BPAD Level 3 accreditation as issued by the Fire Protection Association Australia (FPAA) through their Bushfire Planning and Design Accreditation Scheme (BPAD Scheme) that complies with the Western Australian Bushfire Accreditation Framework.

2 Level of Justification Required in Applying Method 2: AS 3959:2018 Appendix B establishes the detailed procedure for the Method 2 determination of BAL(s) as consisting of 10 steps. When justification is required for an assessed variable value to be applied, the required level of justification can vary. The level definitions used in this table are:

Moderate: Requires the provision of readily available and understood argument and evidence such as when:

1. The methodology step requires or allows for an input variable to be a site assessed value; or
2. A methodology step requires a jurisdictionally determined value which the relevant authority may change for different land use scenarios; or

High: Requires a detailed argument, appropriate evidence and justification when:

1. The variable is derived from the methodology step that applies an AS 3959:2018 default value or determines an intermediate output value (i.e. the result of applying a step's equations).

3 Applying a Different Vegetation Classification: This approach may be justified when certain characteristics of the site's local vegetation complex align with the broad based descriptions of AS 3959:2018, but expert knowledge identifies characteristics that would result in the applied AS 3959 bushfire behaviour model not being properly representative of a fire in the local vegetation. This potential outcome is in part due to the ecological classification of vegetation that is used in AS 3959 rather than a classification more aligned with fuel structure/fire behaviour.

The justification of using a different classification is predicated on the fact that the intent of classifying vegetation in the BAL determination methodology of AS 3959:2018, is to identify the most appropriate fire behaviour model equations to apply.

For example, with respect to contribution to potential fire behaviour, it is often more important to consider vegetation structure rather than canopy cover, yet canopy cover is a key classification factor applied in AS 3959:2018.

Also findings from more recent bushfire behaviour research is not yet incorporated into the current version of the Standard. Certain currently applied bushfire behaviour models within AS 3959:2018 are outdated and may under or over predict radiant heat flux and flame length.

4 Modifying Fuel Loads: Potential steady state maximum fuel loads at a specific site for a given vegetation classification may vary significantly (above and below) from those that are to be applied as the default values in AS 3959:2018.

The Standard only provides the single set of ecological descriptors and corresponding fuel loads that are to be applied to vegetation complexes across Australia, hence its accuracy for all situations will be questionable. The relevant authority for a jurisdiction can establish different fuel loads to be applied.

However, fuel loads for the purposes of determining expected fire behaviour have not currently been determined to the degree necessary in WA, which results in the default values both over and underestimating fuel loads for WA vegetation types. WA DFES in providing advice to decision makers, will currently not accept any assessment and subsequent variation of the default fuel loads. If any variation was to be applied in an assessment, it would need to be argued for based on appropriate evidence and the development of a merit based case to the satisfaction of the decision maker.

The one circumstance where Bushfire Prone Planning will reduce fuel loads is in the calculations associated with a short fire run in forest type vegetation – in which the developing fire will not crown. Therefore, most bark and all canopy fuels can justifiably be excluded from total fuel load.

Note 5 - Flame Temperature: The Guidelines (DPLH, November 2024) establish the requirement to apply 1200 K as the flame temperature to determine an on-site shelter's maximum exposure to radiant heat flux and the corresponding vegetation separation distance, when an on-site shelter is required for vulnerable land use proposals (refer to Guidelines, Appendix B5.2.3 and BPC 8, A2.5). The requirement refers to the guidance presented in the ABCB Design and Construction of Community Bushfire Refuges Handbook 2014 to support the requirement.

Note 6 – Fireline Intensity and Flame Length: These values are determined as intermediate and final outputs of the AS 3959:2018 modelling. Changing these values would not be a valid use of the methodology for a fully developed fire. However, for the circumstance of a developing fire in small patches or corridors of vegetation, there may be justification when an authoritative source is identified to provide an override value.

A2.5: FLAME WIDTH

FLAME WIDTH APPLIED

AS 3959:2018 – BUSHFIRE BEHAVIOUR AND RADIANT HEAT MODELLING - THE DEFAULT FLAME WIDTH

"Flame width is assumed to be 100 metres unless the width of classified vegetation and /or the relative orientation between the classified vegetation and the site justify the use of a lesser value" (AS 3959:2018, clause B8).

The default flame width applied in the AS 3959:2018 modelled bushfire represents a **fully developed fire** within the specific vegetation type. This is large fire travelling at its potential quasi-steady rate of spread (i.e., after it has undergone its initial growth phase), burning at its maximum intensity and travelling directly towards the subject building/structure. Based on research, it is assumed that the fully developed stage is not reached until the head fire width is at least 100 metres.

SITUATIONS WHERE THE ASSUMPTION OF A FULLY DEVELOPED FIRE MAY NOT PROPERLY REPRESENTATIVE OF THE LOCAL CONDITIONS

Small or narrow parcels of vegetation have less opportunity to support fully developed bushfires because of their limited size. They are a lower threat hazard for which determining the potential bushfire impact requires the modification of expected fire behaviour, including the expected flame width and flame length (height). For flame width there are two types of size constraint:

1. **Vegetation Width (Fire Width) Constraint:** When the relevant area of classified vegetation is not wide enough for a fire to travel directly towards and arrive at the subject building/structure with a flame width of 100m; and/or
2. **Vegetation Depth (Fire Run) Constraint:** When the relevant area of classified vegetation is not deep enough to support the spread of a developing fire (directly towards the subject building/structure), for the length of time and distance required to grow into a fully developed fire. This is called a short fire run (SFR).
 - WA DFES currently considers that for a potential fire run to be considered as a SFR a maximum fire run length of 100m is to apply.
 - NSW Rural Fire Service currently considers that for a potential fire run to be considered as a SFR a maximum fire run length of 150m is to apply.

OPTIONS AVAILABLE TO DETERMINE THE REDUCTION IN BUSHFIRE THREAT

The threat reduction information required is the same as that derived from AS 3959:2018 for a fully developed fire. This is the reduced flame length and radiant heat flux.

1. AS 3959:2018 and the Method 2 procedure for BAL determination does not specifically deal with a developing fire. There is the ability to alter the flame width input variable and the flame length intermediate output variable, however there is no guidance as to how these might be determined.
2. WA DFES has allowed the use of its draft (2016) spreadsheet calculator 'Short Fire Run Head Fire Width Calculation'. However, it has limited application as it cannot determine the reduced flame length. Nonetheless, Bushfire Prone Planning will use this tool to the extent possible where relevant.
3. NSW RFS has developed a short fire run (SFR) methodology. It applies the base AS 3959:2018 methodology for determining potential bushfire impact but "introduces modifications from other accepted science to calculate the reduced fire head width and flame height attributed to lower threat bushfire hazards". Currently however, WA DFES have not informed consultants of its position regarding its application in WA.

EVIDENCE OF THE VALIDITY OF DETERMINING THE REDUCTION IN BUSHFIRE THREATS FROM SMALLER AREAS OF VEGETATION

1. The existence of the SFR methodology developed by NSW RFS. The following is quoted from their Short Fire Run Fact Sheet (v6 2019): "To date ... SFRs are usually assessed as if they are large scale hazards which can often resulting in unrealistic and onerous bush fire protection requirements. Historically ... SFRs have been assessed based on expert judgement which can result in an inconsistent approach. This methodology paper provides an overview of the NSW RFS proposal for assessing lower threat bushfire hazards for SFR in bushfire prone areas".

2. The following information is taken from the CSIRO report that details the improvements made to the Queensland methodology for their mapping of bushfire prone areas. These are applied to account for the reduced bushfire impact from small and narrow areas of vegetation. Bushfire Prone Planning is utilising the applicable guidance provided in this information until such time as the revised Map of Bushfire Prone Areas for WA, based on the same methodology, is released (which will likely see the removal of small and narrow areas of vegetation that are currently mapped as bushfire prone).



This report describes the improvement to the mapping rules that have been integrated into the spatial modelling process in order to better reflect the spatial complexities of bushfire behaviour for small and narrow patches of hazardous vegetation.

Table 1: Potential Bushfire Intensity classes and corresponding Potential Fire-line Intensity ranges

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

Mapping rules to estimate hazard of small vegetation patches

The State-Wide mapping methodology (Leonard et al. 2014) also describes spatial procedures that identify and amend the estimated hazard potential of narrow or small patches of vegetation likely to reduce the likelihood that a running fire front will reach its full potential (Gould et al. 2008).

These filtering rules remove or downgrade hazard levels of small patches and narrow corridors in three stages, firstly by merging small patches of a single vegetation class less than 0.5 ha; secondly by merging small vegetation patches between 0.5 and 1 ha with higher or moderate fuel loads (greater than 8 tonnes/ha); and thirdly by removing narrow corridors of vegetation less than 100m wide, through a process

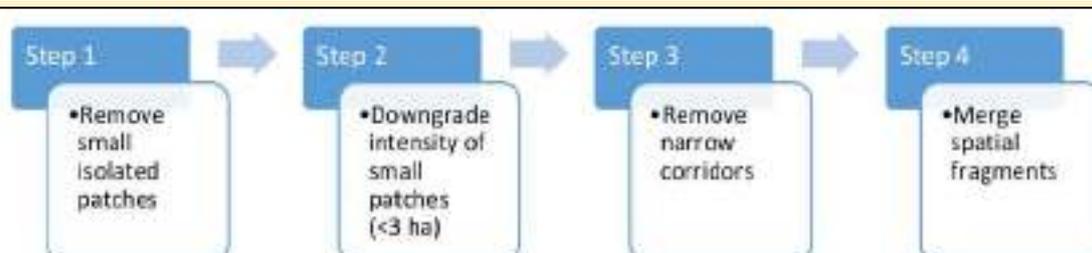


Figure 5. Patch and corridor map processing stages

Step 1 – Remove small isolated patches

Small isolated patches of vegetation are less likely to ignite due to their disconnection with fuels that can carry running fire fronts. They are most likely to be ignited from point sources, which require both distance and area to develop into a fire-front of considerable hazard. If a fire front emerges from a patch of 1 hectare, it is likely to be narrow in width and have significantly lower intensity than a fire front which has had sufficient time and area to develop. The combination of these likelihood and intensity estimates are likely to result in a fire-line intensity less than 4000kW/m, and can be considered a low hazard for the purpose of land use planning to mitigate bushfire risks.

This process removes sub-hectare areas of continuous fuel (that are completely surrounded by either no fuel or discontinuous fuel) if they are further than 100m from any other continuous fuel greater than 2 hectares in size.

Step 2. Downgrade intensity of small patches (0.5 to 3 ha)

Patches of less than 3 hectares in size are less likely to ignite due to their disconnection with vegetation that can carry a running fire front. If ignited, these patches are most likely to be ignited from point sources which require both distance and size to develop into a significant fire front of high intensity.

If a fire front emerges from these patches, it is likely to be narrow in width and significantly less in intensity than a fire front which has had sufficient time and size to develop. The combined effect of both lower ignition likelihood and lower fire-line intensity are reasonably expected to result in a fire-line intensity. It is also significantly less intensity than larger areas of continuous vegetation fire fronts.

Knowledge of fire behaviour and its associated impacts on people and property suggest that fire-line intensity would decrease by two third for patches of 0.5-2 ha, and half for patches of 2-3 ha (Table 2), (Gould et al. 2008).

Table 2. Assumed effect of patch size on fire-line intensity

Patch size	Approx. patch dimensions	Assumed decrease of fire-line intensity
(a) 0.5 - 2 hectares	100m x 100m - 100m x 200m	66%
(b) 2-3 hectares	100m x 200m - 150m x 200m	50%

Step 3. Remove narrow corridors

Narrow corridors are less likely to ignite due to their disconnection with fuels that can carry a running fire front. If the corridor is ignited by either a point source or line ignition, these areas will limit the width of the fire head and hence fire line intensity. The combination of these likelihood and intensity estimates indicate it is unlikely that a fire line intensity of 4000kW/m would be achieved, and can be considered a low hazard for the purpose of land use planning to mitigate bushfire risks.

This process removes narrow corridors and areas of continuous fuel (2 pixels or less in width – i.e. 50m) that are not sufficiently wide to support a fully developed flame front. It erodes then dilates by one pixel (25m in width) all continuous-fuel patches, in relation to non-continuous areas, as illustrated in Figure 9.

Step 4. Remove small fragments

Because of the varied quality of vegetation mapping inputs, only patches of tree or shrub dominated vegetation greater than 0.5 hectares (or 8 pixels) in size are consistently observed with high confidence. Patches of 1 to 7 pixels are often observed to contain mixtures of different land uses or continuous and discontinuous vegetation. As a consequence, isolated patches of hazardous vegetation less than 0.5 ha in size are not likely to generate a fire-line intensity of 4,000 kW/m or provide high exposure to built assets.

This process removes small areas of hazardous tree or shrub-dominated vegetation (i.e. areas of combined very high, high and medium potential bushfire hazard) of 8 or less pixels (<0.5 ha) by merging vegetation patches into the most prevalent surrounding Bushfire Hazard Class (i.e. Grassfire Prone or Low Hazard).

Relevant Vegetation		Default Flame Width [AS 3959:2018]	Assessed Vegetation Width [refer to image]	Calculated Flame Width [DFES Calculator]	
				Short Fire Run Length [assessed - refer to diagram]	Flame Width
Area	Class	metres	metres	metres	metres
1	Scrub	100	26	26	10
Eligibility Checklist for Application of the Vegetation Width Constraint					
The relevant area of classified vegetation is not wide enough for a fire to travel directly towards the subject building/structure with a 100m flame width.					✓
Eligibility Checklist for Application of the Short Fire Run (SFR) Assessment					
The patch or corridor of vegetation subject to the SFR does not have connectivity to larger parcels of land containing vegetation capable of supporting a <u>fully developed</u> fire.					✓
Areas of vegetation will be considered connected if:					
<ul style="list-style-type: none"> • Fire spread by flame contact is possible; • Fire spread by ignition from radiant heat is possible; or • Fire spread by large scale ember attack is possible. 					
Disconnection results in the elimination or very significant reduction in the likelihood that sources of ignition could impact the parcel of vegetation subject to the SFR, and simultaneously ignite a flame width of 100m or greater (line ignition) – that would result in significantly less time and distance being required for a fire to fully develop to 100 m width.					
A fire in the parcel of vegetation subject to the SFR is most likely to develop from a single point ignition.					✓
Flaming in the patch or corridor of vegetation subject to the SFR will be restricted to surface, near surface and elevated fuels. The fire will not become a crown fire.					✓
The assessed short fire run is on the worst case effective slope and directly at the building/structure.					✓

SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

The relevant vegetation area (Area 3 Scrub) is a small patch of unmanaged vegetation in a public open space which is otherwise managed. The local government will manage an additional 6m along the boundary which will increase the separation distance to be 10m from the proposed building. The area is separated from other areas of vegetation by non-vegetated roads and managed lawn areas. Trees are sparse in the area resulting in no canopy connectivity.

Physical Width of Relevant Vegetation:

After installation of the 6m buffer, the area will be significantly reduced in width. A fire in this area cannot be expected to reach the full heat of a scrub fire as calculated in AS3959:2018.

Likely Vegetation Ignition Sources (Justification of Limited Connectivity):

Likely sources of ignition could be ember attack from the nearby scrub, or human activity in the park nearby such as cigarette butts or intentional arson. Ember attack could potentially come from the northwest, west, southwest or southeast directions and is most likely to follow wind directions. Human activity could occur from any direction.

DFES Calculator Input/Output Summary:

Refer to the following page/section.

A3: BAL Calculator – Copy of Input/Output Values

<https://bal-calculator.herokuapp.com/practitioner>

CALCULATION OF BUSHFIRE ATTACK LEVELS – METHOD 2

Vegetation Classification	D. SCRUB						
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <h4>Method 2 Calculation</h4> <h5>Topographical Information</h5> <p>Site slope</p>  <p>Distance of vegetation (measured horizontally)</p>  </div> <div style="width: 45%;"> <h5>Vegetation Information</h5> <p>Effective slope of land under classified vegetation</p>  <p>Predominant vegetation type</p> <p>D. Scrub</p> <p>Surface Fuel Load: 25 t/ha Total Fuel Load: 25 t/ha</p> </div> </div> <div style="margin-top: 20px;"> <h5>Fire Spread Input</h5> <p>Forest Fire Danger Index: FFDI 80</p> </div> <div style="margin-top: 20px;"> <h5>Expert Parameters</h5> <p>Flame Width: 8.2 m</p> <p>Fire Length (for head line width calculation): 20 m</p> </div> <div style="margin-top: 20px; background-color: #003366; color: white; padding: 10px; border: 1px solid white;"> <h4 style="text-align: center; margin: 0;">Bushfire Attack Level (BAL)</h4> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; padding: 5px;">Radiant Heat Flux 27.4 kW/m²</td> <td style="width: 33%; padding: 5px;">Flame angle 40.0 deg</td> <td style="width: 33%; padding: 5px; border: 2px solid red; text-align: center;">BAL 12.5</td> </tr> <tr> <td style="padding: 5px;">Flame length 11.6 m</td> <td style="padding: 5px;">FireLine Intensity 53816 kW/m</td> <td style="padding: 5px;">Rate of Spread 4.2 km/h</td> </tr> </table> </div> <div style="margin-top: 20px;"> <p>Flame Temperature: 1090 K</p> </div>		Radiant Heat Flux 27.4 kW/m ²	Flame angle 40.0 deg	BAL 12.5	Flame length 11.6 m	FireLine Intensity 53816 kW/m	Rate of Spread 4.2 km/h
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Flame length 11.6 m	FireLine Intensity 53816 kW/m	Rate of Spread 4.2 km/h					

Calculated BAL contour distances



Calculated February 18, 2025, 1:58 pm (HDIc = 4.9)

Minimum Distance Calculator - AS3259-2016 (Method 2)			
Inputs		Outputs	
Fire Danger Index	80	Rate of spread	4.16 km/h
Vegetation Classification	Scrub	Flame length	11.02 m
Understorey fuel load	25 t/ha	Flame angle	36°, 40°, 46°, 51°, 54° & 69°
Total fuel load	25 t/ha	Elevation of receiver	5.41 m, 3.73 m, 4.18 m, 4.51 m, 4.7 m & 5.42 m
Vegetation height	m	Fire intensity	53,815 kW/m
Effective slope	0°	Transmissivity	0.888, 0.681, 0.87, 0.86, 0.854 & 0.8080000000000001
Site slope	0°	Viewfactor	0.5827, 0.4262, 0.2819, 0.1854, 0.1539 & 0.0404
Flame width	10 m	Maximum distance to > 40 kW/m ²	8.4 m
Windspeed	45 km/h	Minimum distance to > 25 kW/m ²	13.9 m
Heat of combustion	18,000 kJ/kg	Maximum distance to < 75 kW/m ²	52.1 m
Flame temperature	1050 K	Minimum distance to > 12.5 kW/m ²	34.6 m
		Minimum distance to < 10 kW/m ²	35.7 m

Rate of Spread - Catchpole et al, 1998

Flame length - Ryan, 1989

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiation heat flux - Dyerstein, 1999; Sullivan et al, 2001; Douglas & Tan, 2005

Calculated fire length and head width

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Short Fire Run Head Fire Width Calculation															
2																
3	Inputs				Outputs											
4	Fire Run Meters	FDI	Surface Fuel Load	slope	Total Fire length	Head Fire Width										
5	26	80	25	0	26.87	9.52										
6	0				#DIV/0!	#DIV/0!										
7	0				#DIV/0!	#DIV/0!										
8	0				#DIV/0!	#DIV/0!										
9	0				#DIV/0!	#DIV/0!										
10																
11	Equation derived from:															
12	Alexander, M. E. (1985, April). Estimating the length-to-breadth ratio of elliptical forest fire patterns. In Proc. 8th Conf. Fire and Forest Meteorology (pp. 287-304).															
13																
14	NOTE: Draft Only - to be used for A-Forest, B-Woodland and D-Scrub Vegetation Classifications and only for fire runs up to 100m (max)															
15																
16	Disclaimer: DPES will accept the use of the outputs from this draft calculator but reserve the right to withdraw its use at any time.															
17																
18																
19																
20																

ADDENDUM 1: BUSHFIRE IMPACT MODELLING ADVICE

Scenario 4: Modify the vegetation area and fuel loads by modifying/clearing an area of vegetation adjoining and parallel to the subject lot boundary for a depth of 6 metres.

The modified area must either be:

- Vegetation maintained in a low bushfire threat state, able to be excluded from classification for BAL assessment purposes, managed in perpetuity and for which a formal acknowledgement of responsibility is established.
- Cleared of vegetation and ensure regrowth is not possible e.g. compacted limestone firebreak.

Apply the physically restricted short fire run length of 26 metres to determine the maximum flame width of 9.2 metres using the CSIRO BAL calculator. The reduced flame width value is applied to the BAL calculations.

Outcome: The required separation distance from:

(a) 10 metres

The edge of the classified vegetation to construction to achieve BAL-29: and
The relevant lot boundary to construction to achieve BAL-29

(b) 4 metres



Summary Comments

One of the requirements for being able to justify the use of a short fire run is that the modelled fire in the vegetation will most likely only originate from a single point of ignition rather than multi-point ignition.

Where multi-point ignition is considered possible, from an ember attack from a bushfire burning in neighbouring areas of vegetation, and capable of producing significant ember loads, the application of a short fire run becomes difficult to justify.

For the subject site, it could be argued that there are potential sources of ember attack within the vicinity. However, it is my expert opinion (backed by extensive experience with bushfire events), that any multipoint ignition in the subject small area of vegetation, rather than lead to a more rapid intensification of fire behaviour, will quickly consume the available fuels and therefore constrain the development of a more intense fire.

However, the available fire modelling tools cannot account for this. A decision maker may need to come to a view that also considers expert opinion rather than just the output of a model.

Construction of an assumed single storey building 4 metres from the relevant lot boundary can achieve a BAL-29 rating if there is an acceptable agreement put in place to clear/modify/maintain the necessary adjoining vegetation and the application of short fire run modelling can be adequately justified.

If there is no appetite for vegetation clearing/modification/management on the adjoining lot, the constraint of a small BAL-29 envelope will remain for future development. Otherwise, a future building will need to apply higher levels of bushfire resilient construction.

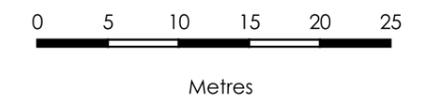
Figure AD1.1

Method 2 Modelling Measurements

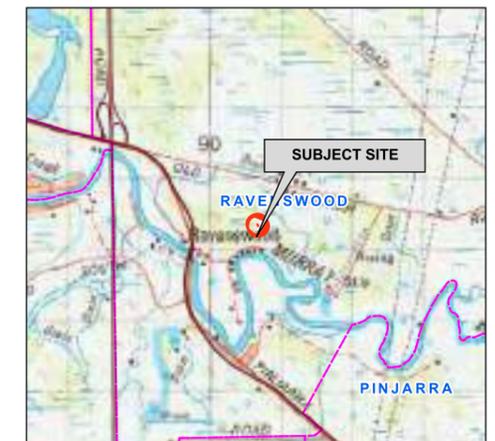
Lot 977 on Plan / Diagram 411195, Area: 1619.53
Nancarrow Way
Ravenswood
Shire of Murray

----- LEGEND -----

-  Subject Site
-  Cadastral
- Classified Vegetation**
 -  Scrub
 -  Grassland
 -  Excluded 2,2,3,2 (e)
 -  Excluded 2,2,3,2 (f)
 -  100m Assessment Area
 -  150m Assessment Area
- Buildings**
 -  Building
 -  Managed Vegetation
 -  Hydrants
 -  Vegetation Distance (m)



----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map by: Simone Eaton 20-02-2026
SCALE (A3): 1 : 500



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.

ADDENDUM 2: AGREEMENT WITH NEIGHBOURING LANDOWNER

From: Greg Delahunty <Gregory.Delahunty@murray.wa.gov.au>
Sent: Wednesday, 21 January 2026 11:46 AM
To: Michael Abrusci <mja@gamacapital.com.au>; Clare McLean <clare@webbplan.com.au>
Cc: Mike Scott <Mike@bushfireprone.com.au>; Chris Geers <chris.geers@mmj.com.au>; Clare McLean <clare@webbplan.com.au>; Ieuan Hook <ieuan.hook@murray.wa.gov.au>
Subject: RE: Planning Response - Lot 977 Nancarrow Way, Ravenswood

Hi Michael and Clare

The Shire will manage the 6m apron inside its reserve boundary ensuring we meet our obligations under the Bushfires Act 1954.

Management actions will reflect those previously discussed with Michael and Mike which will I believe allow the proposed building to achieve a BAL-29.

An initial program will be planned shortly with ongoing maintenance delivered.

Michael, with a view to progressing your proposed application, are you planning on submitting a revised plan based upon feedback previously provided or review prior to lodgement?

Regards.

Greg

Greg Delahunty

Manager Planning and Environment Services

T: +61 8 9531 7642

E: Gregory.Delahunty@murray.wa.gov.au

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PO Box 21, Pinjarra WA 6208.   

ADDENDUM 3: LANDSCAPE MANAGEMENT PLAN (ONSITE VEGETATION)

The following landscape management plan applies to the subject site.

LANDSCAPE MANAGEMENT PLAN					
Implementation / Maintenance Action		Timing	Entity Responsible	Clearance	Comment
No.	Description				
1	Maintain compliance with the DFES Fact Sheet – "Preparing Your Property"	Ongoing in Perpetuity	Landowner	<input checked="" type="checkbox"/>	
2	<p>All vegetation within the site boundary to be maintained in a low fuel state.</p> <p>TREES: (> 5m in height): trunks at maturity should be a minimum distance of 6 metres from the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2m above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5m apart as to not form a continuous canopy.</p> <p>SHRUBS: No tall shrubs or trees should be located within two (2) metres of the building (unless reticulated – managed gardens).</p> <p>SHRUBS & GROUND COVERS: (0.1 metres to 5 metres) Should not be located under trees or within 3 metres of the building, should not be planted in clumps greater than 5m² in area, clumps of shrubs should be separated from each other. Shrubs >than 5 metres in height are to be treated as trees. (unless reticulated – managed gardens).</p> <p>GRASS: Synthetic or maintained lawn no higher than 10cm.</p>	Ongoing in Perpetuity	Landowner	<input checked="" type="checkbox"/>	
3	Building gutters and rooftops are to be free of excessive twigs, leaves, grass etc.	Every 3 months	Landowner	<input checked="" type="checkbox"/>	
4	All overhanging branches, trees, limbs etc. trimmed back from the firebreak/ driveways to a minimum height of four (4) metres.	Every 12 months	Landowner	<input checked="" type="checkbox"/>	