DYNAMIC PLANNING AND DEVELOPMENTS

LOT 90 (NO. 51) JOCOSO RISE, WUNDOWIE WA

AMENDMENT TO SHIRE OF NORTHAM LOCAL PLANNING SCHEME NO.6

JULY 2024 | PROJECT NO.1842

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1.0 LOCAL PLANNING SCHEME AMENDMENT

Amendment to the Shire of Northam Local Planning Scheme No.6.

The Shire of Northam hereby amends the Shire of Northam Local Planning Scheme No.6 by:

1. Modify the scheme map to delete Special Use 12 and modify the boundary of Special Use 9.
2. Delete Special Use 12 provisions in Schedule 4.
3. Amend Special Use 9 provisions in Schedule 4 to be in accordance with the below table.

No	Description of Land	Special Use	Conditions
SU9	Lot 90 (No. 51) Jocoso Rise, Wundowie as designated on the Scheme Map	Grouped Dwellings, Motel, Office, Club Premises, Park Home Park, Reception centre and associated uses.	1. Subdivision of land shall be limited to built or survey strata subdivision. 2. At subdivision stage use restrictions shall be imposed on lots to limit occupancy to persons 45 years and older. 3. The R-Codes are to apply. Subdivision and development is to be in accordance with the R40 density code. 4. Lots shall be connected to a reticulated water supply and sewerage system. 5. Prior to the submission of an application for development approval, a Local Development Plan (LDP) for the land is to be prepared and approved by the local government. The LDP should provide sufficient information to address the requirements of the Scheme including traffic management, car parking, waste management and pedestrian access and walkways. 6. Prior to subdivision or development, a Bushfire Management Plan (BMP) and Emergency Evacuation Plan is to be prepared and approved, in accordance with the Guidelines for Planning in Bushfire Prone Areas (as amended). The BMP should provide sufficient information to address the bushfire protection criteria including siting and design of development and vehicle access. 7. Maximum development of 19 motel units and uses ancillary thereto including swimming pool, gym and tennis court, as approved by the local government. 8. Subdivision and development on the land shall be subject to a notification on title to advise landowners of potential impact from the operation of the Linley Valley abattoir.

			9. Any expansion is to be considered via a local planning scheme amendment to modify the provisions of the Special Use zone.

2.0 BACKGROUND AND SITE DESCRIPTION

2.1 Introduction and Purpose

This report has been prepared on behalf of Realise Retirement WA 1 Pty Ltd, the registered proprietor of Lot 90 (No. 51) Jocoso Rise, Wundowie, in support of a scheme amendment to the Shire of Northam Local Planning Scheme No.6. The amendment seeks to delete the existing Special Use 12 provisions in Schedule 4 and amend the Special Use 9 provisions to effectively amalgamate the two. The primary change to the Special Use provisions pertaining to site is enabling the development of 'Grouped Dwellings' across the entire identified development area. This is in order to assist the landowner to provide flexibility in future development outcomes and delivery of the estate.

2.1.1 Legal Description and Land Ownership

The subject site is described as Lot 90 (No. 51) Jocoso Rise, Wundowie, and covers an area of 389,508 sqm.

The registered proprietor of the subject site is Realise Retirement WA 1 Pty Ltd.

A copy of the Certificate of Title pertaining to the subject site is contained within the appendices as **Attachment 1.**

2.2 Land Description

The subject site is located within the locality of Windowie and within the municipality of the Shire of Northam. The site abuts the northern boundary of the El Cabello golf course with the primary access into the estate being from Jocoso Rise. The site also has an existing emergency access point back onto Great Eastern Highway in the sites south western corner. The subject site is currently operating as a lifestyle village which has been developed in accordance with the existing Special Use provisions.

The subject site is also in close proximity and impacted by buffers associated with the Linley Valley Abattoir and existing anaerobic ponds. Development has and will continue to avoid these buffer areas.

2.3 Site History

Historically, the site has been through a number of planning framework changes to enable the development of the then El Cabello Lifestyle Estate. This was responsible for the delivery of the existing dwellings on site and a significant amount of infrastructure that was intended to support further development.

In 2020, the site was sold by the operator of El Cabello to Equity Trustees Wealth Securities and to the best of our knowledge no development occurred under their

ownership with our understanding being that they had no intent on continuing the development of the lifestyle estate.

In 2023, the site was sold again to the current owner Realise Retirement WA 1 Pty Ltd which is an entity owned and managed by Aspen Group. Since acquiring the site Aspen have been active in undertaking renovations to existing buildings on site and continuing the development of the lifestyle estate which is now rebranded as 'Sierra Lifestyle Estate.

Figure 1 below illustrates the subject site within its local.

Figure 1 – Local Context

3.0 PLANNING FRAMEWORK

3.1 the Shire of Northam Local Planning Scheme No. 6

Under the provisions of the Shire of Northam Local Planning Scheme No. 6 (LPS6), the subject site is zoned 'Special Use 9' and 'Special Use 12'. Provisions associated with these Special Use zone designation have been provided below:

No	Description of Land	Special Use	Conditions
SU9	Portion of Lot 90 (No. 51) Jocoso Rise, Wundowie as designated on the Scheme Map	Park home park, Motel, Office, Club premises, Reception centre and associated uses	1. Maximum development of 131 park homes and uses ancillary thereto including swimming pool, bowling green, kitchen, toilets and storage area, as approved by the local government. 2. Maximum development of 19 motel units and uses ancillary thereto including swimming pool, gym and tennis court, as approved by the local government. 3. Development on the land shall be subject to a notification on title to advise landowners of potential impact from the operation of the Linley Valley abattoir. 4. Any expansion is to be considered via a local planning scheme amendment to modify the provisions of the Special Use zone.
SU12	Portion of Lot 90 (No. 51) Jocoso Rise, Wundowie as designated on the Scheme Map	Grouped dwellings and residential aged care facility and associated. uses.	1. Subdivision of land shall be limited to built or survey strata subdivision. 2. At subdivision stage use restrictions shall be imposed on lots to limit occupancy to person 45 years and older. 3. At subdivision or development stage lots shall be subject to a notification on title to advise landowners of potential impact from the operation of the Linley Valley abattoir. 4. The R-Codes are to apply. Subdivision and development is to be in accordance with the 'R30' density code. 5. Lots shall be connected to a reticulated water supply and sewerage system. 6. No development will be permitted within 500 of the Linley Valley abattoir and its associated wastewater ponds. 7. Construction of the residential aged care facility is to be substantially commenced prior to approval of the 41st lot in SU12. 8. Prior to the submission of an application for development approval, a Local Development Plan (LDP) for the land is to be prepared and approved by the local government. The LDP should provide sufficient information to address the requirements of the Scheme including traffic

			management, car parking, waste management and pedestrian access and walk ways. 9. Prior to subdivision or development, a Bushfire Management Plan (BMP) and Emergency Evacuation Plan is to be prepared and approved, in accordance with the Guidelines for Planning in Bushfire Prone Areas (as amended). The BMP should provide sufficient information to address the bushfire protection criteria including siting and design of development and vehicle access

The proposed scheme amendment simply seeks an amalgamation of the two Special Use zones with some minor changes to the 'Special Use' zone provisions which can be summarised as follows:

1. Introduction of 'Grouped Dwellings' as a land use that can be approved throughout the entire estate. This enables flexibility in construction of dwellings on site.
2. Removal of the restriction in the number of dwellings able to be constructed. This will instead be guided by an assigned residential density, constraints impacting the property i.e. bushfire, land use buffers etc. and a future Local Development Plan.
3. An adjustment of the assigned density coding from R30 to R40. This is a result of the new R-Codes, particularly Part C which no longer allow lot size dispensations for the delivery of aged persons dwellings. In this regard the amended density coding simply allows the delivery of lot sizes consistent with what is existing at the site.
4. Removal of the requirement to deliver an aged care facility as infrastructure, demand and servicing doesn't enable the delivery of this aspect of the estate.

In light of the above, the proposed scheme amendment represents a minor change to the existing Special Use provisions with the development intent remaining the delivery of delivery of a lifestyle estate. In this regard, the proposed amendment remains consistent LPS6.

3.2 Shire of Northam Local Planning Strategy

The Shire of Northam Local Planning Strategy sets out the medium to long term planning directions for the Town over the next 10 years and provides a rationale for the zones and provisions of LPS 6.

There are specific objectives for six (6) themed areas listed in the strategy. The themed area applicable to the subject site is 'Development of Lot 90 On DP 72807 Jocoso Rise, Wundowie'. The applicable themed area has the following objective:

- To provide a variety and choice of high-quality rural living opportunities in the Shire where it is economically, socially and environmentally sustainable.

- Develop the Shire's development potential so that it becomes an increasingly popular destination, provides opportunity for local employment, complements established land uses and protects and enhances the natural environment and local heritage values.
- To facilitate the development of the lifestyle village to ensure it creates a development that is attractive, well planned, comprehensively serviced and its amenity does not conflict with adjoining land uses.

The proposed scheme amendment will facilitate the improved delivery of Sierra Lifestyle Estate by enabling ease of construction on site. This is entirely consistent with the applicable Local Planning Strategy objectives for the subject site.

3.3 State Planning Policy 3.7 – Planning in Bush Fire Prone Areas

State Planning Policy 3.7 – Planning in Bush fire Prone Areas is concerned with bushfire risk management in land use planning and development. SPP3.7 is applicable to the proposed scheme amendment due to the subject site's location a bushfire prone area as shown in Figure 4. SPP3.7 seeks to guide and reduce the impact of bushfire on property and infrastructure.

In considering the provisions of SPP3.7, it is important to stress we are not necessarily seeking an intensification in development at the site, rather it is a minor change to the existing framework to enable ease of delivery. Regardless, we acknowledge the threat of bushfire and have engaged Bushfire Prone Planning to prepare a revised Bushfire Management Plan to support the proposed scheme amendment which is contained in **Attachment 2**.

In accordance with the revised Bushfire Management Plan, the below is of relevance in progressing the proposed scheme amendment:

- The proposed development complies with the provisions of SPP3.7 with the exception of the vehicular access element and specifically:
    - Provision of multiple access routes.
    - Emergency access ways.
    - Through-road.
- The non-compliance is a direct result of the relevant requirements changing over time and applying to a legacy development that has existed for many years.
- To combat the non-compliance, it is proposed that residents, in the event of a bushfire, will shelter on site as there is sufficient cleared area free from vegetation that will allow shelter on site.

3.4 Separation Distances between Industrial and Sensitive Land Uses (GS3)

The EPA Guidance Note 3 - Separation Distances between Industrial and Sensitive Land Use provides generic separation distances (buffers) between industrial and sensitive land uses to avoid conflicts between incompatible land uses. This is relevant

in considering the proposed developments proximity to both the Linley Valley Abattoir and the associated anaerobic ponds.

The proposed development seeks to maintain the existing approved 500m separation distance to this adjoining development which is consistent with the recommended separation distance in Guidance Note 3.

4.0 PROPOSED DEVELOPMENT

In order to provide an illustration of the potential intended development plan, a Masterplan for the estate has been developed and provided in Attachment 3. The proposed lot layout and road network is purely indicative at this stage and it is simply intended to illustrate how the proposed development is situated relative to the surrounding properties and also to existing development at the site.

The final layout of the estate will be broadly based on this masterplan with additional detail and final layout to be confirmed through the preparation of a Local Development Plan which will also include built form controls (beyond the R-Codes) that will apply to the site. This Local Development Plan will be a requirement of the proposed Special Use provisions.

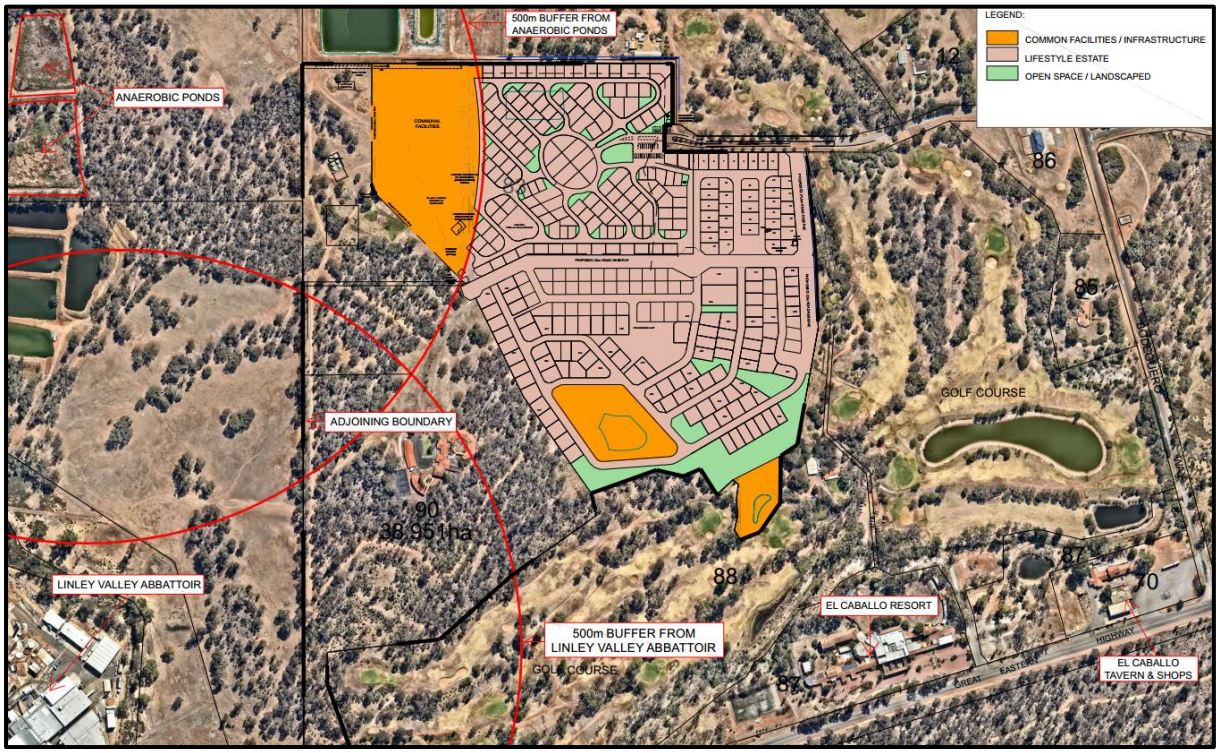

Figure 2 - Masterplan

5.0 JUSTIFICATION

The proposed amendment to the Shire of Northam Local Planning Scheme No.6 as described in Section 1 above is considered to be entirely appropriate for approval as:

1. It will support the improved delivery and expansion of the existing planned lifestyle village as it enables the development of 'Grouped Dwellings' at the site. The key distinction between 'Grouped Dwellings' and 'Park Home Park' (which can be constructed now) is that 'Grouped Dwellings' can be permanent and constructed on site where 'Park Home Park's have to be constructed offsite and transported to the subject site. This will rapidly improve the ability to deliver additional dwellings, should the demand be there.

2. The amendment represents a very minor change to the existing framework applicable at the site with the intended development outcome remaining entirely consistent with the existing approved planning framework.

3. The amendment represents a simplification of the framework applicable to the site through the amalgamation of two separate Special Use zones which both had an independent set of conditions to be satisfied. This will assist in delivering an estate with consistent built form outcomes throughout.

4. The amendment has demonstrated that the most recent requirements of SPP3.7 can be appropriately addressed with development on site able to successfully mitigate against the relevant bushfire threat.

5. The amendment will not result in development that varies the existing approved separation distances from the Linley Valley Abattoir and the associated anaerobic ponds.

Ultimately, we consider the proposed amendment appropriate for initiation as the proposal is expected to have no negative impact on the community's current social and economic needs.

6.0 CONCLUSION

In light of the above, the proposed scheme amendment to LPS6 is considered appropriate and justified given the comprehensive assessment above demonstrating the suitability against the prevailing context of the site and existing development context. The proposed amendment to amalgamate Special Use 12 and Special Use 9 and adding the ability to construct 'Grouped Dwelling' will assist in an improved delivery of the proposed lifestyle estate.

As a result, we are of the view that the proposed amendment to the *Shire of Northam Local Planning Scheme* warrants favourable consideration, initiation and subsequent approval by the Shire of Northam and the Western Australian Planning Commission.

FORM 2A

Planning and Development Act 2005
RESOLUTION TO INITIATE AMENDMENT TO LOCAL PLANNING SCHEME

Local Planning Scheme No. 6
Amendment 22

Resolved that the Local Government pursuant to section 75 of the *Planning and Development Act* 2005, amend the above Local Planning Scheme by:

1) Amending the provisions of Schedule 4 – Special Use Zone 9 to read as follows:

No	Description of Land	Special Use	Conditions
9	Lot 90 (No. 51) Jocoso Rise, Wundowie	Grouped Dwellings, Motel, Office, Club Premises, Park Home Park, Reception Centre and associated uses.	1. Subdivision of land shall be limited to built or survey strata subdivision. 2. At subdivision stage use restrictions shall be imposed on lots to limit occupancy to persons 45 years and older. 3. The R-Codes are to apply. Subdivision and development is to be in accordance with the R40 density code. 4. Lots shall be connected to a reticulated water supply and sewerage system. 5. Prior to the submission of an application for development approval, a Local Development Plan (LDP) for the land is to be prepared and approved by the local government. The LDP should provide sufficient information to address the requirements of the Scheme including traffic management, car parking, waste management and pedestrian access and walkways. 6. Prior to subdivision or development, a Bushfire Management Plan (BMP) and Emergency Evacuation Plan is to be prepared and approved, in accordance with the Guidelines for Planning in Bushfire Prone Areas (as amended). The BMP should provide sufficient information to address the bushfire protection criteria including siting and design of development and vehicle access. 7. Maximum development of 19 motel units and uses ancillary thereto including

			swimming pool, gym and tennis court, as approved by the local government. 8. Subdivision and development on the land shall be subject to a notification on title to advise landowners of potential impact from the operation of the Linley Valley abattoir. 9. Any expansion is to be considered via a local planning scheme amendment to modify the provisions of the Special Use zone.

2) Deleting Special Use Zone No. 12 from Schedule 4.
3) Amending the scheme maps accordingly.

The Amendment is Standard under the provisions of the Planning and Development (Local Planning Schemes) Regulations 2015 for the following reason (s):

a) The Amendment is consistent with the objectives of the Local Planning Strategy.
b) The Amendment is anticipated to have minimal impact on surrounding land; and
c) The Amendment is anticipated to have not significant environmental, social, economic or governance impacts on land in the scheme area.

Dated this 21 day of August 2024

_____

Chief Executive Officer

ATTACHMENT 1

Certificate of Title

WESTERN AUSTRALIA

TITLE NUMBER	
Volume	Folio
2799	**947**

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 90 ON DEPOSITED PLAN 72807

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

REALISE RETIREMENT WA 1 PTY LTD OF SUITE 21, 285A CROWN STREET, SURRY HILLS NSW 2010
(T P648132) REGISTERED 3/8/2023

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. F012347 EASEMENT BURDEN FOR WATER TREATMENT PURPOSES. REGISTERED 14/10/1992.
2. G200423 EASEMENT BURDEN FOR WATER TREATMENT, PIPELINE AND RIGHT OF CARRIAGEWAY PURPOSES - SEE SKETCH ON DEPOSITED PLAN 72807. REGISTERED 12/6/1996.
   M967294 SURRENDER OF EASEMENT. AS TO THE PORTIONS MARKED "B" AND "E" ON DEPOSITED PLAN 72807 ONLY. REGISTERED 31/7/2015.
3. EASEMENT BURDEN CREATED UNDER SECTION 27A T.P. & D. ACT FOR ABOVE GROUND ELECTRICITY PURPOSES TO WESTERN POWER CORPORATION - SEE DEPOSITED PLAN 72807 AS CREATED ON DEPOSITED PLAN 32453.
4. EASEMENT BURDEN CREATED UNDER SECTION 136C T.L.A. FOR SEWERAGE PURPOSES - SEE DEPOSITED PLAN 72807 AS CREATED ON DEPOSITED PLAN 39712.
5. M967293 EASEMENT BURDEN FOR RIGHT OF CARRIAGEWAY PURPOSES - SEE DEPOSITED PLAN 402248. REGISTERED 31/7/2015.
6. O167456 CAVEAT BY RITCHARD JOHN JOHNSTON, THI THOM JOHNSTON AS TO PORTION ONLY LODGED 7/6/2019.
7. P830111 MORTGAGE TO WESTPAC ADMINISTRATION PTY. LIMITED OF LEVEL 2 275 KENT STREET SYDNEY NSW 2000 REGISTERED 19/12/2023.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

END OF PAGE 1 - CONTINUED OVER

REGISTER NUMBER: 90/DP72807 VOLUME/FOLIO: 2799-947 PAGE 2

SKETCH OF LAND:	DP72807
PREVIOUS TITLE:	2521-361, 2521-363, 2551-400
PROPERTY STREET ADDRESS:	51 JOCOSO RISE, WUNDOWIE.
LOCAL GOVERNMENT AUTHORITY:	SHIRE OF NORTHAM

NOTE 1: O362185 SECTION 138D TLA APPLIES TO CAVEAT N079970
NOTE 2: P461807 SECTION 138D TLA APPLIES TO CAVEAT P429014

ATTACHMENT 2

Bushfire Management Plan

Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

Site address: El Caballo Lifestyle Village - Lot 90 (51) Jocoso Rise, Wundowie

Site visit: Yes ☐ No ☑

Date of site visit (if applicable): Day 06 Month June Year 2024

Report author or reviewer: Mike Scott

WA BPAD accreditation level (please circle):

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

If accredited please provide the following.

BPAD accreditation number: 27795 Accreditation expiry: Month February Year 2025

Bushfire management plan version number: 1.0

Bushfire management plan date: Day 10 Month July Year 2024

Client/business name: Dynamic Planning and Developments

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	✔	
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the bushfire protection criteria elements)?	✔	

Is the proposal any of the following (see SPP 3.7 for definitions)?	Yes	No
Unavoidable development (in BAL-40 or BAL-FZ)		✔
Strategic planning proposal (including rezoning applications)	✔	
High risk land-use		✔
Vulnerable land-use	✔	

None of the above ☐

Note: Only if one (or more) of the above answers in the tables is yes should the decision maker (e.g. local government or the WAPC) refer the proposal to DFES for comment.

Why has it been given one of the above listed classifications (E.g. Considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

The proposal is a strategic planning proposal (local scheme amendment) for the existing El Caballo Lifestyle Village.

Method 2 has been used to calculate a <2kW radiant heat flux setback, but not the BAL.

Prior approvals for the site considered the development to be a vulnerable land use.

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

Signature of report author or reviewer 

Date 10/07/2024

BUSHFIRE PRONE PLANNING

El Caballo Lifestyle Village

Bushfire Management Plan

(PREPARED FOR PLANNING APPLICATION ASSESSMENT PURPOSES)

- *Assessment of potential bushfire impact.*
- *Environmental considerations.*
- *Assessment of proposed development's ability to apply bushfire protection measures that satisfy the requirements for planning approval.*
- *Creation of responsibilities to implement and maintain bushfire protection measures.*

Assessing all relevant requirements established by State Planning Policy 3.7

Lot 90 (51) Jocoso Rise, Wundowie

Shire of Northam

Strategic Planning Proposal - Local Planning Scheme Amendment

10 July 2024

Job Reference No: 170505

BPP GROUP PTY LTD T/A BUSHFIRE PRONE PLANNING

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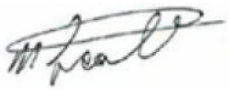
DOCUMENT CONTROL

PREPARATION		
Author:	Neil Stoney (BPAD Level 1 No. 58627)	
Reviewed:	Mike Scott (BPAD Level 3 No. 27795)	

VERSION HISTORY		
Version	Status/Details	Date
1.0	Original	10 July 2024

DISTRIBUTION					
Destination		Version	No. Copies	Hard Copy	Electronic Copy
Person	Email				
Reegan Cake	reegan.cake@dynamicplanning.net.au	1.0	1	☐	☒

Limitations: *The protection measures that will be implemented based on information presented in this Bushfire Management Plan are minimum requirements and they do not guarantee that buildings or infrastructure will not be damaged in a bushfire, persons injured, or fatalities occur either on the subject site or off the site while evacuating.*

This is substantially due to the unpredictable nature and behaviour of fire and fire weather conditions. Additionally, the correct implementation of the required protection measures (including bushfire resistant construction) and any other required or recommended measures, will depend upon, among other things, the ongoing actions of the landowners and/or operators over which Bushfire Prone Planning has no control.

All surveys, forecasts, projections and recommendations made in this report associated with the proposed development are made in good faith based on information available to Bushfire Prone Planning at the time. All maps included herein are indicative in nature and are not to be used for accurate calculations.

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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SUMMARY STATEMENTS

THIS DOCUMENT – STATEMENT OF PURPOSE

The Bushfire Management Plan (BMP)

The BMP sets out the required package of bushfire protection measures to lessen the risks associated with a bushfire event. It establishes the responsibilities to implement and maintain these measures.

The BMP also identifies the potential for any negative impact on any environmental, biodiversity and conservation values that may result from the application of bushfire protection measures or that may limit their implementation.

Risks Associated with Bushfire Events

The relevant risks are the potential for loss of life, injury, or destroyed or damaged assets which results in personal loss and economic loss. For a given site, the level of that risk to persons and assets (the exposed elements) is a function of the potential threat levels generated by the bushfire hazard, and the level of exposure and vulnerability of the at risk elements to the threats.

Bushfire Protection Measures

The required package of protection measures is established by *State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7)*, its associated *Guidelines* and any other relevant guidelines or position statements published by the Department of Planning, Lands and Heritage. These measures are limited to those considered by the WA planning authorities as necessary to be addressed for the purpose of land use planning. They do not encompass all available bushfire protection measures as many are not directly relevant to the planning approval stage. For example:

- Protection measures to reduce the vulnerability of buildings to bushfire threats is primarily dealt with at the building application stage. They are implemented through the process of applying the Building Code of Australia (Volumes 1 and 2 of the national Construction Code) in accordance with WA building legislation and the application of construction requirements based on a building's level of exposure - determined as a Bushfire Attack Level (BAL) rating); or
- Protection measures to reduce the threat levels of consequential fire (ignited by bushfire and involving combustible materials surrounding and within buildings) and measures to reduce the exposure and vulnerability of elements at risk exposed to consequential fire, are not specifically considered.

The package of required bushfire protection measures established by the Guidelines includes:

- The requirements of the bushfire protection criteria which consist of:
  - Element 1: Location (addresses threat levels).
  - Element 2: Siting and Design of Development (addresses exposure levels of buildings).
  - Element 3: Vehicular Access (addresses exposure and vulnerability levels of persons).
  - Element 4: Water (addresses vulnerability levels of buildings).
  - Element 5: Vulnerable Tourism Land Uses (addresses exposure and vulnerability as per Elements 1-4 but in use specific ways and with additional considerations of persons exposure and vulnerability).
- The requirement to develop Bushfire Emergency Plans / Information for 'vulnerable' land uses for persons to prepare, respond and recover from a bushfire event (this addresses vulnerability levels).
- The requirement to assess bushfire risk and incorporate relevant protection measures into the site emergency plans for 'high risk' land uses (this addresses threat, exposure and vulnerability levels).

Compliance of the Proposed Development or Use with SPP 3.7 Requirements

The BMP assesses the capacity of the proposed development or use to implement and maintain the required 'acceptable' solutions and any additionally recommended bushfire protection measures - or its capacity to satisfy the policy intent through the justified application of additional bushfire protection measures as supportable 'alternative' solutions.

THE PROPOSED DEVELOPMENT/USE – BUSHFIRE PLANNING COMPLIANCE SUMMARY		
Environmental Considerations		**Assessment Outcome**
Will land with identified environmental, biodiversity and conservation values limit the full application of the required bushfire protection measures?		No
Will land with identified environmental, biodiversity and conservation values need to be managed in the implementation and maintenance of the bushfire protection measures - but not limit their application?		Yes
Required Bushfire Protection Measures The Acceptable Solutions of the Bushfire Protection Criteria (Guidelines)		**Assessment Outcome**
Element	The Acceptable Solutions	
1: Location	A1 Location	Fully Compliant
	A1.1 Development location	Fully Compliant
2: Siting and Design of Development	A2 Siting and Design of Development	Fully Compliant
	A2.1 Asset Protection Zone (APZ)	Fully Compliant
3: Vehicular Access	A3 Vehicular Access	Not Compliant
	A3.1 Public roads	Fully Compliant
	A3.2a Multiple access routes	Not Compliant
	A3.2b Emergency access way	Not Compliant
	A3.3 Through-roads	Not Compliant
	A3.4a Perimeter roads	Fully Compliant
	A3.4b Fire service access route	Fully Compliant
	A3.5 Battle-axe legs	N/A
	A3.6 Private driveways	N/A
4: Water	A4 Water	Fully Compliant
	A4.1 Identification of future water supply	N/A
	A4.2 Provision of water for firefighting purposes	Fully Compliant
The Methodology Applied to the Development of an Alternative Solution The necessity for an alternative solution is in response to non-compliance with the applicable acceptable solutions.		**Applied**
Merit based assessment - identified as 'minor' development (Guidelines s4.5.3)		No

Merit based assessment - identified as 'unavoidable' development (Guidelines s5.7)	No
Performance based assessment - compare the potential residual risk level of the acceptable solution protection measure with the proposal's implementation of that measure by comparing the determinate risk factors.	No
Performance based assessment - demonstrate the improvement in bushfire performance for existing development/use resulting from the proposed additional development compared to the existing state (in terms of reliability, robustness and resilience against bushfire threats).	Yes
Performance based assessment - develop an alternative solution to achieve the intent of the element based through satisfying the stated performance principle.	No
Development of a Bushfire Risk Assessment and Management Report - an assessment of proposed development/use risk levels associated with a bushfire event to indicate or determine the residual risk levels that will apply to all elements exposed to a bushfire hazard.	No
Other 'Bushfire Planning' Documents to Be Produced This necessity for additional documents is determined by the proposed development/use type and the requirements established by SPP 3.7 and the associated Guidelines (as amended). They may be produced concurrently or subsequent to the BMP. Relevant actions will be identified within Section 6 'Responsibilities for Implementation of Bushfire Protection Measures.	**Required**
Bushfire Emergency Plan: An operational document presenting prevent, prepare, respond and recover procedures and associated actions. As necessary, supporting information to justify determinations is included.	Yes
Bushfire Emergency Information (Poster): As a concise response information poster for certain vulnerable land uses.	No
Bushfire Emergency Information (Content): As content for inclusion into the Site's Emergency Plan for certain high risk land uses:	No
Bushfire Risk Assessment and Management Report:	No

1 PROPOSAL DETAILS AND THE BUSHFIRE MANAGEMENT PLAN

1.1 The Proposed Development/Use Details, Plans and Maps

The Proposal's Planning Stage For which certain bushfire planning documents are required to accompany the planning application.		Strategic Planning Proposal - Local Planning Scheme Amendment
The Subject Land/Site		Lot 90 (51) Jocoso Rise, Wundowie
Total Area of Subject Lot/Site		38.95 hectares
Number of Additional Lots Created		Existing lot(s) = 1 / Proposed strata lot(s) = 276 + 1 balance lot
Primary Proposed Construction	**Type(s)**	New Building(s)
	NCC Classification	Class 1a (house)
The 'Specific' Land Use Type for **Bushfire Planning** When applicable, this classification establishes a requirement to conduct assessments and develop documents that are additional to this Bushfire Management Plan.		Vulnerable Land Use

Description of the Proposed Development/Use

This BMP has been prepared to support the Scheme Amendment and rezoning of the approved and existing/partly constructed El Caballo Lifestyle Village, to allow for grouped dwellings.

The proposed amendment is to allow for grouped dwellings as built strata within the Village, as well as the approved survey strata lots. The key difference between built strata and survey strata is the existence of common property. The proposed amendment is not to increase the occupancy of the development at completion.

The updated masterplan provided within this BMP includes the the over 55s village as survey or built strata lots, a balance lot, common facilities/infrastructure areas, and public open spaces and road reserves. The communal facilities do not have detailed layout at this stage, but may include workshops, a family centre, and communal large vehicle parking (caravans).

The subject site does not comply with the Acceptable Solution A3.2a Multiple Access Routes, due to the legacy lot and road network design.

An existing Emergency Access Way along the western boundary connects to Great Eastern Highway. This was approved as part of previous management strategies for the El Caballo Lifestyle Village, but does not comply with Acceptable Solution A3.2b within the current version of the *Guidelines*.

The Guidelines Section 2.7: *Legacy Approvals and Discretionary Decision Making* should be considered in relation to the proposal.

A performance-based assessment is provided in Section 5.7 detailing the access options. On completion of ground works and vegetation management, an approximately 1.4-hectare area subject to <2kW/m2 radiant heat flux (calculated at 1200K flame temperature) will be available as an open shelter location as a last resort.

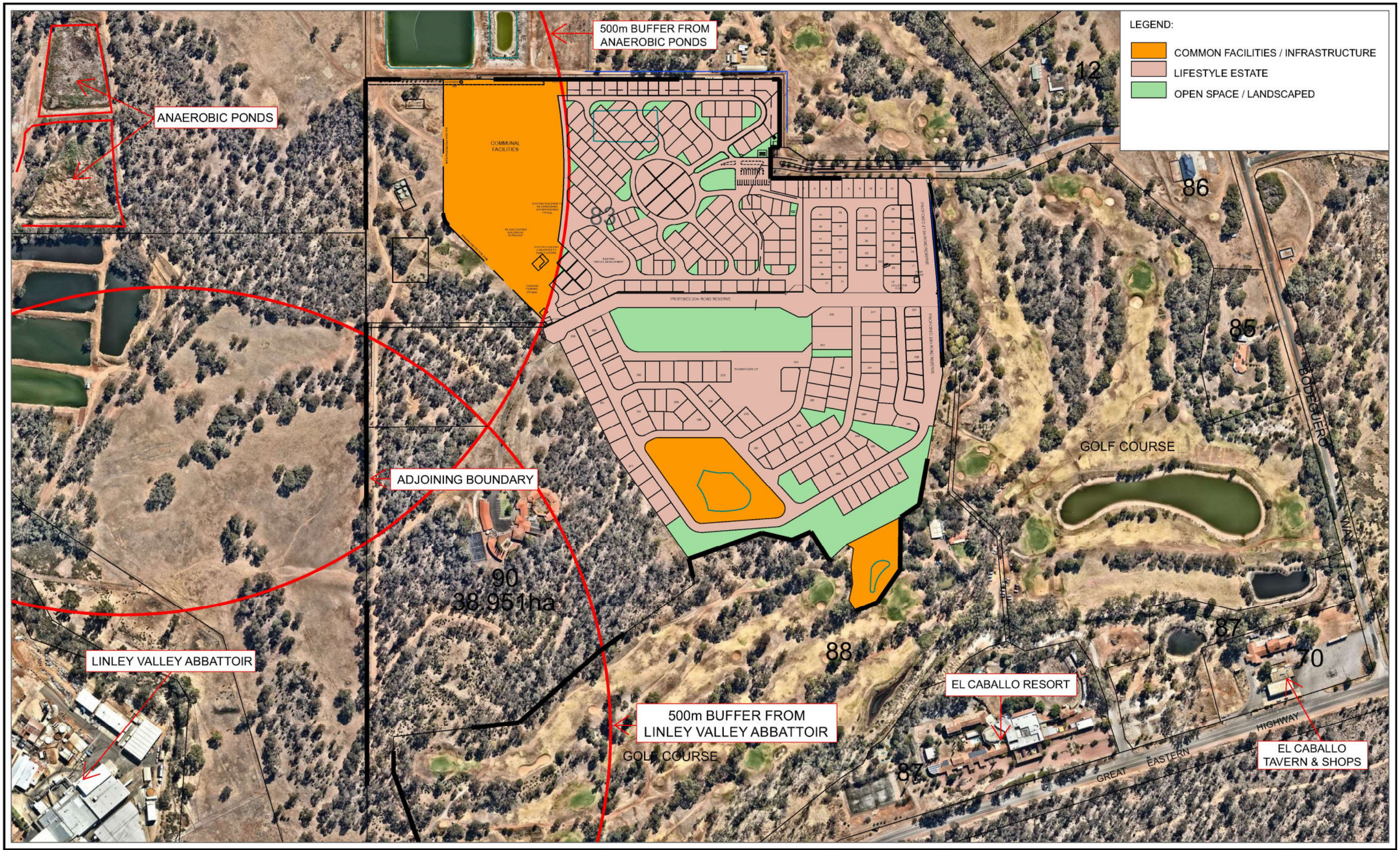
The previous application and Bushfire Management Plan established the proposal to be a 'Vulnerable' Land Use.

An updated Bushfire Emergency Plan is required to be produced prior to sale of subject lots.

Description of Planned Staged Development and the Management of Potential Bushfire Planning Issues

Site works are intended to be completed prior to sale of the strata lots.

Where staging occurs, each stage will be able to comply with the required bushfire protection measures independently of the subsequent stage, through vegetation management/clearing and installation of the internal through-road network.



PROPOSED MASTERPLAN

LOT 90 (No. 51) JOCOSO RISE
WUNDOWIE

Urban Development Institute of Australia WESTERN AUSTRALIA

Planning Institute Australia

CPP CERTIFIED PRACTISING PLANNER

SCALE: 1:4000 @ A3
DATE: 13th JUNE 2024
FILE: 1842_13.06.2024.dwg
DRAW: - SB
CHECKED: -

DYNAMIC PLANNING AND DEVELOPMENTS
E: admin@dynamicplanning.net.au
T: (08) 9275 4433
W: www.dynamicplanning.net.au
SUITE 15, 29 COLLIER ROAD
MORLEY WA 6062
ABN: 99 169 411 705

N W E S

Figure 1.2

Location Plan

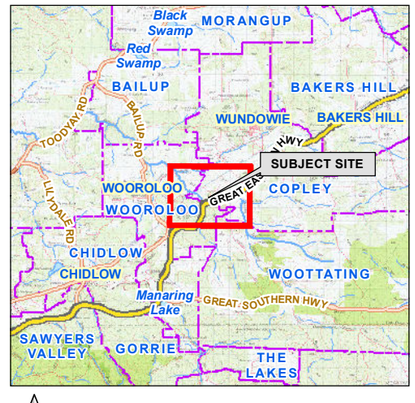
Lot 90 Plan 072807, Area : 389508 sq m
51 Jocoso Rise
WUNDOWIE
SHIRE OF NORTHAM

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

- Subject Site
- Other Lots
- Local Government Authority
- Locality / Suburb
- Reserves

0 200 400 600 800 1,000
Metres

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



Aerial Imagery : Landgate/SLIP
Image Date : Jan 2024

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Neil Stoney 15/07/2024
Map updated by: Neil Stoney 15/07/2024
A3 Scale 1:16,000

BUSHFIRE PRONE PLANNING

Map Document Path / Name: K:\Projects\Jobs 2017\170505 - El Caballo Lifestyle Village (BMP)\170505 - BMP - May 2024\Mapping\MXD\170505_Fig1-2_LOC_El-Caballo-Lifestyle-Village.mxd

WHERE SPP 3.7 AND THE GUIDELINES ARE TO APPLY – DESIGNATED BUSHFIRE PRONE AREAS

All higher order strategic planning documents, strategic planning proposals, subdivisions and development applications located in designated bushfire prone areas need to address SPP 3.7 and its supporting Guidelines. This also applies where an area is not yet designated as bushfire prone but is proposed to be developed in a way that introduces a bushfire hazard.

For development applications where only part of a lot is designated as bushfire prone and the proposed development footprint is wholly outside of the designated area, the development application will not need to address SPP 3.7 or the Guidelines. (Guidelines DPLH 2021 v1.4, s1.2).

For subdivision applications, if all the proposed lots have a BAL-LOW indicated, a BMP is not required. (Guidelines DPLH 2021 v1.4, s5.3.1).

Figure 1.3

Bushfire Prone Area

Lot 90 Plan 072807, Area : 389508 sq m
51 Jocoso Rise
WUNDOWIE
SHIRE OF NORTHAM

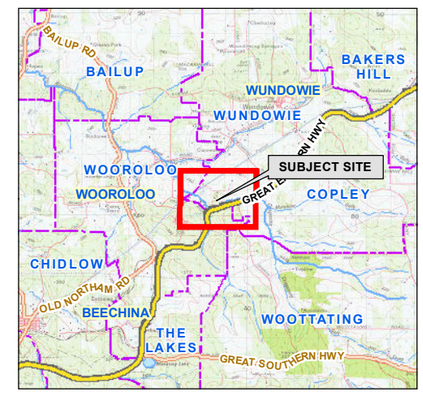
BODEGUERO WAY
LINLEY VALLEY RD
GREAT EASTERN HWY
WARRIN RD
Woorooloo Brook
Woorooloo Brook
Clingenning Gully

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

- Subject Site
- Other Lots
- Bushfire Prone Areas (2021)

0 100 200 300 400 500
Metres

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



Aerial Imagery : Landgate/SLIP
Image Date : Jan 2024

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Neil Stoney 15/07/2024
Map updated by: Neil Stoney 15/07/2024
A3 Scale 1:10,000

BUSHFIRE PRONE PLANNING

Map Document Path / Name: K:\Projects\Jobs 2017\170505 - El Caballo Lifestyle Village (BMP)\170505 - BMP - May 2024\Mapping\MXD\170505_Fig1-3_BPA_El-Caballo-Lifestyle-Village.mxd

1.2 The Bushfire Management Plan (BMP)

1.2.1 Commissioning and Purpose

Proponent:	Dynamic Planning and Developments
Bushfire Prone Planning commissioned to produce the BMP by:	Reegan Cake
Purpose of the BMP:	To assess the proposal's ability to meet all relevant requirements established by State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7), the associated 'Guidelines and any relevant Position Statements; and To satisfy the requirement for the provision of a Bushfire Management Plan to accompany the strategic planning proposal.
BMP to be submitted to:	Shire of Northam

1.2.1 Other Documents with Implications for Development of this BMP

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 planned proposal for the subject. They potentially have implications for the assessment of bushfire threats and the identification and implementation of the protection measures that are established by this Bushfire Management Plan.

Table 1.4: Other relevant documents that may influence threat assessments and development of protection measures.

RELEVANT DOCUMENTS					
Document	Relevant	Currently Exists	To Be Developed	Copy Provided by Proponent / Developer	Title
Bushfire Management Plan	No	Yes	No	Yes	FMP Killara Estate Wundowie (FirePlan WA Feb 2009)
Implications for this BMP: The BMP was produced prior to the release of State Planning Policy 3.7, to support a subdivision application of the parent lot into 4 rural residential lots, with one proposed lot to be developed into the El Caballo Lifestyle Village.					
Bushfire Management Plan	Yes	Yes	No	N/A	170505 – El Caballo Lifestyle Village (BMP)v1.1 (Bushfire Prone Planning Feb 2018)
Implications for this BMP: The BMP was produced to support the subdivision of the parent lot into 5 large land holdings, with a large balance lot and 4 lots containing the existing and expanded El Caballo Lifestyle Village, an Aged Care facility, an effluent disposal/waste treatment plant, and a lot intended for subsequent residential subdivision.					
Bushfire Emergency Plan or Information	No	Yes	No	N/A	170505 - Bushfire Evacuation (Response) Plan v1.1 (Bushfire Prone Planning Jun 2018)
Implications for the BMP: The BEP advises evacuation procedures using the existing EAW, which is not compliant with the current version of the Guidelines for Planning in Bushfire Prone Areas v1.4.					

Bushfire Emergency Plan or Information	Yes	No	Yes	N/A	Pending
Implications for the BMP: A new/updated BEP will be prepared to support the preparation, response, and recovery procedures to bushfire emergencies for El Caballo Lifestyle Village.					

2 BUSHFIRE PRONE VEGETATION – ENVIRONMENTAL & ASSESSMENT CONSIDERATIONS

2.1 Environmental Considerations – 'Desktop' Assessment

This 'desktop' assessment must not be considered as a replacement for a full Environmental Impact Assessment. It is a summary of potential environmental values at the subject site, inferred from information contained in listed datasets and/or reports, which are only current to the date of last modification.

These data sources must be considered indicative where the subject site has not previously received a site-specific environmental assessment by an appropriate professional.

Many bushfire prone areas also have high biodiversity values. Consideration of environmental priorities within the boundaries of the land being developed can avoid excessive or unnecessary modification or clearing of vegetation. Approval processes (and exemptions) apply at both Commonwealth and State levels.

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 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 Guidelines v1.4, the Bushfire and Vegetation Factsheet - WAPC, Dec 2021 and https://www.der.wa.gov.au/our-work/clearing-permits

2.1.1 Vegetation of Significance to be Retained on Public Land

IDENTIFICATION OF PROTECTED VEGETATION ON PUBLIC LAND							
Land with Environmental, Biodiversity, Conservation and Social Values	Relevant to Proposal	Influence on Bushfire Threat Levels and / or Application of Bushfire Protection Measures	Relevant Dataset	Information Source(s) Applied to Identification of Relevant Vegetation			Further Action Required
				Dataset	Landowner or Developer	Environmental Asset or Vegetation Survey	
Legislated Lands and Waters Tenure categories include national and conservation parks, nature and crown reserves, state forest.	No	No	DBCA-011	☒	☐	☐	None
Designated Public Open Space	No	No	-	☐	☒	☐	None

2.1.2 Declared Environmentally Sensitive Areas (ESA)

IDENTIFICATION OF RELEVANT ENVIRONMENTALLY SENSITIVE AREAS							
ESA Class	Relevant to Proposal	Influence on Bushfire Threat Levels and / or Application of Bushfire Protection Measures	Relevant Dataset	Information Source(s) Applied to Identification of Relevant Vegetation			Further Action Required
				Dataset	Landowner or Developer	Environmental Asset or Vegetation Survey	
Heritage Areas (World and National)	No	No	Relevant register or mapping	☐	☐	☐	None
Wetlands and their 50m Buffer These are wetlands of international importance (Ramsar List), conservation category and nationally important.	Yes	No	DBCA-010 and 011, 019, 040, 043, 044	☒	☐	☐	None
Threatened and Priority Flora and their continuous 50m buffer	Possible	Unknown	DBCA-036	Restricted Scale of Data Available (security)	☐	☐	Vegetation survey
Threatened Ecological Community	Possible	Unknown	DBCA-038		☐	☐	Vegetation survey
Bush Forever	No	No	DPLH-022, SPP 2.8	☒	☐	☐	None

2.1.3 Locally Significant Conservation Areas – Local Natural Areas (LNA)

IDENTIFICATION OF LOCALLY SIGNIFICANT CONSERVATION AREAS							
Land with Environmental, Biodiversity and Conservation Values	Relevant to Proposal	Influence on Bushfire Threat Levels and / or Application of Bushfire Protection Measures	Relevant Dataset	Information Source(s) Applied to Identification of Relevant Vegetation			Further Action Required
				Dataset	Landowner or Developer	Environmental Asset or Vegetation Survey	
Native Vegetation / Remnant Vegetation	Yes	Yes - Significant	N/A	☐	☐	☐	Vegetation survey
Riparian Zones / Foreshore Areas	Yes	No		☒	☐	☐	None
Habitat Vegetation and Wildlife Corridors	Possible	Unknown		☐	☐	☐	Vegetation survey

COMMENTS:

Vegetation clearing/modification will be required to create the proposed lots, public open space, roads, and APZs. A vegetation survey may be requested by the decision maker.

The Wooroloo Brook and its 50m buffer runs through the subject lot southernmost at the south-western extent. No development or vegetation modification is proposed within this area.

2.1.4 Response of Proposed Development to Identified Environmental Limitations

Consideration of the implications that identified protected areas of vegetation (i.e., those with environmental and subject to conservation) have for the proposed development.

PROPOSED DEVELOPMENT RESPONSE TO IDENTIFIED 'PROTECTED' VEGETATION	
The existence of 'protected' areas of vegetation has implications for the ability of the proposed development to reduce potential bushfire impact through modification or removal of vegetation.	No
Application of Design and/or Construction Responses to Limit Vegetation Modification or Removal	
Modify the development location to reduce exposure by increasing separation distance.	No
The El Caballo Lifestyle Village is an existing and ongoing development so the location cannot be modified.	
Redesign development, structure plan or subdivision.	Not required
The proposed lot layout (including public open spaces and communal spaces) has been designed within previously cleared areas to the extent possible.	
Reduction of lot yield where this can increase available separation distances.	Considered and applied
Lot yield has been reduced compared to previous drafts of the proposed, which has increased the separation distances from classified vegetation.	
Cluster development to limit modification or removal of vegetation.	Not required
The proposed layout has been clustered.	
Construct building(s) to the requirements corresponding to higher BAL ratings to reduce required separation distances.	Not required
The minimum separation distance applied to proposed lots is associated with BAL-29. This is the highest acceptable BAL for the Bushfire Protection Criteria Element 1 and 2 assessments.	

2.2 Bushfire Assessment Considerations

2.2.1 Planned Onsite Vegetation Landscaping

Identification of areas of the subject site planned to be landscaped, creating the potential for increased or decreased bushfire hazard for proposed development.

PLANNED LANDSCAPING	
Relevant to Proposal:	Yes
The proposed subdivision layout includes public open spaces which are required to be managed to a low threat state in perpetuity.	

2.2.2 Planned / Potential Offsite Rehabilitation or Re-Vegetation

Identification of areas of land adjacent to the subject site on which re-vegetation (as distinct from natural re-generation) will or may occur and is likely to present a greater bushfire hazard for proposed development.

POTENTIAL RE-VEGETATION PROGRAMS		
Land with Environmental, Biodiversity, Conservation and Social Values	Relevant to Proposal	Description
Riparian Zones / Foreshore Areas	No	
Wetland Buffers	No	
Legislated Lands	No	
Public Open Space	No	
Road Verges	No	
Other	No	

2.2.3 Identified Requirement to Manage, Modify or Remove Onsite or Offsite Vegetation

Identification of native vegetation subject to management, modification or removal.

REQUIREMENT TO MANAGE, MODIFY OR REMOVE NATIVE VEGETATION	
Has a requirement been identified to manage, modify or remove **onsite** native vegetation to establish the required bushfire protection measures on the subject site?	Yes
Vegetation clearing/modification will be required to create the proposed lots, public open space, roads, and APZs.	
Is approval, from relevant state government agencies and/or the local government, to modify or remove **onsite** native vegetation required? (Note: if 'Yes' evidence of its existence should be provided in this BMP).	Possible
Approval may be required for onsite vegetation management/removal, unless committed by zoning.	
Has a requirement been identified to manage, modify or remove **offsite** native vegetation to establish the required bushfire protection measures on the subject site?	No

Is written approval required, from relevant state government agencies and/or the local government, that permits the landowner, or another identified party, to modify or remove **offsite** bushfire prone vegetation and/or conduct other works, to establish an identified bushfire protection measure(s)? If 'Yes', appropriate evidence of the approval or how it is to be established, shall be provided in this BMP as an addendum.	N/A
Is a written management agreement required that states the obligation of the landowner, or another responsible party, to manage defined areas of **offsite** bushfire prone vegetation, in perpetuity, to ensure the conditions of no fire fuels and/or low threat vegetation (refer to Appendix B) continue to be met? If 'Yes', appropriate evidence of the agreement or how it is to be established, shall be provided in this BMP as an addendum.	N/A

2.2.4 Classification Variations to Existing Areas of Vegetation

FOR THE PROPOSED DEVELOPMENT SITUATIONS TO BE ACCOUNTED FOR IN ASSESSING THE POTENTIAL BUSHFIRE IMPACT (BAL)	
Area(s) of land will be subject to future vegetation rehabilitation or re-vegetation that will require a change to a higher threat classification of vegetation on that land than that which currently exists. (Note: this is not regeneration to the mature natural state which is accounted for in the 'existing state' assessment in accordance with AS 3959:2018).	No
Modification of existing area(s) of classified vegetation due to the implementation of the proposed development and/or prior to the site's occupancy or use. This modification will require a change to a lower threat classification (or exclusion from classification) for that area of vegetation.	Yes
Refer to Figure 3.1.1 'Post Development Classified Vegetation' and Appendix A1.2 for justification details supporting the change.	
Complete removal of existing area(s) of classified vegetation due to the implementation of the proposed development and/or prior to the site's occupancy or use. This modification will require an exclusion from classification for that area of vegetation.	Yes
Refer to Figure 1.1 'Proposed Development Site Plan' and Figure 3.1.1 'Post Development Classified Vegetation'	

3 BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT

BUSHFIRE ATTACK LEVELS (BAL) - UNDERSTANDING THE RESULTS

The potential transfer (flux/flow) of radiant heat from the bushfire to a receiving object is measured in kW/m^2. The AS 3959:2018 BAL determination methodology establishes the ranges of radiant heat flux that correspond to each bushfire attack level. These are identified as BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ.

The bushfire performance requirements for certain classes of buildings are established by the Building Code of Australia (Vol. 1 & 2 of the NCC). The BAL will establish the bushfire resistant construction requirements that are to apply in accordance with AS 3959:2018 - *Construction of buildings in bushfire prone areas* and the NASH Standard – *Steel framed construction in bushfire areas (NS 300 2021),* whose solutions are deemed to satisfy the NCC bushfire performance requirements.

DETERMINED BAL RATINGS

A BAL Certificate can be issued for a determined BAL. A BAL can only be classed as 'determined' for an existing or future building/structure when:

1. It's final design and position on the lot are known and the stated separation distance from classified bushfire prone vegetation exists and can justifiably be expected to remain in perpetuity; or

2. It will always remain subject to the same BAL regardless of its design or position on the lot after accounting for any regulatory or enforceable building setbacks from lot boundaries as relevant and necessary (e.g., R-codes, restrictive covenants, defined building envelopes) or the retention of any existing classified vegetation either onsite or offsite.

If the BMP derives determined BAL(s), the BAL Certificate(s) required for submission with building applications can be provided, using the BMP as the assessment evidence.

INDICATIVE BAL RATINGS

A BAL Certificate cannot be issued for an indicative BAL. A BAL will be classed as 'indicative' for an existing or future building/structure when the required conditions to derive a determined BAL are not met.

This class of BAL rating indicates what BAL(s) could be achieved and the conditions that need to be met are stated.

Converting the indicative BAL into a determined BAL is conditional upon the currently unconfirmed variable(s) being confirmed by a subsequent assessment and evidential documentation. These variables will include the future building(s) location(s) being established (or changed) and/or classified vegetation being modified or removed to establish the necessary vegetation separation distance. This may also be dependent on receiving approval from the relevant authority for that modification/removal.

BAL RATING APPLICATION – PLANNING APPROVAL VERSUS BUILDING APPROVAL

1. **Planning Approval**: SPP.3.7 establishes that where BAL- LOW to BAL-29 will apply to relevant future construction (or existing structures for proposed uses), the proposed development may be considered for approval (dependent on the other requirements of the relevant policy measures being met). That is, BAL40 or BAL-FZ are not acceptable on planning grounds (except for certain limited exceptions).

   Because planning is looking forward at what can be achieved, as well as looking at what may currently exist, both determined and indicative BAL ratings are acceptable assessment outcomes on which planning decisions can be made (including conditional approvals).

2. **Building Approval:** The Building Code of Australia (Vol. 1 & 2 of the NCC) establishes that relevant buildings in bushfire prone areas must be constructed to the bushfire resistant requirements corresponding to the BAL rating that is to apply to that building. Consequently, a determined BAL rating and the BAL Certificate is required for a building permit to be issued - an indicative BAL rating is not acceptable.

3.1 BAL Assessment Summary (Contour Map Format)

INTERPRETATION OF THE BAL CONTOUR MAP

The BAL contour map is a diagrammatic representation of the results of the bushfire attack level assessment.

The map presents different coloured contours extending out from the areas of classified vegetation. Each contour represents a set range of radiant heat flux that potentially will transfer to an exposed element (building, person or other defined element), when it is located within that contour.

Each of the set ranges of radiant heat flux corresponds to a different BAL rating as defined by the AS 3959:2018 BAL determination methodology.

The width of each shaded BAL contour will vary dependant on both the BAL rating and the relevant parameters (calculation inputs) for the subject site. Their width represents the minimum and maximum vegetation separation distances that correspond to each BAL rating (refer to the relevant table below for these distances).

The areas of classified vegetation to be considered in developing the BAL contours, are those that will remain at the intended end state of the subject development once earthworks, clearing and/or landscaping and re-vegetation have been completed. Variations to this statement that may apply include:

- Both pre and post development BAL contour maps are produced; and/or
- Each stage of a development is assessed independently.

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 and 3.1.1	Table 3.2	Appendix A1	Table 3.1 Table 3.3 / BAL Contour Map Appendix A3 / Figure 5.1
Method 2 (Detailed)	Yes	Figure 3.1.1	Table 3.2	Appendix A2	
Reasons for the Application of the Method 2 Procedure					
1.	To apply the requirement to assume a higher flame temperature of 1200K when determining the availability of suitable onsite sheltering options for tourism vulnerable land uses (Guidelines v1.4 s5.5.3.1.3). This ensures the margin of safety is increased.				

Identification of the specific issues associated with the site and/or proposed development that have necessitated the use of the Method 2 procedure:

The proposed subdivision is not able to fully comply with Element 3 of the Bushfire Protection Criteria due to the legacy local road network limiting access/egress options.

The Method 2 procedure has been applied to determine an appropriate open area shelter location onsite as a last resort, where evacuation is no longer safe.

3.1.2 Site Assessment Data Applied to Construction of the BAL Contour Map(s)

RELEVANT CLASSIFIED VEGETATION	
Identification of Classified Vegetation that is Relevant to the Production of the BAL Contour Map(s)	Relevant Vegetation Map
The relevant vegetation for the post-development BAL contour map will be any area of classified vegetation - both within the subject site (onsite) and external to the subject site (offsite) - that will remain at the intended end state of the subject development once earthworks, any clearing and/or landscaping and re-vegetation have been completed.	Figure No. 3.2

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	(A) Forest	80	Upslope or flat 0	flat 0	flat 0	80	1200	Default	Default	Default	Default	Default
2	(A) Forest	80	Downslope >0-5	d/slope 4	upslope 5	80						
3	(A) Forest	80	Downslope >5-10	d/slope 9	upslope 10	80						
4	(A) Forest	80	Downslope >10-15	d/slope 12	upslope 15	80						
5	(B) Woodland	80	Upslope or flat 0	flat 0	flat 0	80						
6	(B) Woodland	80	Downslope >0-5	d/slope 2	upslope 5	80						
7	(B) Woodland	80	Downslope >5-10	d/slope 8	upslope 10	80						
8	(D) Scrub	80	Downslope >5-10	d/slope 6	upslope 10	80						
9	(G) Grassland	80/110	Upslope or flat 0	flat 0	flat 0	110						
10	(G) Grassland	80/110	Downslope >0-5	d/slope 2	upslope 5	110						
11	(G) Grassland	80/110	Downslope >5-10	d/slope 8	upslope 10	110						
12	(A) Forest	80	Upslope or flat 0	flat 0	flat 0	80						
13	(A) Forest	80	Downslope >0-5	d/slope 4	upslope 5	80						
14	(A) Forest	80	Downslope >5-10	d/slope 8	upslope 10	80						
15	(A) Forest	80	Downslope >10-15	d/slope 14	upslope 15	80						
16	(A) Forest	80	Downslope >15-20	d/slope 18	upslope 20	80						
17	(B) Woodland	80	Downslope >0-5	d/slope 3	upslope 5	80						
18	(B) Woodland	80	Downslope >5-10	d/slope 9	upslope 10	80						
19	(G) Grassland	80/110	Downslope >0-5	d/slope 4	upslope 5	110						
20	(G) Grassland	80/110	Downslope >5-10	d/slope 9	upslope 10	110						
21	Excluded cl 2.2.3.2(e & f)	N/A	N/A	-	-	-	-	-	-	-	-	-

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)							
		>40 kW/m²	40 kW/m²	29 kW/m²	19 kW/m²	12.5 kW/m²	N/A [2]	10 kW/m²	2 kW/m²
		Bushfire Attack Levels							
Area	Class	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW		
1	(A) Forest	<16	16-<21	21-<31	31-<42	42-<100	>100	-	152
2	(A) Forest	<20	20-<27	27-<37	37-<50	50-<100	>100	-	175
3	(A) Forest	<26	26-<33	33-<46	46-<61	61-<100	>100	-	207
4	(A) Forest	<33	33-<42	42-<56	56-<73	73-<100	>100	-	257
5	(B) Woodland	<10	10-<14	14-<20	20-<29	29-<100	>100	-	120
6	(B) Woodland	<13	13-<17	17-<25	25-<35	35<100	>100	-	138
7	(B) Woodland	<16	16-<22	22-<31	31-<43	43<100	>100	-	162
8	(D) Scrub	<12	12-<17	17-<24	24-<35	35<100	>100	-	140
9	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50	-	87
10	(G) Grassland	<7	7-<9	9-<14	14-<20	20<50	>50	-	96
11	(G) Grassland	<8	8-<10	10-<16	16-<23	23<50	>50	-	107
12	(A) Forest	<16	16-<21	21-<31	31-<42	42-<100	>100	-	152
13	(A) Forest	<20	20-<27	27-<37	37-<50	50-<100	>100	-	175
14	(A) Forest	<26	26-<33	33-<46	46-<61	61-<100	>100	-	207
15	(A) Forest	<33	33-<42	42-<56	56-<73	73-<100	>100	-	257
16	(A) Forest	<42	42-<52	52-<68	68-<87	87<100	>100	-	NS[3]
17	(B) Woodland	<10	10-<14	14-<20	20-<29	29-<100	>100	-	138
18	(B) Woodland	<13	13-<17	17-<25	25-<35	35<100	>100	-	162
19	(G) Grassland	<7	7-<9	9-<14	14-<20	20<50	>50	-	96
20	(G) Grassland	<8	8-<10	10-<16	16-<23	23<50	>50	-	107
21	Excluded cl 2.2.3.2(e & f)	-	-	-	-	-	-	-	-

Note 1: The calculated results are illustrated in Figure 3.2 as a BAL Contour Map and/ or additional defining lines as necessary. 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.

Note 3: No solution. 2kW/m² setback cannot be calculated due to limitations of the formula. Area 16 is 337m from shelter area.

Figure 3.1

Topography & Classified Vegetation

Lot 90 Plan 072807, Area : 389508 sq m
51 Jocoso Rise
WUNDOWIE
SHIRE OF NORTHAM

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

- Subject Site
- Other Lots
- Photo & Direction

Vegetation Assessment Area

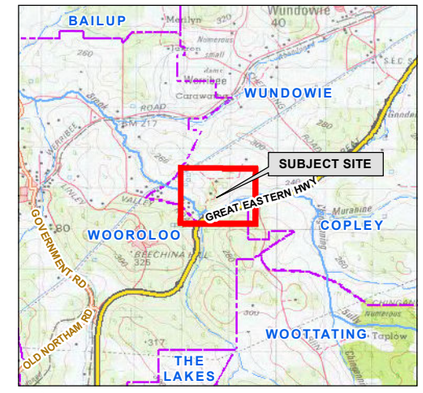
- 150m from Subject Site

Classified Vegetation

- Class (A) Forest
- Class (B) Woodland
- Class (D) Scrub
- Class (G) Grassland
- Excluded 2.2.3.2

0 100 200 300
Metres

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



Aerial Imagery : Landgate/SLIP
Image Date : Jan 2024

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Neil Stoney 15/07/2024
Map updated by: Neil Stoney 15/07/2024
A3 Scale 1:4,900

BUSHFIRE PRONE PLANNING

Map Document Path / Name: K:\Projects\Jobs 2017\170505 - El Caballo Lifestyle Village (BMP)\170505 - BMP - May 2024\Mapping\MXD\170505_Fig3-1_VEG_El-Caballo-Lifestyle-Village.mxd

Figure 3.1.1

Topography & Classified Vegetation (Post Development)

Lot 90 Plan 072807, Area : 389508 sq m
51 Jocoso Rise
WUNDOWIE
SHIRE OF NORTHAM

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

- Subject Site
- Other Lots
- Proposed Lots

Vegetation Assessment Area

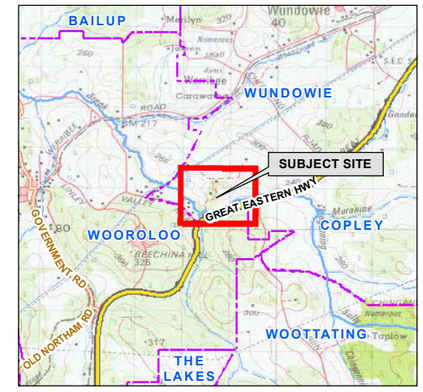
- 150m from Subject Site

Classified Vegetation

- Class (A) Forest
- Class (B) Woodland
- Class (D) Scrub
- Class (G) Grassland
- Excluded 2.2.3.2
- Vegetation Distance

0 100 200 300
Metres

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



Aerial Imagery : Landgate/SLIP
Image Date : Jan 2024

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Neil Stoney 16/07/2024
Map updated by: Neil Stoney 16/07/2024
A3 Scale 1:4,900

BUSHFIRE PRONE PLANNING

Map Document Path / Name: K:\Projects\Jobs 2017\170505 - El Caballo Lifestyle Village (BMP)\170505 - BMP - May 2024\Mapping\MXD\170505_Fig3-1-1_VEG-POST_El-Caballo-Lifestyle-Village.mxd

Figure 3.2

BAL Contour Map

Lot 90 Plan 072807, Area : 389508 sq m
51 Jocoso Rise
WUNDOWIE
SHIRE OF NORTHAM

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

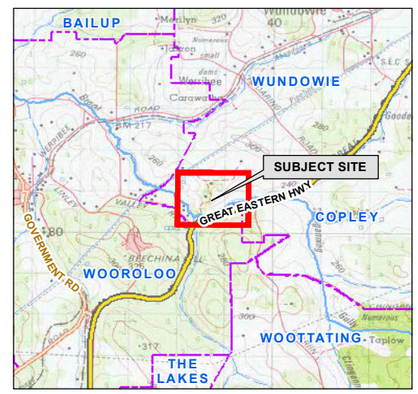
- Subject Site
- Other Lots
- Proposed Lots
- 100m from Subject Site
- Classified Vegetation Boundary

Indicative Bushfire Attack Levels

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL LOW

0 50 100 150 200 250
Metres

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



Aerial Imagery : Landgate/SLIP
Image Date : Jan 2024

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Neil Stoney 15/07/2024
Map updated by: Neil Stoney 15/07/2024
A3 Scale 1:4,600

BUSHFIRE PRONE PLANNING

Map Document Path / Name: K:\Projects\Jobs 2017\170505 - El Caballo Lifestyle Village (BMP)\170505 - BMP - May 2024\Mapping\MXD\170505_Fig3-2_BAL_El-Caballo-Lifestyle-Village.mxd

4 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

The Guidelines for Planning in Bushfire Prone Areas (WAPC 2021 v1.4), Appendix 5, establish that the application of this section of the BMP is intended to support ***strategic planning*** proposals. At the strategic planning stage there will typically be insufficient proposed development detail to enable all required assessments, including the assessment against the bushfire protection criteria.

Strategic Planning Proposals

For strategic planning proposals this section of the BMP will identify:

- Issues associated with the level of the threats presented by any identified bushfire hazard;
- Issues associated with the ability to implement sufficient and effective bushfire protection measures to reduce the exposure and vulnerability levels (of elements exposed to the hazard threats), to a tolerable or acceptable level; and
- Issues that will need to be considered at subsequent planning stages.

All Other Planning Proposals

For all other planning stages, this BMP will address what are effectively the same relevant issues but do it within the following sections:

- Section 2 – Bushfire Prone Vegetation - Environmental and Assessment Considerations: Assess environmental, biodiversity and conservation values;
- Section 3 – Potential Bushfire Impact: Assess the bushfire threats with the focus on flame contact and radiant heat; and
- Section 5 – Assessment Against the Bushfire Protection Criteria (including the guidance provided by the *Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2'):* Assess the ability of the proposed development to apply the required bushfire protection measures thereby enabling it to be considered for planning approval for these factors.

Is the proposed development a strategic planning proposal?	Yes

STRATEGIC PLANNING PROPOSALS - IDENTIFICATION OF RISK AND PLANNING ISSUES	
The Broader Landscape/Environment – The Potential for Bushfire Intensification and Extreme Events	
The type of bushfire prone vegetation surrounding the proposed development. Referencing the potential levels of each bushfire threat mechanism (direct and indirect).	The bushfire prone vegetation within the subject site and in the immediate surrounds (the assessment area) is primarily Class G Grassland (open pasture) and remnant Class A Forest. Other vegetation areas are of limited extent and impact. The grassland vegetation is largely grazed or slashed pasture, which will support very fast-moving wind-driven fires of low heat flux and flame lengths which are very unlikely to generate significant embers. The grassland vegetation will allow for fire spread between greater hazard vegetation areas. The forest vegetation is native jarrah/wandoo, which in combination with the undulating to rugged terrain provide for very high to extreme heat fluxes and flame lengths. The forests will generate high intensity short range ember attack, and support medium range (up to 2km) spotting.
The extent of bushfire prone vegetation surrounding the proposed development – both in area and	At the landscape scale, the largest extents of extreme hazard vegetation are to the south and southwest of the site, however these slope significantly away from the site. Whilst bushfire attack from these directions is possible they will likely have reduced intensity and rate of spread.

continuity (fragmentation). Identification of conserved vegetation.	Based on topography the more likely directions of direct bushfire attack are the east and west. The El Caballo Golf Course bounds the site to the east, northeast, and south, providing discontinuous or fragmented fuels from these directions. Directly north of the site is a mixed area of Class G Grassland and Class B Woodland, but this is isolated from surrounding vegetation by anaerobic ponds and golf course. The dominant wind directions in summer are southerly and easterly. The greatest bushfire hazard to the subject site in terms of topography, wind, extent, and classification, is to the west. Additionally, bushfire from this direction can ignite the Class A Forest onsite.
The potential for the surrounding topography to support known dynamic fire behaviours that can lead to an extreme fire event and intensification through atmospheric interaction (pyroconvective events).	The subject site and surrounds are undulating to rugged. Effective slopes exceeding 15 degrees occur over short distances, with slopes exceeding 5 degrees being common. Significant portions of this vegetation is proposed to be managed in establishing the required APZs.
The Broader Landscape/Environment – The Potential for Increased Vulnerability of Persons in a Bushfire Event	
The wider (regional) road network and any access constraints.	Great Eastern Highway is reached after 1.2km (2 mins travel) from the subject site. From here, residents can rapidly travel away from the area under threat to Northam or Mundaring. Locally, the public road network is constrained due to the existing layout. Jocoso Rise and Bodegueri Way are well maintained public roads but do not provide through-access. Where development opportunities can increase local access options within the surrounding area, this would have merit that should be considered as benefiting a greater number of residents.
The proximity of settlements and availability of emergency services	The subject site is within a rural/semi-rural area. The townsites of Wundowie and Chidlow can be reached in 10km (11 mins) and 13km (13 mins) respectively, or continue to the larger low threat areas of Northam and Mundaring. Volunteer Bushfire Brigades are located in Mount Helena, Chidlow, Wooroloo, Wundowie, Inkpen, Wundowie, and Bakers Hill.
Environmental Considerations	
Constraints to implementing required and/or additional bushfire protection measures	Vegetation clearing/modification will be required to create the proposed lots, public open space, roads, and APZs. A vegetation survey may be requested by the decision maker.
Provision of Access Within the Subject Site	
Potential constraints	Discussed in Section 5.5 Element 3 assessment.
Issues to be Considered at Subsequent Planning Stages (additional assessments/documents)	
Specific land uses to be addressed	Vulnerable Land Use
Additional assessments	N/A
Additional documents	This BMP has created the additional requirement that a Bushfire Emergency Plan must be prepared prior to sale of subject lots.

Discretionary Decision Making and the Precautionary Principle (SPP 3.7 and Guidelines)	
Does the bushfire consultant consider there are issues that need to be addressed in this space?	No.

5 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA (GUIDELINES V1.4)

5.1 Bushfire Protection Criteria Elements Applicable to the Proposed Development/Use

APPLICATION OF THE CRITERIA, ACCEPTABLE SOLUTIONS AND PERFORMANCE ASSESSMENT

The criteria are divided into five elements – location, siting and design, vehicular access, water and vulnerable tourism land uses. Each element has an intent outlining the desired outcome for the element and reflects identified planning and policy requirements in respect of each issue.

The example acceptable solutions (bushfire protection measures) provide one way of meeting the element's intent. Compliance with these automatically achieves the element's intent and provides a straightforward pathway for assessment and approval.

Where the acceptable solutions cannot be met, the ability to develop design responses (as alternative solutions that meet bushfire performance requirements) is an alternative pathway that is provided by addressing the applicable performance principles (as general statements of how best to achieve the intent of the element).

A merit based assessment is established by the SPP 3.7 and the Guidelines as an additional alternative pathway along with the ability of using discretion in making approval decisions (sections 2.5, 2.6 and 2.7). This is formally applied to certain development (minor and unavoidable – sections 5.4.1 and 5.7). Relevant decisions by the State Administrative Tribunal have also supported this approach more generally.

Elements 1 – 4 should be applied for all strategic planning proposals, subdivision or development applications, except for vulnerable tourism land uses which should refer to Element 5. Element 5 incorporates the bushfire protection criteria in Elements 1 – 4 but caters them specifically to tourism land uses. (Guidelines DPLH 2021v1.4)

The Bushfire Protection Criteria	Applicable to the Proposed Development/Use
Element 1: Location	Yes
Element 2: Siting and Design	Yes
Element 3: Vehicular Access	Yes
Element 4: Water	Yes
Element 5: Vulnerable Tourism Land Uses	No

5.2 Local Government Variations to Apply

Local governments may add to or modify the acceptable solutions to recognise special local or regional circumstances (e.g., topography / vegetation / climate). These are to be endorsed by both the WAPC and DFES before they can be considered in planning assessments. (Guidelines DPLH 2021v1.4).	
Do endorsed regional or local variations to the acceptable solutions apply to the assessments against the Bushfire Protection Criteria for the proposed development /use?	No

5.3 Assessment Statements for Element 1: Location

LOCATION					
Element Intent	To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.				
Proposed Development/Use – Relevant Planning Stage	(Sb) Structure plan where the lot layout is known and subdivision application				
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.				
Pathway Applied to Provide an Alternative Solution	N/A				
Acceptable Solutions - Assessment Statements *All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.*					
Solution Component Check Box Legend	☑ Relevant & met	☒ Relevant & not met	⃠ Not relevant		
E1 Location				**Compliant:**	Yes
A1.1 Development location		**Applicable:**	Yes	**Compliant:**	Yes
ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE GUIDELINES					
☑ ☐ ☐ The strategic planning proposal is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL-29 or below.					
Supporting Assessment Details: The local scheme amendment application includes a lot layout. The proposed layout will provide an area of land within each lot that can be considered suitable for development as BAL-40 or BAL-FZ construction requirements will not be required to be applied. This meets the requirements established by Acceptable Solution A1.1 and its associated explanatory note.					
ASSESSMENTS APPLYING THE GUIDANCE ESTABLISHED BY THE WAPC ELEMENT 1 & 2 POSITION STATEMENT (2019)					
"Consideration should be given to the site context where 'area' is the land both within and adjoining the subject site. The hazards remaining within the site should not be considered in isolation of the hazards adjoining the site, as the potential impact of a bushfire will be dependent on the wider risk context, including how a bushfire could affect the site and the conditions for a bushfire to occur within the site." **Strategic Planning Proposals:** Consider the threat levels from any vegetation adjoining and within the subject site for which the potential intensity of a bushfire in that vegetation would result in it being classified as an Extreme Bushfire Hazard Level (BHL). Identify any proposed design strategies to reduce these threats. **Structure Plans (lot layout known) and Subdivision Applications:** As for strategic planning proposals but within the subject site the relevant threat levels to consider are the radiant heat levels represented by BAL-FZ and BAL-40 ratings.					

The Hazard Within the Subject Site

The subject site includes a cleared and partially developed area associated with the El Caballo Lifestyle Village. To the west and east of the development are areas dominated by pasture (Class G Grassland) with pockets of Class A Forest, or Class B Woodland where the canopy cover or fuel structure is lower.

The remainder of the site is dominated by native vegetation classified as Class A Forest except for the landscaped surrounds of the mansion homestead building.

The impact of the slopes under the vegetation will be dependent on a bushfire's direction of travel, but rugged slopes of up to 18 degrees exist. Bushfire travelling upslope will have increased intensity and rate of spread.

Significantly intense bushfire behaviour is possible, particularly if vegetation within the lot is ignited by bushfire in the adjoining hazard and they are involved together.

However, the ability to establish a BAL-29 dimensioned APZ within each proposed lot's boundaries removes the threat of greater levels of radiant heat or flame contact upon a future dwelling. The BAL-29 APZ will exist over the entirety of each proposed lot, with roads and public open spaces significantly increasing the setback to bushfire prone vegetation.

The primary bushfire threat from bushfire prone vegetation remaining within the proposed lot will be embers. This threat will be mitigated by the application of appropriate building design, bushfire construction requirements and the ongoing maintenance of the APZ to ensure the buildings will not be impacted by consequential fire within combustible materials used, stored or accumulated within the APZ.

The Hazard Adjoining the Subject Site

The El Caballo Golf Course adjoins the subject site on the northern, eastern, and southern boundaries. The golf course is low threat manicured lawns and pockets of dense trees with minimal understory and intensively managed surface fuel loads.

Beyond the golf course across Bodeguero Way and Great Eastern Highway, are significant tracts of continuous Class A Forest.

To the west of the subject site are large irregular sections of Class A Forest and Class B Grassland.

The impact of the slope under the vegetation will be dependent on a bushfire's direction of travel, but slopes up to 5 degrees downslope from the proposed lots are common, with slopes of up to 10 degrees across large areas. Slopes exceeding 10 degrees exist but are limited and over short distances.

Bushfire travelling upslope will have increased intensity and rate of spread and the potential exists for dynamic fire behaviours to develop leading to increasing fire intensity extreme bushfire events.

The Potential of the Proposed Development to Reduce Bushfire Risk to the Existing Land Use

When considered in the broader context of existing land use within the surrounding area, the proposed subdivision can potentially contribute to reducing the level of risk from bushfire to existing landowners.

This can be achieved in various ways and the following assessment points are made for the proposed subdivision:

- The subject site and Bodeguero Way are a legacy design prior to the release of SPP 3.7;
- Large rural residential lots potentially contain large areas of retained native vegetation that present practical limitations to being able to remain low threat vegetation (refer to Appendix B) in perpetuity. Consequently, these vegetated lots potentially allow the uninterrupted passage of a bushfire across the landscape;
- Planning for smaller lot sizes can reduce the level of risk from bushfires as a greater percentage of their total area will be comprised of land managed to APZ standards. This results in a reduction in the bushfire hazard over a broader area and establishes discontinuous fuels. This has benefits to all development in the area;
- For adjoining landowners the more bushfire resilient dwellings and reduced area of hazard on the proposed lots, will lower their level of risk from bushfire because the threat levels from the bushfire attack mechanisms

on the adjoining land will be reduced. These reduced fuels will also be between them and a conservation reserve; and

- There is potential for occupants of the surrounding areas to shelter onsite where evacuation is no longer safe, as discussed in Section 5.7. This applies to existing occupants of the developed extent of the El Caballo Lifestyle Village and to other occupants on Bodeguero Way.

The potential for reduction in bushfire risk to surrounding properties compared to the present situation is considered, there is significant merit in the proposed subdivision that it is appropriate to consider.

5.4 Assessment Statements for Element 2: Siting and Design

SITING AND DESIGN OF DEVELOPMENT					
Element Intent	To ensure that the siting and design of development minimises the level of bushfire impact. (BPP Note: not building/construction design)				
Proposed Development/Use – Relevant Planning Stage	(Sb) Structure plan where the lot layout is known and subdivision application				
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.				
Pathway Applied to Provide an Alternative Solution	N/A				
Acceptable Solutions - Assessment Statements *All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.*					
Solution Component Check Box Legend	☑ Relevant & met	☒ Relevant & not met	⃠ Not relevant		
E2 Siting and Design of Development				**Compliant:**	Yes
A2.1 Asset Protection Zone (APZ)		**Applicable:**	Yes	**Compliant:**	Yes

APZ DIMENSIONS – DIFFERENCES IN REQUIREMENTS FOR PLANNING ASSESSMENTS COMPARED TO IMPLEMENTATION

A key required bushfire protection measure is to reduce the exposure of buildings/infrastructure (as exposed vulnerable elements at risk), to the direct bushfire threats of flame contact, radiant heat and embers and the indirect threat of consequential fires that result from the subsequent ignition of other combustible materials that may be constructed, stored or accumulate in the area surrounding these structures. This reduces the associated risks of damage or loss.

This is achieved by separating buildings (and consequential fire fuels as necessary) from areas of classified bushfire prone vegetation. This area of separation surrounding buildings is identified as the Asset Protection Zone (APZ) and consists of no vegetation and/or low threat vegetation (refer to Appendix B). The required separation distances will vary according to the site specific conditions and local government requirements.

The APZ dimensions stated and/or illustrated in this Report can vary dependent on the purpose for which they are being identified.

> *Note: Appendix B 'Onsite Vegetation Management' provides further information regarding the different APZ dimensions that can be referenced, their purpose and the specifications of the APZ that are to be established and maintained on the subject lot.*

THE 'PLANNING BAL-29' APZ DIMENSIONS

Purpose: To provide evidence of the development or use proposal's ability to achieve minimum vegetation separation distances. To achieve 'acceptable solution' planning approval for this factor, it must be demonstrated that the minimum separation distances corresponding to a maximum level of radiant transfer to a building of 29 kW/m^2, either exist or can be implemented (with certain exceptions). These separation distances are the 'Planning BAL-29' APZ dimensions.

The 'Planning BAL-29' APZ is not necessarily the size of the APZ that must be physically implemented and maintained by a landowner. Rather, its sole purpose is to identify if an acceptable solution for planning approval can be met.

THE 'REQUIRED' APZ DIMENSIONS

Purpose: Establishes the dimensions of the APZ to be physically implemented by the landowner on their lot: These will be the minimum required separation distances from the subject building(s) to surrounding bushfire prone vegetation (identified by type and associated ground slope). These are established by:

A. The 'BAL Rating APZ' of the subject building(s) when distances are greater than 'B' below (except when 'B' establishes a maximum distance); or

B. The 'Local Government' APZ' derived from the Firebreak/Hazard Reduction Notice when distances are greater than 'A' above, other than when a maximum distance is established, in which case this will apply; or

C. A combination of 'A' and 'B'.

> *Within this Report/Plan it is the **'Planning BAL-29' APZ** that will be identified on maps, diagrams and in tables as necessary – unless otherwise stated.*
>
> *The **'Required' APZ** dimension information will be presented in Appendix B1.1 and on the Property Bushfire Management Statement, when required to be included for a development application.*

ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE GUIDELINES

☑ ☐ ☐	**APZ Width:** The proposed (or a future) habitable building(s) on the lot(s) of the proposed development - or an existing building for a proposed change of use – can be (or is) located within the developable portion of the lot and be surrounded by a 'Planning BAL-29' APZ of the required dimensions (measured from any external wall or supporting post or column to the edge of the classified vegetation), that will ensure their exposure to the potential radiant heat impact of a bushfire does not exceed 29 kW/m^2.
☐ ☐ ⦸	**Restriction on Building Location:** It has been identified that the current developable portion of a lot(s) provides for the proposed future (or a future) building/structure location that will result in that building/structure being subject to a BAL-40 or BAL-FZ rating. Consequently, it may be considered necessary to impose the condition that a restrictive covenant to the benefit of the local government pursuant to section 129BA of the Transfer of Land Act 1893, is to be placed on the certificate(s) of title of the proposed lot(s) advising of the existence of a restriction on the use of that portion of land (refer to Code F3 of Model Subdivision Conditions Schedule, WAPC January 2024 and Guidelines s5.3.2).
☐ ☐ ⦸	**APZ Location:** The required dimensions for a 'Planning BAL-29' APZ can be contained solely within the boundaries of the lot(s) on which the proposed (or a future) habitable building(s) - or an existing building(s) for a proposed change of use – is situated.
☑ ☐ ☐	**APZ Location:** The required dimensions for a 'Planning BAL-29' APZ can be partly established within the boundaries of the lot(s) on which the proposed (or a future) habitable building(s) - or an existing building(s) for a proposed change of use – is situated. The balance of the APZ would exist on adjoining land that satisfies the exclusion requirements of AS 3959:2018 cl 2.2.3.2 for non-vegetated areas and/or low threat vegetation (refer to Appendix B).
☑ ☐ ☐	**APZ Location:** It can be justified that any adjoining (offsite) land forming part of a 'Planning BAL-29' APZ will: • If non-vegetated, remain in this condition in perpetuity; and/or • If vegetated, be low threat vegetation maintained in this condition in perpetuity (refer to Appendix B).

☑ ☐ ☐	**APZ Management:** The area of land (within each lot boundary), that is to make up the required 'Landowner' APZ dimensions (refer to Appendix B, Part B1), can and will be managed in accordance with the requirements of the Guidelines Schedule 1 'Standards for Asset Protection Zones' (refer to Appendix B).
☐ ☐ ⊘	**Staged Subdivision:** The subdivision proposes development in stages and each stage is to comply with the relevant bushfire protection criteria. A balance lot is created or classified vegetation within a subsequent stage will be removed and/or modified and/or be subject to ongoing management, to ensure that proposed lots within the current stage of the subdivision achieve a development site subject to 29 kW/m^2 or below. The planned approach for achieving the required outcome is described in the supporting assessment details below.
☑ ☐ ☐	**Firebreak/Hazard Reduction Notice:** Any additional requirements established by the relevant local government's annual notice to install firebreaks and manage fuel loads (issued under s33 of the Bushfires Act 1954), can and will be complied with.

Supporting Assessment Details: The ability to establish the 'Planning BAL-29' APZ dimensions is illustrated in Figure 3.1.1 and Figure 3.2. Onsite native vegetation will be required to be modified and/or removed, for which the appropriate authority will be required (refer to Section 2 of this BMP).

The smaller lot sizes will require adjoining lots to be managed to low threat to establish the 'Planning BAL-29' APZ for each proposed lot. The parts of the 'Planning BAL-29' APZ that exist outside each proposed lot will consist of:

- Roads and unvegetated verges
- Footpaths
- Parking bays
- Landscaped public open space
- Gardens, lawns, and golf courses
- Structures and developments (houses and sheds)

ASSESSMENTS APPLYING THE GUIDANCE ESTABLISHED BY THE WAPC ELEMENT 1 & 2 POSITION STATEMENT (2019)

Strategic Planning Proposals: "At this planning level there may not be enough detail to demonstrate compliance with this element. The decision-maker may consider this element is satisfied where A1.1 is met."

Structure Plans (lot layout known) and Subdivision Applications: "Provided that Element 1 is satisfied, the decision-maker may consider approving lot(s) containing BAL-40 or BAL-FZ under the following scenarios.

Scenario A: The lots sizes provide sufficient area to accommodate a building and the establishment of an APZ dimensioned to ensure a maximum BAL rating of BAL-29 will apply to that building.

5.5 Assessment Statements for Element 3: Vehicular Access

VEHICULAR ACCESS					
Element Intent	To ensure that the vehicular access serving a subdivision/development is available and safe during a bushfire event.				
Proposed Development/Use – Relevant Planning Stage	(Sb) Structure plan where the lot layout is known and subdivision application				
Element Compliance Statement	The proposed development/use cannot fully comply with all applicable acceptable solutions. An alternative solution(s) is provided.				
Pathway Applied to Provide an Alternative Solution	Performance based assessment - based on analysis of improved bushfire performance (in terms of reliability, robustness and resilience against bushfire threats) of the proposed development compared to the existing development. Details in BMP s5.8.				
Acceptable Solutions - Assessment Statements *All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.* *The technical construction requirements for access types and components, and for each firefighting water supply component, are also presented in Appendices C and D. 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 in the relevant appendix if requested by the local government).*					
Solution Component Check Box Legend	☑ Relevant & met	☒ Relevant & not met	⃠ Not relevant		
E3 Vehicular Access				**Compliant:**	Yes
A3.1 Public roads – technical requirements			**Applicable**: Yes	**Compliant**:	Yes
☑ ☐ ☐	The technical construction requirements of vertical clearance and weight capacity (Guidelines, Table 6) can and will be complied with (Refer also to Appendix C in this BMP).				
☑ ☐ ☐	All other applicable technical requirements of trafficable width, gradients and curves, are required to be in "accordance with the class of road as specified in the IPWEA Subdivision Guidelines, Liveable Neighbourhoods, Ausroad Standards and/or any applicable standard in the local government area" (Guidelines, Table 6 and E3.1. Refer also to Appendix C in this BMP). The assessment conducted for the bushfire management plan indicates that it is likely that the proposed development can and will comply with the requirements. However, the applicable class of road, the associated technical requirements and subsequent proposal compliance, will need to be confirmed with the relevant local government and/or Main Roads WA.				
☑ ☐ ☐	A traversable verge is available adjacent to classified vegetation (Guidelines, E3.1), as recommended.				
Supporting Assessment Details: The subject site is accessed via Bodeguero Way and Jocoso Rise, which are public roads highly likely to meet the requirements of the applicable class of road. The proposed subdivision layout will include an internal road network will be constructed following applicable standards. Most roads will not adjoin bushfire prone vegetation and thus will not require a traversable verge. Boundary					

roads will adjoin bushfire prone vegetation, and are likely to install a mountable verge (footpath) or otherwise a cleared, traversable verge.				
A3.2a Multiple access routes	**Applicable**:	Yes	**Compliant**:	No
☐ ☒ ☐	For each lot, two-way public road vehicular access is provided in two different directions to at least two different suitable destinations with an all-weather surface.			
☐ ☐ ⦸	The two-way access is available at an intersection no greater than 200m from the relevant boundary of each lot, via a no-through road.			
☐ ☐ ⦸	The two-way access is not available at an intersection within 200m from the relevant boundary of each lot. However, the available no-through road satisfies the established exemption for the length limitation in every case. These requirements are: • Demonstration of no alternative access (refer to A3.3 below); • The no-through road travels towards a suitable destination; and • The balance of the no-through road that is greater than 200m from the relevant lot boundary is within a residential built-out area or is potentially subject to radiant heat levels from adjacent bushfire prone vegetation that correspond to the BAL-LOW rating (<12.5 kW/m^2).			
Supporting Assessment Details: A3.3 is applied where A3.2a is not met. See A3.3.				
A3.2b Emergency access way	**Applicable**:	Yes	**Compliant**:	No
☑ ☐ ☐	The proposed or existing EAW provides a through connection to a public road.			
☐ ☒ ☐	The proposed or existing EAW is less than 500m in length and will be signposted and gated (remaining unlocked) to the specifications stated in the Guidelines and/or required by the relevant local government.			
☐ ☒ ☐	The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.2b. Refer also to Appendix C in this BMP), can and will be complied with.			
☐ ☐ ⦸	The subdivision proposes development in stages and each stage is to comply with the relevant bushfire protection criteria. A temporary EAW is planned to facilitate the staging arrangements of a subdivision as an interim second access route until the required second access route is constructed as a public road in a subsequent stage. The planned approach for achieving the required outcome is described in the supporting assessment details below.			
Supporting Assessment Details: An Emergency Access Way is installed along the western boundary and connects to Great Eastern Highway. The EAW was approved as part of previous management strategies for the El Caballo Lifestyle Village, but now does not comply with the current version of the *Guidelines for Planning in Bushfire Prone Areas* v1.4. Two access points to the installed EAW exist: • Toward the north-western corner of the subject lot (directly west of Jocoso Rise). This route is approximately 1km to the connection to Great Eastern Highway. • West of the existing mansion homestead building. This route is approximately 740m to Great Eastern Highway, but the 20% slope exceeds the 10%/14.3% sealed maximum gradients within the *Guidelines* v1.4. The surface and clearances will be maintained the technical requirements of the *Guidelines* v1.4 and may be used at the discretion of the Incident Controller where an emergency warrant its use.				

To inform why discretion may be warranted by the decision maker in this instance (in accordance with the Guidelines v1.4, Section 2.7 'Legacy Approvals and Discretionary Decision Making'), relevant merits of the proposal are presented in Section 5.7 of this BMP.

A3.3 Through-roads	**Applicable**: Yes	**Compliant**: No

☑ ☐ ☐	A no-through public road is necessary as no alternative road layout exists due to site constraints.
☐ ☒ ☐	The no-through public road length does not exceed the established maximum of 200m to an intersection providing two-way access (Guidelines, E3.3).
☐ ☐ ⊘	The no-through public road exceeds 200m but satisfies the exemption provisions of A3.2a as demonstrated in A3.2a above.
☑ ☐ ☐	The public road technical construction requirements (Guidelines, Table 6 and E3.1. Refer also to Appendix C in this BMP), can and will be complied with as established in A3.1 above.
☑ ☐ ☐	The turnaround area requirements (Guidelines, Figure 24) can and will be complied with.

Supporting Assessment Details:

The El Caballo Lifestyle Village is accessed via Jocoso Rise from Bodeguero Way, which do not provide two-way public road access. These roads are part of an existing legacy road layout that satisfies the technical requirements but are greater than the maximum acceptable solution length of 200m. This is the factor that contributes to the proposals inability to comply with acceptable solution A3.2a.

The nearest point of two-way access is available at Great Eastern Highway, 1.2km from the estate exit or approximately 2km from the farthest lot within the subdivision area.

There are no other alternative access/egress options other than the existing Emergency Access Way. The legacy layout and surrounding land uses prevent the creation of an alternative access route.

The terminus of Jocoso Rise is not a cul-de-sac head, as it then connects to the internal road network of El Caballo Lifestyle Village. The both the carpark and roundabouts at the Village entrance comply with the turnaround area dimensions within the Guidelines Table 6.

To inform why discretion may be warranted by the decision maker in this instance (in accordance with the Guidelines v1.4, Section 2.7 'Legacy Approvals and Discretionary Decision Making'), relevant merits of the proposal are presented in Section 5.7 of this BMP.

A3.4a Perimeter roads	**Applicable**: Yes	**Compliant**: Yes

☐ ☐ ⊘	The proposed greenfield or infill development consists of 10 or more lots (including those that are part of a staged subdivision) and therefore should have a perimeter road. This is planned to be installed.
☑ ☐ ☐	The proposed greenfield or infill development consists of 10 or more lots (including those that are part of a staged subdivision). However, it is not required on the established basis of: • The vegetation adjoining the proposed lots is classified Class G Grassland; • Lots are zoned rural living or equivalent; • It is demonstrated that it cannot be provided due to site constraints; or • All lots have existing frontage to a public road.
☐ ☐ ⊘	The technical construction requirements of widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.4a) can and will be complied with.

Supporting Assessment Details: The irregular shape of the subject lot creates constraints in implementing perimeter roads whilst maintaining a practical lot layout. The proposed lots at the north-western extent will abut a communal facilities area. This area will be managed to low threat and will provide an adequate separation distance such that a perimeter road would not be required. Additionally, the Communal Facilities area will likely include significant trafficable routes, as a Family Centre, Workshop, Caravan Parking etc are intended. The proposed lots at the south-western extent (facing the mansion homestead) are adjacent to Class A Forest vegetation. The front facing of the lots is onto a road providing through-access to the subdivision network, and dual frontage is not desirable under E3.4a. The design of the strata title includes community amenity and lots facing communal areas and other properties, and a redesign was not applied. An existing track runs approximately parallel to these lots, which can connect to the internal road system to comply with A3.4b.				
A3.4b Fire service access route	**Applicable**:	Yes	**Compliant**:	Yes
☑ ☐ ☐	The FSAR can be installed as a through-route with no dead ends, linked to the internal road system every 500m and is no further than 500m from a public road.			
☑ ☐ ☐	The technical construction requirements of widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.4b. Refer also to Appendix C in this BMP), can and will be complied with.			
☑ ☐ ☐	The FSAR can and will be signposted. Where gates are required by the relevant local government, the specifications can be complied with.			
☐ ☐ ⊘	Turnaround areas (to accommodate type 3.4 fire appliances) can and will be installed every 500m on the FSAR.			
Supporting Assessment Details: The existing track running north-south between the western extent of the Lifestyle Village and the mansion homestead will be connected to the internal road network at the southern extent to form a Fire Service Access Route. The total length of the FSAR will be approximately 270m.				
A3.5 Battle-axe access legs	**Applicable**:	No	**Compliant**:	N/A
A3.6 Private driveways	**Applicable**:	No	**Compliant**:	N/A

5.6 Assessment Statements for Element 4: Water

WATER					
Element Intent	To ensure water is available to enable people, property and infrastructure to be defended from bushfire.				
Proposed Development/Use – Relevant Planning Stage	(Sb) Structure plan where the lot layout is known and subdivision application				
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.				
Pathway Applied to Provide an Alternative Solution	N/A				
Acceptable Solutions - Assessment Statements *All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.* *The technical construction requirements for access types and components, and for each firefighting water supply component, are also presented in Appendices C and D. 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 in the relevant appendix if requested by the local government).*					
Solution Component Check Box Legend	☑ Relevant & met	☒ Relevant & not met	⊘ Not relevant		
E4 Water				**Compliant:**	Yes
A4.1 Identification of future firefighting water supply		**Applicable:**	No	**Compliant:**	N/A
A4.2 Provision of water for firefighting purposes		**Applicable:**	Yes	**Compliant:**	Yes
☑ ☐ ☐	A reticulated water supply is available to the proposed development. The existing hydrant connection(s) are provided in accordance with the specifications of the relevant water supply authority.				
☑ ☐ ☐	A reticulated water supply will be available to the proposed development. Hydrant connection(s) can and will be provided in accordance with the specifications of the relevant water supply authority.				
☐ ☐ ⊘	A static water supply (tank) for firefighting purposes will be installed on each lot that is additional to any water supply that is required for drinking and other domestic purposes.				
☐ ☐ ⊘	A strategic water supply (tank or tanks) for firefighting purposes will be installed within or adjacent to the proposed development that is additional to any water supply that is required for drinking and other domestic purposes. The required land will be ceded free of cost to the local government and the lot or road reserve where the tank is to be located will be identified on the plan of subdivision.				
☐ ☐ ⊘	The strategic static water supply (tank or tanks) will be located no more than 10 minutes travel time from a subject site (at legal road speeds).				
☐ ☐ ⊘	The technical requirements (location, number of tanks, volumes, design, construction materials, pipes and fittings), as established by the Guidelines (A4.2, E4 and Schedule 2) and/or the relevant local government, can and will be complied with.				

Supporting Assessment Details: The existing extent of the El Caballo Lifestyle Village is provided with a reticulated water supply and hydrants are installed throughout the developed portion of the site. The reticulated system and hydrant network will be expanded to service the proposed lots.

Refer to information contained in Appendix D for the firefighting water supply specifications and technical requirements.

5.7 Non-Compliance – Additional Assessments

5.7.1 Performance Based Assessment – Improved Bushfire Performance Compared to Existing State

THE PERFORMANCE REQUIREMENT(S) TO BE ACHIEVED BY THE PROPOSAL

The performance requirements are established by:

1. The intent and objectives of State Planning Policy 3.7 (SPP 3.7), as broad outcomes;
2. The stated intent of each element of the bushfire protection criteria within the Guidelines. These intents outline the overall aim (performance requirement) as more specific outcomes; and
3. The stated performance principles of each element that provide guidance as to how the intent of each element may be achieved.

The stated 'acceptable' solutions contained within each element of the bushfire protection criteria are examples of how the intent of each element may be achieved - they are the 'deemed to satisfy' solutions.

The stated intent of each element may also be achieved by an 'alternative' solution where it can be assessed as meeting the performance requirements.

JUSTIFICATION FOR THE APPLIED PERFORMANCE BASED ASSESSMENT

Relevant State Administrative Tribunal (SAT) case decisions are relied upon for the authority to conduct the assessment applied in this section of the BMP.

The following paraphrased reasons for the decisions and orders of the findings (identified by clause number), are from [2019] WASAT 121. Decision makers will need to refer to the actual proceedings.

[153] In considering the requirements of State Planning Policy 1: State Planning Framework (SPP1) in the application of SPP3.7, there is no basis on which provisions lower in the hierarchy (the Guidelines) should necessarily prevail over provisions higher in the hierarchy (SPP3.7).

[141] The intent and objectives of policy (SPP3.7) can be infringed by the inflexible application of the provisions of the Guidelines.

[99] The existence of the principle that policy should not be inflexibly applied means that it is open to the Tribunal to consider the proposed development through the applications of a merits review.

[145] Application of the precautionary principle requires caution in departing from policy but doesn't preclude approval and provides for assessment on merit and the use of discretion.

[122] One should be slow to depart from policies unless satisfied that good reason exists.

[123] It cannot be accepted that, simply because a proposal contemplates a solution that is not contemplated by the Guidelines, the Tribunal cannot approve that proposal. To accept that proposition would amount to inflexibly applying policy.

[230] The Tribunal finds a sound basis for departing from SPP 3.7 cl. 6.6.2 and Elements 1 and 2 of the Guidelines while being able to accord with the intent and relevant objectives SPP 3.7.

[231] The Tribunal Finds against the inflexible application of SPP 3.7 and associated Guidelines.

THE ALTERNATIVE SOLUTION

The assessment:

1. Identifies if the bushfire performance of an existing development will be improved by the proposed additions, even though it cannot meet the required level of performance established for totally new development.

2. The degree of land use intensification is a considered factor. Lower levels are more appropriate to be considered for approval.

The El Caballo Lifestyle Village is unable to comply with Element 3: Vehicular Access of the Bushfire Protection Criteria due to the existing road layout.

Currently, the site is accessed by Jocoso Rise via Bodegueri Way. A non-compliant emergency access way is installed along the western boundary, connecting to Great Eastern Highway.

The Element 3 Performance Principle (P3i) states:

'The design and capacity of vehicular access and egress is to provide for the community to evacuate to a suitable destination before a bushfire arrives at the site, allowing emergency services personnel to attend the site and/or hazard vegetation.'

A suitable destination:

Great Eastern Highway provides two directions of continuous travel and residents can rapidly leave the immediate area through to suitable destinations. The alternative 'suitable destination' is within the Village itself. The El Caballo Lifestyle Village will include substantial low-threat areas due to the roads, landscaping, residential lots, and associated APZs. Figure 5.1 shows a <2kW/m2 radiant heat flux zone (calculated at 1200K flame temperature) available onsite. This zone has a footprint of approximately 1.4 ha and includes the visitors carpark and fountain park.

Before a bushfire arrives at the site:

Where the primary access route is no longer safe (e.g. it is no longer 'before a bushfire arrives at the site'), alternative routes would also no longer be safe. Spot fires ahead of the main fire front are likely, and the undulating to rugged terrain allows for rapid rates of travel (up to 20km/hr). Additionally, any access via the western route would be bounded by Class A Forest on 5-15 degree slopes for the entire route. Where a bushfire is close enough for the eastern route to be deemed unsafe, a western route should not be used.

Allowing emergency services to attend the site and/or hazard vegetation:

The surface and clearances of the existing Emergency Access Way will be maintained the technical requirements of the *Guidelines* v1.4. The EAW is not appropriate for egress of residents, but may be used by emergency services at the discretion of the Incident Controller where an emergency warrant its use.

Explanatory Note E3.2a Multiple Access Routes outlines the following should be considered regarding the performance principle:

(a) the extent of the bushfire hazard, location and vegetation classification, the likelihood, potential severity and impact of bushfire to the subject site and the road network;

At the landscape scale, the largest extents of extreme hazard vegetation are to the south and southwest of the site, however these slope significantly away from the site. Whilst bushfire attack from these directions is possible they will likely have reduced intensity and rate of spread.

Based on topography the more likely directions of direct bushfire attack are the east and west. The El Caballo Golf Course bounds the site to the east, northeast, and south, providing discontinuous or fragmented fuels from these directions. Directly north of the site is a mixed area of Class G Grassland and Class B Woodland, but this is isolated from surrounding vegetation by anaerobic ponds and golf course.

The dominant wind directions in summer are southerly and easterly.

The greatest bushfire hazard to the subject site in terms of topography, wind, extent, and classification, is to the west. Additionally, bushfire from this direction can ignite the Class A Forest onsite.

(b) time between fire detection and the onset of conditions in comparison to travel time for the community to evacuate to a suitable destination;

The intersection with Great Eastern Highway can be considered a 'suitable destination' as evacuees can rapidly travel away from the area under threat to Northam or Mundaring. This intersection is reached in <2 minutes at legal road speeds. The intersection would be reached in <4 minutes at 20km/h (accounting for possible congestion).

The time between fire detection and decision/preparation to evacuate would vary on the residents. This is the decisive factor in time to evacuate the site, which is true of all residential uses.

(c) available access route(s) travelling towards a suitable destination;

Jocoso Rise and Bodegueri Way are well maintained public roads bounded by the low threat areas of the golf course and rural residential lots, and by Class B Woodland and Class G Grassland.

(d) turn-around area for a fire appliance for no-through roads.

The subdivision area includes an internal road network providing numerous loop roads and turnaround areas.

Sheltering On-Site

The subject site cannot comply with A3.2a Multiple Access Routes due to the pre-existing lot layout and road network.

The Guidelines for Planning in Bushfire Prone Areas v1.4 provides for the option for sheltering onsite for some Vulnerable Tourism Land Uses in Element 5 and in Section 5.5.3.1.3. For all other applications, sheltering onsite is not considered an Acceptable Solution. For this application, the persons onsite will be residents aware of the local area rather than tourists.

An open space area meeting the <2kW/m2 radiant heat flux (calculated at 1200K flame temperature) setback will be available with no additional vegetation management. This area will be approximately 1.4 ha and will easily accommodate the maximum number of persons onsite. The number of residents at completion is not known, but will likely be in the range of 300-400, and thus 35m^2 per person.

The open space area is easily identified, being the visitors carpark and fountain park adjacent to the site entry, as well as the nearby lots to the south.

The <2kw zone is approximately 450m by foot from the farthest proposed lot, with sealed roads and footpaths throughout the development.

5.8 Additional Bushfire Protection Measures to be Implemented

The following bushfire protection measures are recommended to be implemented and maintained. They are additional to, or a variation of, those established by the relevant acceptable solutions applied to the proposed development/use within Sections 5 of this BMP (as applicable to the proposed development).

The intent of their application is to improve the bushfire performance of the proposed development/use and reduce residual risk levels to persons and property from a bushfire event.

The development of these additional and/or varied protection measures originates the following potential sources (not exhaustive):

1. Out of the relevant merit based assessment when the Section titled 'Non-compliance – Additional Assessments' has been used in this BMP;
2. Out of the relevant performance based assessment when Section titled 'Non-compliance – Additional Assessments' has been used in this BMP;
3. Out of the development of any other required bushfire planning documents. These include a Bushfire Emergency Plan and the Bushfire Risk Assessment and Management Report;
4. Out of any additional bushfire planning guidance documents or position statements issued by the WA Department of Planning, Lands and Heritage;
5. From any 'Conditions' which may be applied to a 'Planning Approval' or a 'Notice of Determination; or
6. As a recommendation from the bushfire consultant.

The following table summarises the requirements/recommendations with the detail provided in the following sections.

When necessary, the implementation responsibility for these additional protection measures will be stated in Section 6 of this BMP and included in other operational documents as relevant.

A <2kW/m2 radiant heat flux area (calculated at 1200K flame temperature) is identified in Figure 5.1. This open shelter location will be nominated in the Bushfire Emergency Plan to be prepared for the site. The preparation of a new or updated Bushfire Emergency Plan is a responsibility established in Section 6 of this BMP.

The open shelter location will be available for use as a last resort when advised by emergency services or where evacuation is no longer safe.

Figure 5.1

Safer Onsite Location Map

Lot 90 Plan 072807, Area : 389508 sq m
51 Jocoso Rise
WUNDOWIE
SHIRE OF NORTHAM

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

- Subject Site
- Other Lots
- Proposed Lots

Asset Protection Zone

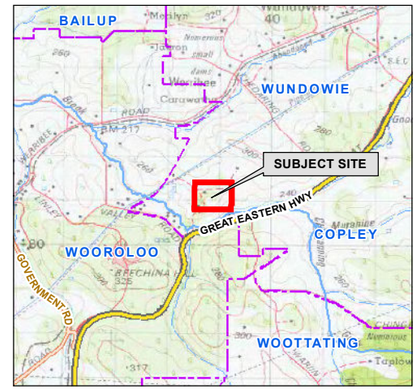
- <2kw Zone (Within Subject Site)

Classified Vegetation

- Class (A) Forest
- Class (B) Woodland
- Class (D) Scrub
- Class (G) Grassland
- Vegetation Distance

0 25 50 75 100
Metres

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



Aerial Imagery : Landgate/SLIP
Image Date : Jan 2024

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Neil Stoney 16/07/2024
Map updated by: Neil Stoney 16/07/2024
A3 Scale 1:2,200

BUSHFIRE PRONE PLANNING

Map Document Path / Name: K:\Projects\Jobs 2017\170505 - El Caballo Lifestyle Village (BMP)\170505 - BMP - May 2024\Mapping\MXD\1_170505_Fig5-1_SHELTER_El-Caballo-Lifestyle-Village.mxd

6 RESPONSIBILITY CHECKLISTS FOR THE IMPLEMENTATION AND MANAGEMENT OF BUSHFIRE PROTECTION MEASURES

The following sections and their associated tables establish:

- The bushfire protection measures that shall be initially implemented and those requiring ongoing maintenance to the stated requirements;
- The persons responsible for the implementation and maintenance of the required bushfire protection measures; and
- The persons responsible and the timing for compliance certification when required.

The necessity for the BMP to contain this information is established by the *Guidelines for Planning in Bushfire Prone Areas* (Version 1.4, WAPC 2021) in Appendices 3 and 5.

6.1 Developer Responsibilities Prior to Issue of Certificates of Title for New Lots

TABLE 6.1(A) REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)	
1	For the entire area of each new lot, ensure any retained vegetation can be regarded as 'low threat' when considering the relevant parameters of extent, connectivity, flammability, moisture or fuel load as per AS 3959:2018 s2.2.3.2. The requirements established by the following will also apply: • The standards established for an Asset Protection Zone (APZ) by the *Guidelines for planning in bushfire prone areas,* DPLH, 2021 v1.4, Schedule 1; or • The standards established for an Asset Protection Zone (APZ) by the relevant local government's requirements set out in a section 33 notice under the Bush Fires Act 1954 (annual firebreak/fuel load notice); or • An alternative standard in a gazetted local planning scheme. If native vegetation is required to be modified or removed, ensure that approval has been received from the relevant authority (refer to the applicable local government for advice).
2	Establish the planned public open space and common land. Ensure all retained and planned vegetation can be regarded as 'low threat' when considering the relevant parameters of extent, connectivity, flammability, moisture or fuel load.
3	Clearing and/or vegetation modification to be undertaken in accordance with requirements established by the BMP. If native vegetation is required to be modified or removed, ensure that approval has been received from the relevant authority (refer to the applicable local government for advice).
4	Construct the public roads (including no through roads and perimeter roads as relevant), to comply with the technical requirements referenced in the BMP.
5	Construct the fire service access route to comply with the technical requirements referenced in the BMP.

TABLE 6.1(A) REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)	
6	Install the reticulated firefighting water supply and hydrants to comply with the technical requirements referenced in the BMP.

TABLE 6.1(B) REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (SUBJECT TO COMPLIANCE BEING ESTABLISHED BY THE WAPC AND/OR LOCAL GOVERNMENT)	
1	[Relevant when stated as a condition of planning approval] A subdivision condition may be imposed that establishes a requirement for information to be provided that demonstrates the required bushfire protection measures contained in Section 6.1 of this bushfire management plan have been implemented during subdivisional works. The relevant measures are those that can be checked for compliance by a bushfire consultant. The compliance certification is to be provided as a certificate or report.
2	[Relevant when stated as a condition of planning approval] A notification, pursuant to Section 165 of the *Planning and Development Act 2005*, is to be placed on the certificate(s) of title of the proposed lot(s) with a Bushfire Attack Level (BAL) rating of 12.5 or above, advising of the existence of a hazard or other factor. Notice of this notification is to be included on the diagram or plan of survey (deposited plan). The notification is to state as follows: *"This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is/may be subject to a Bushfire Management Plan. Additional planning and building requirements may apply to development on this land."* (Western Australian Planning Commission).
3	[Relevant when stated as a condition of planning approval] A plan is to be provided to identify areas of the proposed lot(s) that have been assessed as BAL-40 or BAL-FZ. A restrictive covenant to the benefit of the local government pursuant to section 129BA of the *Transfer of Land Act 1893*, is to be placed on the certificate(s) of title of the proposed lot(s) advising of the existence of a restriction on the use of land within areas that have been assessed a BAL-40 or BAL-FZ. Notice of this restriction is to be included on the diagram or plan of survey (deposited plan). The restrictive covenant is to state as follows: *"No habitable buildings are to be built within areas identified as BAL-40 or BAL-FZ".*

6.2 Developer Responsibilities Prior To Sale

TABLE 6.2(A) REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)	
1	Prior to occupancy/operation establish the 'Required' Asset Protection Zone (APZ) around habitable buildings (and other structures as required) to satisfy: • The minimum required dimensions established in Appendix B1; and • The standards established by the *Guidelines for planning in bushfire prone areas,* DPLH, 2021 v1.4, Schedule 1; or • The standards established for an Asset Protection Zone (APZ) by the relevant local government's requirements set out in a section 33 notice under the Bush Fires Act 1954 (annual firebreak/fuel load notice); or • An alternative standard in a gazetted local planning scheme. If native vegetation is required to be modified or removed, ensure that approval has been received from the relevant authority (refer to the applicable local government for advice).
2	Prior to sale, ensure the designated onsite shelter area is identified and meets the requirements for separation from bushfire prone vegetation detailed in the BMP.
3	Prior to occupancy, for the 'vulnerable' land use, there is an outstanding obligation, created by this Bushfire Management Plan, for a Bushfire Emergency Plan for proposed occupants to be developed and approved.
4	Prior to sale, all actions contained within the 'Pre-Season Preparation Procedure' established by the Bushfire Emergency Plan, must be completed.

TABLE 6.2(C) REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (NOT SUBJECT TO COMPLIANCE CHECK)	
1	Prior to relevant building work, inform the builder of the existence of this approved Bushfire Management Plan (BMP). The plan 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 ratings are indicative. BAL certificates will need to be issued to accompany building applications. The BMP may also establish, as an additional bushfire protection measure, that construction requirements to be applied will be those corresponding to a specified higher BAL rating. Compliance with the 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). Other classes of buildings may also be required to comply with these construction when established by the relevant authority or if identified as an additional bushfire protection measure within the BMP. 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 the NASH Standard - Steel Framed Construction in Bushfire Areas (as amended).
2	Each property owner on sale of the allotment is provided with a copy of the BMP and BEP and informed of their responsibilities. A copy of the approved BMP should be attached to all contracts of sale for the lot.

6.3 Landowner Responsibilities – Ongoing Management

TABLE 6.3 REQUIRED BUSHFIRE PROTECTION MEASURES – ONGOING MANAGEMENT ACTIONS	
1	Maintain the 'Required' Asset Protection Zone (APZ) around habitable buildings (and other structures as required) to satisfy: • The minimum required dimensions established in Appendix B1; and • The standards established by the *Guidelines for planning in bushfire prone areas,* DPLH, 2021 v1.4, Schedule 1; or • The standards established for an Asset Protection Zone (APZ) by the relevant local government's requirements set out in a section 33 notice under the Bush Fires Act 1954 (annual firebreak/fuel load notice); or • An alternative standard in a gazetted local planning scheme.
2	Comply with the Shire of Northam Firebreak and Fuel Load Notice issued under s33 of the Bush Fires Act 1954. Check the notice annually for any changes.
3	Ensure that builders engaged to construct dwellings/additions and/or other relevant structures on the lot, are aware of the existence of this approved Bushfire Management Plan (BMP). The plan 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 ratings are indicative. BAL certificates will need to be issued to accompany building applications. Compliance with the 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). 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 the NASH Standard - Steel Framed Construction in Bushfire Areas (as amended). As an additional bushfire protection measure, other classes of buildings may also be required to comply with these construction requirements when established by the relevant authority or if identified as an additional bushfire protection measure within the BMP. The BMP may also establish that construction requirements to be applied will be those corresponding to a specified higher BAL rating. When applicable, these requirements will be identified in Section 5.7.
4	Ensure all future buildings the landowner has responsibility for, are designed and constructed in full compliance with: • The bushfire resistant construction requirements of the Building Code of Australia (Volumes 1 and 2 of the National Construction Code), as established by the Building Regulations 2012 (WA Building Act 2011); and • Any additional bushfire protection measures this Bushfire Management Plan has established are to be implemented.
5	Ensure the ongoing implementation of the BMP, including providing successive landowners with a copy of the BMP and making them aware of the responsibilities it contains.

6.4 Strata Responsibilities – Ongoing Management

TABLE 6.3 REQUIRED BUSHFIRE PROTECTION MEASURES – ONGOING MANAGEMENT ACTIONS	
1	Maintain the planned public open space and common land. Ensure all retained and planned vegetation can be regarded as 'low threat' when considering the relevant parameters of extent, connectivity, flammability, moisture or fuel load.
2	Comply with the Shire of Northam Firebreak and Fuel Load Notice issued under s33 of the Bush Fires Act 1954. Check the notice annually for any changes.
3	Annually review the Bushfire Emergency Plan and complete all actions contained within the 'Pre-Season Preparation Procedure' and the 'In-Season Preparation Procedure' at the appropriate times of the year.
4	The bushfire specific content of the operation's Site Emergency Plan must be reviewed annually, relevant information updated and ensure all bushfire related preparation procedures are carried out.
5	Ensure the ongoing implementation of the BMP, including providing successive landowners with a copy of the BMP and BEP and making them aware of the responsibilities it contains.

6.5 Local Government Responsibilities – Ongoing Management

TABLE 6.4 REQUIRED BUSHFIRE PROTECTION MEASURES – ONGOING MANAGEMENT ACTIONS	
1	To be aware of the potential consequences of any significant changes in the local government's management of land, of which they have vested control (including re-vegetation), that could have an adverse impact on the determined BAL ratings that apply to adjacent existing or future buildings and where: • The determined BAL ratings have been established by an existing BMP or a BAL Assessment; and • The BAL has been correctly determined with appropriate consideration of what might reasonably be expected to potentially change in the future with regards to the classification of the vegetation being altered and/or management of the relevant area of vegetation.

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:	None
Assessment Statement:	No vegetation types exist close enough, or to a sufficient extent, within the relevant area to influence classification of vegetation within 100 metres of the subject site.

VEGETATION AREA 1						
Classification	**A. FOREST**					
Types Identified	Open forest A-03					
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees		
Foliage Cover (all layers)	>30%	Shrub/Heath Height	1-2m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Wandoo and jarrah overstory. Sub-dominant layer includes acacias, grevilleas, and grasstrees.					
Understorey	Scattered grasses.					
Vegetation Area 1 is local Class A Forest flat or upslope relative to the development site. Area 1 is approximately 500m from the development extent.						

VEGETATION AREA 2						
Classification	**A. FOREST**					
Types Identified	Open forest A-03					
Effective Slope	Measured	d/slope 4 degrees	Applied Range (Method 1)	Downslope >0-5 degrees		
Foliage Cover (all layers)	>30%	Shrub/Heath Height	Up to 6m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Wandoo and jarrah overstory. Sub-dominant layer includes acacias, grevilleas, and grasstrees.					
Understorey	Scattered grasses.					
Justification Comments:	Vegetation Areas 2-4 are of comparable structure. The Areas are identified separately based on effective slope.					

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EGETATION AREA 3						
Classification	**A. FOREST**					
Types Identified	Open forest A-03					
Effective Slope	Measured	d/slope 9 degrees	Applied Range (Method 1)	Downslope >5-10 degrees		
Foliage Cover (all layers)	>30%	Shrub/Heath Height	1-2m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Wandoo and jarrah overstory. Sub-dominant layer includes acacias, grevilleas, and grasstrees.					
Understorey	Scattered grasses.					
Justification Comments:	Vegetation Areas 2-4 are of comparable structure. The Areas are identified separately based on effective slope.					

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VEGETATION AREA 4						
Classification	**A. FOREST**					
Types Identified	Open forest A-03					
Effective Slope	Measured	d/slope 12 degrees	Applied Range (Method 1)	Downslope >10-15 degrees		
Foliage Cover (all layers)	>30%	Shrub/Heath Height	1-2m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Wandoo and jarrah overstory. Sub-dominant layer includes acacias, grevilleas, and grasstrees.					
Understorey	Scattered grasses.					
Justification Comments:	Vegetation Areas 2-4 are of comparable structure. The Areas are identified separately based on effective slope.					

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VEGETATION AREA 5						
Classification	**B. WOODLAND**					
Types Identified	Woodland B-05					
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees		
Foliage Cover (all layers)	10-30%	Shrub/Heath Height	<1m	Tree Height	Over 30m	
Dominant & Sub-Dominant Layers	Stringybark plantation.					
Understorey	Grasses.					
Justification Comments:	The vegetation is fragmented with regular spaces between trees. Vegetation Areas 5 and 6 are of comparable structure. The Areas are identified separately based on effective slope. The topography becomes flat nearing the subject site's northern boundary.					

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VEGETATION AREA 6						
Classification	**B. WOODLAND**					
Types Identified	Woodland B-05					
Effective Slope	Measured	d/slope 3 degrees	Applied Range (Method 1)	Downslope >0-5 degrees		
Foliage Cover (all layers)	10-30%	Shrub/Heath Height	<2m	Tree Height	Over 30m	
Dominant & Sub-Dominant Layers	Stringybarks and wandoo.					
Understorey	Grasses.					
Justification Comments:	The vegetation is fragmented with regular spaces between trees. Vegetation Areas 5 and 6 are of comparable structure. The Areas are identified separately based on effective slope.					

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VEGETATION AREA 7						
Classification	**B. WOODLAND**					
Types Identified	Woodland B-05					
Effective Slope	Measured	d/slope 6 degrees	Applied Range (Method 1)	Downslope >5-10 degrees		
Foliage Cover (all layers)	10-30%	Shrub/Heath Height	N/A	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Stringybarks, acacia, and wandoo.					
Understorey	Grasses.					
Justification Comments:	The vegetation is fragmented with regular spaces between trees. Vegetation Areas 5 and 6 are of comparable structure. The Areas are identified separately based on effective slope.					

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VEGETATION AREA 8						
Classification	**D. SCRUB**					
Types Identified	Open heath C-11					
Effective Slope	Measured	d/slope 7 degrees	Applied Range (Method 1)	Downslope >5-10 degrees		
Foliage Cover (all layers)	>30%	Shrub/Heath Height	<2m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Tall rushes, grasstrees, and grasses. A single row of planted jarrahs are present bordering the golf course green.					
Understorey	Grasses.					
Justification Comments:	Some revegetation is expected, but significant canopy coverage is unlikely as no saplings are present and some sections are slashed/grazed.. Class D Scrub has been assigned as a precaution.					

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VEGETATION AREA 9						
Classification	**G. GRASSLAND**					
Types Identified	Tussock grassland G-22					
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees		
Foliage Cover (all layers)	<10%	Shrub/Heath Height	N/A	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Occasional trees with <10% foliage cover.					
Understorey	Scattered grasses or short cropped pasture.					
Justification Comments:	Vegetation Areas 9-11 are of comparable structure. The Areas are identified separately based on effective slope.					

See Areas 10 and 11 for photographic evidence.

VEGETATION AREA 10						
Classification	**G. GRASSLAND**					
Types Identified	Tussock grassland G-22					
Effective Slope	Measured	d/slope 4 degrees	Applied Range (Method 1)	Downslope >0-5 degrees		
Foliage Cover (all layers)	<10%	Shrub/Heath Height	N/A	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Occasional trees with <10% foliage cover.					
Understorey	Scattered grasses or short cropped pasture.					
Justification Comments:	Vegetation Areas 9-11 are of comparable structure. The Areas are identified separately based on effective slope.					

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VEGETATION AREA 11						
Classification	**G. GRASSLAND**					
Types Identified	Tussock grassland G-22					
Effective Slope	Measured	d/slope 4 degrees	Applied Range (Method 1)	Downslope >0-5 degrees		
Foliage Cover (all layers)	<10%	Shrub/Heath Height	N/A	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Occasional trees with <10% foliage cover.					
Understorey	Scattered grasses or short cropped pasture.					
Justification Comments:	Vegetation Areas 9-11 are of comparable structure. The Areas are identified separately based on effective slope.					

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VEGETATION AREA 12						
Classification	**A. FOREST**					
Types Identified	Open forest A-03					
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees		
Foliage Cover (all layers)	>30%	Shrub/Heath Height	1-2m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Wandoo and jarrah overstory. Sub-dominant layer includes acacias, grevilleas, and grasstrees.					
Understorey	Scattered grasses.					
Justification Comments:	Vegetation Areas 12-16 are of comparable structure. The Areas are identified separately based on effective slope. Area 12 is upslope relative to the closest development area.					

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VEGETATION AREA 13						
Classification	**A. FOREST**					
Types Identified	Open forest A-03					
Effective Slope	Measured	d/slope 5 degrees	Applied Range (Method 1)	Downslope >0-5 degrees		
Foliage Cover (all layers)	>30%	Shrub/Heath Height	1-2m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Wandoo and jarrah overstory. Sub-dominant layer includes acacias, grevilleas, and grasstrees.					
Understorey	Scattered grasses.					
Justification Comments:	Vegetation Areas 12-16 are of comparable structure. The Areas are identified separately based on effective slope.					

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VEGETATION AREA 14						
Classification	**A. FOREST**					
Types Identified	Open forest A-03					
Effective Slope	Measured	d/slope 8 degrees	Applied Range (Method 1)	Downslope >5-10 degrees		
Foliage Cover (all layers)	>30%	Shrub/Heath Height	1-2m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Wandoo and jarrah overstory. Sub-dominant layer includes acacias, grevilleas, and grasstrees.					
Understorey	Scattered grasses.					
Justification Comments:	Vegetation Areas 12-16 are of comparable structure. The Areas are identified separately based on effective slope.					

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<table>
<tr><th colspan="8">VEGETATION AREA 15</th></tr>
<tr><td>Classification</td><td colspan="7">A. FOREST</td></tr>
<tr><td>Types Identified</td><td colspan="7">Open forest A-03</td></tr>
<tr><td>Effective Slope</td><td>Measured</td><td colspan="2">d/slope 12 degrees</td><td>Applied Range (Method 1)</td><td colspan="3">Downslope >10-15 degrees</td></tr>
<tr><td>Foliage Cover (all layers)</td><td colspan="2">>30%</td><td>Shrub/Heath Height</td><td>1-2m</td><td>Tree Height</td><td>Up to 30m</td></tr>
<tr><td>Dominant & Sub-Dominant Layers</td><td colspan="7">Wandoo and jarrah overstory.
Sub-dominant layer includes acacias, grevilleas, and grasstrees.</td></tr>
<tr><td>Understorey</td><td colspan="7">Scattered grasses.</td></tr>
<tr><td>Justification Comments:</td><td colspan="7">Vegetation Areas 12-16 are of comparable structure. The Areas are identified separately based on effective slope.</td></tr>
<tr><td colspan="4"> 
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<tr><td colspan="4">PHOTO ID: 30</td><td colspan="4">PHOTO ID: 31</td></tr>
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VEGETATION AREA 16						
Classification	**A. FOREST**					
Types Identified	Open forest A-03					
Effective Slope	Measured	d/slope 18 degrees	Applied Range (Method 1)	Downslope >15-20 degrees		
Foliage Cover (all layers)	>30%	Shrub/Heath Height	1-2m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Wandoo and jarrah overstory. Sub-dominant layer includes acacias, grevilleas, and grasstrees.					
Understorey	Scattered grasses.					
Justification Comments:	Vegetation Areas 12-16 are of comparable structure. The Areas are identified separately based on effective slope.					

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VEGETATION AREA 17						
Classification	**B. WOODLAND**					
Types Identified	Woodland B-05					
Effective Slope	Measured	d/slope 5 degrees	Applied Range (Method 1)	Downslope >0-5 degrees		
Foliage Cover (all layers)	10-30%	Shrub/Heath Height	<2m	Tree Height	Over 30m	
Dominant & Sub-Dominant Layers	Jarrah and wandoo.					
Understorey	Grasses.					
Justification Comments:	The vegetation is where the local grassland exceeds 10% foliage cover. Vegetation Areas 17 and 18 are of comparable structure. The Areas are identified separately based on effective slope.					

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VEGETATION AREA 18						
Classification	**B. WOODLAND**					
Types Identified	Woodland B-05					
Effective Slope	Measured	d/slope 7 degrees	Applied Range (Method 1)	Downslope >5-10 degrees		
Foliage Cover (all layers)	10-30%	Shrub/Heath Height	<2m	Tree Height	Over 30m	
Dominant & Sub-Dominant Layers	Jarrah and wandoo.					
Understorey	Grasses.					
Justification Comments:	The vegetation is where the local grassland exceeds 10% foliage cover. Vegetation Areas 17 and 18 are of comparable structure. The Areas are identified separately based on effective slope.					

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VEGETATION AREA 19						
Classification	**G. GRASSLAND**					
Types Identified	Tussock grassland G-22					
Effective Slope	Measured	d/slope 5 degrees	Applied Range (Method 1)	Downslope >0-5 degrees		
Foliage Cover (all layers)	<10%	Shrub/Heath Height	N/A	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Occasional trees with <10% foliage cover.					
Understorey	Scattered grasses or short cropped pasture.					
Justification Comments:	Vegetation Areas 19 and 20 are of comparable structure. The Areas are identified separately based on effective slope.					

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VEGETATION AREA 20						
Classification	**G. GRASSLAND**					
Types Identified	Tussock grassland G-22					
Effective Slope	Measured	d/slope 9 degrees	Applied Range (Method 1)	Downslope >5-10 degrees		
Foliage Cover (all layers)	<10%	Shrub/Heath Height	N/A	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers	Occasional trees with <10% foliage cover.					
Understorey	Scattered grasses or short cropped pasture.					
Justification Comments:	Vegetation Areas 19 and 20 are of comparable structure. The Areas are identified separately based on effective slope.					

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VEGETATION AREA 21	
Exclusion Clause	2.2.3.2 (e) Non-vegetated areas and (f) Low threat vegetation - minimal fuel condition.
Justification Comments:	Gardens, lawns, and vegetation maintained in a low-threat, minimal fuel condition. Area 7 includes non-vegetated features such as roads, structures, and rock features.
Post Development Assumptions:	Managed areas are expected to be maintained in perpetuity.

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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, horizonal continuity of fuel and steeper upward ground slope in the direction of fire travel.

Example values:

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

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

justifying the application of a lesser effective slope, or a lower threat vegetation classification, or calculating a reduced head fire width (using short fire run modelling).

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

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

Slope Length (m)	Considered a Significant Slope	Considerations in Determining the Effective Slope
< 5	No	Where these short slopes exist as part of a compound slope under an area of classified vegetation, they can be ignored as they will not influence the fire behaviour in that vegetation.
5-20	No	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 determined effective slope that is applied (i.e., with a greater length apply to a greater extent). But the actual slope of these shorter slopes is likely not to be applied as it is not a 'significant' length.
20-30	Maybe	The same considerations applied to the 5-20m slope lengths should be applied here. However, more justification would need to be presented to support their assessment as not being 'significant' slopes. 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. Higer risk levels require greater precaution meaning these slopes should be considered 'significant', and vice versa. Consider the potential for a bushfire on adjoining or nearby land be a source of ignition and/or pre-heating to vegetation on the subject slope. Consider if vegetation on the slope is likely be ignited by a single ignition point or is multipoint ignition possible from bushfire an adjoining slopes or the surrounding area. Single point ignition will require a fire to travel further before being fully developed (DFES considers less than 100m fire runs may be considered a short fire run for forest, woodland and scrub vegetation classifications, RFS NSW applies 150m). Isolated slopes of this length are less likely to be considered significant as compared to when part of a compound slope.
>30	Yes	Likely to always be a significant slope unless isolated (i.e., exists alone) – in which case, justifying the application of a lesser effective slope, or a lower threat vegetation classification, or calculating a reduced head fire width, are approaches that may need to 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.
- "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.

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 as a BAL Contour Map – whichever is determined to best fit the purpose of the assessment.

For additional information refer to the information boxes in Section 3 'Bushfire Attack Levels (BAL) - Understanding the Results and Section 3.2. 'Interpretation of the BAL Contour Map'.

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 as a BAL contour map 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. 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.		**IDENTIFICATION OF THE CALCULATION INPUT VARIABLES ASSESSED AND/OR MODIFIED FOR THE PROPOSED DEVELOPMENT/USE**				
		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)			✓		
	Wind speed					
	Ambient temperature					
	Relative humidity					
Bushfire Prone Vegetation and slope of the land it grows on	Vegetation classification [3]				✓	
	Effective slope				✓	
	Understorey and total fuel loads [4]					
	Vegetation height					
	Fuel age					
	Fuel moisture					
Receiver (building) positioning parameters	Site slope					
	Separation distance				✓	
	Elevation of the receiver (EOR).					
Bushfire flame parameters	Flame temperature [5]			✓		
	Flame width					
	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 2021, v1.4) Section 5.5.3.1.3 and the relevant acceptable solutions within the bushfire protection criteria, establish that the higher flame temperature of 1200 K is to be applied when determining the availability of suitable onsite sheltering options for tourism vulnerable land uses.

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.

A2.2: FLAME TEMPERATURE

FLAME TEMPERATURE APPLIED

ESTABLISHED BY AS 3959:2018

The AS 3959:2018 radiation modelling assumes an effective flame temperature of 1090 K and that it is sustained for a 2 minute period over a fire front width of 100 m. It states that instantaneous flame temperature may peak above 1090 K (AS 3959:2018 Table B1, clause B2 and clause 1.5.17).

Existing scientific literature suggests that flame temperatures for determining flame emissive power vary greatly and the majority fall between 1000 K and 1200 K. An appropriate flame temperature is chosen from this range in accordance with the minimum level of stringency or safety required by the relevant authority having jurisdiction (AS 3959:2018, CB10.2).

ESTABLISHED BY THE GUIDELINES

The Guidelines (DPLH 2021, v1.4) Section 5.5.3.1.3 and the relevant acceptable solutions within the bushfire protection criteria, establish that the higher flame temperature of 1200 K is to be applied when determining the availability of suitable onsite sheltering options for tourism vulnerable land uses.

Relevant Site	Relevant Vegetation		Flame Temperature Applied (Kelvin)	Explanation and Justification
	Area	Class		
Open Shelter Location	1	(A) Forest	**1200 K**	The requirement to apply the higher flame temperature is established by the Guidelines (refer to information above).
	2	(A) Forest		
	3	(A) Forest		
	4	(A) Forest		
	5	(B) Woodland		
	6	(B) Woodland		
	7	(B) Woodland		
	8	(D) Scrub		
	9	(G) Grassland		
	10	(G) Grassland		
	11	(G) Grassland		
	12	(A) Forest		
	13	(A) Forest		
	14	(A) Forest		
	15	(A) Forest		
	16	(A) Forest		
	17	(B) Woodland		
	18	(B) Woodland		
	19	(G) Grassland		

	20	(G) Grassland		
	21	Excluded cl 2.2.3.2(e & f)		

A2.3: SITE SLOPE

SITE SLOPE
DETERMINING
Site slope is the 'line of sight' slope between the 'site' and the edge of the relevant area of classified vegetation (AS 3959:2018 clause B5). The 'site' being "the part of the allotment of land on which a building stands or is to be erected" (AS 3959:2018 clause 1.5.30). That is, it is the straight line slope that ignores any changes in slope or any other physical obstructions between these two points. The slope direction is considered from the receiver to the vegetation with upslope entered as negative degrees and downslope as positive degrees.
PURPOSE
Site slope is applied to position the potential receiver of radiant heat (typically a structure) relative to the modelled bushfire (the radiant heat panel as a black body of evenly distributed heat) at the edge of the vegetation. This enables the use of the view factor radiant heat model in the AS 3959:2018 BAL determination methodology, to calculate of the level of radiant heat that will potentially flow from the bushfire to the structure.
SLOPE LIMITS
AS 3959:2018 clause B1 limits site slope to 20^0 but explains that this limitation due to the considered impracticality of maintaining relevant vegetation in a low threat state in perpetuity on steeper slopes. This is likely to result in an inability to maintain the assessed separation distance between the building and the classified vegetation. Consequently, where the maintenance of vegetation is not a limiting factor, the application of a greater site slope can be justified to position the building relative to the bushfire more accurately.
AS 3959:2018 METHOD 1 AND METHOD 2 – DIFFERENCES IN APPLYING SITE SLOPE
Method 2 allows for the input of the site slope as the actual measured or calculated slope (not a range or the highest value of a range), that exists for the subject site. The slope can be upslope (entered as negative degrees), flat or downslope (entered as positive degrees). This differs from the Method 1 procedure for which site slope is not independent of effective slope and assumes the site slope to be the same as the effective slope that is applied (i.e., zero, 5, 10, 15 or 20 degrees, as applicable).

SITE SLOPE APPLIED – USING THE METHOD 1 PROCEDURE IN A METHOD 2 CALCULATOR

APPLIED FOR THE PURPOSE OF DETERMINING A REQUIRED SEPARATION DISTANCE

For the proposed building work/development, the following information is required:

- The determination of the separation distance required to limit radiant heat exposure of persons to 2 kW/m^2; and/or
- The determination of the separation distance required to limit radiant heat exposure of a structure to 10 kW/m^2.

LIMITATIONS OF THE AS 3959:2018 METHOD 1 CALCULATOR

Method 1 calculators typically do not provide the required information. The limitations are:

- The only output displayed is a BAL rating and each rating corresponds to a range of radiant heat flux, not single values; and
- The separation distance corresponding to a single radiant heat flux value is not determined or displayed.

USING A METHOD 2 CALCULATOR TO APPLY THE METHOD 1 PROCEDURE

The above limitations necessitate the use of a Method 2 calculator to derive the required separation distances. However, in only applying the Method 1 procedure the site specific calculator input variables are restricted to the following:

- Fire Danger Index;
- Vegetation classification;
- Effective slope as zero degrees for upslope and flat land, otherwise 5, 10, 15 or 20 degrees, as applicable and in accordance with AS 3959:2018 Table 2.5; and
- Site slope values will be the same as those applied to the effective slope.

Refer to the copies of the calculator inputs/outputs to confirm the application of the Method 1 procedure.

Relevant Site	Relevant Vegetation		Applied Effective Slope (Method 1)	Applied Site Slope (Method 1)
	Area	Class		
Open Shelter Location	1	(A) Forest	Upslope or flat 0	flat 0
	2	(A) Forest	Downslope >0-5	upslope 5
	3	(A) Forest	Downslope >5-10	upslope 10
	4	(A) Forest	Downslope >10-15	upslope 15
	5	(B) Woodland	Upslope or flat 0	flat 0
	6	(B) Woodland	Downslope >0-5	upslope 5
	7	(B) Woodland	Downslope >5-10	upslope 10
	8	(D) Scrub	Downslope >5-10	upslope 10
	9	(G) Grassland	Upslope or flat 0	flat 0
	10	(G) Grassland	Downslope >0-5	upslope 5
	11	(G) Grassland	Downslope >5-10	upslope 10
	12	(A) Forest	Upslope or flat 0	flat 0
	13	(A) Forest	Downslope >0-5	upslope 5

	14	(A) Forest	Downslope >5-10	upslope 10
	15	(A) Forest	Downslope >10-15	upslope 15
	16	(A) Forest	Downslope >15-20	upslope 20
	17	(B) Woodland	Downslope >0-5	upslope 5
	18	(B) Woodland	Downslope >5-10	upslope 10
	19	(G) Grassland	Downslope >0-5	upslope 5
	20	(G) Grassland	Downslope >5-10	upslope 10
	21	Excluded cl 2.2.3.2(e & f)	N/A	-

A3: BAL Calculator – Copy of Input/Output Values

DETERMINING 2 kW/m² SEPARATION DISTANCES

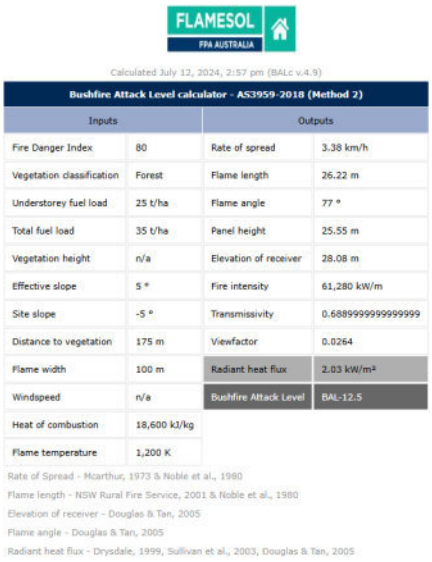
Calculated May 3, 2024, 1:26 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	80	Rate of spread	2.4 km/h
Vegetation classification	Forest	Flame length	19.8 m
Understorey fuel load	25 t/ha	Flame angle	83 °
Total fuel load	35 t/ha	Panel height	19.65 m
Vegetation height	n/a	Elevation of receiver	9.82 m
Effective slope	0 °	Fire intensity	43,400 kW/m
Site slope	0 °	Transmissivity	0.702
Distance to vegetation	152 m	Viewfactor	0.0256
Flame width	100 m	Radiant heat flux	2 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980
Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 1: A. Forest 0 Degrees



Calculated July 12, 2024, 2:57 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	80	Rate of spread	3.38 km/h
Vegetation classification	Forest	Flame length	26.22 m
Understorey fuel load	25 t/ha	Flame angle	77 °
Total fuel load	35 t/ha	Panel height	25.55 m
Vegetation height	n/a	Elevation of receiver	28.08 m
Effective slope	5 °	Fire intensity	61,280 kW/m
Site slope	-5 °	Transmissivity	0.6889999999999999
Distance to vegetation	175 m	Viewfactor	0.0264
Flame width	100 m	Radiant heat flux	2.03 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980
Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 2: A. Forest 0-5 Degrees

Calculated July 12, 2024, 3:00 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	80	Rate of spread	4.78 km/h
Vegetation classification	Forest	Flame length	35.3 m
Understorey fuel load	25 t/ha	Flame angle	71 °
Total fuel load	35 t/ha	Panel height	33.37 m
Vegetation height	n/a	Elevation of receiver	53.18 m
Effective slope	10 °	Fire intensity	86,527 kW/m
Site slope	-10 °	Transmissivity	0.68
Distance to vegetation	207 m	Viewfactor	0.0266
Flame width	100 m	Radiant heat flux	2.02 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980
Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 3: A. Forest 5-10 Degrees

Calculated July 12, 2024, 3:02 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	80	Rate of spread	6.75 km/h
Vegetation classification	Forest	Flame length	48.11 m
Understorey fuel load	25 t/ha	Flame angle	65 °
Total fuel load	35 t/ha	Panel height	43.6 m
Vegetation height	n/a	Elevation of receiver	90.66 m
Effective slope	15 °	Fire intensity	122,175 kW/m
Site slope	-15 °	Transmissivity	0.728
Distance to vegetation	257 m	Viewfactor	0.0247
Flame width	100 m	Radiant heat flux	2.01 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980
Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 4: A. Forest 10-15 Degrees

Calculated May 3, 2024, 1:28 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	80	Rate of spread	1.43 km/h
Vegetation classification	Woodland	Flame length	12.35 m
Understorey fuel load	15 t/ha	Flame angle	85 °
Total fuel load	25 t/ha	Panel height	12.31 m
Vegetation height	n/a	Elevation of receiver	6.15 m
Effective slope	0 °	Fire intensity	18,599 kW/m
Site slope	0 °	Transmissivity	0.722
Distance to vegetation	120 m	Viewfactor	0.0246
Flame width	100 m	Radiant heat flux	1.98 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980
Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 5: B. Woodland 0 Degrees

Calculated July 12, 2024, 3:06 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	80	Rate of spread	2.03 km/h
Vegetation classification	Woodland	Flame length	16.21 m
Understorey fuel load	15 t/ha	Flame angle	79 °
Total fuel load	25 t/ha	Panel height	15.91 m
Vegetation height	n/a	Elevation of receiver	20.03 m
Effective slope	5 °	Fire intensity	26,263 kW/m
Site slope	-5 °	Transmissivity	0.711
Distance to vegetation	138 m	Viewfactor	0.0254
Flame width	100 m	Radiant heat flux	2.01 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980
Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 6: B. Woodland 0-5 Degrees

Calculated July 12, 2024, 3:07 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	80	Rate of spread	2.87 km/h
Vegetation classification	Woodland	Flame length	21.66 m
Understorey fuel load	15 t/ha	Flame angle	73 °
Total fuel load	25 t/ha	Panel height	20.71 m
Vegetation height	n/a	Elevation of receiver	38.92 m
Effective slope	10 °	Fire intensity	37,083 kW/m
Site slope	-10 °	Transmissivity	0.697
Distance to vegetation	162 m	Viewfactor	0.0257
Flame width	100 m	Radiant heat flux	2 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980
Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 7: B. Woodland 5-10 Degrees

Calculated July 12, 2024, 3:09 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	80	Rate of spread	8.300000000000001 km/h
Vegetation classification	Scrub	Flame length	15.97 m
Understorey fuel load	25 t/ha	Flame angle	74 °
Total fuel load	25 t/ha	Panel height	15.35 m
Vegetation height	3 m	Elevation of receiver	32.36 m
Effective slope	10 °	Fire intensity	107,293 kW/m
Site slope	-10 °	Transmissivity	0.71
Distance to vegetation	140 m	Viewfactor	0.0248
Flame width	100 m	Radiant heat flux	1.97 kW/m²
Windspeed	45 km/h	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Catchpole et al. 1998
Flame length - Byram, 1959
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 8: D. Scrub 5-10 Degrees

Calculated May 6, 2024, 11:36 am (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Grassland Fire Danger Index	110	Rate of spread	14.3 km/h
Vegetation classification	Grassland	Flame length	6.87 m
Understorey fuel load	4.5 t/ha	Flame angle	86 °
Total fuel load	4.5 t/ha	Panel height	6.85 m
Vegetation height	n/a	Elevation of receiver	3.42 m
Effective slope	0 °	Fire intensity	33,247 kW/m
Site slope	0 °	Transmissivity	0.742
Distance to vegetation	87 m	Viewfactor	0.024
Flame width	100 m	Radiant heat flux	1.99 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Noble et al. 1980
Flame length - Purton, 1982
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 9: G. Grassland 0 Degrees

Calculated July 12, 2024, 3:28 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Grassland Fire Danger Index	110	Rate of spread	20.19 km/h
Vegetation classification	Grassland	Flame length	8.16 m
Understorey fuel load	4.5 t/ha	Flame angle	81 °
Total fuel load	4.5 t/ha	Panel height	8.06 m
Vegetation height	n/a	Elevation of receiver	12.43 m
Effective slope	5 °	Fire intensity	46,945 kW/m
Site slope	-5 °	Transmissivity	0.736
Distance to vegetation	96 m	Viewfactor	0.0243
Flame width	100 m	Radiant heat flux	2 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Noble et al. 1980
Flame length - Purton, 1982
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 10: G. Grassland 0-5 Degrees

Calculated July 12, 2024, 6:11 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Grassland Fire Danger Index	110	Rate of spread	28.51 km/h
Vegetation classification	Grassland	Flame length	9.699999999999999 m
Understorey fuel load	4.5 t/ha	Flame angle	76 °
Total fuel load	4.5 t/ha	Panel height	9.41 m
Vegetation height	n/a	Elevation of receiver	23.57 m
Effective slope	10 °	Fire intensity	66,286 kW/m
Site slope	-10 °	Transmissivity	0.73
Distance to vegetation	107 m	Viewfactor	0.0244
Flame width	100 m	Radiant heat flux	1.99 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Noble et al. 1980
Flame length - Purton, 1982
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 11: G. Grassland 5-10 Degrees

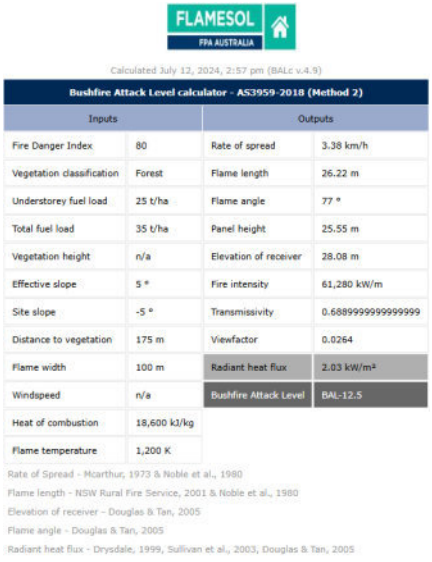
Calculated May 3, 2024, 1:26 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	80	Rate of spread	2.4 km/h
Vegetation classification	Forest	Flame length	19.8 m
Understorey fuel load	25 t/ha	Flame angle	83 °
Total fuel load	35 t/ha	Panel height	19.65 m
Vegetation height	n/a	Elevation of receiver	9.82 m
Effective slope	0 °	Fire intensity	43,400 kW/m
Site slope	0 °	Transmissivity	0.702
Distance to vegetation	152 m	Viewfactor	0.0256
Flame width	100 m	Radiant heat flux	2 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980
Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 12: A. Forest 0 Degrees



Calculated July 12, 2024, 2:57 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	80	Rate of spread	3.38 km/h
Vegetation classification	Forest	Flame length	26.22 m
Understorey fuel load	25 t/ha	Flame angle	77 °
Total fuel load	35 t/ha	Panel height	25.55 m
Vegetation height	n/a	Elevation of receiver	28.08 m
Effective slope	5 °	Fire intensity	61,280 kW/m
Site slope	-5 °	Transmissivity	0.6889999999999999
Distance to vegetation	175 m	Viewfactor	0.0264
Flame width	100 m	Radiant heat flux	2.03 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980
Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 13: A. Forest 0-5 Degrees

Calculated July 12, 2024, 3:00 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	80	Rate of spread	4.78 km/h
Vegetation classification	Forest	Flame length	35.3 m
Understorey fuel load	25 t/ha	Flame angle	71 °
Total fuel load	35 t/ha	Panel height	33.37 m
Vegetation height	n/a	Elevation of receiver	53.18 m
Effective slope	10 °	Fire intensity	86,527 kW/m
Site slope	-10 °	Transmissivity	0.68
Distance to vegetation	207 m	Viewfactor	0.0266
Flame width	100 m	Radiant heat flux	2.02 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980
Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Vegetation Area 14: A. Forest 5-10 Degrees

Calculated July 12, 2024, 3:02 pm (BALc v.4.9)

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	80	Rate of spread	6.75 km/h
Vegetation classification	Forest	Flame length	48.11 m
Understorey fuel load	25 t/ha	Flame angle	65 °
Total fuel load	35 t/ha	Panel height	43.6 m
Vegetation height	n/a	Elevation of receiver	90.66 m
Effective slope	15 °	Fire intensity	122,175 kW/m
Site slope	-15 °	Transmissivity	0.728
Distance to vegetation	257 m	Viewfactor	0.0247
Flame width	100 m	Radiant heat flux	2.01 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980
Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980
Elevation of receiver - Douglas & Tan, 2005
Flame angle - Douglas & Tan, 2005
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Cannot be calculated due to limitations of the formula. Area 16 is 337m from shelter area.

Vegetation Area 15: A. Forest 10-15 Degrees	Vegetation Area 16: A. Forest 15-20 Degrees
	
Vegetation Area 17: B. Woodland 0-5 Degrees	Vegetation Area 18: B. Woodland 5-10 Degrees
	
Vegetation Area 19: G. Grassland 0-5 Degrees	Vegetation Area 20: G. Grassland 5-10 Degrees

APPENDIX B: ADVICE - ONSITE VEGETATION MANAGEMENT - THE APZ

THE ASSET PROTECTION ZONE (APZ) – EXPLANATORY INFORMATION

The APZ is an area surrounding a building/structure in which fire fuels are intensively managed (reducing sources and quantities) to provide localised protection. Any retained or planted vegetation must be able to be considered low threat (due to a range of characteristics) or as being continuously maintained in a minimal fuel condition. The primary objectives of establishing an APZ are:

1. Ensure a reduction in the exposure of the building/structure to bushfire direct attack mechanisms (threats) of flame contact, radiant heat transfer and ember attack, by establishing appropriate separation from the bushfire prone vegetation. The required APZ dimensions will be dependent on site specific conditions and the use of the site;
2. Ensure a reduction in the exposure of the building/structure to bushfire indirect attack mechanisms (threats) by:
   - Preventing surface fire spreading to the building/structure;
   - Minimising the potential for tree strike; and
   - Limiting the potential for consequential fire to impact the building/structure by eliminating, reducing and/or shielding consequential fire fuels. These fuels include accumulated debris, stored combustible/flammable items and constructed combustible items. Consequential fire, typically ignited by embers, is the primary cause of building loss in a bushfire event; and
3. To provide a defendable space for firefighting activities.

The *Guidelines for planning in bushfire prone areas* (WAPC 2021 v1.4) Appendix 4, Element 2 Explanatory Notes and Schedule 1: Standards for APZ, provide an example of how the objectives might be met.

B1: The Asset Protection Zone (APZ) - Dimension and Location Requirements

PLANNING APPLICATION REQUIREMENTS VERSUS LANDOWNER IMPLEMENTATION REQUIREMENTS

ONE IDENTIFIES THE ABILITYOF DEVELOPMENT TO ACHIEVE A MAXIMUM LEVEL OF EXPOSURE TO CERTAIN BUSHFIRE THREATS AND THE OTHER ESTABLISHES WHAT IS TO BE PHYSICALLY IMPLEMENTED SURROUNDING BUILDINGS/STRUCTURES

THE 'PLANNING BAL-29 APZ'

For planning approval purposes, an assessment against the Bushfire Protection Criteria in the *Guidelines for planning in bushfire prone areas* (WAPC 2021, v1.4), is conducted. Element 2 of the criteria (Siting and Design) establishes the acceptable solution (A2.1: APZ) requiring proposed development to depict on submitted plans that every habitable building can be surrounded by an APZ that can be reasonably expected to comply with the maintenance requirements (APZ standards) in perpetuity, and meets the following dimension and location requirements:

Dimensions: The minimum dimensions of the 'Planning BAL-29 APZ' are those that will ensure the potential radiant heat impact on the relevant buildings does not exceed 29 kW/m^2. These dimensions will vary dependent on the site specific conditions.

Location: The 'Planning BAL-29 APZ' dimensions must not extend past lot boundaries onto land the landowner has no responsibility for or control over. Limited exceptions include:

- When adjoining land is not vegetated (e.g., built out, roads, carparks, drainage systems, rock, water body etc.);
- When adjoining land does or will contain low threat vegetation (refer to Appendix B) and it can be justified that enforceable mechanisms are in place to ensure the APZ status of this land will exist in perpetuity. Such areas of land include:

- Publicly managed areas of vegetation (e.g., public open space, recreation grounds/areas and services installed in a common section of land). For certain situations, evidence of an entity's enforceable requirement to manage these areas to the required standard would be included in either the BAL Assessment Report or Bushfire Management Plan;

- Land on a neighbouring lot that is/will be part of the required APZ surrounding buildings/structures on that lot, and/or required firebreak, and for which the owner of that lot has a recognised responsibility to implement and maintain.

- Adjoining land for which a formalised and enforceable authority and responsibility is created for the owner of the lot on which development is proposed, or another third party, to manage vegetation in perpetuity, on land they do not own. This is not common, and the necessary evidence of the responsibility would be included in the BAL Assessment Report or Bushfire Management Plan.

If the proposed development can potentially satisfy these dimension and location requirements, then planning approval can be considered for this requirement, and then be subject to all other planning requirements being met.

KEY POINT

The 'Planning BAL-29 APZ' dimensions are not necessarily those that must be physically implemented and maintained by a landowner. Implementation requirements may be different (see 'Determined BAL Rating APZ' below).

The purpose of identifying the ability of proposed development to apply the 'Planning BAL-29 APZ' dimensions is solely to inform decision makers as to the ability of the proposed building works to limit exposure to certain bushfire threats (flame contact, radiant heat transfer and ember attack), to the extent represented by a BAL-29 rating.

Note for certain vulnerable land uses, evidence of the ability to implement a larger APZ may be required to inform planning decisions. These include dimensions corresponding to radiant heat impact levels of 10 kW/m² and/or 2 kW/m² and calculated using a flame temperature of 1200 K – rather than 29kW/m² at 1090 K.

THE 'DETERMINED BAL RATING APZ'

The dimensions associated with the 'Determined BAL Rating APZ' are derived for the specific site conditions and are to be physically implemented and maintained by the landowner. The rating also establishes the bushfire construction requirements for any new building works which results in the built resilience to bushfire threats corresponding to their distance from the bushfire hazard. Variations of these dimensions will only exist as the result of either:

- A requirement presented within an associated Bushfire Management Plan to increase the size of the APZ as part of an alternative solution, and which is subsequently approved by the decision maker; or

- A directive of the relevant Local Government through their annual Firebreak/Hazard Reduction Notice (see below) that results in a larger dimension.

The applicable 'determined' BAL rating is stated in the BAL Assessment Data section of the BAL Assessment Report or Bushfire Management Plan.

If an 'indicative' or 'conditional' rather than a 'determined' BAL rating is stated, the corresponding separation distances (dimensions) are just informative. Confirmation that the stated BAL rating (or a different rating) will apply, is still subject to either certain physical requirements being met or approval from relevant authorities for native vegetation removal is obtained (refer to explanatory information in Section 3).

Dimensions: The minimum dimensions of the 'BAL Rating APZ' will be those associated with the 'determined' BAL rating for the relevant buildings/structures and stated in the following Table B1.

Note for certain vulnerable land uses and relevant buildings/areas, the 'BAL Rating APZ' dimensions may be replaced with dimensions corresponding to the specific radiant heat impact levels of 10 kW/m² and 2 kW/m² and calculated using a flame temperature of 1200K– rather than 29kW/m² at 1090 K.

Location: As for the 'Planning BAL-29 APZ'.

THE 'LOCAL GOVERNMENT APZ'

Certain Local Government's state the dimensions of the APZ that must be established surrounding buildings in their annual Firebreak/Hazard Reduction Notice. For certain vegetation/sites, based on environmental considerations, they may also establish a maximum allowable dimension, typically that corresponding to a BAL-29 rating.

THE 'REQUIRED APZ'

The dimensions associated with the 'Required APZ' are to be established and maintained by the landowner within the subject lot and surrounding the subject buildings/structures. The 'Required APZ' will be appropriately depicted in Reports and Plans on the Property Bushfire Management Statement when it is required to be included.

Dimensions: The 'Required APZ' dimensions are the minimum distances away from the subject building/structure that the APZ must extend towards each relevant area of classified vegetation (note: a distance may also be a maximum distance when relevant as an environmental constraint). These distances are stated in the following Table B1.

The dimensions to implement are determined by:

A. Those associated with the 'Determined BAL APZ' for the subject building(s) when distances are greater than 'B' below (except when 'B' has established a maximum distance); or

B. The 'Local Government' APZ' derived from their Firebreak/Hazard Reduction Notice when distances are greater than 'A' above, other than when a maximum distance is established, in which case this will apply; or

C. A combination of 'A' and 'B' as they may apply to different areas of classified vegetation.

Location: As for the 'Planning BAL-29 APZ'.

Table B1: The APZ dimensions required to be implemented and maintained by the landowner.

ESTABLISHING THE 'REQUIRED APZ' DIMENSIONS TO BE IMPLEMENTED AND MAINTAINED BY LANDOWNER WITHIN THEIR LOT									
Relevant Site	Vegetation Classification		MINIMUM REQUIRED SEPARATION DISTANCES BETWEEN BUILDING/STRUCTURE AND BUSHFIRE PRONE VEGETATION [1]						
			Dimensions Associated with the 'BAL Rating APZ'				Dimensions Associated with the 'Local Government APZ'		The 'Required APZ' Dimensions [3]
			Potential Bushfire Impact [2]			Separation Distance	Firebreak / Hazard Reduction Notice	Maximum Allowed	
								N/A	
	Area	Class	Stated As	Value	Status	metres	metres	metres	metres
El Caballo Lifestyle Village	1	(A) Forest	BAL Rating	BAL-29	Maximum Allowed	21	20	-	21
	2	(A) Forest				27	24	-	27
	3	(A) Forest				33	29	-	33
	4	(A) Forest				42	32	-	42
	5	(B) Woodland				14	20	-	14
	6	(B) Woodland				17	22	-	17
	7	(B) Woodland				22	28	-	22
	8	(D) Scrub				17	26	-	17
	9	(G) Grassland				8	20	-	8
	10	(G) Grassland				9	22	-	9
	11	(G) Grassland				10	28	-	10
	12	(A) Forest				21	20	-	21
	13	(A) Forest				27	24	-	27
	14	(A) Forest				33	28	-	33
	15	(A) Forest				42	34	-	42
	16	(A) Forest				52	38	-	52
	17	(B) Woodland				14	23	-	14
	18	(B) Woodland				17	29	-	17
	19	(G) Grassland				9	24	-	9
	20	(G) Grassland				10	29	-	10
	21	Excluded cl 2.2.3.2(e & f)	-	-	-	-	-	-	-

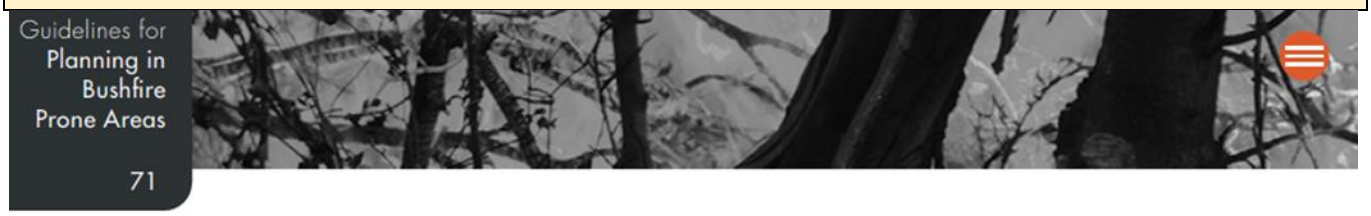
Note 1: Refer to all explanatory information on the preceding pages.
Note 2: For the bushfire direct attack mechanisms of flame contact, radiant heat transfer and, to some extent, ember attack.
Note 3: These are minimum distances unless a maximum is being applied by a local government.

Comments: The distances associated with the Firebreak Notice are not applicable to the individual lots, as the Firebreak Notice applies only within a lot boundary.

B2: The Standards for the APZ as Established by the Guidelines (DPLH, v1.4)

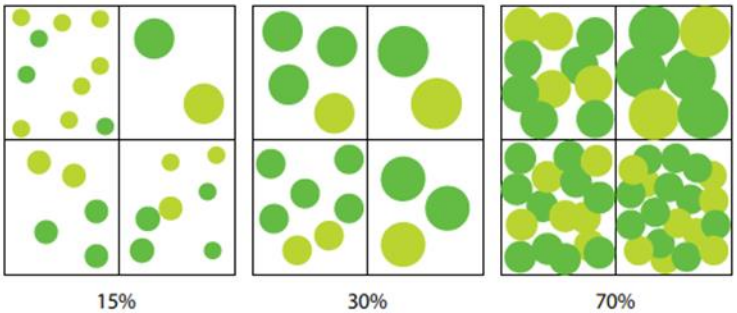
Within the Guidelines (source: https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas), the management Standards are established by:

- Schedule 1: Standards for Asset Protection Zones (see extract below) established by the Guidelines; and
- The associated explanatory notes (Guidelines E2) that address (a) managing an asset protection zone (APZ) to a low threat state (b) landscaping and design of an asset protection zone and (c) plant flammability.



ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	• Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	• Should be managed and removed on a regular basis to maintain a low threat state. • Should be maintained at <2 tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be <15 per cent of the total APZ area. • Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ. **Figure 19:** Tree canopy cover – ranging from 15 to 70 per cent at maturity 

Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps >5 square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.
Grass	• Grass should be maintained at a height of 100 millimetres or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	• Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	• Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

** Plant flammability, landscaping design and maintenance should be considered – refer to explanatory notes*

B3: The Standards for the APZ as Established by the Local Government

Refer to the firebreak / hazard reduction notice issued annually (under s33 of the Bushfires Act 1954) by the relevant local government. It may state Standards that vary from those established by the Guidelines and that have been endorsed by the WAPC and DFES as per Section 4.5.3 of the Guidelines.

A copy of the applicable notice is not included here as they are subject to being reviewed and modified prior to issuing each year. Refer to ratepayers' notices and/or the local government's website for the current version.

B4: Vegetation Excluded from Classification - Ensure Continued Low Threat Status

EXPLANATORY NOTES

When applying AS 3959:2018 BAL determination methodology, vegetation adjoining or adjacent to the subject site can be excluded from classification based on being 'low threat'. To maintain this status, certain requirements must continue to be met in accordance with the below extract from AS3959:2018. Refer to the 'Classified Vegetation and Topography Map' for the relevant areas associated with the subject site.

Determination of 'low threat' vegetation is based on factors such as:

- Proximity to the subject site
- Small areas of vegetation
- Low flammability
- High moisture content
- Low fuel load

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

Acceptable forms of justification typically involve supportable evidence or the existence of an enforceable mechanism. Examples of enforceable mechanisms include:

- Requirements established by a Section 33 (Bush Fires Act 1954) notice issued by a local government;
- An appropriate and enforceable agreement between relevant parties (which may involve additions to land titles); and
- For public open space, written evidence that the land manager e.g., local government or State Government Department, agrees to maintain the public open space in a low threat state in perpetuity.

2.2.3.2 *Exclusions—Low threat vegetation and non-vegetated areas*

The following vegetation shall be excluded from a BAL assessment:

(a) Vegetation of any type that is more than 100 m from the site.

(b) Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified vegetation.

(c) Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other or of other areas of vegetation being classified vegetation.

(d) Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified vegetation.

(e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.

(f) Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks.

NOTES:

1 Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack (recognizable as short-cropped grass for example, to a nominal height of 100 mm).

2 A windbreak is considered a single row of trees used as a screen or to reduce the effect of wind on the leeward side of the trees.

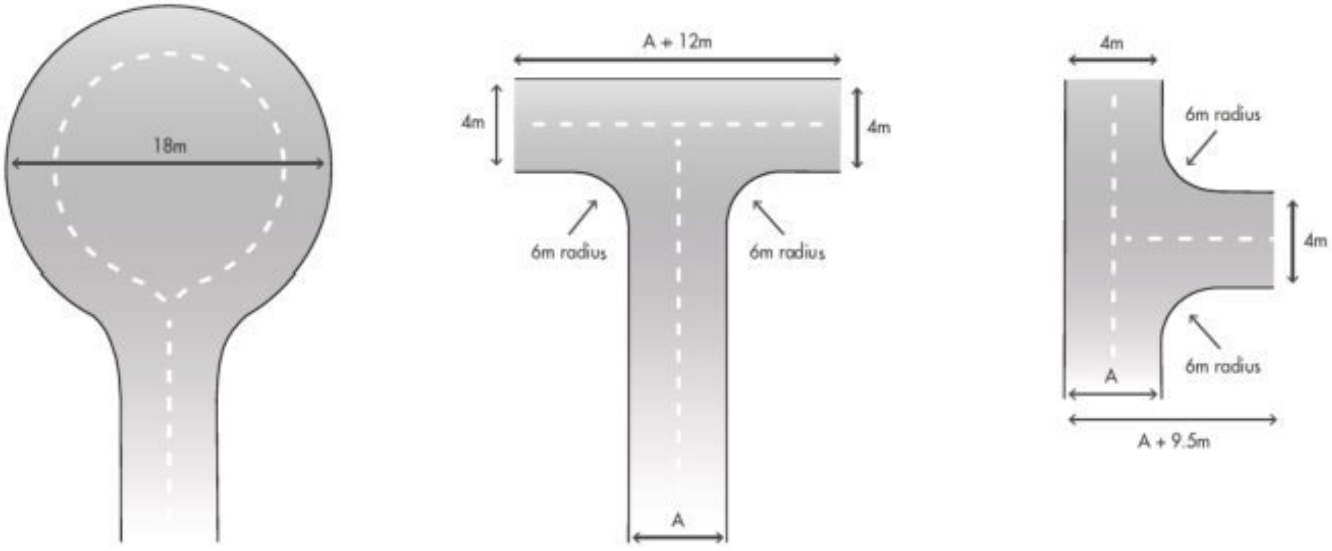
APPENDIX C: TECHNICAL REQUIREMENTS FOR VEHICULAR ACCESS

The design/layout requirements for access are established by the acceptable solutions of the Guidelines (DPLH, 2021 v1.4) Element 3 and vary dependent on the access component, the land use and the presence of 'vulnerable' persons. Consequently, the best reference source are the Guidelines. The technical requirements that are fixed for all components and uses are presented in this appendix.

GUIDELINES TABLE 6, EXPLANATORY NOTES E3.3 & E3.6 AND RELEVANT ACCEPTABLE SOLUTIONS

Technical Component	Vehicular Access Types / Components			
	Public Roads	Emergency Access Way [1]	Fire Service Access Route [1]	Battle-axe and Private Driveways [2]
Minimum trafficable surface (m)	In accordance with A3.1	6	6	4
Minimum Horizontal clearance (m)	N/A	6	6	6
Minimum Vertical clearance (m)	4.5			
Minimum weight capacity (t)	15			
Maximum Grade Unsealed Road [3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum Grade Sealed Road [3]		1:7 (14.3%)		
Maximum Average Grade Sealed Road		1:10 (10%)		
Minimum Inner Radius of Road Curves (m)		8.5		

Turnaround Area Dimensions for No-through Road, Battle-axe Legs and Private Driveways [4]



Passing Bay Requirements for Battle-axe leg and Private Driveway

When the access component length is greater than the stated maximum, passing bays are required every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum 6m).

Emergency Access Way – Additional Requirements

Provide a through connection to a public road, be no more than 500m in length, must be signposted and if gated, gates must be open the whole trafficable width and remain unlocked.

[1] To have crossfalls between 3 and 6%.

[2] Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

[3] Dips must have no more than a 1 in 8 (12.5% or 7.1 degree) entry and exit angle.

[4] The turnaround area should be within 30m of the main habitable building.

APPENDIX D: TECHNICAL REQUIREMENTS FOR FIREFIGHTING WATER SUPPLY

D1: Reticulated Areas – Hydrant Supply

The Guidelines state "where a reticulated water supply is existing or proposed, hydrant connection(s) should be provided in accordance with the specifications of the relevant water supply authority."

The main scheme water suppliers / authorities in WA are The Water Corporation, AqWest – Bunbury Water Corporation and Busselton Water Corporation. Various local authority exists in other non-scheme and regional areas. However, most existing fire hydrants are connected to Water Corporation water mains.

Consequently, the hydrant location specifications from The Water Corporation's 'No 63 Water Reticulation Standard' (Ver 3 Rev 15) are provided in the extract below with the key distances relevant to bushfire planning assessments being highlighted. This Standard is deemed to be the baseline criteria for developments and should be applied unless different local water supply authority conditions apply. Other applicable specification will be found in the Standard.

Note: The maximum distance from a hydrant to the rear of a lot/building is generally interpreted as not applicable to large lot sizes where the maximum distance becomes an impractical limitation i.e., typically rural residential areas.

2.2.1.5 Appurtenances

c. Hydrants

Hydrants shall be screw-down hydrant with built-in isolation valve and installed only on DN100 or larger pipes. Hydrants shall be located:

- so that the maximum distance between a hydrant and the rear of a building envelope, (or in the absence of a building envelope the rear of the lot) shall be 120m;
- so that spacing (as measured by hose-run) between hydrants in non-residential or mixed use areas shall be maximized and no greater than 100m;
- so that spacing (as measured by hose-run) between hydrants in residential areas with lots per dwelling <10,000m² shall be maximized and no greater than 200m;
- so that spacing between hydrants (as measured by hose-run) in rural residential areas where minimum lots per dwelling is >10,000 m² (1ha) shall be maximized and no greater than 400m;
- centrally along the frontage of a lot to avoid being under driveways, unless the lot features a frontage 6m or less, in which case it shall be placed to the side opposite the driveway;
- at lots that have the widest frontage in the local area;
- where appropriate at the truncation of road junctions or intersections so that they can serve more than one street and can be readily located;
- on both sides of the major roads at staggered intervals where there are mains on both sides of the road;
- at major intersections on dual multi-lane roads, where two hydrants are to be sited on diagonally opposite corners;
- hydrants should be located at least 20m from traffic calming devices i.e., median slow points or chokers, chicanes, mini traffic circles, and intersection 'pop-outs' to ensure traffic is not impeded;
- in a position not less than 10m from any high voltage main electrical distribution equipment such as transformers and distribution boards, liquefied petroleum gas or other combustible storage;
- directly on top of the main using a tee unless proved to be impractical.

D2: Non-Reticulated Areas – Static Supply

For specified requirements, refer to the Guidelines Element 4: Water – Acceptable Solution A4.2 , Explanatory Notes E4 (that provide water supply establishment detail under the headings of water supply; independent water and power supply; strategic water supplies, alternative water sources and location of water tanks) and the technical requirements established by Schedule 2 (reproduced below).

SCHEDULE 2: WATER SUPPLY DEDICATED FOR BUSHFIRE FIREFIGHTING PURPOSES

2.1 Water supply requirements

Water dedicated for firefighting should be provided in accordance with Table 7 below, and be in addition to water required for drinking purposes.

Table 7: Water supply dedicated for bushfire firefighting purposes

PLANNING APPLICATION	NON-RETICULATED AREAS
Development application	10,000L per habitable building
Structure Plan / Subdivision: Creation of 1 additional lot	10,000L per lot
Structure Plan / Subdivision: Creation of 3 to 24 lots	10,000L tank per lot **or** 50,000L strategic water tank
Structure Plan / Subdivision: Creation of 25 lots or more	50,000L per 25 lots or part thereof Provided as a strategic water tank(s) or 10,000L tank per lot

2.2 Technical requirements

2.2.1 Construction and design

An above-ground tank and associated stand should be constructed of non-combustible material. The tank may need to comply with AS/NZS 3500.1:2018.

Below ground tanks should have a 200mm diameter access hole to allow tankers or emergency service vehicles to refill direct from the tank, with the outlet location clearly marked at the surface. The tank may need to comply with AS/NZS 3500.1:2018. An inspection opening may double as the access hole provided that the inspection opening meets the requirements of AS/NZS 3500.1:2018. If the tank is required under the BCA as part of fire hydrant installation, then the tank will also need to comply with AS 2419.

Where an outlet for an emergency service vehicle is provided, then an unobstructed, hardened ground surface is to be supplied within four metres of any water supply.

2.2.2 Pipes and fittings

All above-ground, exposed water supply pipes and fittings should be metal. Fittings should be located away from the source of bushfire attack and be in accordance with the applicable section below, unless otherwise specified by the local government.

2.2.2.1 Fittings for above-ground water tanks:

- Commercial land uses: 125mm Storz fitting; or
- Strategic water tanks: 50mm or 100mm (where applicable and adapters are available) male camlock coupling with full flow valve; or
- Standalone water tanks: 50mm male camlock coupling with full flow valve; or
- Combined water tanks: 50mm male camlock coupling with full flow valve or a domestic fitting, being a standard household tap that enables an occupant to access the water supply with domestic hoses or buckets for extinguishing minor fires.

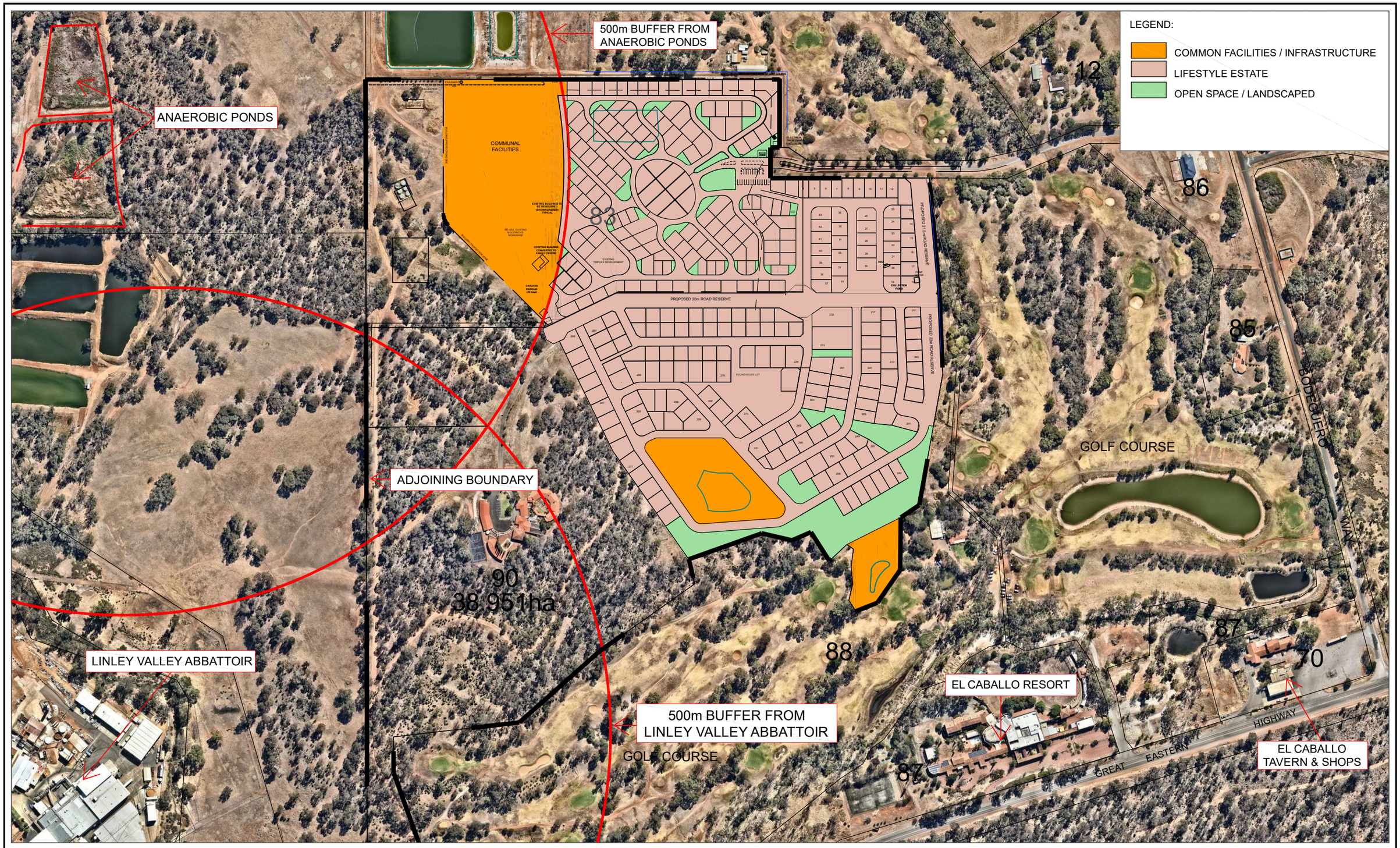
2.2.2.2 Remote outlets

In certain circumstances, it may be beneficial to have the outlet located away from the water supply. In such instances in which a remote outlet is to be used, the applicant should consult the local government and DFES on their proposal.

EXAMPLE CONSTRUCTION AND FITTINGS	
	
Strategic 47,000 Litre Concrete Tank & Protected Fittings	
	
10,000 Litre Concrete Tank	Storz and Camlock Couplings
	
Full Flow 50mm Ball Valve	Full Flow 50mm Gate Valve and Male Camlock

ATTACHMENT 3

Masterplan



PROPOSED MASTERPLAN

LOT 90 (No. 51) JOCOSO RISE
WUNDOWIE

Urban Development Institute of Australia WESTERN AUSTRALIA

Planning Institute Australia

CPP CERTIFIED PRACTISING PLANNER

SCALE: 1:4000 @ A3
DATE: 18th JULY 2024
FILE: 1842_18.07.2024.dwg
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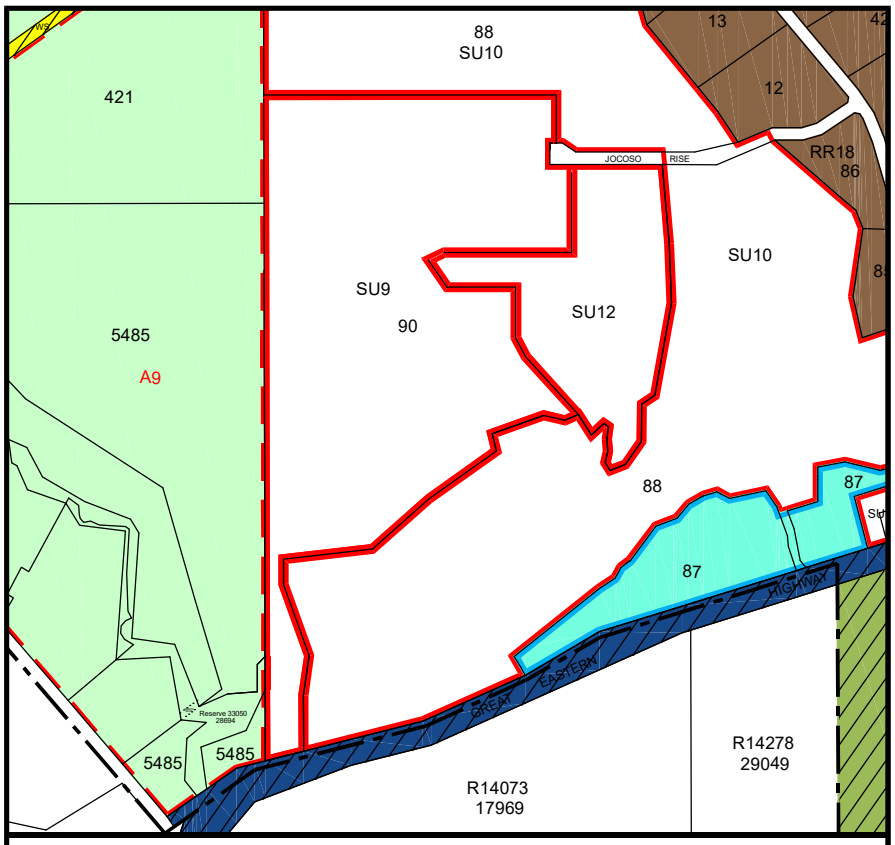
N W E S

ATTACHMENT 4

Scheme Amendment Map

SHIRE OF NORTHAM
LOCAL PLANNING SCHEME No. 6

Planning and Development Act 2005



EXISTING ZONING

LEGEND

LOCAL SCHEME RESERVES
(see scheme text for additional information)

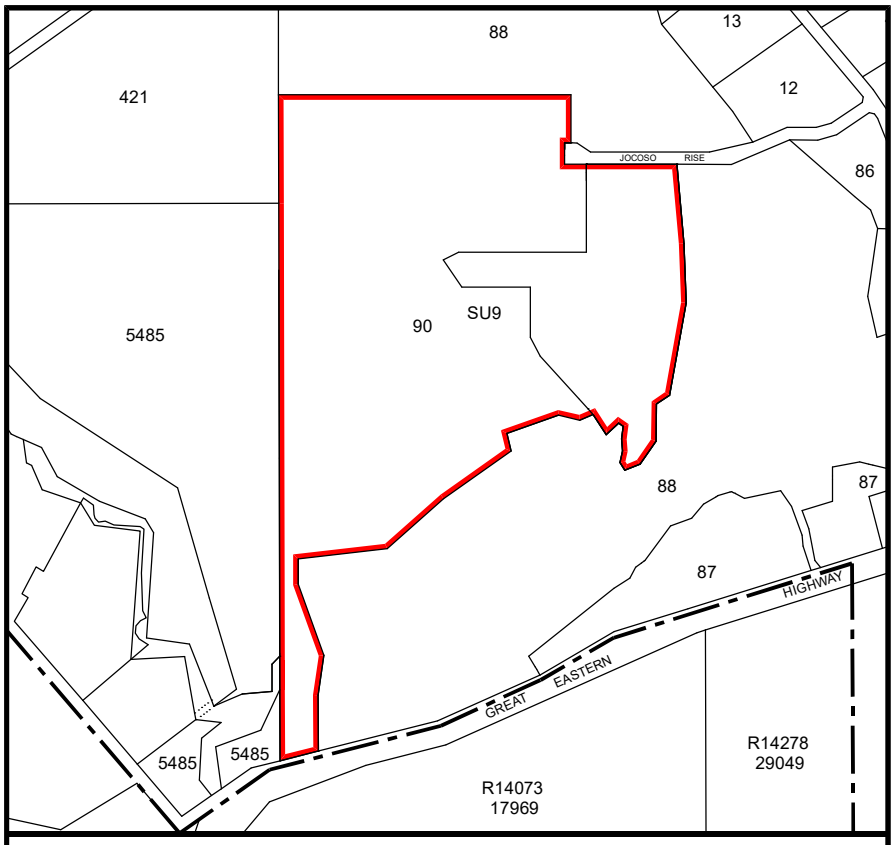
- CONSERVATION OF FLORA AND FAUNA
- WS PUBLIC PURPOSES - WATER SUPPLY
- REGIONAL ROAD

LOCAL SCHEME RESERVES
(see scheme text for additional information)

- RURAL
- RURAL RESIDENTIAL
- SPECIAL USE
- TOURIST

OTHER CATEGORIES
(see scheme text for additional information)

- SCHEME BOUNDARY
- A1 ADDITIONAL USES
- **SU1** SPECIAL USE AREA
- **RR18** RURAL RESIDENTIAL AREA



SCHEME (AMENDMENT) MAP

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SCALE: 1:12 000
DATE: 19.07.2024

Amendment No.