

Bushfire Management Plan Coversheet

Site address: 3680 Collie-Changerup Road, Kojonup

Site visit / date: Yes No 20 March 2025

Report author or reviewer: Kathy Nastov

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

BPAD accreditation number: 27794 Accreditation expiry – month / year August 2026

Bushfire Management Plan - version / date: V1.2 11 May 2026

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

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

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

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

Dated signature of report author or reviewer:  11 May 2026



Kojonup BESS

Bushfire Management Plan

(PREPARED FOR PLANNING APPLICATION ASSESSMENT PURPOSES)



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

3680 Collie-Changerup Road, Kojonup

Shire of Kojonup

Development Application - Commercial/Industrial
Development

11 May 2026

Job Reference No: 241243

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BMP (Master) Template v10.1					

LIMITATIONS AND DISCLAIMER

Management of Risks Associated with Bushfire

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

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

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

Provision of Mapping Data

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

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

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

Bushfire Prone Planning's Liability

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

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

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STATEMENT OF PURPOSE – THE ‘PLANNING’ BUSHFIRE MANAGEMENT PLAN

EXPLANATORY INFORMATION

SITE/USE PLANNING

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

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

SITE OPERATIONS

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

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

BUSHFIRE RESISTENT CONSTRUCTION

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

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

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

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

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

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

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

1 THE PLANNING PROPOSAL

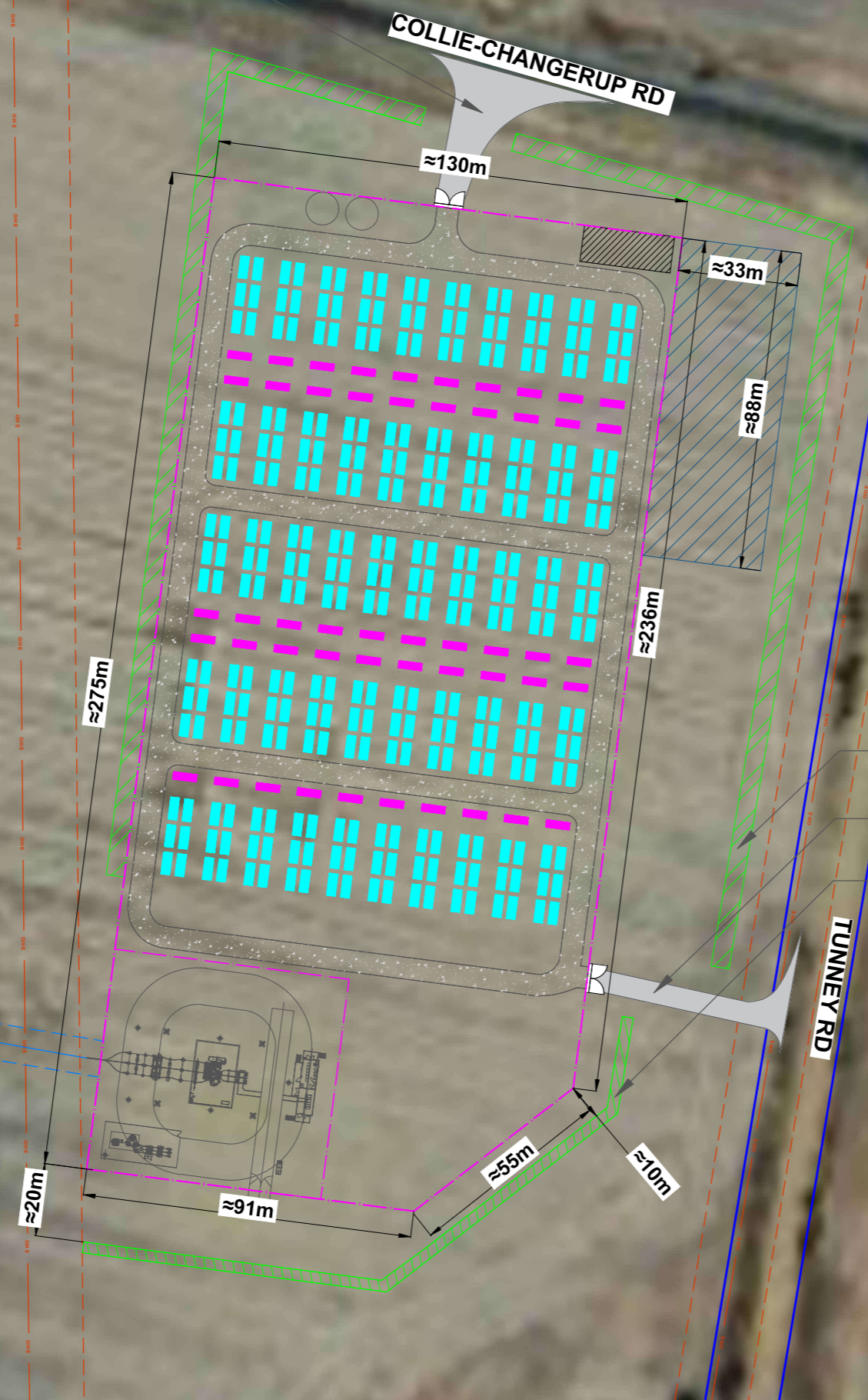
1.1 Details, Plans and Maps

SUBJECT LAND AND PROPONENT (LANDOWNER)	
Address Details	3680 Collie-Changerup Road, Kojonup
Applicable Local Government	Shire of Kojonup
Proponent	Mint Renewables
Entity Commissioning Production of the BMP	Mint Renewables
THE PLANNING PROPOSAL STAGE AND TYPE	
Strategic Planning Document	<input type="checkbox"/> N/A
Structure Plan	<input type="checkbox"/> N/A
Subdivision Application	<input type="checkbox"/> N/A
Development Application	<input checked="" type="checkbox"/> Construction of a habitable building that is subject to bushfire planning requirements.
DESCRIPTION	
<p>This Bushfire Management Plan (BMP) will outline bushfire management requirements for a Battery Energy Storage System (BESS) and grid connection proposed at 3680 (L3194) Collie-Changerup Road, Kojonup. The BMP assesses the proposal against <i>State Planning Policy 3.7 Bushfire</i> and associated Guidelines and Position Statements corresponding to the specific land use and planning stage.</p> <p>The Mint Renewables Project Layout (Item_10_KBESS_MINT_CP_1.0_E December 2025) and resulting 2-D footprint has been used as the basis for assessing the potential bushfire impact to the subject site.</p> <p>Should the design detail or project location change, a revised BMP or BMP Addendum may be required to confirm the specific layout and how the development will meet the required APZ, access, and water supply.</p> <p>The Project</p> <p>The Project is situated on private land (3680 Collie-Changerup Road, Kojonup) with a planned connection into the existing Kojonup Substation (262 Tunney Road, Kojonup). The Project Investigation Area also includes Collie-Changerup and Tunney Road reserves. The dominant land is generalised agriculture, with sparse areas of native vegetation present.</p> <p>The subject site is bounded in the north by Collie-Changerup Road and Tunney Road in the east. Land within and adjacent to the Project site is predominantly associated with agricultural practices, primarily used for dryland mixed farming of livestock and cropping.</p> <p>The Project involves a battery energy storage facility and underground transmission line to connect the Project to the electricity network, and includes (but is not limited to):</p> <ul style="list-style-type: none"> • Onsite electrical substation • A 330 kV underground transmission line connecting the Project from the onsite substation into the electricity network. • Battery Energy Storage System (BESS) with an indicative storage capacity of 800MWh • Internal site access tracks • Operations and maintenance facilities • Detention basin - to collect stormwater and contaminated fire water. <p>The proposed development area is contained within the lease area, within a north-eastern section of the subject lot.</p>	

Primary Proposed or Intended Construction	
EXPLANATORY INFORMATION	
<p>Note: A habitable building is defined in the WA <i>Planning and Development (LPS) Regulations 2015</i> to mean: A permanent or temporary structure on land that:</p> <ul style="list-style-type: none"> (a) Is fully or partially enclosed; and (b) Has at least one wall of solid material and a roof of solid material; and (c) Is used for a purpose that involves the use of the interior of the structure by people for living, working, studying or being entertained. 	
Primary Type(s)	Battery energy storage system New Building(s)
BCA Classification	N/A Class 7b (warehouse/storage/wholesale)
Development Type - Establishing the Applicable Bushfire Protection Criteria	
Commercial and Industrial	Construction of or addition to, a habitable building for commercial or industrial uses. [Guidelines s7]
<p><u>Assessment Supporting Details:</u></p> <p>As discussed within Section 1.2, the proposal includes numerous asset and structure types which are not 'Habitable Buildings.' However, only 'Habitable Buildings' are subject to SPP 3.7 and have Acceptable Solutions provided within the <i>Guidelines for Planning in Bushfire Prone Areas</i>.</p> <p>Constructed assets other than the Detention Pond and Access Roads have all been considered 'Habitable Buildings' for the purposes of the assessment against the Bushfire Protection Criteria, and allowing for application of SPP 3.7.</p>	



PROPOSED MAIN ACCESS TRACK APPROX. 42m



INDICATIVE LANDSCAPE SCREENING AREA (APPROX. 5m WIDE)

PROPOSED SECONDARY ACCESS TRACK APPROX. 55m

INDICATIVE LANDSCAPE SCREENING AREA (APPROX. 3m WIDE)

LEGEND			
	SITE ACCESS GATE		PROPOSED SECURITY FENCE
	PROPOSED NEW ACCESS TRACK		EXISTING SUBSTATION
	BATTERY CONTAINER		PROPOSED LANDSCAPE SCREENING (APPROX. 5m WIDE)
	POWER CONVERSION SYSTEM UNIT (PCS)		PROPOSED LANDSCAPE SCREENING (APPROX. 3m WIDE)
	EXISTING OVERHEAD LINE		INTERNAL ACCESS TRACK
	EXISTING OVERHEAD LINE EASEMENT		PROPOSED SUBSTATION AREA
	PROPERTY BOUNDARY		PROPOSED WATER DETENTION BASIN AREA
	PROPOSED NEW CONNECTION ROUTE		
	PROPOSED WATER TANK		
	PROPOSED O&M BUILDING AND CAR PARK AREA		

REVISIONS					
REV	STATUS	DESCRIPTION	DATE	D.B.	C.B.
A	DA	INITIAL ISSUE	10/02/26	X.Z	S.Y
B	DA	DETAIL AMENDED	19/02/26	X.Z	S.Y
C	DA	DETAIL AMENDED	03/03/26	X.Z	S.Y
D	DA	DETAIL AMENDED	10/03/26	X.Z	S.Y
E	DA	DETAILS INFORMATION AMENDED	23/03/26	X.Z	S.Y
F	DA	NOTES AMENDED	25/03/26	X.Z	S.Y

PROJECT DETAILS:

KOJONUP BESS
Collie-Changerup Rd, Kojonup WA 6395
-33.804452, 117.136471

PROJECT DEVELOPER:
MINT RENEWABLES

DRAWING TITLE:
INDICATIVE SITE LAYOUT

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DA-2.0_F_KOJONUP

DRAWN BY: X.Z
APPROVED BY: S.Y
PROJECT MANAGER: K.D

SCALE: NOT SCALED
ISSUE: CONCEPT PLAN
ISSUE DATE: 25/03/2026

SHEET SIZE: A3
CONCEPT ONLY NOT FOR CONSTRUCTION PURPOSE
REV. NO: F

DA-2.0_F_KOJONUP

DRAWN BY: X.Z
APPROVED BY: S.Y
PROJECT MANAGER: K.D

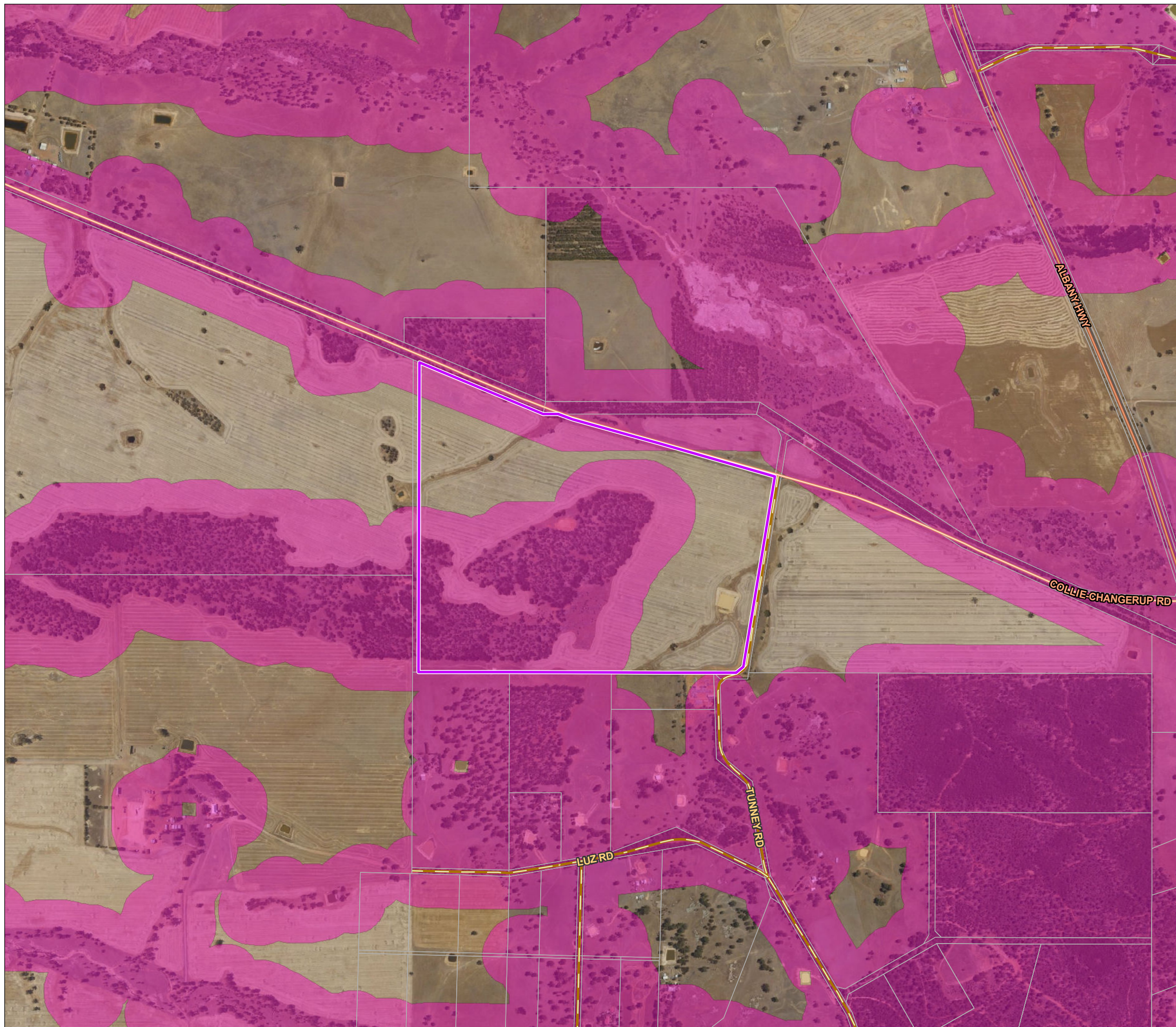
SCALE: NOT SCALED
ISSUE: CONCEPT PLAN
ISSUE DATE: 25/03/2026

SHEET SIZE: A3
CONCEPT ONLY NOT FOR CONSTRUCTION PURPOSE
REV. NO: F



Figure 1.3
Bushfire Prone Area

Lot 3194 on Plan 227649, Area : 97.29 ha
 Collie-Changerup Road
 KOJONUP
 SHIRE OF KOJONUP

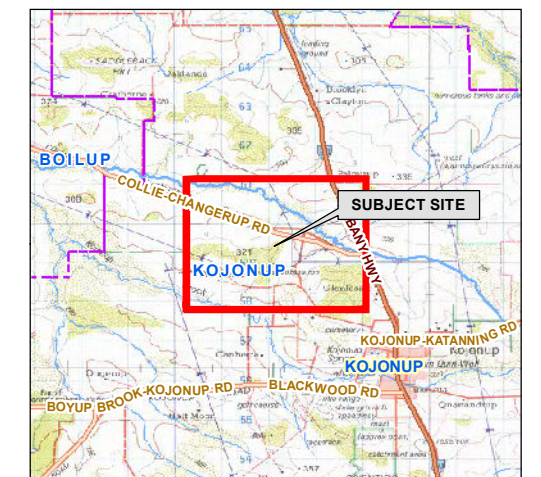


----- LEGEND -----

- Subject Site
- Other Lots
- Bushfire Prone Area OBRM-023**
- Bushfire Prone Area 2



----- LOCALITY -----



Aerial Imagery : Landgate/SLIP
 Image Date : Nov 2024

Coordinate System: GDA 1994 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map compiled by: Neil Stoney 18/12/2025
 Map updated by: Neil Stoney 18/12/2025
 A3 Scale 1:12,000



1.2 The Planning Proposal and its Requirement to Address Bushfire Risk

EXPLANATORY INFORMATION

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

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

Relevant Terms

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

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

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

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

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

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

1.2.1 Applied Statutory Bushfire Provisions Requiring a Planning Application

A PLANNING APPLICATION IS TO BE SUBMITTED TO WAPC FOR DETERMINATION

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

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

Assessment Supporting Details:

The subject Development Application does not technically trigger any bushfire assessment under the current *State Planning Policy 3.7 Bushfire* (WAPC November 2024).

The *Planning and Development (Local Planning Schemes) Regulations 2015* Section 78B describes the development types within a Bushfire Prone Area subject to the *Regulations* Part 10A – Bushfire risk management. These are:

- Single houses or ancillary dwellings on lots with an area of >1,100m²;
- Habitable buildings other than a single house or ancillary dwelling, or;
- Specified buildings.

State Planning Policy 3.7 Bushfire (WAPC November 2024) and the associated *Planning for Bushfire Guidelines* (WAPC November 2024) aligns with these definitions and reference 'Habitable Buildings' and 'Specified Buildings' requiring application of the Policy.

The subject Development Application does not propose to locate any 'Habitable Buildings' within a Bushfire Prone Area.

'Specified Buildings' are those which are specifically designated in the Local Government's Local Planning Scheme as being subject to Part 10A of the *Planning and Development (Local Planning Schemes) Regulations 2015*. To date, no Local Planning Schemes have identified a 'Specified Building.'

The *Planning and Development (Local Planning Schemes) Regulations 2015* Clause 67.2 requires due regard be given to:

"(q) the suitability of the land for the development taking into account the possible risk of flooding, tidal inundation, subsidence, landslip, bush fire, soil erosion, land degradation or any other risk;

(r) the suitability of the land for the development taking into account the possible risk to human health or safety;"

The proposal is for a major infrastructure asset in a bushfire prone area, and the potential may exist for the site to either instigate or have hazardous interactions with a bushfire. The decision maker must have due regard to Subclauses q) and r) despite the limited scope of SPP 3.7.

Policy can never fully capture appropriate bushfire protection measures for all development types. This is particularly in the case of very large proposals, complex sites, emerging technologies, or complex/hazardous uses. BPP note this development is technically exempt from SPP3.7 and the Guidelines; but there are still relevant parameters contained within these documents that can inform the project and the planning determination.

To assist the decision maker of all the necessary considerations to make an informed, robust decision regarding bushfire risks, BPP's approach is to:

- a) Apply a precautionary approach and assess relevant assets (as identified by the Bushfire Planning Practitioner) to be 'Habitable Buildings' for the purposes of initial assessment;
- b) Conduct a Risk Assessment (provided in a separate report) to comprehensively assess the proposal and determine appropriate bushfire protection measures applicable to the specific development, and;
- c) Produce a Bushfire Management Plan (this document) for planning consideration, which establishes the specific bushfire protection measures for this particular proposal.

In aligning with SPP 3.7 and the Guidelines, the outcome is to meet the intent of the Bushfire Protection Criteria by establishing relevant bespoke Criteria applicable to the development.

1.2.2 Applied Triggers to Apply State Planning Policy 3.7 Bushfire

EXPLANATORY INFORMATION

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

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

Inconsistent Information (as of December 2024):

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

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

Bushfire Prone Planning's Current Approach:

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

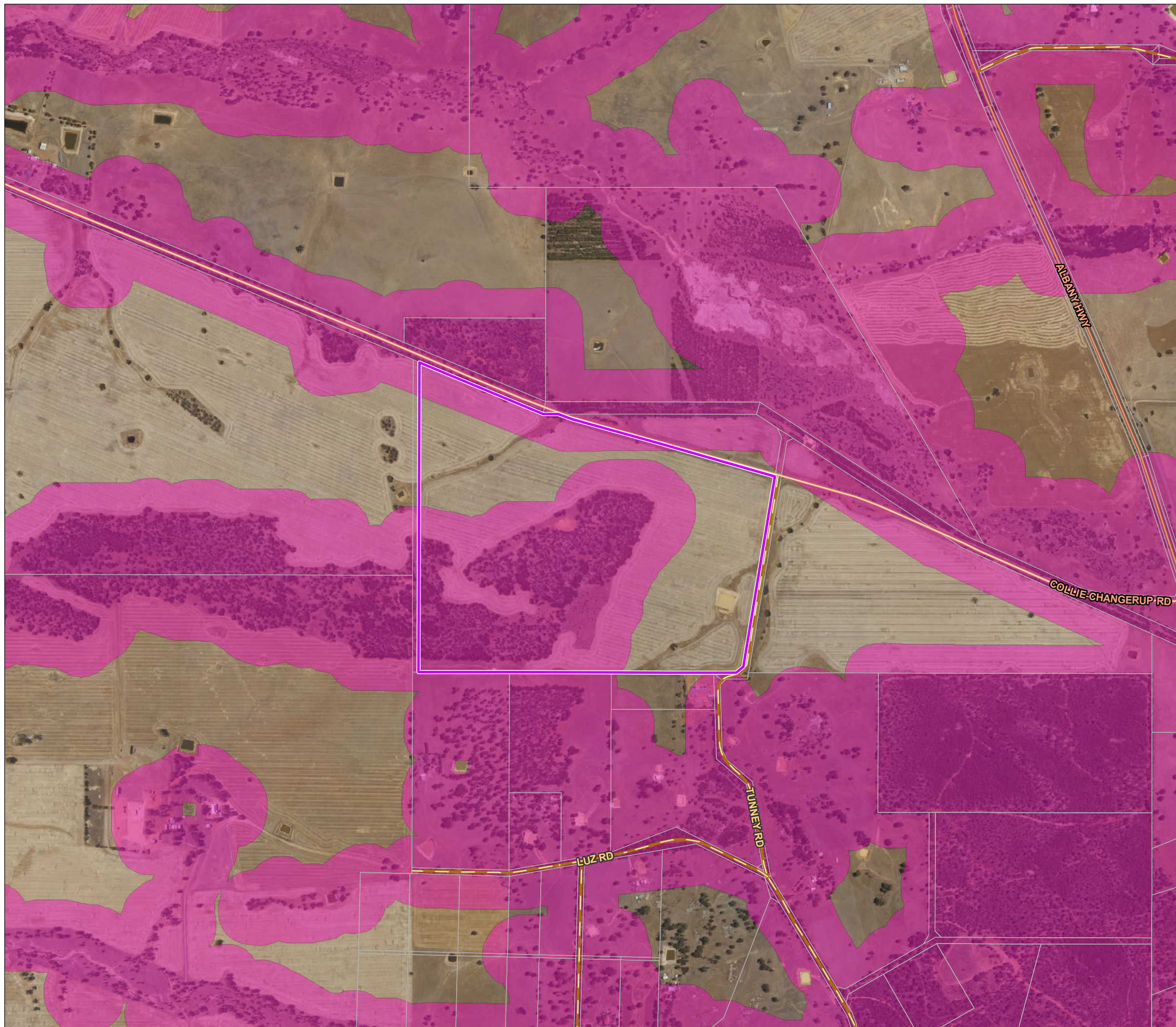
SPP 3.7 AND THE GUIDELINES - ESTABLISHING THE NEED TO GIVE DUE REGARD TO SPP 3.7		APPLICABLE
1	THE LAND SUBJECT TO THE PLANNING PROPOSAL IS:	
	Designated bushfire prone and 'Area 1 (Urban)' on the Map of Bushfire Prone Areas (refer to Figure 1.4); or	No
	Designated bushfire prone and 'Area 2' on the Map of Bushfire Prone Areas (refer to Figure 1.4).	No
AND		
2	THE PLANNING PROPOSAL WILL:	
	Result in the intensification of development (or land use); or	Yes
	Result in an increase of visitors, residents or employees; or	Yes
	Adversely impact or increase the bushfire risk to the subject or surrounding site(s).	Yes
AND		
3	THE PLANNING PROPOSAL IS A:	
	(Source: Guidelines s.7) A <u>development application for construction of or additions to</u> a habitable building for commercial or industrial uses in an area subject to a <u>pre-development</u> radiant heat impact exceeding 29kW/m ² (BAL-40 or BAL-FZ) and designated as Area 1 (Urban) or Area 2 on the Map of BPA. Note: An application for <u>additions</u> to a habitable building to which SPP 3.7 and these Guidelines apply, <u>is required to address the bushfire protection criteria for the entire site</u> . It should be noted that there are no requirements under SPP 3.7 or the Guidelines to retrofit existing buildings to the appropriate bushfire construction standard, or any requirement for these existing buildings to be located within an area with a radiant heat impact not exceeding 29 kW/m ² (BAL-29).	

1.2.3 Identified Exemptions

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

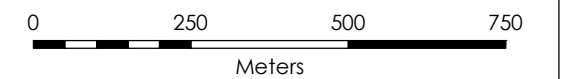
Figure 1.3
Bushfire Prone Area

Lot 3194 on Plan 227649, Area : 97.29 ha
 Collie-Changerup Road
 KOJONUP
SHIRE OF KOJONUP

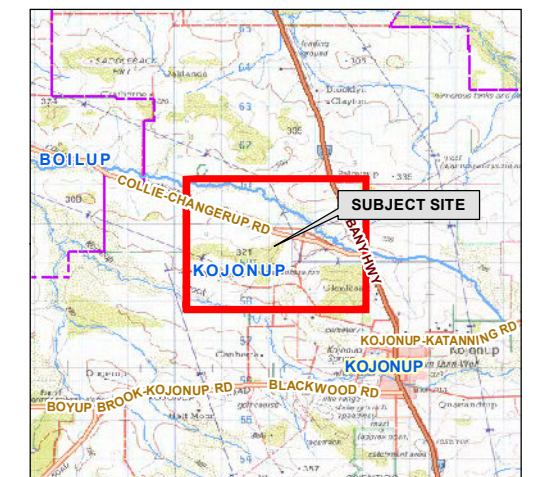


----- LEGEND -----

- Subject Site
- Other Lots
- Bushfire Prone Area OBRM-023**
- Bushfire Prone Area 2



----- LOCALITY -----



Aerial Imagery : Landgate/SLIP
 Image Date : Nov 2024

Coordinate System: GDA 1994 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map compiled by: Neil Stoney 18/12/2025
 Map updated by: Neil Stoney 18/12/2025
 A3 Scale 1:12,000



1.3 Required 'Bushfire Planning' Assessments and Documents

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

Note: Where a relevant planning proposal (e.g. subdivision) was previously assessed and approved under the SPP 3.7/Guidelines 2015, it is likely that a BLA will not be required. Also, if an application (e.g. subdivision) is compliant with a structure plan and/or a local planning scheme amendment, which were assessed and approved under the 2015 SPP/Guidelines, it is likely that a BLA will not be required. Confirmation from a relevant DPLH officer may be required (DPLH advice to BPP 20/2/2025).

1.4 Other Documents Relevant to Preparing the BMP

EXPLANATORY INFORMATION				
<p>This section identifies any known assessments, reports or plans that have been conducted and prepared previously, or are being prepared concurrently, and are relevant to the subject planning proposal.</p> <p>They may have implications for the assessment of bushfire hazard threats and the identification and implementation of the bushfire protection measures that are established by this BMP.</p>				
RELEVANT DOCUMENTS				
Document	Relevant	Exists	To Be Concurrently Developed	Title
Preliminary bushfire advice	Yes	Yes	N/A	241243 – Kojonup BESS (BAB) v1.0 (Bushfire Prone Planning, March 2025)
<p><u>Implications for the BMP:</u></p> <p>A Bushfire Advice Brief (BAB) has been previously produced to provide bushfire planning advice for the proposal. The submitted layout is based on the advice provided within the BAB.</p>				
Bushfire Risk Report	Yes	No	Yes	241243 – Kojonup BESS (BRR) v1.2 (Bushfire Prone Planning, May 2026).
<p><u>Implications for the BMP:</u></p> <p>The Bushfire Risk Report prepared alongside this BMP identifies the appropriate measures to reduce the risk of onsite and/or offsite ignition, asset damage, and harm to persons, environment, and community.</p> <p>Additional Bushfire Protection Measures to meet or exceed the intent of the Acceptable Solutions of Elements 2-4 of the Bushfire Protection Criteria have been provided within the Section 5.3 Assessment Statements. These are measures which are considered relevant to the planning process.</p>				
Revegetation Plan	Yes	No	No	TBA
<p><u>Implications for the BMP:</u></p> <p>Revegetation is proposed to improve visual amenity through vegetation screens. A landscaping (revegetation) plan will be produced prior to construction. The indicative location of the proposed vegetation screening is shown within the project layout and included within this BMP. Refer to Section 2.3 for details.</p>				

2 ENVIRONMENTAL CONSIDERATIONS – NATIVE VEGETATION

EXPLANATORY INFORMATION

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

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

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

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

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

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

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

2.1 Biodiversity or Conservation Values Identified

EXPLANATORY INFORMATION

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

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

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

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

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

No Report Available / Provided

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

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

Yes - Fully

IDENTIFICATION OF RELEVANT BIODIVERSITY OR CONSERVATION VALUES							
Dataset	Relevant to Subject Planning Proposal	Influence on Bushfire Threat Levels and / or Application of Bushfire Protection Measures	Information Source(s) Applied			Further Action Required by Proponent	
			WA Govt. Agency Dataset (ID)	Landowner or Developer Statements	Environmental Asset or Vegetation Survey Report		
Department of Biodiversity, Conservation and Attractions (DBCA) Datasets							
Conservation Category Wetlands and Buffer (geomorphic wetlands – relevant area)	No	-	<input checked="" type="checkbox"/>	DBCA-021	<input type="checkbox"/>	<input type="checkbox"/>	None
RAMSAR Sites (wetlands of international importance)	No	-	<input checked="" type="checkbox"/>	DBCA-010	<input type="checkbox"/>	<input type="checkbox"/>	None
Threatened and Priority Flora	No	-	Restricted Scale of Data Available (security)	DBCA-036	<input type="checkbox"/>	<input type="checkbox"/>	None
Threatened Ecological Communities	No	-		DBCA-038	<input type="checkbox"/>	<input type="checkbox"/>	None
Legislated Lands and Waters (national/conservation parks, nature/crown reserves, state forest)	No	-	<input checked="" type="checkbox"/>	DBCA-011	<input type="checkbox"/>	<input type="checkbox"/>	None
Department of Planning, Lands and Heritage (DPLH) Datasets							
Bush Forever Areas 2000	No	-	<input checked="" type="checkbox"/>	DPLH-019, 022 and MRS Bush Forever	<input type="checkbox"/>	<input type="checkbox"/>	None
Department of Water and Environmental Resources (DWER) Datasets							
Clearing Regulations – Environmentally Sensitive Areas	No	-	<input checked="" type="checkbox"/>	DWER-046	<input type="checkbox"/>	<input type="checkbox"/>	None
Swan Bioplan Regionally Significant Natural Areas 2010	No	-	<input checked="" type="checkbox"/>	DWER-070	<input type="checkbox"/>	<input type="checkbox"/>	None

2.2 Response of the Planning Proposal to Protection of Native Vegetation

The protection of native vegetation is to be prioritised by avoiding areas that would require clearing or modification of native vegetation, specifically for the purpose of bushfire mitigation (BMP Manual, November 2024 DPLH).

SOLUTIONS APPLIED TO MINIMISE NATIVE VEGETATION REMOVAL / MODIFICATION	
Clearing and/or modification of native vegetation is proposed and necessary.	Likely
<p><u>Proposed Clearing:</u></p> <p>Land within and adjacent to the Project site is predominantly associated with agricultural practices, primarily used for dryland mixed farming of livestock and cropping. The BESS located within open grassland.</p> <p>No clearing of native vegetation is required, except:</p> <ul style="list-style-type: none"> • within road reserves to install driveway crossovers to Collie-Changerup Road and Tunney Road, and • if the underground transmission line crosses native vegetation. The alignment of the transmission line connection is subject to confirmation with Western Power. <p>Appropriate permits of approvals for vegetation modification will be sought if required.</p>	
Conservation Response	
The proposal reserves native vegetation for conservation, recreation or environmental protection purpose. These can include ecological linkage, local natural area, waterway, or foreshore area or wetland buffer.	Not required
Siting / Design / Construction Responses	
Reduction in the proposed intensification of land use or development potential.	Not required
Containing or clustering areas of intensification of land use to reduce clearing requirements.	Not required
Consideration of locating proposed development to have greater initial vegetation separation distances from bushfire hazards by utilising non-vegetated interfaces.	Not required
Modification or redesign of the proposed areas of intensification of land use to avoid areas with high environmental, biodiversity or conservation values.	N/A
The proposal has applied a reduction in the intensification of land use or development potential (e.g. reduced lot yield or smaller building footprints), to ensure the retention of greater areas of native vegetation while achieving the required vegetation separation distances to limit exposure to unacceptable levels of potential bushfire impact.	N/A
The proposal situates required non-vegetated elements (e.g. footpaths, paved areas, roads, parking, open drainage channels, and major services delivery installed in common corridors), between bushfire hazards and elements at risk – to effectively achieve required vegetation separation distances with less vegetation clearing and/or modification.	N/A
The proposal applies building envelopes, and these have located to minimise the requirement to clear and/or modify native vegetation.	N/A
The proposal utilises the clustering habitable buildings to reduce requirements for native vegetation clearing and/or modification.	N/A
The proposal aligns roads and pathways to work around trees and other vegetation, preserving their ecological values.	N/A

The proposal establishes requirements for the construction of building(s) to satisfy the requirements corresponding to higher BAL ratings to ensure a reduced vegetation separation distance requirement.

N/A

2.3 Vegetation Management Plans with Implications for the BMP

EXPLANATORY INFORMATION

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

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

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

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

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

Relevance of the Stated Scenarios to the Subject Planning Proposal

Only Scenario 3 is relevant.

2.3.1 Revegetation Plan – Additional Bushfire Hazard

PLANNED REVEGETATION – ADDITIONAL BUSHFIRE HAZARD	
Assessment Details	Relevant
The area of land that is to be subject to a revegetation plan is within the subject site (onsite).	Yes
The area of land that is to be subject to a revegetation plan is outside the subject site (offsite).	No
The revegetation plan will introduce a bushfire hazard that doesn't currently exist.	No
The area of land subject to the revegetation plan will introduce a bushfire hazard with a greater bushfire threat level than currently exists. its classification under AS 3959 (as amended) BAL determination methodology will be changed to a higher threat level classification.	Yes
Identification of the Area(s) of Land Subject to a Revegetation Plan	
<p>The submitted layout includes planted vegetation screening around the perimeter of the facility. The vegetation screens proposed are 5m wide- see Figure 1.1.</p> <p>This is a common measure applied, either as a condition of approval, through public consultation, or as a voluntary measure to improve visual amenity.</p>	
Implications for the BMP	
<p>The northern, southern, and eastern vegetation screens have been classified as Class D Scrub (Vegetation Area 8). These areas are continuous with classifiable vegetation (pasture only).</p> <p>The western vegetation screen has been excluded from classification (Vegetation Area 10). This area is bounded by low threat vegetation or non-vegetated areas, thus any impacting bushfire will not transfer directly into the vegetation (spotting or surface fire rather than flame contact).</p>	

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

3.1 Bushfire Attack Level (BAL) Assessment Summary (Contour Map Format)

EXPLANATORY INFORMATION
<p>Future building works require a 'determined' BAL rating for building permit applications. When a BAL contour map is being used for planning assessment purposes, (as opposed to a building assessment purpose), the required 'determined' BAL rating typically is not able to be derived from the map (there are only limited scenarios where this is possible).</p> <p>The BAL ratings identified from the map will more likely be only 'indicative' of what can be achieved – with planning compliance for this factor being achieved when BAL-29 is indicated.</p> <p>Otherwise, an additional assessment of the site data for building application purposes is required, and potentially approval will need to be obtained for native vegetation modification and/or removal from the relevant authority.</p> <p>Refer to Appendix B2 for additional information and guidance regarding interpretation of the BAL Contour Map.</p>

3.1.1 BAL Determination Methodology and Location of Data and Results

LOCATION OF DATA & RESULTS					
BAL Determination Methodology		Location of the Site Assessment Data			Location of the Results
AS 3959:2018	Applied to Assessment	Classified Vegetation and Topography Map(s)	Calculation Input Variables		Assessed Bushfire Attack Levels and/or Radiant Heat Levels
			Summary Data	Detailed Data with Explanatory and Supporting Information	
Method 1 (Simplified)	Yes	Figure 3.1	Table 3.2	Appendix A1	Table 3.1 Table 3.3 / BAL Contour Map
Method 2 (Detailed)	Yes			Appendix A2	
Reasons for the Application of the Method 2 Procedure					
1.	A more specific result is sought.				
<p>Identification of the specific issues associated with the site and/or proposed development that have necessitated the use of the Method 2 procedure:</p> <p>A 10kW/m² APZ (calculated at 1090K Flame Temperature) has been applied as an appropriate maximum acceptable heat flux exposure for BESS / PCS area and control building for secondary systems.</p>					

3.1.2 BAL Ratings Derived from the Contour Map

Table 3.1: Indicative and determined BAL(s) for existing and/or proposed building works.

BUSHFIRE ATTACK LEVEL FOR EXISTING/PLANNED BUILDINGS/STRUCTURE ¹		
Building/Structure Description	Indicative BAL ²	Determined BAL ²
BESS / PCS and associated infrastructure	BAL-12.5	BAL-FZ
On-site Substation	BAL-19	BAL-FZ
Class 1-10 Buildings	BAL-19	BAL-FZ
Firefighting Water Tanks	BAL-19	BAL-FZ

¹ The assessment data used to derive the BAL ratings is sourced from Table 3.1 and Figure 3.2 'BAL Contour Map'.

² Refer to the start of Section 3 for an explanation of indicative versus determined BAL ratings.

3.1.3 Site Assessment Data Applied to Construction of 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
Supporting Assessment Details: Vegetation management and/or installation of hardstands throughout the development area will reduce much of the development to low threat. Vegetation screening for visual amenity are additionally applied- See Section 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	metres	metres	metres	% Reduction
1	(A) Forest	80	Upslope or flat 0	flat 0	flat 0	80	1090	Default	Default	Default	Default	Default
2	(A) Forest	80	Downslope >0-5	d/slope 5	upslope 5	80						
3	(B) Woodland	80	Upslope or flat 0	flat 0	flat 0	80						
4	(B) Woodland	80	Downslope >0-5	d/slope 5	upslope 5	80						
5	(D) Scrub	80	Upslope or flat 0	flat 0	flat 0	80						
6	(G) Grassland	80	Upslope or flat 0	flat 0	flat 0	110						
7	(G) Grassland	80	Downslope >0-5	d/slope 5	upslope 5	110						
8	(D) Scrub	80	Upslope or flat 0	flat 0	flat 0	80						
9	Excluded cl 2.2.3.2(e)	-	-	-	-	-	-	-	-	-	-	-
10	Excluded cl 2.2.3.2(f)	-	-	-	-	-	-	-	-	-	-	-

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

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

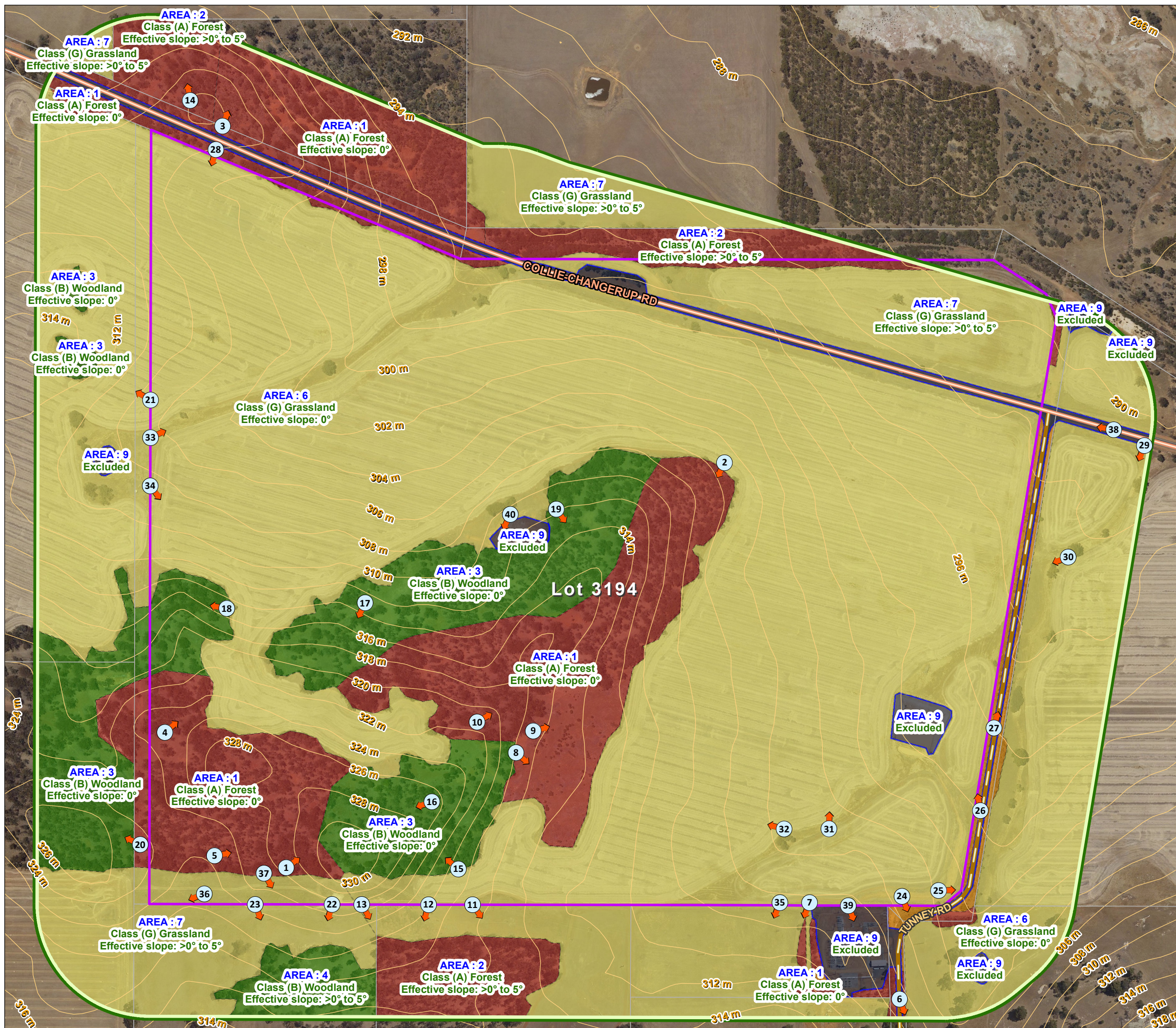
Table 3.3: Vegetation separation distances corresponding to the stated levels of potential radiant heat transfer.

THE CALCULATED (SITE SPECIFIC) VEGETATION SEPARATION DISTANCES CORRESPONDING TO THE STATED LEVEL OF POTENTIAL RADIANT HEAT TRANSFER (METRES) ¹								
Vegetation Classification		Maximum Radiant Heat Transfer (Flux)						10 kW/m ²
		>40 kW/m ²	40 kW/m ²	29 kW/m ²	19 kW/m ²	12.5 kW/m ²	N/A ²	
		Bushfire Attack Levels						
Area	Class	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW	
1	(A) Forest	<16	16-<21	21-<31	31-<42	42-<100	>100	48.9
2	(A) Forest	<20	20-<27	27-<37	37-<50	50-<100	>100	60.4
3	(B) Woodland	<10	10-<14	14-<20	20-<29	29-<100	>100	34.5
4	(B) Woodland	<13	13-<17	17-<25	25-<35	35-<100	>100	43.2
5	(D) Scrub	<10	10-<13	13-<19	19-<27	27-<100	>100	32.9
6	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50	21.2
7	(G) Grassland	<7	7-<9	9-<14	14-<20	20-<50	>50	25
8	(D) Scrub	<10	10-<13	13-<19	19-<27	27-<100	>100	32.9
9	Excluded cl 2.2.3.2(e)	-	-	-	-	-	-	-
10	Excluded cl 2.2.3.2(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.

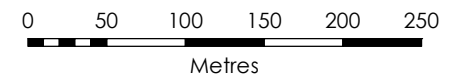
Note 2: The BAL-LOW rating does not represent a maximum level of radiant heat transfer. The rating is applied when the separation distance is at least 100m from all classified vegetation except Grassland, for which 50m applies.

Figure 3.1
Classified Vegetation & Topography
 Lot 3194 on Plan 227649, Area : 97.29 ha
 Collie-Changerup Road
 KOJONUP
 SHIRE OF KOJONUP

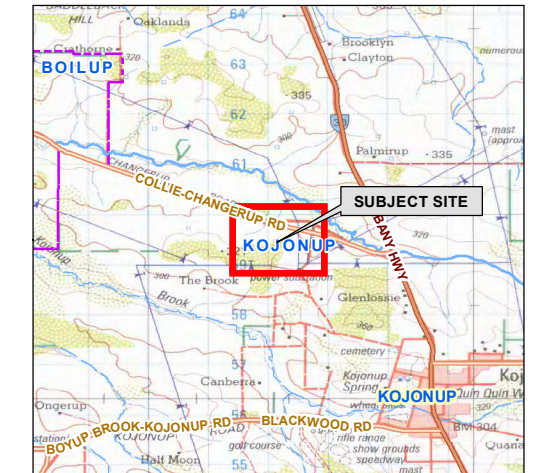


----- LEGEND -----

- Subject Site
 - Other Lots
 - 150m from Subject Site
 - Photo & Direction
- Classified Vegetation**
- Class (A) Forest
 - Class (B) Woodland
 - Class (D) Scrub
 - Class (G) Grassland
 - Excluded 2.2.3.2 (e)



----- LOCALITY -----



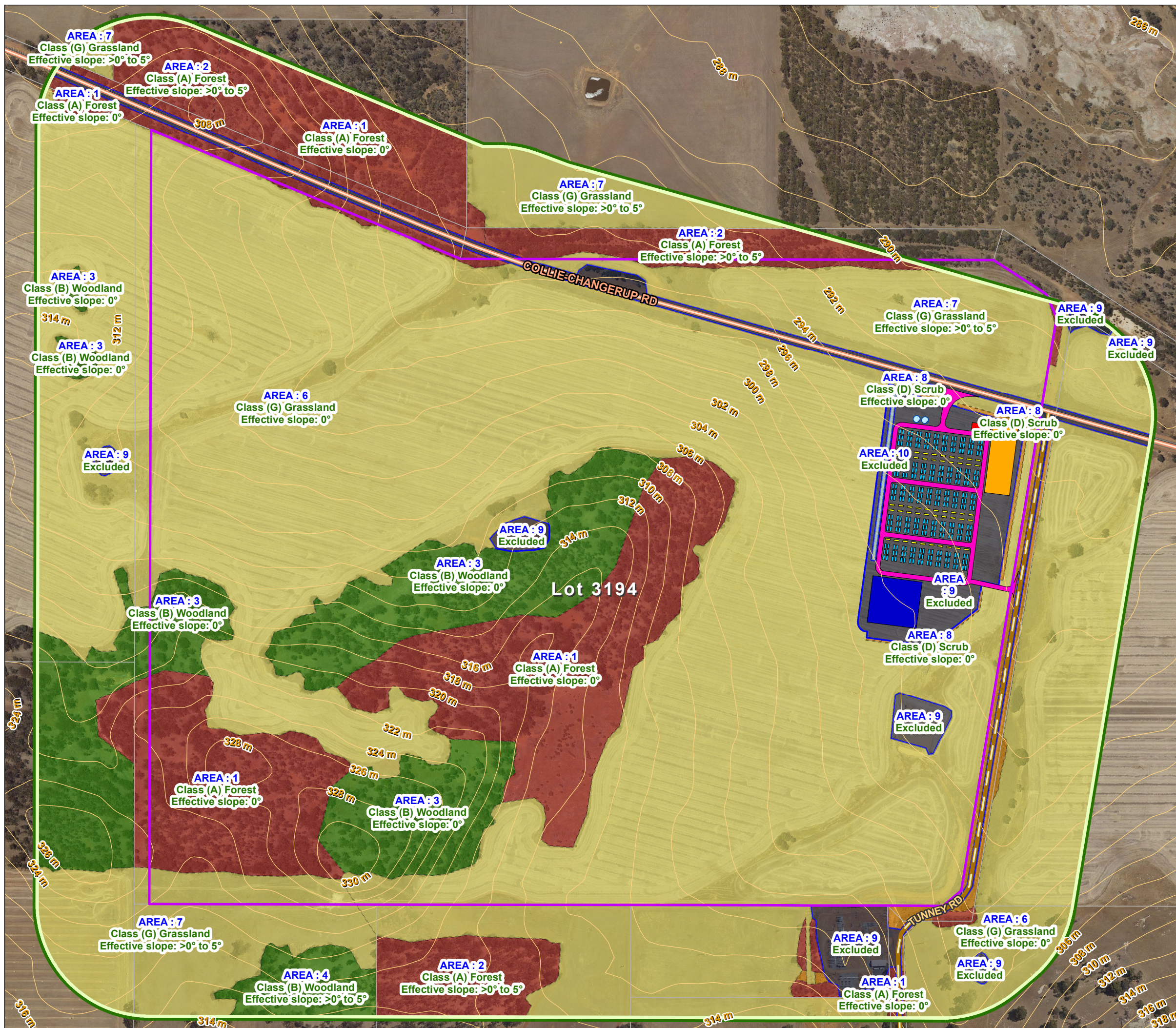
Aerial Imagery : Landgate/SLIP

Coordinate System: GDA2020 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map compiled by: Neil Stoney 16/04/2026
 Map updated by: Neil Stoney 16/04/2026
 A3 Scale 1:4,800

Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence arising from relying on any information depicted.
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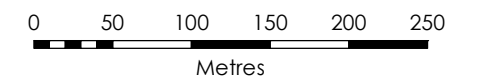
Figure 3.1.1
Classified Vegetation & Topography (Post Development)

Lot 3194 on Plan 227649, Area : 97.29 ha
 Collie-Changerup Road
 KOJONUP
 SHIRE OF KOJONUP

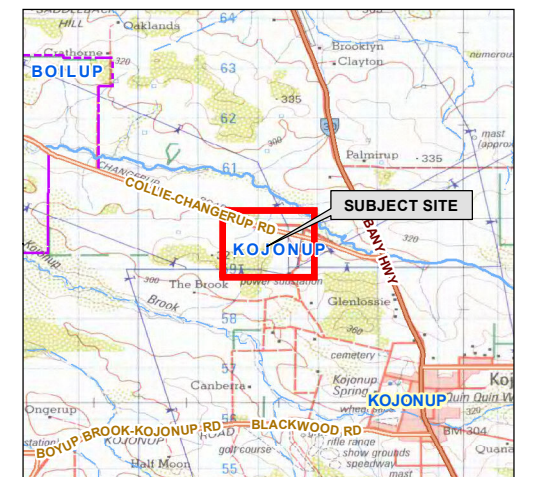


----- LEGEND -----

- Subject Site
 - Other Lots
 - 150m from Subject Site
 - Access Roads
 - BESS
 - On-Site Substation
 - PCS
 - Detention Pond
 - Operations & Maintenance
 - Water Tank
- Classified Vegetation**
- Class (A) Forest
 - Class (B) Woodland
 - Class (D) Scrub
 - Class (G) Grassland
 - Excluded 2.2.3.2 (e)
 - Excluded 2.2.3.2 (f)



----- LOCALITY -----



Aerial Imagery : Landgate/SLIP

Coordinate System: GDA2020 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map compiled by: Neil Stoney 16/04/2026
 Map updated by: Neil Stoney 16/04/2026
 A3 Scale 1:4,800



Figure 3.2

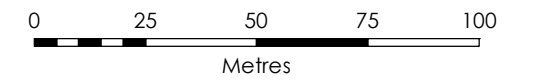
BAL Contour Map

Lot 3194 on Plan 227649, Area : 97.29 ha
 Collie-Changerup Road
 KOJONUP
 SHIRE OF KOJONUP

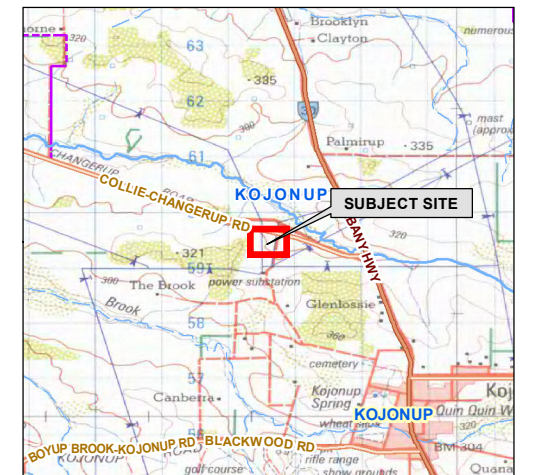


----- LEGEND -----

- Subject Site
 - Other Lots
 - 100m from Subject Site
 - Access Roads
 - BESS
 - On-Site Substation
 - PCS
 - Detention Pond
 - Operations & Maintenance
 - Water Tank
- Indicative Bushfire Attack Levels**
- BAL FZ
 - BAL 40
 - BAL 29
 - BAL 19
 - BAL 12.5
 - BAL LOW
- Classified Vegetation Boundary
- Radiant Heat Flux**
- <10kw Zone (Within Subject Site)



----- LOCALITY -----



Aerial Imagery : Landgate/SLIP

Coordinate System: GDA2020 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map compiled by: Neil Stoney 17/04/2026
 Map updated by: Neil Stoney 17/04/2026
 A3 Scale 1:1,700

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 Map Document Path / Name: C:\Users\Neil\OneDrive - Bushfire Prone\Desktop\241243 - Client review and updates - Apr 2026\Mapping\mxd2020\241243_Fig3-2_BAL.mxd

4 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

EXPLANATORY INFORMATION

Section Content Guidance (DPLH/WAPC)

'Bushfire Hazard Issues' is a section of the Bushfire Management Plan (BMP) in accordance with guidance presented in the BMP Manual (DPLH/WAPC, November 2024).

The Manual indicates the intent of applying its guidance with the following statement:

"The standardisation of BMP's improves efficiencies in decision making at local and state government level by promoting the clear and succinct presentation of information required under SPP 3.7 and the Guidelines."

Bushfire Prone Planning's Approach

In complying more broadly with the above efficiency intentions, Bushfire Prone Planning (BPP) will also seek to:

- Improve the efficiency of BMP development by its consultants; and
- Ensure the readability and understanding of the BMP by persons who will need to read the document.

Key to achieving these efficiency and comprehension outcomes is the design and quality of the explanatory and assessment content of the BMP. This includes the effective use of Section 4 by not repeating content and assessment summaries that are presented in other sections of the BMP.

Typically, bushfire hazard issues will be appropriately addressed in Sections 2 and 3 of the BMP which identify:

- The required environmental considerations; and
- The assessment of potential levels of bushfire impact and their justification.

Limitation on Section 4 Content

As a consequence of the above considerations, content in this section will be limited to raising decision maker awareness regarding additional site specific matters that otherwise may not be a component of the standard BMP bushfire hazard assessment.

Additional information is provided on an 'as necessary' basis for the following scenarios:

1. When local governments have provided jurisdiction specific bushfire hazard assessment and/or management guidance that needs to be addressed. How these have been considered by the bushfire consultant in conducting their bushfire hazard assessments will be discussed.
2. When, due to difficult site conditions, additional explanation and justification of the bushfire hazard assessment process undertaken by the bushfire consultant would assist decision making.
3. Matters are identified when they are either not considered or are only partially considered, under the bushfire hazard assessments conducted in accordance with SPP 3.7/Guidelines. These include matters that would potentially reflect poorly on the bushfire consultant's professional integrity if ignored.

For the subject planning proposal, has the bushfire practitioner determined (in accordance with the explanatory information above), that presenting additional information in this section is necessary?	No
Additional bushfire hazard information is provided below for the relevant scenarios.	N/A

5 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA (BPC)

EXPLANATORY INFORMATION

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

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

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

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

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

For the subject planning proposal:

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

5.1 Local Government Variations to Apply

EXPLANATORY INFORMATION

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

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

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

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

No

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

No

5.2 Assessment Summary

PATHWAY APPLIED TO DEMONSTRATE ACHIEVING POLICY OUTCOMES OF SPP 3.7 BUSHFIRE ¹ INCLUDES SUMMARY OF THE PROPOSAL'S ASSESSMENT AGAINST THE BPC ACCEPTABLE SOLUTIONS			
DEVELOPMENT – COMMERCIAL AND INDUSTRIAL			
The Acceptable Solutions Corresponding to the Policy Outcomes of SPP 3.7 Bushfire as Incorporated into the Elements of the Bushfire Protection Criteria (Guidelines)	Acceptable Solutions Pathway	Alternative Pathway ²	
	Compliance Status	Outcomes-Based Approach Only	Combination of Pathways
ELEMENT 2: SITING AND DESIGN:	Fully Compliant		
A2.1a Siting and design	Fully Compliant		
A2.1b Siting in an area with a radiant heat impact exceeding 29 kW/m ² (BAL-40 or BAL-FZ)	Not Applicable		
A2.2 Asset Protection Zone (APZ)	Fully Compliant	-	-
A2.3 Clearing of native vegetation	Fully Compliant		
A2.4 Storage of hazardous, flammable and/or combustible materials	Fully Compliant		
ELEMENT 3: VEHICULAR ACCESS:	Fully Compliant		
A3.1 Private Driveways	Fully Compliant	-	-
ELEMENT 4: WATER SUPPLY:	Fully Compliant		
A4.1 Water supply	Fully Compliant	-	-
<p>Note 1: Achieving the objectives and policy outcomes of SPP 3.7 Bushfire can be demonstrated through either the acceptable solutions pathway, the outcomes- based approach only, or a combination of both pathways (refer to Guidelines s 2.2.1).</p> <p>Note 2: When applied, the required additional assessment details are provided in Section 5.4 of this BMP. The content and comprehensiveness of the assessment will vary dependant on the specific conditions of the broader landscape, the development site, its use and the degree to which any relevant acceptable solutions cannot be complied with.</p>			

5.3 BPC 7: Development – Commercial and Industrial - Acceptable Solutions Assessment

5.3.1 Element 2: Siting and Design

ELEMENT 2: SITING AND DESIGN (DEVELOPMENT - COMMERCIAL/INDUSTRIAL)

EXPLANATORY INFORMATION

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

The Planning Assessment and the APZ

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

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

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

Approved BMP's and the APZ Dimensions to be Implemented

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

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

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

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

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

The Outcome of State Planning Policy 3.7 Bushfire (and the BPC) to be Achieved	
O2	<p>Ensure siting and design solutions:</p> <ul style="list-style-type: none"> Manage or mitigate the bushfire risk to people, property and infrastructure; and Avoid, or where unavoidable, minimises the clearing of native vegetation. (SPP 3.7, 6.2)
E2	Acceptable Solutions Pathway - Compliance Statement
	The planning proposal is fully compliant with all applicable acceptable solutions and therefore achieves the required outcomes of this element.
	Alternative Pathway Applied to Demonstrate Ability to Achieve SPP 3.7 Outcomes
	N/A
ACCEPTABLE SOLUTIONS - ASSESSMENT STATEMENTS	
Check Box Legend: <input checked="" type="checkbox"/> Relevant & met <input checked="" type="checkbox"/> Relevant & not met <input type="checkbox"/> Not relevant	
A2.1a Siting and design	Applicable: Yes Compliant: Yes
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Every habitable building achieves a radiant heat impact not exceeding 29 kW/m ² (BAL-29).
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	A2.1a is not applicable to the subject planning proposal as it cannot be complied with and an alternative acceptable solution A2.1b (dealing with the same protection measure), is provided and establishes a higher level of radiant heat impact that will be considered for planning approval, if it can be satisfactorily demonstrated that the allowable constraints apply to the subject development site.
<u>Assessment Supporting Details:</u> The installation of an APZ is required for structures to be subject to a radiant heat impact not exceeding 29 kW/m ² (BAL-29). Acceptable Solution A2.2 applies.	
A2.1b Siting in an area with a radiant heat impact exceeding 29 kW/m² (BAL-40 or BAL-FZ)	Applicable: No Compliant: -
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	A2.1b is not applicable to the subject planning proposal because A2.1a can be complied with.
A2.2 Asset Protection Zone (APZ)	Applicable: Yes Compliant: Yes
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	A2.2 is not applicable to the subject planning proposal because it is a requirement associated with the compliant application of A2.1a. Given A2.1a is not applicable to the subject planning proposal, A2.2 is also not applicable.
Where a habitable building(s) cannot be wholly within an area with a radiant heat impact not exceeding 29 kW/m ² (BAL-29) in its pre-development state, an indicative APZ is to be provided and meet the following requirements for width, location and management:	
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	APZ Width: The APZ, when measured from any external wall or supporting post or column, is of sufficient size to ensure the radiant heat impact of a bushfire does not exceed 29 kW/m ² (BAL-29) to any part of the building, in all circumstances.
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	APZ Location – Option 1: The indicative 'Planning BAL-29' APZ can be contained solely within the boundaries of the lot.

- The proposed development will include the storage of hazardous, flammable and/or combustible materials as part of its ongoing day to day operations. These are not at a quantity that trigger the requirement for a licence under the *Dangerous Goods Safety Act 2004* or the *Environmental Protection Act 1986*. Consequently, the following established storage area requirements can and will be applied:
- The storage area is subject to a radiant heat impact not exceeding 29 kW/m² (BAL-29); and
- The construction of the storage area is non-combustible and shields the materials to reduce their exposure to radiant heat from the bushfire to levels significantly lower than 29 kW/m² and prevents the entry of debris and embers; and
- The construction of the storage area limits to the degree necessary and practical, the escape of sources of ignition from the stored materials into bushfire prone vegetation.

Assessment Supporting Details:

Lithium-ion batteries are classified as dangerous good under the *Dangerous Goods Safety (Road and Rail Transport of Non-explosives) Regulations 2007*, when they are in transport and temporary (transit) storage.

Section 7.1.1 of the *Planning for Bushfire Guidelines* states the Acceptable Solution is not applicable due to the requirement for a dangerous goods licence.

When installed and connected to a consuming device (the grid) the batteries are **not** considered as dangerous goods under the *Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007*, therefore the following acceptable solution applies:

- As discussed in A2.2 above, all assets will be subject to no greater than 29kW/m² radiant heat flux (BAL-29).
- Shielding of the storage area is achieved by the external battery cabinet itself, being an insulated and climate-controlled steel enclosure. These materials are potentially exposed 'to radiant heat from the bushfire to levels significantly lower than 29 kW/m²' due to the <10kW/m² @ 1090K APZ applied.

The BESS units will be sited on a non-combustible hardstand, with minimum 10m additional non-vegetated area to prevent surface fire interactions to/from the unit. These are measures established through the associated Bushfire Risk Report 241243 – Kojonup BESS (BRR) v1.2 (Bushfire Prone Planning May 2026).

5.3.2 Element 3: Vehicular Access

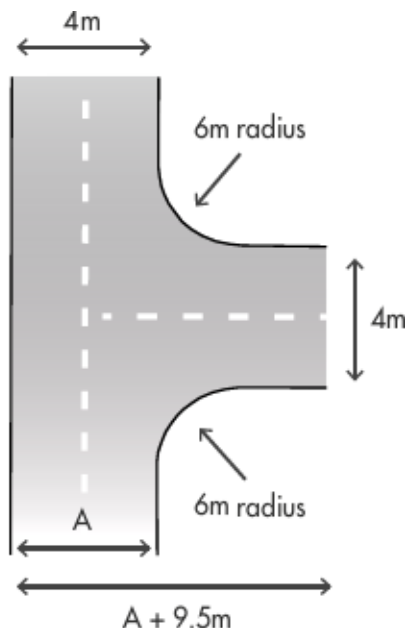
ELEMENT 3: VEHICULAR ACCESS (DEVELOPMENT - COMMERCIAL/INDUSTRIAL)	
<p>All details of acceptable solution requirements are established in the Planning for Bushfire Guidelines (Guidelines) – WA Department of Planning, Lands and Heritage (DPLH, as amended). When relevant, the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (DPLH, 2021 Rev B), is also referenced.</p> <p>The technical construction requirements for access types and components are established in the Guidelines Appendix B.3, Table 10 (certain information is copied and presented in Appendix C of this BMP). The local government will advise the proponent where different requirements are to apply and when any additional specifications such as those for signage and gates are to apply. These are included as an appendix if requested by the local government.</p> <p>Note:</p> <p>The following understanding of what constitutes a 'road', and the stated definitions can be important considerations for assessments against an acceptable solution for Element 3.</p> <ul style="list-style-type: none"> Guidelines Appendix B3: Vehicular Access, identifies a 'road' as being either a public road (that includes a no-through road) or a perimeter road. All other access types (i.e. emergency access ways, fire service access routes, battle-axes and private driveways) are considered a different class of access i.e. they are not 'roads'. SPP 3.7 defines 'no-through road' as "a cul-de-sac or dead end road". SPP 3.7 defines 'two-way access' as "vehicular access from a site in two different directions to at least two different suitable destinations". This allows for required access to potentially be provided by an emergency access way. 	
The Outcome of State Planning Policy 3.7 Bushfire (and the BPC) to be Achieved	
O3	<p>Ensure the design and capacity of vehicular access and egress provide:</p> <ul style="list-style-type: none"> For efficient and effective evacuation to a suitable destination(s); and/or As a contingency measure for vulnerable land uses, an on-site shelter, where demonstrated appropriate, as a last resort option. (SPP 3.7, 6.3)
Acceptable Solutions Pathway - Compliance Statement	
E3	The planning proposal is fully compliant with all applicable acceptable solutions and therefore achieves the required outcomes of this element.
Alternative Pathway Applied to Demonstrate Ability to Achieve SPP 3.7 Outcomes	
N/A	
ACCEPTABLE SOLUTIONS - ASSESSMENT STATEMENTS	
Check Box Legend: <input checked="" type="checkbox"/> Relevant & met <input checked="" type="checkbox"/> Relevant & not met <input type="checkbox"/> Not relevant	
A3.1 Private driveways	Applicable: Yes Compliant: Yes
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> The subject lot is serviced by reticulated water, and the private driveway is no greater than 70 metres in length between the most distant external part of the habitable building and the public road. For these conditions, no private driveway technical requirements are prescribed by the Guidelines.
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> In circumstances where the above conditions are not met, the private driveway is to meet the following requirements:

	<ul style="list-style-type: none"> The private driveway meets (or can and will meet) the technical requirements (Guidelines Appendix B3, Table 10) for minimum horizontal clearance (6 metres) or where not required to comply with the Guidelines width, it meets (or can and will meet) the requirements of the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision; and
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<ul style="list-style-type: none"> The private driveway meets (or can and will meet) the technical requirements (Guidelines Appendix B3, Table 10) for minimum vertical clearance (4.5 metres), minimum weight capacity (15 tonnes - includes bridges, culverts) and minimum inner radius of road curves (8.5 metres); and
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<ul style="list-style-type: none"> The private driveway meets (or can and will meet) the technical requirements (Guidelines Appendix B3, Table 10) for the gradients of different surfaces and dips; and
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<ul style="list-style-type: none"> Passing bays are (or can and will be) installed every 200 metres with a minimum length of 20 metres and a minimum additional carriageway width of 2 metres i.e. the combined carriageway width of the passing bay and constructed private driveway will be a minimum 6 metres; and
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<ul style="list-style-type: none"> The turnaround area/head meets (or can and will meet) the design and location (within 30m of main habitable building) requirements established by the Guidelines (refer to Figures 30 and 38).

Assessment Supporting Details:

The subject site is bounded by Collie-Changerup Road to the north and Tunney Road to the east. The submitted layout includes a crossover onto each road. Permission from the Shire of Kojonup will be required for the additional road crossover.

Multiple turnaround areas will be present within the site. At a minimum, the internal junctions within the submitted layout meet the requirements provided in Figure 30 of the Guidelines. See below.



The internal roads form a loop design, meeting the required turnaround area through a 'circular and loop driveway design' (Guidelines B3.8).

Internal access roads will be constructed to 6m trafficable width. All internal roads will meet or exceed the technical construction requirements as outlined in Table 10 of the Guidelines and Appendix C of this document. Access roads will be constructed to allow for the delivery of heavy equipment to the project site, which exceeds the 15t weight capacity specified in Table 10.

There are no constraints to all components of the project meeting the required access.

5.3.3 Element 4: Water Supply

ELEMENT 4: WATER SUPPLY (DEVELOPMENT - COMMERCIAL/INDUSTRIAL)	
All details of acceptable solution requirements are established in the Planning for Bushfire Guidelines (Guidelines) – WA Department of Planning, Lands and Heritage (DPLH, as amended). When relevant, the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (DPLH, 2021 Rev B), is also referenced.	
O4	The Outcome of State Planning Policy 3.7 Bushfire (and the BPC) to be Achieved
O4	Ensure that sufficient water is available and accessible for emergency services, to enable people, property and infrastructure to be defended from bushfire. (SPP 3.7, 6.4)
E4	Acceptable Solutions Pathway - Compliance Statement
E4	The planning proposal is fully compliant with all applicable acceptable solutions and therefore achieves the required outcomes of this element.
E4	Alternative Pathway Applied to Demonstrate Ability to Achieve SPP 3.7 Outcomes
E4	N/A
ACCEPTABLE SOLUTIONS - ASSESSMENT STATEMENTS	
Check Box Legend: <input checked="" type="checkbox"/> Relevant & met <input checked="" type="checkbox"/> Relevant & not met <input type="checkbox"/> Not relevant	
A4.1 Water supply	Applicable: Yes Compliant: Yes
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Evidence is provided that a reticulated water supply, available for firefighting purposes, exists or can be provided. Hydrant connection(s) will be provided in accordance with the specifications established by the relevant water supply authority (refer also to hydrant location information in Appendix D of this BMP).
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	The provision of or the specifications of a reticulated water supply cannot be met. Evidence is provided that a sufficient, sustainable and accessible non-reticulated water supply, dedicated to firefighting purposes, can and will be provided in accordance with the specifications established in the Guidelines, Appendix B4: Water Supply:
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<ul style="list-style-type: none"> The planning proposal is for commercial/industrial development. For <u>each habitable building</u> a water supply, dedicated to firefighting purposes, will be stored in tanks at 10,000 litres of water per 1,500 m² of floor area up to 50,000 litres in total; and
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<ul style="list-style-type: none"> The above ground water supply tank(s), dedicated to firefighting purposes (and tank stand(s) when applicable), will be constructed of non-combustible material and as necessary, will comply with AS/NZS 3500.1 (as amended). This includes not using the same water supply for both domestic use and firefighting purposes. If a combined use tank(s) is to be used, it will separate the storage compartments in accordance with the provisions of the standard (i.e. internal installation of double partition walls); and
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<ul style="list-style-type: none"> The planning proposal is for a commercial/industrial land use. The tank(s) water outlet connection fitting will be 125 mm Storz; and
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<ul style="list-style-type: none"> All above-ground, exposed water supply pipes and fittings will be metal and positioned facing away from the source of bushfire hazard and/or shielded against potential bushfire impact – to allow access by emergency services; and

- The planned provision of the water supply tank(s) will consider locations relative to the bushfire hazard. Location of the tank(s) and management of vegetation will ensure vegetation will not exist over or against the tank(s) and that sufficient separation exists to limit the potential bushfire impact.
Due consideration will also be given to the provision of sufficient separation from vegetation and/or shielding for the protection of firefighters accessing the water supply; and
- An unobstructed, hardened ground surface, for emergency services vehicle access, can and will be installed within 4 metres of the water supply outlet (refer to Figure 39, Guidelines); and
- It is proposed for a water supply tank outlet(s) is to be remote from the tank, the local government and DFES will have been consulted regarding the application and location. The determined requirements are presented as an Addendum in this BMP; and
- Planned below ground water supply tank(s), dedicated to firefighting purposes, will have at least a 200 mm diameter access hole – or a suitable inspection opening - to allow tankers or emergency services vehicles to refill direct from the tank, with the outlet location clearly marked on the surface. As necessary, the tanks(s) will comply with AS/NZS 3500.1 (as amended).
- The planning proposal intends that a suitable static water supply is to be provided by a dam or river that complies with the DFES guidelines for acceptable sources of water for firefighting purposes.
Evidence is provided that:

 - Demonstrates that the water level will be maintained above the top of the highest fire brigade suction point; and
 - Approval has been obtained from the decision maker in consultation with the emergency services and is presented as an Addendum in this BMP.
- The BPC Explanatory Notes in Appendix B.4: Water Supply introduce additional measures as best practice but voluntary. The following measure is adopted by the planning proposal:
The subject site is in a non-reticulated area. Pumping equipment is installed and will be powered by means other than the electricity network such as an appropriately powered and capacity petrol/diesel or onsite generator/electricity, driven pump, and be shielded against potential bushfire impact.
- The BPC Explanatory Notes in Appendix B.4: Water Supply introduce additional measure as best practice but voluntary. The following measure is adopted by the planning proposal:
The subject site will have a reticulated water supply but is in an area designated as Area 2 on the Map of BPA and/or the local government area has known issues with water supply or pressure.
Water supply tank(s) and fittings dedicated to firefighting purposes (noting that combining drinking and firefighting uses of water is not recommended and may be contrary to relevant provisions), that satisfy the construction and design requirements established in the Guidelines, Appendix B4: Water Supply, will be provided.
- The BPC Explanatory Notes in Appendix B.4: Water Supply introduce additional measure as best practice but voluntary. The following measure is adopted by the planning proposal:
The subject site is serviced by reticulated water. However, the distance from the public road (along which the fire hydrant is located) to the farthest part of the habitable building is greater than 70 metres, exceeding the reach of a hose reel. A water supply tank will be installed within the lot.

Assessment Supporting Details:

The *Planning for Bushfire Guidelines* do not establish a firefighting water requirement for uses other than Class 1-9 buildings. The associated Bushfire Risk Report has identified the aggregate firefighting water requirements, exceeding

the requirements of the Guidelines. The water supply applied aligns with the Victorian Country Fire Authority's *Design Guidelines and Model Requirements – Renewable Energy Facilities v4.4*.

Access

- Firefighting water access points (hydrants, hard suction, or drafting) must be clearly identifiable, visible from internal roads, and unobstructed.
- Signage must be provided at each vehicle entrance to the facility, indicating the direction to the nearest firefighting water access point.
- An all-weather hardstand turnaround area meeting the requirements of the *Planning for Bushfire Guidelines* (Figure 30) must be provided within 4 metres static water storage tank(s) and any independent hard suction points (hydrants).
- Site Operating Procedures must include that access routes must be unobstructed at all times.

Siting and Capacity

- The BESS development area will be required to install a static firefighting water supply. The volume will be calculated following AS 2419.1 based on the footprint of the BESS development. The estimated area footprint of 9000>27,000m² (approximately) would require a supply of 432,000L. This number may be revised where the final layout of the BESS development is determined.
 - Where another firefighting water supply is determined elsewhere (for asset fire etc), the greater volume is to apply.
- All BESS cabinets must be wholly within 70m of a water outlet.
- Water tanks must be positioned >15m from BESS cabinets, PCS, and other structures.
- Water tanks should apply a BAL-29 dimensioned APZ at a minimum.

Construction

- Static water storage tanks must be an above-ground water tank constructed of concrete or steel.
- An external water level indicator must be installed on static water storage tanks and be visible from internal roads and the adjoining turnaround area.
- Signage indicating 'FIRE WATER' and the tank capacity must be fixed to each tank.
- Couplings at hard suction points are required to be 125mm Storz fittings (*Guidelines B.4.1.2*). The local emergency services should be contacted for input on appropriate couplings and adaptors.

The Class 1-9 buildings within the Operations and Maintenance area will require a firefighting water supply calculated as 10,000 litres of water per 1,500 m² of floor area up to 50,000 litres in total. This will be provided through installation of hydrants connected to the water supply requirement of the BESS development above, and therefore the (estimated) 432,000L supply provided. There are no constraints to meeting the required water supply.

5.4 Required Additional Bushfire Protection Measures

EXPLANATORY INFORMATION

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

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

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

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

Source of the Required Additional Bushfire Protection Measures	Applicable to the Subject Planning Proposal
1. When the assessments within the BMP have applied an outcomes-based approach and established additional protection measures.	No
2. When the subject planning proposal is to be assessed against BPC 7: Development – Commercial and Industrial but it is also considered a vulnerable land use.	No
3. The operational documents generated through the process of developing a Bushfire Risk Report (Assessment and Management).	Yes
<p>Section 4.2 of the associated Bushfire Risk Report includes a full list of Additional Bushfire Protection Measures identified by the Risk Assessment process. Many of these measures relate to operating procedures, emergency planning, or detailed design/construction which do not form part of the planning assessment process.</p> <p>Additional Bushfire Protection Measures to meet or exceed the intent of the Acceptable Solutions of Elements 2-4 of the Bushfire Protection Criteria have been provided within the Section 5.3 Assessment Statements. These are measures which are relevant to the planning process.</p>	
4. The operational documents generated through the process of developing a Bushfire Emergency Plan.	No
5. From a local government including: <ul style="list-style-type: none"> a) Variations to acceptable solutions; and/or b) Additional protection measures to be implemented, including through 'Conditions' which may be applied to a 'Planning Approval' or a 'Notice of Determination. 	No
6. Any additional bushfire planning guidance documents or position statements issued by the WA Department of Planning, Lands and Heritage.	No
7. The application of a radiant heat barrier.	No

6 RESPONSIBILITY CHECKLISTS

EXPLANATORY INFORMATION

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

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

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

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

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

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

6.1 Protection Measure Implementation Checklist

TABLE 6.1 PROPONENT/LANDOWNER RESPONSIBILITIES PRIOR TO SALE/OCCUPANCY/OPERATION					
No.	IMPLEMENTATION OF BUSHFIRE PROTECTION MEASURES Measures Established Under SPP 3.7 / Guidelines				
1	Install an Asset Protection Zone (APZ) surrounding assessed assets. The APZ must establish the minimum separation distances detailed below between the asset and each vegetation area. The APZ must: <ol style="list-style-type: none"> 1. Consist of non-vegetated areas and low bushfire threat vegetation, able to be maintained in perpetuity in a low threat state, by complying with the established APZ technical requirements (refer to the Guidelines Appendix B2 and Appendix B3 of this BMP); and 2. Be located within the boundaries of the lot except for any allowable variances allowed and discussed in the assessment against the bushfire protection criteria in Section 5, Element 2: Siting and design, and the relevant APZ acceptable solution. (Refer also to the illustrated APZ on the Property Bushfire Management Statement in Section 6.3); and 3. Establish the minimum separation distances between the relevant asset and each vegetation area, as shown in the insert table below. 				
	THE MINIMUM (SITE SPECIFIC) VEGETATION SEPARATION DISTANCES ESTABLISHING APZ DIMENSIONS ¹				
		Building / Structure	Vegetation Classification ²	Potential Bushfire Impact	Minimum Distances (metres)
		BESS / PCS and associated infrastructure Critical Class 10 Buildings	1 (A) Forest	10kW/m ² 1090K Flame Temperature	48.9
			2 (A) Forest		60.4
			3 (B) Woodland		34.5
			4 (B) Woodland		43.2
			5 (D) Scrub		32.9
			6 (G) Grassland		21.2
			7 (G) Grassland		25
			8 (D) Scrub		32.9
		On-site Substation	1 (A) Forest	BAL-19	31
			2 (A) Forest		37
			3 (B) Woodland		20
			4 (B) Woodland		25
	5 (D) Scrub		19		
	6 (G) Grassland		12		
	7 (G) Grassland		14		
	8 (D) Scrub		19		
	Class 1-10 Buildings Laydown Yards (extent of storage only)	1 (A) Forest	BAL-29	21	
		2 (A) Forest		27	

	Firefighting Water Tanks	3	(B) Woodland		14
		4	(B) Woodland		17
		5	(D) Scrub		13
		6	(G) Grassland		8
		7	(G) Grassland		9
		8	(D) Scrub		13
	<p>Note 1: Will include the application of the radiant heat barrier when applicable to the proposal.</p> <p>Note 2: Refer to the Vegetation and Topography Map in Section 3.1</p> <p>Note 3: The Shire of Kojonup Fire Break Order imposes a minimum 20m APZ dimension. This exceeds the APZ dimensions for some vegetation classes and BALs.</p>				
2	Construct the private driveways / internal vehicular access to comply with the technical requirements stated and/or referenced in Section 5.3 of the BMP at Element 3: Vehicular access, A3.1 Private driveways.				
3	Install the firefighting water supplies, including fittings and the required hardstand/access, to comply with the technical requirements stated and/or referenced in Section 5.3 of the BMP at Element 4: Water supply.				
4	A purchaser, occupier and/or operator of the site must be made aware of the existence of this approved BMP and provided with access to a copy and be informed of their ongoing responsibilities it contains.				
5	The advice of an accredited Bushfire Planning Practitioner must be sought where revegetation within the lease area is proposed. Revegetation may require a Landscape Management Plan, and update to this Bushfire Management Plan, or Addendum to this Bushfire Management Plan.				
<p>IMPLEMENTATION OF BUSHFIRE PROTECTION MEASURES</p> <p>Measures Established by this BMP as a Required Additional Measure in Section 5.5</p>					
6	<p>Prior to operation, review and implement the 'Required or Recommended Additional Bushfire Protection Measures' discussed in Section 5.4 of this BMP.</p> <p>The Measures are detailed in Section 4.2 of the associated Bushfire Risk Report 241243 – Kojonup BESS (BRR)v1.2 (Bushfire Prone Planning May 2025).</p>				
<p>IMPLEMENTATION OF BUSHFIRE PROTECTION MEASURES</p> <p>Measures Established by a Local Government's Section 33 Notice Under the Bush Fires Act 1954</p>					
7	Install the required firebreaks, providing emergency access within the lot, to the stated specifications established by the Shire of Kojonup Fire Break Order.				
<p>IMPLEMENTATION OF BUSHFIRE PROTECTION MEASURES</p> <p>Measures Established by the Building Code of Australia (Vol. 1 and 2 of the National Construction Code)</p>					

Inform builders engaged to construct dwellings/additions and/or other relevant structures on the subject lot of the existence of this approved Bushfire Management Plan (BMP).

The BMP identifies that the development site is within a designated bushfire prone area and states the indicative (or determined) BAL rating(s) that will be applied to buildings/structures. A BAL assessment report may be required to confirm determined ratings and will be required when stated ratings are only indicative. BAL certificates will need to be produced to accompany building applications.

The associated Bushfire Risk Report establishes that permanent Class 1-9 buildings are required to construct to their assessed BAL under AS 3959.

8 Compliance with the current Building Code of Australia (Volumes 1 and 2 of the National Construction Code), will require certain bushfire resistant construction requirements be applied to residential buildings in bushfire prone areas (i.e., Class 1, 2 and 3 and associated Class 10a buildings and decks) and certain Class 9 buildings. Other classes of buildings may also be required to comply with these when established by the relevant authority or if identified as a 'Required Additional Bushfire Protection Measure' 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).

6.2 Protection Measure Maintenance Checklist

TABLE 6.2 LANDOWNER/OCCUPIER – MAINTENANCE OF BUSHFIRE PROTECTION MEASURES	
No.	MAINTENANCE OF BUSHFIRE PROTECTION MEASURES Measures Established Under SPP 3.7 / Guidelines
1	Annually review and enact the following maintenance responsibilities established in this approved BMP for the development site prior to the bushfire season.
2	<p>Maintain the Asset Protection Zone (APZ) around habitable buildings (and other structures as required) that consists of:</p> <ol style="list-style-type: none"> 1. Non-vegetated areas and low bushfire threat vegetation maintained in perpetuity in a low threat state by complying with established APZ technical requirements; and 2. The required zone dimensions that are established by the required separation distances from any areas classified vegetation. These distances should in most situations correspond to either: <ul style="list-style-type: none"> • The determined BAL rating for a relevant building(s) / structure(s); or • The maximum acceptable level of radiant heat transfer that is to apply. These distances will account for the specific site conditions. This ensures the building's/structure's constructed bushfire resistance continues to align with its calculated potential exposure to flame and radiant heat. <p>IMPORTANT:</p> <ol style="list-style-type: none"> 1. REFER TO THE APPLICABLE APZ DIMENSIONS IN TABLE 6.1. 2. REFER TO APPENDICES B3, B4 AND B5 FOR APZ TECHNICAL REQUIREMENTS AND DIMENSION GUIDANCE.
3	Maintain the private driveways / internal vehicular access to comply with the technical requirements stated and/or referenced in Section 5.3 of the BMP at Element 3: Vehicular access, A3.1 Private driveways.
4	Maintain the fighting water supplies, including fittings and the required hardstand/access, in good working condition. Ensure the tanks are maintained at full capacity.
5	When the property changes ownership or occupancy, to assist with the ongoing maintenance of the implemented bushfire protection measures, ensure that the relevant person(s) is aware of the BMP, and the responsibilities it contains. Provide access to a copy of the BMP and Bushfire Risk Report (BRR).
MAINTENANCE OF BUSHFIRE PROTECTION MEASURES Measures Established by this BMP as a Required Additional Measure in Section 5.5	
6	<p>Maintain the 'Required or Recommended Additional Bushfire Protection Measures' discussed in Section 5.4 of this BMP.</p> <p>The Measures are detailed in Section 4.2 of the associated Bushfire Risk Report 241243 – Kojonup BESS (BRR) v1.2 (Bushfire Prone Planning May 2025).</p>

<p>MAINTENANCE OF BUSHFIRE PROTECTION MEASURES</p> <p>Measures Established by a Local Government's Section 33 Notice Under the Bush Fires Act 1954</p>	
7	<p>Maintain the required firebreaks, providing emergency access within the lot, to the stated specifications established by the Shire of Kojonup Fire Break Order.</p>
<p>MAINTENANCE OF BUSHFIRE PROTECTION MEASURES</p> <p>Measures Established by the Building Code of Australia (Vol. 1 and 2 of the National Construction Code)</p>	
8	<p>Prior to any future building work, inform the builder of the existence of this approved Bushfire Management Plan (BMP).</p> <p>The BMP identifies that the development site is within a designated bushfire prone area and states the indicative (or determined) BAL rating(s) that may (or will) be applied to buildings/structures. A BAL assessment report may be required to confirm determined ratings and will be required when stated ratings are only indicative. BAL certificates will need to be produced to accompany building applications.</p> <p>The BMP may also establish, as a 'Required Additional Bushfire Protection Measure', that bushfire construction requirements to be applied must be those corresponding to a specified higher BAL rating.</p> <p>Compliance with the current Building Code of Australia (Volumes 1 and 2 of the National Construction Code), will require certain bushfire resistant construction requirements be applied to residential buildings in bushfire prone areas (i.e., Class 1, 2 and 3 and associated Class 10a buildings and decks) and certain Class 9 buildings. Other classes of buildings may also be required to comply with this construction when established by the relevant authority or if identified as a 'Required Additional Bushfire Protection Measure' bushfire protection measure within the BMP.</p> <p>The deemed to satisfy solutions that will meet the relevant bushfire performance requirements are found in AS 3959 – Construction of Building in Bushfire Prone Areas (as amended) and the NASH Standard - Steel Framed Construction in Bushfire Areas (as amended).</p>

APPENDIX A: DETAILED BAL ASSESSMENT DATA AND SUPPORTING INFORMATION

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

A1.1: FIRE DANGER INDICES (FDI/FDI/GFDI)

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

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

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

A1.2: VEGETATION ASSESSMENT AND CLASSIFICATION

Vegetation Types and Classification

In accordance with AS 3959:2018 Clauses 2.2.3 and C2.2.3.1, all vegetation types within 100 metres of the 'site' (defined as "the part of the allotment of land on which a building stands or is to be erected"), are identified and classified. Any vegetation more than 100 metres from the site that has influenced the classification of vegetation within 100 metres of the site, is identified and noted. The maximum excess distance is established by AS 3959: 2018 Clause 2.2.3.2 and is an additional 100 metres.

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

Modified Vegetation

The vegetation types have been assessed as they will be in their natural mature states, rather than what might be observed on the day. Vegetation destroyed or damaged by a bushfire or other natural disaster has been assessed on its expected re-generated mature state. Modified areas of vegetation can be excluded from classification if they consist of low threat vegetation (refer to Appendix B) and that any required active management can be expected to continue in perpetuity, and this can be adequately justified.

The Influence of Ground Slope

Where significant variation in effective slope exists under a consistent vegetation type, these will be delineated as separate vegetation areas to account for the difference in potential bushfire behaviour, in accordance with AS 3959:2018 Clauses 2.2.5 and C2.2.5.

THE INFLUENCE OF VEGETATION GREATER THAN 100 METRES FROM THE SUBJECT SITE

Vegetation area(s) within 100m of the site whose classification has been influenced by the existence of bushfire prone vegetation from 100m – 200m from the site:

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	Up to 6m	Tree Height	Up to 30m
Justification Comments:	<p>Forests with variable tree composition, frequently with plantation species. Understorey varies from absent or sparse grasses, to denser assemblages including Grass-trees, Parrotbush, sedges and grasses.</p> <p>The designation as Class A Forest is based on >30% canopy cover at maturity. Some areas are currently Class B Woodland structure but have potential for revegetation.</p> <p>Photos 8 and 9 show an area subject to revegetation.</p>				
Post Development Assumptions:	Areas are expected to maintain their mature condition.				
					
PHOTO ID: 1			PHOTO ID: 2		
					
PHOTO ID: 3			PHOTO ID: 4		



PHOTO ID: 5



PHOTO ID: 6



PHOTO ID: 7







PHOTO ID: 8



PHOTO ID: 9



PHOTO ID: 10

VEGETATION AREA 2					
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	Up to 6m	Tree Height	Up to 30m
Justification Comments:	<p>Forests with variable tree composition, frequently with plantation species. Understorey varies from absent or sparse grasses, to denser assemblages including Grass-trees, Parrotbush, sedges and grasses.</p> <p>The designation as Class A Forest is based on >30% canopy cover at maturity. Some areas are currently Class B Woodland structure but have potential for revegetation.</p>				
Post Development Assumptions:	Areas are expected to maintain their mature condition.				
 <p style="text-align: right; font-size: small;">33.80945, 117.1295, 325.0m, 147° 27/03/2025 12:26:55</p>			 <p style="text-align: right; font-size: small;">33.80944, 117.12948, 325.6m, 196° 27/03/2025 12:26:59</p>		
PHOTO ID: 11			PHOTO ID: 12		
 <p style="text-align: right; font-size: small;">33.80943, 117.12803, 331.4m, 169° 27/03/2025 12:38:49</p>			 <p style="text-align: right; font-size: small;">33.80914, 117.12573, 315.4m, 353° 27/03/2025 13:21:04</p>		
PHOTO ID: 13			PHOTO ID: 14		





VEGETATION AREA 3					
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)	<30%	Shrub/Heath Height	<2m	Tree Height	Up to 30m
Justification Comments:	Treed areas with sparse or grassy understory, inconsistent canopy, and limited extent. Joined canopies are present but with overall cover <30%.				
Post Development Assumptions:	Areas are expected to maintain their current condition.				
 <p style="text-align: right; font-size: small; margin: 0;">-33.80903, 117.1295, 325.7m, 309° 27/03/2025 12:29:21</p>			 <p style="text-align: right; font-size: small; margin: 0;">-33.80823, 117.12914, 338.5m, 252° 27/03/2025 12:31:02</p>		
PHOTO ID: 15			PHOTO ID: 16		
 <p style="text-align: right; font-size: small; margin: 0;">-33.80591, 117.12801, 317.6m, 204° 27/03/2025 12:55:49</p>			 <p style="text-align: right; font-size: small; margin: 0;">-33.80586, 117.12629, 312.9m, 230° 27/03/2025 12:53:31</p>		
PHOTO ID: 17			PHOTO ID: 18		





PHOTO ID: 19



PHOTO ID: 20



PHOTO ID: 21

VEGETATION AREA 4					
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)	<30%	Shrub/Heath Height	<2m	Tree Height	Up to 30m
Justification Comments:	Treed areas with sparse or grassy understory, inconsistent canopy, and limited extent. Joined canopies are present but with overall cover <30%.				
Post Development Assumptions:	Areas are expected to maintain their current condition.				
					
PHOTO ID: 22			PHOTO ID: 23		

VEGETATION AREA 5					
Classification	D. SCRUB				
Types Identified	Open scrub D-14				
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees	
Foliage Cover (all layers)	>30%	Shrub/Heath Height	Up to 6m	Tree Height	Up to 30m
Justification Comments:	Tall shrubs and short trees, generally contained within road reserves. The vegetation has a mature height of 2-6m. Taller trees may be present with <10% canopy cover.				
Post Development Assumptions:	Areas are expected to maintain their current condition.				



PHOTO ID: 24



PHOTO ID: 25



PHOTO ID: 26



PHOTO ID: 27





VEGETATION AREA 6					
Classification	G. GRASSLAND				
Types Identified	Tussock grassland G-22		Sown pasture G-26		
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees	
Foliage Cover (all layers)	>30%	Shrub/Heath Height	N/A	Tree Height	N/A
Justification Comments:	Pasture or cropland consistent with the region. Pasture areas display regular grazing.				
Post Development Assumptions:	Areas are expected to maintain their current condition.				
 <p style="text-align: right; font-size: small;">-33.80058, 117.12609, 314.2m, 197° 27/03/2025 13:22:25</p>			 <p style="text-align: right; font-size: small;">-33.80391, 117.13923, 300.7m, 200° 27/03/2025 11:56:03</p>		
PHOTO ID: 28			PHOTO ID: 29		
 <p style="text-align: right; font-size: small;">-33.80534, 117.13804, 364.9m, 250° 27/03/2025 13:29:05</p>			 <p style="text-align: right; font-size: small;">-33.80883, 117.13432, 319.4m, 2° 27/03/2025 12:14:55</p>		
PHOTO ID: 30			PHOTO ID: 31		



PHOTO ID: 32





PHOTO ID: 33



PHOTO ID: 34



PHOTO ID: 35

VEGETATION AREA 7						
Classification	G. GRASSLAND					
Types Identified	Tussock grassland G-22		Sown pasture G-26			
Effective Slope	Measured	d/slope 5 degrees	Applied Range (Method 1)		Downslope >0-5 degrees	
Foliage Cover (all layers)	>30%	Shrub/Heath Height	N/A		Tree Height	N/A
Justification Comments:	Pasture or cropland consistent with the region. Pasture areas display regular grazing.					
Post Development Assumptions:	Areas are expected to maintain their current condition.					
						
PHOTO ID: 36			PHOTO ID: 37			

VEGETATION AREA 8						
Classification	D. SCRUB					
Types Identified	Closed scrub D-13					
Effective Slope	Measured	d/slope 5 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
Justification Comments:	Vegetation Area 8 identifies a portion of Area 6 (pasture) which may be revegetated to provide a visual buffer.					
Post Development Assumptions:	The northern, southern, and eastern vegetation screens shown on the submitted layout have been assigned Class D Scrub classification as a precautionary approach and as evidence that the bushfire protection measures can be applied regardless of vegetation screening.					
No photos are provided as the vegetation does not yet exist.						

VEGETATION AREA 9	
Exclusion Clause	2.2.3.2 (e) Non-vegetated area
Justification Comments:	Area 8 includes non-vegetated areas including buildings, roads, and dams.
Post Development Assumptions:	Areas are expected to be maintained in their current condition.
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p style="font-size: small; color: gray;">-33.80391, 117.1392, 296.6m, 257° 27/03/2025 11:56:19</p> </div> <div style="text-align: center;">  <p style="font-size: small; color: gray;">-33.8094, 117.1346, 315.4m, 159° 27/03/2025 12:17:39</p> </div> </div>	
<div style="display: flex; justify-content: space-around;"> PHOTO ID: 38 PHOTO ID: 39 </div>	
 <p style="font-size: small; color: gray;">33.8049, 117.13043, 317.7m, 207° 27/03/2025 12:59:27</p>	
PHOTO ID: 40	
VEGETATION AREA 10	
Exclusion Clause	2.2.3.2 (f) Low threat vegetation - reduced flammability.
Justification Comments:	Vegetation Area 10 identifies a portion of Area 6 (pasture) which may be revegetated to provide a visual buffer.
Post Development Assumptions:	The western vegetation screen shown on the submitted layout is disconnected from other classifiable vegetation and 5m wide. The vegetation would be subject to spotting or surface fire only and would be a developing fire, meeting the intent of AS 3959 exclusion clauses 2.2.3.2 (c) and (d).
No photos are provided as the vegetation does not yet exist.	

A1.3: EFFECTIVE SLOPE

EXPLAINING THE ASSESSMENT METHODOLOGY APPLIED BY BUSHFIRE PRONE PLANNING

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

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

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

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

COMPOUND SLOPES UNDER VEGETATION AND DETERMINING SLOPE SIGNIFICANCE

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

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

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

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

The primary factors that will increase the residence time are:

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

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

Example values:

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

An Isolated Slope: For scenarios where there is a single significant slope (based on the above criteria) additional consideration would need to be given to the time and distance consumed by a bushfire still in its 'developing' phase. This will require due consideration be given to how it is potentially ignited i.e., from a single or multiple points, as this will influence the time and distance required to fully develop. For such scenarios, a normally significant slope

may not be sufficiently long. It may be necessary to determine the potential bushfire impact more accurately by justifying the application of a lesser effective slope, or a lower threat vegetation classification, or calculating a reduced head fire width (using short fire run modelling).

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

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

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

BPP Approach - Slope Variation Within Areas of Vegetation

When multiple 'significant' slope lengths with large differences in degrees of effective slope (or different applicable slope ranges when AS 3959:2018 Method 1 is applied), exists under a single vegetation classification, these will be delineated as separate vegetation areas of classified vegetation to account for the difference in potential bushfire behaviour and impact, in accordance with AS 3959:2018 clauses 2.2.5 and C2.2.5.

Effective Slope Variation Due to Multiple Development Sites

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

AS 3959:2018 EFFECTIVE SLOPE DETERMINATION - GUIDANCE

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

- Highlighting the importance of the value by stating "The slope of the land under the classified vegetation has a direct influence on the rate of fire spread, the severity of the fire and the ultimate level of radiant heat flux" (Clause C2.2.5). [Note: A common rule of thumb is that for every 10 degrees of upslope, a fire will double its rate of spread if moving in the direction of the prevailing wind].
- "It may be necessary to consider the slope under the classified vegetation for distances greater than 100 m in order to determine the effective slope for that vegetation classification) ... (i.e. the vegetation within 100 m) (Clause C2.2.5).
- "Where there is more than one slope within the classified vegetation, each slope shall be individually assessed, and the worst case Bushfire Attack Level shall apply" (Clause 2.2.5).

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

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

SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

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

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		
	BPAD Level 1		BPAD Level 3		
	LEVEL OF JUSTIFICATION REQUIRED TO APPLY ²	None	Moderate	None	Moderate
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				
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, November 2024) establish the requirement to apply 1200 K as the flame temperature to determine an on-site shelter's maximum exposure to radiant heat flux and the corresponding vegetation separation distance, when an on-site shelter is required for vulnerable land use proposals (refer to Guidelines, Appendix B5.2.3 and BPC 8, A2.5). The requirement refers to the guidance presented in the ABCB Design and Construction of Community Bushfire Refuges Handbook 2014 to support the requirement.

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

A2.3: 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° 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).

A site slope inverse to the effective slope has been applied. For example, a 5 degree downslope effective slope applies a -5 degree site slope.

This results in the worst-case scenario modelling applying the Method 2 procedure.

A3: BAL Calculator – Copy of Input/Output Values

DETERMINING 10 kW/m² SEPARATION DISTANCES

Vegetation Classification		A. FOREST																																																																																																													
0 Degrees (Flat)		5 Degrees Downslope																																																																																																													
<p>Calculated August 13, 2025, 3:59 pm (MDC v4.9)</p> <table border="1"> <thead> <tr> <th colspan="4">Minimum Distance Calculator - AS3959-2018 (Method 2)</th> </tr> <tr> <th colspan="2">Inputs</th> <th colspan="2">Outputs</th> </tr> </thead> <tbody> <tr> <td>Fire Danger Index</td> <td>80</td> <td>Rate of spread</td> <td>2.4 km/h</td> </tr> <tr> <td>Vegetation Classification</td> <td>Forest</td> <td>Flame length</td> <td>19.8 m</td> </tr> <tr> <td>Understorey fuel load</td> <td>25 t/ha</td> <td>Flame angle</td> <td>52 °, 61 °, 69 °, 73 °, 74 ° & 81 °</td> </tr> <tr> <td>Total fuel load</td> <td>35 t/ha</td> <td>Elevation of receiver</td> <td>7.8 m, 8.65 m, 9.24 m, 9.460000000000001 m, 9.51 m & 9.77 m</td> </tr> <tr> <td>Vegetation height</td> <td>n/a</td> <td>Fire intensity</td> <td>43,400 kW/m</td> </tr> <tr> <td>Effective slope</td> <td>0 °</td> <td>Transmissivity</td> <td>0.863, 0.841, 0.8110000000000001, 0.786, 0.773 & 0.716</td> </tr> <tr> <td>Site slope</td> <td>0 °</td> <td>Viewfactor</td> <td>0.6085, 0.4531, 0.3066, 0.2086, 0.1696 & 0.0458</td> </tr> <tr> <td>Flame width</td> <td>100 m</td> <td>Minimum distance to < 40 kW/m²</td> <td>16.1 m</td> </tr> <tr> <td>Windspeed</td> <td>n/a</td> <td>Minimum distance to < 29 kW/m²</td> <td>21.5 m</td> </tr> <tr> <td>Heat of combustion</td> <td>18,600 kJ/kg</td> <td>Minimum distance to < 19 kW/m²</td> <td>30.6 m</td> </tr> <tr> <td rowspan="2">Flame temperature</td> <td rowspan="2">1,090 K</td> <td>Minimum distance to < 12.5 kW/m²</td> <td>41.9 m</td> </tr> <tr> <td>Minimum distance to < 10 kW/m²</td> <td>48.9 m</td> </tr> </tbody> </table>		Minimum Distance Calculator - 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Understorey fuel load	25 t/ha	Flame angle	48 °, 56 °, 62 °, 66 °, 67 ° & 75 °																																																																																																												
Total fuel load	35 t/ha	Elevation of receiver	11.66 m, 13.38 m, 15.03 m, 16.57 m, 17.35 m & 24.03 m																																																																																																												
Vegetation height	n/a	Fire intensity	61,280 kW/m																																																																																																												
Effective slope	5 °	Transmissivity	0.852, 0.827, 0.797, 0.772, 0.76 & 0.705																																																																																																												
Site slope	-5 °	Viewfactor	0.6165, 0.46, 0.3127, 0.2125, 0.1727 & 0.0465																																																																																																												
Flame width	100 m	Minimum distance to < 40 kW/m ²	22 m																																																																																																												
Windspeed	n/a	Minimum distance to < 29 kW/m ²	28.7 m																																																																																																												
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m ²	39.5 m																																																																																																												
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m ²	52.5 m																																																																																																												
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Vegetation Classification	D. SCRUB
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0 Degrees (Flat)



Calculated August 13, 2025, 4:02 pm (MDC v.4.9)

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	80	Rate of spread	4.16 km/h
Vegetation Classification	Scrub	Flame length	11.62 m
Understorey fuel load	25 t/ha	Flame angle	53 °, 63 °, 72 °, 76 °, 78 ° & 83 °
Total fuel load	25 t/ha	Elevation of receiver	4.64 m, 5.18 m, 5.52 m, 5.64 m, 5.68 m & 5.77 m
Vegetation height	m	Fire intensity	53,815 kW/m
Effective slope	0 °	Transmissivity	0.878, 0.862, 0.838, 0.8139999999999999, 0.8 & 0.735
Site slope	0 °	Viewfactor	0.5988, 0.4419, 0.2962, 0.2016, 0.1638 & 0.0446
Flame width	100 m	Minimum distance to < 40 kW/m ²	9.6 m
Windspeed	45 km/h	Minimum distance to < 29 kW/m ²	13 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m ²	19.3 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m ²	27.5 m
		Minimum distance to < 10 kW/m ²	32.9 m

Vegetation Classification	G. GRASSLAND
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0 Degrees (Flat)



Calculated August 13, 2025, 4:04 pm (MDC v.4.9)

Minimum Distance 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	54 °, 64 °, 73 °, 78 °, 80 ° & 85 °
Total fuel load	4.5 t/ha	Elevation of receiver	2.78 m, 3.08 m, 3.28 m, 3.36 m, 3.38 m & 3.42 m
Vegetation height	n/a	Fire intensity	33,247 kW/m
Effective slope	0 °	Transmissivity	0.887, 0.877, 0.861, 0.841, 0.829 & 0.755
Site slope	0 °	Viewfactor	0.5823, 0.4291, 0.29, 0.1946, 0.158 & 0.0434
Flame width	100 m	Minimum distance to < 40 kW/m ²	5.8 m
Windspeed	n/a	Minimum distance to < 29 kW/m ²	7.9 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m ²	11.7 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m ²	17.3 m
		Minimum distance to < 10 kW/m ²	21.2 m

5 Degrees Downslope



Calculated July 1, 2024, 6:21 pm (MDC v.4.9)

Minimum Distance 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	51 °, 60 °, 68 °, 73 °, 75 ° & 80 °
Total fuel load	4.5 t/ha	Elevation of receiver	3.8 m, 4.38 m, 5.03 m, 5.71 m, 6.13 m & 9.9 m
Vegetation height	n/a	Fire intensity	46,945 kW/m
Effective slope	5 °	Transmissivity	0.884, 0.872, 0.854, 0.832, 0.819 & 0.748
Site slope	-5 °	Viewfactor	0.5914, 0.4357, 0.2914, 0.1969, 0.1601 & 0.0438
Flame width	100 m	Minimum distance to < 40 kW/m ²	7.1 m
Windspeed	n/a	Minimum distance to < 29 kW/m ²	9.6 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m ²	14.2 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m ²	20.7 m
		Minimum distance to < 10 kW/m ²	25 m

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

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

B1: Understanding Bushfire Attack Level (BAL) Ratings

BUSHFIRE ATTACK LEVEL

IMPORTANT

It is not the purpose of this 'planning' BMP to derive a 'determined' BAL rating (and associated minimum APZ dimensions), that will apply to an existing or future habitable or specified building, for the purpose of establishing its bushfire resistant construction requirements in accordance with the Building Code of Australia (contained in the NCC).

However, in limited situations a 'determined' BAL can be an incidental outcome of the planning assessment.

BUSHFIRE ATTACK LEVEL (BAL)

The potential transfer (flux/flow) of radiant heat from a bushfire to a receiving object is measured in kW/m². The AS 3959:2018 Bushfire Attack Level (BAL) determination methodology establishes the ranges of radiant heat flux that correspond to each bushfire attack level.

These ranges of radiant heat transfer are titled BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ.

For certain classes of building/structure the bushfire performance requirements and the associated deemed to satisfy solutions are established by the Building Code of Australia (Vol. 1 & 2 of the NCC). For most jurisdictions the relevant building classes are 1, 2, 3, 9 and associated 10a.

The assessed BAL rating that applies to a specific building/structure determines the bushfire resistant construction requirements for those works in accordance with AS 3959:2018 - *Construction of buildings in bushfire prone areas*, or for Class 1 buildings, the NASH Standard – *Steel framed construction in bushfire areas (NS 300 2021)*, as the recognised deemed to satisfy solutions.

DETERMINED BAL RATINGS

A BAL can only be classed as 'determined' and therefore apply to an existing or future building/structure when:

1. The building/structure 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. The building/structure will always remain subject to the same BAL regardless of:
 - (a) The retention of all existing classified vegetation either onsite or offsite; and
 - (b) Its design or position on the lot - including, as relevant and necessary, accounting for any regulatory or enforceable building setbacks from lot boundaries (i.e. R-codes, restrictive covenants and defined building envelopes).

Consequently, a BAL Certificate may be able to be issued for a BAL stated in the BMP when it can be considered 'determined'. However, this is not the typical outcome but an incidental one.

If the BMP can derive determined BAL(s), the BAL Certificate(s) required for submission with building applications could potentially be provided, using the BMP as the supporting assessment data.

INDICATIVE AND CONDITIONAL BAL RATINGS

An 'Indicative BAL' indicates the highest BAL rating that exists for the applied set of parameters that have been applied to the site's assessment. Because the potential remains for these parameters to be varied, they are unable to be considered a 'determined' BAL.

A 'Conditional BAL' establishes the BAL rating that will be considered as a 'Determined BAL' once the stated requirements (i.e. the conditions), which may require approval by the relevant authority, are implemented and subsequently confirmed as being met.

Relevant conditions that may need to be met include:

- The location of future development sites being identified accurately and/or modified; and/or
- Classified vegetation being modified or removed (after obtaining any required approvals from the relevant authority), to establish the required vegetation separation distances.

A BAL Certificate cannot be issued for an indicative or conditional BAL rating – only for a 'Determined BAL'.

BAL RATINGS FOR BUILDING VERSUS PLANNING PURPOSES – ASSESSMENT & REPORTING REQUIREMENTS ARE DIFFERENT

Building Permit Applications

The relevant requirements are established in accordance with the WA Building Act 2011 and Building Regulations 2012 which reference the application of the Building Code of Australia (within the National Construction Code).

The required BAL rating is a 'determined' BAL rating (stated on a BAL Certificate) and supported by the requisite assessment details. Typically, this will be a Bushfire Attack Level (BAL) Report produced specifically for this purpose.

The required supporting assessment information may be derived from a Bushfire Management Plan (BMP) when a 'determined' BAL can be derived for a planning proposal. This is possible when the specific conditions discussed under 'Determined BAL Ratings' above, can be met, as an incidental outcome.

Planning Proposal Applications

The relevant requirements are established in accordance with the Planning and Development Act 2005, LPS Regulations 2015, SPP 3.7 Bushfire and the associated Guidelines.

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

The minimum dimensions are those that ensure the potential radiant heat impact on the relevant buildings does not exceed 29 kW/m² from fire in any surrounding types of classified vegetation. This is the upper limit of the range of radiant heat flux corresponding to the BAL-29 rating.

Consequently, the BAL ratings identified in a Bushfire Management Plan (BMP) only need to be 'indicative' - although 'determined' ratings may be derived as an incidental outcome when relevant conditions are met (discussed under 'Determined BAL Ratings' above).

The indicative BAL-29 dimensioned APZ is not necessarily the APZ that will be required to be implemented and maintained surrounding any subject building/structure that exists as per an approved planning proposal. Refer to Appendix B3 in this BMP for additional information.

B2: BAL Contour Map Interpretation

THE BAL CONTOUR MAP

The Bushfire Attack Level (BAL) contour map is a diagrammatic representation of the outcome of the bushfire attack level assessment that has been conducted.

The map presents six shaded radiant heat contours extending out from each area of classified vegetation. Each coloured contour represents a different BAL rating (BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ) and corresponds to a set range of potential radiant heat transfer (kW/m^2), in accordance with AS 3959:2018 BAL determination methodology.

The highest BAL rating contour that an exposed element (building, person or other defined element), is partly or fully located within, is the BAL rating that will apply to that element.

The width of each BAL contour:

- Will vary dependent on the BAL rating it represents; and
- The assessed potential bushfire behaviour that considers site specific vegetation types, fuel loads, ground slopes and fire weather; and
- Represents the minimum and maximum vegetation separation distances corresponding to the BAL rating it represents.

For 'post development' BAL contour maps, the areas of classified vegetation applied to the production of the BAL contours, are those that will remain at the intended end state of the subject development once earthworks, clearing and/or landscaping and/or re-vegetation have been completed.

B3: The Asset Protection Zone (APZ)

THE APZ – DESCRIPTION, TECHNICAL REQUIREMENTS AND DIMENSIONS

DESCRIPTION AND PURPOSE

An asset protection zone (APZ) is an area surrounding a habitable or specified building that is:

- Not vegetated; and/or
- Supports retained or planted vegetation that can be considered to present a low bushfire threat as a result of;
 - Low flammability and/or higher moisture content characteristics; and/or
 - Minimal fuel loads (either naturally or as a result of continual maintenance).

The primary objectives of establishing an APZ are:

1. To ensure a reduction in the exposure of the building/structure to the bushfire direct attack mechanisms (threats) of flame contact, radiant heat transfer and ember attack, by establishing appropriate separation distances from each identified area of classified vegetation.

These distances are measured from the nearest part of an external wall and/or the supporting posts of building parts without external walls; and

2. To 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 that can decrease building/structure resilience to bushfire direct attack mechanisms; and
 - Limiting the potential for consequential fires to impact the building/structure by eliminating, reducing, moving away and/or shielding consequential fire fuels.

These fuels include accumulated debris, stored combustible/flammable items and constructed combustible items. Note that consequential fire, typically ignited by embers, is the primary cause of building loss in a bushfire event; and

3. To provide a defensible space for firefighting activities.

TECHNICAL REQUIREMENTS

Established by the Guidelines

The relevant technical requirements for an APZ are established in the Planning for Bushfire Guidelines (DPLH/WAPC) (as amended), Appendix B2: Siting and design and available online at [Planning WA - SPP 3.7 Bushfire](#)

Established by the Relevant Local Government

Certain LGA may state technical requirements to be complied with that vary from and/or are additional to those established by the Guidelines.

Refer to the notice issued annually by the relevant local government under s33 of the Bushfires Act 1954 (e.g. Bushfire Risk Reduction Notice or Firebreak and Hazard Reduction Notice etc). These technical requirements may also be established by their gazetted local planning scheme. Refer to the ratepayer notice and/or the local government's website for the current version.

Information Published by the Bushfire Centre of Excellence (DFES)

The book titled Firewise Gardening in Western Australia (2024), is a good source of relevant information and is available online at <https://dfes.wa.gov.au/hazard-information/bushfire/bcoe#bushfire-resources>.

DIMENSIONS

The dimensions of the APZ that will be the responsibility of a landowner to implement and/or maintain around a habitable or specified building/structure, are stated as the separation distances between these buildings and each identified area of classified vegetation. These distances will be site specific and dependant on variables which include:

- The potential bushfire behaviour in the identified vegetation which is dependent on factors including vegetation types, fuel loads, ground slopes and fire weather;
- The intended use of the site, with vulnerable uses requiring greater safety margins; and
- The constructed bushfire resistance of the subject building/structure (typically corresponding to a BAL rating or kW/m² level of radiant heat exposure).

Dimensions Established by the BAL Rating of the Subject Building/Structure

These minimum separation distances, to be installed and maintained, correspond to a 'determined' BAL rating and align the building's applied level of bushfire resistant construction to its potential level of exposure to flames, radiant heat and embers from the bushfire (note: this will not account for any exposure from significant consequential fires closer to the building).

The dimensions should be stated within a Bushfire Attack Level Report (BAL Report) produced for building application purposes. They may also be identified in an associated Bushfire Management Plan (BMP) produced for planning application purposes.

Dimensions Established by the Guidelines, DPLH/WAPC for an On-site Shelter for a Vulnerable Tourism Land Use

For the stated specific use, the Guidelines specify the maximum level of radiant heat exposure allowed. Consequently, the BMP produced for planning application purposes will state the minimum distances that are to be installed and maintained.

Note: Other than for the above use, the Guidelines do not establish the dimensions of the APZ for other buildings/structures that must be installed. They only establish that at least a BAL-29 dimensioned APZ should be the minimum that is installed and ensures that this is possible for the subject planning proposal. Consequently, the BMP can only indicate the separation distances corresponding to different levels of radiant heat exposure. Refer also to Appendix B1 in this BMP.

Dimensions Established by this BMP

The required dimensions may be identified in this BMP when specific increased separation distances have been applied through the application of an outcomes-based assessment that requires this as an additional protection measure.

Dimensions Established by the BCA (NCC 2022) for Certain Class 9 Vulnerable Use Buildings

These separation distances are stated in the BCA in Specification 43 as either:

- Not less than the minimum distances specified in Table S43C2; or
- Those corresponding to radiant heat flux on exposed building elements not exceeding 10kW/m² from a justified design bushfire analysis; or
- Those justified as an outcome of a building performance solution.

The separation distances may be included in the BMP by the bushfire practitioner as additional information to inform proponents and decision makers. They are not addressed by the Guidelines and therefore not a required part of the bushfire assessments presented within a BMP for planning application purposes.

Dimensions Established by a Local Government

To satisfy certain local government requirements, required APZ dimensions may be stated in the notice issued annually by the relevant local government under s.33 of the Bushfires Act 1954. These may be greater than the dimensions applied by the above mechanisms. A maximum APZ dimension could also be applied by the LGA.

These separation distances may be included in the BMP for informative purposes, but they are not a requirement for a BMP submitted for planning application purposes in accordance with the Guidelines.

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

MAINTAINING THE LOW THREAT STATUS OF EXCLUDED VEGETATION

When applying AS 3959:2018 BAL determination methodology, vegetation adjoining or adjacent to the subject site can be excluded from classification based on being a 'low bushfire threat'. To maintain this status, certain requirements must continue to be met in accordance with the below extract from AS3959:2018. Refer to the Figures 3.1 and 3.1.1 (Existing and Post-Development Classified Vegetation and Topography Maps) for the relevant low threat 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 / higher moisture content / low fuel load.

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

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 or crown land, written evidence that the land manager e.g. local government or a State Government department, agrees to maintain the designated area of land 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.

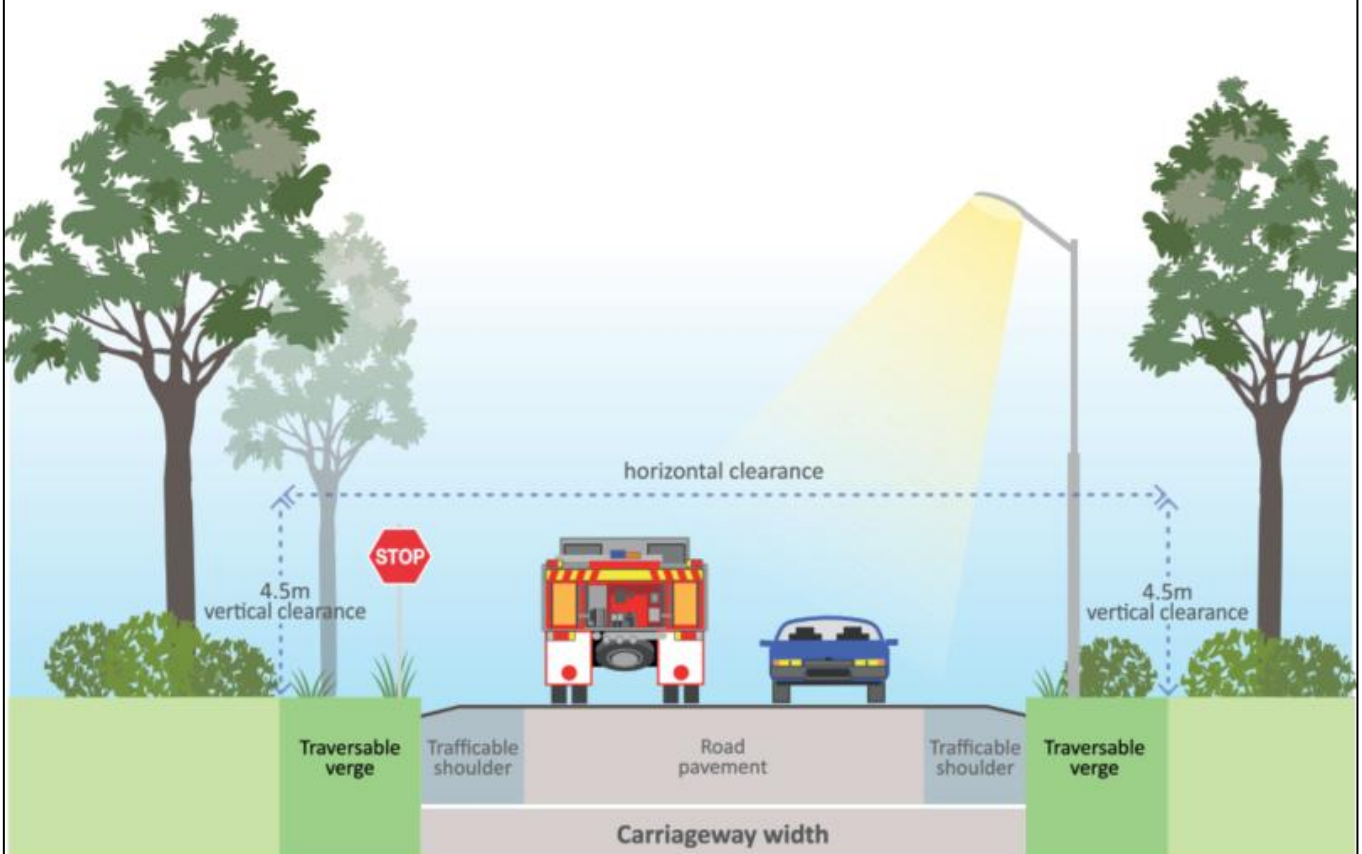
APPENDIX C: GUIDANCE - TECHNICAL REQUIREMENTS FOR VEHICULAR ACCESS

The relevant technical requirements are established in the Planning for Bushfire Guidelines (DPLH/WAPC) (as amended), Appendix B3: Vehicular access and available online at [Planning WA - SPP 3.7 Bushfire](#)

The following excerpts are presented here as a quick reference to applicable terminology and design requirements applied in the assessment against the bushfire protection criteria, Element 3: Vehicular access in this BMP.

C1: Road Component Terminology

Figure 26: Area encompassing horizontal clearance and vertical clearance



Horizontal clearance: The carriageway width (including the road pavement and trafficable shoulder) and traversable verge that provides for the movement and parking of vehicles and area required by emergency services to operate. Infrastructure and vegetation within the traversable verge should be frangible, however, non-frangible items can occur providing they do not restrict vehicular movement in the event of an emergency.

C2: Vehicular Access Technical Requirements

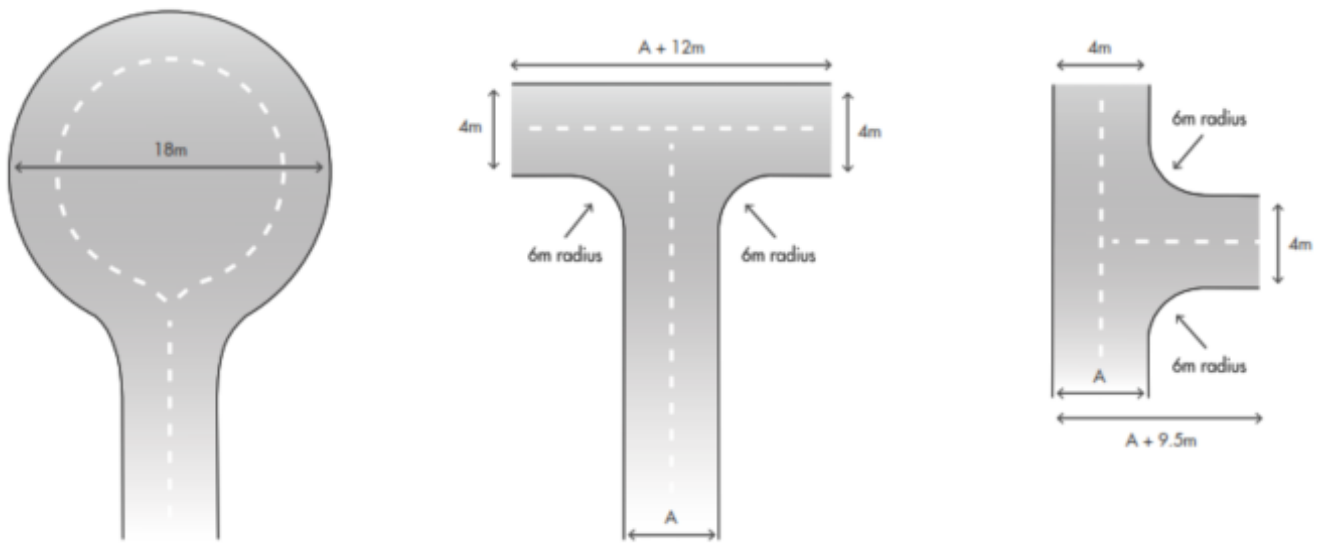
Table 10: Vehicular access technical requirements

	1		2		3		4		5	
TECHNICAL REQUIREMENTS	PERIMETER ROADS		PUBLIC ROADS		EMERGENCY ACCESS WAY ³		FIRE SERVICE ACCESS ROUTE ³		BATTLE-AXE & PRIVATE DRIVEWAYS ¹	
MAP OF BUSH FIRE PRONE AREAS DESIGNATION	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1
Minimum horizontal clearance (metres)	12	8	See note 5		10	6	10	6	6	
Minimum vertical clearance (metres)	4.5									
Minimum weight capacity (tonnes)	15									
Maximum grade unsealed road ²	See note 5		See note 5		1:10 (10% or 6°)					
Maximum grade sealed road ^{2,4}					1:7 (14.3% or 8°)					
Maximum average grade sealed road					1:10 (10% or 6°)					
Minimum inner radius of road curves (metres)					8.5					

Notes:

- ¹ Driveways and battle-axe legs to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision where not required to comply with the widths in this Appendix or the Guidelines.
- ² Dips must have no more than a 1 in 8 (12.5% - 7.1 degrees) entry and exit angle.
- ³ To have crossfalls between 3 per cent and 6 per cent.
- ⁴ For sealed roads only the maximum grade of no more than 1 in 5 (20 per cent) (11.3 degrees) for no more than 50 metres is permissible, except for short constrictions to 3.5 metres for no more than 30 metres in length where an obstruction cannot be reasonably avoided or removed.
- ⁵ As outlined in the Institute of [Public Works Engineering Australasia \(IPWEA\) subdivision guidelines, Liveable Neighbourhoods, Austroads Standards Main Roads standard, supplement, policy or guideline and/or any applicable or relevant local government standard or policy.](#)

Figure 30: Design requirements for a turn-around area



APPENDIX D: GUIDANCE - TECHNICAL REQUIREMENTS FOR FIREFIGHTING WATER SUPPLY

The relevant technical requirements are established in the Planning for Bushfire Guidelines (DPLH/WAPC) (as amended), Appendix B4: Water supply and available online at [Planning WA - SPP 3.7 Bushfire](#)

The information provided in this appendix is additional to that provided in the Guidelines. It includes:

- For reticulated water supply, the hydrant location specifications established by the WA Water Corporation (Design Standard DS 63), as dependant on land use type and relevant to bushfire planning assessments (highlighted). 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; and
- Images of example installations of acceptable water supply tanks and outlet fittings.

D1: Hydrant Location in Reticulated Areas

Design Standard DS 63
Water Reticulation Standard



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: Firefighting Water Supply - Tank and Fittings



Bushfire Centre of Excellence
TRAINING / KNOWLEDGE / ENGAGEMENT

Water tank connections for bushfire-prone areas (domestic and commercial)

Information Sheet, January 2025

This fact sheet provides information on how to best set up water supplies to assist firefighters on properties in bushfire-prone areas. It includes information on the siting, capacity, access and appropriate fittings needed for firefighters to access and use water supplies during an emergency.

Please note: if you are establishing water supplies to comply with planning requirements, you should read this fact sheet in conjunction with the [Planning for Bushfire Guidelines](#), as well as relevant planning schemes or policies from your local government.



What fittings should I fit the water tank with?

All tanks for firefighting should be fitted with a 50 millimetres or 100 millimetres male camlock fitting. This fitting is readily available from most hardware and rural supply shops. DFES recommends a male camlock fitting, as it means there are no perishable washers or working parts to maintain.

The fitting should be controlled by a butterfly, ball or gate valve, as these can easily control flow.



Why do I need a water tank for bushfires on my property?

You may have a water tank dedicated to bushfires to make your property as resilient as possible, or it may be a formal requirement under relevant planning or building regulations.

A water tank dedicated to firefighting supports firefighters attempting to protect your property and other assets from bushfires. You should consider a dedicated water tank alongside other bushfire prevention and preparedness activities, such as managing bushfire fuels and having a bushfire plan.



Where should I site a water tank?

You should site water tanks on clear, level ground compacted to take the maximum weight of the tank when full.

The tank should also be in a low-fuel area with at least 3 metres cleared around it to prevent direct contact with flames.

The water tank must be accessible to firefighting appliances and include a suitable area for these to turn around. You can find more information on recommended minimum standards for access in the [firebreak construction guidelines](#).

What capacity should the tank be?

The recommended minimum capacity for a firefighting water supply is 10,000 litres.

You may be using the tank for other purposes besides bushfire fighting, such as water for livestock or other rural purposes. However, it is recommended that a minimum of 10,000 litres is always available for firefighting.





Example Strategic 47,000 Litre Concrete Tank & Protected Fittings



Example 10,000 Litre Concrete Tank



Example Storz and Camlock Couplings

NON-MANDATORY GUIDANCE ASSESSMENT

APPLICABLE BUSHFIRE PLANNING GUIDELINES/OVERLAYS

APPLICABLE PLANNING DOCUMENTS

"Design Guidelines and Model Requirements for Renewable Energy Facilities v4.4" - Victorian Country Fire Authority – Specialist Risk and Fire Safety Unit (June 2025).

COMPLIANCE ASSESSMENT

COMPLIANCE WITH THE RELEVANT ACCEPTABLE SOLUTIONS (APPROVED MEASURES)

The Planning Document/s

The applicable planning documents establish packages of bushfire protection measures that are to be applied, each with different sets of specifications and requirements to be satisfied and applied to different types of development or use with appropriate variations.

The aim of these is to provide for the protection of human life and minimise impacts on property from the threats of bushfire, while having due regard to development potential, site characteristics and protection of the environment.

The bushfire protection measures are typically grouped under a common and specific purpose. Each purpose has:

1. A performance outcome, objective, criteria or intent to be met (satisfied); and
2. Provides for two pathways to satisfy the required performance:
 - a) Prescriptive measures and their requirements as acceptable solutions (approved measures); or
 - b) The ability to develop an alternative solution.

The Compliance Assessment



The assessment will consist of:

1. Identification of the relevant development type/use associated with the subject site.
2. Identify if the Design Advice or Model Requirement criteria is relevant within the context of the Western Australian Planning System.
3. Where a Design Advice or Model Requirement criteria is relevant:
 - a. Determine whether the existing planning or design of the proposed development complies with the criteria or its intent; or
 - b. Provide recommendations for the proposed development to meet the criteria or its intent; or
 - c. Detail why the measure is not or cannot be met.
4. Potential alternative solutions may be provided, but this is applied as a 'Modification' as there is no body or process for consultation/verification that the alternative meets the intent of the criteria.

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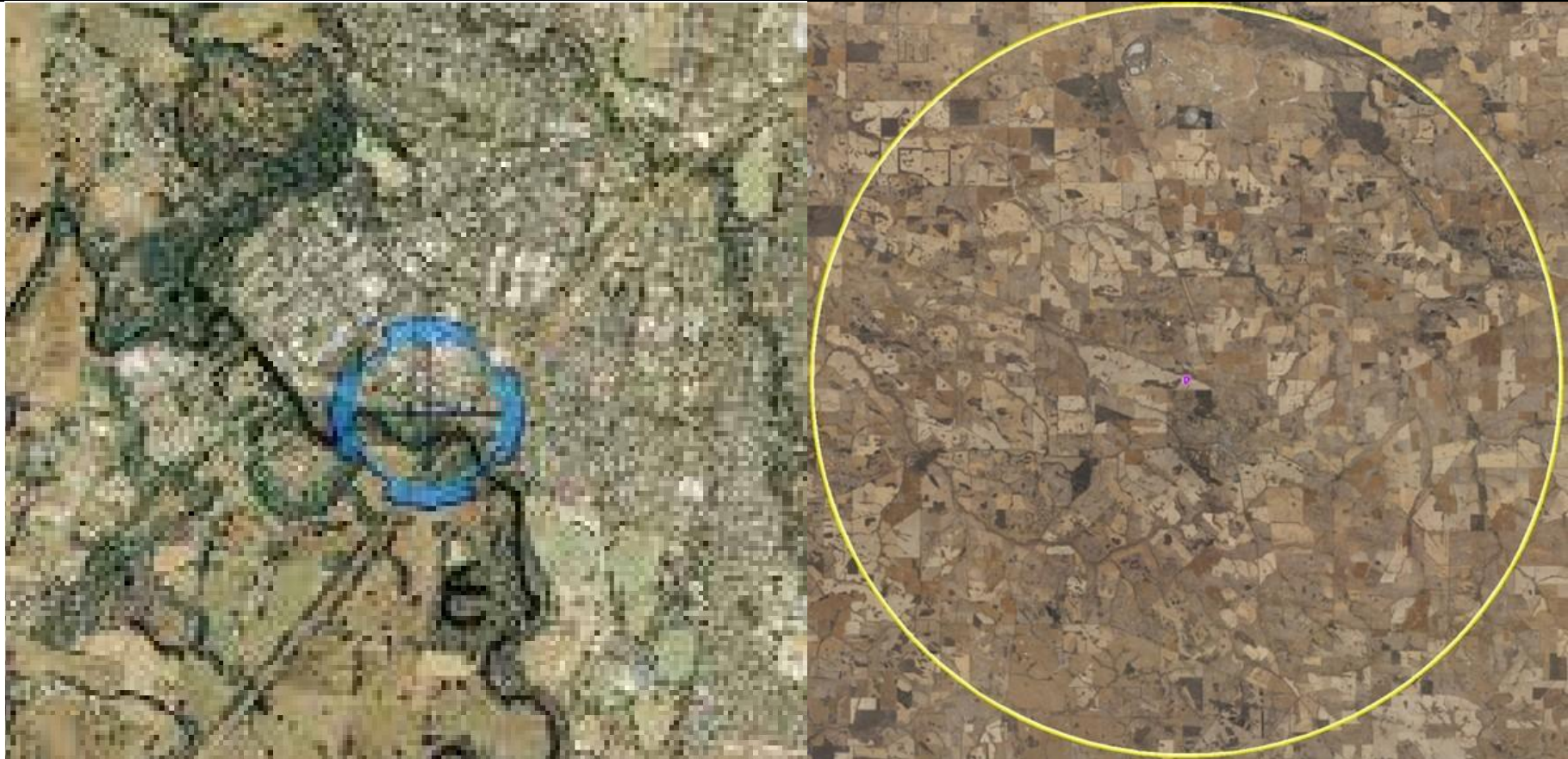
APPLICABLE DEVELOPMENT	
Type	Applicable
<p>All Facilities</p> <p><i>Definition (Renewable Energy Facility):</i> A site or installation dedicated to the generation and/or capture of renewable energy. Stand-alone battery energy storage systems are considered renewable energy facilities for the purposes of this guideline.</p>	✓
<p>Wind Energy Facilities</p> <p><i>Definition:</i> A facility where wind turbines use the energy of the wind to spin an electric generator which produces electricity, then power conversion equipment (inverters) convert the power into alternating current (AC). The facility may include grid connection infrastructure to feed power into the electricity grid.</p>	
<p>Solar Energy Facilities</p> <p><i>Definition:</i> A facility where solar panels convert sunlight into direct current (DC) electricity; then power conversion equipment (inverters) convert the power into alternating current (AC). The facility may include grid connection infrastructure to feed power into the electricity grid. Solar energy facilities may utilise either solar photovoltaic or solar thermal technologies.</p> <ul style="list-style-type: none"> • Large-scale solar: >5MW • Micro solar: ≤5MW 	
<p>Battery Energy Storage Systems</p> <p><i>Definition:</i> A system comprising one or more cells, modules or batteries, power conversion equipment (PCE) and isolation and protection devices. Battery energy storage systems convert energy into electrical energy and stores the energy internally. For the purposes of this guideline:</p> <ul style="list-style-type: none"> • Large-scale battery systems: >1MWh • Small-scale battery systems: ≤1MWh 	✓
Assessment Criteria	
<p>The <i>Design Guidelines and Model Requirements for Renewable Energy Facilities v4.4</i> provides Design Advice and Model Requirements for each use type.</p> <p>Design Advice whilst not requirements, are factors to consider in planning of the proposal. These items should be considered and applied where feasible.</p> <p>Model Requirements are 'CFA's minimum requirements for renewable energy facilities in low-risk environments, and must be reflected in the RMP.'</p> <p>Despite the references to Low-Risk or High-Risk Environments, the <i>CFA Guidelines</i> provide no distinction in requirements. Therefore, the Model Requirements are assessed regardless of the environment.</p> <p>Alternatives can be considered as '<i>Modifications to Model Requirements must be in consultation with CFA.</i>'</p> <p>As consultation is not available, variations/modifications to Model Requirements are justified either to meet the intent of the Model Requirement, or to justify why the Model Requirement should not be applied. This is the 'alternative solution' pathway applicable.</p> <p>The measures within the <i>Design Guidelines and Model Requirements for Renewable Energy Facilities v4.4</i> are not applied independently of the associated Bushfire Risk Report (BRR). The criteria are instead applied under the Applicable Protection Measure in the body of the BRR.</p> <p>The intent is to produce a single 'package' of protection measures recommended/required to be applied to the proposal (regardless of their source), for clarity of the proponent and decision maker(s).</p>	

SECTION 2: CFA INVOLVEMENT WITH RENEWABLE ENERGY FACILITIES

Subsection 2.2.1: Pre-Planning

Assessment Criteria Detail (summarised)	Assessment Status	Applicable Protection Measure (BRR)
<p>a) Where located within a Bushfire Prone Area, bushfire risk is addressed according to the Victoria Planning Provisions, Clause 13.02-1S (Bushfire Planning), through bushfire hazard identification and assessment (including a bushfire hazard site and landscape assessment). This assessment must include risks to the proposed technologies from the landscape (bushfire/grassfire).</p> <p>Assessment Comment: Additional protection measures are applied through this document regardless of the bushfire hazard type. The Project is assessed under the Western Australian Planning Provisions, being <i>State Planning Policy 3.7 Bushfire</i> and the associated <i>Planning for Bushfire Guidelines</i> (September 2024). The WA provisions also require landscape assessments (per Appendix A.1 of the <i>Guidelines</i>) but not for development applications. Victorian and Western Australian methodologies vary considerably, and <u>neither consider the topography, nor the ember generation potential of vegetation</u>. These are two of the most critical factors influencing the threat posed by the specific regional vegetation. A 'broader landscape' assessment has been provided within Section 5.1 of the associated Bushfire Risk Report. The methodology differs from that required under WA and Victorian Planning Provisions, as:</p> <ul style="list-style-type: none"> • BPP considers topography and ember hazard to be critical factors which cannot be overlooked. • The Victorian planning framework does not apply. • Supplementary technical information is required to assess the inherent threat from the broader landscape. <p>From <i>Applying the Bushfire Hazard Landscape Assessment in a Bushfire Management Overlay v4.0</i> (CFA March 2022): 'Where 'buildings and works' are proposed in landscape types Three or Four, it may be necessary to further enhance safety through additional bushfire protection measures.' The methodology within <i>Planning Permit Applications Bushfire Management Overlay – Technical Guide</i> pp13-16 (DELWP September 2017) considers urban/forest interfaces only- it does not consider pasture or mosaic (rural) landscapes, except to describe as 'little vegetation.' This is because such a landscape would not be within the Bushfire Management Overlay to trigger application of the <i>Technical Guide</i> the first instance. The subject site appears to meet Type 1 (the lowest tier), being primarily pasture. An example from p13 of <i>Planning Permit Applications Bushfire Management Overlay – Technical Guide</i> is provided below, as well as a comparison with the subject proposal (20km extent). Note the image below is poor quality- this is drawn directly from the <i>Technical Guide</i> and the resolution cannot be improved.</p>	<p>Complies with Intent</p>	<p>5.1.3</p>

ALL FACILITIES



b) Address risks from proposed technologies through a comprehensive risk management process, documented in a Risk Management Plan.

Complies with Intent

5.1.4

Assessment Comment:

Bushfire risks for the Project are considered within the associated Bushfire Risk Report.

c) Indicate where the exact specifications of elements within the renewable energy facilities will be determined during the detailed design phase, such as solar panel model/manufacturer and battery chemistry.

Fully Complies

N/A

Assessment Comment:

Product specifications have not been determined/finalised and datasheets are not available. This information is intended to be provided during procurement after planning approval.

d) Explicitly state that the following documentation will be prepared in accordance with this guideline, in consultation with CFA, before development starts:

Complies with Intent

N/A

- Risk Management Plan
- Fire Management Plan
- Emergency Plan

Assessment Comment:

Fire and Emergency Planning documentation required per WA regulations will be produced. Titles and content will be in accordance with WA provisions rather than the Victorian CFA guideline.

SECTION 3: FIRE RISK MANAGEMENT

Intent: Fire risk must be identified and measures to eliminate or reduce its occurrence and consequences must be incorporated into facility design and operations.

Subsection 3.3: Risk Management Plan

	Assessment Criteria Detail (summarised)	Assessment Status	Applicable Protection Measure (BRR)
ALL FACILITIES	A Risk Management Plan must be developed all renewable energy facilities. The Risk Management Plan must:		
	a) Describe the infrastructure (natural and built), landscape, nature of operations and occupancy of the facility.	Fully Complies	2.1, 5.1.3; 5.2
	Assessment Comment: The proposal details are provided in Section 2.1 of the Bushfire Risk Report. Section 5.2 provides the Identified Elements at Risk.		
	b) Describe the risks and hazards at the facility to and from the renewable energy infrastructure (including battery energy storage systems).	Fully Complies	Section 5
	Assessment Comment: See item (c) below.		
c) Specify and justify, in accordance with Section 4.2 of this guideline: <ul style="list-style-type: none"> • The location of the facility in the landscape, and the proposed infrastructure on-site. • Emergency vehicle access to and within the facility that: <ul style="list-style-type: none"> ○ Includes site access points of a number suitable to the size and hazard of the facility (a minimum of two). ○ Provides access to renewable energy infrastructure, substations and fire service infrastructure. • Firefighting water supply for the facility. • A fire break width of 10m or greater, based on radiant heat flux (output) as an ignition source: <ul style="list-style-type: none"> ○ Around the perimeter of the facility. ○ Between any landscape buffer/vegetation screening and infrastructure. • The separation distance, based on radiant heat flux (output) as an ignition source, between: <ul style="list-style-type: none"> ○ Adjacent renewable energy infrastructure (e.g. between adjacent battery containers/enclosures). ○ Battery containers/enclosures and related battery infrastructure, buildings/structures, and vegetation. • All other controls for the management of on-and off-site hazards and risks at the facility (including all proposed battery energy storage system safety and protective systems). 	Complies with Intent	Section 5	

	Assessment Comment:		
	The Bushfire Risk Report addresses the requirements for mitigation of bushfire-related hazards. Threats, exposures and vulnerabilities, to and from the Project are addressed and, where necessary, treatments recommended. This forms the bulk of the Bushfire Risk Report. Non-bushfire hazards, including fires due to asset failure, should be addressed through product design or the appropriate regulation.		
	d) Provide an evidence-based determination of the effectiveness of the risk controls against the identified hazards, including justification for the omission of any battery safety and protective system/s.	Not Applied	N/A
	Assessment Comment:		
The associated Bushfire Risk Report comprehensively assesses bushfire risk reduction measures. The effectiveness of each measure is based on experience and logic as evidence is not available for the quantitative impact of a single measure. Fully established bushfires cannot be tested in vitro. See Appendix 1.2 of the Bushfire Risk Report for the risk assessment framework.			
The BESS installation will include a Thermal Management System and Fire Suppression System, as required.			
e) Form the basis for the design of the facility.	Fully Complies	N/A	
Assessment Comment:			
A comprehensive Bushfire Advice Brief was produced during initial site selection to inform potential constraints and inform the design.			
The submitted design includes the recommendations drawn from the initial Bushfire Advice Brief, and therefore has 'formed the basis of design.'			
The associated Bushfire Risk Report details the justification for these measures.			

SECTION 4: FACILITY LOCATION AND DESIGN

Subsection 4.1: Facility Location

Intent: Renewable energy facilities must be located in low-risk environments wherever possible, to reduce the risk of external fire impacting the facility and its consequences.

Item 4.1.1: High-Risk Environments

Note: The Site is within a Low-Risk Environment, following the methodology within *Planning Permit Applications Bushfire Management Overlay – Technical Guide*.
The section has been addressed regardless.

Assessment Criteria Detail (summarised)	Assessment Status	Applicable Protection Measure (BRR)
Planning applications for all renewable energy facilities proposed in high-risk environments must address the following:		
a) An assessment against policy at <i>Clause 13.02-1S (Bushfire Planning)</i> where the facility is located in a Bushfire Prone Area (BPA).	Not Applicable	N/A
Assessment Comment: Not applicable to Western Australian planning system. The Project is not within a Bushfire Prone Area.		
b) The impact of any ignitions arising from the infrastructure (solar panels, wind turbines, battery energy storage systems, electrical infrastructure) on nearby communities, infrastructure and assets.	Fully Complies	Section 5
Assessment Comment: <u>BESS:</u> Radiant heat flux in battery fires is relatively low, the Victorian Big Battery Fire (July 2021) required only a 20m exclusion zone for personnel (such an exclusion zone would generally be <4kW/m2 radiant heat flux). The closest vegetation of significance is approximately 210m away from BESS units, with the vegetation screening and inconsistent road verge scrub being >20m away. Therefore, in the reasonable worst case scenario, flame contact would not be possible, and radiant heat flux would be insufficient to ignite a bushfire in the surrounding vegetation. Embers can travel beyond any applicable APZ. <u>Substations and Switchyards: (Not necessarily connected to the renewable energy facilities)</u> Ignitions arising from substations are a known factor and are managed through state and national regulation, and organisational operating procedures.		
c) The impact of bushfire on the infrastructure (e.g. ember attack, radiant heat impact, flame contact).	Fully Complies	5.3.5, 5.3.6
Assessment Comment: <u>BESS:</u>		

ALL FACILITIES

BESS technologies are continuing to develop and the critical heat flux thresholds of assets may vary slightly between engineering designs. The exterior and structural components of battery cabinets are non-combustible, generally being metal, fibrous cement, mineral wool etc. A single battery rack consists of battery cells (each cell connected into a module), a fire suppression system and a control box with chiller. Power and computer cabling is associated within and between racks. These are the relevant components regarding potential for fire.

- The individual batteries have been found to be highly resistant to conductive heat. Applied temperatures exceeding 400 degrees Celsius destroyed, but not ignite, running battery cells. See UL 9540A Test Method for Evaluating Thermal Runaway Fire Propagation in Cell Energy Storage Systems, Third Edition (UL LLC; 8 July 2020). Other trigger/failure conditions must be met for battery cells to ignite (mechanical rupture, flame contact, product failure etc).
- The product is tested in accordance with UN 38.3. UN 38.3.4.2 Test T.2: *Thermal test* requires cells and batteries to be tested to 72C ± 2°C for 6 hours, with 10 repeats of the same set of cells or batteries. Radiant heat from a bushfire or other source against the battery cabinet can heat the interior, however direct calculations between ambient temperature and radiant heat are not available. It must be considered that battery cells are tested to be able to withstand sustained high temperatures beyond human endurance.
 - The ABCB Handbook requires refuge structures for a tenable human environment be subject to <10kw/m² radiant heat flux, and a maximum mean internal temperature <39°C for 1 hour (and peak of 45°C).
 - The thermal insulation of the battery cabinet is not readily available.
- Control boxes are computers which will apply thermal throttling and thermal shutdown if internal temperatures exceed a determined threshold. Once a computer system is shut down in this scenario, the threshold is expected to be that of the cabling (below).
- Associated cabling (both power transmission and computer). Common electrical cabling reaches its critical point at >12kWm² (Kaczorek-Chrobak et al. 2021) [49]. Electrical cabling and components are expected to exceed this standard, being industrial and high capacity, however the 12kW threshold is adopted for the highest potential vulnerability.

The Project is sited on flat ground and not within a Bushfire Prone Area (impacted by pasture only). The APZ to be installed will ensure exposure to the bushfire hazard threat of radiant heat will be limited to a maximum radiant heat flux of 10 kW/m² (calculated with an assumed flame temperature of 1090K).

Substations/Switchyards: (Not necessarily connected to the renewable energy facilities)

AS 2067-2016 *Substations and high voltage installations exceeding 1 kV a.c.* does not provide radiant heat or flame exposure thresholds, nor any general bushfire protection measures. 'Consideration of the area surrounding the installation should also be included, in particular the effect of fire on or from surrounding vegetation.' (AS 2067-2016 s6.7.1.2).

Standard vegetation clearances are provided in *Western Australian Distribution Connections Manual 2015* (Western Power 2015).

The following document was found to be relevant in the assessment of proposed substations: *NS187 Passive Fire Mitigation Design of Major Substations - Internal Document No. NW000-S0007* (Ausgrid 2020). Ausgrid Pty Ltd is Australia's largest electricity distributor (in terms of customers and energy load), and the document referenced is an internal network standard. The below table is sourced from Section 12 of the network standard.

Table 3 – Radiant Heat Exposure Limits for Bushfires

Item	Maximum allowable radiant heat flux (kW/m ²)	Comment
Cable	12.5	PVC Cables begin to distort and may ignite.
	20	Ignition of XLPE cables between 85 and 550 seconds.
Steel support structure	35	To 60% of yield strength after a maximum duration of 5 minutes. Applies where elastic deflections due to elevated temperatures are not critical.
Porcelain bushing/Insulators	>30	Damage may occur requiring replacement or in extreme case resulting in catastrophic failure. See Note 2.
Polymeric bushing/insulators	>30	Damage may occur requiring replacement or in extreme case resulting in catastrophic failure. See Note 2.
Aluminium busbar	20	Based on 250°C after a maximum duration of 5 minutes. Comparable to withstand temperature under fault conditions.
Copper busbar	25	Busbars may undergo significant distortion and impose significant stresses on rigid insulators.
Transformer tank	>35 (see Note 1)	Refer to above regarding bushings and cables.
Combustibles	12.5	Piloted ignition may occur on timber.

Note 1. Transformers always have some more vulnerable components such as bushings and cables etc. Refer to Clause 7.2.

'Combustibles' in this description are consequential fire hazards for the purposes of the bushfire assessment: packing materials, pallets, waste, and other assorted debris. These should not be present within the substation footprint and where necessary should be positioned away from infrastructure components, applied in Measure 6.7.

The internal network standard and the *Asset Management System Distribution Substation Plant Manual 2019: Chapter 5 – Substation Fire Risk* (Western Power March 2021) align in identifying Transformer Oil as being a consequential fire source (within the context of bushfire assessments). This is a flammable material with a low flash point of 135°C, and a radiant heat flux threshold dependent on the period of exposure: 3-4 hours at 4.5kW/m² (the residence period of a bushfire is <10 minutes). The network standard considers radiant heat impact from asset fires on transformer oil but not bushfires, which appears to be due to the greatly reduced residence period and the transformer oil being contained within the transformer tank, which provides shielding/insulation to the contents to prevent the flash point being reached. As an appropriate heat flux for the short residence period of a bushfire is not available, the capacity for this risk to be managed is dependent on the developer recognising the issue and ensuring that the design/procedures that are applied to manage transformer oil fires, also consider the possibility of external bushfire impact igniting the oil (either through piloted ignition from embers or radiant heat only).

PVC cables should be either enclosed within structures or installed underground where practical. Exposed cabling (not shielded or buried underground) positioned subject to >12kW heat flux may be damaged/destroyed in a bushfire event and require replacement.

d) Assessment of whether the proposal will lead to an increase in risk to adjacent land and how the proposal will reduce risks at the site to an acceptable level.

Complies with Intent

Section 5

Assessment Comment:

Refer to b).

Recommendations

An APZ to ensure radiant heat flux does not exceed 10kW/m² is to be installed around BESS and PCUs.

The 10m portion of the APZ immediately around BESS units must be entirely and permanently non-vegetated (sealed, compacted limestone, gravel, mineral earth etc).

Onsite fine and heavy fuel sources are required to be eliminated in project design and strictly controlled in ongoing operation to prevent the capacity for embers to be generated.

The product datasheet or manufacturer is likely to specify a setback between BESS units. Where this is not provided, a setback of >1m on the shorter and >3m on the longer side is recommended.

Where the product datasheet or manufacturer specification does not specify a distance between battery containers and other combustible/critical assets, the applied distance should be 15m (based on >1 hour intervention).

Switchyard footprints (within perimeter fence line) should be entirely and permanently non-vegetated (sealed, compacted limestone, gravel, mineral earth etc).

SECTION 4: FACILITY LOCATION AND DESIGN

Subsection 4.2: Facility Design

Intent: Renewable energy facilities must be designed to eliminate or reduce the risk of fire occurring and if it does occur, its consequences.

Item 4.2.1: Emergency Vehicle (Fire Truck) Access

Assessment Criteria Detail (summarised)		Assessment Status	Applicable Protection Measure (BRR)
ALL FACILITIES	a) Construction of a four (4) metre perimeter road within the perimeter fire break.	Fully Complies	5.4.2
	Assessment Comment: The Project includes a perimeter access road. See the submitted <i>Concept plans and elevation drawings</i> (Mint Renewables, March 2026).		
	b) Roads must be of all-weather construction and capable of accommodating a vehicle of fifteen (15) tonnes (e. g. no compacted earth).	Fully Complies	5.4.2
	c) Constructed roads should be a minimum of four (4) metres in trafficable width with a four (4) metre vertical clearance for the width of the formed road surface. Ensure any fencing along access routes allows for width of fire vehicles.	Fully Complies	5.4.2
	d) The average grade should be no more than 1 in 7 (14.4% or 8.1°) with a maximum of no more than 1 in 5 (20% or 11.3°) for no more than fifty (50) metres.	Fully Complies	5.4.2
	e) Dips in the road should have no more than a 1 in 8 (12.5% or 7.1°) entry and exit angle.	Fully Complies	5.4.2
	f) Roads must incorporate passing bays at least every 600 metres, which must be at least twenty (20) metres long and have a minimum trafficable width of six (6) metres. At least one passing bay must be incorporated where roads are less than 600 metres long.	Fully Complies	5.4.2
	Assessment Comment: Items b) to f) are met or exceeded through compliance with the Western Australian <i>Planning for Bushfire Guidelines</i> (WAPC 2024).		
	g) Road networks must enable responding emergency services to access all areas of the facility, including fire service infrastructure, buildings, and battery energy storage systems and related infrastructure, substations and grid connection areas.	Fully Complies	5.4.2
	Assessment Comment: The submitted layout provides vehicular access to all areas of the Project. Internal roads will be installed to access all operational areas and renewable energy infrastructure. These roads will be required for delivery and operations vehicle access, which are larger/heavier than Emergency Services vehicles.		

	Recommendation: Contact the local emergency control agencies; Shire of Kojonup Emergency Services Manager and/or Chief Bushfire Control Officer (CBFCO) prior to commissioning and offer a familiarisation visit and explanation of emergency procedures, access, hazards, and fire detection and suppression systems. Local Volunteer Fire and Rescue Service (VFRS) and Bush Fire Brigade (BFB) may be invited through the Shire Emergency Management Coordinator (CBFCO). The particular services should be determined by the CBFCO. Establish an ongoing schedule to contact the Shire Emergency Services Manager and/or CBFCO prior to the bushfire season.		
	h) The provision of at least two (2) but preferably more access points to each part of the facility. The number of access points must be informed through a risk management process, in consultation with the CFA.	Fully Complies	5.4.2
	Assessment Comment: Two site access points are provided, as shown on the submitted site plan. These connect to different through-roads (Tunney Road and Collie-Changerup Road).		
BATTERY ENERGY STORAGE SYSTEMS	At least two access points are to be provided into each section where battery energy storage systems are located. The number and location of vehicle access points must be determined in consultation with CFA.	Fully Complies	5.4.2
	Assessment Comment: Two access points are provided, as above.		
Item 4.2.2: Firefighting Water Supply			
Assessment Criteria Detail (summarised)		Assessment Status	Applicable Protection Measure (BRR)
ALL FACILITIES	a) Water access points must be clearly identifiable and unobstructed to ensure efficient access.	Fully Complies	5.4.4, 5.4.5, 5.4.6
	b) Static water storage tank installations must comply with AS 2419.1-2021: Fire hydrant installations – System design, installation and commissioning.	Fully Complies	5.4.4, 5.4.5, 5.4.6
	c) The static water storage tank(s) must be an above-ground water tank constructed of concrete or steel.	Fully Complies	5.4.4, 5.4.5, 5.4.6
	d) The static water storage tank(s) must be capable of being completely refilled automatically or manually within 24 hours.	Not Applied	N/A
	Assessment Comment: The measure is possible. The requirement has not been applied as it must be confirmed (with the local CESM/CFO) during the Recovery phase after the initial bushfire emergency.		

e) The static water storage tanks must be located at vehicle access points to the facility and must be positioned at least ten (10) metres from any infrastructure (solar panels, wind turbines, battery energy storage systems, etc.).	Fully Complies	5.4.4, 5.4.5, 5.4.6
f) The hard-suction point must be provided, with a 150mm full bore isolation valve equipped with a Storz connection, sized to comply with the required suction hydraulic performance. Adapters that may be required to match the connection are: 125mm, 100mm, 90mm, 75mm, 65mm Storz tree adapters with a matching blank end cap to be provided.	Complies with Intent	5.4.4, 5.4.5, 5.4.6
Assessment Comment: This is a specification for Victorian firefighting operations- connections at the hard suction point will be as determined by the requirements of the <i>Planning for Bushfire Guidelines</i> and in consultation with local services.		
g) The hard-suction point must be positioned within four (4) metres to a hardstand area and provide a clear access for emergency services personnel.	Fully Complies	5.4.4, 5.4.5, 5.4.6
h) An all-weather road access and hardstand must be provided to the hard-suction point. The hardstand must be maintained to a minimum of 15 tonne GVM, eight (8) metres long and six (6) metres wide or to the satisfaction of the CFA.	Fully Complies	5.4.4, 5.4.5, 5.4.6
i) The road access and hardstand must be kept clear at all times.	Fully Complies	5.4.4, 5.4.5, 5.4.6
j) The hard-suction point must be protected from mechanical damage (eg. bollards) where necessary.	Not Applied	N/A
Assessment Comment: Not been applied as the location of tanks will not have public access, and they will be set back from carriageways. The necessity will be determined by the developer.		
k) Where the access road has one entrance, an eight (8) metre radius turning circle must be provided at the tank.	Complies with Intent	5.4.4, 5.4.5, 5.4.6
Assessment Comment: Turnaround area requirements within the <i>Planning for Bushfire Guidelines</i> will be applied.		
l) An external water level indicator must be provided to the tank and be visible from the hardstand area.	Fully Complies	5.4.4, 5.4.5, 5.4.6
m) Signage indicating 'FIRE WATER' and the tank capacity must be fixed to each tank.	Fully Complies	5.4.4, 5.4.5, 5.4.6
n) Signage must be provided at each vehicle entrance to the facility, indicating the direction to the nearest static water tank(s).	Fully Complies	5.4.4, 5.4.5, 5.4.6
<p>Assessment Comment:</p> <p>The Project's BESS development will require a water supply calculated following AS 2419.1 (Open Yard Protection). Where a firefighting water supply for the BESS development is determined elsewhere, the greater volume is to apply.</p> <p>The Substation will be reasonably adjacent to the BESS and will be serviced with the same water supply.</p> <p>Recommendation: The following requirements apply to the firefighting water supply, via Measure 13.17 in the associated Bushfire Risk Report. The specifications will be confirmed at the detailed design stage.</p>		

Access

- Firefighting water access points (hydrants, hard suction, or drafting) must be clearly identifiable, visible from internal roads, and unobstructed.
- Signage must be provided at each vehicle entrance to the facility, indicating the direction to the nearest firefighting water access point.
- An all-weather hardstand turnaround area meeting the requirements of the *Planning for Bushfire Guidelines* (Figure 30) must be provided within 4 metres static water storage tank(s) and any independent hard suction points (hydrants).
- Site Operating Procedures must include that access routes must be unobstructed at all times.

Siting and Capacity

- The BESS development requires a minimum 288,000L firefighting water tank. This is to account for both bushfire and asset fire.
 - The required water supply in compliance with AS 2419.1 will be determined based on the final footprint of the BESS development. A footprint exceeding 9000m² will require additional water supply.
 - Where another firefighting water supply is determined elsewhere, the greater volume is to apply.
- All BESS units must be wholly within 70m of a water outlet.
- Water tanks must be positioned >15m from BESS units, PCUs, etc.
- Water tanks should apply a BAL-29 dimensioned APZ at a minimum.

Construction

- Static water storage tanks must be an above-ground water tank constructed of concrete or steel.
- An external water level indicator must be installed on static water storage tanks and be visible from internal roads and the adjoining turnaround area.
- Signage indicating 'FIRE WATER' and the tank capacity must be fixed to each tank.

Couplings at hard suction points are required to be 125mm Storz fittings (*Guidelines B.4.1.2*). DFES Built Environment and the local emergency services should be contacted for input on appropriate couplings and adaptors.

1. Centralised or Stand-Alone Facilities

The fire protection system must apply requirement a) **OR** b) below.

a) Where reticulated water is available, a fire hydrant system that meets the requirements of AS 2419.1-2021: Fire hydrant installations, Section 3.9: Open Yard Protection, and Table 2.2.5(d): Number of Fire Hydrants Required to Flow Simultaneously - Open Yards.
 Except, that fire hydrants must be provided and located so that every part of the battery energy storage system is within reach of a 10m hose stream issuing from a nozzle at the end of a 60m length of hose connected to a fire hydrant outlet.

Not Applicable

N/A

b) Where no reticulated water is available, a fire hydrant system that complies with AS 2419.1-2021 must be provided:
 i. The fire water supply must be of a quantity no less than 288,000L or as per the provisions of AS 2419.1-2021: Fire Hydrant installations, Table 2.2.5(D) for open yards flowing for a period of no less than four hours at 20L/s, whichever is the greater.
 ii. The quantity of static fire water storage is to be calculated from the number of hydrants required to flow from AS 2419.1-2021: Fire hydrant installations, Table 2.2.5(D).
 iii. Fire hydrants must be provided and located so that every part of the battery energy storage system is within reach of a 10m hose stream issuing from a nozzle at the end of a 60m length of hose connected to a fire hydrant outlet.
 iv. The fire water supply must be located at vehicle entrances to the facility, at least 10m from any infrastructure (electrical substations, inverters, battery energy storage systems, buildings).

Fully Complies

5.4.5

BATTERY ENERGY STORAGE SYSTEMS

<p>v. The fire water supply must be reasonably adjacent to the battery energy storage system and shall be accessible without undue danger in an emergency. (Eg., Fire water tanks are to be located closer to the site entrance than the battery energy storage system).</p> <p>vi. The fire water supply must comply with AS 2419.1-2021: Fire hydrant installations - Section 5: Water storage tanks.</p>		
<p>Assessment Comment: The detailed requirements of the hydrant system are outside the field of a Bushfire Consultant and must be confirmed by an appropriate Fire Engineer.</p> <p>Recommendation: During the detailed design stage, the entity designing the firefighting water supply should provide information on compliance with AS2419.1-2021 (Open Yard Protection) and what variations are applied (if any).</p>		
<p><u>2. Decentralised Facilities</u></p> <p>The fire protection system must apply requirement a) OR b) below.</p>		
<p>a) Where reticulated water is available, a fire protection system as per Model Requirement (1a) under 'Centralised Battery Energy Storage Systems'.</p>	<p>Not Applicable</p>	<p>N/A</p>
<p>b) Where no reticulated water is available, a fire water supply in static storage tanks, where a minimum 45,000L static water tank is provided within 120m of each battery container. The aggregate quantity of fire water supply at the facility must be no less than 288,000L to the satisfaction of CFA.</p>	<p>Not Applicable</p>	<p>N/A</p>
<p>Assessment Comment: The facility is a centralised system.</p>		
<p>Item 4.2.3: Fire Detection and Suppression Equipment</p>		
<p>Assessment Criteria Detail (summarised)</p>	<p>Assessment Status</p>	<p>Applicable Protection Measure (BRR)</p>

ALL FACILITIES	Suitable fire detection and suppression equipment must be provided:		
	a) For on-site buildings and structures, according to the requirements of the National Construction Code.	Fully Complies	N/A
	Assessment Comment: Compliance with the NCC is a regulatory requirement.		
	b) For storages of dangerous goods, according to the requirements of any Australian Standards for storing and handling of dangerous goods.	Not Applicable	N/A
	Assessment Comment: The Project does not trigger a Dangerous Goods Licence.		
	c) For electrical installations, a minimum of two (2) suitable fire extinguishers must be provided within 3m-20m of each PCU.	Fully Complies	5.4.5
	Assessment Comment: N/A Recommendation: Two suitable fire extinguishers should be provided within 20m of each PCU/PCS.		
	d) In all vehicles and heavy equipment, each vehicle must carry at least a nine (9)-litre water stored-pressure fire extinguisher with a minimum rating of 3A, or other firefighting equipment as a minimum when on-site during the Fire Danger Period.	Fully Complies	N/A
	Assessment Comment: Fire extinguishers will be provided in operational vehicles as an OSH requirement. The type of fire extinguisher will be as applicable to the facility hazards (e.g. chemical, electrical fires).		
Item 4.2.5: Fire Breaks			
Note: The Victorian and Western Australian definition of 'Fire Break' differ. In Western Australia, a 'Fire Break' is a trafficable perimeter used primarily for Emergency Services access. It is not expected to impact bushfire spread.			

In Victoria, a 'Fire Break' is a gap in fuel intended to restrict bushfire spread, which may also be used for Emergency Services access. A Victorian 'Fire Break' is therefore wider than in Western Australia, and need not be trafficable. A 'Fire Break' may even follow a road.

Assessment Criteria Detail (summarised)		Assessment Status	Applicable Protection Measure (BRR)
ALL FACILITIES	The width of fire breaks must be a minimum of 10m, and at least the distance where radiant heat flux (output) from the vegetation does not create the potential for ignition of on-site infrastructure.	Fully Complies	5.3.5, 5.3.6
	Assessment Comment: See Item 4.1.1.		
	a) A fire break must be established and maintained around the perimeter of the facility, commencing from the boundary of the facility or from the vegetation screening inside the property boundary.	Fully Complies	5.4.5, 5.4.6.
	Assessment Comment: See Item 4.1.1.		
	b) A fire break must be established and maintained around the perimeter of control rooms, electricity compounds, substations and all other buildings on-site.	Fully Complies	5.4.5, 5.4.6
Assessment Comment: See Item 4.1.1.			
The 'perimeter fire break' refers to a non-vegetated portion of the APZ around the assets, as 'fire break' has different definitions between Victoria and WA.			
BATTERY ENERGY STORAGE SYSTEMS	A fire break must be established and maintained around battery energy storage systems and related infrastructure.	Fully Complies	5.3.5
	Assessment Comment: The criterion can be summarised as a permanently non-vegetated buffer around the asset (the first 10m of the APZ).		
	Recommendation: The 10m portion of the APZ immediately around BESS units must be entirely and permanently non-vegetated (sealed, compacted limestone, gravel, mineral earth etc). Site Operating Procedures should include that no items (plant or equipment) can be stored on access roads or on the 10m non-vegetated buffer.		
Item 4.2.6: Design Specific to Facility Type			
Assessment Criteria Detail (summarised)		Assessment Status	Applicable Protection Measure (BRR)
BATTERY	1) The design of the facility must incorporate:		

<p>a) A separation distance that prevents fire spread between battery containers/enclosures and:</p> <ul style="list-style-type: none"> • Other battery containers/enclosures. • On-site buildings. • Substations. • The site boundary. • Any other site buildings. • Vegetation. <p><i>Separation must be at least the distance where the radiant heat flux (output) from a battery energy storage system container/enclosure fully involved in fire does not create the potential for ignition of these site elements.</i></p>	Complies with Intent	5.3.5
<p>Assessment Comment: The design and layout of the facility has been determined by the relevant designer/engineer and are assumed to be appropriate in reducing the risk of structure-to-structure (or asset) fire.</p> <p>Setbacks between assets and vegetation is considered within Item 4.1.1.</p> <p>Recommendation: The product datasheet or manufacturer is likely to specify a setback between BESS units. Where this is not provided, a setback of >1m on the shorter and >3m on the longer side is recommended.</p> <p>Where the product datasheet or manufacturer specification does not specify a distance between battery containers and other combustible/critical assets, the applied distance should be 15m (based on >1 hour intervention).</p>		
<p>b) A fire break around the battery energy storage system and related infrastructure, of a width of no less than 10m, or greater where determined in the Risk Management Plan.</p> <p>Fire breaks must be non-combustible, constructed of concrete, mineral earth or non-combustible mulch such as crushed rock.</p> <p><i>The width must be calculated based on the ignition source being radiant heat of surrounding vegetation, including landscaping.</i></p>	Fully Complies	5.3.5
<p>Assessment Comment: See Item 4.2.5.</p>		
<p>c) A layout of site infrastructure that:</p> <ol style="list-style-type: none"> i. Considers the safety of emergency responders. ii. Minimises the potential for grassfire and/or bushfire to impact the battery energy storage system. iii. Minimises the potential for fires in battery containers/enclosures to impact on-site and off- site infrastructure. 	Fully Complies	5.3.5
<p>Assessment Comment: i) Emergency services have been consulted in layout and design, particularly the provision of multiple access options and a firebreak at western boundary of the lease area.</p> <p>ii) and iii) The BESS are sited centrally within the Project and separated from vegetation and infrastructure by perimeter internal roads.</p>		

2) Battery energy storage systems must be:

a) Located so as to be reasonably adjacent to a site vehicle entrance (suitable for emergency vehicles).

Fully Complies

5.4.5

Assessment Comment: Grid-scale BESS developments must be reasonably adjacent to major transmission lines and have various location restrictions due to noise and visual impact, vegetation (bushfire), floodplains, topography etc. This Model Requirement may not be within the control of the developer.

The recommendation is met as the Project is sited in the north-eastern corner of the property at the intersection of two through roads where the transmission line bisects the property.

b) Located so that the site entrance and any fire water tanks are not aligned to the prevailing wind direction (therefore least likely to be impacted by smoke in the event of fire at the battery energy storage system.)

Fully Complies

N/A

Assessment Comment: The prevailing wind directions are easterly and southerly.

The Model Requirement 4.4.2(e) requires the water tank to be at the site access point, which is the most appropriate location for emergency water. This is to the north of the Project and thus not aligned to the prevailing wind.

Note:

- In complying with AS 2419.1 the Project will include multiple remote outlets (hydrants). The main water tank does not need to be accessed to draft water.
- Wind can occur from non 'prevailing' directions, and large bushfires often experience unusual weather conditions.

c) Provided with in-built detection and suppression systems. Where these systems are not provided, measures to effectively detect fires within containers must be detailed within the Risk Management Plan.

Unable to Verify

5.4.5

d) Provided with explosion prevention via sensing and venting, or explosion mitigation through deflagration panels.

Unable to Verify

5.4.5

Assessment Comment: Automatic fire detection and suppression systems, and explosion prevention/mitigation, are design components applied via national/international safety standards.

The product has not yet been selected and so compliance cannot be confirmed.

e) Provided with suitable ember protection to prevent embers from penetrating battery containers/enclosures.

Fully Complies

5.4.5

Assessment Comment: Battery Units are designed to eliminate the ingress of dust, spiders and other insects. This will also prevent any embers from fires in the surrounding area entering the Battery Unit. The chosen Battery Unit will have a suitable Ingress Protection (IP) rating. This will be confirmed prior to construction once a battery supplier and model has been selected.

f) Provided with suitable access roads for emergency services vehicles, to and within the site, including to battery energy storage system(s) and fire service infrastructure.

Fully Complies

5.4.5

Assessment Comment: See Item 4.2.1.

g) Installed on a non-combustible surface such as concrete.

Fully Complies

5.3.5

Assessment Comment: See Item 4.1.1.		
h) Provided with suitable ventilation.	Not Applicable	N/A
Assessment Comment: The criteria likely refers to ventilation around BESS units where contained within a structure. The units will be open-air.		
i) Provided with impact protection to at least the equivalent of a W guardrail-type barrier, to prevent mechanical damage to battery containers/enclosures.	Not Applied	N/A
Assessment Comment: Not been applied as the BESS locations will not have public access, and they will be set back from carriageways. BESS will be within a secured compound with >2m tall security fencing.		
j) Provided with enclosed wiring and buried cabling, except where required to be above-ground for grid connection.	Fully Complies	5.3.5
Assessment Comment: N/A Recommendation: Cabling and plumbing subject to >10kW/m ² (not within the <10kW/m ² setback), or beyond footprint of buildings or constructed assets, are recommended to be installed underground, or shielded with non-combustible material (or enclosed) where practical.		
k) Provided with spill containment that includes provision for management of fire water runoff.	Fully Complies	N/A
Assessment Comment: A detention basin is included within the submitted design, to the east of the Project. The dimensions and capacity of the basins will be confirmed within the civil engineering design.		

SECTION 5: FACILITY CONSTRUCTION AND COMMISSIONING

Intent: Fire risks must be identified and effectively managed during the construction and commissioning of renewable energy facilities.

Subsection 5.1: Recommended Risk Controls

Item 5.1.4: Emergency Management

Assessment Criteria Detail (summarised)		Assessment Status	Applicable Protection Measure (BRR)
ALL FACILITIES	An Emergency Plan must be developed for the construction and commissioning phase, before development starts.	Unable to Verify	5.4.1
	<p>Assessment Comment: It is expected that an Emergency Management Plan for the construction and commissioning phase will be prepared in line with safety requirements/codes. Contractors and visitors will attend at different times, and hazards and resources will change.</p> <p>The requirements for Total Fire Bans and/or Harvest and Vehicle Movement Bans would restrict operations during construction and commissioning.</p> <p>Recommendation: Ensure bushfire response is included in the construction Emergency Management Plan, or produced as a separate document.</p>		

SECTION 6: FACILITY OPERATION

Intent: Fire risks must be effectively managed for the duration of the operational life of renewable energy facilities.

Subsection 6.1: Fire Management Plan

Assessment Criteria Detail (summarised)		Assessment Status	Applicable Protection Measure (BRR)
ALL FACILITIES	A Fire Management Plan must be developed for the facility, in conjunction with CFA, before development starts.	Complies with Intent	5.1.4
	<p>Assessment Comment: A 'Fire Management Plan' does not have an analogue in Western Australia. The contents are generally contained within the Project's Emergency Management Plan (e.g. as a Fire and Emergency Management Plan).</p> <p>Recommendation: The Project's Emergency Management Plan should contain fire prevention and response, including:</p> <ul style="list-style-type: none"> • A summary of fire hazards and risks to and from the Project, specific to its location, infrastructure, activities and occupancy. • Description of control measures to prevent fire occurring and limit the consequences of fire at the facility. • Description of control measures to prevent and reduce the consequences of external fire impacting the facility. • Details of equipment and resources to manage fire at the facility. • Policies and procedures that ensure all control measures are appropriate and effective, and remain so. • Procedures for review of the Plan. 		

SECTION 6: FACILITY OPERATION

Subsection 6.2: Fire Hazards and Risk Controls

Item 6.2.1: Bushfire and Grassfire

Assessment Criteria Detail (summarised)		Assessment Status	Applicable Protection Measure (BRR)
ALL FACILITIES	If your facility is at-risk of bushfire, prevention and preparedness activities must be detailed in the Fire Management Plan.	Complies with Intent	5.1.4
	Recommendations: See Item 6.1 above.		

Item 6.2.2: Vegetation Management

Assessment Criteria Detail (summarised)		Assessment Status	Applicable Protection Measure (BRR)
ALL FACILITIES	Facility operators must undertake the following measures during the Fire Danger Period: a) Grass must be maintained at or below 100mm in height during the declared Fire Danger Period. b) Long grass and/or deep leaf litter must not be present in areas where heavy equipment will be working, during construction or operation. c) Restrictions and guidance must be adhered to during the Fire Danger Period, days of High (and above) fire danger and Total Fire Ban days (refer to www.cfa.vic.gov.au).	Complies with Intent	5.1.4
	Assessment Comment: The above requirements broadly align to those within a Local Government Firebreak Notice (Bush Fires Act 1954). Harvest and Vehicle Movement Bans restrict vehicle movements in fire risk areas. Site Operating Procedures will expand on management of hot works. Recommendation: Site Operating Procedures should include procedures to ensure heavy equipment is not operated where long grass (>100mm) or heavy leaf litter is present, particularly during the bushfire season (see the Local Government Prohibited Burning Period).		

Item 6.2.4: Facility and System Monitoring

Assessment Criteria Detail (summarised)		Assessment Status	Applicable Protection Measure (BRR)

ALL FACILITIES	<p>Appropriate monitoring for facility infrastructure must be provided, to ensure that any shorts, faults or equipment failures with the potential to ignite or propagate fire are rapidly identified and controlled.</p> <p>Any fire must be notified to 000 immediately.</p>	Complies with Intent	N/A
	<p>Assessment Comment: Appropriate equipment monitoring systems will be applied. However, the exact nature (and thus compliance) cannot be confirmed until the product has been selected.</p> <p>The product has not yet been selected and so compliance cannot be confirmed.</p> <p>Recommendations: Ensure the Project includes appropriate equipment monitoring systems.</p>		
Item 6.2.5: Maintenance			
	Assessment Criteria Detail (summarised)	Assessment Status	Applicable Protection Measure (BRR)
ALL FACILITIES	<p>Inspection, maintenance and any required repair activities must be conducted for all infrastructure, equipment and vehicles at the facility. Maintenance must be in line with any relevant Australian Standards and the manufacturer's requirements.</p>	Fully Complies	N/A
	<p>Assessment Comment: Compliance with relevant Australian Standards is a regulatory requirement. Ongoing maintenance is not related to bushfire. Scheduled ongoing maintenance will be included in the appropriate ongoing operational documents.</p>		

SECTION 7: EMERGENCY PLANNING

Intent: Emergencies at renewable energy facilities must be planned for and effectively managed.

Subsection 7.1: Emergency Plans

	Assessment Criteria Detail (summarised)	Assessment Status	Applicable Protection Measure (BRR)
ALL FACILITIES	An Emergency Management Plan must be developed specific to the facility, in conjunction with CFA, before development starts.	Complies with Intent	N/A
	Assessment Comment: The production of an Emergency Management Plan is a requirement for the application. However, these are required prior to operation/occupancy in Western Australia.		

SECTION 8: PROVISION OF EMERGENCY INFORMATION

Subsection 8.1: Developing and Emergency Information Book

Assessment Criteria Detail (summarised)		Assessment Status	Applicable Protection Measure (BRR)
ALL FACILITIES	An Emergency Information Book must be developed and available to emergency responders. Emergency Information Books must be located in Emergency Information Containers, provided at each vehicle entrance the facility.	Not Applicable	N/A
	<p>Assessment Comment: DFES Emergency Response Guide (FES-ERG) is required for some sites which store or handle dangerous goods above 10-times the manifest quantity under <i>Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007</i>. The FES-ERG is equivalent to a CFA Emergency Information Book, including the required location within a signed weatherproof container at site entry.</p> <p>Lithium-ion batteries are classified as dangerous good under the <i>Dangerous Goods Safety (Road and Rail Transport of Non-explosives) Regulations 2007</i>, when they are in transport and temporary (transit) storage.</p> <p>When installed and connected to a consuming device (the grid) the batteries are currently not considered as dangerous goods under the <i>Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007</i>.</p>		

SECTION 9: BATTERY ENERGY STORAGE SYSTEMS AT COMMERCIAL AND INDUSTRIAL FACILITIES

Increasingly, small-scale battery energy storage systems (<1MW) are being installed at commercial and industrial buildings to supplement power requirements for business operations.

Assessment Comment: The Project is >1MW and thus the section is not applicable. The Section outlines guidance to be applied *instead* of Sections 2-8.

SECTION 10: NEIGHBOURHOOD BATTERY ENERGY STORAGE SYSTEMS

Community or neighbourhood-scale battery energy storage systems range from approximately 100kW to 5MW, and where connected to a section of the electricity distribution network operating with a nominal voltage not exceeding 66,000 volts may be exempt from planning permit requirements in most planning zones.

Assessment Comment: The Project is not a neighbourhood system. The Section outlines guidance to be applied *instead* of Sections 2-8.