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Bushfire Management Plan

Wattle Grove South
Local Structure Plan

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Bushfire Management Plan

Wattle Grove South
Local Structure Plan

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1. Introduction

1.1 Proposal Details

Hesperia Projects Pty Ltd ATF Wattle Grove Trust (the Proponent) is seeking to progress a Local Structure Plan (LSP) over multiple landholdings known as Wattle Grove South Precinct (hereafter referred to as the subject site, Figure 1). The Wattle Grove South LSP will provide the framework to guide future urban development within the subject site, as detailed in Figure 2.

The subject site is within a designated bushfire prone area (Area 2) as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES, 2024; Figure 3), which triggers bushfire planning requirements under *State Planning Policy 3.7 Bushfire* (SPP 3.7; WAPC, 2024a) and the associated *Planning for Bushfire Guidelines* (the Guidelines; WAPC, 2024b).

Western Environmental Approvals Pty Ltd (WEPL) was commissioned to prepare a Bushfire Management Plan (BMP) to support the LSP. This BMP has been prepared by Associate Bushfire Consultant Dylan Wray (FPAA BPAD Level 3 Certified Practitioner No. BPAD44656) and Senior Principal Bushfire Consultant Daniel Panickar (FPAA BPAD Level 3 Certified Practitioner No. BPAD37802).

1.1.1 Site context

The subject site is located within the City of Kalamunda and is currently zoned Rural under the Metropolitan Region Scheme (MRS) and Special Rural under the City of Kalamunda Local Planning Scheme No. 3. However, MRS Amendment 1388/57 and a concurrent Local Planning Scheme amendment is currently being progressed which seeks to rezone the subject site to Urban and Urban Development respectively.

The subject site is approximately 126 ha in area and has historically been used for a variety of uses including residential, rural living, agriculture and horticulture. The subject site is bound by Crystal Brook Road to the north, Brentwood Road to the north-west, Tonkin Highway to the south-west and rural properties to the south-east. The subject site contains a mixture of unmanaged, classifiable vegetation as well as cleared areas and managed gardens associated with existing land uses.

1.2 Purpose and Application of the BMP

This BMP has been prepared in accordance with SPP 3.7 and the Guidelines to support the assessment of the LSP submitted to the Western Australian Planning Commission (WAPC).

In addition, this BMP provides strategies and guidance to reduce the level of bushfire risk exposure for the subject site through implementation of a range of bushfire management measures in accordance with the Guidelines.

1.2.1 Limitations and Impact on Future BMPs

The subject site and adjacent land comprise multiple private properties currently under different ownership. Permission to access to each property was unable to be obtained, and the existing public road network only provides visibility over some of the properties within the assessment area. As such, a drone has been utilised to aid in the assessment in this BMP which is supported by onsite validation from the public road network. Future BMPs to accompany subsequent subdivision applications for individual precincts within the subject site will refine the vegetation classifications in this BMP once site access is available.

Despite the limitations described above, the level of assessment undertaken is considered suitable for a strategic planning proposal over a large area and provides a platform for future BMPs to build on. The limitations are outside of the control of the developer, and we ask the decision-making authorities and referral agencies reviewing this BMP to exercise discretion in this regard.

2. Environmental Considerations

SPP 3.7 policy objective 5.4 recognises the need to consider bushfire risk management measures alongside environmental, biodiversity and conservation values.

2.1 Native Vegetation - Modification and Clearing

The MRS Amendment 1388/57 was referred to the Environmental Protection Authority (EPA) in accordance with Section 48A of the *Environmental Protection Act 1986* (EP Act). The EPA determined that the MRS amendment requires assessment under Part IV of the EP Act given the subject site contains environmental values including native vegetation, threatened ecological communities, habitat for threatened flora and fauna species, water-dependent ecosystems, inland water quality and quantity (surface and groundwater), Aboriginal heritage sites and amenity (*Environmental Review*; EPA, 2024). WEPL understands that the EPA has determined that MRS Amendment 1388/57 may be implemented subject to conditions.

The subject site has been significantly disturbed by historical clearing and ongoing agricultural / horticultural land uses. Native vegetation within the subject site is largely fragmented and ranges from Degraded to Excellent Condition. The LSP seeks to retain native vegetation, habitat trees and significant flora species in accordance with the conditions set by the EPA. This also aligns with the Proponent's Sustainability Strategy (Hesperia, 2021-2026) which seeks to target a 30% tree canopy across the subject site.

The extent of native vegetation modification or clearing will be determined at subsequent planning stages, once detailed tree surveys and arborist reports have been completed. However, WEPL assumes that any clearing or modification of native vegetation to facilitate future development and the requirements of this BMP can be undertaken in accordance with the conditions set by the EPA and requirements of the Proponent's Sustainability Strategy (Hesperia, 2021-2026).

2.2 Revegetation / Landscape Plans

The Environmental Review (EPA, 2024) identifies potential for revegetation within conservation areas where the vegetation is in a Degraded condition. Accordingly, the environmental conservation reserves have been classified as Class A Forest on the basis that they will be revegetated with suitable endemic native species to provide foraging habitat for black cockatoos.

The Landscape Strategy (EPCAD, 2025) for the POS reserves seek to enable the retention of trees with environmental and amenity values while also reducing the radiant heat impact on future development to an acceptable level. This has been achieved as follows:

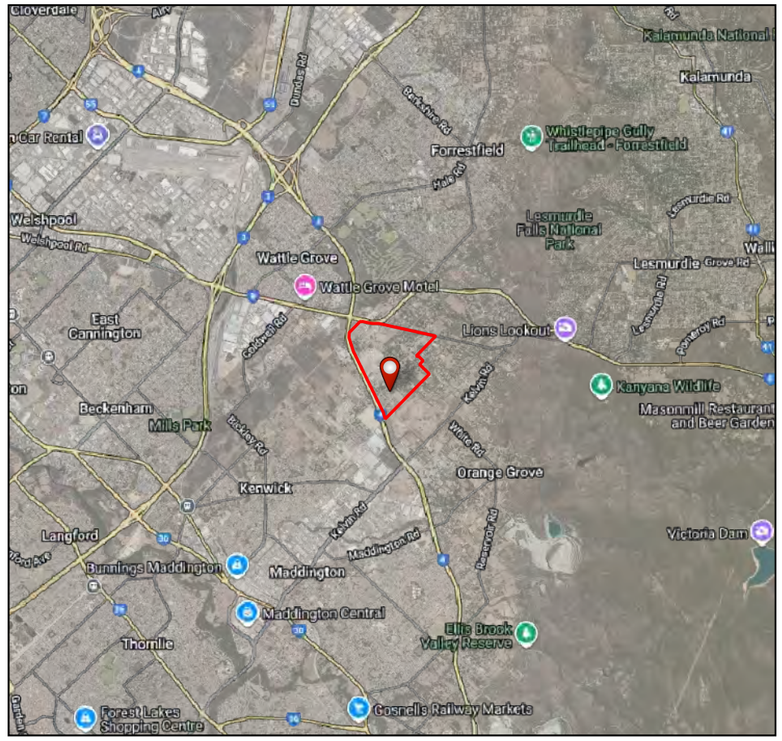
- POS reserves with more than 30% canopy cover at maturity have been classified as Class A Forest.
- POS reserves with 15% to 30% canopy cover at maturity have been classified as Class B Woodland with grassy understorey (managed or unmanaged).

- The remainder of the POS reserves, including the high-pressure gas pipeline easement, will be landscaped (i.e. public parkland) with less than 15% canopy cover and maintained or cleared understorey. Areas of landscaped POS have been excluded as low threat vegetation in accordance with Clause 2.2.3.2 (f) of AS 3959: 2018.

- Drainage basins and swales will likely contain sedges and rushes consistent with Class G Grassland classification. Drainage basins and swales within POS reserves will be separated from future development by non-vegetated road reserves and low threat landscaping. Specific drainage details will be determined at subdivision stage for each precinct.

A conservative analysis has been undertaken to determine the extent of canopy cover within the POS reserves which will be refined at subsequent planning stages once tree surveys and arborist reports have been undertaken for the relevant precincts.

Furthermore, the establishment of low fuel perimeter buffer along the boundary of the POS reserves will result in further reduction in the radiant heat impact on surrounding development. This can be implemented through the landscape design at subdivision stage for individual precinct, if deemed appropriate by the developer.



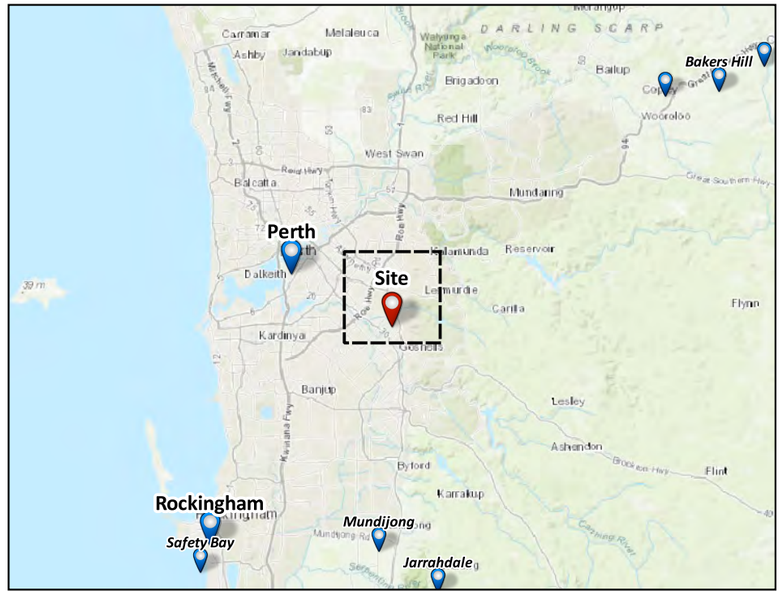


Figure 1: Site Overview

N

0 100 200 300 400 500 m

PROJECT/REPORT NAME	Bushfire Management Plan – Local Structure Plan Wattle Grove South
SCALE	1:9,000
SHEET SIZE	A3 COLOUR
CLIENT	Hesperia
COORDINATE REFERENCE SYSTEM	GDA2020 / MGA zone 50
PROJECT NUMBER	A25.066
VERSION	0
DATA SOURCE	Nearmap (17th March 2025)
DRAWN BY / REVIEWED BY	SM/DW
DATE	21/8/2025

Legend

- Subject Site
- Buffer 100m
- Buffer 150m

No	Description	Drawn	Approved	Date
A	Original issue	SM	DW	21/8/2025

NOTES:

Cadastral boundary (LGATE-002). Base map ESRI Topo. Townsites (LGATE-248).

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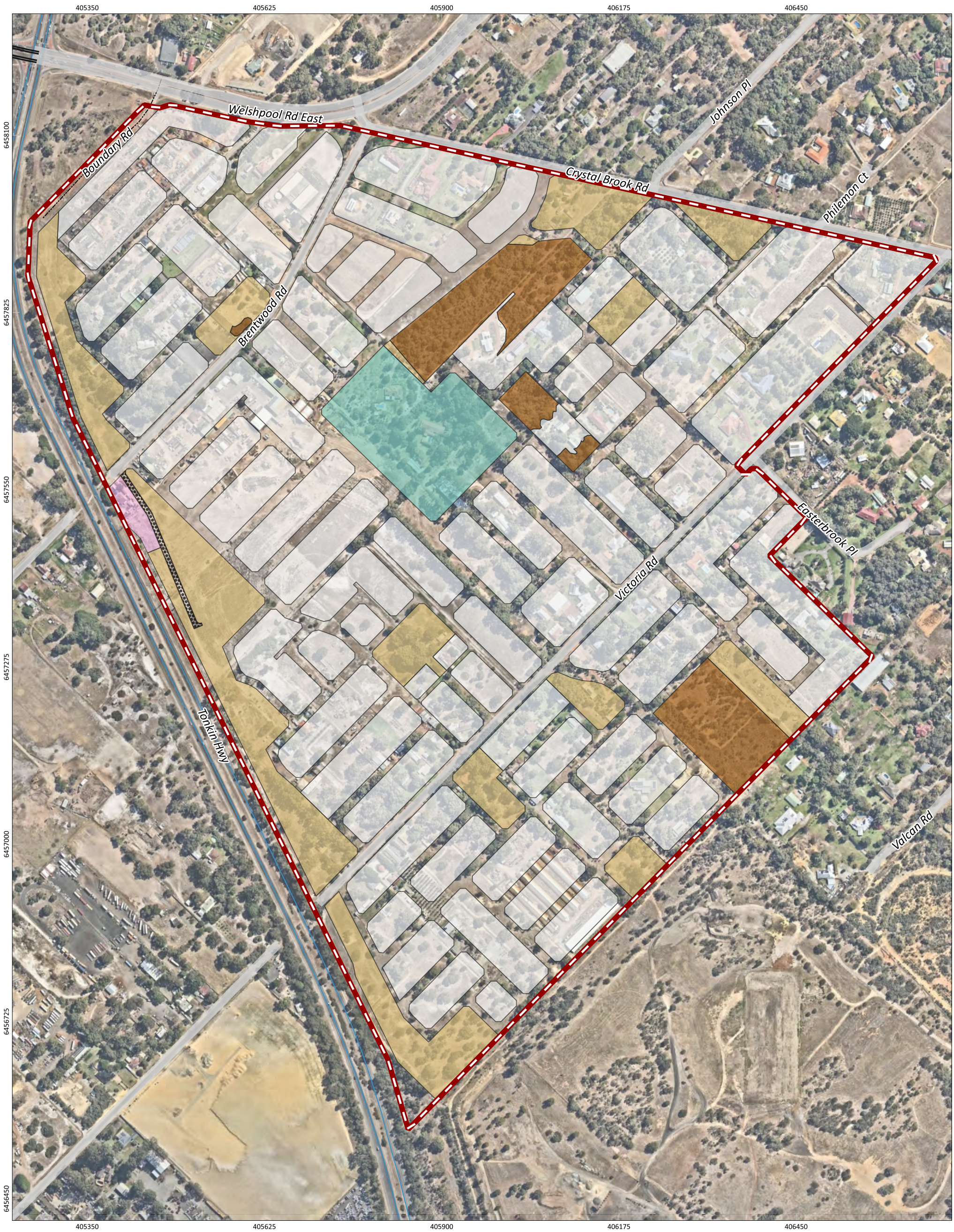

Figure 2: Site Plan

N

0 50 100 150 200 m

PROJECT/REPORT NAME: Bushfire Management Plan – Local Structure Plan Wattle Grove South			
SCALE: 1:5,500	SHEET SIZE: A3 COLOUR	CLIENT: Hesperia	
COORDINATE REFERENCE SYSTEM: GDA2020 / MGA zone 50		PROJECT NUMBER: A25.066	VERSION: 0
DATA SOURCE: Nearmap (17th March 2025)		DRAWN BY / REVIEWED BY: SM/DW	DATE: 21/8/2025

Legend

- Subject Site
- Conservation
- POS
- Residential
- Light Industrial
- School
- Access Easement

No	Description	Drawn	Approved	Date
A	Original issue	SM	DW	21/8/2025

NOTES:

Cadastral boundary (LGATE-002). Label corresponds to the vegetation association number.

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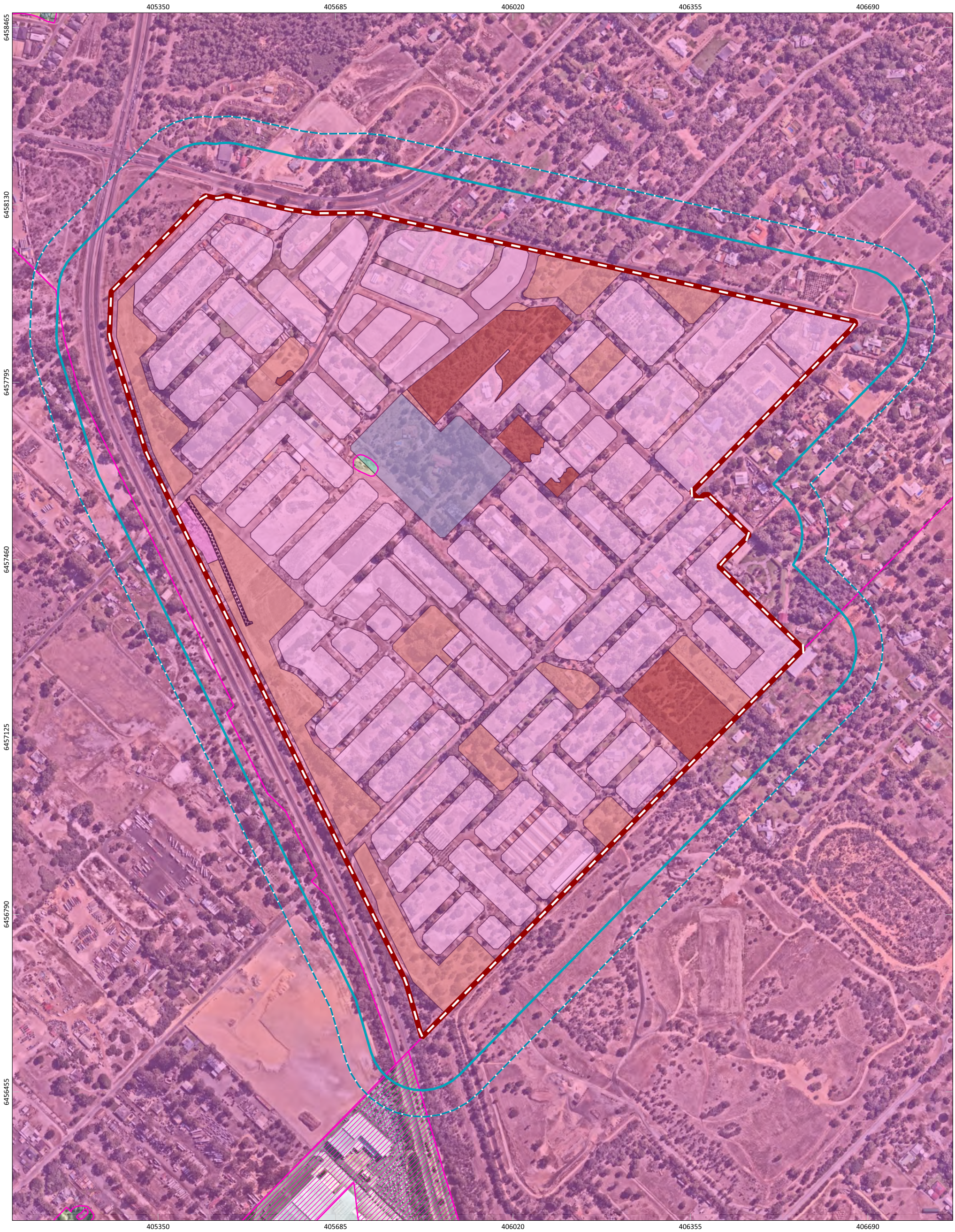

Figure 3: Bushfire Prone Areas

N

0 50 100 150 200 250 m

PROJECT/REPORT NAME	Bushfire Management Plan – Local Structure Plan Wattle Grove South
SCALE	1:6,700
SHEET SIZE	A3 COLOUR
CLIENT	Hesperia
COORDINATE REFERENCE SYSTEM	GDA2020 / MGA zone 50
PROJECT NUMBER	A25.066
VERSION	0
DATA SOURCE	Nearmap (17th March 2025)
DRAWN BY / REVIEWED BY	SM/DW
DATE	21/8/2025

Legend

- Subject Site
- Buffer 100m
- Buffer 150m
- Conservation
- POS
- Residential
- Light Industrial
- Access Easement
- Access Easement

Bush Fire Prone Area Planning (OBRM-023)

- Bushfire Prone Area 1
- Bushfire Prone Area 2

No	Description	Drawn	Approved	Date
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NOTES:

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3. Bushfire Assessment Results

3.1 Bushfire Assessment Inputs

A bushfire assessment has been undertaken for the proposed LSP in accordance with the Guidelines. Inputs to this assessment are detailed below.

3.1.1 Fire Danger Index

A blanket Fire Danger Index (FDI) 80 is adopted for Western Australia, as outlined in AS 3959: 2018.

3.1.2 Vegetation Classification and Slope under Vegetation

Vegetation and effective slope (i.e. slope under vegetation) within the subject site and surrounding 150 m (the assessment area) were assessed on 21/05/2025 and 02/07/2025 in accordance with the Guidelines and AS 3959: 2018.

The subject site and adjacent land comprise multiple private properties under different ownership. Permission to access to each property was unable to be obtained, and the existing public road network only provides visibility over some of the properties within the assessment area. Consequently, the vegetation classification assessment in this BMP has been undertaken through a combination of desktop analysis, drone footage and field validation from the public road network.

Given these limitations, a conservative approach was adopted for vegetation classification which likely overestimates bushfire risk. This conservatism entails adopting worst-case vegetation classifications for vegetation which could not be accessed fully. Future BMPs supporting subdivision applications for various precincts will refine the vegetation classifications in this BMP and may result in improved development outcomes.

The classified vegetation and effective slope for the subject site from each of the identified vegetation plots are identified below in Table 1 and Figure 4.

Table 1: Classified Vegetation as per AS 3959: 2018

Plot	Vegetation classification	Effective slope
1	Class A Forest	All upslopes and flat land (0 degrees)
2	Class B Woodland	All upslopes and flat land (0 degrees)
3	Class D Scrub	All upslopes and flat land (0 degrees)
4	Class G Grassland	All upslopes and flat land (0 degrees)
5	Excluded - clause 2.2.3.2 (e)	-
6	Excluded - clause 2.2.3.2 (f)	-

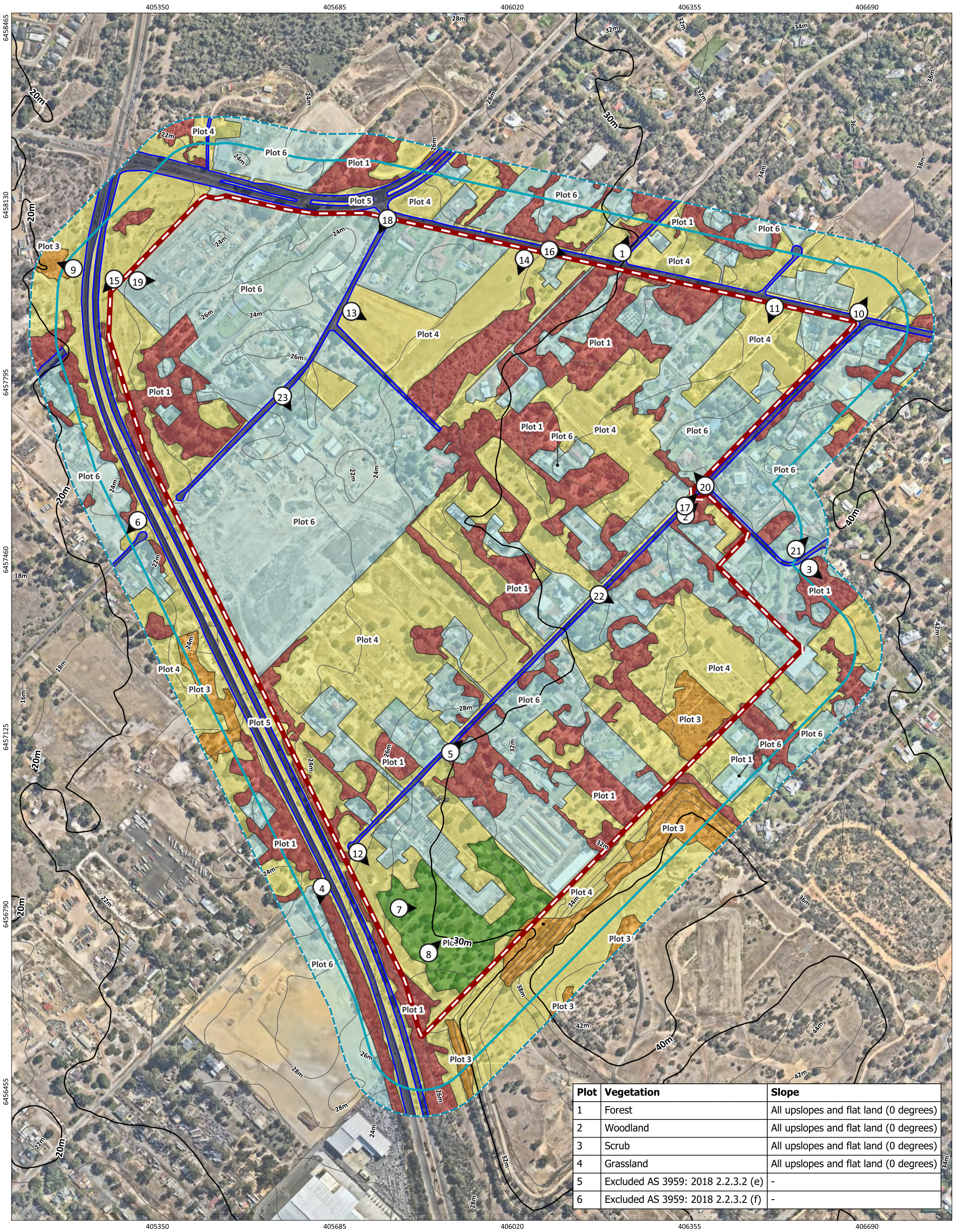
Photographs relating to each area and vegetation type are included in Appendix A.

3.1.3 Post-Development Scenario

The assessment outputs in this BMP have been based on the post-development scenario, as shown in Figure 5. The post-development scenario is based on:

- Land identified for residential, light industry and public purpose (primary school) has been excluded on the basis it will be cleared for development with retained vegetation and proposed landscaping on private properties to be maintained as low threat vegetation in accordance with AS 3959: 2018.
- Road reserves have been excluded on the basis they will be cleared for future road construction with retained vegetation and proposed landscaping within the verge to be maintained as low threat vegetation in accordance with AS 3959: 2018.
- Environmental Conservation reserves have been classified as Class A Forest given vegetation will be retained due to environmental values. Where required, a low threat buffer / non-vegetated footpath will be provided along the external boundary of the Environmental Conservation reserve to provide additional separation to classified vegetation.
- POS reserves classified based on the indicative canopy cover and Landscape Strategy (EPCAD, 2025). As outlined in Section 2, the POS reserves have been classified as follows:
    - Retained vegetation and proposed landscaping with more than 30% canopy cover have been classified as Class A Forest.
    - Retained vegetation and proposed landscaping with 15% to 30% canopy cover with managed or grassy understory have been classified as Class B Woodland.
    - Retained vegetation and proposed landscaping with less than 15% canopy cover with managed understory have been excluded in accordance with Clause 2.2.3.2 (f) of AS 3959: 2018.
- The high-pressure gas pipeline easement has been excluded on the basis that it will be used as active POS with retained vegetation and landscaping to be low threat vegetation to protect the in-ground infrastructure.
- Land owned by Water Corporation adjacent Tonkin Highway remains unchanged and classified as per existing site conditions.

Future BMPs supporting subdivision applications for various precincts will refine the above assumptions and may result in improved development outcomes when more details become available.



Plot	Vegetation	Slope
1	Forest	All upslopes and flat land (0 degrees)
2	Woodland	All upslopes and flat land (0 degrees)
3	Scrub	All upslopes and flat land (0 degrees)
4	Grassland	All upslopes and flat land (0 degrees)
5	Excluded AS 3959: 2018 2.2.3.2 (e)	-
6	Excluded AS 3959: 2018 2.2.3.2 (f)	-

Figure 4: Vegetation Classifications (Pre-Development)

N

0 50 100 150 200 250 m

PROJECT/REPORT NAME	Bushfire Management Plan – Local Structure Plan Wattle Grove South
SCALE	1:6,700
SHEET SIZE	A3 COLOUR
CLIENT	Hesperia
COORDINATE REFERENCE SYSTEM	GDA2020 / MGA zone 50
PROJECT NUMBER	A25.066
VERSION	0
DATA SOURCE	Nearmap (17th March 2025)
DRAWN BY / REVIEWED BY	SM/DW
DATE	18/8/2025

Legend

- Subject Site
- Buffer 100m
- Buffer 150m
- Photos

2 metre contours (DPIRD-072)

- 2m
- 10m

Vegetation Classification

- Class A - Forest
- Class B - Woodland
- Class D - Scrub
- Class G - Grassland
- Excluded AS 3959: 2018 2.2.3.2 (e)
- Excluded AS 3959: 2018 2.2.3.2 (f)

No	Description	Drawn	Approved	Date
A	Original issue	SM	DW	18/8/2025

NOTES:

Cadastral boundary (LGATE-002). Label corresponds to the vegetation association number.

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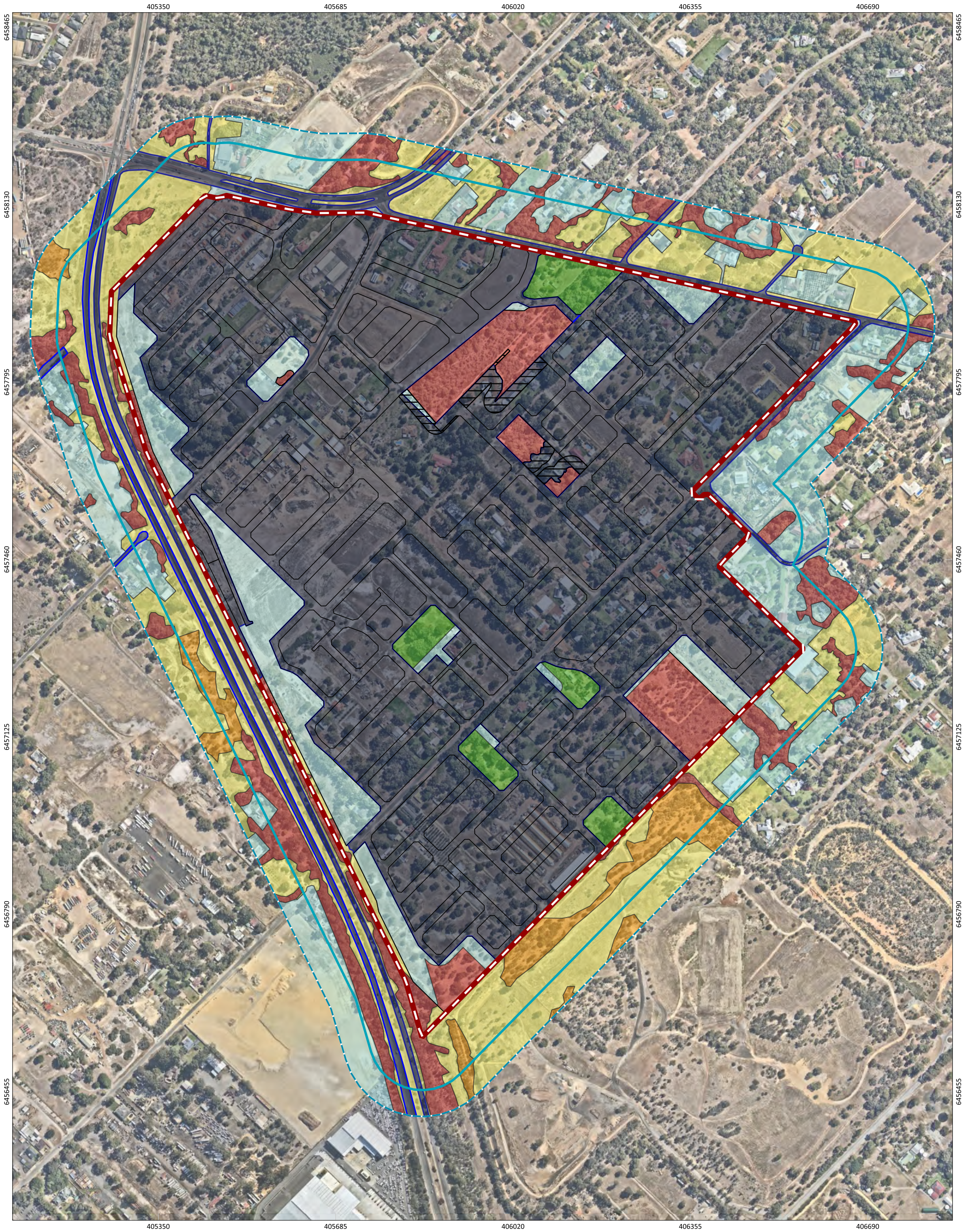

Figure 5: Vegetation Classifications (Post-Development)

0 50 100 150 200 250 m
N

PROJECT/REPORT NAME	Bushfire Management Plan – Local Structure Plan Wattle Grove South
SCALE	1:6,700
SHEET SIZE	A3 COLOUR
CLIENT	Hesperia
COORDINATE REFERENCE SYSTEM	GDA2020 / MGA zone 50
PROJECT NUMBER	A25.066
VERSION	0
DATA SOURCE	Nearmap (17th March 2025)
DRAWN BY / REVIEWED BY	SM/DW
DATE	21/8/2025

Legend

- Subject Site
- Buffer 100m
- Buffer 150m
- Structure Plan Layout
- Asset Protection Zone

Vegetation Classification

- Class A - Forest
- Class B - Woodland
- Class D - Scrub
- Class G - Grassland
- Excluded AS 3959: 2018 2.2.3.2 (e)
- Excluded AS 3959: 2018 2.2.3.2 (f)

No	Description	Drawn	Approved	Date
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3.2 Bushfire Assessment Outputs

A Bushfire Attack Level (BAL) contour assessment has been undertaken in accordance with SPP 3.7, the Guidelines, AS 3959: 2018 and the bushfire assessment inputs in Section 3.1.

3.2.1 BAL Assessment

All land located within 100 m of the classified vegetation depicted in Figure 4 is considered bushfire prone and is subject to a BAL assessment in accordance with the Guidelines.

A Method 1 BAL assessment (as outlined in AS 3959: 2018) has been completed for the proposed LSP and incorporates the following factors:

- Fire Danger Index (FDI) rating.
- Vegetation class.
- Slope under classified vegetation.
- Distance between the proposed building envelopes and the post development classified vegetation.

Based on the identified BAL, construction requirements for relevant buildings/structures can then be assigned. The BAL rating gives an indication of the expected level of bushfire attack (i.e. radiant heat flux, flame contact and ember penetration) that may be received by proposed buildings and subsequently informs the standard of construction required to increase building survivability.

3.2.2 Method 1 BAL Assessment

Figure 6 displays the Method 1 BAL assessment (in the form of BAL contours) that has been completed for the proposed LSP based on the post-development scenario in Figure 5. The BAL assessment has been prepared in accordance with the methodology in AS 3959: 2018 and the Guidelines using the separation distances in Table 5.

Table 2: Method 1 BAL Calculations (BAL Contours)

Plot	Vegetation classification	Effective slope	Separation distances required (m)				
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
1	Class A Forest	All upslopes and flat land (0 degrees)	<16	16 - <21	21 - <31	31 - <42	42 - <100
2	Class B Woodland	All upslopes and flat land (0 degrees)	<10	10 - <14	14 - <20	20 - <29	29 - <100
3	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10 - <13	13 - <19	19 - <27	27 - <100
4	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50

3.3 Identification of Issues Arising from the BAL Assessment

Post development, all areas identified for residential, light industry and public purpose on the LSP can accommodate future habitable buildings which will be subject to a radiant heat impact not exceeding 29kW/m^2 (BAL-29). This is reflected on the BAL contour assessment in Figure 6 which is summarised as follows:

- The majority of residential cells do not exceed a radiant heat exposure of 29kW/m^2 (BAL-29), except in the following circumstances:
    - Precinct B (existing lot 210) contains residential cells which are subject to a radiant heat impact exceeding 29kW/m^2 (BAL-40 and BAL-FZ). This is due to the proximity to classified vegetation along Crystal Brook Road and within the environmental conservation reserve.
    - Precinct C (existing lots 3 and 4) contains residential cells which subject to a radiant heat impact exceeding 29kW/m^2 (BAL-40 only) due to the proximity to classified vegetation on private properties to the south-east of Victoria Road, outside of the subject site.
    - Precinct C (existing lots 21, 201 and 202) contains residential cells which are subject to a radiant heat impact exceeding 29kW/m^2 (BAL-40 only) due to the proximity to classified vegetation along Crystal Brook Road.
    - Precinct C (existing lots 802, 803 and 804) contains residential cells which are subject to a radiant heat impact exceeding 29kW/m^2 (BAL-40 and BAL-FZ) due to the proximity to classified vegetation within the environmental conservation reserves.
    - Precinct D (existing lots 6, 82, 83 and 84) contains residential cells which are subject to a radiant heat impact exceeding 29kW/m^2 (BAL-40 and BAL-FZ) due to the proximity to classified vegetation within the environmental conservation reserves.
    - Precinct E (existing lot 41 and 340) contains residential cells which are subject to a radiant heat impact exceeding 29kW/m^2 (BAL-40 and BAL-FZ) due to the proximity to classified vegetation within the environmental conservation reserve.
    - Precinct E (existing lots 4, 51, 249 and 251) contains residential cells which are subject to a radiant heat impact exceeding 29kW/m^2 (BAL-40 only) due to the proximity to classified vegetation within the POS reserve.
- The BAL-40 and BAL-FZ encroachments identified above are considered acceptable given:
    - The residential cells that are only impacted by the BAL-40 encroachment can readily accommodate future habitable buildings within areas subject to a radiant heat impact not exceeding 29kW/m^2 (BAL-29). The BAL-40 encroachments are minor and will only impact the front setback area of future residential lots. The street setback provisions of the Residential Design Codes will likely avoid any potential for development within the BAL-40 area.

- The residential cells subject to BAL-40 and BAL-FZ encroachments due to classified vegetation outside of the subject site, within the adjacent road reserves and private properties, can be readily accommodated through the subdivision design for individual precincts. The radiant heat impact will be further reduced should classified vegetation within Crystal Brook Road reserve be cleared or modified to a low threat state.

- Where the BAL-40 and BAL-FZ encroachments are more significant due to residential cells directly abutting environmental conservation reserves (i.e. existing lots 803 and 804 in Precinct C and existing lots 83 and 84 in Precinct D), a 21m setback will need to be accommodated within the subdivision design to ensure future habitable buildings are subject to a radiant heat impact not exceeding 29kW/m^2 (BAL-29), as shown on Figure 7. If the 21 setback is unable to be accommodated in the subdivision design, the existing lots will need to remain unsubdivided. Given the development intentions of these landowners are currently unknown, these lots are likely to remain undeveloped for the foreseeable future.

- The POS and environmental conservations reserves have been conservatively assessed and will be refined at subsequent subdivision stage for each precinct. The establishment of a low fuel perimeter buffer along the boundary of the POS and environmental conservation reserves will reduce the radiant heat impacts on adjacent residential cells.

- The light industry cell does not exceed a radiant heat exposure of 29kW/m^2 (BAL-29).

- The public purpose (primary school) site contains a minor area which is subject to a radiant heat impact exceeding 29kW/m^2 (BAL-40 and BAL-FZ) however these is sufficient area for habitable buildings to be located in areas which are subject to a radiant heat exposure not exceeding 29kW/m^2 (BAL-29).

The current LSP design is considered suitable given the bushfire hazards within and adjacent to the subject site can be readily managed through standard management responses and compliance with acceptable solutions outlined in the Guidelines. These management measures will need to be factored into the development design as early as possible to ensure a suitable, compliant and effective bushfire management outcome is achieved to ensure protection of future life and property assets.

Demonstration of compliance with the relevant requirements of SPP 3.7, the Guidelines and AS 3959: 2018 at future planning stages will also depend on the developer's ability to coordinate the timing and staging of clearing and development works within the subject site with the aim of avoiding bushfire impacts from temporary, retained vegetation.

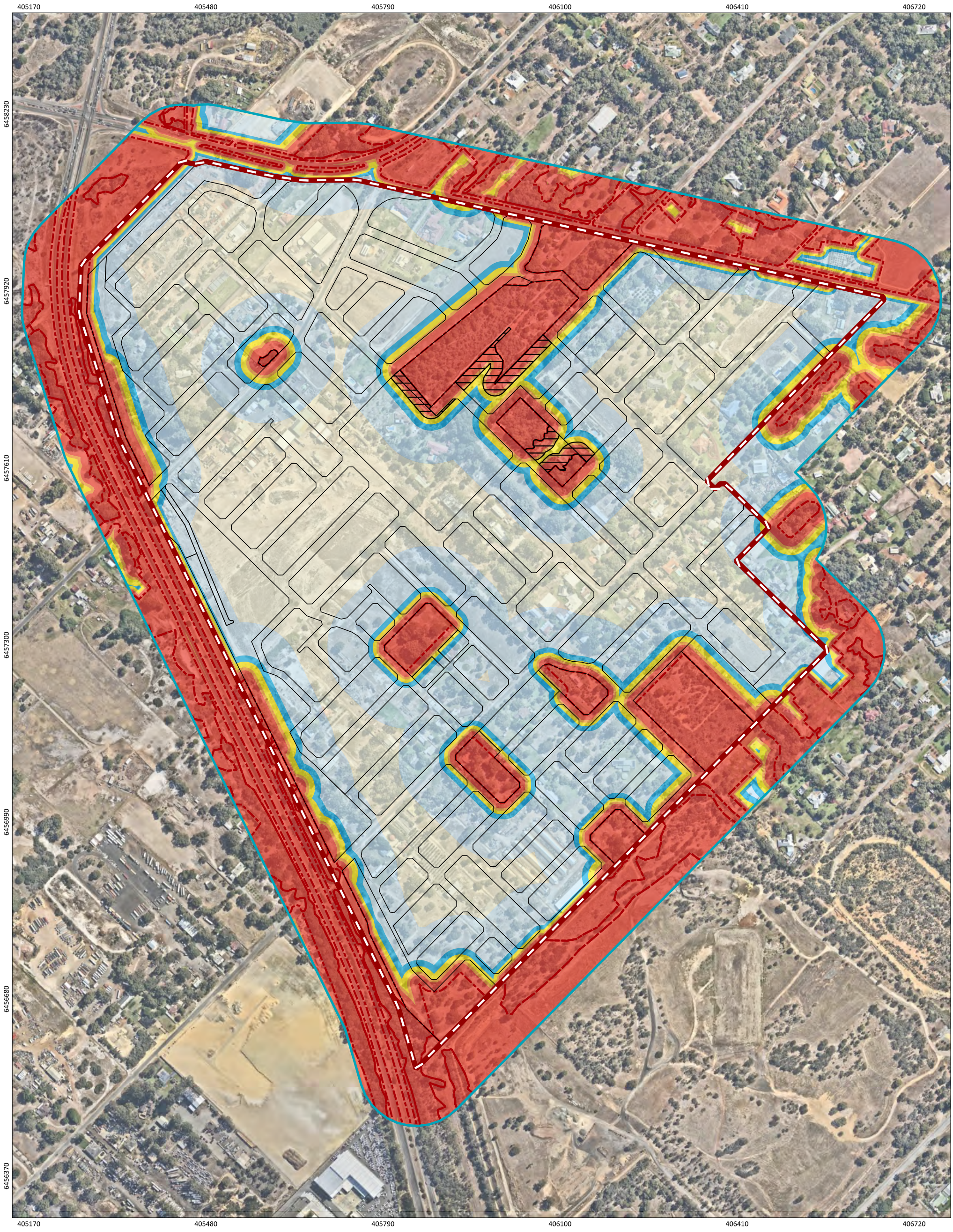

Figure 6: Bushfire Attack Level (BAL) Contours

0 50 100 150 200 m
N

PROJECT/REPORT NAME	Bushfire Management Plan – Local Structure Plan Wattle Grove South
SCALE	1:6,200
SHEET SIZE	A3 COLOUR
CLIENT	Hesperia
COORDINATE REFERENCE SYSTEM	GDA2020 / MGA zone 50
PROJECT NUMBER	A25.066
VERSION	0
DATA SOURCE	Nearmap (17th March 2025)
DRAWN BY / REVIEWED BY	SM/DW
DATE	21/8/2025

Legend

- Subject Site
- Buffer 100m
- Buffer 150m
- Structure Plan Layout
- Environmental Conservation
- Asset Protection Zone
- Bushfire Hazard Interface

Bushfire Attack Level (BAL)

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

No	Description	Drawn	Approved	Date
A	Original issue	SM	DW	21/8/2025

NOTES:

Cadastral boundary (LGATE-002). Label corresponds to the vegetation association number.

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4. Assessment Against the Bushfire Protection Criteria

4.1 Compliance

The proposed LSP is required to comply with policy measures 7.1 of SPP 3.7 and Bushfire Protection Criteria 5 of the Guidelines.

Table 3 outlines the Acceptable Solutions (AS) that are relevant to the proposal and summarises how the intent of each Bushfire Protection Criteria has been achieved through the application of bushfire risk management measures. No Outcomes-based Approaches (OA) have been proposed for this LSP. These management measures are depicted in Figure 7 where relevant.

Implementation of this BMP is expected to meet objectives 5.1-5.4 of SPP 3.7.

Table 3: Assessment Against the Bushfire Protection Criteria

Bushfire Protection Criteria 5: Structure Plans and Subdivision Applications	AS	OA	N/A
Element 1: Location A1.1 Broader Landscape Type	☐	☐	✓
Not Applicable - MRS Amendment 1388/57 was accompanied by a BMP (Strategen JBS&G, 2021) which assessed the subject site against the previous version of SPP 3.7 (WAPC, 2015) and the Guidelines (WAPC, 2017). The subject site has already been determined suitable for future urban development through the MRS amendment process. A Broader Landscape Assessment (BLA) is not required in accordance with Section 1.3.1 of the Guidelines.			
Element 2: Siting and design of development A2.1 Siting and design	✓	☐	☐
Post-development, all residential, light industry and public purpose cells will provide sufficient area for future development to be subject to a radiant heat impact not exceeding 29kW/m^2 (BAL-29). Future development will be separated from bushfire hazards through public roads, Asset Protection Zones (APZs), managed parklands and internal boundary setbacks. The lot layout for each precinct will be determined at the subsequent subdivision stage with the subdivision design to ensure lot sizes enable future habitable development to be located in areas that are subject to a radiant heat impact not exceeding 29kW/m^2 (BAL-29). The proposed LSP is considered to be compliant with A2.1.			
A2.2 Asset Protection Zone (APZ)	✓	☐	☐
Indicative APZs have been prescribed on residential cells directly adjacent the Environmental Conservation reserves, as shown on Figure 6 and Figure 7. Future subdivision of these cells will need to accommodate the required APZ width to ensure future development is subject to a radiant heat impact not exceeding 29kW/m^2 (BAL-29). All other cells are unlikely to require APZs given sufficient separation will be provided following completion of the subdivisional works. Temporary APZs may be required if lots are released in stages and temporary bushfire hazards on balance lots need to be maintained in a low threat state to avoid unnecessarily constraining development on the created lots. If temporary APZs are required, this will be determined through future BMPs at subdivision stage. APZs shall be managed in a minimum fuel condition in accordance with the APZ technical requirements in Appendix B. The proposed LSP is considered to be compliant with A2.2.			

Bushfire Protection Criteria 5: Structure Plans and Subdivision Applications	AS	OA	N/A
A2.3 Clearing of native vegetation	✓	☐	☐
As detailed in Section 2, the environmental conditions set by the EPA and the Proponent's Sustainability Strategy (Hesperia, 2021-2026) seeks to retain native vegetation, where possible. The extent of native vegetation to be cleared will be determined at subsequent planning stages. The proposed LSP is considered to be compliant with A2.3.			
Element 3: Vehicular access A3.1 Public roads	✓	☐	☐
The subject site is accessed via existing public roads including Crystal Brook Road, Victoria Road and Brentwood Road. The LSP also includes additional public roads throughout the subject site. The Guidelines do not prescribe values for the trafficable (carriageway/pavement) width of public roads as they should be in accordance with the class of road as specified in the IPWEA Subdivision Guidelines, Liveable Neighbourhoods, Austroad Standards and/or any applicable standard in the local government area. Proposed roads within the subject site have been developed to align with Liveable Neighbourhoods, as outlined in the Traffic Impact Assessment (PTG Consulting, 2025). The existing and proposed public road network is considered to be compliant with relevant standards and suitable to provide access and egress for the community and emergency services personnel in the event of a bushfire. Vehicular access technical requirements in accordance with the Guidelines are detailed in Appendix C. The proposed LSP is considered to be compliant with A3.1.			
A3.2 Access routes	✓	☐	☐
Multiple access routes from the subject site to more than two suitable destinations are available via the existing public road network. Access to the subject site is via Crystal Brook Road which provides access to the east and west to multiple suitable destinations (Figure 7). The internal public road network provides the majority of cells with multiple access routes to the existing public road network. Certain cells will be accessed via a no-through road with access limited to a single direction until an intersection which provides access in two different directions. The use of no-through roads has been used in limited scenarios, as detailed in A3.3a. The proposed LSP is considered to be compliant with A3.2.			
A3.3a No-through roads	✓	☐	☐
Three (3) proposed roads within the subject site will be no-through roads. Brentwood Road is an existing no-through road which will remain unchanged. All existing and proposed no-through roads are less than 200 m in length from an intersection which provides access in two directions. The proposed road network will also address existing non-compliances associated with Brentwood Road and Victoria Road which are currently no-through roads longer than 200 m in length. The proposed LSP is considered to be compliant with A3.3a.			
A3.3b No-through road requirements	✓	☐	☐
All existing and proposed no-through roads will comply with the public road requirements in A3.1 with a turnaround area provided for a Type 3.4 fire appliance vehicle (Figure 7). The proposed LSP is considered to be compliant with A3.3b.			
A3.4 Emergency access way	☐	☐	✓
Not Applicable - Compliance with A3.2 and A3.3 has been achieved.			

Bushfire Protection Criteria 5: Structure Plans and Subdivision Applications	AS	OA	N/A
A3.5a Perimeter roads	✓	☐	☐
The proposed public road network provides perimeter access while separating cells from permeant classified vegetation. The perimeter public roads will be accommodated within road reserves ranging from 12 m - 15 m in width which achieves the horizontal clearance requirements in Appendix C. In the limited scenarios where perimeter roads have not been provided, fire service access routes are proposed in accordance with A3.5b below. The proposed LSP is considered to be compliant with A3.5a.			
A3.5b Fire services access routes	✓	☐	☐
Fire service access routes (FSARs) are proposed where cells directly adjoin the Environmental Conservation reserves which will contain permanent classified vegetation. The FSARs will provide access for emergency services vehicles to classified vegetation for firefighting and fire management purposes. The FSARs are less than 500 m in length and provide through connection to the public road network. The FSARs shall be included on the plan of subdivision for the relevant precinct and be designed to comply with the technical requirements in Appendix C. The proposed LSP is considered to be compliant with A3.5b.			
A3.6 Battle-axe access legs	☐	☐	✓
Not applicable - Lot layout is currently unknown and will be determined at subdivision stage.			
Element 4: Water A4.1 Water supply for structure plans	✓	☐	☐
Existing reticulated water is present within the area with existing hydrants located along Crystal Brook Road, Brentwood Road and Victoria Road (Figure 7). The existing water infrastructure will be extended to service future lots, including the provision of additional hydrants to meet Water Corporation specifications. WEPL is not aware of any constraints that would prevent the subject site and future development being provided with reticulated water. The proposed LSP is considered to be compliant with A4.2.			
A4.2 Water supply for subdivision applications	☐	☐	✓
Not applicable - does not apply to LSP.			
A4.3 Water supply for existing habitable building(s)	☐	☐	✓
Not applicable - does not apply to LSP.			

Note: AS - Acceptable solution, OA - Outcomes-based Approaches, N/A - Not applicable.

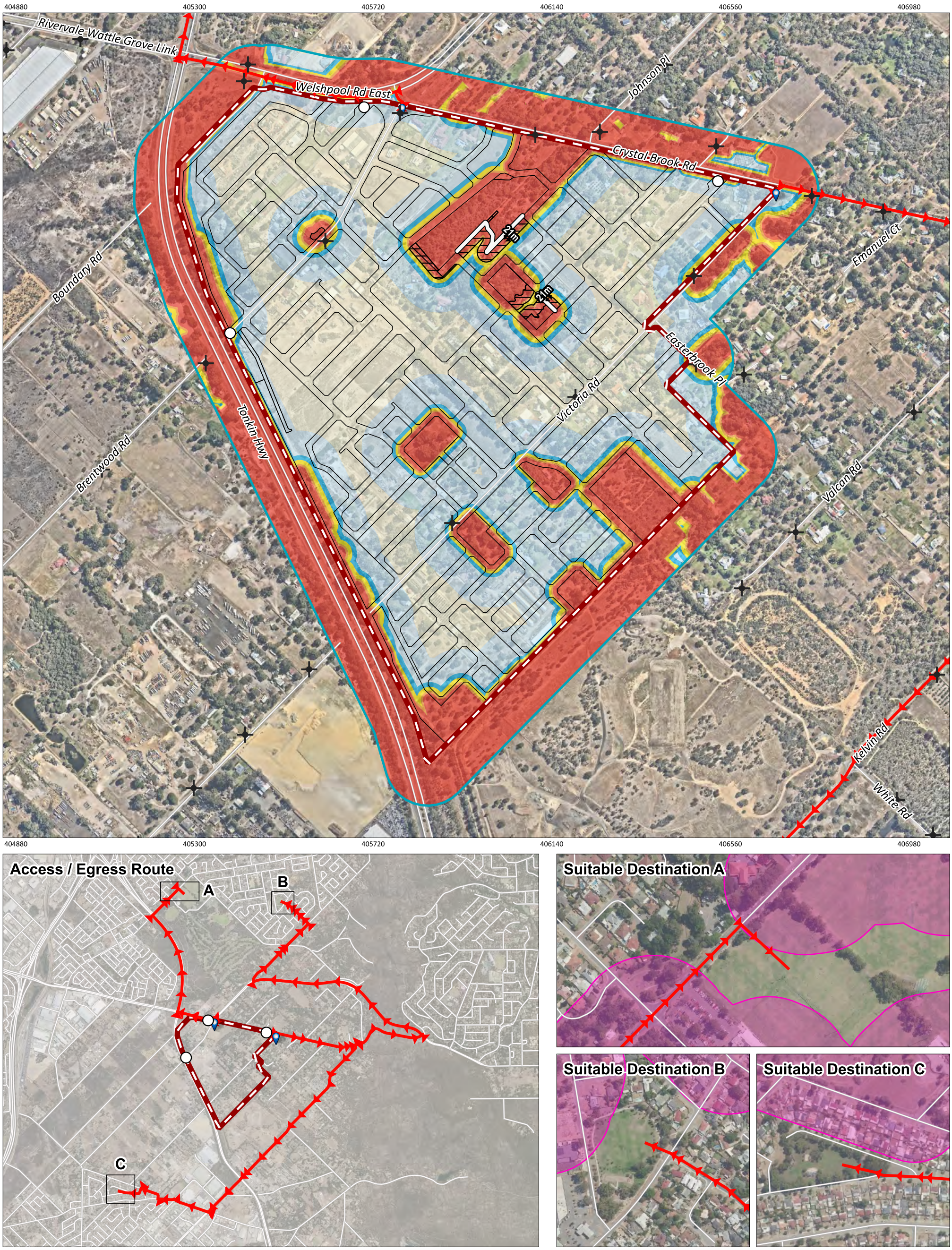

Figure 7: Spatial representation of the bushfire management strategies

N

0 75 150 225 300 m

PROJECT/REPORT NAME: Bushfire Management Plan – Local Structure Plan Wattle Grove South			
SCALE: 1:8,400	SHEET SIZE: A3 COLOUR	CLIENT: Hesperia	
COORDINATE REFERENCE SYSTEM: GDA2020 / MGA zone 50		PROJECT NUMBER: A25.066	VERSION: 0
DATA SOURCE: Nearmap (17th March 2025)		DRAWN BY / REVIEWED BY: SM/DW	DATE: 21/8/2025

Legend

- Subject Site
- Buffer 100m
- Structure Plan Layout
- Environmental Conservation
- Asset Protection Zone
- Water Hydrant (WCORP-070)
- Access point
- Turnaround area
- Access / egress route
- FSAR
- Bushfire Prone Area 1 (OBRM-023)
- Bushfire Prone Area 2 (OBRM-023)

Bushfire Attack Level (BAL)

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

No	Description	Drawn	Approved	Date
A	Original issue	SM	DW	21/8/2025

NOTES:

Cadastral boundary (LGATE-002). Label corresponds to the vegetation association number.

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5. Responsibilities for Implementation and Management of Bushfire Management Measures

Implementation of the BMP applies to the developer, the WAPC, the City of Kalamunda, and future landowners to ensure bushfire management measures are adopted and implemented on an ongoing basis. This BMP has been prepared as a strategic guide to demonstrate how development compliance will be delivered at future planning stages in accordance with the Guidelines. In this respect, management measures documented in Section 4 will be implemented through the subdivision design, where applicable.

The preparation of BMPs to accompany future subdivision application for individual precincts will need to include a detailed works program to outline the measures, timing and responsibilities for implementation the bushfire risk management measures required to comply with the Guidelines. BMPs prepared for the subdivision of individual precincts will need to consider the following:

- The subdivision design for individual precincts shall incorporate hazard separation between areas of classified vegetation and future development sites to ensure the radiant heat impact does not exceed 29kW/m^2 (BAL-29).
- POS reserves classified according to the canopy cover and fuel loads at maturity, as detailed indicatively in this BMP. The vegetation classifications within POS reserves may be subject to change following completion of tree surveys and arborist reports at subdivision stage.
- The public road network designed to ensure all lots have public road access in two different directions to two different suitable destinations with an all-weather surface. No-through roads can be considered where they are less than 200m in length from a proposed lot to an intersection where two-way access is provided.
- Emergency access ways provided where public road access in two different directions to two different suitable destinations is not achievable due to the staging of development.
- Prioritisation of perimeter roads to separate areas of permanent bushfire hazards from future development sites.
- Where a perimeter road is not required or unable to be provided, fire service access routes shall be provided for firefighter access to classified vegetation.
- Reticulated water supply network and hydrant connections provided in accordance with Water Corporation technical specifications.

Aside from the preparation of BMPs to accompany future subdivision applications demonstrating compliance with the above requirements, there are no further items to implement, enforce or review at this stage of the planning process.

6. Conclusion

In the professional opinion of the author, the proposed LSP satisfies the intent, aim and objectives of SPP 3.7 and the Guidelines and is recommended for approval.

7. References

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Strategen JBS&G. (2021). *Bushfire Management Plan (Rezoning Application). Wattle Grove Metropolitan Region Scheme Amendment.*

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Western Australian Planning Commission (WAPC). (2024b). *Planning for Bushfire Guidelines*. Government of Western Australia.

Appendix A:
Classified Vegetation Photos

Plot 1	Class A Forest
Photo 1 This plot consists of trees reaching up to 30 m in height with overstorey canopy cover greater than 30% and grassy understorey. The slope under this vegetation was assessed to be upslope/flat land.	

Plot 1	Class A Forest
Photo 2 This plot consists of trees reaching up to 30 m in height with overstorey canopy cover greater than 30% and grassy understorey. The slope under this vegetation was assessed to be upslope/flat land.	

Plot 1	Class A Forest
Photo 3 This plot consists of trees reaching up to 30 m in height with overstorey canopy cover greater than 30% and grassy understorey. The slope under this vegetation was assessed to be upslope/flat land.	

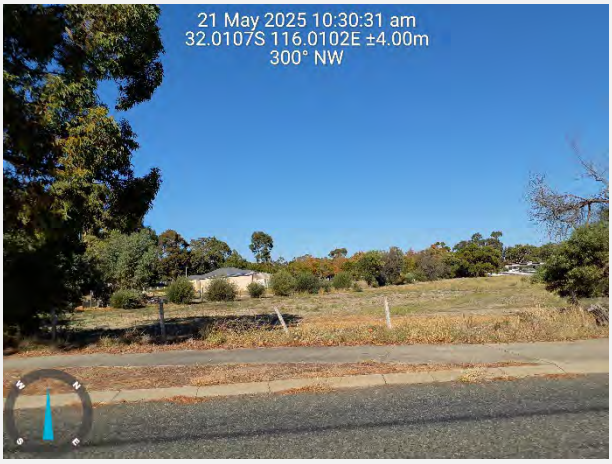
Plot 1	Class A Forest
Photo 4 This plot consists of trees reaching up to 30 m in height with overstorey canopy cover greater than 30% and understorey comprising of dense shrubs. The slope under this vegetation was assessed to be upslope/flat land.	

Plot 1	Class A Forest
Photo 5 This plot consists of trees reaching up to 30 m in height with overstorey canopy cover greater than 30% and grassy understorey. The slope under this vegetation was assessed to be upslope/flat land.	

Plot 1	Class A Forest
Photo 6 This plot consists of trees reaching up to 30 m in height with overstorey canopy cover greater than 30% and grassy understorey. The slope under this vegetation was assessed to be upslope/flat land.	

Plot 2	Class B Woodland
Photo 7 This plot consists of trees reaching up to 20 m in height with overstorey canopy cover less than 30% and grassy understorey. The slope under this vegetation was assessed to be upslope/flat land.	
Plot 2	**Class B Woodland**
Photo 8 This plot consists of trees reaching up to 20 m in height with overstorey canopy cover less than 30% and grassy understorey. The slope under this vegetation was assessed to be upslope/flat land.	
Plot 3	**Class D Scrub**
Photo 9 (Background) This plot is dominated shrubs with an average height greater than 6m and foliage cover greater than 30%. The slope under this vegetation was assessed to be upslope/flat land.	

Plot 4	Class G Grassland
Photo 10 Open paddocks dominated by grasses more than 100mm in height. The slope under this vegetation was assessed to be upslope/flat land.	

Plot 4	Class G Grassland
Photo 11 Open paddocks dominated by grasses more than 100mm in height. The slope under this vegetation was assessed to be upslope/flat land.	

Plot 4	Class G Grassland
Photo 12 Open paddocks dominated by grasses more than 100mm in height. The slope under this vegetation was assessed to be upslope/flat land.	

Plot 4	Class G Grassland
Photo 13 Open paddocks dominated by grasses more than 100mm in height. The slope under this vegetation was assessed to be upslope/flat land.	
Plot 4	**Class G Grassland**
Photo 14 Open paddocks dominated by grasses more than 100mm in height. The slope under this vegetation was assessed to be upslope/flat land.	
Plot 4	**Class G Grassland**
Photo 15 Unmanaged grass within the road reserve. The slope under this vegetation was assessed to be upslope/flat land.	

Plot 5	Excluded - clause 2.2.3.2 (e)
Photo 16 Non-vegetated areas excluded in accordance with Clause 2.2.3.2 (e) if AS 3959: 2018.	

Plot 5	Excluded - clause 2.2.3.2 (e)
Photo 17 Non-vegetated areas excluded in accordance with Clause 2.2.3.2 (e) if AS 3959: 2018.	

Plot 5	Excluded - clause 2.2.3.2 (e)
Photo 18 Non-vegetated areas excluded in accordance with Clause 2.2.3.2 (e) if AS 3959: 2018.	

Plot 6	Excluded - clause 2.2.3.2 (f)
Photo 19 Low threat vegetation excluded in accordance with Clause 2.2.3.2 (f) of AS 3959: 2018.	

Plot 6	Excluded - clause 2.2.3.2 (f)
Photo 20 Low threat vegetation excluded in accordance with Clause 2.2.3.2 (f) of AS 3959: 2018.	

Plot 6	Excluded - clause 2.2.3.2 (f)
Photo 21 Low threat vegetation excluded in accordance with Clause 2.2.3.2 (f) of AS 3959: 2018.	

Plot 6	Excluded - clause 2.2.3.2 (f)
Photo 22 Low threat vegetation excluded in accordance with Clause 2.2.3.2 (f) of AS 3959: 2018.	

Plot 6	Excluded - clause 2.2.3.2 (f)
Photo 23 Low threat vegetation excluded in accordance with Clause 2.2.3.2 (f) of AS 3959: 2018.	

Additional Drone Imagery

Plot: 1	Classification: Class A Forest

Description: Vegetation along Tonkin Highway and to the south-west of the subject site.

Description: Vegetation throughout the subject site

Plot: 2	Classification: Class B Woodland

Description: Vegetation within the south-west corner of the subject site.

Plot: 3	Classification: Class D Scrub

Description: Vegetation to the east of the subject site.

Plot: 3	Classification: Class D Scrub

Description: Vegetation to the west of Tonkin Highway.

Plot: 4	Classification: Class G Grassland

Description: Open paddocks throughout the subject site.

Appendix B:
Standards for Asset Protection Zones

The following standards have been extracted from the Planning for Bushfire Guidelines (WAPC, 2024b).

Every habitable building is to be surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements:

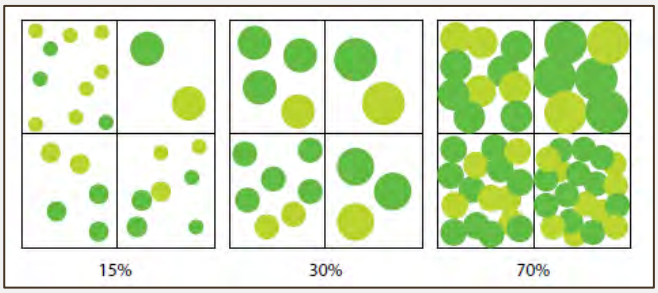
a. Width: the APZ is measured from the development site, and of sufficient size to ensure the radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29) in all circumstances.

b. Location: the APZ should be contained solely within the boundaries of the lot, except in instances where:

   - the vegetation on the adjoining lot(s) is, and will continue to be, low threat as per Clause 2.2.3.2 of AS 3959 or the APZ technical requirements, or an alternative standard on a local planning scheme, on an ongoing basis in perpetuity; or
   - the adjoining land is and will remain in perpetuity, non-vegetated.

c. Management: the APZ is managed in accordance with the APZ technical requirements (below), or an alternative standard in a gazetted local planning scheme.

APZ Technical Requirements

Object	Requirement
Fences within the APZ	Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter less than 6 mm in thickness)	• Should be managed and removed on a regular basis to be maintained as a low threat vegetation. • Should be maintained at less than two tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel, shells, rock or crushed mineral earth or wood mulch more than five millimetres in thickness.
Trees* **(more than 6 m in height)**	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be less than 15 per cent of the total APZ area. • Tree canopies at maturity should be at least 5 m apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided the total canopy cover within the APZ does not exceed 15 per cent and is not connected to the tree canopy outside the APZ.  Tree canopy cover – ranging from 15 to 70 per cent at maturity

Object	Requirement
Shrub* and scrub* (0.5 m to 6 m in height). Shrub and scrub more than 6 m in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps more than five square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground cover*(less than 0.5 m in height. Ground cover more than 0.5 m in height is to be treated as shrub)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above • Can be located within two metres of a structure but three metres from windows or doors if more than 100 mm in height.
Grass	• Grass should be maintained at a height of 100 mm or less, at all times • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	• Within three metres of each wall or supporting post of a habitable building; the area is kept free from vegetation but can include ground cover, grass and non- combustible mulches as prescribed above.
Liquid petroleum gas cylinders	• Should be located on the side of a building farthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.
* Plant flammability, landscaping design and maintenance should be considered - refer to explanatory notes in the Guidelines.	

ADDITIONAL NOTES

An Asset Protection Zone (APZ) is a low fuel area, maintained around a building to increase the likelihood a building will survive a bushfire, by reducing the potential for direct flame contact, radiant heat exposure and ember attack. The APZ allows emergency services access and provides an area for firefighters and homeowners to defend their property.

An APZ should be contained within the boundaries of the lot on which the building is situated, except in instances where it is demonstrated the vegetation on the adjoining land is, and will continue to be, low threat as per cl. 2.2.3.2 of AS 3959, or the vegetation on the adjoining lot is, and will remain in perpetuity, non-vegetated. However, it should be noted there is no requirement for a neighbouring landowner or land manager (public or private) to be party to a legal agreement to undertake ongoing management of vegetation as low threat, in perpetuity.

Appendix C:
Vehicular Access Technical Requirements

Technical requirements	Perimeter Roads		Public Roads		Emergency Access Way3		Fire Service Access Route3		Battle-Axe and Private Driveways1	
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 (m)	12	8	See note 5		10	6	10	6	6	
Minimum vertical clearance (m)	4.5									
Minimum weight capacity (t)	15									
Maximum grade unsealed road2	See note 5		See note 5		1:10 (10% or 6 degrees)					
Maximum grade sealed road2, 4					1:7 (14.3% or 8 degrees)					
Maximum average grade sealed road					1:10 (10% or 6 degrees)					
Minimum inner radius of road curves (m)					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.