Appendix 2 - Bushfire Management Plan Addendum (JBS&G)

Bushfire Management Plan Coversheet

This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

Bushfire Management Plan and Site Details

Site Address / Plan Reference: Allara Education Precinct

Suburb: Eglinton **State:** WA **P/code:** 6034

Local government area: City of Wanneroo

Description of the planning proposal: Structure Plan amendment

BMP Plan / Reference Number: 63490/146,616 **Version:** M01 Rev 2 **Date of Issue:** 18/12/2023

Client / Business Name: Satterley Property Group

Reason for referral to DFES	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	☐	X
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the BPC elements)?	☐	X
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	☐	X
Strategic planning proposal (including rezoning applications)	X	☐
Minor development (in BAL-40 or BAL-FZ)	☐	X
High risk land-use	☐	X
Vulnerable land-use	☐	X

If the development is a special development type as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

The proposal is a Structure Plan amendment, which is a strategic planning proposal.

Note: The decision maker (e.g. local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

BPAD Accredited Practitioner Details and Declaration

Name	Accreditation Level	Accreditation No.	Accreditation Expiry
Zac Cockerill	Level 2	BPAD37803	31/08/2024
Company		**Contact No.**	
JBS&G Australia Pty Ltd		(08) 9792 4797	

I declare that the information provided within this bushfire management plan is to the best of my knowledge true and correct

Signature of Practitioner **Date** 18/12/2023

Name:	Justin Radici	Date:	18 December 2023
Company:	Satterley Property Group	Job/Doc. No.:	63490/146,616
Email:	justinr@satterley.com.au	Inquiries:	Zac Cockerill

Bushfire Management Plan Addendum: Allara Education Precinct Structure Plan Amendment

1. Introduction

Satterley Property Group is lodging a Structure Plan Amendment over the proposed Allara TOD and Education Village (hereon referred to as the project area) within Allara Estate, on a portion of Lot 9008 Pipidinny Road, Eglinton in the City of Wanneroo. The Structure Plan Amendment provides for a revised design initiated by the proposed relocation of the Indoor Recreation Centre and High School site, introduction of service commercial uses on Pipidinny Road, downgrade of residential density and new parkland boulevard providing a more direct connection to Impressions Drive and the northern open space network (see **Figure 1**).

FirePlan WA prepared a comprehensive Fire Management Plan (FMP) in 2013 to support Satterley Property Group in their original Local Structure Plan submission for Allara Estate. Subsequently, multiple stages of subdivision application have been approved throughout the Allara Structure Plan area, which have been supported by various subdivision stage Bushfire Management Plans (BMPs) and addendums, including the Strategen (2018) subdivision stage BMP (which includes the project area), the Strategen-JBS&G (2022) subdivision stage BMP addendum for Stage 6 and the JBS&G (2023) BMP addendum for Stages 16–19.

This BMP is an addendum to the original Allara Estate Structure Plan FMP (FirePlan WA 2013) and the Strategen (2018) subdivision stage BMP and provides for an updated strategic level bushfire assessment specific to the project area, as required to support the proposed Structure Plan Amendment. This BMP addendum should be read in conjunction with the original Structure Plan BMP (FirePlan WA 2013) and the subdivision stage BMP (Strategen 2018) and includes the following information:

1. A revised bushfire assessment including:
    a. updated pre and post-development vegetation classification and effective slope maps specific to the project area and current/proposed vegetation conditions (**Figure 2** and **Figure 3**)
    b. updated pre and post-development Bushfire Hazard Level (BHL) assessments specific to the project area and current/proposed vegetation conditions mapped from Item 1a above (**Figure 4** and **Figure 5**).
2. A revised assessment against the bushfire protection criteria of *Guidelines for Planning in Bushfire-Prone Areas Version 1.4* (the Guidelines; WAPC 2021) demonstrating that bushfire compliance can be achieved at subsequent planning stages (**Table 4**).

1.1 Purpose

The project area is predominantly designated bushfire prone on the Map of Bush Fire Prone Areas (refer to **Plate 1**; DFES 2021); therefore, bushfire risk considerations and assessment are required to inform the development proposal as triggered under Policy Measure 6.2 of *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP3.7; WAPC 2015).

This BMP addendum has been prepared to accompany the proposed Structure Plan Amendment and to address strategic planning requirements under Policy Measure 6.3 of SPP3.7 in accordance with the Guidelines.

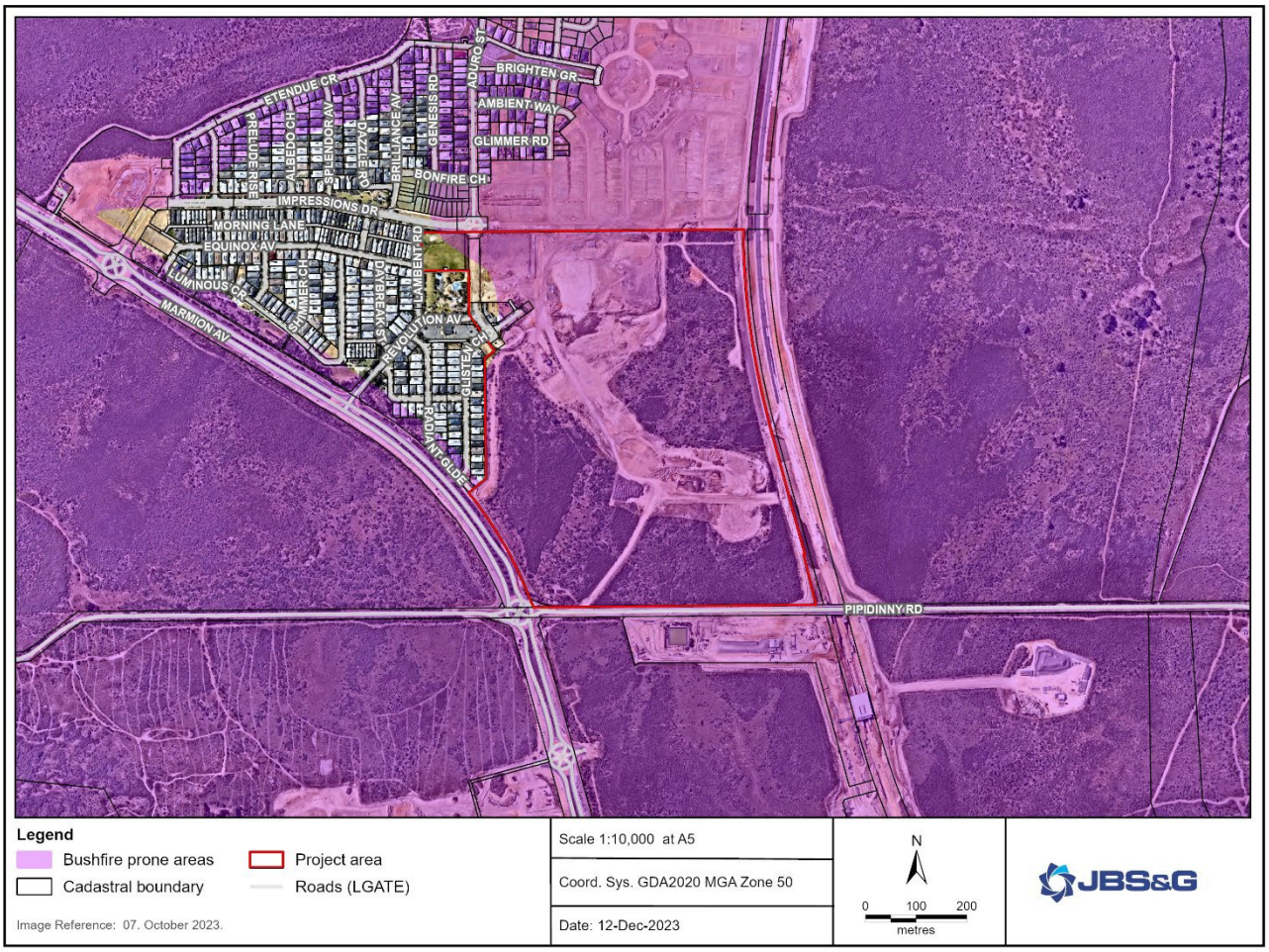


Plate 1: Designated bushfire prone status of the project area (DFES 2021)

WORKING DRAWING

N

400m catchment to Neighbourhood Centre

400m catchment to Local Centre

Connection to northern Park

KINKUNA PARK (0.81 ha)

5 PS (4.0ha)

DISTRICT OPEN SPACE (9.8ha)

3 HS (8.5ha)

2 Service Commercial (1.361ha)

1 IRC (1.82ha)

10 Drainage (0.339ha) Pump Station (0.334ha)

Drainage (0.096ha) 9

PIPIDINNY ROAD

Underpass

FUTURE STATION CARPARK

P5

R80

ECLIPTIC DRIVE

MARMION AVENUE

400m

LEGEND

- Structure Plan Boundary
- Indicative Public Transport Route
- Social/Pedestrian/Cycle Linkages (PSP)
- Neighbourhood Connector
- Underpass

REGION SCHEME RESERVES (MRS)

- Railway Reserve
- Civic and Community
- Business

LOCAL SCHEME RESERVES

- Public Open Space
- Public Purposes
  - HS High School
  - PS Primary School

LOCAL SCHEME ZONES

- Service Commercial
- Mixed Use
- Residential (R2.5-R60)

ANNOTATIONS

1. Relocated Indoor Recreation Centre within walkable catchment of Railway Station
2. New Service Commercial Zone
3. High School separated from Primary School within walkable catchment of Railway Station
4. Former Indoor Recreation Centre site now Mixed Use
5. Reconfigured Primary School
6. New 'School Road' provides second access to Estate and aligns with entry to PTA carpark
7. Aduro Street alignment modified to reflect DSP planning
8. PSP relocated from railway reserve adjacent to new 'School Road' linking in with underpass
9. Drainage area requested by City of Wanneroo to accommodate Pipidinny Rd stormwater
10. Integrated drainage and relocated pump station site provides screening between Indoor Recreation Centre and adjacent homes

Satterley DevelopmentWA

CADASTRAL INFORMATION
SOURCE: MNG
YYMMDD: 230130
DWG REF: 9750-dsts-9999sq-PC094.dwg
PROJECTION: PCG 94

AERIAL PHOTOGRAPHY
SOURCE:
YYMMDD:

HATCH | RobertsDay

SIZE A1 1:2500
0 metres 25 50 75 100 125

REV	DESCRIPTION	DRAWN	APP'D
K	UPDATE DESIGN	231211 TG	DRAFT
J	UPDATE DESIGN	231201 MC/TG	DRAFT
I	UPDATE DESIGN	231122 MC/TG	DRAFT
H	UPDATE DESIGN	231120 TG	DP
G	WESTERN PRECINCT DESIGN	231011 TG	DP

DRAFT

INDICATIVE CONCEPT PLAN
Lot 9008 Marmion Avenue, Eglinton
City of Wanneroo

REF NO. **SAT EGL** | DRAW NO. **RD1 439** | REV. **K**

2. Bushfire assessment results

2.1 Assessment inputs

2.1.1 Vegetation classifications and exclusions

JBS&G assessed classified vegetation and exclusions within the project area and adjacent 150 m through on-ground verification on 20 July 2022 and reassessment on 2 October 2023. Vegetation classifications and exclusions were assessed in accordance with *AS 3959—2018 Construction of Buildings in Bushfire-Prone Areas* (AS 3959; SA 2018) and the *Visual Guide for Bushfire Risk Assessment in Western Australia* (DoP 2016). Georeferenced site photos and descriptions are contained in Appendix A, with results of the assessment depicted in **Table 1** and **Figure 2** for existing pre-development conditions; and **Table 2** and **Figure 3** for anticipated post-development conditions.

Current pre-development conditions indicate that Class D Scrub (i.e. coastal heath, 2–6 m in height, with a continuous horizontal fuel profile) is the predominant vegetation type within and surrounding the project area, described as follows:

- vegetation retained within the project area
- vegetation retained on undeveloped land opposite Marmion Avenue to the west of the project area
- vegetation retained on undeveloped land to the east and northeast of the project area within future development stages of Allara Estate opposite the Yanchep Rail Extension (YRE) corridor
- vegetation retained on undeveloped land opposite Pipidinny Road to the south.

Existing areas of non-vegetated land (i.e. buildings, roads, current earthworked extent, etc) and low threat managed land (i.e. managed gardens, POS, urban street verges, etc) within and adjacent to the project area are excluded from classification under Clauses 2.2.3.2 (e) and (f).

The railway corridor for the YRE has been cleared and earthworked and its exclusion under AS3959 is consistent with bushfire management planning undertaken for the NeWest Alliance and property development projects situated adjacent to the railway corridor (e.g. East of the Beach).

Post-development conditions will require modification of all remaining on-site vegetation to a non-vegetated/low threat managed state to achieve exclusion under Clause 2.2.3.2 of AS3959. This includes areas of proposed landscaping throughout District Open Space, POS, drainage and streetscapes, as well as the 100 m wide low threat staging buffer, as depicted in **Figure 3**. This approach is consistent with the landscaping undertaken to date throughout existing developed stages of Allara Estate.

2.1.2 Effective Slope

JBS&G assessed effective slope under classified vegetation within the assessment area through on ground verification on 20 July 2022 and reassessment on 2 October 2023 in accordance with AS3959. Results were cross referenced with DPIRD 2 m contour data.

Effective slope results are outlined in **Table 1** and **Figure 2** for existing pre-development conditions; and **Table 2** and **Figure 3** for anticipated post-development conditions. Results indicate that effective slope of the predominant Class D scrub within and surrounding the project area ranges from flat/upslope (0 degrees) to >5–10 degrees downslope.

2.1.3 Summary of pre-development inputs

A summary of the assessed pre-development classified vegetation, exclusions and effective slope within the project area and adjacent 150 m are listed in Table 1 and illustrated in Figure 2.

Table 1: Summary of pre-development vegetation classifications/exclusions and effective slope

Vegetation plot	Vegetation classification	Effective slope	Comments
1	Class D Scrub	Downslope >5–10°	Scrub vegetation between 2–6 m high at maturity with a continuous horizontal fuel profile
2	Class D Scrub	Downslope >0–5°	Scrub vegetation between 2–6 m high at maturity with a continuous horizontal fuel profile
3	Class D Scrub	Flat/upslope (0°)	Scrub vegetation between 2–6 m high at maturity with a continuous horizontal fuel profile
4	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	Existing non-vegetated land/low threat areas including existing residential areas, roads, footpaths, earthworked extent and managed POS

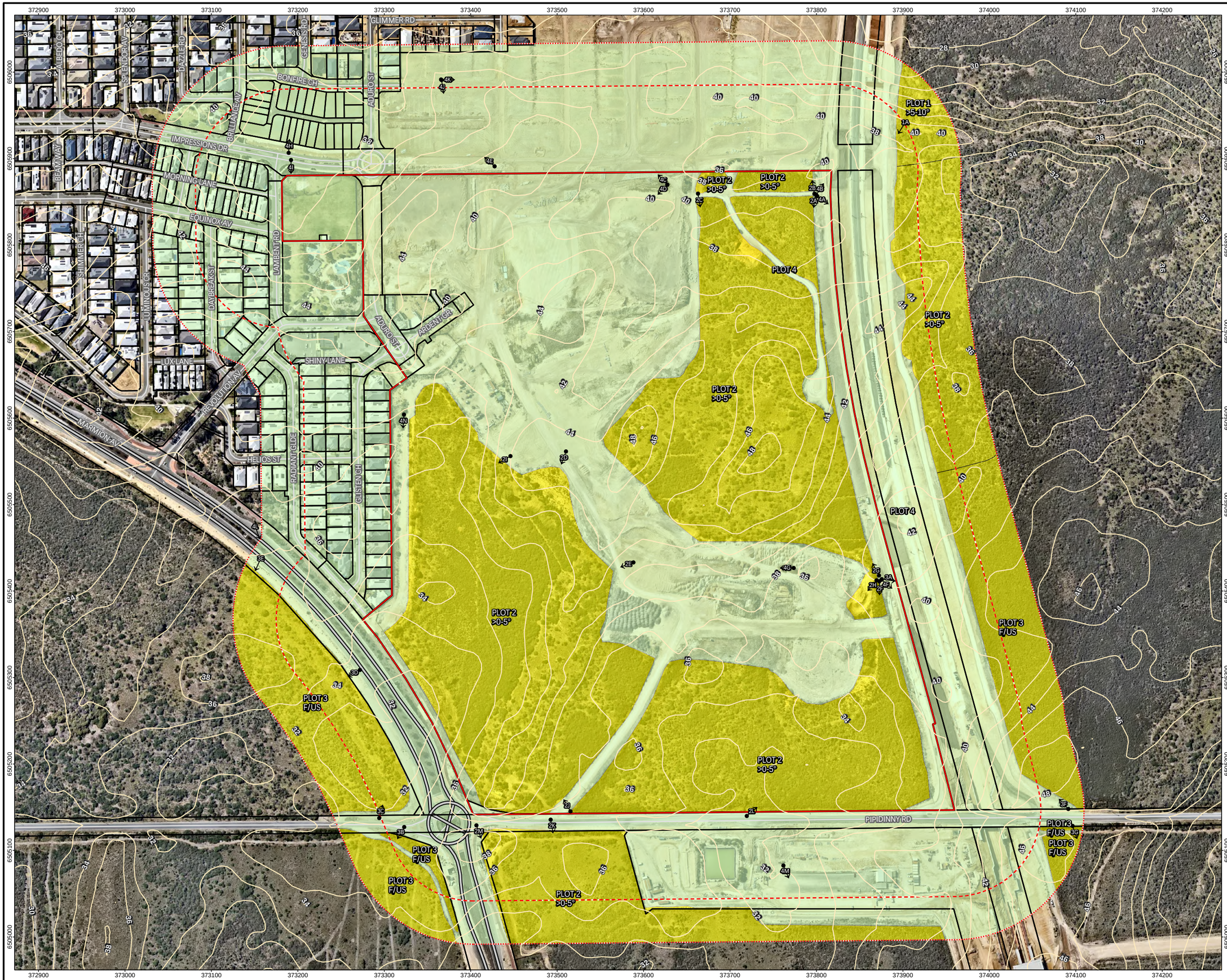
2.1.4 Summary of post-development inputs

A summary of the expected post-development classified vegetation, exclusions and effective slope within the project area and adjacent 150 m are listed in **Table 2** and illustrated in **Figure 3**.

The post-development vegetation classifications for land external to the project area are generally expected to remain the same as pre-development conditions (**Figure 3**). Post-development conditions will require all existing vegetation within the project area to be modified to a non-vegetated/low threat managed state to achieve exclusion under Clause 2.2.3.2 of AS3959.

Table 2: Summary of post-development vegetation classifications, exclusions and effective slope

Vegetation plot	Vegetation classification	Effective slope	Comments
1	Class D Scrub	Downslope >5–10°	Scrub vegetation between 2–6 m high at maturity with a continuous horizontal fuel profile
2	Class D Scrub	Downslope >0–5°	Scrub vegetation between 2–6 m high at maturity with a continuous horizontal fuel profile
3	Class D Scrub	Flat/upslope (0°)	Scrub vegetation between 2–6 m high at maturity with a continuous horizontal fuel profile
4	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	Existing non-vegetated land/low threat areas including existing residential areas, roads, footpaths, earth worked extent and managed POS
5	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	Areas to be modified and maintained to a non-vegetated/low threat managed state as part of proposed development (i.e. existing vegetation within the project area to be removed for proposed development)



Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Vegetation classification

- Class D Scrub
- Clause 2.2.3.2 (e) & (f)
- Photo point directions
- Topographic contours (mAHD)
- Highway
- Minor road

JBS&G

Job No: 63490	
Client: Satterley Property Group	
Version: A	Date: 18-Dec-2023
Drawn By: jcrute	Checked By: ZC

Scale 1:4,000 at A3

0 50 100
metres

Coord. Sys. GDA2020 MGA Zone 50

Allara Western Precinct, Eglinton, WA

PRE-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

FIGURE 2

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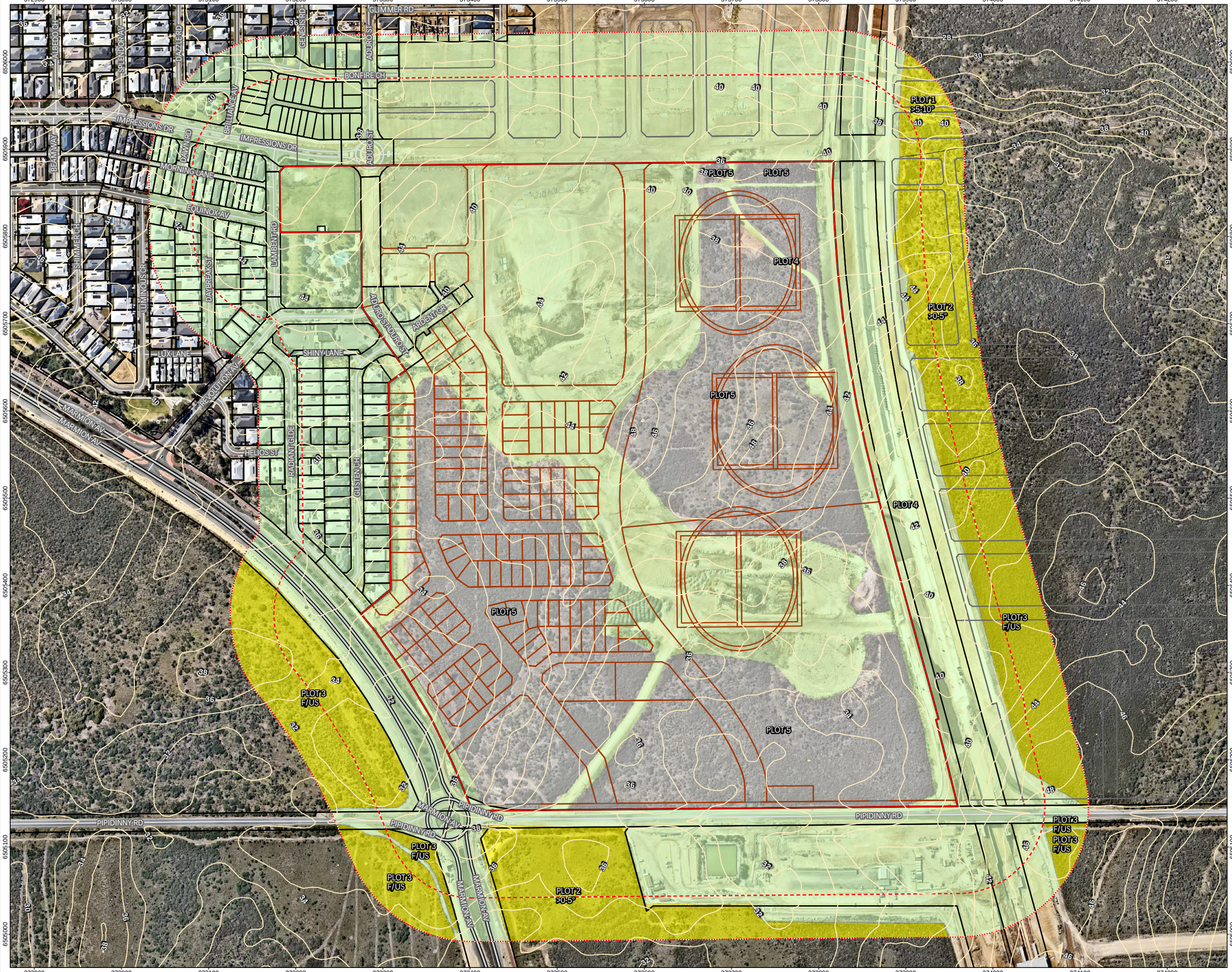

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Vegetation classification

- Class D Scrub
- Clause 2.2.3.2 (e) & (f)
- Area to be modified to non-vegetated and low threat state
- Proposed development layout
- Future indicative subdivisions on adjacent stages
- Topographic contours (mAHD)
- Highway
- Minor road

JBS&G

Job No: 63490	
Client: Satterley Property Group	
Version: A	Date: 12-Dec-2023
Drawn By: jcrute	Checked By: ZC

Scale 1:4,000 at A3

0 50 100
metres

Coord. Sys. GDA2020 MGA Zone 50

Allara Western Precinct, Eglinton, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

FIGURE 3

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Image Reference: www.nearmap.com© - Imagery Date: 07. October 2023.

2.2 Assessment outputs

2.2.1 Bushfire Hazard Level (BHL) assessment

Pre and post-development vegetation extents have been assigned a Bushfire Hazard Level (BHL) in accordance with the methodology detailed in Appendix Two of the Guidelines, as outlined in **Table 3**. Since proposed lot layout has not been confirmed, it is not appropriate to prepare a BAL contour map to inform the strategic planning stage. A BAL contour map will be prepared at the future subdivision stage once the proposed lot layout has been confirmed.

Table 3: BHL assessment methodology and characteristics from the Guidelines

Bushfire hazard level	Characteristics*
Extreme	Class A Forest Class B Woodland (05) Class D Scrub Any classified vegetation with a greater than 10° slope.
Moderate	Class B Low Woodland (07) Class C Shrubland Class E Mallee/Mulga Class G Grassland, including sown pasture and crops Class G Grassland: Open woodland (06), Low open woodland (08), Open shrubland (09) Vegetation that has a low hazard level but is within 100 metres of vegetation classified as a moderate or extreme hazard, is to adopt a moderate hazard level.
Low	Low threat vegetation may include areas of maintained lawns, golf courses, public recreation reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks Managed grassland in a minimal fuel condition (insufficient fuel is available to significantly increase the severity of the bushfire attack). For example, short-cropped grass to a nominal height of 100 millimetre Non-vegetated areas including waterways, roads, footpaths, buildings and rock outcrops.
*Vegetation classifications from AS 3959-2018 Table 2.3.	

Pre-development BHLs

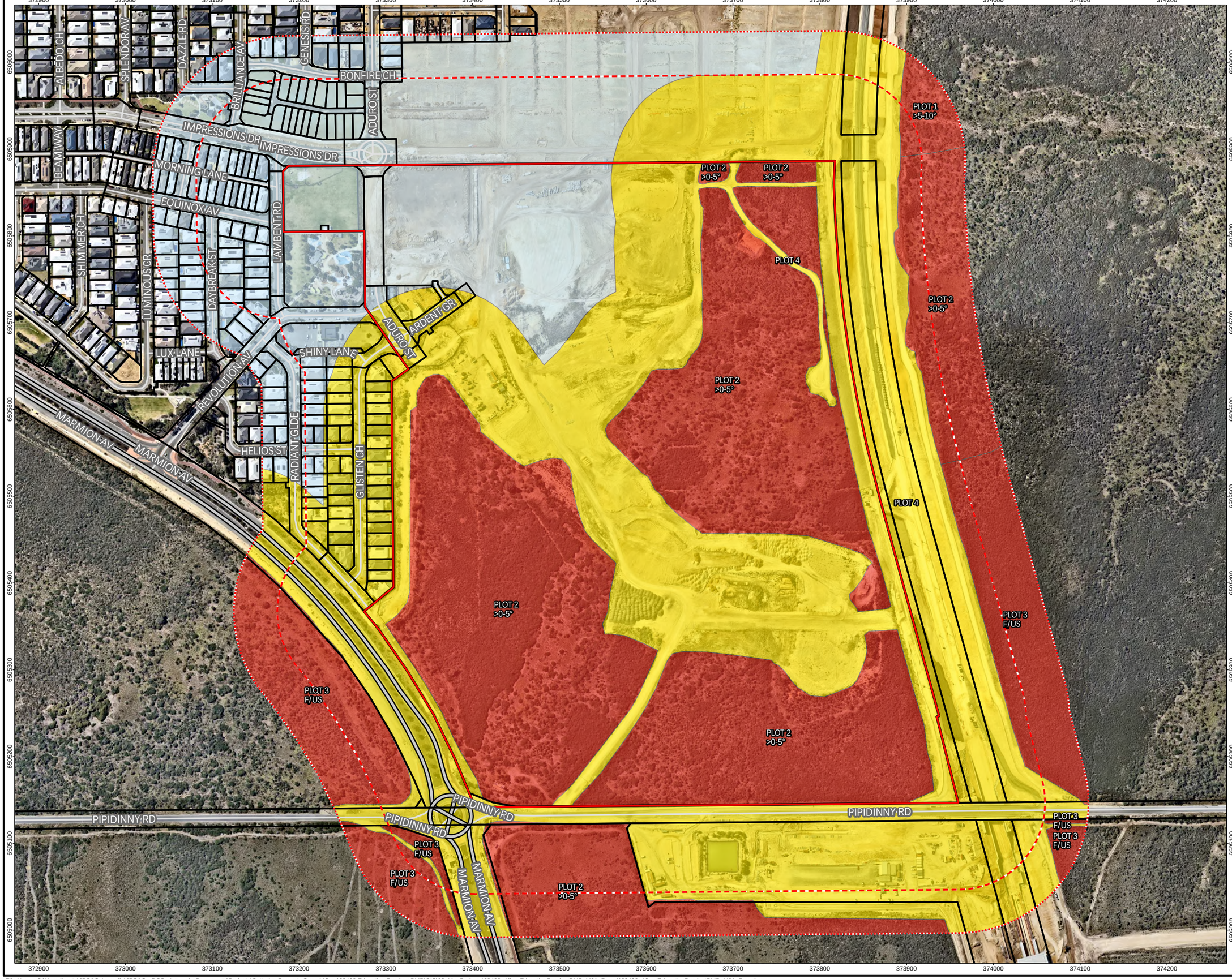
JBS&G has mapped the pre-development BHLs within the project area and adjacent 150 m wide assessment area. The BHLs have been assessed on the basis of the vegetation discussed in Section 2.1.3 (i.e. the current pre-development extent of vegetation within and surrounding the project area).

The pre-development BHL assessment (refer to **Figure 4**) indicates that based on the existing vegetation extent, the project area contains land with Low, Moderate and Extreme BHLs. It is important to note that a significant portion of the Extreme BHL rated vegetation is temporary, subject to modification to a non-vegetated/low threat managed state as part of proposed development.

Post-development BHLs

JBS&G has mapped the expected post-development BHLs to demonstrate that the future bushfire hazard levels will be acceptable for proposed development to occur within the project area. The BHLs have been assigned on the basis of the vegetation discussed in Section 2.1.4 and the expected vegetation modification within the project area.

The post-development BHL assessment (refer to **Figure 5**) demonstrates that all future habitable development within the project area will be located on land with either a Low or Moderate BHL.



Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low
- Highway
- Minor road

JBS&G

Job No: 63490	
Client: Satterley Property Group	
Version: A	Date: 12-Dec-2023
Drawn By: jcrute	Checked By: ZC

Scale 1:4,000 at A3

0 50 100
metres

Coord. Sys. GDA2020 MGA Zone 50

Allara Western Precinct, Eglinton, WA

PRE-DEVELOPMENT BUSHFIRE HAZARD LEVELS

FIGURE 4

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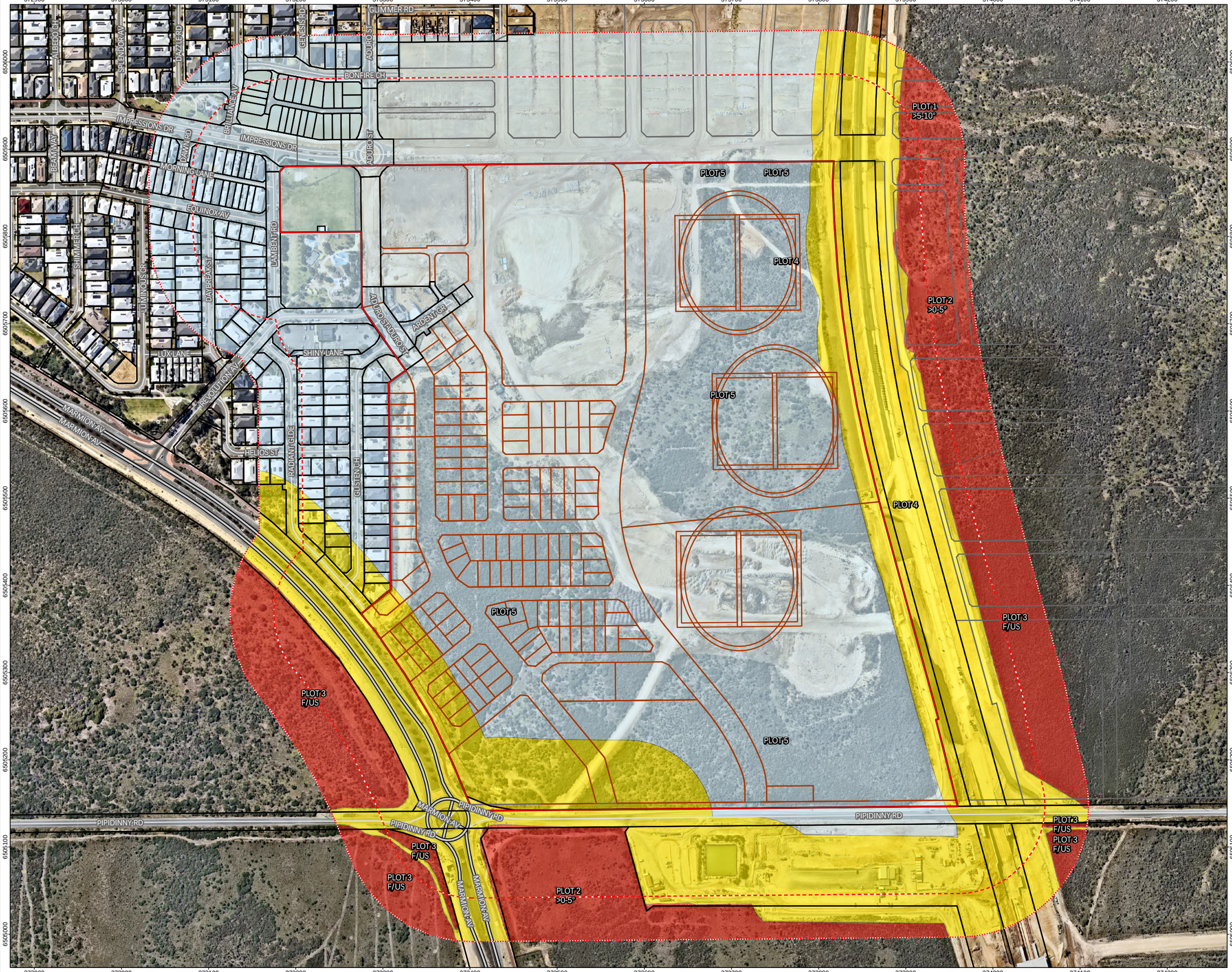

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low

- Proposed development layout
- Future indicative subdivisions on adjacent stages
- Highway
- Minor road

JBS&G

Job No: 63490	
Client: Satterley Property Group	
Version: A	Date: 12-Dec-2023
Drawn By: jcrute	Checked By: ZC

Scale 1:4,000 at A3

0 50 100
metres

Coord. Sys. GDA2020 MGA Zone 50

Allara Western Precinct, Eglinton, WA

POST-DEVELOPMENT BUSHFIRE HAZARD LEVELS

FIGURE 5

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Image Reference: www.nearmap.com© - Imagery Date: 07. October 2023.

3. Assessment against bushfire protection criteria

3.1 Compliance with Elements 1–4

Demonstration that the proposed development can comply with relevant acceptable solutions of Elements 1–4 of the bushfire protection criteria of the Guidelines (Version 1.4) is outlined in **Table 4**.

Table 4: Compliance with the bushfire protection criteria of the Guidelines (Elements 1–4)

Bushfire protection criteria	Performance Principle	Method of compliance Acceptable solutions	Proposed bushfire management strategies	Compliance achievable at future planning stages
Element 1: Location	**Performance Principle P1** The strategic planning proposal, subdivision and development application is located in an area where the bushfire hazard assessment is or will, on completion, be moderate or low, or a BAL–29 or below, and the risk can be managed. For unavoidable development in areas where BAL–40 or BAL–FZ applies, demonstrating that the risk can be managed to the satisfaction of the decision-maker.	**A1.1 Development location** The strategic planning proposal, subdivision and development application is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL–29 or below.	The pre-development BHL assessment (**Figure 4**) identifies that the project area currently contains land with Low, Moderate and Extreme BHLs. However, on completion of development, all vegetation within the project area is expected to be excludable under Clause 2.2.3.2 of AS3959 through vegetation modification associated with implementation of proposed development. The resulting post-development BHLs within the project area were assessed to be Low to Moderate, which is significantly reduced compared to pre-development levels (**Figure 5**). Consideration at the subdivision stage will need to be given to on-site and external classified vegetation and the appropriate separation distances necessary for habitable development to achieve BAL-29 or lower. The project area is considered to be of sufficient size such that any interface with post-development classified vegetation could be readily accommodated via compliant subdivision design to ensure all future habitable development can achieve BAL-29 or lower. This will be demonstrated through preparation of a BAL contour map to support the future subdivision stage once lot layout has been confirmed.	✓

Bushfire protection criteria	Performance Principle	Method of compliance Acceptable solutions	Proposed bushfire management strategies	Compliance achievable at future planning stages
			At this stage, minimum separation distances to achieve BAL-29 or lower from the assessed classified vegetation extent is as follows: • Class D scrub (flat/upslope): 13 m • Class D scrub (downslope >0–5 degrees): 15 m • Class D scrub (downslope >5–10 degrees): 17 m.	
Element 2: Siting and design	**Performance Principle P2** The siting and design of the strategic planning proposal, subdivision or development application, including roads, paths and landscaping, is appropriate to the level of bushfire threat that applies to the site. The proposal incorporates a defendable space and significantly reduces the heat intensities at the building surface thereby minimising the bushfire risk to people, property and infrastructure, including compliance with AS 3959 if appropriate.	**A2.1 Asset Protection Zone** Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the requirements set out in Schedule 1.	Asset Protection Zones (APZs) required for future habitable development to achieve BAL-29 are to be implemented for all relevant lots where required. APZs will be identified at the subdivision stage based on future subdivision/development design and following a BAL contour assessment. APZs are to be implemented and maintained in accordance with Schedule 1 of the Guidelines **(Appendix B**).	✓
Element 3: Vehicular access	**Performance Principle P3i** The design and capacity of vehicular access and egress is to provide for the community to evacuate to a suitable destination before a bushfire arrives at the site, allowing emergency services personnel to attend the site and/or hazard vegetation.	**A3.1 Public roads** *The minimum requirements under this acceptable solution are applicable to all proposed and existing public roads.* Public roads are to meet the minimum technical requirements in Table 6, Column 1. The trafficable (carriageway/pavement) width is to be in accordance with the relevant class of road in the Local Government Guidelines for Subdivisional Development (IPWEA Subdivision Guidelines), Liveable Neighbourhoods, Austroad standards and/or any applicable standards for the local government area.	All proposed public roads will be constructed to the technical requirements of the Guidelines (see **Appendix C**) and in accordance with relevant federal, State and local government requirements.	✓

Bushfire protection criteria	Performance Principle	Method of compliance Acceptable solutions	Proposed bushfire management strategies	Compliance achievable at future planning stages
		A3.2a Multiple access routes Public road access is to be provided in two different directions to at least two different suitable destinations with an all-weather surface (two-way access). If the public road access to the subject site is via a no-through road which cannot be avoided due to demonstrated site constraints, the road access is to be a maximum of 200 metres from the subject lot(s) boundary to an intersection where two-way access is provided. The no-through road may exceed 200 metres if it is demonstrated that an alternative access, including an emergency access way, cannot be provided due to site constraints and the following requirements are met: • the no-through road travels towards a suitable destination; and • the balance of the no-through road, that is greater than 200 metres from the subject site, is wholly within BAL-LOW, or is within a residential built-out area – Figure 23.	The project area forms an extension to the existing Allara Estate and based on indicative design, completion of the development will provide connections to the existing and proposed public road network as follows: • connection with Marmion Avenue in the west (both directly and via Impressions Drive), which provides access to multiple suitable destinations, including Yanchep to the north and Alkimos to the south. • Connection with Pipidinny Road in the south, which provides broader access east to Marmion Avenue and west to Wanneroo Road leading to multiple suitable destinations. A minimum of two access routes are also to be provided for individual stages during staging of development, which may require consideration of construction of public roads in advance or provision of temporary compliant no-through roads and/or Emergency Access Ways (EAWs).	✓
		A3.2b Emergency access way *Where it is demonstrated that A3.2a cannot be achieved due to site constraints, or where an alternative design option does not exist, an emergency access way can be considered as an acceptable solution.* An emergency access way is to meet all the following requirements: • requirements in Table 6, Column 2; • provides a through connection to a public road;	No permanent EAWs are required; however, if development and vehicle access construction is to be staged, any temporary EAWs required as part of development staging are to be constructed to the technical requirements of the Guidelines (see **Appendix C**).	✓

Bushfire protection criteria	Performance Principle	Method of compliance Acceptable solutions	Proposed bushfire management strategies	Compliance achievable at future planning stages
		• be no more than 500 metres in length; and • must be signposted and if gated, gates must open the whole trafficable width and remain unlocked.		
		A3.3 Through-roads All public roads should be through-roads. No-through roads should be avoided and should only be considered as an acceptable solution where: • it is demonstrated that no alternative road layout exists due to site constraints; and • the no-through road is a maximum length of 200 metres to an intersection providing two-way access, unless it satisfies the exemption provisions in A3.2a of this table. A no-through road is to meet all the following requirements: • requirements of a public road (Table 6, Column 1); and • turn-around area as shown in Figure 24.	All proposed public roads will be through roads. Any temporary no-through roads required as part of development staging will be constructed to the technical requirements of the Guidelines (see **Appendix C**).	✓
	Performance Principle P3ii The design of vehicular access and egress provides: • access and egress for emergency service vehicles while allowing the community to evacuate; • a defendable space for emergency services personnel on the interface • between classified vegetation and development site; and • hazard separation between classified vegetation and the	**A3.4a Perimeter roads** A perimeter road is a public road and should be provided for greenfield or infill development where 10 or more lots are being proposed (including as part of a staged subdivision) with the aim of: • separating areas of classified vegetation under AS3959, which adjoin the subject site, from the proposed lot(s); and • removing the need for battle-axe lots that back onto areas of classified vegetation. A perimeter road is to meet the requirements contained in Table 6, Column 1.	Based on indicative design, perimeter roads have, or will be provided at all external development interfaces to provide separation between adjoining classified vegetation hazards and a defendable space for firefighting activities. Existing Marmion Avenue and Pipidinny Roads provide perimeter access to vegetation hazards along the western and southern interfaces respectively. The railway corridor, DOS and High School site will provide a substantial and accessible buffer to vegetation hazards in the east opposite the YRE corridor. There are no bushfire hazards currently situated along the northern site interface.	✓

Bushfire protection criteria	Performance Principle	Method of compliance Acceptable solutions	Proposed bushfire management strategies	Compliance achievable at future planning stages
	subject site to reduce the potential radiant heat that may impact a lot(s).	A perimeter road may not be required where: • the adjoining classified vegetation is Class G Grassland; • lots are zoned for rural living or equivalent; • it is demonstrated that it cannot be provided due to site constraints; or • all lots have frontage to an existing public road.		
	Performance Principle P3iii Vehicular access is provided which allows: • access and egress for emergency service vehicles; • defendable space for emergency services • personnel on the interface between classified vegetation and development; and • hazard separation between classified vegetation and the site to reduce the potential radiant heat that may impact a lot(s).	**A3.4b Fire service access route** *Where proposed lots adjoin classified vegetation under AS3959, and a perimeter road is not required in accordance with A3.4a, a fire service access route can be considered as an acceptable solution to provide firefighter access, where access is not available, to the classified vegetation.* A fire service access route is to meet all the following requirements: • requirements in Table 6, Column 3; • be through-routes with no dead-ends; • linked to the internal road system at regular intervals, every 500 metres; • must be signposted; • no further than 500 metres from a public road; • if gated, gates must open the required horizontal clearance and can be locked by the local government and/or emergency services, if keys are provided for each gate; and • turn-around areas designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 metres.	N/A – As discussed under A3.4a, the proposed development at completion (based on indicative design) is expected to provide perimeter roads at all external development interfaces. In this regard, fire service access routes (FSARs) are not considered to be required for the proposed development.	N/A

Bushfire protection criteria	Performance Principle	Method of compliance Acceptable solutions	Proposed bushfire management strategies	Compliance achievable at future planning stages
	Performance Principle P3iv Vehicular access is provided which allows emergency service vehicles to directly access all habitable buildings and water supplies and exit the lot without entrapment.	**A3.5 Battle-axe access legs** *Where it is demonstrated that a battle-axe cannot be avoided due to site constraints, it can be considered as an acceptable solution.* There are no battle-axe technical requirements where the point the battle-axe access leg joins the effective area of the lot, is less than 50 metres from a public road in a reticulated area. In circumstances where the above condition is not met, or the battle-axe is in a non-reticulated water area, the battle-axe is to meet all the following requirements: • requirements in Table 6, Column 4; and • passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres).	N/A – A3.5 is relevant to the subdivision stage of planning.	N/A
		A3.6 Private driveways There are no private driveway technical requirements where the private driveway is: • within a lot serviced by reticulated water; • no greater than 70 metres in length between the most distant external part of the development site and the public road measured as a hose lay; and • accessed by a public road where the road speed limit is not greater than 70 km/h. In circumstances where all of the above conditions are not met, or the private driveway is in a non-	N/A – A3.6 is relevant to the DA stage of planning.	N/A

Bushfire protection criteria	Performance Principle	Method of compliance Acceptable solutions	Proposed bushfire management strategies	Compliance achievable at future planning stages
		reticulated water area, the private driveway is to meet all the following requirements: • requirements in Table 6, Column 4; • passing bays every 200 metres with a minimum length of 20 metres and a minimum • additional trafficable width of two metres (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres); and • turn-around area as shown in Figure 28 and within 30 metres of the habitable building.		
Element 4: Water	No performance principle applies	**A4.1 Identification of future water supply** Evidence that a reticulated or sufficient non-reticulated water supply for bushfire fighting can be provided at the subdivision and/or development application stage, in accordance with the specifications of the relevant water supply authority or the requirements of Schedule 2. Where the provision of a strategic water tank(s) is required a suitable area within a road reserve or a dedicated lot the location should be identified, should be identified on the structure plan, to the satisfaction of the local government.	A reticulated water supply will be provided for proposed development in accordance with the specifications of the relevant water supply authority through extension of existing services from surrounding development areas.	✓
	Performance Principle P4 Provide a permanent water supply that is: • sufficient and available for firefighting purposes; • constructed from non-combustible materials (e.g. steel), or able to maintain its integrity throughout a bushfire; and	**A4.2 Provision of water for firefighting purposes** Where a reticulated water supply is existing or proposed, hydrant connection(s) should be provided in accordance with the specifications of the relevant water supply authority. Where these specifications cannot be met, then the following applies: • The provision of a water tank(s), in accordance with the requirements of Schedule 2; and	N/A – A4.2 is relevant to the subdivision and DA stage of planning.	N/A

Bushfire protection criteria	Performance Principle	Method of compliance Acceptable solutions	Proposed bushfire management strategies	Compliance achievable at future planning stages
	• accessible, with legal access for maintenance and re-filling by tankers and emergency service vehicles.	• Where the provision of a strategic water tank(s) is applicable, then the following requirements apply: – land to be ceded free of cost to the local government for the placement of the tank(s); – the lot or road reserve where the tank is to be located is identified on the plan of subdivision; – tank capacity, construction, and fittings, provided in accordance with the requirements of Schedule 2; and – a strategic water tank is to be located no more than 10 minutes from the subject site (at legal road speeds). Where a subdivision includes an existing habitable building(s) that is to be retained, a water supply should be provided to this existing habitable building(s), in accordance with the requirements listed above.		

4. Responsibilities for implementation and management of the bushfire measures

This BMP addendum has been prepared as a strategic guide to demonstrate how development compliance will be delivered at future planning stages in accordance with the Guidelines. Aside from the preparation of future BMPs/addendums to accompany future subdivisions and development applications where appropriate, there are no further items to implement, enforce or review at this strategic stage of the planning process.

Future BMPs/addendums prepared for subsequent subdivisions and development applications are to meet the relevant commitments outlined in this strategic level BMP addendum, address the relevant requirements of SPP 3.7 (i.e. Policy Measures 6.4 and 6.5 respectively) and demonstrate in detail how the proposed development will comply with the relevant acceptable solutions of the Guidelines. Future BMPs/addendums are to include the following detailed information:

- confirmation of proposed lot layout
- information (such as detailed landscaping plans) to inform proposed POS landscaping treatments that support the intended low threat vegetation outcomes
- confirmation of the post-development classified vegetation extent, effective slope and separation distances
- preparation of a BAL contour map demonstrating that proposed development achieves a rating of BAL–29 or lower
- confirmation of the width/alignment of compliant APZs (or other sufficient low threat separation)
- confirmation of how BAL management will be addressed during development staging, including the management of temporary bushfire hazards on adjacent future stages (i.e. provision of internal low threat staging buffers or temporary quarantining of lots where required)
- confirmation of how vehicular access provisions will be addressed during development staging, including demonstration that a minimum of two access routes will be achieved for each stage of development (i.e. provision of temporary compliant access provisions such as no-through roads and/or EAWs)
- confirmation of reticulated water supply provisions
- provisions for bushfire notification on Title for any future lots situated within a designated bushfire prone area containing a rating of BAL-12.5 or greater
- compliance requirements with the annual City of Wanneroo firebreak notice, as amended (refer to Appendix D)
- compliance assessment against the bushfire protection criteria of the Guidelines and associated acceptable solutions
- proposed audit and compliance program outlining all measures requiring implementation and the appropriate timing and responsibilities for implementation.

Based on the information contained in this BMP, JBS&G considers the bushfire hazards within and adjacent to the project area and the associated bushfire risks are readily manageable through standard acceptable solution responses outlined in the Guidelines. JBS&G considers that on implementation of the proposed management measures, the project area will be able to be developed with a manageable level of bushfire risk whilst maintaining full compliance with SPP3.7 and the Guidelines.

5. References

Department of Fire and Emergency Services (DFES) 2021, *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from: https://maps.slip.wa.gov.au/landgate/bushfireprone/, [12/12/2023].

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FirePlan WA 2013, *Fire Management Plan Lot 2 Pipidinny Road North Eglinton Estate,* report prepared for Satterley Property Group, November 2013.

JBS&G 2023, *Bushfire Management Plan Addendum: Allara Stages 16–19 Subdivision Application*, report prepared for Satterley Property Group, November 2023.

Standards Australia (SA) 2018, Australian Standard *AS 3959–2018 Construction of Buildings in Bushfire-prone Areas*, Standards Australia, Sydney.

Strategen 2018, *Bushfire Management Plan Subdivision application: Stages 7-8 & 10-22 Allara Estate, Eglinton*, report prepared for Satterley Property Group, November 2018.

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Western Australian Planning Commission (WAPC) 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission (WAPC) 2021, *Guidelines for Planning in Bushfire Prone Areas*, Version 1.4 December 2021, Western Australian Planning Commission, Perth.

Appendix A Vegetation plot photos and description

Plot 1	
Vegetation classification	Class D Scrub (Downslope >5–10 degrees)
Description / justification	
Scrub vegetation between 2–6 m high at maturity with a continuous horizontal fuel profile	

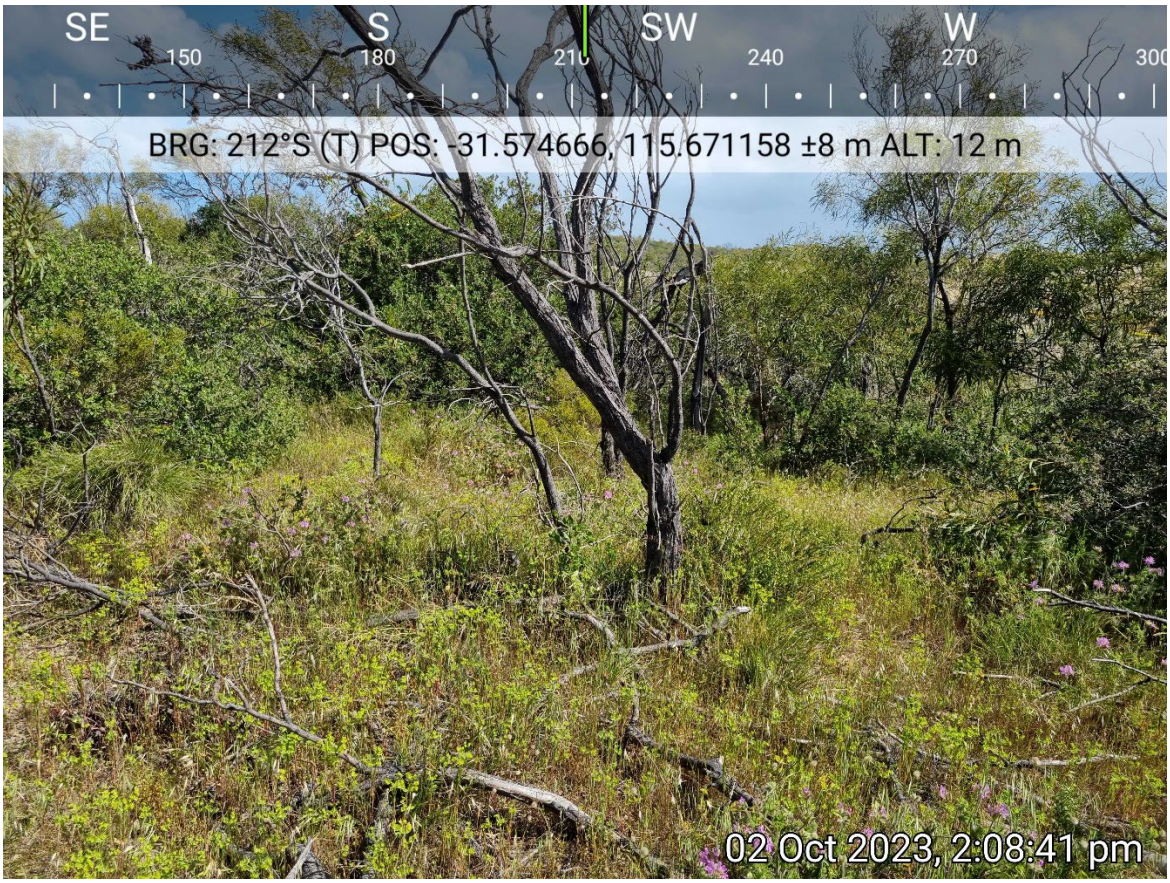


Photo ID: 1a

Plot 2	
Vegetation classification	Class D Scrub (Downslope >0–5°)

Description / justification

Scrub vegetation between 2–6 m high at maturity with a continuous horizontal fuel profile

Photo ID: 2a

Photo ID: 2b

Photo ID: 2c

Photo ID: 2d

Photo ID: 2e

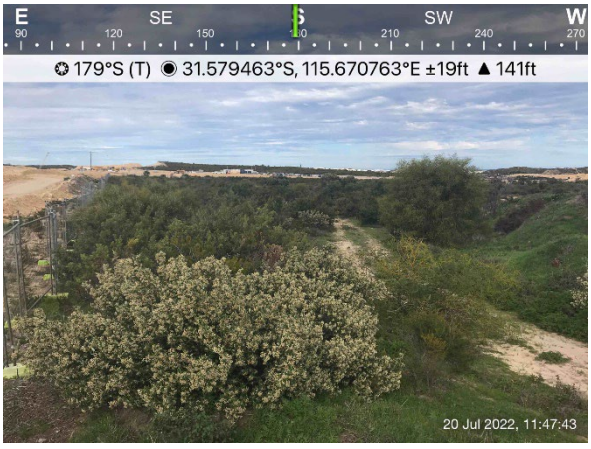
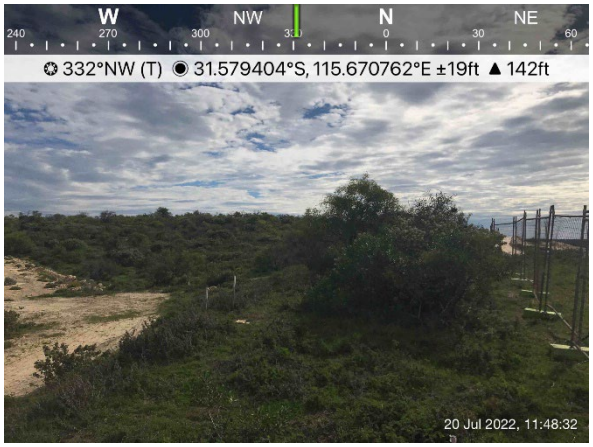
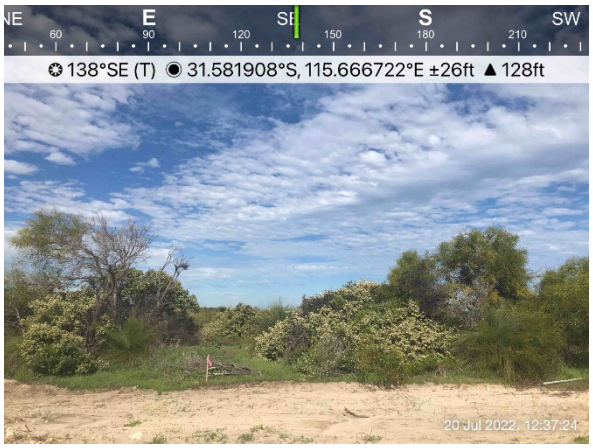
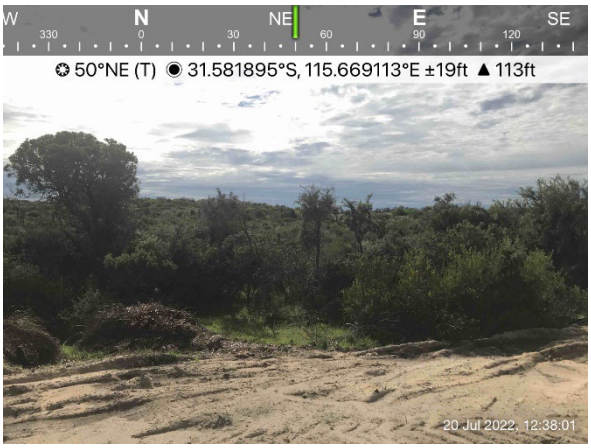


Photo ID: 2f

Plot 2	
 **Photo ID:** 2g	 **Photo ID:** 2h
 **Photo ID:** 2i	 **Photo ID:** 2j
 **Photo ID:** 2k	 **Photo ID:** 2l

Plot 2	
 **Photo ID:** 2m	

Plot 3	
Vegetation classification	Class D Scrub (Flat/Upslope)

Description / justification

Scrub vegetation between 2–6 m high at maturity with a continuous horizontal fuel profile

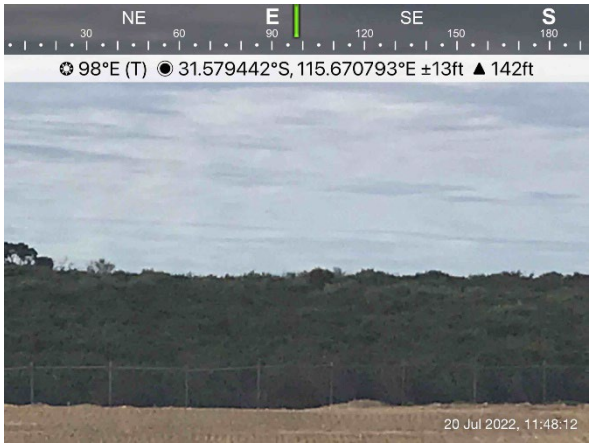


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Photo ID: 3b

Photo ID: 3c

Photo ID: 3d

Photo ID: 3e

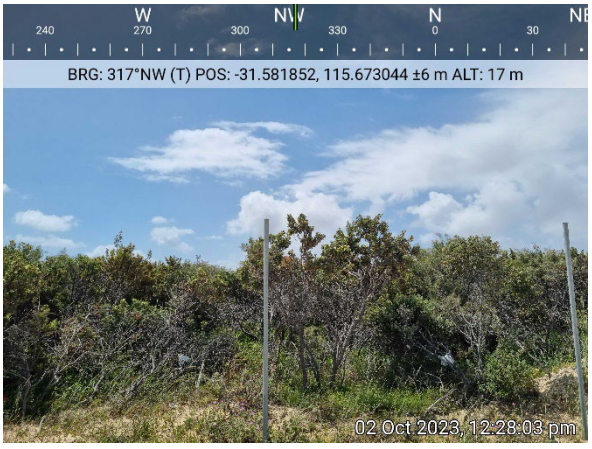


Photo ID: 3f

Plot 3	
 **Photo ID:** 3g	

Plot 4	
Vegetation classification	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])

Description / justification

Existing non-vegetated land/low threat areas including existing residential areas, roads, footpaths, earthworked extent and managed POS.

Photo ID: 4a

Photo ID: 4b

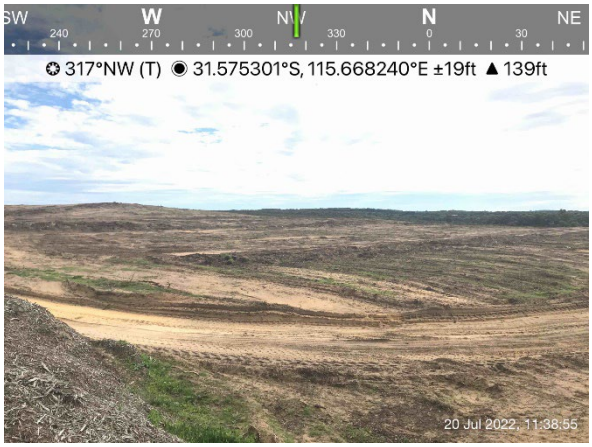


Photo ID: 4c

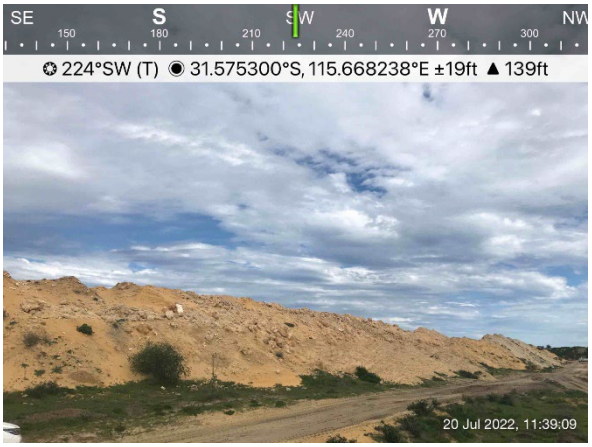
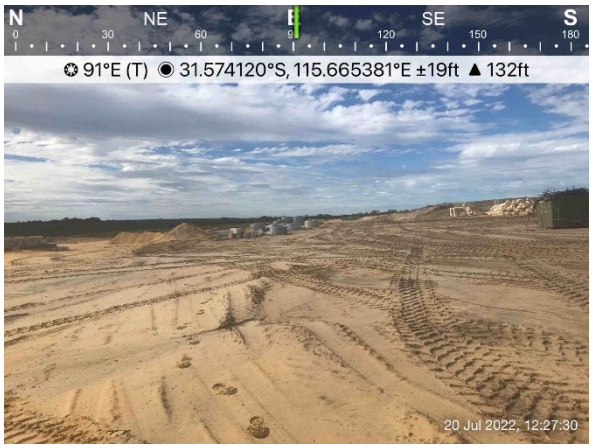


Photo ID: 4d

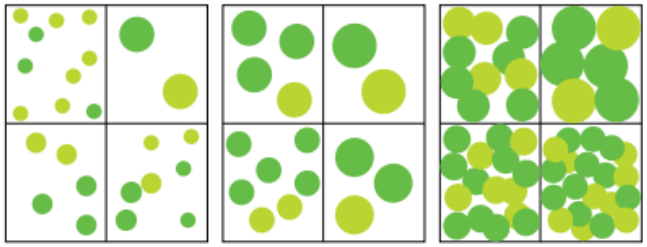
Photo ID: 4e

Photo ID: 4f

Plot 4	
 **Photo ID:** 4g	 **Photo ID:** 4h
 **Photo ID:** 4i	 **Photo ID:** 4j
 **Photo ID:** 4k	 **Photo ID:** 4l

Plot 4	
 **Photo ID:** 4m	 **Photo ID:** 4n

Appendix B APZ Standards (Schedule 1 of the Guidelines) and explanatory notes

Schedule 1: Standards for Asset Protection Zones	
Object	**Requirement**
Fences within the APZ	• Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	• Should be managed and removed on a regular basis to maintain a low threat state. • Should be maintained at <2 tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be <15 per cent of the total APZ area. • Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ. **Figure 19:** Tree canopy cover – ranging from 15 to 70 per cent at maturity 
Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps >5 square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.
Grass	• Grass should be maintained at a height of 100 millimetres or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.

Schedule 1: Standards for Asset Protection Zones	
Defendable space	Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. The pressure relief valve should point away from the house. No flammable material within six metres from the front of the valve. Must sit on a firm, level and non-combustible base and be secured to a solid structure.

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

Source: *Guidelines for Planning in Bushfire Prone Areas (WAPC 2021)*

Element 2 Explanatory Notes
E2 Managing an Asset Protection Zone (APZ) to a low threat state
An APZ is a low fuel area maintained around a habitable building to increase the likelihood that it will survive a bushfire, by providing a defendable space and reducing the potential for direct flame contact, radiant heat exposure and ember attack. Vegetation management within an APZ should provide defendable space and be maintained to a low threat state, in perpetuity, in accordance with the requirements outlined in Schedule 1. The width of an APZ varies with slope and vegetation type, however it should only be as wide as needed to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29), or 10kW/m² where a building is identified for use as an on-site shelter. An APZ is generally not required where a building or development site achieves 29kW/m² (BAL-29) or lower in its pre-development state (prior to any vegetation clearing or modification). An APZ should include an area of defendable space immediately adjoining a building, that is kept free from combustible items and obstructions, within which firefighting operations can be undertaken to defend the structure. Where a lot contains a building envelope, it may not be necessary for the entire building envelope to achieve 29kW/m² (BAL-29) as this may result in significant unnecessary clearing. It is recommended that the BMP identifies that a sufficient APZ can be accommodated within the building envelope, with the development site and associated APZ to be determined at the development approval stage. An APZ should be contained within the boundaries of the lot on which the building is situated, except in instances where it is demonstrated that the vegetation on the adjoining land is managed in a low threat state, as per cl. 2.2.3.2 of AS 3959, such as a road, managed park, rocky outcrop or a water body. The siting of a habitable building and associated APZ should aim to minimise the clearing of vegetation. The BMP should demonstrate that the proposed APZ has minimised the unnecessary loss of vegetation or potential for conflict with landscape or environmental objectives; and complies with environmental approvals/exemptions (where necessary). A re-design or reduction in lot yield may be necessary to minimise the removal and modification of remnant vegetation. It is recommended that development be located on flat areas or slopes less than 20 degrees (especially where classified vegetation is located downslope to a building) and away from ridge tops, crests or narrow gullies, as bushfire can spread rapidly in these areas. Circumstances where these locations may be suitable for development to occur include where the land is already cleared, and 29kW/m² (BAL-29) or

Element 2 Explanatory Notes
lower can be achieved for the whole development site without the use of an APZ. To ensure soil stability within an APZ, vegetation removal on slopes exceeding 18 degrees is discouraged. Fine fuel load should be maintained to less than two tonnes per hectare, however this is often a subjective assessment. Reducing fuel load levels does not necessarily require the removal of existing vegetation. A combination of methods can be utilised to reduce fuel load such as raking, weed removal, pruning, mulching and/or the removal of plant material. A simple method to estimate fuel load is to roughly equate one tonne of fuel load per hectare as 100 grams per square metre. For example, two tonnes per hectare of leaf litter is roughly 200 grams of leaf litter per square metre and eight tonnes per hectare is roughly 800 grams. Eucalyptus leaf litter is approximately 100 grams per handful, so two handfuls of litter per square metre will roughly equate to two tonnes per hectare. Different types of fine fuel, like mulch or pine needles may be more or less than a handful, however the 100 grams per square metre rule of thumb can still be used. The landowner or proponent is responsible for maintaining an APZ in accordance with Schedule 1 - Standards for Asset Protection Zones. Ongoing maintenance of an APZ is usually enforced through the local government firebreak notice issued under section 33 of the Bushfires Act 1954, and/or through a condition of a development approval, which requires the implementation of measures identified within a BMP. A copy of the firebreak notice and Schedule 1 should be included in a BMP specifically as a how-to guide for the landowner, and to demonstrate to decision-makers that the measures outlined in the BMP to achieve the appropriate BAL rating through provision and ongoing management of an APZ, can be implemented.
E2 Landscaping and design of an Asset Protection Zone
Landscaping, design, and maintenance of an APZ in a bushfire prone area can significantly improve the bushfire resilience of a building. An APZ should not be seen as an area entirely cleared of vegetation, but as a strategically designed space that gives holistic consideration to how existing or proposed vegetation or non-combustible features interact with, or affect the building's bushfire resilience. A well designed APZ provides a greater level of vegetation management within the first few metres of a building with, for example, less vegetation or inclusion of non-combustible materials. The vegetation within the remainder of an APZ can increase further away from the building with carefully considered plant selection and landscaping techniques. Strategic landscaping measures can be applied, such as replacing weeds with low flammability vegetation (refer to E2 Plant Flammability) to create horizontal and vertical separations between the retained vegetation. The accumulation of fine fuel load from different plants is an important consideration for ongoing maintenance in accordance with Schedule 1. For example, when planting ground covers under deciduous trees within an APZ, the total fine fuel load prescribed in Schedule 1 will include any dead plant material from ground covers and leaf litter from the trees. Plant density and final structure and form of mature vegetation should be considered in the initial landscaping stages. For example, clumps of sapling shrubs planted at a density without consideration of future growth, may increase the bushfire risk as a clump will quickly grow to exceed $5m^2$. It should be noted that in some cases, a single shrub in a mature state may be so dense as to fill a $5m^2$ clump alone. The location of plants within an APZ is a key design technique. Separation of garden beds with areas of low fuel or non-combustible material, will break up fuel continuity and reduce the likelihood of a bushfire running through an APZ and subjecting a dwelling to radiant heat or direct flame contact. It is important to note, where mature trees are separated from a building by six metres, but the canopy has grown to extend or overhang a building, maintenance and pruning to remove the overhanging branches should be undertaken without the entirety of the tree being removed.

Element 2 Explanatory Notes

Mulches used within the APZ should be non-combustible. The use of stone, gravel, rock and crushed mineral earth is encouraged. Wood mulch >6mm in thickness may be used, however it is recommended that it is used in garden beds or areas where the moisture level is higher by regular irrigation. These materials could be sourced from non-toxic construction and demolition waste giving the added benefit of reducing the environmental impact of any 'hard landscaping' actions.

Combustible objects, plants, garden supplies such as mulches, fences made from combustible material, should be avoided within 10 metres of a building. Vines or climbing plants on pergolas, posts or beams, should be located away from vulnerable parts of the building, such as windows and doors. Non-flammable features can be used to provide hazard separation from classified vegetation, such as tennis courts, pools, lawns and driveways or paths that use inorganic mulches (gravel or crushed rock). Consider locating firewood stacks away from trees and habitable buildings.

Incorporation of landscaping features, such as masonry feature walls can provide habitable buildings with barriers to wind, radiant heat and embers. These features can include noise walls or wind breaks. Use of Appendix F of AS 3959 for bushfire resistant timber selection within areas of 29kW/m² (BAL-29) or below, or the use of non-combustible fencing materials such as iron, brick, limestone, metal post and wire is encouraged.

In addition to regular maintenance of an APZ, further bushfire protection can be provided at any time by:

- ensuring gutters are free from vegetation;
- installing gutter guards or plugs;
- regular cleaning of underfloor spaces, or enclosing them to prevent gaps;
- trimming and removing dead plants or leaf litter;
- pruning climbing vegetation (such as vines) on a trellis, to ensure it does not connect to a building, particularly near windows and doors;
- removing vegetation in close proximity to a water tank to ensure it is not touching the sides of a tank; and/or
- following the requirements of the relevant local government section 33 fire break notice, which may include additional provisions such as locating wood piles more than 10 metres from a building.

Preparation of a property prior to the bushfire season and/or in anticipation of a bushfire is beneficial even if your plan is to evacuate. As embers can travel up to several kilometres from a bushfire and fall into small spaces and crevices or land against the external walls of a building, best practice recommends that objects within the APZ are moved away from the building prior to any bushfire event. Objects may include, but are not limited to:

- door mats;
- outdoor furniture;
- potted plants;
- shade sails or umbrellas;
- plastic garbage bins;
- firewood stacks;
- flammable sculptures; and/or
- playground equipment and children's toys.

E2 Plant flammability

There are certain plant characteristics that are known to influence flammability, such as moisture or oil content and the presence and type of bark. Plants with lower flammability properties may still burn during a bushfire event, but may be more resistant to burning and some may regenerate faster post-bushfire.

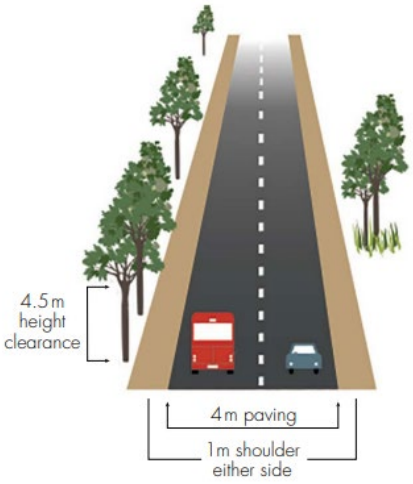
There are many terms for plant flammability that should not be confused, including:

- Fire resistant – plant species that survive being burnt and will regrow after a bushfire and therefore may be highly flammable and inappropriate for a garden in areas of high bushfire risk.
- Fire retardant – plants that may not burn readily or may slow the passage of a bushfire.

Element 2 Explanatory Notes
• Fire wise – plants that have been identified and selected based on their flammability properties and linked to maintenance advice and planting location within a garden. Although not a requirement of these Guidelines, local governments may develop their own list of fire wise or fire retardant plant species that suit the environmental characteristics of an area. When developing a recommended plant species list, local governments should consult with ecologists, land care officers or environmental authorities to ensure the plants do not present a risk to endangered ecological communities, threatened, or endangered species or their habitat. When selecting plants, private landholders and developers should aim for plants within the APZ that have the following characteristics: • grow in a predicted structure, shape and height; • are open and loose branching with leaves that are thinly spread; • have a coarse texture and low surface-area-to-volume ratio; • will not drop large amounts of leaves or limbs, that require regular maintenance; • have wide, flat, and thick or succulent leaves; • trees that have bark attached tightly to their trunk or have smooth bark; • have low amounts of oils, waxes, and resins (which will often have a strong scent when crushed); • do not produce or hold large amounts of fine dead material in their crowns; and/or • will not become a weed in the area. Refer to the WAPC Bushfire and Vegetation Fact Sheet for further information on clearing and vegetation management and APZ landscaping, design and plant selection reference material.

Source: *Guidelines for Planning in Bushfire Prone Areas (WAPC 2021)*

Appendix C Vehicular access technical standards of the Guidelines and explanatory notes

Acceptable Solution A3.1 – Public Roads
Explanatory Note E3.1
These 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. The IPWEA Subdivision Guidelines, Liveable Neighbourhoods, Austroad Standards do not prescribe a horizontal clearance. However, it is recommended that a traversable verge is provided to allow for emergency services vehicles to stop and operate on the side of the public road, specifically where the public road may traverse large areas of classified vegetation. Where local government roads are proposed to be widened by the proponent, they must obtain approval from the local government.    Figure 20: Example of a public road

Source: *Guidelines for Planning in Bushfire Prone Areas (WAPC 2021)*

Acceptable Solution A3.2a – Multiple access routes
Explanatory Note E3.2a

Two-way public road access is public road access from a lot in at least two different directions to two suitable destinations, and provides residents and the community, as well as emergency services, with access and egress from both the subdivision and individual habitable buildings/development in the event of a bushfire emergency. A single road provides no alternative route if the access becomes congested or is unable to be traversed due to smoke and/or fallen trees during a bushfire.

Two-way public road access applies to access/egress routes leading into a subdivision, as well as those within a subdivision. A road that loops back onto itself does not constitute the option of two different directions.

Two-way public road access should always be the first option. Where the site is not able to achieve two-way access within 200 metres of the lot boundary, due to demonstrated site or environmental constraints, the proponent should identify options for an emergency access way from the subject site to a suitable destination. Where an emergency access way cannot be provided, the proponent should demonstrate compliance with the performance principle.

Subject sites or proposed lots greater than 200 metres from an intersection, which provides two-way access, do not satisfy the requirement for two-way access unless they meet the provisions which allow for no-through roads greater than 200 metres in A3.2a.

To demonstrate compliance with the performance principle for two-way access, the bushfire planning practitioner may have regard to:

a. the extent of the bushfire hazard, location and vegetation classification, the likelihood, potential severity and impact of bushfire to the subject site and the road network;
b. time between fire detection and the onset of conditions in comparison to travel time for the community to evacuate to a suitable destination;
c. available access route(s) travelling towards a suitable destination; and
d. turn-around area for a fire appliance for no-through roads.

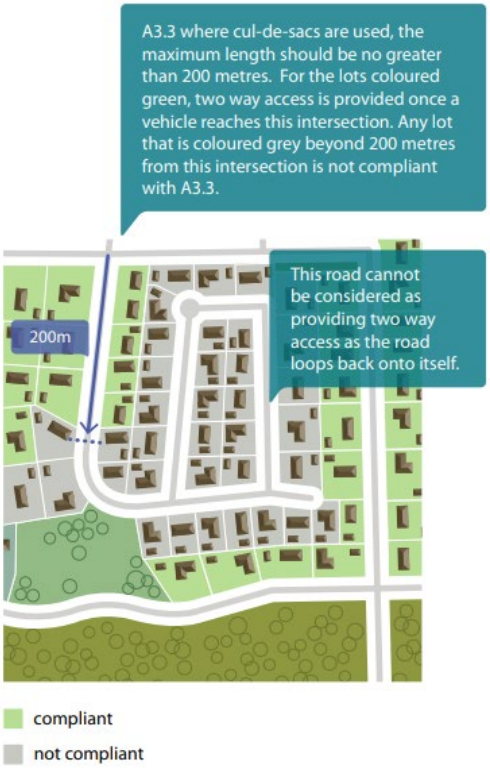


Figure 21: Example of compliant and non-compliant two-way

Acceptable Solution A3.2b – Emergency access way

Explanatory Note E3.2b

An emergency access way is not a preferred alternative to through public road access and should only be considered acceptable where it has been demonstrated that it will provide the safety and performance needs of emergency services and the community, including consideration for future needs, and that public road access to satisfy A3.2a cannot be achieved due to site constraints, such as an established road network with no opportunity to provide a public road for secondary access. Acceptance of an emergency access way should also consider the ability to accommodate reasonable worst-case vehicle volumes.

The principle function of the emergency access way is to provide a contingency (second) community evacuation route and simultaneously provide access for emergency services, in the event of a bushfire emergency. Where an emergency access way traverses classified vegetation, which has the potential to create a bushfire hazard, an emergency access way performs the secondary function of providing access by emergency services to this vegetation.

Emergency access ways should connect to a public road to allow alternative two-way through access. An emergency access way should not exceed 500 metres in length as they may not be as safe for road-use due to not being designed or constructed to the full requirements of a public road and may present uncertainties to emergency service personnel and the public as they are not part of the daily road network and not identified on Maps.

Permanent public emergency access way

An emergency access way can be provided as either a public easement in gross or a right-of-way. In both approaches, the management of the emergency access way is by the local government as the grantee of the easement or management body of the right-of-way. The proponent must obtain written consent from the local government that the local government will accept care, control and management of the easement or right-of-way; this must be provided to the decision-maker prior to granting planning approval. The approach taken is at the discretion of the decision-maker and/ or the local government and is also dependent on whether the land is to remain in private ownership or be ceded to the Crown. Consultation with Land Use Management at the Department of Planning, Lands and Heritage should also be considered if the land is to be ceded to the Crown or if the local government is uncertain of which approach to take.

If the emergency access way is provided as an easement, it should be provided as a public easement in gross under sections 195 and 196 of the Land Administration Act 1997 in favour of the local government and/or public authority, to ensure accessibility for emergency services and the public at all times. To be provided as a right-of-way the emergency access way should be vested in the Crown under section 152 of the Planning and Development Act 2005 as a right-of-way and such land to be ceded free of cost and without any payment or compensation by the Crown. If gates are used to control traffic flow during non-emergency periods, these will be managed by the local government and must not be locked. Gates should be double gates wide enough to access the full pavement width and accommodate Type 3.4 fire appliances with the design and construction to be approved by the relevant local government.

Temporary public emergency access way

A temporary emergency access way may be proposed to facilitate the staging arrangements of a subdivision. The provision of two public roads may not be possible in the first stage of the subdivision and an emergency access way can be provided as an interim access route until the second public road is developed and gazetted in a subsequent stage of the subdivision (see figure 22). The emergency access way should be provided in the same manner as a permanent emergency access way, but it should be removed from the certificate of title once the public road is developed and gazetted. Where an emergency access way is proposed as an alternative to a public road, the Bushfire Management Plan should provide thorough justification for its use.

Acceptable Solution A3.2b – Emergency access way

Explanatory Note E3.2b

Restricted public emergency access way

There may be some instances where a restricted emergency access way is proposed as a performance principle based solution where access is only available to the public in the event of a bushfire emergency. This option can only be considered where the local government or Main Roads WA have advised that vehicular access on the emergency access way is not allowed during non-emergency periods, as it provides an additional thoroughfare and entry point on a local or State road. In this scenario, the emergency access way can be provided as an easement under section 195 of the Land Administration Act 1997, as public access in the event of a bushfire emergency or vested in the Crown as a reserve under section 152 of the Planning and Development Act 2005. Such land is to be ceded free of cost without any payment or compensation by the Crown. The proponent must obtain written consent from the local government that the local government will accept care, control and management of the proposed reserve and agree to the terms of the Management Order Conditions (if applicable); this must be provided to the decision-maker prior to granting planning approval.

The purpose of the reserve should be for a public purpose specified in the condition related to the subdivision, for example for emergency access only, or for emergency access and recreation. A reserve for emergency access and recreation can optimise the land-use as a dual purpose where it provides vehicular access in the event of a bushfire emergency, but can be accessed by the public (on foot) on a day-to-day basis as a recreation link. Appropriate signage can ensure the general public is aware of the purpose of the reserve. The approach taken is at the discretion of the decision-maker and/or local government.

Right-of-carriageway emergency access way

There may be some instances where a right-of-carriageway easement is proposed as a performance principle-based solution. This may be where particular landowner(s) and emergency services, but not the public, require access over a neighbouring lot(s). A right-of-carriageway easement should be provided under section 195 of the Land Administration Act 1997. The easement is to provide alternative access for the particular landowner(s) in the event of a bushfire emergency and not for use by the public. In this scenario, support will be necessary from the adjoining lot owner(s). The easement is to be granted to the local government and it is to agree with the landowner on the arrangements of the management of the easement area by deed. These management arrangements will be at the discretion of the local government. If gated, the easement area can be locked to restrict day-to-day vehicular access.

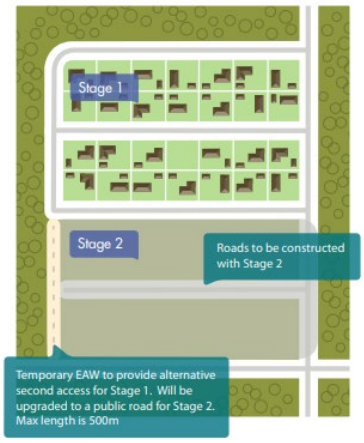


Figure 22: Example of an emergency access way

Source: *Guidelines for Planning in Bushfire Prone Areas (WAPC 2021)*

Acceptable Solution A3.3 – Through roads

Explanatory Note E3.3

In bushfire prone areas, a proposed structure plan or subdivision that incorporates no-through roads should be avoided because they do not provide a connected and legible design that allows for easy access and egress by the community, residents and emergency services in the event of a bushfire. No-through roads also reduce the options available for access and egress in the event of a bushfire emergency.

There will however be situations where a subject site is accessed via an existing or proposed no-through road and alternative access cannot be provided. In these situations, the proponent should demonstrate to the decision-maker, that all efforts have been made with the local government and/or adjoining landowners to secure alternative public road access or an emergency access way and that a redesign has been explored. The bushfire planning practitioner may need to develop a performance principle-based solution or address the non-compliance and demonstrate to the decisionmaker why discretion should be exercised in accordance with section 2.6 of these Guidelines.

No-through roads will only be considered an acceptable solution where it is demonstrated by the proponent, to the satisfaction of the decision maker, that a no through-road cannot be avoided due to site constraints. For example, the internal road design of a structure plan or subdivision where site constraints, such as a water body or Bush Forever, prevent the ability to create a through-road and a no through road may be a more appropriate road layout.

No-through roads should be a maximum of 200 metres from the lot(s) boundary to an intersection where two-way access is provided and may only exceed 200 metres if it meets the provisions which allow for no-through roads greater than 200 metres in A3.2a.

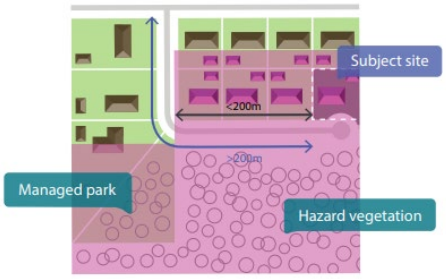


Figure 23: Example of a site on a no-through road greater than 200 metres from the intersection, but within 200 metres of BAL-LOW

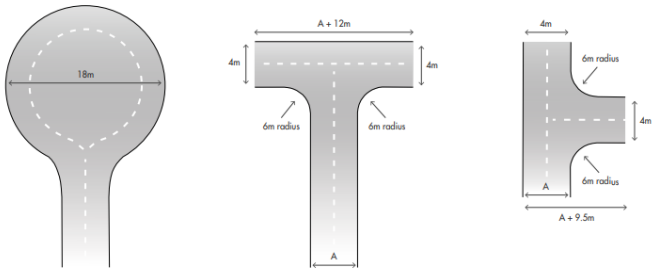


Figure 24: Turn-around area dimensions for a no-through road

Source: *Guidelines for Planning in Bushfire Prone Areas (WAPC 2021)*

Acceptable Solution A3.4a – Perimeter roads
Explanatory Note E3.4a

Where a planning proposal includes the creation of 10 or more lots adjacent to each other, which adjoin classified vegetation under AS 3959 with the exception of Class G Grassland, as part of a greenfield development or large urban infill site, hazard separation and defendable space should be provided in the form of a perimeter road. Greenfield is 'undeveloped or minimally developed areas that have been identified for urban development'; and urban infill is 'the redevelopment of existing urban areas at a higher density than currently exists'. The creation of 10 or more lots includes cumulative subdivision applications where the subdivision application may be part of a staged subdivision.

A perimeter road 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 as per the requirements of a public road in Table 6, Column 1.

As the road is likely to function as a key neighbourhood distributor, or similar, consideration should be given to the provision of additional width to allow for emergency services vehicles to stop and operate on the side of the perimeter road, whilst simultaneously proving for the evacuation of the community (Figure 20).

When designing a strategic planning proposal and/or subdivision, creating a large setback between classified vegetation and proposed lots with a perimeter road, and orientating habitable buildings to front onto (rather than back onto) areas of vegetation has many benefits, including:

- passive surveillance;
- defendable space for firefighting and emergency management purposes;
- reducing the potential radiant heat that may impact a habitable building in a bushfire event;
- reducing the need for battle-axe lots; and
- unconstrained public access/egress for the community in the event of a bushfire.

In developments where no perimeter road exists, property defence in a bushfire event is difficult and can be impossible. Where proposed lots have frontage to an existing public road and abut the hazard at the rear or side, it may be an undesirable planning outcome to create lots which front the existing public road and back onto a perimeter road. In this instance, consideration should be given to a fire service access route. Refer to E3.4b.

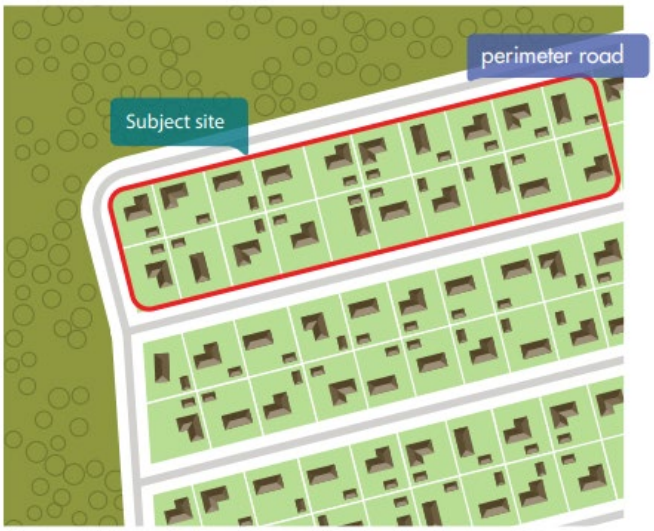


Figure 25: Example of a perimeter road

Source: *Guidelines for Planning in Bushfire Prone Areas (WAPC 2021)*

Technical requirement	1	2	3	4
	Public road	Emergency access way[1]	Fire service access route[1]	Battle-axe and private driveways[2]
Minimum trafficable surface (m)	In accordance with A3.1	6	6	4
Minimum horizontal clearance (m)	N/A	6	6	6
Minimum vertical clearance (m)	4.5	4.5	4.5	4.5
Minimum weight capacity (t)	15	15	15	15
Maximum grade unsealed road[3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%, 6°)	1:10 (10%, 6°)	1:10 (10%, 6°)
Maximum grade sealed road[3]		1:7 (14.3%, 8°)	1:7 (14.3%, 8°)	1:7 (14.3%, 8°)
Maximum average grade sealed road		1:10 (10%, 6°)	1:10 (10%, 6°)	1:10 (10%, 6°)
Minimum inner radius of road curves (m)		8.5	8.5	8.5

[1] To have crossfalls between 3 and 6%

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

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

Appendix D City of Wanneroo annual firebreak notice