

Dear Buyer/ Builder,

The below PDF document is the bushfire management plan (BMP) for Stages 38 and 39 in Catalina Green. As you may have noticed, there are two BAL contour maps in this document. For the purposes of evaluating Stage 38, the correct BAL contour map to use is **Figure 6 on Page 13 (or PDF page 18)**. Satterley can confirm that clearing in accordance with this map has been completed as of 16 August 2023. The correct plan is also provided as a separate document accessible via this link: [Stage 38 BAL Contour Plan](#).

The BAL rating in this document gives an indication of the level of bushfire attack (i.e., the radiant heat flux) that may be received by future development and subsequently informs the standard of building construction and/or setbacks required for proposed habitable development to potentially withstand such impacts and/or deliver compliance with bushfire protection criteria of the Guidelines.

When preparing your building permit application, you or your builder may be required to engage a third-party bushfire assessor to determine the lot specific BAL rating. The ultimate rating provided by the assessor will be based on their individual judgement of the site conditions, as well as when the assessment is conducted (vegetation may have grown or been cleared since this BMP was written). This may result in your assessor providing a different BAL rating on your lot when compared to the rating outlined in this document. Satterley recommend providing this report to your bushfire assessor at first contact so they fully understand the previous assumptions made and can choose which to adopt during their evaluation.

If you are unsure on this or any other aspect of buying or building, please don't hesitate to reach our customer service team on customerservicewa@satterley.com.au or call 08 9368 9000.

All the best with your new home.

Yours sincerely,

The Satterley Team

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: Catalina Green Estate

Suburb: Tamala Park

State: WA

P/code: 6030

Local government area: City of Wanneroo

Description of the planning proposal: Subdivision Application

BMP Plan / Reference Number: 62243/142,577

Version: R02 Rev 1

Date of Issue: 01/07/2022

Client / Business Name: Satterley Property Group on behalf of Tamala Park Regional Council

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)?

☐
☒

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)?

☐
☒

Is the proposal any of the following special development types (see SPP 3.7 for definitions)?

Unavoidable development (in BAL-40 or BAL-FZ)

☐
☒

Strategic planning proposal (including rezoning applications)

☐
☒

Minor development (in BAL-40 or BAL-FZ)

☐
☒

High risk land-use

☐
☒

Vulnerable land-use

☐
☒

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.)?

N/A

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

Zac Cockerill

Accreditation Level

Level 2

Accreditation No.

BPAD 37803

Accreditation Expiry

31/08/2022

Company

Strategen-JBS&G

Contact No.

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 01/07/2022

Satterley Property Group
Bushfire Management Plan (Subdivision Application)

Catalina Green
Lot 9032 Marmion Avenue, Clarkson

1 July 2022

62243/142,577 (Rev 1)

JBS&G Australia Pty Ltd T/A Strategen-JBS&G

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Appendix B	APZ standards (Schedule 1) and explanatory notes of the Guidelines (WAPC 2021)
Appendix C	Vehicular access technical standards and explanatory notes of the Guidelines (WAPC 2021)
Appendix D	City of Wanneroo Firebreak Notice (2021-22)

1. Proposal details

1.1 Background

Satterley Property Group, on behalf of Tamala Park Regional Council (TPRC), is in the process of developing Catalina Green Estate, situated at Lot 9032 Marmion Avenue, Clarkson, within the City of Wanneroo.

A plan of subdivision is provided in Figure 1, which depicts the following within the proposed subdivision area (hereon referred to as the project area):

- 139 proposed residential lots
- four proposed roadside Public Open Space (POS) areas
- internal public road network
- one balance landholding.

1.2 Site description

The project area forms an extension to existing subdivision approval (WAPC Ref. 160750) within Catalina Green Estate and is partially cleared and earthworked (see Figure 2). The project area is surrounded by:

- cleared, earthworked land on adjacent approved development stages north and west of the project area
- existing urban residential development to the north and west of the project area opposite Neerabup Road and Connolly Drive respectively
- vegetation yet to be cleared as part of future development stages of Catalina Green Estate to the south and east, including WAPC Lot 711 to the east, which TPRC is understood to be in the process of acquiring.

The proposed development is partially located within a bushfire prone area as designated on the *Map of Bush Fire Prone Areas* (DFES 2021; see Plate 1).

1.3 Purpose

This Bushfire Management Plan (BMP) has been prepared to accompany subdivision application and address requirements under Policy Measure 6.4 of *State Planning Policy 3.7 Planning in Bushfire-Prone Areas* (SPP 3.7; WAPC 2015) and *Guidelines for Planning in Bushfire-Prone Areas Version 1.4* (the Guidelines; WAPC 2021).

1.4 Other plans/reports

Other plans/reports prepared for the project area/surrounds include:

- Eco Logical Australia (2018), *Clearing and Revegetation Management Plan: Catalina Residential Development*
- Eco Logical Australia (2021a), *Bushfire Management Plan: Subdivision Application: Stage 1 of Catalina Grove, Clarkson*
- Eco Logical Australia (2021b), *Preliminary Bushfire Attack Level (BAL) Assessment Report for Catalina Grove – Green, Clarkson*.

The abovementioned reports have been considered as part of preparation of this BMP where applicable.

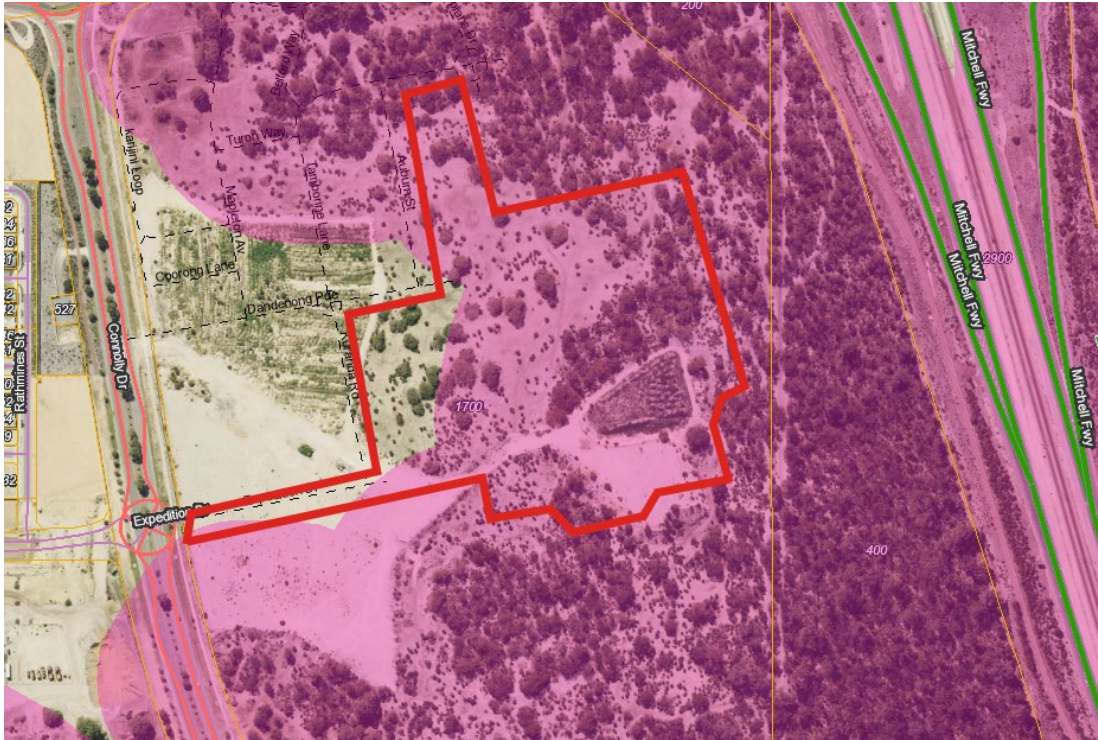


Plate 1: Map of Bush Fire Prone Areas (DFES 2021)

LEGEND

- Subdivision Application Area (262.48 Ha)
- Proposed Lots
- Dual Use Shared Path (2.5m)
- Footpath
- Trees Retained on Site

RESIDENTIAL LOT SUMMARY

Size	No. of Lots	%Total Lots
160 sqm. - 179 sqm.	15	10.8%
180 sqm. - 234 sqm.	25	18%
235 sqm. - 319 sqm.	27	19.4%
320 sqm. - 449 sqm.	61	43.9%
450 sqm. - 499 sqm.	10	7.2%
550 sqm. - 599 sqm.	01	0.7%

Total Residential Lots 139

Minimum Lot Size: 167 sqm.
Average Lot Size: 313.6 sqm.
Maximum Lot Size: 577 sqm.
Total Lot Area: 43585 sqm.

SUBJECT LAND SUMMARY

The proposed subdivision of Lot 9032 on DP422785 creates the following lot yield:
- 139 Residential Lots
- 1 Balance Lot

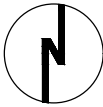
Approved
Subdivision
WAPC 160750

Balance Lot
52.26 Ha
(254.05 Ha)

DP422785
9032
60.7 Ha
(262.48 Ha)

PROPOSED FREEHOLD SUBDIVISION (GREEN PRECINCT)
LOT 9032 MARMION AVENUE, CLARKSON

Aerial supplied by: N/A
Aerial Date Stamp: N/A
Survey supplied by: N/A
Plan Number: NPS1059 - 005
Revision Number: J
Drawn By: Nivedita Ravindran
Client: Satterley Property Group

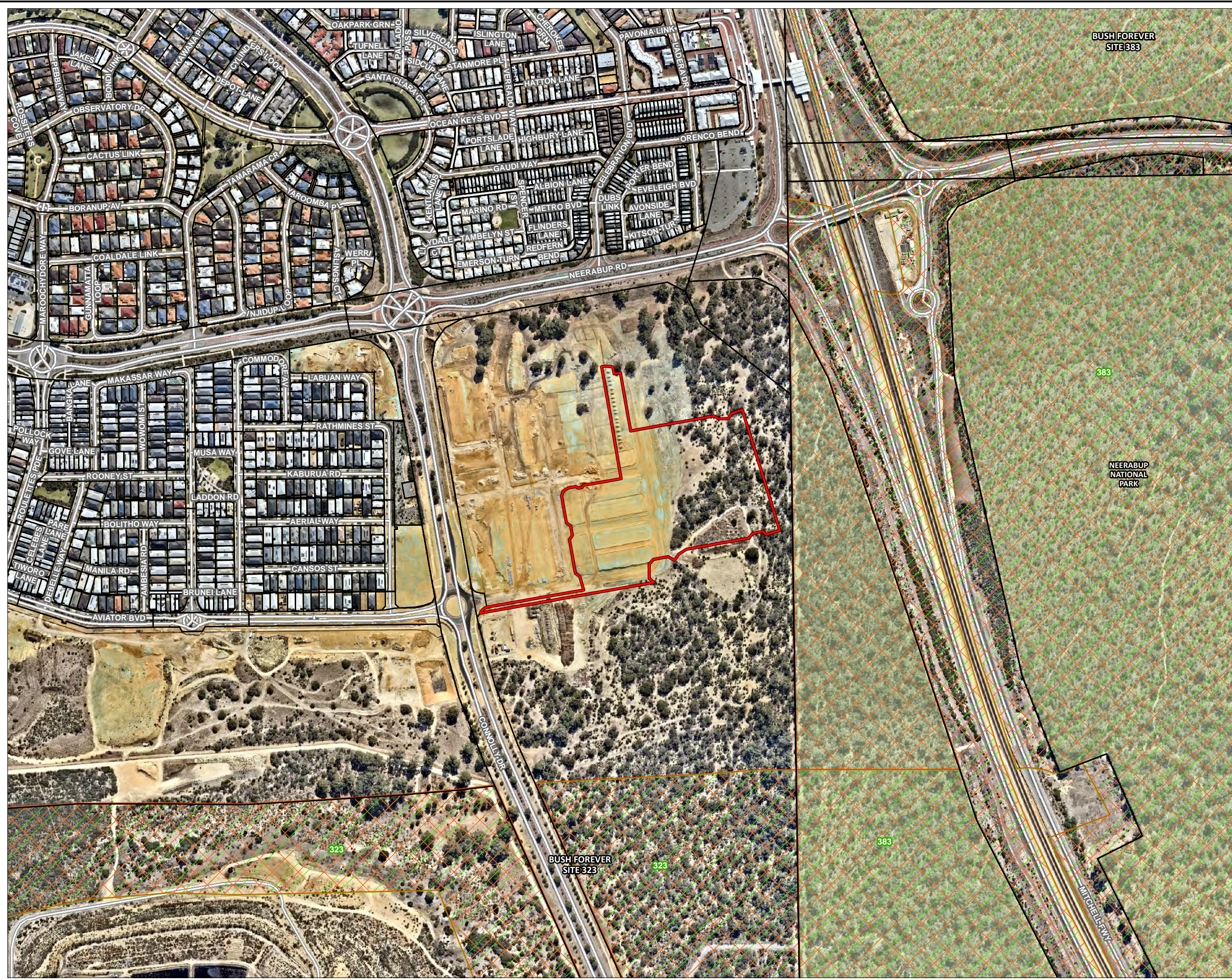


0 10 20 30 40 50 60 70 80 90 100m

Scale: 1:1200 @A3 Date Issued: 22.06.2022 ©Niche Planning Studio

DISCLAIMER:
Town Planning compliance is subject to approval from the Tamara Park Regional Council and a suitable town planner will need to be appointed.
All Dimensions, Areas and Calculations are subject to Detailed Survey and Design before Town Planning Permit application.
Built Form is illustrative only and subject to Architectural Design and approval from an RMA qualified architect. This plan has been prepared for illustrative purposes only and should not be used as a means to judge any properties value or field potential.

NICHE
PLANNING
STUDIO



- Legend**
- Project area
 - Cadastral boundary
 - Environmentally sensitive areas (DWER)
 - Bush Forever site (DPLH)
 - Legislated lands and waters (DBCA)
 - National Park
 - Roads



Job No: 62243

Client: Satterley Property Group

Version: A	Date: 23-Jun-2022
Drawn By: jcrute	Checked By: CT

Scale 1:5,500 at A3

0 50 100 metres

Coord. Sys. GDA 1994 MGA Zone 50

Catalina Green
Clarkson, WA

SITE OVERVIEW

FIGURE 2

2. Environmental considerations

2.1 Native vegetation – modification and clearing

The project area and associated low threat staging buffers will be predominantly cleared (with the exception of any high value trees retained where practicable), established and maintained in accordance with a low threat state under Clause 2.2.3.2 (f) of AS3959. Proposed tree retention, as depicted in Figure 3 through to Figure 6, will not compromise the intended low threat state of the project area and adjacent staging buffers given the sparse arrangement and lack of density in the trees to be retained.

As outlined in Table 1, the project area contains potential habitat for Threatened species protected under the EPBC Act. The environmental impacts resulting from implementation of the proposal have been addressed in accordance with standard State and Commonwealth legislative requirements through the State planning and development processes, as well as the Commonwealth EPBC Act.

Clearing of native vegetation within the site has been referred for assessment under the EPBC Act and approved with conditions as per EPBC 2010/5785. Clearing will also be subject to assessment through the planning process, which provides an exemption from the requirement of a state clearing permit.

In response to identification of the environmental values summarised in Table 1, proposed development within the project area has been designed to, where possible, avoid clearing of native vegetation through:

1. Strategic location of lot boundaries to minimise clearing impacts from Asset Protection Zones (APZs) and low threat staging buffers.
2. Retention of trees in POS/road verges, where said retention does not result in an unacceptable risk to future habitable buildings.
3. Selective planting within POS and streetscapes, where said planting does not result in an unacceptable risk to future habitable buildings.

Table 1 provides a summary of the environmental attributes potentially occurring within the site based on a search of publicly available environmental data.

Table 1: Summary of environmental values

Environmental value	Mapped as occurring within or adjacent to the project area		Description
	Within	Adjacent	
Environmentally Sensitive Area	✗	✓	An ESA is located east and south of the project area.
Swan Bioplan Regionally Significant Natural Area	✗	✗	There are no mapped Swan Bioplan Regionally Significant Natural Areas within or adjacent to the project area.
Ecological linkages	✗	✗	There are no mapped ecological linkages within or adjacent to the project area.
Wetlands	✗	✗	There are no mapped wetlands within or adjacent to the project area.
Waterways	✗	✗	There are no mapped waterways within or adjacent to the project area.
Threatened Ecological Communities listed under the EPBC Act	-	-	Strategen-JBS&G is not aware of any TECs occurring within the project area and understands that if present, this would have been addressed through the previous clearing approval process under the EPBC Act.

Environmental value	Mapped as occurring within or adjacent to the project area		Description
	Within	Adjacent	
Threatened and priority flora	-	-	Strategen-JBS&G is not aware of any threatened or priority flora occurring within the project area and understands that if present, this would have been addressed through the previous clearing approvals process under the EPBC Act.
Fauna habitat listed under the EPBC Act	✓	✓	Carnaby's Black Cockatoo habitat is mapped throughout the project area and adjacent land, as an area requiring investigation as feeding habitat. Strategen-JBS&G understands this would have been addressed through the EPBC Act approval process.
Threatened and priority fauna	-	-	Strategen-JBS&G is not aware of any threatened or priority fauna occurring within the project area and understands if present, that this would have been Addressed through the previous clearing approval process under the EPBC Act.
Bush Forever Site	✗	✓	Bush forever sites 323 and 383 are located south and east of the project area respectively and will not be impacted as part of the proposed subdivision.
DBCA managed lands and waters (includes legislated lands and waters and lands of interest)	✗	✓	There are no DBCA mapped ecological linkages within or adjacent to the project area.
Conservation covenants	✗	✗	Strategen-JBS&G is not aware of any conservation covenants in effect over the project area or adjacent land.

2.2 Revegetation / Landscape Plans

Four roadside POS areas are proposed, as indicated in Figure 1. These constitute narrow landscaped strips along the Connolly Drive entry road and the north-south spine road, and are not anticipated to contain significant amounts of retained or replanted vegetation, but rather low threat landscaping treatments that achieve one or a combination of exclusion Clauses 2.2.3.2 (d), (e) and (f). Low threat exclusions will be confirmed for these POS areas as part of detailed landscape plans prepared following subdivision approval.

As previously stated, proposed tree retention, as depicted in Figure 3 through to Figure 6, will not compromise the intended low threat state of the project area and adjacent staging buffers given the sparse arrangement and lack of density in the trees to be retained.

A future POS cell to the south of the project area is likely to be associated with the retention and introduction of drainage vegetation. Early concepts indicate a drainage basin of approximately 0.5 ha in size is proposed to contain retained scrub vegetation, as well as scrub planting for drainage purposes. This potential vegetated component south of the project area may be either classifiable or excludable under AS3959, dependent on the following two scenarios:

- should TPRC acquire the adjacent east WAPC Lot 711 and implement the full extent of 100 m wide low threat staging buffers, this drainage vegetation will be excludable under Clause 2.2.3.2 (b), as depicted in Figure 3
- should TPRC not acquire the adjacent east WAPC Lot 711 and be unable to implement the full extent of 100 m wide low threat staging buffers, this drainage vegetation will constitute Class D scrub, as depicted in Figure 4.

Both vegetation scenarios have been assessed as part of this BMP to demonstrate that the proposed subdivision can cater for both the anticipated and worst case BAL impacts to the site.

3. Bushfire assessment results

3.1 Assessment inputs

3.1.1 Vegetation classification

Strategen-JBS&G assessed classified vegetation and exclusions within the 150 m assessment area through on-ground verification on 30 November 2021 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 a description of the vegetation classifications and exclusions are contained in Appendix A.

As referenced in Section 2.2, two different vegetation scenarios have been mapped subject to potential land acquisition by TPRC of the adjacent east WAPC Lot 711. Scenario 1 caters for this land acquisition to occur, enabling the full extent of 100 m wide low threat staging buffers and exclusions to be established, as depicted in Figure 3. This presents the most likely and ideal bushfire management outcome. Scenario 2 has been provided to present the unlikely worst case bushfire management outcome should the land acquisition not occur, resulting in reduced low threat staging buffer widths and classification of future drainage vegetation, as depicted in Figure 4.

A description of the assessed classified vegetation plots for both scenarios is provided below and a summary is contained in Table 2 and Table 3 for each respective scenario.

The following areas are proposed to be modified to a low threat state as part of proposed development (noting that proposed tree retention has been properly considered in these descriptions):

- those portions of the project area that are currently vegetated
- 100 m wide low threat staging buffers around perimeter lots and future drainage vegetation to remove any unnecessary BAL impacts from temporary vegetation retained on adjacent stages (with acquisition of WAPC Lot 711)
- reduced low threat staging buffers around perimeter lots and future drainage vegetation to remove any unnecessary BAL impacts from temporary vegetation retained on adjacent stages (without acquisition of WAPC Lot 711).

Classified vegetation identified within 150 m of the project area included:

- areas of Class B Woodland to the east and south comprising two-tiered woodland fuel profile at maturity with overstorey eucalypts and a grassy understorey
- predominant coverage of banksia/casuarina Class D scrub to the south
- Class G grassland throughout cleared, unmanaged areas and road verge to the north.

Remaining land within the 150 m assessment area comprises existing non-vegetated and low threat managed vegetation excluded from classification under Clauses 2.2.3.2 (e) and (f).

The future drainage vegetation south of the project area (approximately 0.5 ha in size) will be excludable under Clause 2.2.3.2 (b) with acquisition of WAPC Lot 711 and establishment of the full extent of 100 m wide staging buffers, or classifiable as Class D scrub without acquisition of WAPC Lot 711 as a result of reduced low threat staging buffer widths (i.e. less than 100 m).

3.1.2 Effective slope

Strategen-JBS&G assessed effective slope under classified vegetation within the 150 m assessment area through on-ground verification on 30 November 2021 in accordance with AS 3959. Results were cross-referenced with DPIRD 2m contour data and are depicted in Figure 3 and Figure 4 dependent on the status of land acquisition of WAPC Lot 711. A summary of the effective slope assessed under classified vegetation is contained in Table 2 and Table 3 for each respective scenario.

Site observations indicate that the effective slope under all classifiable vegetation within the 150 m assessment area is flat or up-slope in relation to the project area.

3.1.3 Summary of inputs

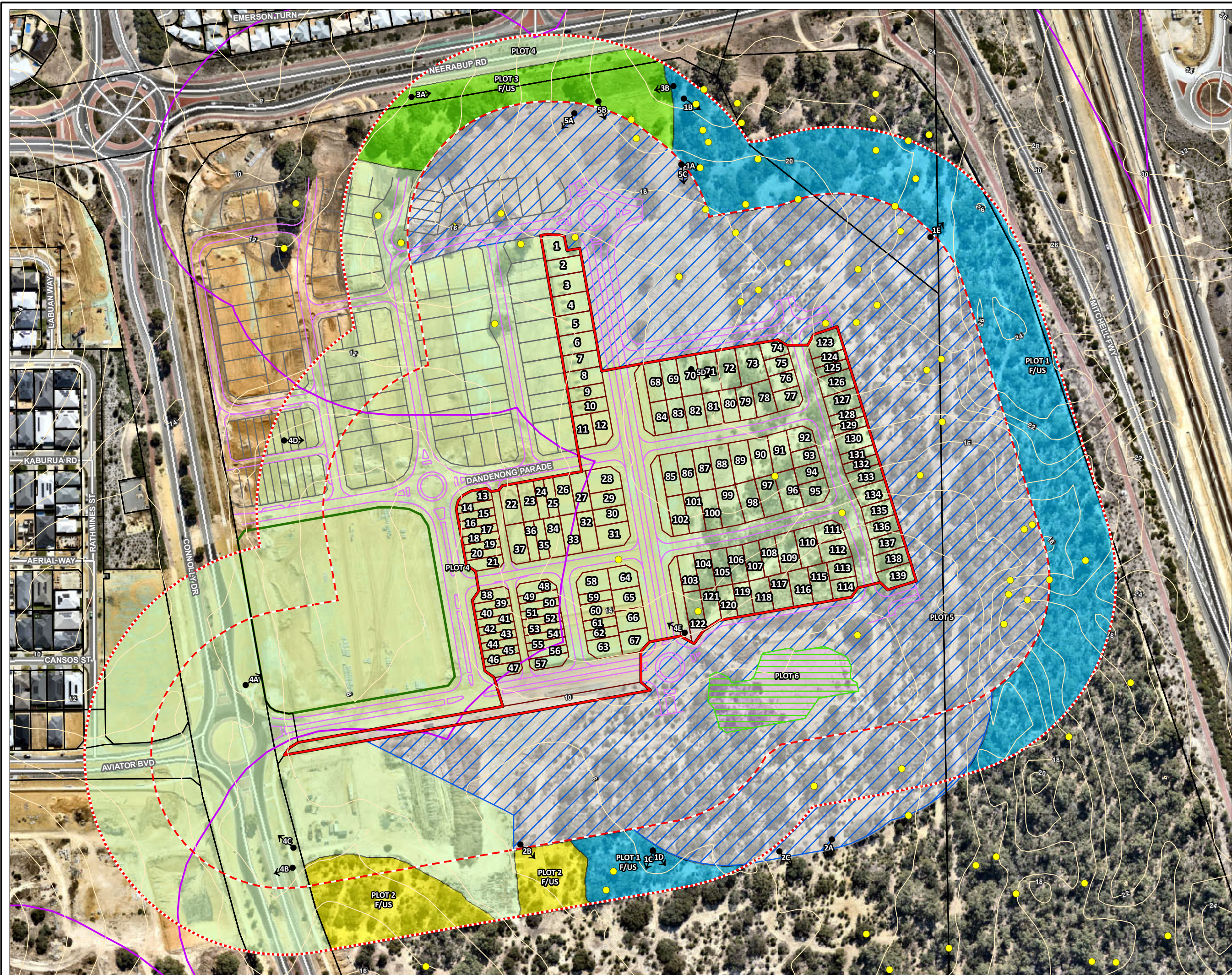
Figure 3 and Figure 4 illustrate the anticipated post-development vegetation classifications and exclusions within the 150 m assessment area, dependent on the status of land acquisition of WAPC Lot 711. The post-development vegetation classifications/exclusions and effective slope are summarised in Table 2 and Table 3, dependent on the status of land acquisition of WAPC Lot 711.

Table 2: Summary of post-development vegetation classifications, exclusions and effective slope (with acquisition of WAPC Lot 711)

Vegetation plot	Vegetation classification	Effective slope	Comments
1	Class B Woodland	Flat/upslope (0°)	Two-tiered woodland fuel profile at maturity with overstorey eucalypts and a grassy understorey
2	Class D Scrub	Flat/upslope (0°)	Scrub vegetation with a continuous horizontal fuel profile between 2–6 m in height at maturity
3	Class G Grassland	Flat/upslope (0°)	Grassland greater than 100 mm in height
4	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	Low threat cultivated gardens and maintained lawns within surrounding properties and non-vegetated areas including roads, footpaths, driveways and building footprints
5	Excluded – Vegetation to be modified to a low threat state (Clause 2.2.3.2 [e] and [f])	N/A	Vegetation to be cleared or modified to a low threat state as part of proposed development.
6	Excluded – Clause 2.2.3.2 [b]	N/A	Future drainage vegetation (approximately 0.5 ha in size) situated 100 m from any other areas of classified vegetation.

Table 3: Summary of post-development vegetation classifications, exclusions and effective slope (without acquisition of WAPC Lot 711)

Vegetation plot	Vegetation classification	Effective slope	Comments
1	Class B Woodland	Flat/upslope (0°)	Two-tiered woodland fuel profile at maturity with overstorey eucalypts and a grassy understorey
2	Class D Scrub	Flat/upslope (0°)	Scrub vegetation with a continuous horizontal fuel profile between 2–6 m in height at maturity, including future drainage vegetation to the south of the project area
3	Class G Grassland	Flat/upslope (0°)	Grassland greater than 100 mm in height
4	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	Low threat cultivated gardens and maintained lawns within surrounding properties and non-vegetated areas including roads, footpaths, driveways and building footprints
5	Excluded – Vegetation to be modified to a low threat state (Clause 2.2.3.2 [e] and [f])	N/A	Vegetation to be cleared or modified to a low threat state as part of proposed development.



- Legend**
- Project area
 - 100m assessment area
 - 150m assessment area
 - Cadastral boundary
 - Bushfire prone areas
 - 100m wide low threat staging buffer
 - Future drainage basin
 - POS
 - Proposed lots
- Vegetation classification**
- Class B Woodland
 - Class D Scrub
 - Class G Grassland
 - Class 2.2.3.2 (b)
 - Class 2.2.3.2 (e) & (f)
- Area to be modified to non-vegetated and low threat state
- Proposed carriageways
- Indicative future subdivisions on adjacent stages
- Topographic contours (mAHD)
- Photo point directions
- Roads
- Potential tree retention



Job No: 62243

Client: Satterley Property Group

Version: A Date: 01-Jul-2022

Drawn By: jcrute Checked By: CT

Scale 1:2,600 at A3

0 50 100 metres

Coord. Sys. GDA 1994 MGA Zone 50

Catalina Green
Clarkson, WA

**VEGETATION CLASSIFICATION
AND EFFECTIVE SLOPE
(WITH ACQUISITION OF
WAPC LOT 711)**

FIGURE 3

3.2 Assessment outputs

3.2.1 Bushfire Attack Level (BAL) contour assessment

Strategen-JBS&G has undertaken a BAL contour assessment in accordance with Method 1 of AS 3959 for the project area for both vegetation scenarios, including:

- with acquisition of WAPC Lot 711, enabling the full extent of 100 m wide low threat staging buffers and exclusion of future drainage vegetation to be established (Figure 5)
- without acquisition of WAPC Lot 711, resulting in reduced low threat staging buffer widths and classification of future drainage vegetation (Figure 6).

The Method 1 procedure incorporates the following factors:

- state-adopted FDI 80 rating
- vegetation classification
- effective slope
- distance maintained between proposed development areas and the classified vegetation.

The BAL rating gives an indication of the level of bushfire attack (i.e. the radiant heat flux) that may be received by future development and subsequently informs the standard of building construction and/or setbacks required for proposed habitable development to potentially withstand such impacts and/or deliver compliance with bushfire protection criteria of the Guidelines.

The calculated BAL is based on the vegetation classifications and effective slope observed at the time of inspection and separation distances achieved in line with the plan of subdivision in Figure 1, whilst also taking into account the two different vegetation scenarios discussed above.

Results of the BAL contour assessment are summarised in Table 4 and Table 5 and depicted in Figure 5 and Figure 6, dependent on the status of land acquisition of WAPC Lot 711.

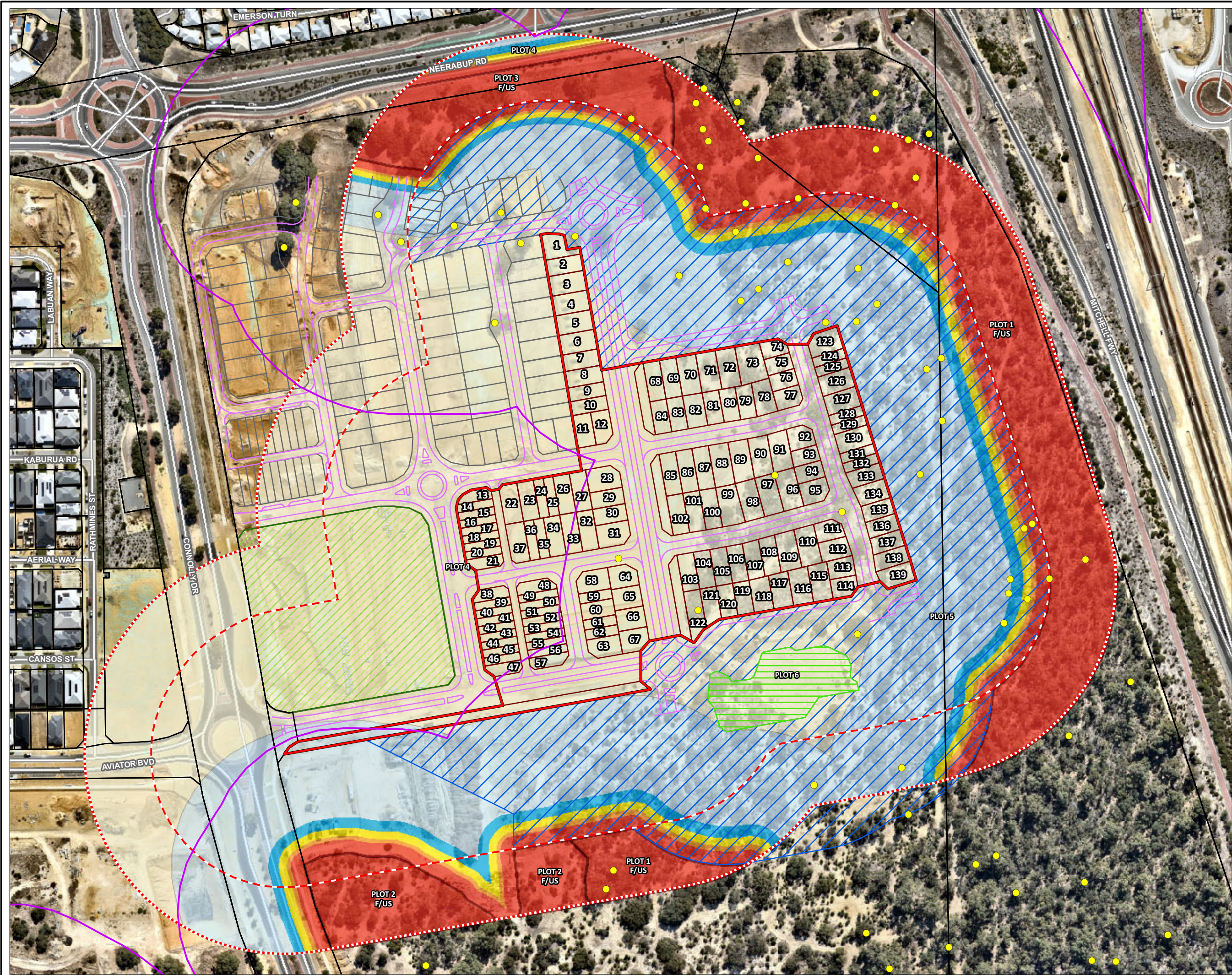
The highest BAL applicable to proposed habitable development with acquisition of WAPC Lot 711 is BAL-Low. This outcome presents the most likely and ideal bushfire management outcome. The highest BAL applicable to proposed habitable development without acquisition of WAPC Lot 711 is BAL-19. This outcome presents the unlikely worst case bushfire management outcome.

Table 4: BAL contour assessment results (with acquisition of WAPC Lot 711)

Plot	Vegetation classification	Effective slope	Separation distance (to nearest lot boundary)	BAL
1	Class B Woodland	Flat/upslope (0°)	100 m	BAL-Low
2	Class D Scrub	Flat/upslope (0°)	100 m	BAL-Low
3	Class G Grassland	Flat/upslope (0°)	>50 m	BAL-Low
4	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	N/A	N/A
5	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	N/A	N/A
6	Excluded – Clause 2.2.3.2 [b]	N/A	N/A	N/A

Table 5: BAL contour assessment results (without acquisition of WAPC Lot 711)

Plot	Vegetation classification	Effective slope	Separation distance (to nearest lot boundary)	BAL
1	Class B Woodland	Flat/upslope (0°)	20 m	BAL-19
2	Class D Scrub	Flat/upslope (0°)	30 m	BAL-12.5
3	Class G Grassland	Flat/upslope (0°)	>50 m	BAL-Low
4	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	N/A	N/A
5	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	N/A	N/A



- Legend**
- Project area
 - 100m assessment area
 - 150m assessment area
 - Cadastral boundary
 - Bushfire prone areas
 - POS
 - Proposed lots
 - Future drainage basin
 - 100m wide low threat staging buffer
 - Classified vegetation
- BAL contours**
- BAL FZ
 - BAL 40
 - BAL 29
 - BAL 19
 - BAL 12.5
 - BAL Low
- Proposed carriageways
- Indicative future subdivisions on adjacent stages
- Roads
- Potential tree retention



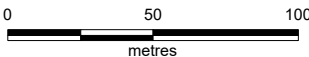
Job No: 62243

Client: Satterley Property Group

Version: A Date: 01-Jul-2022

Drawn By: jcrute Checked By: CT

Scale 1:2,600 at A3

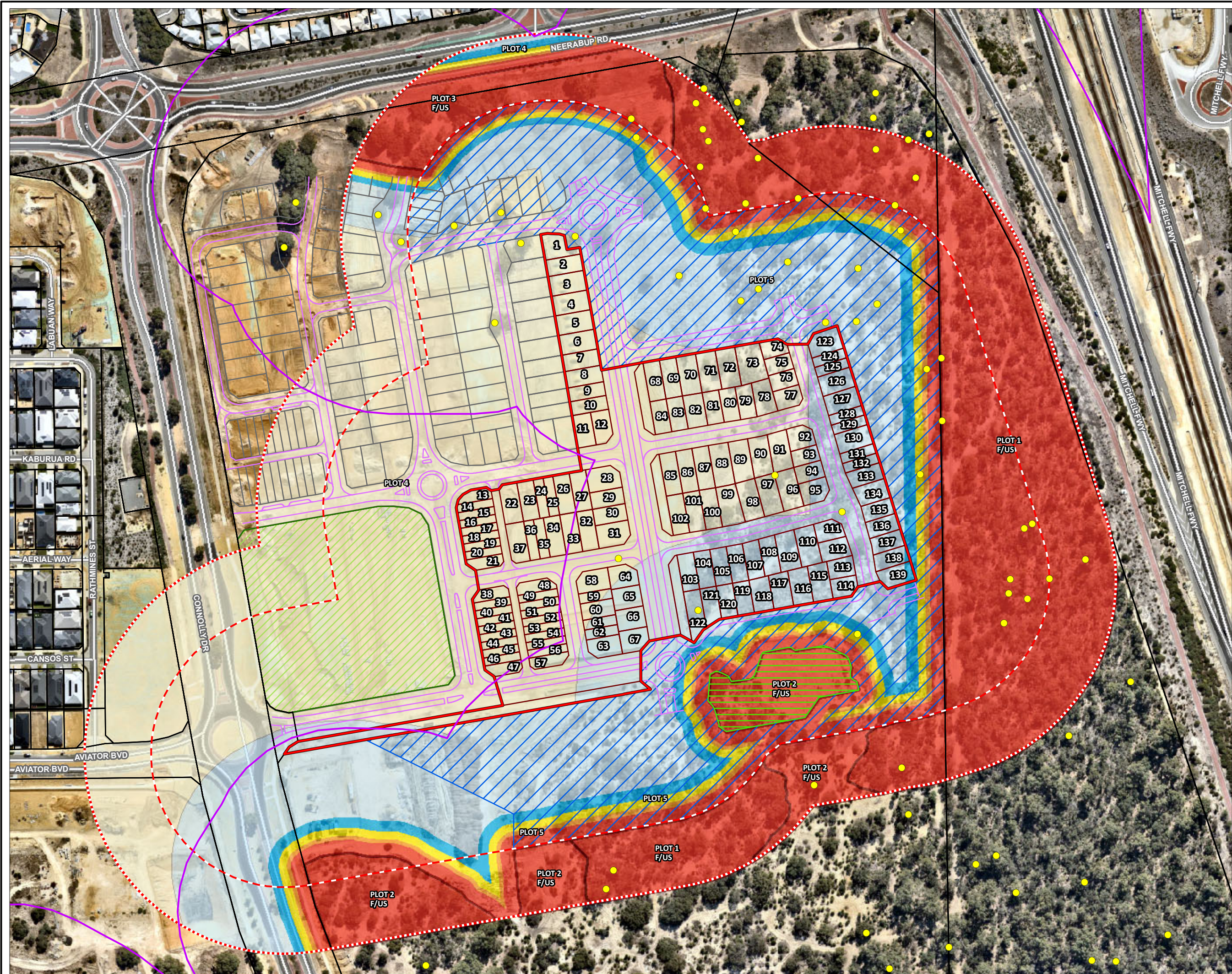


Coord. Sys. GDA 1994 MGA Zone 50

Catalina Green
Clarkson, WA

**BAL CONTOUR MAP
(WITH ACQUISITION OF
WAPC LOT 711)**

FIGURE 5



- Legend**
- Project area
 - 100m assessment area
 - 150m assessment area
 - Cadastral boundary
 - Bushfire prone areas
 - POS
 - Proposed lots
 - Future drainage basin
 - 100m wide low threat staging buffer
 - Classified vegetation
- BAL contours**
- BAL FZ
 - BAL 40
 - BAL 29
 - BAL 19
 - BAL 12.5
 - BAL Low
- Proposed carriageways
- Indicative future subdivisions on adjacent stages
- Roads
- Potential tree retention



Job No: 62243

Client: Satterley Property Group

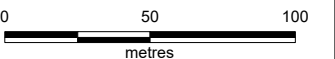
Version: A

Date: 29-Jun-2022

Drawn By: jcrute

Checked By: CT

Scale 1:2,600 at A3



Coord. Sys. GDA 1994 MGA Zone 50

Catalina Green
Clarkson, WA

BAL CONTOUR MAP
(WITHOUT ACQUISITION OF
WAPC LOT 711)

FIGURE 6

4. Identification of bushfire hazard issues

4.1 Bushfire context

The project area is surrounded by a combination of existing residential development, remnant woodland/scrub vegetation and land cleared to facilitate approved subdivision development.

Land to the north and west comprises existing and ongoing residential development in the form of roads, cleared vacant lots, houses and low threat managed residential lots and parks that do not pose a bushfire threat to the proposed development.

Potential fire runs of over 1 km in length on variable topography exist to the south through woodland and scrub vegetation and pose a risk to future assets in the project area. This bushfire scenario is considered to pose the worst case fire threat to proposed development and may result in moderate to elevated levels of radiant heat and ember attack at the bushland interface. However, it is acknowledged that this threat will be greatly diminished following rollout of clearing for low threat staging buffers and ultimately future development stages to the south.

The other main bushfire risk to the project area is from a bushfire spreading through Neerabup National Park to the east of the Mitchell Freeway, which would be expected to be a fully developed bushfire, with potential fire runs of up to 2.5 km in length. Mitchell Freeway provides significant fragmentation of the fire run and separation between classified vegetation and proposed assets (typically between 60–70 m in width). This separation would be sufficient to arrest rapid bushfire spread from east to west across the freeway; however, heavy spotting and ember attack would be expected that could impact future assets and reignite a bushfire throughout the local vegetation extent surrounding the site. Potential acquisition and clearing within the adjacent east WAPC Lot 711 would provide significant risk mitigation for a potential bushfire scenario from the east.

4.2 Bushfire hazard issues

The BAL contours identified under both vegetation scenarios in Figure 5 and Figure 6 demonstrate that all proposed lots are located within areas of BAL-29 or lower. Updated BAL contours will need to be determined at subdivision clearance once the final vegetation scenario has been confirmed, subject to land acquisition of WAPC Lot 711 and detailed landscape design.

On completion of development within the project area, there will be a reduced bushfire risk to future assets as a result of vegetation clearing/modification that will be undertaken to facilitate development of Catalina Green. Vegetation clearing throughout development staging will play an important role in managing the bushfire risk posed by on-site temporary vegetation during roll out of individual development stages. If development is staged, vehicular access arrangements will also need to ensure that all occupiers and visitors are provided with at least two vehicular access routes at all times. Potential staging matters are discussed as key management measures below and reiterated in Section 5.

If subdivisional works are to be staged internal to the project area, the following staging provisions are to be implemented as required and in advance of lot creation within each development stage to negate any unnecessary bushfire risk from future development stages:

- establishment of low threat staging buffers around proposed residential lots, as discussed in Section 5 and depicted in Figure 5 and Figure 6 subject to land acquisition of WAPC Lot 711 and detailed landscape design
- provision of temporary compliant cul-de-sacs and turn-around points (if staged road construction is to be less than 200 m long), until such time that through access can be achieved onto adjacent development stages (this may also require consideration of temporarily quarantined lots to accommodate 18 m diameter cul-de-sac heads that cannot otherwise be achieved within existing road reserve widths)

- provision of temporary compliant Emergency Access Ways (EAWs) to achieve through access for each internal development stage if the access route is longer than 200 m and cannot be dealt with via a compliant temporary cul-de-sac.

These provisions will not apply for internal stages that are subject to BAL-Low and/or are not designated bushfire prone.

Fire Brigade and Fire and Rescue Services stationed at Butler in the north and Joondalup in the south are expected to provide a best-case emergency suppression response time of 20 minutes should a bushfire threaten habitable buildings within the project area.

On this basis, Strategen-JBS&G considers the bushfire hazards within and adjacent to project area and the associated bushfire risks are readily manageable through standard management responses outlined in the Guidelines and AS 3959, as detailed in Section 5. These responses have been factored in to proposed development as early as possible at all stages of the planning process to ensure a suitable, compliant and effective bushfire management outcome is achieved for protection of future life, property and environmental assets.

5. Assessment against the bushfire protection criteria

5.1 Compliance with Elements 1–4

Compliance with Elements 1 – 4 of the bushfire protection criteria of the Guidelines (Version 1.4) is demonstrated by meeting the acceptable solutions, as detailed in Table 6.

Table 6: Compliance with the bushfire protection criteria of the Guidelines (Elements 1–4)

Bushfire protection criteria	Performance Principle	Method of compliance	Statement of development compliance	Compliance achieved
		Acceptable solutions		
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 BAL contour assessments (see Table 4 and Figure 5; and Table 5 and Figure 6 for the respective vegetation scenarios) demonstrate that all future habitable development will be located within BAL-29 or lower for either vegetation scenario, irrespective of the status of land acquisition of adjacent east WAPC Lot 711.	✓
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 defensible 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.	APZs are not warranted since BAL impacts to proposed lots can be managed within compliant levels through clearing and earthworks associated with proposed development of the site for either vegetation scenario. Low threat staging buffers will be sufficient to manage BAL impacts from temporary vegetation on adjacent stages. Low threat areas established as part of the development, such as POS and road verges will comply with APZ standards where relevant and be maintained in accordance with Schedule 1 of the Guidelines Appendix B).	✓

Bushfire protection criteria	Performance Principle	Method of compliance	Statement of development compliance	Compliance achieved
		Acceptable solutions		
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 <i>The minimum requirements under this acceptable solution are applicable to all proposed and existing public roads.</i> 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 public roads will be constructed to the minimum technical requirements of the Guidelines (see Appendix C) and in accordance with relevant federal, State and local government requirements.	✓
		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: <ul style="list-style-type: none"> the no-through road travels towards a suitable destination; and 	On completion of development, the existing public road network and proposed internal public roads will provide all occupants with the option of travelling to at least two different suitable destinations in two different directions. The proposed vehicular access network will provide two links to Connolly Drive to the west and one link to Neerabup Road to the north. In this regard, the proposed development is provided with at least two access routes, which meets the requirements of Acceptable Solution A3.2a. Two access routes will also be provided during staging of development. Proposed development does not include any no-through roads.	✓

Bushfire protection criteria	Performance Principle	Method of compliance	Statement of development compliance	Compliance achieved
		Acceptable solutions		
		<ul style="list-style-type: none"> 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. 		
		<p>A3.2b Emergency access way</p> <p><i>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.</i></p> <p>An emergency access way is to meet all the following requirements:</p> <ul style="list-style-type: none"> requirements in Table 6, Column 2; provides a through connection to a public road; 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. 	The proposed development does not require any permanent Emergency Access Ways (EAWs) to provide through access to a public road. However, if development and vehicular access construction is to be staged, any proposed temporary EAWs are to be constructed to the relevant technical requirements of the Guidelines (Appendix C).	✓
		<p>A3.3 Through-roads</p> <p>All public roads should be through-roads. No-through roads should be avoided and should only be considered as an acceptable solution where:</p> <ul style="list-style-type: none"> 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. 	All proposed roads will be through roads. However, if development and vehicular access construction is to be staged, any proposed temporary no-through roads will be constructed to the relevant technical requirements of the Guidelines (Appendix C).	✓

Bushfire protection criteria	Performance Principle	Method of compliance	Statement of development compliance	Compliance achieved
		Acceptable solutions		
		<p>A no-through road is to meet all the following requirements:</p> <ul style="list-style-type: none"> requirements of a public road (Table 6, Column 1); and turn-around area as shown in Figure 24. 		
	<p>Performance Principle P3ii</p> <p>The design of vehicular access and egress provides:</p> <ul style="list-style-type: none"> access and egress for emergency service vehicles while allowing the community to evacuate; a defensible space for emergency services personnel on the interface between classified vegetation and development site; and hazard separation between classified vegetation and the subject site to reduce the potential radiant heat that may impact a lot(s). 	<p>A3.4a Perimeter roads</p> <p>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:</p> <ul style="list-style-type: none"> 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. <p>A perimeter road is to meet the requirements contained in Table 6, Column 1.</p> <p>A perimeter road may not be required where:</p> <ul style="list-style-type: none"> 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. 	<p>Perimeter roads are existing along the northern and western site interfaces. Perimeter roads will be provided along the southern site interface, as well as a portion of the eastern site interface.</p> <p>For the row of 17 proposed lots situated along the eastern site boundary without an interfacing perimeter road, a perimeter road is not required for these lots given these lots will not adjoin classified vegetation, but rather a low threat staging buffer.</p>	N/A

Bushfire protection criteria	Performance Principle	Method of compliance	Statement of development compliance	Compliance achieved
		Acceptable solutions		
	Performance Principle P3iii Vehicular access is provided which allows: <ul style="list-style-type: none"> • access and egress for emergency service vehicles; • defensible 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 <i>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.</i> A fire service access route is to meet all the following requirements: <ul style="list-style-type: none"> • 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 – the proposed development does not require fire service access routes (FSARs) to achieve access within and around the perimeter of the project area.	N/A
	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 <i>Where it is demonstrated that a battle-axe cannot be avoided due to site constraints, it can be considered as an acceptable solution.</i> There are no battle-axe technical requirements where the point the battle-axe access leg joins the	No battle-axe lots are proposed as part of the subdivision and the project area is not serviced by an existing battle-axe.	N/A

Bushfire protection criteria	Performance Principle	Method of compliance	Statement of development compliance	Compliance achieved
		Acceptable solutions		
		<p>effective area of the lot, is less than 50 metres from a public road in a reticulated area.</p> <p>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:</p> <ul style="list-style-type: none"> • 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). 		
		<p>A3.6 Private driveways</p> <p>There are no private driveway technical requirements where the private driveway is:</p> <ul style="list-style-type: none"> • 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. <p>In circumstances where all of the above conditions are not met, or the private driveway is in a non-reticulated water area, the private driveway is to meet all the following requirements:</p> <ul style="list-style-type: none"> • requirements in Table 6, Column 4; • passing bays every 200 metres with a minimum length of 20 metres and a minimum 	<p>The proposed subdivision is located within a reticulated area where roads speeds will be lower than 70 km/hr and proposed lots are of size where all future habitable development will be located within 70 m of a public road. In this regard, there are no private driveway compliance requirements for future landowners of the subdivided lots.</p>	N/A

Bushfire protection criteria	Performance Principle	Method of compliance	Statement of development compliance	Compliance achieved
		Acceptable solutions		
		<ul style="list-style-type: none"> 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	<p>A4.1 Identification of future water supply</p> <p>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.</p> <p>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.</p>	A4.1 is applicable to strategic planning applications only.	N/A
	<p>Performance Principle P4</p> <p>Provide a permanent water supply that is:</p> <ul style="list-style-type: none"> sufficient and available for firefighting purposes; constructed from non-combustible materials (e.g. steel), or able to maintain its integrity throughout a bushfire; and accessible, with legal access for maintenance and re-filling by tankers and emergency service vehicles. 	<p>A4.2 Provision of water for firefighting purposes</p> <p>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:</p> <ul style="list-style-type: none"> The provision of a water tank(s), in accordance with the requirements of Schedule 2; and Where the provision of a strategic water tank(s) is applicable, then the following requirements apply: 	The proposed development will be connected to reticulated water supply via extension of services from adjacent development areas in accordance with Water Corporations Design Standard 63 requirements.	✓

Bushfire protection criteria	Performance Principle	Method of compliance	Statement of development compliance	Compliance achieved
		Acceptable solutions		
		<ul style="list-style-type: none"> – 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). <p>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.</p>		

5.2 Compliance with Element 5

Element 5 relates specifically to vulnerable tourism land uses and is therefore not applicable to the proposed subdivision.

5.3 Additional management strategies

Strategen-JBS&G makes the following additional bushfire management recommendations to inform ongoing planning stages of the development and increase the level of bushfire risk mitigation across the site.

5.3.1 Temporary staging buffers

External staging buffer

As the proposed subdivision forms a stage within the ultimate Catalina Green development, a temporary vegetation interface will be created at the northern, eastern and southern interfaces of the project area due to land that will not be cleared until the next stages of subdivision are constructed. In order to ensure there are no temporary BAL impacts from this classified vegetation, low threat staging buffers are to be established around the northern, eastern and southern boundaries of the project area to reduce the BAL impacts (refer to Figure 5 and Figure 6 for the respective vegetation scenarios). The staging buffer is to comply with AS 3959 Clause 2.2.3.2 (f) and Schedule 1 (APZ standards) of the Guidelines (Appendix B), including ongoing maintenance/slashing to less than 100 mm in height of any regrowth grass and weeds. The proposed level of tree retention outlined in Figure 5 and Figure 6 can be readily accommodated within the low threat staging buffers, whilst continuing to maintain a low threat state.

Internal staging buffers

If development (and therefore clearing) of the project area is to occur on a staged basis, clearing in advance will need to occur to ensure building construction is not inhibited by a temporary vegetation extent located within adjacent development stages yet to be cleared. This can be achieved by ensuring that each approved stage subject to construction is surrounded by a 100 m wide, on-site cleared or low threat staging buffer (not including vegetation/trees proposed to be retained). Once the buffers are created, they will need to be maintained on a regular and ongoing basis in accordance with AS 3959 Clause 2.2.3.2 (f) (including the management of grassland at 100 mm or lower) and Schedule 1 of the Guidelines (Appendix B) to achieve a low threat minimal fuel condition all year round until such time that the buffer area is developed as part of future development stages. This will assist in managing the current on-site temporary vegetation hazards.

5.3.2 Staging of access

If development (and therefore construction of vehicular access) is to occur on a staged basis, vehicular access arrangements will need to ensure that all occupiers and visitors are provided with at least two access routes at all stages of development. This can be achieved via construction of public access roads in advance of stages or through provision of temporary compliant emergency access ways/cul-de-sacs until two formal access roads are available.

5.3.3 Fuel management within cleared vacant lots

Cleared lots are to be managed on a regular and ongoing basis by the developer until sale of lots after which time landowners will be responsible for ongoing management. Maintenance is to be in accordance with Clause 2.2.3.2 (f) of AS 3959 and Schedule 1 of the Guidelines (refer to Appendix B) and will involve slashing/mowing of grassland and weeds to height of less than 100 mm.

5.3.4 Road verge fuel management

Surrounding road verges that have been excluded as low threat are to continue to be managed to ensure the understorey and surface fuels remain in a low threat, minimal fuel condition in accordance with Clause 2.2.3.2 (f) of AS 3959. Ongoing road verge management is the responsibility of the City.

5.3.5 Notification on title

A notification, pursuant to Section 165 of the *Planning and Development Act 2005*, is to be placed on the certificates of title of the proposed lots subject to BAL-12.5 or higher to ensure landowners/proponents and prospective purchasers are aware that their lot is located within a bushfire prone area and is subject to an approved BMP. The notification is to state as follows:

This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is subject to a Bushfire Management Plan. Additional planning and building requirements may apply to development on this land (Western Australian Planning Commission).

5.3.6 Building construction standards

Future Class 1a, Class 1b, Class 2, Class 3 residential buildings and associated Class 10a structures in an area subject to BAL—12.5 or higher are required to comply with the bushfire specific construction requirements of AS 3959.

5.3.7 BMP compliance reporting

A BMP compliance report will be prepared as evidence demonstrating that the BMP has been implemented as intended as a mechanism to clear subdivision conditions relating to the BMP. The BMP compliance report will be prepared following completion of subdivisional works and prior to issue of lot title to validate and confirm the accuracy of the BAL contour map depicted in the BMP, as well as identify that compliant vehicular access and water supply provisions have been implemented for the subdivision as required under the BMP. The BMP compliance report will also demonstrate any change in the assessed BAL or other management measures documented in this BMP, which may occur as a result of changes in vegetation clearing extent, lot layout or bushfire management approach.

5.3.8 Detailed landscape plan

A detailed landscape plan is to be prepared prior to subdivision clearance to demonstrate the expected low threat landscaping outcomes within the four proposed roadside POS areas. The BAL contour map is to be updated at this time to reflect any changes proposed by the detailed landscaping plan.

Responsibility for establishment and maintenance of low threat landscaping is discussed in Section 6.

5.3.9 Compliance with annual firebreak notice

The developer/land manager and prospective land purchasers are to comply with the current City of Wanneroo annual firebreak notice as amended (refer to Appendix D).

6. Responsibilities for implementation and management of the bushfire measures

Implementation of the BMP applies to the developer, prospective owners/managers of the proposed facility and the City to ensure bushfire management measures are adopted and implemented on an ongoing basis. A bushfire responsibilities table is provided in Table 7 to drive implementation of all bushfire management works associated with this BMP.

Table 7: Responsibilities for implementation and management of the bushfire measures

Implementation/management table	
Developer – prior to issue of titles	
No.	Implementation action
1	Construct (or have works bonded) the vehicular access including public roads, temporary cul-de-sacs and/or temporary EAWs (where required) to the standards stated in the BMP.
2	Construct (or have works bonded) the reticulated water supply and network of hydrants to the standards stated in the BMP.
3	Prepare detailed POS landscaping plans for the four proposed roadside POS areas to demonstrate the expected low threat landscaping outcomes throughout on-site POS and update BAL contour mapping if required.
4	Establish low threat areas (i.e. development footprint, road verges, low threat staging buffers and low threat POS as per landscape plans) to the standards stated in this BMP.
5	Undertake BMP compliance reporting on a staged basis as evidence to demonstrate proper implementation of the BMP and general bushfire compliance.
6	Comply with the City's annual firebreak notice, as amended.
Developer – until sale/transfer of lots	
No.	Implementation action
1	Maintain all established low threat areas (i.e. development footprint, road verges, low threat staging buffers, low threat POS) to the standards stated in this BMP.
2	Comply with the City's annual firebreak notice, as amended.
Landowner/occupier – prior to building construction and ongoing	
No.	Implementation action
1	Maintain low threat areas (i.e. cleared vacant lots) to the standards stated in this BMP.
2	Construct buildings to the relevant BAL in accordance with AS 3959 and maintain buildings on an ongoing basis.
3	Comply with the City's annual firebreak notice, as amended.
Local government – ongoing management	
No.	Implementation action
1	Maintain low threat road verges to the standards stated in this BMP.
2	Maintain low threat POS areas to the standards stated in this BMP.

7. 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/>, [21/01/2022].

Department of Planning (DoP) 2016, *Visual guide for bushfire risk assessment in Western Australia*, Department of Planning, Perth.

Eco Logical Australia 2018, *Clearing and Revegetation Management Plan: Catalina Residential Development*, report prepared for Tamala Park Regional Council.

Eco Logical Australia 2021a, *Bushfire Management Plan: Subdivision Application: Stage 1 of Catalina Grove, Clarkson*, report prepared for Tamala Park Regional Council.

Eco Logical Australia 2021b, *Preliminary Bushfire Attack Level (BAL) Assessment Report for Catalina Grove – Green, Clarkson*, report prepared for Tamala Park Regional Council.

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.

8. Limitations

Scope of services

This report ("the report") has been prepared by Strategen-JBS&G in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Strategen-JBS&G. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

Reliance on data

In preparing the report, Strategen-JBS&G has relied upon data and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise expressly stated in the report, Strategen-JBS&G has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Strategen-JBS&G has also not attempted to determine whether any material matter has been omitted from the data. Strategen-JBS&G will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to Strategen-JBS&G. The making of any assumption does not imply that Strategen-JBS&G has made any enquiry to verify the correctness of that assumption.

The report is based on conditions encountered and information received at the time of preparation of this report or the time that site investigations were carried out. Strategen-JBS&G disclaims responsibility for any changes that may have occurred after this time. This report and any legal issues arising from it are governed by and construed in accordance with the law of Western Australia as at the date of this report.

Environmental conclusions

Within the limitations imposed by the scope of services, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted environmental consulting practices. No other warranty, whether express or implied, is made.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

Strategen-JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by Strategen-JBS&G, and should not be relied upon by other parties, who should make their own enquiries.

Appendix A Vegetation plot photos and description



Photo ID: 1a

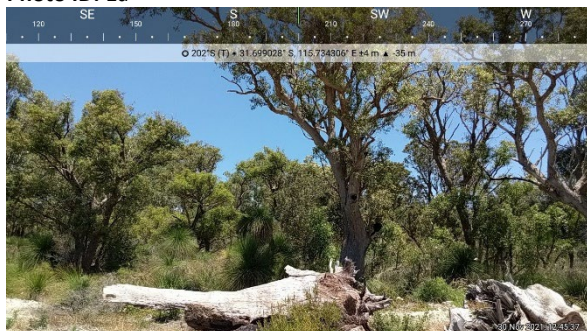


Photo ID: 1c



Photo ID: 1e

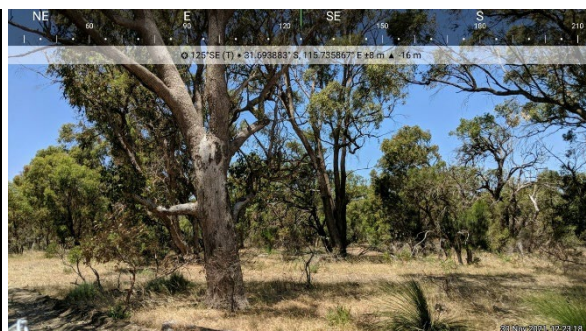


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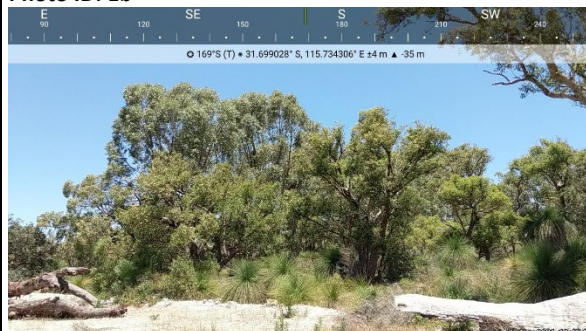


Photo ID: 1d

Plot number		Plot 1
Vegetation classification	Pre-development	Class B Woodland
	Post-development	Class B Woodland
Description / justification		Trees 10–30 m high; 10–30% foliage cover, dominated by eucalypts with a prominent grassy understorey.



Photo ID: 2a



Photo ID: 2b



Photo ID: 2c

Plot number		Plot 2
Vegetation classification	Pre-development	Class D Scrub
	Post-development	Class D Scrub
Description / justification		Scrub vegetation with a continuous horizontal fuel profile between 2–6 m in height at maturity.

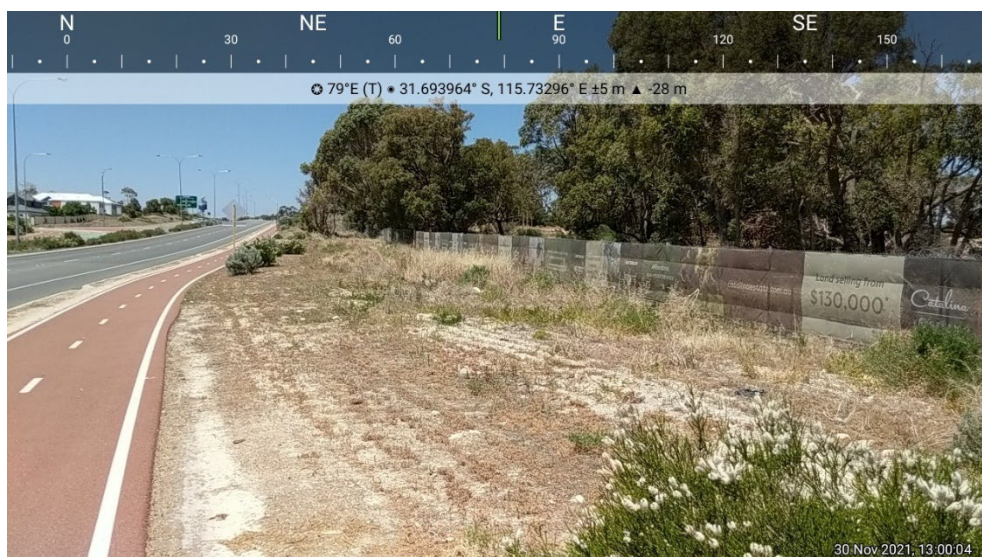


Photo ID: 3a



Photo ID: 3b

Plot number		Plot 3
Vegetation classification	Pre-development	Class G Grassland
	Post-development	Class G Grassland
Description / justification		Grassland greater than 100 mm in height



Photo ID: 4a



Photo ID: 4b



Photo ID: 4c

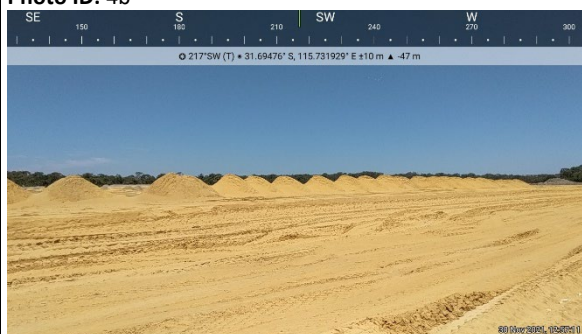


Photo ID: 4d



Photo ID: 4e

Plot number		Plot 4
Vegetation classification	Pre-development	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
	Post-development	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
Description / justification		Low threat cultivated gardens and maintained lawns within surrounding properties and non-vegetated areas including roads, footpaths, driveways and building footprints



Photo ID: 5a



Photo ID: 5b



Photo ID: 5c

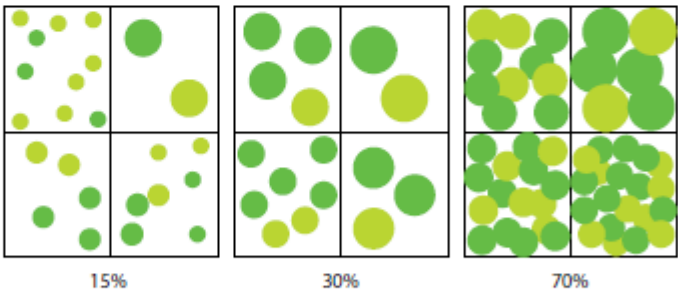


Photo ID: 5d

Plot number		Plot 5
Vegetation classification	Pre-development	Class B Woodland, Class D Scrub, Class G Grassland
	Post-development	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
Description / justification		Areas to be modified to a low threat state as part of proposed development.

Appendix B APZ standards (Schedule 1) and explanatory notes of the Guidelines (WAPC 2021)

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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. <p>Figure 19: Tree canopy cover – ranging from 15 to 70 per cent at maturity</p>  <p>The figure consists of three 2x2 grids of squares, each containing circles of varying sizes and shades of green and yellow to represent tree canopies. The first grid is labeled '15%' and shows sparse, small canopies. The second grid is labeled '30%' and shows a moderate density of canopies. The third grid is labeled '70%' and shows a very dense, overlapping canopy cover.</p>
Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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.

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Grass	<ul style="list-style-type: none"> Grass should be maintained at a height of 100 millimetres or less, at all times. Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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*

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 defensible space and reducing the potential for direct flame contact, radiant heat exposure and ember attack.

Vegetation management within an APZ should provide defensible 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/m^2 (BAL-29), or 10kW/m^2 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/m^2 (BAL-29) or lower in its pre-development state (prior to any vegetation clearing or modification).

An APZ should include an area of defensible 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/m^2 (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/m^2 (BAL-29) or 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.

Figure 17: Topography considerations for building locations



EXPLANATORY NOTES

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.

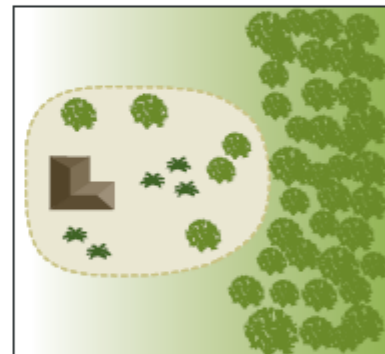
A simple method to estimate fuel load is to roughly equate one tonne of fuel load per hectare as 100 grams per square metre. For example, two tonnes per hectare of leaf litter is roughly 200 grams of leaf litter per square metre and eight tonnes per hectare is roughly 800 grams. Eucalyptus leaf litter 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.

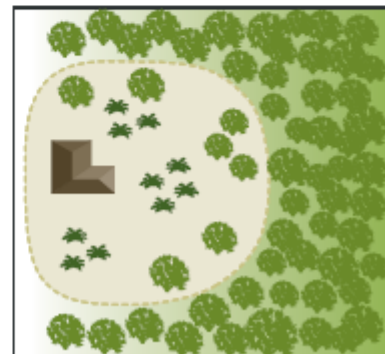
A copy of the firebreak notice and Schedule 1 should be included in a BMP specifically as a how-to guide for the landowner, and to demonstrate to decision-makers that the measures outlined in the BMP to achieve the appropriate BAL rating through provision and ongoing management of an APZ, can be implemented.

Regardless of whether an Asset Protection Zone exists in accordance with the acceptable solutions and is appropriately maintained, it should be noted that fire fighters are not obliged to protect an asset if they think the separation distance between the dwelling and vegetation is unsafe.

Hazard on one side



Hazard on three sides



Legend




-  APZ
-  trees
-  shrubs

Figure 18: Design of Asset Protection Zone

Refer to Schedule 1: Standards for Asset Protection Zones

EXPLANATORY NOTES

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 5m². It should be noted that in some cases, a single shrub in a mature state may be so dense as to fill a 5m² 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.

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.

EXPLANATORY NOTES

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.
- 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.

Appendix C Vehicular access technical standards and explanatory notes of the Guidelines (WAPC 2021)

Table 6: Vehicular access technical requirements

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

Notes:

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.

E3.1 Public roads

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.

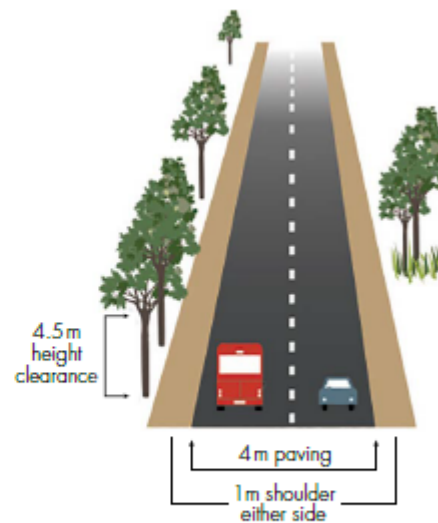


Figure 20: Example of a public road

E3.2b Emergency access way

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.

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

EXPLANATORY NOTES

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.

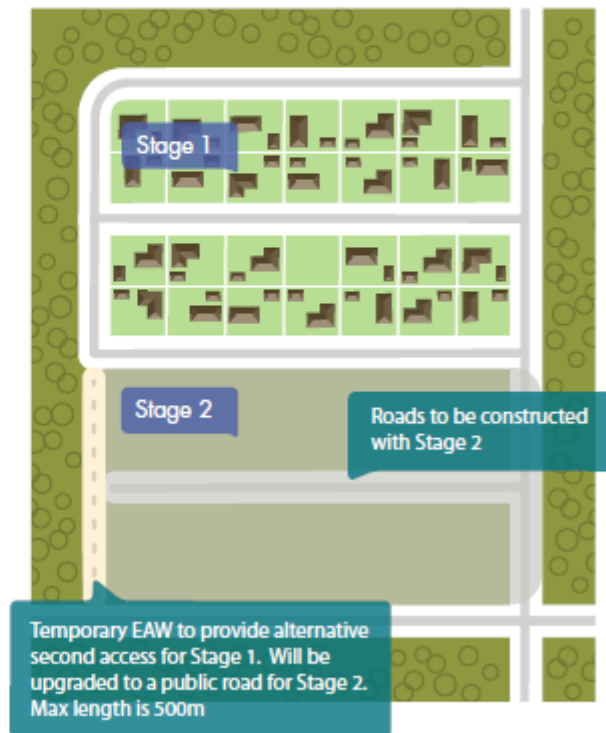


Figure 22: Example of an emergency access way

E3.3 Through-roads

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 decision-maker 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.

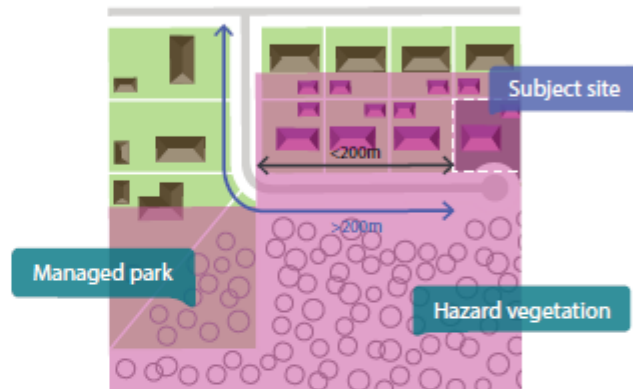


Figure 23: Example of a site on a nothrough road greater than 200 metres from the intersection, but within 200 metres of BAL-LOW

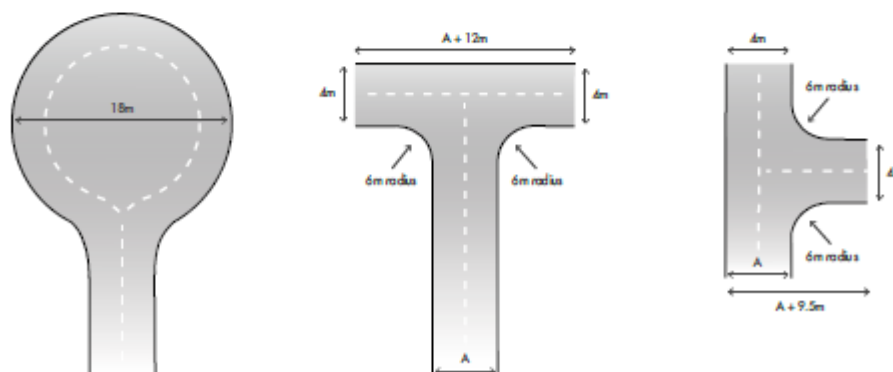


Figure 24: Turn-around area dimensions for a no-through road

Appendix D City of Wanneroo Firebreak Notice (2021-22)

IMPORTANT FIRE MITIGATION NOTICE

**FIRE MITIGATION MEASURES MUST BE IN PLACE BY
1 NOVEMBER AND MAINTAINED UNTIL 30 APRIL EACH YEAR.**

This is a requirement under the Bush Fires Act 1954 Section 33.

Failure to comply with this Notice may incur penalties of up to \$5,000 and the works required by this Notice will be carried out at the expense of the owner/occupier.

FIRE MANAGEMENT REQUIREMENTS FOR LAND LESS THAN 4000sqm

- Maintain grasses and inflammable materials with the exception of living trees on the entire property to a height of no more than 50 millimetres. The entire property is required to be maintained below 50 millimetres from 1 November each year until 30 April the following year.
- OR
- A 3 metre wide trafficable firebreak as close as possible to all external boundaries of the property must be installed by 1 November each year and maintained until 30 April the following year.
- If it is not possible to install the firebreak adjacent to the external boundary of the property due to naturally occurring obstacles, it is acceptable to install the firebreak around the obstacle. If this requires the firebreak to be greater than 5 metres away from the external boundary, a firebreak variation is required.
- Ensure a minimum vertical clearance of 4 metres is maintained along the firebreaks to enable vehicles to drive along the firebreaks without access being obstructed.
- Where a property is affected by an approved bushfire management plan, property owners must still comply with all requirements in this Notice and with any additional requirements outlined within that plan.

FIRE MANAGEMENT REQUIREMENTS FOR LAND GREATER THAN 4000sqm

- A 3 metre wide trafficable firebreak as close as possible to all external boundaries of the property must be installed by 1 November each year and maintained until 30 April the following year.
- If it is not possible to install the firebreak adjacent to the external boundary of the property due to naturally occurring obstacles, it is acceptable to install the firebreak around the obstacle. If this requires the firebreak to be greater than 5 metres away from the external boundary, a firebreak variation is required.
- Ensure a minimum vertical clearance of 4 metres is maintained along the firebreaks to enable vehicles to drive along the firebreaks without access being obstructed.
- Install and maintain a 20 metre bare earth area around all hay stacks and/or fuel dumps.
- Where a property is affected by an approved bushfire management plan, property owners must still comply with all requirements in this Notice and with any additional requirements outlined within that plan.

ALL VACANT LAND **GREATER** THAN 4000sqm

- A 3 metre wide trafficable firebreak as close as possible to all external boundaries of the property must be installed by 1 November each year and maintained until 30 April the following year.
- Ensure a minimum vertical clearance of 4 metres is maintained along the firebreaks to ensure vehicles can drive along the firebreaks without being impeded by tree branches.
- If the land is an area of 50,000sqm (5 hectares) or greater, the grass must be maintained on the land to a height no greater than 50 millimetres for a distance of 10 metres from any firebreak.

Frequently Asked Questions

I live in a residential area, does this notice apply to me?

Yes. All City of Wanneroo property owners must comply with the Bush Fires Act 1954.

Please refer overleaf for fire management requirements to be in place by 1 November to ensure your property is compliant.

Most properties under 1000sqm will automatically comply if gardens are maintained.

Do I need a Bushfire Survival Plan?

If you live in, on or near bushland, you are at risk from a bushfire and developing a bushfire survival plan is critical. Visit the Department of Fire and Emergency Services website for information on how to develop a plan for your property dfes.wa.gov.au

I am concerned my neighbour's property is not compliant, what can I do?

All properties are required to be compliant by 1 November. If you think your neighbour's property does not comply with the requirements as outlined in this Notice, please contact the Community Safety and Emergency Management team on 9405 5297.

I own a vacant lot, do I need a firebreak?

A 3 metre wide trafficable firebreak as close as possible to all external boundaries of the property must be installed by 1 November each year and maintained until 30 April the following year.

I am unable to meet the requirements outlined, what should I do?

If it is considered impracticable for any reason to implement any of the requirements of this Notice, an application for a firebreak variation must be made to the City of Wanneroo by no later than 18 October of each year. If permission is not granted, the requirements of this Notice must be complied with.

Visit the City's website wanneroo.wa.gov.au/firebreakvariation to apply for a variation.

Where can I learn more about this Notice and bushfire management?

Visit the City's website wanneroo.wa.gov.au/fireinformation to learn more.

Please note, in addition to the requirements of this Notice, if a City of Wanneroo Fire Control Officer considers further works are necessary to reduce the risk of bushfire, Landowners will be notified via letter to the address shown on the City of Wanneroo rates record for the relevant land.

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Document Status

Report version	Rev No.	Purpose	Author	Reviewed and Approved for Issue	
				Name	Date
Draft Report	Rev A	For client review	Benjamin Musitano	Zac Cockerill (BPAD 37803, Level 2)	24 February 2022
Final Report	Rev 0	Issued for use: to accompany subdivision application	Zac Cockerill (BPAD 37803, Level 2)	Zac Cockerill (BPAD 37803, Level 2)	23 March 2022
Final Report	Rev 1	Issued for use: updated to address City of Wanneroo comments	Zac Cockerill (BPAD 37803, Level 2)	Zac Cockerill (BPAD 37803, Level 2)	1 July 2022

