

Bushfire Management Plan:
Subdivision: Lots 1, 12, 13, 36, 37 and 38 Caporn
Street, Wanneroo

QUBE Property Group

DOCUMENT TRACKING

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Template 2.8.1

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1. Introduction

1.1 Proposal details

Eco Logical Australia (ELA) was commissioned by QUBE Property Group to prepare a Bushfire Management Plan (BMP) to support subdivision applications for Lots 1, 12, 13, 36, 37 and 38 Caporn Street, Wanneroo (hereafter referred to as the subject site, Figure 1). The proposed subdivisions span multiple lots owned by different parties, and this BMP will be used to support subdivision applications submitted by each party (as detailed below):

- QUBE: Lots 12, 36 and 38;
- W Development: Lot 37; and
- Acumen Development Solutions: Lots 1 and 13.

Each landowner listed above is reliant on the others to develop their land at the same time for road access, management of bushfire fuels etc. and thus, this BMP addresses the development of the entire subject site at once. Subdivision design is presented in Figure 2 and will result in the creation of 281 residential lots and five Public Open Spaces (POS) areas, containing a mixture of retained vegetation, managed landscaping/turf and drainage basins.

The subject site is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2019; Figure 3), which triggers bushfire planning requirements *under State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; Western Australian Planning Commission (WAPC) 2015) and reporting to accompany submission of the development application in accordance with the associated *Guidelines for Planning in Bushfire Prone Areas v 1.3* (the Guidelines; WAPC 2017).

This assessment has been prepared by ELA Bushfire Consultant Maitland Ely and Principal Bushfire Consultant Daniel Panickar (FPAA BPAD Level 3 Certified Practitioner No. BPAD37802).

1.2 Purpose and application of the plan

The primary purpose of this BMP is to act as a technical supporting document to inform planning assessment. This BMP is also designed to provide guidance on how to plan for and manage the bushfire risk to the subject site through implementation of a range of bushfire management measures in accordance with the Guidelines.

1.3 Environmental considerations

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

The subject site will be cleared for development and ELA understands that all relevant environmental approvals have been obtained. Impacts associated with bushfire protection measures have been considered through consultation with the project team.

Some retention of native vegetation and planting for landscaping is proposed within the subject site and this has been accounted for in the post development bushfire assessment. A summary of these considerations is provided below and these are discussed further in section 2:

- Four of the five POS areas will be cleared for development (excluding the retention of existing trees where possible) and managed in such a way that they resemble low threat vegetation and/or non-vegetated areas; and
- The POS area in the southwest of the subject site will contain retained vegetation and has been considered in the bushfire assessment.

Any changes to revegetation and/or landscaping will be addressed in future BMPs.

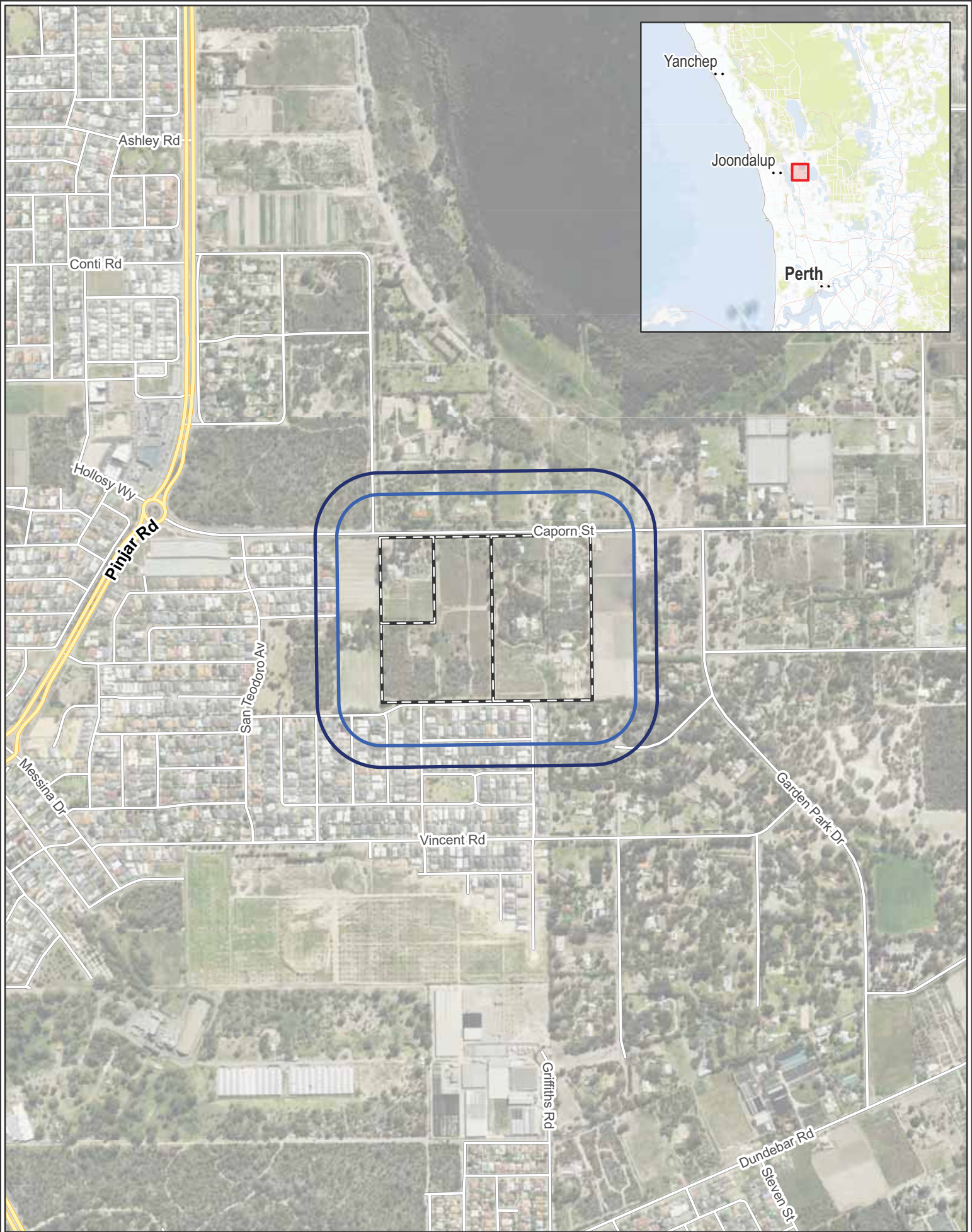
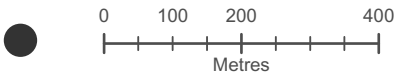


Figure 1: Site Overview

-  Subject site
-  100m site assessment
-  150m site assessment



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Figure 2: Site Plan

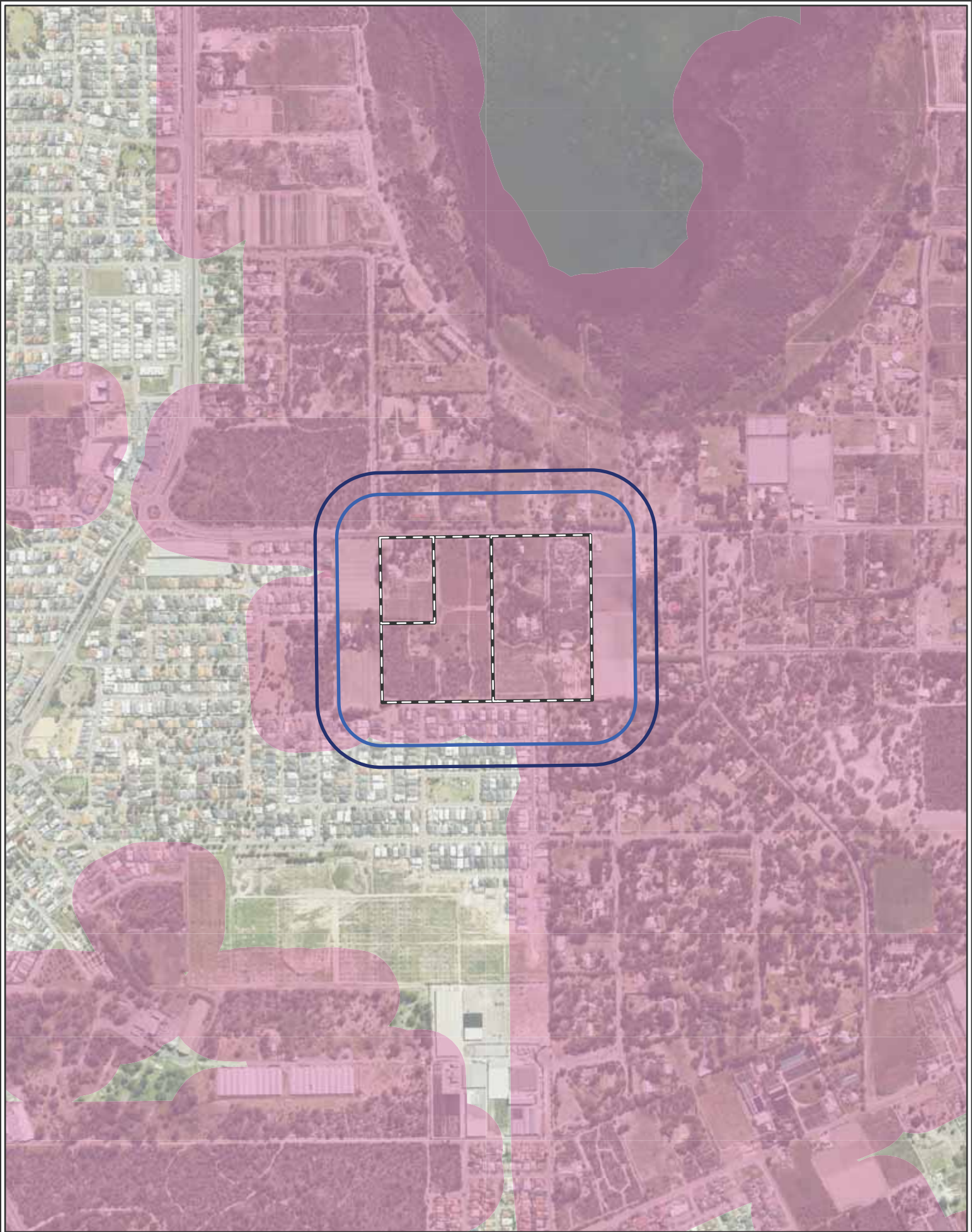
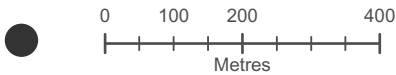


Figure 3: Bushfire Prone Areas

-  Subject site
-  100m site assessment
-  150m site assessment
-  Bushfire Prone Mapping (DFES 2019)



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2. Bushfire assessment results

2.1 Bushfire assessment inputs

The following section is a consideration of spatial bushfire risk and has been used to inform the bushfire assessment in this report.

2.1.1 Fire Danger Index

A blanket Fire Danger Index (FDI) 80 is adopted for Western Australia, as outlined in Australian Standard AS 3959: 2018 *Construction of Buildings in Bushfire Prone Areas* (SA 2018) and endorsed by Australasian Fire and Emergency Service Authorities Council (AFAC).

2.1.2 Vegetation classification and slope under vegetation

Vegetation and effective slope (i.e. slope under vegetation) within the subject site and surrounding 150 m (the assessment area) were assessed in accordance with the Guidelines and AS 3959: 2018 with regard given to the *Visual guide for bushfire risk assessment in Western Australia* (DoP 2016). Site assessment was undertaken on 26 November 2021.

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

Table 1: Classified vegetation as per AS 3959: 2018

Plot	Vegetation Classification	Effective Slope
1	Class B Woodland	Downslope >0 to 5 degrees
2	Class B Woodland	All upslopes and flat land (0 degrees)
3	Class D Scrub	All upslopes and flat land (0 degrees)
4	Class G Grassland	Downslope >5 to 10 degrees
5	Class G Grassland	All upslopes and flat land (0 degrees)
6	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)	-

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

2.1.2.1 Post-development vegetation classification

An assessment of vegetation and slope was undertaken based on the proposed development concept in Figure 2. Vegetation retention and planting within POS areas as described in Section 1.3, as well as staging of development have also been considered and the results of this 'post-development' vegetation assessment are depicted in Figure 5 and detailed further below.

LANDSCAPING AND VEGETATION RETENTION WITHIN POS AREAS

The three POS areas along the northern boundary of the subject site will be predominantly cleared for development (excluding the retention of existing trees where possible) and managed in such a way that they can be excluded under clause 2.2.3.2 of AS 3959: 2018. Landscape treatments for these POS areas are indicated in the landscaping plan in Appendix B. Whilst this landscaping plan is only applicable to the QUBE landholdings, ELA was advised by the project team that the treatments will be similar across all three of the POS areas along the northern boundary of the subject site.

The POS area within the central portion of the subject site will also be managed in such a way that it can be excluded under clause 2.2.3.2 of AS 3959: 2018. There were no landscaping plans available for this POS area at the time this BMP was prepared, and instead the vegetation exclusion was applied based on advice provided to ELA by the project team.

The POS area at the southwest of the subject site will contain retained vegetation as per the Structure Plan over the site. The extent of this retained vegetation amounts to 0.91 ha as indicated in the landscaping plan in Appendix B. Given this area of vegetation is less than 1 ha in size and is located at least 100 m from other areas of classified vegetation, it has been excluded under clause 2.2.3.2 (b) of AS 3959: 2018.

STAGING OF DEVELOPMENT

It is assumed that the development of the subject site will be undertaken in a manner that will ensure no classified vegetation within the bounds of the subject site occurs within 100 m of areas being developed. This is reliant on all landowners within the subject site working collaboratively to legally remove all vegetation within 100 m of not only their own, but also their neighbour's development stages to ensure that lots are not affected by a temporary bushfire risk.

This is discussed further in sections 2.3 and 3.2 including contingencies to account for scenarios where the required clearing may not have occurred.

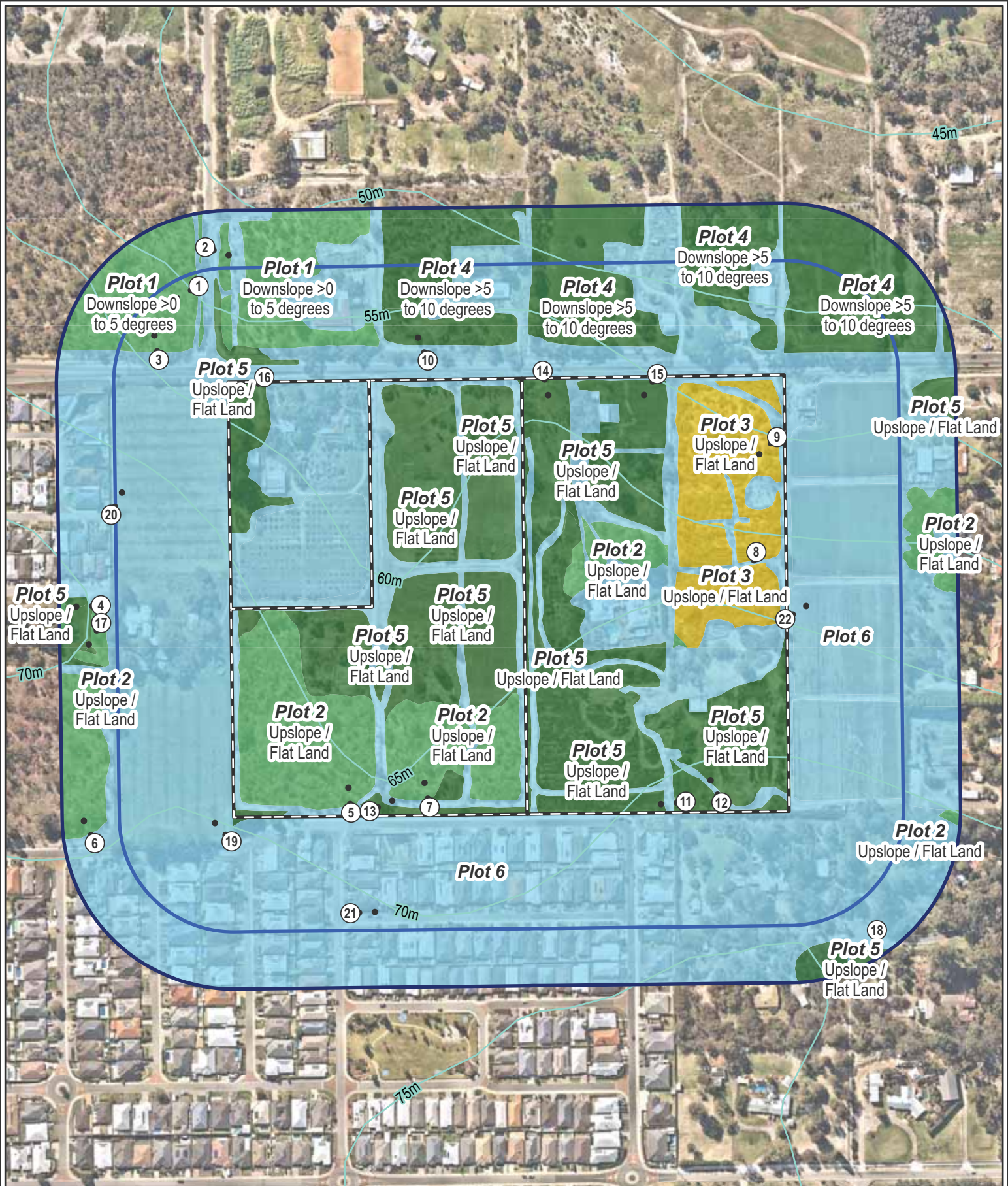


Figure 4: Vegetation Classification - Pre-development

- Subject site
- 100m site assessment
- 150m site assessment
- Contour (5m)
- Photo location

Vegetation Classification (Pre)

- Class B woodland
- Class D scrub
- Class G grassland
- Excluded

0 40 80 160
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

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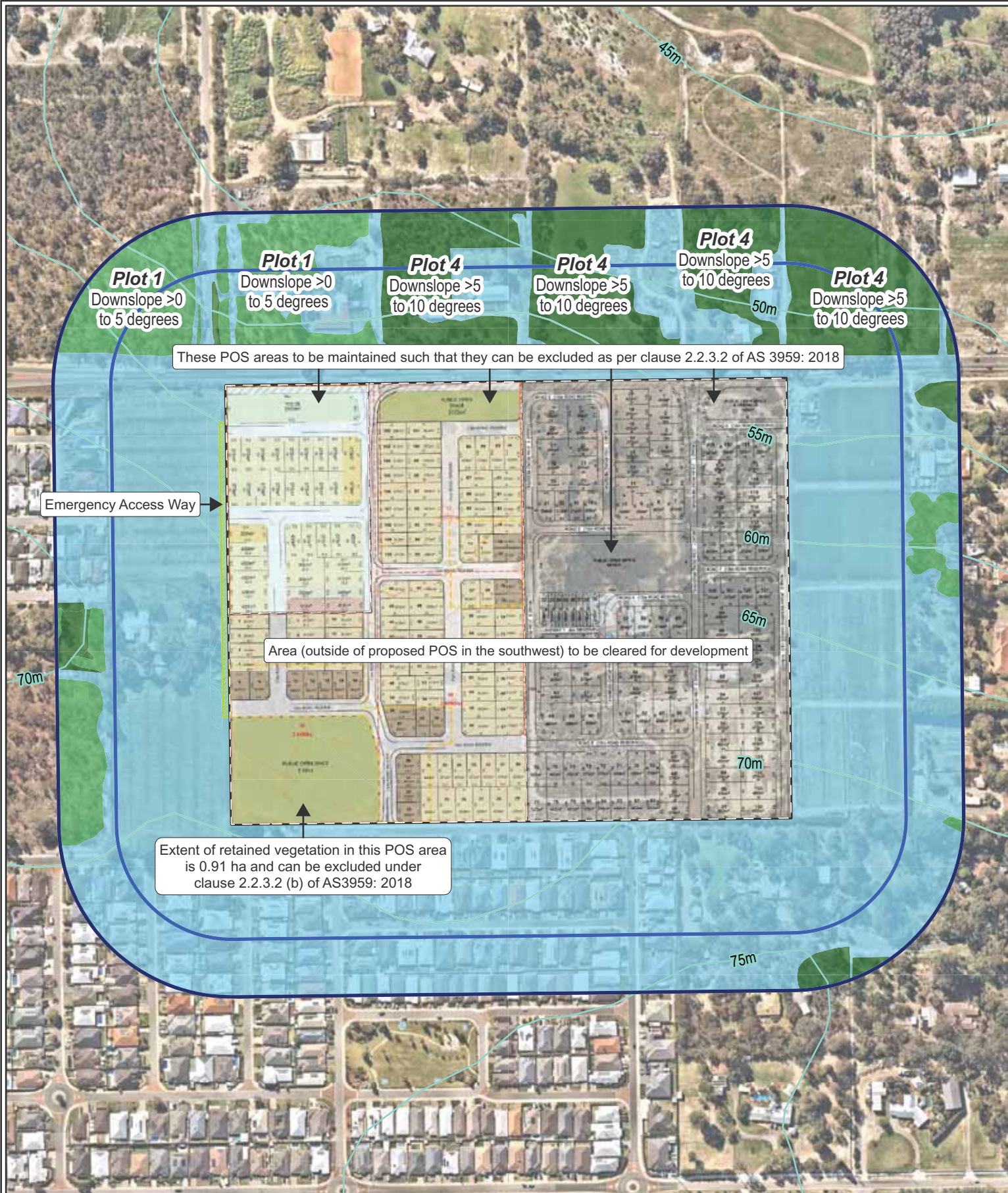


Figure 5: Vegetation Classification - Post-development

- Subject site
- 100m site assessment
- 150m site assessment
- Contour (5m)
- Emergency Access Way

Vegetation classification

- Class B woodland
- Class G grassland
- Excluded

0 40 80 160
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

Project: 20724-RD Date: 1/03/2022

2.2 Bushfire assessment outputs

A Bushfire Attack Level (BAL) assessment has been undertaken in accordance with SPP 3.7, the Guidelines, AS 3959: 2018 and the bushfire assessment inputs in Section 2.1.

2.2.1 BAL assessment

All land located within 100 m of the classified vegetation depicted in Figure 5 is considered bushfire prone and is subject to a BAL assessment in accordance with AS 3959: 2018.

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

- Fire Danger Index (FDI) rating;
- Vegetation class;
- Slope under classified vegetation; and
- Distance between proposed subdivision area and the classified vegetation.

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

2.2.2 Method 1 BAL assessment

Table 2 and Figure 6 display the Method 1 BAL assessment (in the form of BAL contours) that has been completed for the proposed subdivision in accordance with AS 3959: 2018 methodology. The BAL assessment factors in clearing and management of all classified vegetation on all properties within the subject site as depicted in Figure 5. Consequently, only two of the plots in Table 1 (i.e. Plots 1 and 4) have been assessed in Table 2 as all other plots will either: be cleared and maintained as per an exclusion under clause 2.2.3.2 of AS 3959: 2018; are already excluded under the same clause; or are outside of the 100 m assessment area.

Table 2: Method 1 BAL calculation (BAL contours)

Plot and vegetation classification	Effective slope	Hazard separation distance	BAL rating	Post-vegetation management
Plot 1 Class B Woodland	Downslope >0 to 5 degrees	0-<13	BAL-FZ	No development proposed in this area
		13-<17	BAL-40	No development proposed in this area
		17-<25	BAL-29	No development proposed in this area
		25-<35	BAL-19	No development proposed in this area
		35-<100	BAL-12.5	Development proposed in this area

Plot and vegetation classification	Effective slope	Hazard separation distance	BAL rating	Post-vegetation management
Plot 4 Class G Grassland	Downslope >5 to 10 degrees	0-<8	BAL-FZ	No development proposed in this area
		8-<10	BAL-40	No development proposed in this area
		10-<16	BAL-29	No development proposed in this area
		16-<23	BAL-19	No development proposed in this area
		23-<50	BAL-12.5	Development proposed in this area
ALL OTHER PLOTS ARE EITHER EXCLUDED UNDER CLAUSE 2.2.3.2 OR GREATER THAN 100 M FROM THE SUBJECT SITE				

2.3 Identification of issues arising from the BAL assessment

The subject site is being developed by three different landowners as shown by the lines within the subject site boundary in the figures in this BMP. It is assumed that the development of the subject site will be undertaken in a manner that will ensure no classified vegetation within the bounds of the subject site occurs within 100 m of areas being developed. This is reliant on all landowners within the subject site working collaboratively to legally remove all vegetation within 100 m of not only their own, but also their neighbour's development stages to ensure that lots are not affected by a temporary bushfire risk.

The staged clearing described above will be managed as an Asset Protection Zone (APZ) or in such a way that results in vegetation being able to be excluded as per clause 2.2.3.2 of AS 3959: 2018 until the land is developed for residential purposes and the bushfire threat is removed. Following this management, all lots within the subject site will be exposed to BAL ratings of ≤BAL-12.5.

This is discussed further in section 3.2 including contingencies to account for scenarios where the required clearing may not have occurred.

Should there be any changes in development design or vegetation/hazard extent that requires a modified bushfire management response, then the above BAL ratings will need to be reassessed for the affected areas and documented in a brief addendum to this BMP.

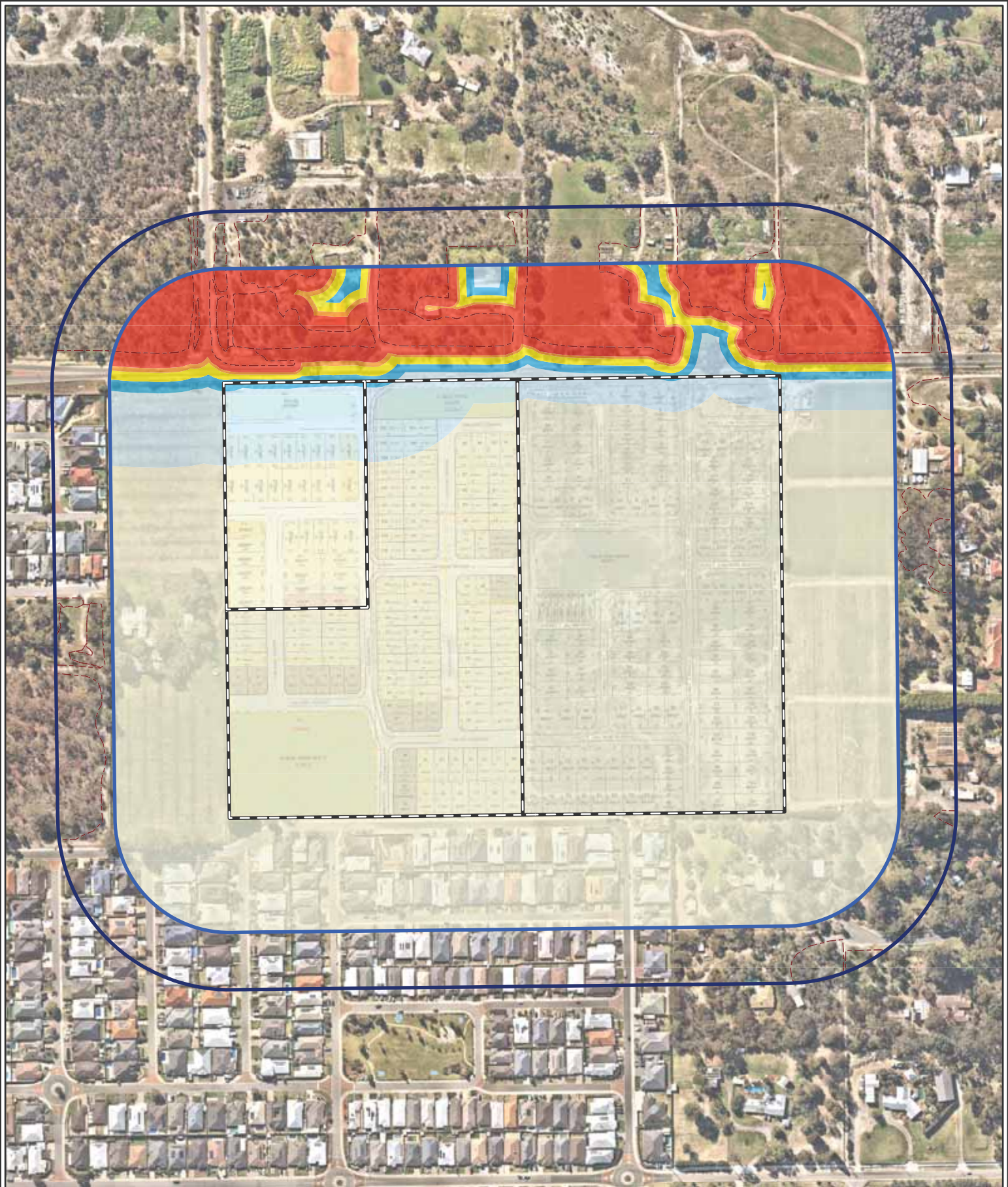
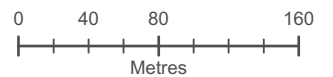


Figure 6: Bushfire Attack Level (BAL) Contours

-  Subject site
-  100m site assessment
-  150m site assessment
-  Bushfire hazard interface

Bushfire Attack Level (BAL)

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



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3. Assessment against the Bushfire Protection Criteria

3.1 Compliance

The proposed subdivision is required to comply with policy measures 6.2 and 6.5 of SPP 3.7 and the Guidelines. Implementation of this BMP is expected to meet objectives 5.1-5.4 of SPP 3.7.

In response to the above requirements of SPP 3.7 and the Guidelines, bushfire risk management measures, as outlined, have been devised for the proposed subdivision in accordance with Guideline acceptable solutions to meet compliance with bushfire protection criteria.

Table 3 outlines the Acceptable Solutions (AS) that are relevant to the proposal and summarises how the intent of each Bushfire Protection Criteria has been achieved. No Performance Solutions (PS) have been proposed for this proposal. These management measures are depicted in Figure 7 where relevant.

Table 3: Summary of solutions used to achieve bushfire protection criteria

Bushfire Protection Criteria	AS	PS	N/A	Comment
Element 1: Location A1.1 Development location	☒	☐	☐	All proposed lots within the subject site will be located in an area subject to BAL ratings of ≤BAL-29 (Figure 6; Figure 7). Refer to section 3.2 for further detail. The proposed development is considered to be compliant with A1.1.
Element 2: Siting and design of development A2.1 Asset Protection Zone (APZ)	☒	☐	☐	The proposed development has an APZ sufficient for the potential radiant heat flux to not exceed 29kW/m ² and will be managed in accordance with the requirements of 'Standards for Asset Protection Zones' (WAPC 2017; Appendix B). The APZ can be contained within the boundaries of the lot or managed in perpetuity in a low fuel state (Figure 6; Figure 7). The proposed development is considered to be compliant with A2.1.
Element 3: Vehicular access A3.1 Two access routes	☒	☐	☐	Five access points to/from the subject site are available (Figure 7). These connect to numerous access routes leading to multiple destinations in different directions. All roads are public roads and comply with requirements outlined in the Guidelines (Appendix D). The access points/routes described above include an extension to Saponara Drive which will be facilitated by the developer as depicted in Figure 7. The proposed development is considered to be compliant with A3.1.

Bushfire Protection Criteria	AS	PS	N/A	Comment
A3.2 Public road	☒	☐	☐	All public roads will be designed and constructed to meet the requirement of the Guidelines shown in Appendix D. The proposed development is considered to be compliant with A3.2.
A3.3 Cul-de-sac	☒	☐	☐	No cul-de-sacs are proposed as part of the development. However, temporary cul-de-sacs may be created during staged development, either within the bounds of each property, or at the interface between to properties owned by different parties. If created, each temporary cul-de-sacs will eventually connect to adjacent stages of development, however until these through roads are connected, each cul-de-sac will contain a minimum 17.5 m diameter turning circle at their head. An emergency access way will be created on the western boundary of the subject site, within the bounds of the adjacent 48 Caporn Street, Wanneroo, thereby removing the need for temporary cul-de-sacs within the subject site on this interface. This is discussed further in A3.6. The proposed development is considered to be compliant with A3.3.
A3.4 Battle-axe	☐	☐	☒	No battle axe lots are proposed.
A3.5 Private Driveway longer than 50 m	☐	☐	☒	No private driveways longer than 50 m are proposed.
A3.6 Emergency Access way	☒	☐	☐	An emergency access way will be created on the western boundary of the subject site, within the bounds of the adjacent 48 Caporn Street, Wanneroo, thereby removing the need for temporary cul-de-sacs within the subject site on this interface. This has been agreed to by the owner of 48 Caporn Street, Wanneroo, as detailed in Appendix E. This emergency access way will be removed once development on 48 Caporn Street, Wanneroo provides road connections to all roads serviced by the emergency access way within the subject site. The proposed development is considered to be compliant with A3.6.
A3.7 Fire-service access routes	☐	☐	☒	No fire service access routes are required or proposed.
A3.8 Firebreak width	☐	☐	☒	Following development, no fire breaks are required or proposed as per the City of Wanneroo Firebreak Notice.

Bushfire Protection Criteria	AS	PS	N/A	Comment
Element 4: Water				
A4.1 Reticulated areas	☒	☐	☐	The subject site will be connected to a reticulated water supply. The proposed development is considered to be compliant with A4.1. A4.2 and A4.3 are not applicable to this proposed development.
A4.2 Non-Reticulated areas	☐	☐	☒	Reticulated water is present within the area.
A4.3 Individual Lots within non-reticulated areas	☐	☐	☒	Reticulated water is present within the area.

NOTE – AS- ACCEPTABLE SOLUTION, PS- PERFORMANCE SOLUTION, N/A- NOT APPLICABLE

3.2 Additional bushfire management requirements

The subject site is being developed by three different landowners as shown by the lines within the subject site boundary in the figures in this BMP. It is assumed that the development of the subject site will be undertaken in a manner that will ensure no classified vegetation within the bounds of the subject site occurs within 100 m of areas being developed. This is reliant on all landowners within the subject site working collaboratively to legally remove all vegetation within 100 m of not only their own, but also their neighbour's development stages to ensure that lots are not affected by a temporary bushfire risk.

The staged clearing described above will be managed as an Asset Protection Zone (APZ) or in such a way that results in vegetation being able to be excluded as per clause 2.2.3.2 of AS 3959: 2018 until the land is developed for residential purposes and the bushfire threat is removed. Following this management, all lots within the subject site will be exposed to BAL ratings of ≤BAL-12.5.

As a safeguard, reassessment of BALs for each stage of development will be required prior to obtaining Titles (as part of BMP certification) as detailed in Table 4 to identify if appropriate clearing has been undertaken. If these reassessments identify any lots where future dwellings cannot achieve BAL ratings of ≤BAL-29 within the subject site, Titles will be withheld from these lots until such a time that BAL ratings of ≤BAL-29 can be achieved.

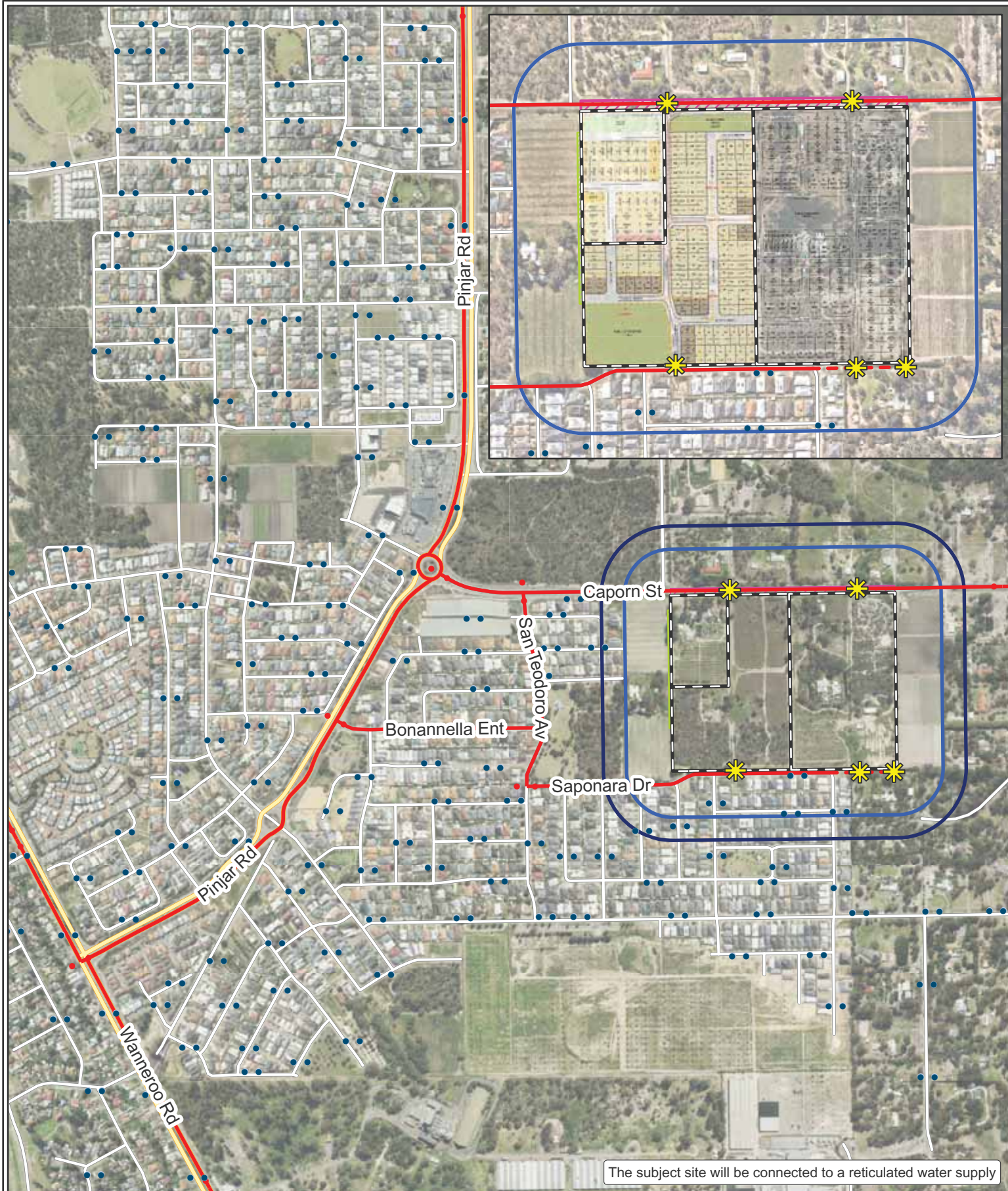
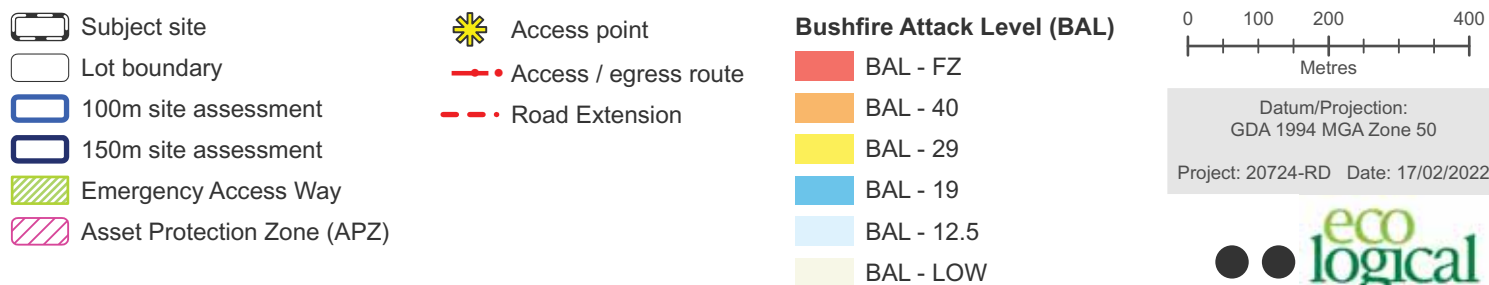


Figure 7: Spatial representation of the bushfire management strategies



4. Implementation and enforcement

Implementation of the BMP applies to the developer, future owners within the subject site, builders and the local government / Department of Planning, Lands and Heritage to ensure bushfire management measures are adopted and implemented on an ongoing basis. A summary of the bushfire management measures described in Section 3, as well as a works program, is provided in Table 4. These measures will be implemented to ensure the ongoing protection of life and property assets is achieved. Timing and responsibilities are also defined to assist with implementation of each measure.

Table 4: Proposed work program

No	Bushfire management measure	Responsibility
Prior to issue of Titles		
1	Ensure proposed buildings are located outside of areas subject to BAL-FZ and BAL-40 as per the design in Figure 7.	Developer
2	Maintain Asset Protection Zones to <i>Standards for Asset Protection Zones</i> in Appendix C as depicted in Figure 7.	Developer
3	Ensure that 100 m wide APZs are cleared and maintained around each stage of subdivision if the entirety of the development depicted in Figure 7 is not developed in a single stage.	Developer
4	Landscape the proposed POS areas such that they can be excluded from classification under clause 2.2.3.2 of AS 3959: 2018.	Developer
5	Undertake a new BAL assessment for each stage of development to ensure that all future dwellings can achieve BAL ratings of ≤BAL-29 within the subject site.	Developer
6	If BAL ratings >BAL-29 are identified following the completion of Item No. 5 above, withhold Titles from the lots with these ratings until such a time that the BAL rating is reduced to ≤BAL-29.	City of Wanneroo / Department of Planning, lands and Heritage
7	Place Section 165 Notification on Title for all lots within Bushfire Prone Areas.	Developer
8	Construct road network as per plan in Figure 7.	Developer
9	Construct 17.5 m diameter turning circles at their head of any temporary cul-de-sacs created during staged development.	Developer
10	Construct emergency access way on 48 Caporn Street, Wanneroo as depicted in Figure 7.	Developer
11	Provide reticulated water supply to all lots and install hydrants in accordance with Water Corporation standards.	Developer
Prior to occupancy		
12	Maintain Asset Protection Zones to <i>Standards for Asset Protection Zones</i> in Appendix C as depicted in Figure 7.	Developer
13	Maintain emergency access way on 48 Caporn Street, Wanneroo until development on this property provides road connections to all roads serviced by the emergency access way within the subject site.	Developer
14	Construct proposed building to relevant construction standard in AS 3959: 2018.	Builder

No	Bushfire management measure	Responsibility
Ongoing management		
15	Maintain Asset Protection Zones to <i>Standards for Asset Protection Zones</i> in Appendix C as depicted in Figure 7.	Owners / City of Wanneroo (in public reserves)
16	Maintain emergency access way on 48 Caporn Street, Wanneroo until development on this property provides road connections to all roads serviced by the emergency access way within the subject site.	Developer

5. Conclusion

In the author's professional opinion, the bushfire protection requirements listed in this assessment provide an adequate standard of bushfire protection for the proposed subdivision. As such, the proposed subdivision is consistent with the aim and objectives of SPP 3.7 and associated guidelines and is recommended for approval.

6. References

Department of Fire and Emergency Services (DFES), 2019, *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from: <http://www.dfes.wa.gov.au/regulationandcompliance/bushfireproneareas/Pages/default.aspx>

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

Standards Australia (SA), 2018, *Construction of buildings in bushfire-prone areas*, AS 3959-2018. SAI Global, Sydney.

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

Western Australian Planning Commission (WAPC), 2017, *Guidelines for Planning in Bushfire Prone Areas Version 1.3 (including appendices)*, WAPC, Perth.

Appendix A – Classified Vegetation Photos

Plot	1	Classification or Exclusion Clause	Class B Woodland
		Photo Point 1 Classified vegetation within this plot most accurately reflects Class D Scrub dominated by <i>Banksia</i>, <i>Xanthorrhoea</i> and other species to 6 m in height. However, there are scattered trees within the plot up to 20 m in height and therefore, ELA has adopted a conservative approach and classified this plot as Class B Woodland. Slope under the vegetation has been assessed as Downslope >0-5°.	
Plot	1	Classification or Exclusion Clause	Class B Woodland
		Photo Point 2 Classified vegetation within this plot most accurately reflects Class D Scrub dominated by <i>Banksia</i>, <i>Xanthorrhoea</i> and other species to 6 m in height. However, there are scattered trees within the plot up to 20 m in height and therefore, ELA has adopted a conservative approach and classified this plot as Class B Woodland. Slope under the vegetation has been assessed as Downslope >0-5°.	
Plot	1	Classification or Exclusion Clause	Class B Woodland
		Photo Point 3 Classified vegetation within this plot most accurately reflects Class D Scrub dominated by <i>Banksia</i>, <i>Xanthorrhoea</i> and other species to 6 m in height. However, there are scattered trees within the plot up to 20 m in height and therefore, ELA has adopted a conservative approach and classified this plot as Class B Woodland. Slope under the vegetation has been assessed as Downslope >0-5°.	

Plot	2	Classification or Exclusion Clause	Class B Woodland
Photo Point 4		Classified vegetation within this area of the plot is comprised of trees to 30 m in height over grasses and low shrubs. The open nature of this vegetation most accurately resembles Class B Woodland. Slope under the vegetation has been assessed as Upslope/ flat land.	
Photo Point 5		Classified vegetation within this plot most accurately reflects Class D Scrub dominated by <i>Banksia</i>, <i>Xanthorrhoea</i> and other species to 6 m in height. However, there are scattered trees within the plot up to 20 m in height and therefore, ELA has adopted a conservative approach and classified this plot as Class B Woodland. Slope under the vegetation has been assessed as Upslope/ flat land.	
Photo Point 6		Classified vegetation within this plot most accurately reflects Class D Scrub dominated by <i>Banksia</i>, <i>Xanthorrhoea</i> and other species to 6 m in height. However, there are scattered trees within the plot up to 20 m in height and therefore, ELA has adopted a conservative approach and classified this plot as Class B Woodland. Slope under the vegetation has been assessed as Upslope/ flat land.	

Plot	2	Classification or Exclusion Clause	Class B Woodland
Photo Point 7			
Classified vegetation within this plot most accurately reflects Class D Scrub dominated by <i>Banksia</i> , <i>Xanthorrhoea</i> and other species to 6 m in height. However, there are scattered trees within the plot up to 20 m in height and therefore, ELA has adopted a conservative approach and classified this plot as Class B Woodland.			
Slope under the vegetation has been assessed as Upslope/ flat land.			
			
Plot	3	Classification or Exclusion Clause	Class D Scrub
Photo Point 8 (foreground)			
Classified vegetation within this plot is comprised of shrubs >2 m high with greater than 30% foliage cover.			
Slope under the vegetation has been assessed as Upslope/ flat land.			
			
Plot	3	Classification or Exclusion Clause	Class D Scrub
Photo Point 9			
Classified vegetation within this plot is comprised of shrubs >2 m high with greater than 30% foliage cover.			
Slope under the vegetation has been assessed as Upslope/ flat land.			
			

Plot	4	Classification or Exclusion Clause	Class G Grassland
Photo Point 10			
Classified vegetation within this plot is comprised of exotic grasses. Some trees and shrubs are present, however overall canopy cover is less than 10%. Slope under the vegetation has been assessed as Downslope >5-10°.			
Plot	5	Classification or Exclusion Clause	Class G Grassland
Photo Point 11			
Classified vegetation within this plot is comprised of exotic grasses. Some shrubs are present, however overall canopy cover is less than 10%. Slope under the vegetation has been assessed as Upslope/ flat land.			
Plot	5	Classification or Exclusion Clause	Class G Grassland
Photo Point 12			
Classified vegetation within this plot is comprised of exotic grasses. Some shrubs are present, however overall canopy cover is less than 10%. Slope under the vegetation has been assessed as Upslope/ flat land.			

Plot	5	Classification or Exclusion Clause	Class G Grassland
Photo Point 13		Classified vegetation within this plot is comprised of exotic grasses. Some shrubs are present, however overall canopy cover is less than 10%. Slope under the vegetation has been assessed as Upslope/ flat land.	
Plot	5	Classification or Exclusion Clause	Class G Grassland
Photo Point 14		Classified vegetation within this plot is comprised of exotic grasses. Some shrubs are present, however overall canopy cover is less than 10%. Slope under the vegetation has been assessed as Upslope/ flat land.	
Plot	5	Classification or Exclusion Clause	Class G Grassland
Photo Point 15		Classified vegetation within this plot is comprised of exotic grasses. Some shrubs are present, however overall canopy cover is less than 10%. Slope under the vegetation has been assessed as Upslope/ flat land.	

Plot	5	Classification or Exclusion Clause	Class G Grassland
Photo Point 16			
Classified vegetation within this plot is comprised of exotic grasses. Some shrubs are present, however overall canopy cover is less than 10%. Slope under the vegetation has been assessed as Upslope/ flat land.			
Plot	5	Classification or Exclusion Clause	Class G Grassland
Photo Point 17			
Classified vegetation within this plot is comprised of exotic grasses. Some shrubs are present, however overall canopy cover is less than 10%. Slope under the vegetation has been assessed as Upslope/ flat land.			
Plot	5	Classification or Exclusion Clause	Class G Grassland
Photo Point 18			
Classified vegetation within this plot is comprised of exotic grasses. Some trees and shrubs are present, however overall canopy cover is less than 10%. Slope under the vegetation has been assessed as Upslope/ flat land.			

Plot	6	Classification or Exclusion Clause	Excluded AS 3959-2018 2.2.3.2 (f)
Photo Point 19			
		This area has been excluded under clause 2.2.3.2 (f) of AS 3959: 2018. It is comprised of managed grass on an adjacent property to the west (48 Caporn Street, Wanneroo).	
Photo Point 20			
		This area has been excluded under clause 2.2.3.2 (f) of AS 3959: 2018. It is comprised of managed grass on an adjacent property to the west (48 Caporn Street, Wanneroo).	
Photo Point 21			
		This area has been excluded under clause 2.2.3.2 (e) of AS 3959: 2018. It is comprised of existing roads and dwellings in a residential setting.	
Photo Point 22			
		This area has been excluded under clause 2.2.3.2 (f) of AS 3959: 2018. It is comprised of a market garden on the property to the east of the subject site.	

Appendix B – Landscaping plan

Northern POS

PUBLIC OPEN SPACE

The two proposed public open space areas are small local parks and are intended to be passive in nature, easily accessible to local residents and interconnected by a footpath network. Where possible, the POS will be designed to enable the retention of existing trees as a part of the urban form. The southern POS will include a significant area of retained vegetation.

The POS's will provide rest areas, informal exercise opportunities, small kick-about area for unorganised active recreation. The northern POS will provide for the treatment of stormwater.

FORM & FUNCTIONS

- Native, water wise planting. Deciduous used where appropriate.
- Maximise shade trees with emphasis on native species.
- Limited picnic facilities.
- Internal path network.
- Path network connecting into the broader path network.
- Drainage.
- Passive solar.
- Planting design to be zoned according to irrigation requirement, with full irrigation requirements to the informal turf area.
- Source local materials where possible.
- Consider the long term maintenance requirements for all materials.
- POS areas are to be maintained as managed Parklands / Landscape.



Southern POS



Drawing Number	QCSMP : 001	Revision	C
Date	28 Jan 2022	Scale	1:3000 @ A3

QUBE Caporn Street (Lots 12, 36 & 38) Landscape Master Plan

Landscape Architecture
Urban Design
Play Spaces
Residential Landscapes

Considered
Space



Northern POS

- Low height (irrigated) gardenbeds adjacent Caporn Street.
- Internal path network linked to greater path & cycle network.
- Vegetated stormwater detention basin. Note proposed size and location indicative and to be confirmed following detailed design and provision of the UWMP.
- Bench seating to provide areas of respite.
- Shade trees throughout POS & adjacent pedestrian pathways.
- Turf (irrigated) open space area.
- Street trees to each residential lot



Open turf areas with shade trees



Bench seating adjacent path network

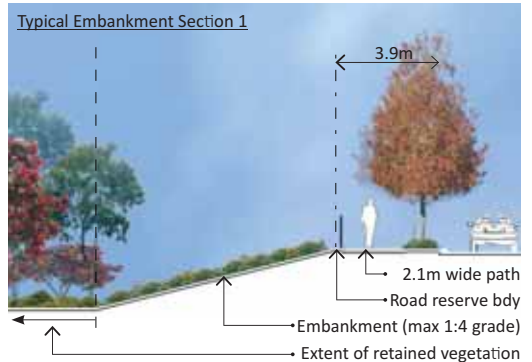


Vegetated stormwater detention basin with reed and sedge planting



Southern POS

- Street trees to each residential lot
- External path network linked to greater path & cycle network
- Shade trees adjacent pedestrian pathways
- Extent of existing vegetation retained and protected. (approx 9,150m²)
- Low height (irrigated) gardenbeds planting to embankment areas.



- Low height (irrigated) gardenbeds adjacent Saponara Drive and proposed internal roads.



Path adjacent retained vegetation



Existing site vegetation



Endemic shrub and tree species to proposed planting areas



Existing site vegetation



Drawing Number	QCSMP : 002	Revision	C
Date	28 Jan 2022	Scale	1:1000@ A3

QUBE Caporn Street (Lots 12, 36 & 38) POS Landscape Concept Plan

Landscape Architecture
Urban Design
Play Spaces
Residential Landscapes

Considered
Space

Proposed Planting in the Public Realm

The provision of tree, shrub, groundcover & turf planting in public areas and streetscapes serves to provide character, shade, interest, function and habitat. The location and types of vegetation will include;

- Predominantly native tree species are to be nominated throughout the development.
- Street trees to increase shade and amenity, greatly improving the walkability and pedestrian orientated nature of the proposed development.
- Exotic specimen shade trees are to be nominated in high profile street or entry locations.
- Smaller scale exotic trees may be nominated in feature locations and avenue plantings to secondary residential streets,
- Bushland and habitat regeneration in disturbed embankment areas,
- Shrub planting to screening and to provide spatial definition,
- Groundcover planting to medians, roundabouts, planters and areas requiring clear sightlines and views,
- Reed and sedge planting to stormwater detention areas,
- Irrigated grass to informal usable space and recreation areas,
- Local species shall be used where suitable to maximise local habitat and minimise water dependence. Soil amendments will be used in order to reduce leaching and increase soil moisture holding capacity. All garden beds will be mulched to reduce water loss through evaporation.

The selection and placement of species shall consider adjacent elements so as to limit future maintenance and public health & safety issues. It will promote the survival and health of the existing vegetation while also provide ongoing social and visual benefits. Items of consideration may include;

- Proximity to traffic sightlines to ensure suitable view corridors,
- Proximity and alignment to underground services to ensure no adverse impact,
- Seasonal influence of shade on adjacent facilities and areas,
- Passive solar benefits influencing adjacent built form and residential dwellings,
- Bushfire management,
- Provision of seasonal visual colour,
- Provision of a seasonal food source to local fauna,
- Plant selection based on suitability to local climate, soils, rainfall and temperatures,
- Selection based on reduced maintenance, trimming, pruning, fertilising and watering.
- Buffer screening will be provided to residential or sensitive areas where required.
- Fringing vegetation to the surrounding areas is to be retained and protected.



Indicative sample plant species below. Final species to be confirmed following detailed design, City of Wanneroo review and availability.

TREES



Agonis flexuosa



Allocasuarina fraseriana



Banksia ashbyii



Corymbia ficifolia



Eucalyptus victrix

SHRUBS



Conostylis candicans



Olearia axillaris



Melaleuca conothamnoides



Scaevola nitida



Westringia fruticosa

GROUNDCOVERS



Eremophila glabra



Grevillea obtusifolia



Grevillea thelmanniana



Hemiandra pungens



Kennedia prostrata

SEDGES



Baumea juncea



Carex appressa



Ficinia nodosa



Lepidosperma gladiatum



Lomandra longifolia

Drawing Number	QCSMP : 003	Revision	C
Date	28 Jan 2022	Scale	nts

QUBE Caporn Street (Lots 12, 36 & 38) Softscape Palette

Landscape Architecture
Urban Design
Play Spaces
Residential Landscapes

Considered
Space

Appendix C – Standards for Asset Protection Zones

The following standards have been extracted from the *Guidelines for Planning in Bushfire Prone Areas v 1.3* (WAPC 2017).

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

a. Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a fire does not exceed 29kW/m^2 (BAL-29) in all circumstances.

b. Location: the APZ should be contained solely within the boundaries of the lot on which a building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes).

c. Management: the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones' (below):

- Fences: within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used
- Objects: within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors
- Fine Fuel load: combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare
- Trees (> 5 metres in height): trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy (Figure 8).

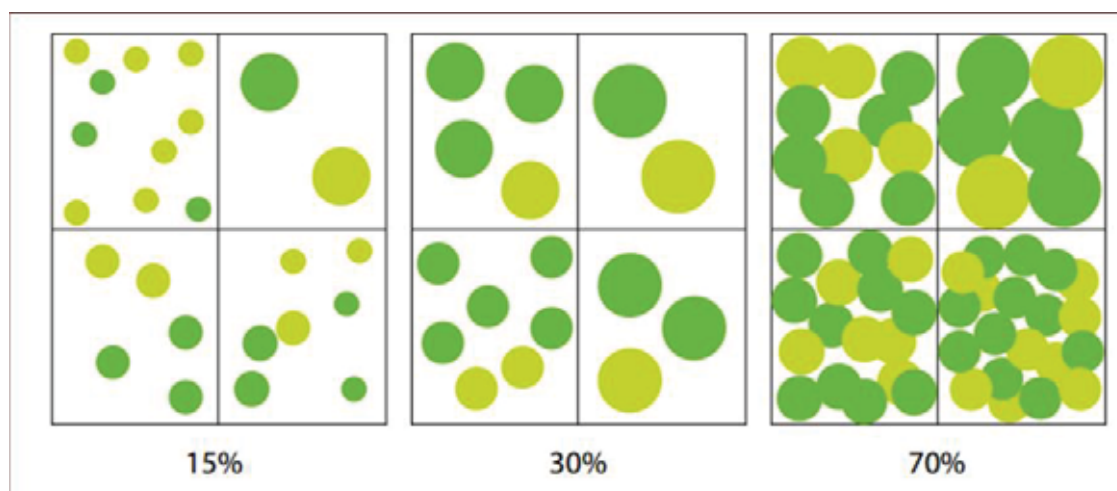


Figure 8: Illustrated tree canopy cover projection (WAPC 2017)

- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m² in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees
- **Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs
- **Grass:** should be managed to maintain a height of 100 millimetres or less.

Additional notes

The Asset Protection Zone (APZ) is an area surrounding a building that is managed to reduce the bushfire hazard to an acceptable level. Hazard separation in the form of using subdivision design elements or excluded and low threat vegetation adjacent to the lot may be used to reduce the dimensions of the APZ within the lot.

The APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity. The APZ may include public roads, waterways, footpaths, buildings, rocky outcrops, golf courses, maintained parkland as well as cultivated gardens in an urban context, but does not include grassland or vegetation on a neighbouring rural lot, farmland, wetland reserves and unmanaged public reserves.

Appendix D – Vehicular access technical requirements (WAPC 2017)

Technical requirements	Public road	Cul-de-sac	Private driveway	Emergency access way	Fire service access route
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal distance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 m	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius	8.5	8.5	8.5	8.5	8.5
* Refer to E3.2 Public roads: Trafficable surface					

Appendix E – Emergency access way agreement

Panickar, Daniel

From: Michael Glendinning <michael@mg-property.com.au>
Sent: Tuesday, 8 March 2022 11:10 PM
To: Panickar, Daniel
Cc: Rod Gardiner; Peter@wdevelopment.com.au; smith.consulting@bigpond.com
Subject: RE: Emergency Access Way - 48 Caporn Street, Wanneroo

 **CAUTION:** This email originated from an external sender. Verify the source before opening links or attachments.



Hi Dan, not enough hours in the day, as you can tell!

My client John Wilson and I have authority from the owner of Lot 7, Tony Cosentino, to act on his behalf. Therefore, I can confirm our acceptance of your proposed 6m temporary emergency access way on Lot 7 should the development of Lots 37 and 38 precede the development of Lot 7.

We also confirm that the well managed grass within Lot 7 will be maintained in this way until it is cleared for development.

Given your advice that your clients, the owners of Lots 37 and 38, are also happy to reciprocate with a temporary emergency access way on their properties should the development of Lot 7 precede the development of Lots 37 and 38.

We trust this suffices to enable BMPs to be prepared for each of the properties.

Regards, Michael

From: Panickar, Daniel [mailto:DanielP@ecoaus.com.au]
Sent: Tuesday, 8 March 2022 1:36 PM
To: Michael Glendinning <michael@mg-property.com.au>
Cc: Rod Gardiner <Rod@qubeproperty.com.au>; Peter@wdevelopment.com.au; smith.consulting@bigpond.com
Subject: Re: Emergency Access Way - 48 Caporn Street, Wanneroo

Hi Michael,

Any updates on this one mate?

Cheers

Dan

State Manager - Western Australia

Principal Bushfire Consultant

From: Panickar, Daniel <DanielP@ecoaus.com.au>
Sent: Friday, March 4, 2022 10:38:35 AM
To: Michael Glendinning <michael@mg-property.com.au>
Cc: Rod Gardiner <Rod@qubeproperty.com.au>; Peter@wdevelopment.com.au <Peter@wdevelopment.com.au>; smith.consulting@bigpond.com <smith.consulting@bigpond.com>
Subject: Re: Emergency Access Way - 48 Caporn Street, Wanneroo

Thanks Michael,
Much appreciated mate!

Cheers

Dan

State Manager - Western Australia
Principal Bushfire Consultant

From: Michael Glendinning <michael@mg-property.com.au>
Sent: Friday, March 4, 2022 10:11:04 AM
To: Panickar, Daniel <DanielP@ecoaus.com.au>
Cc: Rod Gardiner <Rod@gubeproperty.com.au>; Peter@wdevelopment.com.au <Peter@wdevelopment.com.au>; smith.consulting@bigpond.com <smith.consulting@bigpond.com>
Subject: RE: Emergency Access Way - 48 Caporn Street, Wanneroo

⚠ CAUTION: This email originated from an external sender. Verify the source before opening links or attachments.



Hi Dan, it's been another manic week and I forgot to close this out with a response.
My client was out of town until Wednesday and I meant to follow him up yesterday but I was swamped by calls and emails.
I'll follow him up this morning and revert to you as soon as possible.
Regards, Michael

From: Panickar, Daniel [mailto:DanielP@ecoaus.com.au]
Sent: Friday, 4 March 2022 8:08 AM
To: Michael Glendinning <michael@mg-property.com.au>
Cc: Rod Gardiner <Rod@gubeproperty.com.au>; Peter@wdevelopment.com.au; smith.consulting@bigpond.com
Subject: RE: Emergency Access Way - 48 Caporn Street, Wanneroo

Hi Michael,

Was this ok mate? If so, any chance you can respond to my original email below so we can finalise our BMP ☺

Cheers

Dan

Daniel Panickar

Manager – Western Australia
Principal Bushfire Consultant

Level 1, Bishops See, 235 St Georges Terrace
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We acknowledge the Whadjuk Noongar people as the First People of the South West region where our buildings stand and where we work in Perth. We pay respect to Elders, past, present, emerging and future.
ELA recognises the traditional custodians of country, and their unique connection to their lands and waters, language, law, kinship and ceremony. Through this acknowledgement we commit to ongoing learning and understanding on our journey to reconciliation.

From: Panickar, Daniel
Sent: Monday, 28 February 2022 2:26 PM

To: Michael Glendinning <michael@mg-property.com.au>

Cc: Rod Gardiner <Rod@qubeproperty.com.au>; Peter@wdevelopment.com.au; smith.consulting@bigpond.com

Subject: Emergency Access Way - 48 Caporn Street, Wanneroo

Hi Michael,

Following our discussions, I've prepared a Figure showing the temporary emergency access way we are proposing on your client's land at 48 Caporn Street, Wanneroo (attached). The temporary emergency access way will be 6m wide and constructed of gravel or limestone. This will remove the requirement for temporary cul-de-sacs on our land until such time that the future road connections extend east-west and the emergency access way can be removed. Our clients (as the owners of Lots 37 and 38) are also happy to reciprocate with a temporary emergency access way on their properties if your client's property is developed first.

As the grass within 48 Caporn Street, Wanneroo appeared well managed at the time of our site assessment in November 2021, we also ask that the property continue to be maintained in this way until it is cleared for development.

I understand you are seeking variations to the LSP in regards to your development, however I am hoping you can confirm your client (i.e. the landowner of 48 Caporn Street) is supportive 'in-principle' for the temporary emergency access way we are proposing, as well as the continuing management of grasses on the property so we can continue to prepare our Bushfire Management Plan. We can finalise the arrangement at a later date.

Look forward to hearing from you.

Dan

Daniel Panickar

Manager – Western Australia

Principal Bushfire Consultant

Level 1, Bishops See, 235 St Georges Terrace

PERTH WA 6000

T +61 8 6218 2200 | D +61 8 6218 2035 | M +61 403 617 745



www.linkedin.com/in/daniel-panickar-91270144/



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