A decorative background element on the left side of the page, consisting of a series of concentric, irregular lines that resemble a topographic map or contour lines, rendered in a light green color.

Bushfire Management Plan

Mason Green Estate - Lot 9004 and Lot 9008, Wright Road, Piara Waters

QUBE Property

DOCUMENT TRACKING

Project Name	Bushfire Management Plan Mason Green Estate - Lot 9004 and Lot 9008, Wright Road, Piara Waters
Project Number	19PER-12967
Project Manager	Daniel Panickar
Prepared by	James Leonard
Reviewed by	Daniel Panickar (BPAD Level 2 – 37802)
Approved by	Daniel Panickar (BPAD Level 2 – 37802)
Status	Final
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This document has been prepared by Eco Logical Australia Pty Ltd with support from QUBE Property

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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 to prepare a Bushfire Management Plan (BMP) to support a subdivision application being prepared for Mason Green Estate South (Lots 9004 and Lot 9008 Wright Road, Piara Waters), hereafter referred to as the subject site (**Figure 1, Figure 2**).

The subject site is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2018; **Figure 3**), which triggers bushfire planning requirements under *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; WAPC 2015) and reporting to accompany submission of the subdivision 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 James Leonard with quality assurance undertaken by Senior Bushfire Consultant, Daniel Panickar (FPAA BPAD Level 2 Certified Practitioner No. BPAD37802-L2).

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

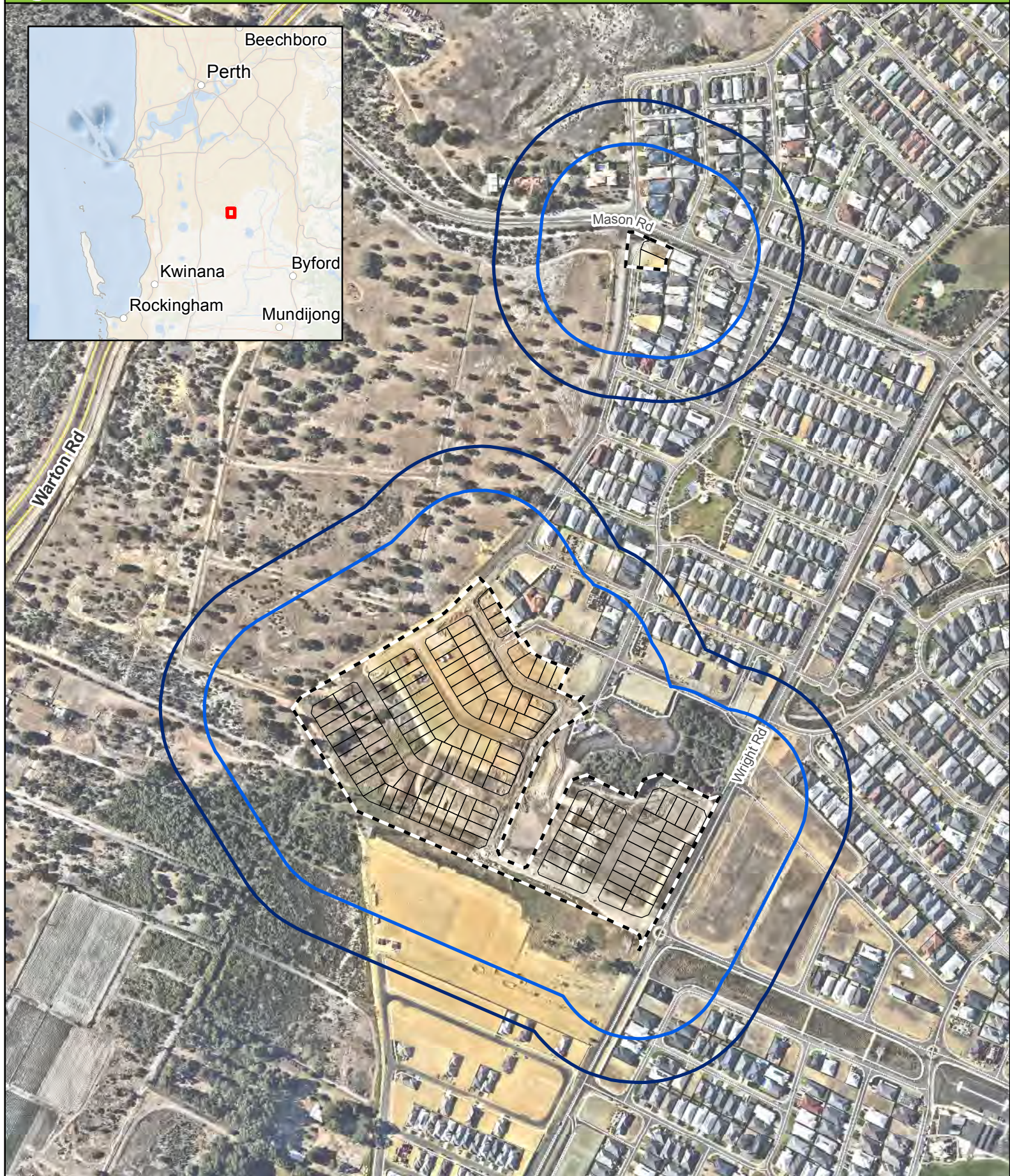
Some bushfire prone areas also have high biodiversity values. SPP 3.7 policy objective 5.4 recognises the need to consider bushfire risk management measures alongside environmental, biodiversity and conservation values.

The subject site has been cleared of native vegetation for development. ELA is not aware of any requirements for environmental approvals for the development to proceed.

No revegetation is proposed within the subject site, however if this changes, it will be addressed in future BMPs.

ELA has been advised by the City of Armadale that the Western Power easement south of the subject site will be revegetated. This has been considered in the vegetation class assessment in section 2.1.

Figure 1: Site Overview



- Legend**
- Subject site
 - 100m site assessment
 - 150m site assessment
 - Lot boundary

0 45 90 180
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

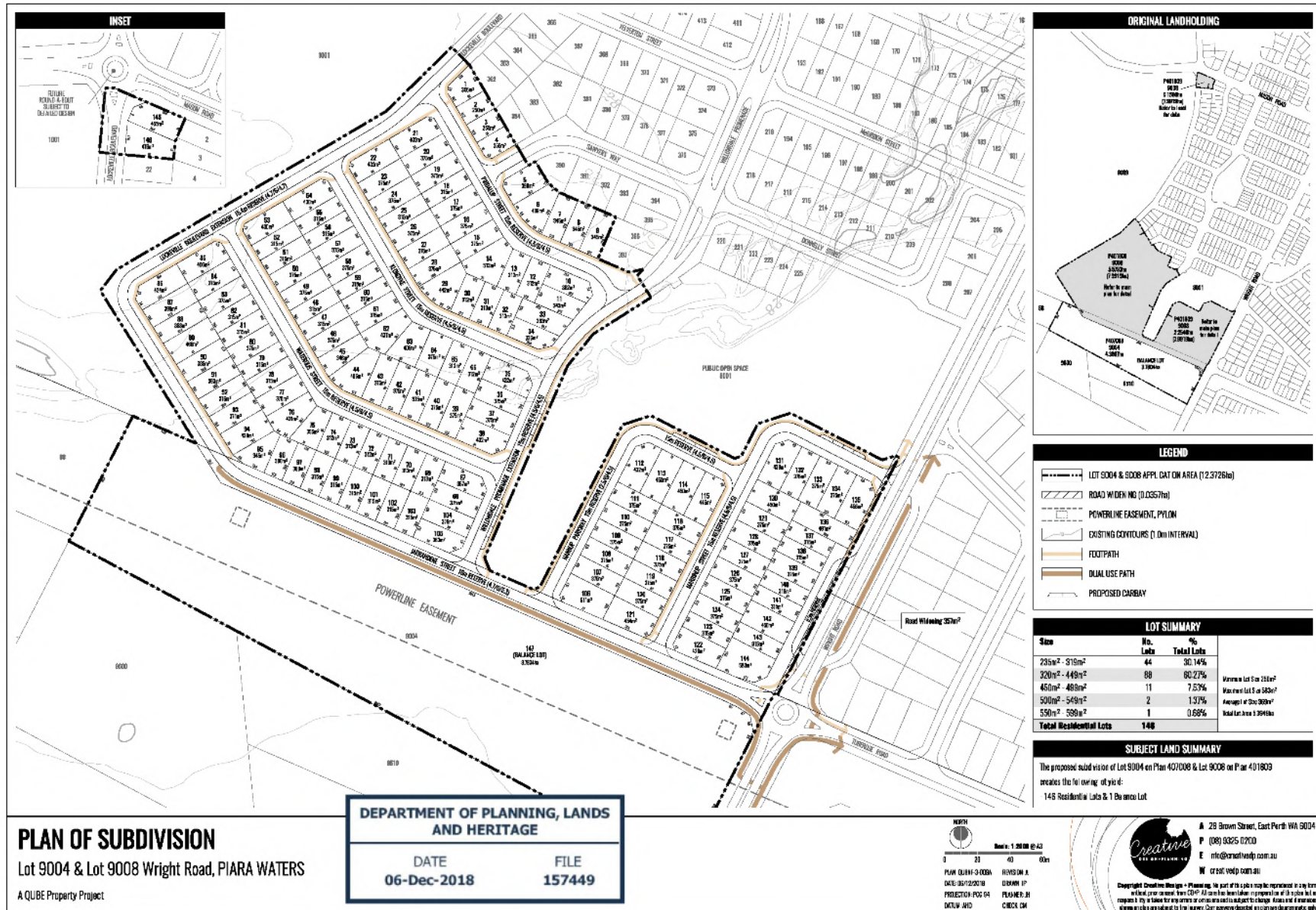
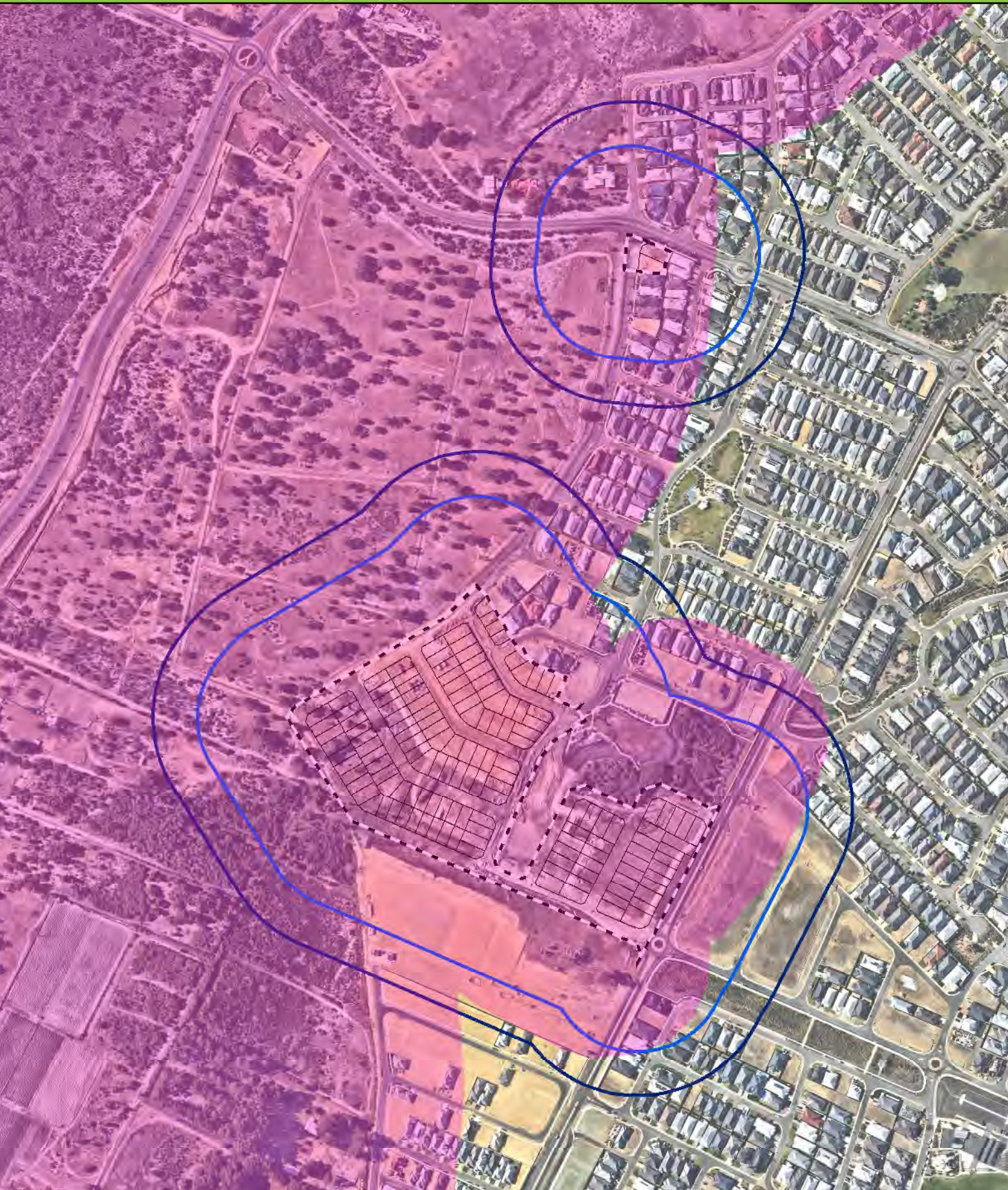


Figure 2: Plan of Subdivision – Mason Green, Piara Waters

Figure 3: Bushfire Prone Mapping (DFES 2018)



Legend

- Subject Site
- Assessment 100m
- Assessment 150m
- Lot boundary
- Bushfire Prone Mapping (DFES 2018)

0 45 90 180
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

N

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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 General

The subject site is located in the City of Armadale. The subject site is bound by residential development to the north, east and south and native vegetation to the west and south-west (**Figure 1**). The subject site is accessed by Mason Rd, Wright Rd, Warton Rd and Armadale Rd.

Visual assessment of the surrounding vegetation within the assessment area did not identify any recent fire scars and fire history was not able to be determined. Accumulation of vegetative matter over time, combined with the moderate to high risk of ignition associated with high levels of public access and proximity to urban areas would potentially facilitate a bushfire occurrence in this area.

2.1.2 Fire Danger Index

A blanket rating of FDI 80 is adopted for Western Australian environments, as outlined in *AS 3959-2009 Construction of Buildings in Bushfire Prone Areas* (AS 3959-2009; SA 2009) and endorsed by Australasian Fire and Emergency Service Authorities Council (AFAC).

2.1.3 Vegetation classification

Vegetation within the subject site and surrounding 150 m (the assessment area) was assessed in accordance with the Guidelines and AS 3959-2009 with regard given to the *Visual guide for bushfire risk assessment in Western Australia* (DoP 2016). The site inspection was undertaken on 24th April 2019.

The following vegetation classes and exclusions were identified within the assessment area as depicted in **Figure 4** and listed below. Photographs relating to each vegetation type are included in **Appendix A**.

- Class B woodland;
- Class C shrubland;
- Class D scrub;
- Class G grassland;
- Excluded as per clause 2.2.3.2 (b) (i.e. single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified); and
- Excluded as per clause 2.2.3.2 (e) and (f) (i.e. non-vegetated areas and low-threat vegetation).

There is a landowner agreement with the owner of the western neighbouring land (765 Warton Road, Piara Waters) to maintain all land within 35 m of the western boundary of Mason Green Estate as low threat vegetation, **Appendix B**.

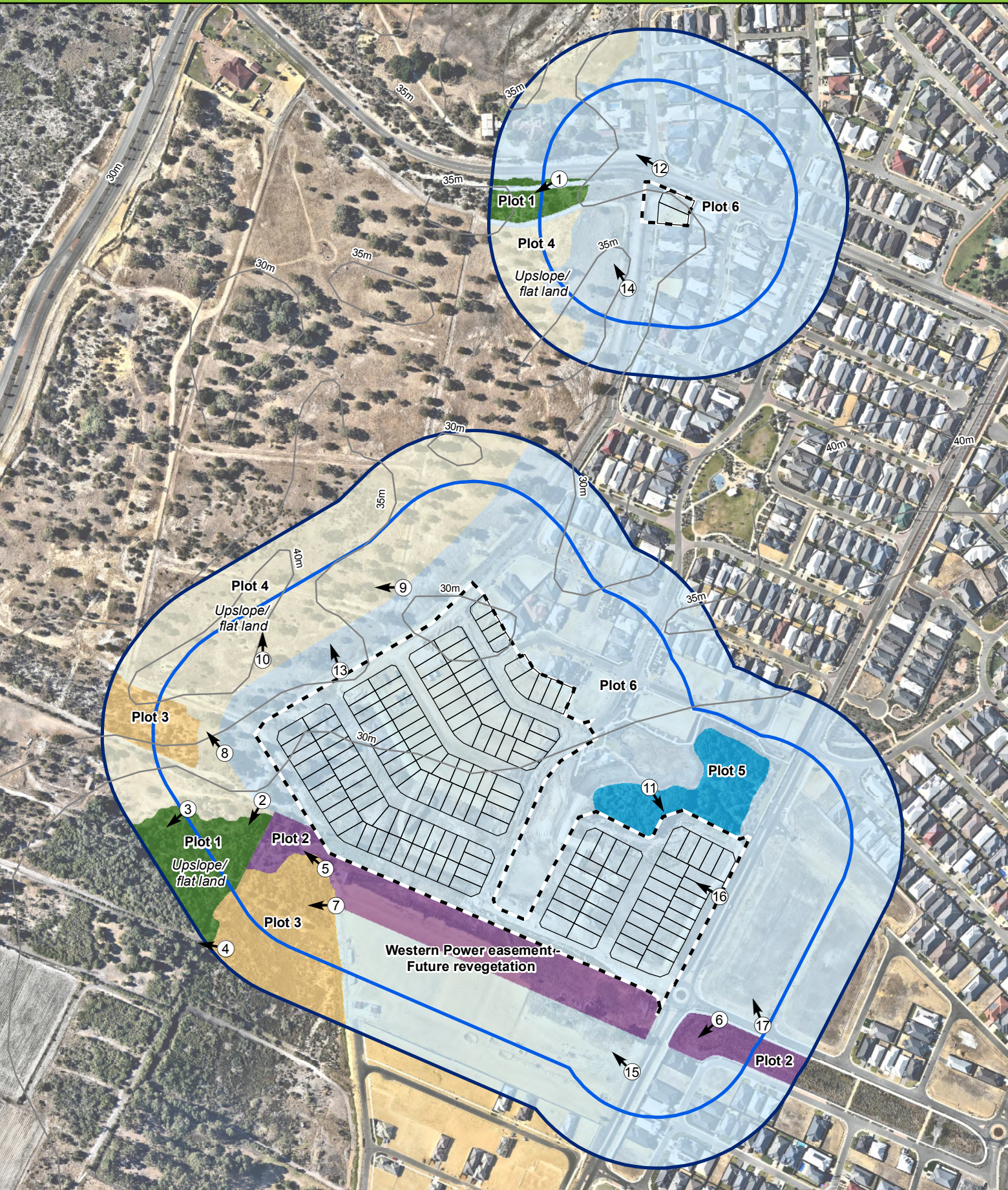
The Western Power easement south of the subject site was cleared of vegetation at the time of assessment and therefore excluded under Clause 2.2.3.2 (e) and (f) of AS 3959-2009. ELA has been advised by the City of Armadale that this easement is to be revegetated, resulting in a classification of Class C shrubland (Alex VanderPlas and Erin Somers, per comms. City of Armadale 2019). The

‘revegetated’ classification has been included in this BMP to identify that there is a potential future bushfire risk from the proposed revegetation work.

2.1.4 Topography and slope under vegetation

Effective slope under vegetation was assessed for a distance of 150 m from the subject site in accordance with the Guidelines and AS 3959-2009 and is depicted in **Figure 4**. Slope under classified vegetation was assessed as upslope / flat within the subject site and surrounding areas.

Figure 4: Vegetation classification



Legend

- Subject Site
- Assessment 100m
- Assessment 150m
- Lot boundary
- Contours (5m Intervals)
- Photo location

Vegetation classification

- Class B woodland
- Class C shrubland
- Class D scrub
- Class G grassland
- Excluded under clause 2.2.3.2 (b)
- Excluded under clause 2.2.3.2 (e) and (f)

0 40 80 160
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

N

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2.2 Bushfire assessment outputs

A Bushfire Attack Level (BAL) assessment has been undertaken in accordance with SPP 3.7, the Guidelines, AS 3959-2009 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 4** considered bushfire prone and is subject to a BAL assessment in accordance with AS 3959 2009.

A Method 1 BAL assessment (as outlined in AS 3959 2009) has been completed for the proposed development and incorporates the following factors:

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

Based on the identified BAL, construction requirements for proposed 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 1 and **Figure 5** display the Method 1 BAL assessment (in the form of BAL contours) that has been completed for the proposed development in accordance with AS 3959-2009 methodology.

Table 1: Method BAL Calculation (BAL contours)

Plot and vegetation classification	Effective slope	Hazard separation distance	BAL rating	Comment
Plot 1 Class B woodland	Upslope Flat	0-<10	BAL-FZ	No development proposed in this area
		10-<14	BAL-40	No development proposed in this area
		14-<20	BAL-29	No development proposed in this area
		20-<29	BAL-19	No development proposed in this area
		29-<100	BAL-12.5	Development proposed in this area
Plot 2 Class C shrubland	Upslope/flat	0-<7	BAL-FZ	No development proposed in this area
		7-<9	BAL-40	No development proposed in this area
		9-<13	BAL-29	No development proposed in this area
		13-<19	BAL-19	Development proposed in this area
		19-<100	BAL-12.5	Development proposed in this area
Plot 3 Class D scrub	Upslope/flat	0-<10	BAL-FZ	No development proposed in this area
		10-<13	BAL-40	No development proposed in this area
		13-<19	BAL-29	No development proposed in this area
		19-<27	BAL-19	No development proposed in this area
		27-<100	BAL-12.5	Development proposed in this area
Plot 4 Class G grassland	Upslope/flat	0-<6	BAL-FZ	No development proposed in this area
		6-<8	BAL-40	No development proposed in this area
		8-<12	BAL-29	No development proposed in this area
		12-<17	BAL-19	No development proposed in this area
		17-<50	BAL-12.5	Development proposed in this area
Plot 5 Excluded as per clause 2.2.3.2 (b)		N/A		
Plot 6 Excluded as per clause 2.2.3.2 (e) and (f) of AS3959- 2009		N/A		

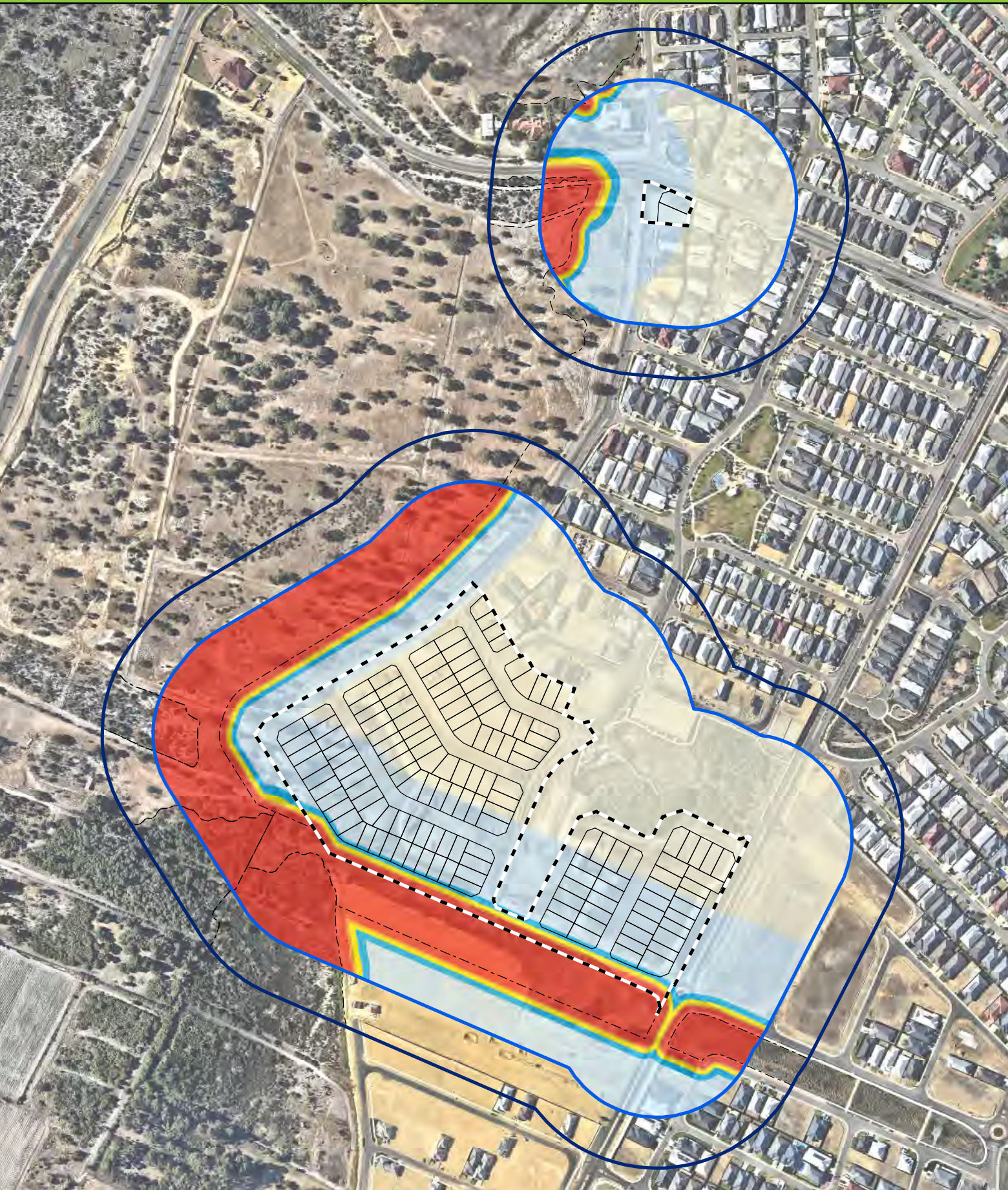
2.3 Identification of issues arising from the BAL assessment

All proposed lots within the proposed subdivision will be located in areas subject to a BAL rating of BAL-19 or lower. Vegetation clearing and management works will be undertaken on the adjoining property to the west as part of the ongoing land management agreement (**Appendix B**). Managing this vegetation to Asset Protection Zone standards, as outlined in **Appendix C**, will be undertaken by the adjoining land owner.

ELA has been advised by the City of Armadale that the Western Power easement south of the subject site is to be revegetated, resulting in a classification of Class C shrubland (Alex VanderPlas and Erin Somers, per comms. City of Armadale 2019). The 'revegetated' classification has been included in this BMP to identify that there is a potential future bushfire risk from the proposed revegetation work.

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 5: Bushfire Attack Level (BAL) Contour



Legend

- Subject Site
- Assessment 100m
- Assessment 150m
- Bushfire hazard interface
- Lot boundary

Bushfire Attack Level (BAL) Contour


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

0 40 80 160

Metres

Datum/Projection:
GDA 1994 MGA Zone 50

N



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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 6.4 of SPP 3.7 and the Guidelines. Implementation of this BMP is expected to meet objectives 5.1-5.4 of SPP 3.7.

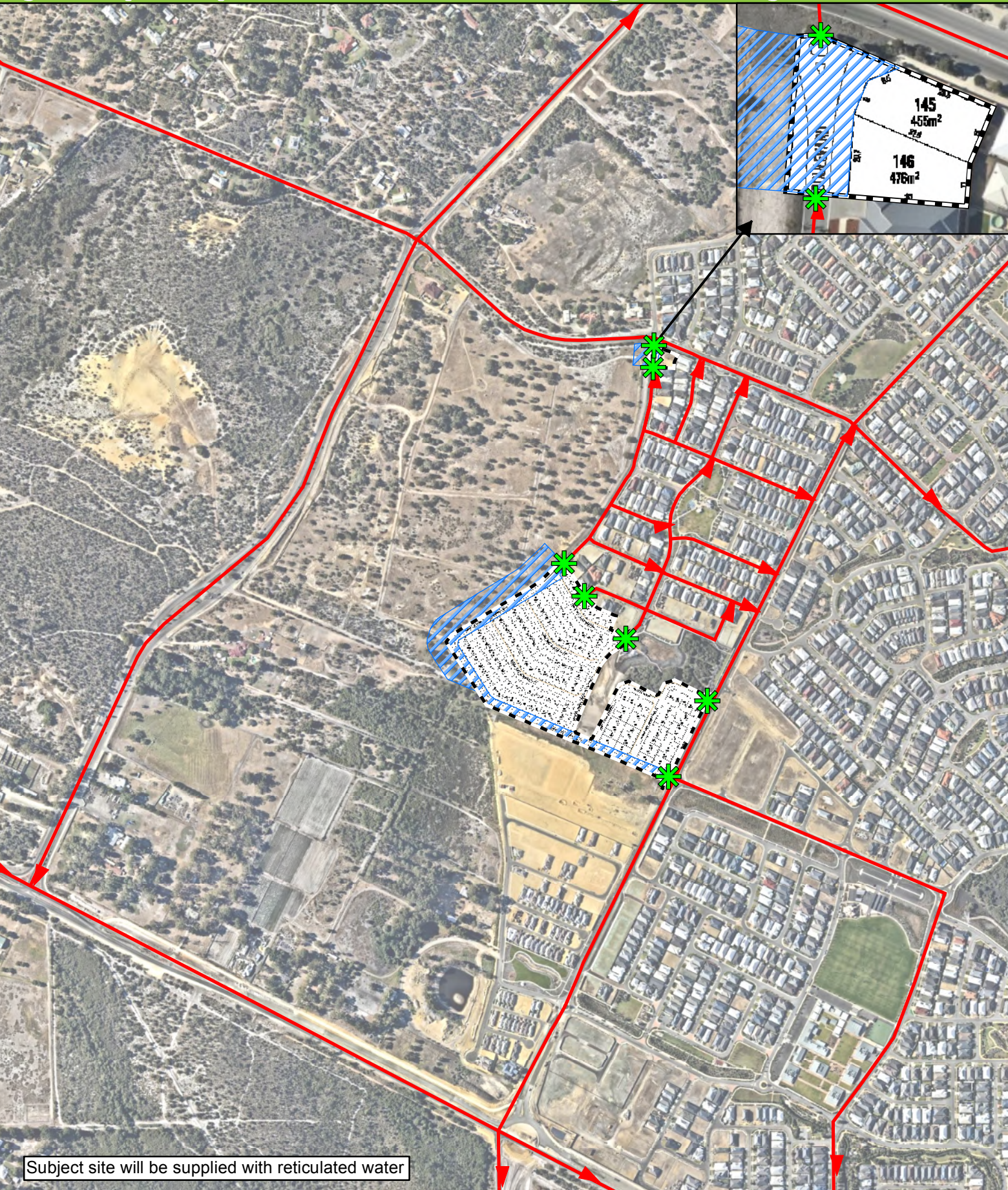
In response to the above requirements of SPP 3.7 and the Guidelines, bushfire management measures, as outlined, have been devised for the proposed development in accordance with Guideline acceptable solutions to meet compliance with bushfire protection criteria.

Table 2: Summary of solutions used to achieve bushfire performance criteria

Bushfire Performance Criteria	AS	PS	N/A	Comment
Element 1: Location				
A1.1 Development location	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On development, all proposed lots will be located in areas subject to BAL ratings of BAL-12.5 or lower. The proposed development is considered to be compliant with A1.1.
Element 2: Siting and design of development				
A2.1 Asset Protection Zone (APZ)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	APZs can be maintained between all proposed dwellings and classified vegetation in the form of roads and other non-vegetated and landscaped areas (refer to Figure 6). The adjacent lot to the west will be maintained as low threat vegetation, in perpetuity, as per the land owner agreement in Appendix B . All APZ's will be managed in accordance with the requirements of 'Standards for Asset Protection Zones' (WAPC 2017; Appendix C) The proposed development is considered to be compliant with A2.1.
Element 3: Vehicular access				
A3.1 Two access routes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Seven access routes to/from the subject site are available (Figure 6). All roads will comply with requirements outlined in the Guidelines (Appendix D). The proposed development is considered to be compliant with A3.1.
Element 3: Vehicular access				
A3.2 Public road	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All public roads will comply with vehicular access requirements (Appendix D).
Element 3: Vehicular access				
A3.3 Cul-de-sac	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	There currently is a cul-de-sac at the end of Lockeville Blvd. However, as part of this proposed subdivision, the development of the two northern lots will result in the connection of Lockeville Blvd to Mason Green Rd through a round-about and provide two-way access for these lots. The proposed development is considered to be compliant with A3.3.
Element 3: Vehicular access				
A3.4 Battle-axe	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No battle axe lots are proposed.

Bushfire Performance Criteria	AS	PS	N/A	Comment
Element 3: Vehicular access A3.5 Private Driveway longer than 50 m	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No private driveways longer than 50 m are proposed.
Element 3: Vehicular access A3.6 Emergency Access way	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No emergency access way is required.
Element 3: Vehicular access A3.7 Fire-service access routes	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No fire service access routes are required or proposed.
Element 3: Vehicular access A3.8 Firebreak width	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	None of the proposed lots are greater than 0.5 hectares and therefore firebreaks are not required (CoA 2018).
Element 4: Water A4.1 Reticulated areas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>The subject site has a reticulated water supply that will be extended to all proposed lots.</p> <p>The proposed development is considered to be compliant with A4.1.</p> <p>A4.2 and A4.3 are not applicable to this proposed development. .</p>

Figure 6: Spatial representation of the bushfire management strategies



Subject site will be supplied with reticulated water

Legend

- Access point *(Refer to inset)
- Subject site
- Access / egress route
- Indicative Asset Protection Zone (APZ) as per land agreement

0 0.075 0.15 0.3
Kilometres
Datum/Projection:
GDA 1994 MGA Zone 50

N

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logical
AUSTRALIA
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Prepared by: SM Date: 10/06/2019

4. Implementation and enforcement

Implementation of the BMP applies to QUBE Property, the owner of 765 Warton Rd, Piara Waters and the City of Armadale 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 3**. 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 3: Proposed work program

No	Bushfire management measure	Responsibility
Prior to issue of Titles		
1	Clear and maintain APZs depicted in Figure 6 .	QUBE Property
2	Place Section 70A on title of all Lots within Bushfire Prone Areas	QUBE Property
Prior to sale or occupancy		
3	Maintain vegetation to APZ standard	QUBE Property. until development completion, adjacent land owner as per land owner agreement (Appendix B)
4	Implement increased building construction standards	Builders
5	Provide reticulated water supply	QUBE Property, construction contractor
6	Comply with current fire control order	QUBE Property until development completion
Ongoing management		
7	Maintain vegetation to APZ standard	Individual landowners (within property)
8	Comply with fire break order	Individual landowners (within property) City of Armadale (within public reserves)

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 development. As such, the proposed development is consistent with the aim and objectives of SPP 3.7 and associated guidelines and is recommended for approval.



James Leonard
Bushfire Consultant



Daniel Panickar
Senior Bushfire Consultant
FPAA BPAD Certified Practitioner
No. BPAD37802-L2



5. References

City of Armadale (CoA). 2018. *Fire Break Notice*. Available from: https://www.armadale.wa.gov.au/sites/default/files/assets/documents/docs/Laws_and_Enforcement/Firebreak_Note.pdf

Department of Fire and Emergency Services (DFES). 2018. *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. 2009. *Construction of buildings in bushfire-prone areas, AS 3959-2009*. 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 - Plates

Plot	Photo ID	Photo and vegetation classification
1	1	 <p>Class B woodland – upslope/ flat land</p>
1	2	 <p>Class B woodland (background) – upslope/ flat land</p>

Plot	Photo ID	Photo and vegetation classification
1	3	 <p>Class B woodland – upslope/ flat land</p>
1	4	 <p>Class B woodland – upslope/ flat land</p>

Plot	Photo ID	Photo and vegetation classification
2	5	 <p>Class C shrubland</p>
5	6	 <p>Class C shrubland – this are has been revegetated and not yet hit maturity. This wil increase in height between 1 m to 2 m .</p>

Plot	Photo ID	Photo and vegetation classification
3	7	<p>Class D scrub – upslope/ flat land</p>
3	8	<p>Class D scrub–upslope/ flat land. This has been classified as scrub because the canopy cover is between 10 to 30%, with the majority of shrubs great than 2 m high, with sparse tree distribution.</p>

Plot	Photo ID	Photo and vegetation classification
4	9	 <p>Class G grassland – upslope/ flat land</p>
4	10	 <p>Class G grassland – upslope/ flat land</p>

Plot	Photo ID	Photo and vegetation classification
5	11	<p>Excluded under Clause 2.2.3.2 (b) of AS 3959-2009. This is an area that is less than 1 ha in size and is not within 100 m of any other areas of classified vegetation</p>
6	12	<p>Excluded under 2.2.3.2 (e) and (f) – this is an area of low threat managed vegetation with reticulation</p>

Plot	Photo ID	Photo and vegetation classification
------	----------	-------------------------------------

6

13



Excluded under 2.2.3.2 (e) and (f) – this area is maintained, low threat vegetation, as per the land owner agreement in **Appendix B**.

6

14



Excluded under 2.2.3.2 (e) and (f) – this area is maintained, low threat vegetation, as per the land owner agreement in **Appendix B**.

Plot	Photo ID	Photo and vegetation classification
6	15	<p>24 Apr 2019, 09:47</p> <p>Excluded under 2.2.3.2 (e) and (f)</p>
6	16	<p>24 Apr 2019, 10:27</p> <p>Excluded under 2.2.3.2 (e) and (f)</p>

Plot	Photo ID	Photo and vegetation classification
6	17	 <p>Excluded under 2.2.3.2 (e) and (f)</p>

Appendix B – Land owner agreement

Rich Haul Holdings Pty Ltd

37-41 Burlington Street
Naval Base WA 6165

PHONE: 9410 1693

ABN 48 009 311 282

27TH February, 2018

Qube Property Group Pty Ltd
P O Box 8298
SUBIACO EAST WA 6008

ATTENTION: MR MARK HECTOR
SUBJECT: MASON GREEN-PIARA WATERS

Dear Mark,

I accept and acknowledge as the landowner of 765 Warton Road Piara Waters that I will maintain the area of my property indicated on the attached drawing (i.e. 35m from my eastern boundary) as low threat vegetation in perpetuity. Specifically, this will entail:

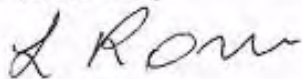
- Fine fuel load: reduced to and maintained at within two tonnes per hectare (i.e. grass trimmed to a maximum height of 50 mm).

Grass will be trimmed at the end of winter each year to a maximum height of 50 mm, and again in spring and summer if significant growth has occurred.

This maintenance will be undertaken in perpetuity, regardless of a change in ownership of 765 Warton Road Piara Waters until development on my property replaces the need to continue maintenance (i.e. the vegetation is replaced by roads, buildings, etc.).

I agree to formally notify any future owners of this hazard reduction agreement and also that, they in turn will also be required to notify any future owners of this requirement.

Yours sincerely



LIVIA RONCI
DIRECTOR
Enc.

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 2018).

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 7**).

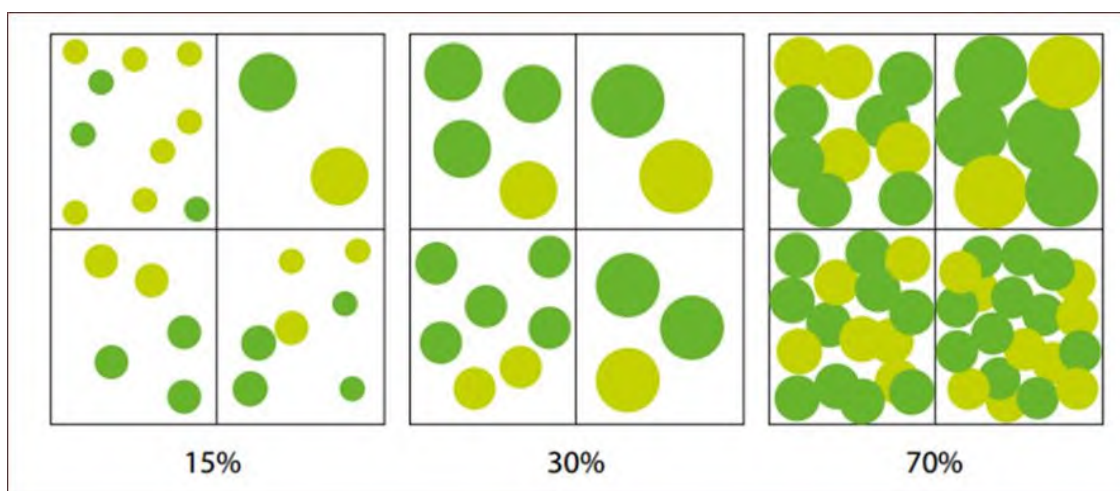


Figure 7: Illustrated tree canopy cover projection (WAPC 2017)

- **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					

