Bushfire Management Plan

Beenyup Grove, Byford

Prepared for
Parcel Property

20 September 2017

DOCUMENT TRACKING

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Contents

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List of figures

List of tables

List of appendices

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1 Introduction

1.1 Project overview

Eco Logical Australia (ELA) was commissioned by Parcel Property to prepare a Bushfire Management Plan (BMP) to support a subdivision application being prepared for the Beenyup Grove Estate at Lots 127-130 and 202 Doley Road, Lots 2-3 Lawrence Way, and Lot 1 Orton Road, Byford (hereafter referred to as the subject site; **Figure 1)**.

The subject site is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2017), 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 1.2* (the Guidelines; WAPC 2017).

This assessment has been prepared by ELA Senior Bushfire Consultant, Daniel Panickar (FPAA BPAD Level 2 Certified Practitioner No. BPAD37802-L2) and quality assurance undertaken by ELA Senior Bushfire Consultant, Bruce Horkings (FPAA BPAD Level 3 Certified Practitioner No. BPAD29962-L3).

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.

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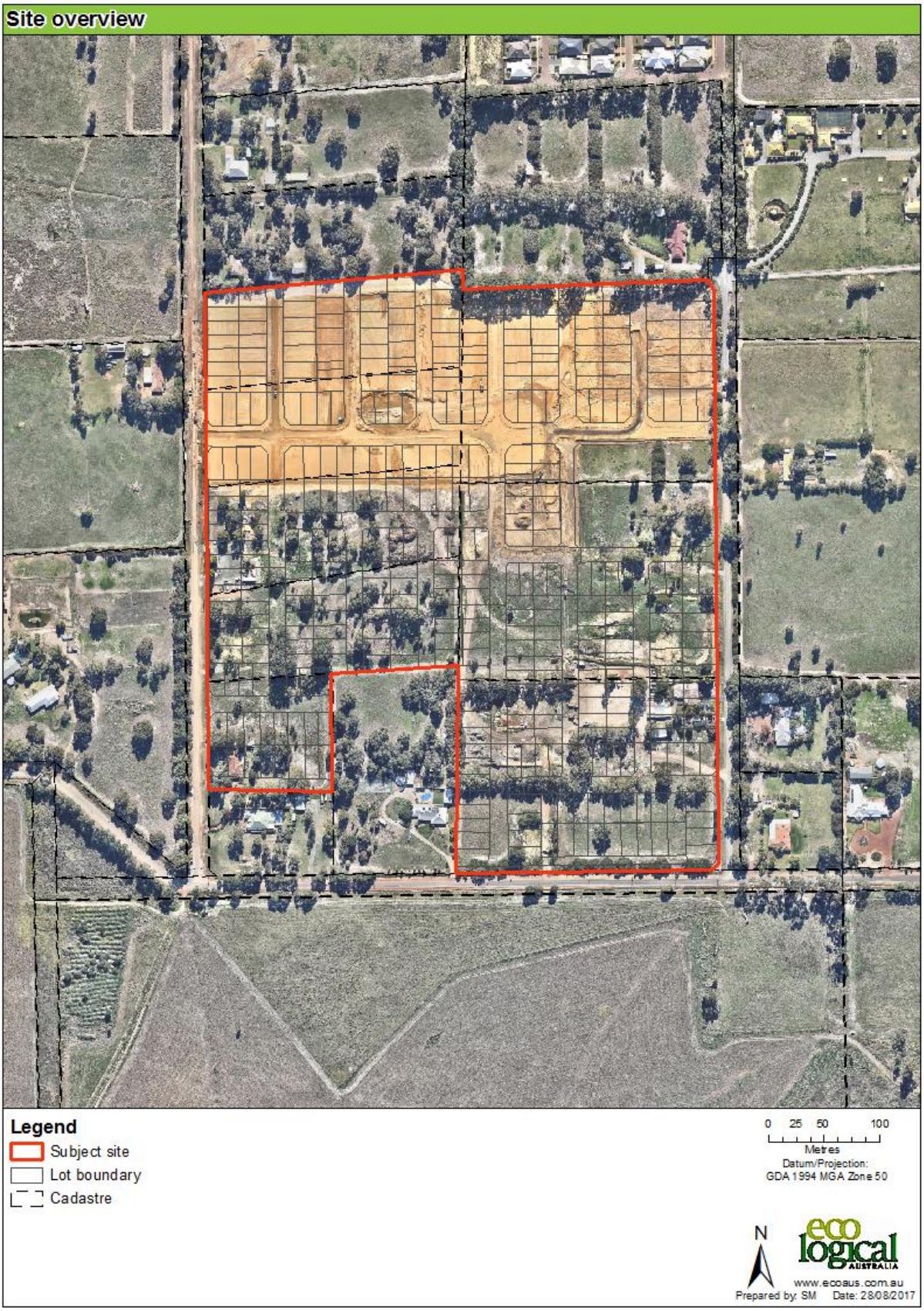

Figure 1: Site overview

2 Spatial consideration of bushfire threat

2.1 General

The subject site is located in the Shire of Serpentine-Jarrahdale, and is bound by Doley Road to the west, Lawrence Way to the east, Orton Road to the south, and rural-residential properties to the north. Historically, the subject site comprised multiple rural properties which are now being cleared and levelled for development.

2.2 Bushfire fuels

Vegetation within the subject site and surrounding 150 m (the assessment area) was assessed in accordance with the Guidelines and *AS 3959-2009 Construction of Buildings in Bushfire Prone Areas* (SA 2009) with regard given to the *Visual guide for bushfire risk assessment in Western Australia* (DoP 2016). Site inspection was undertaken on 26 July 2017.

The following vegetation classes and exclusions were identified within the assessment area as depicted in **Figure 2** and listed below:

- Class G grassland; and
- Exclusions as per clause 2.2.3.2 (e) and (f) (i.e. non-vegetated areas and low-threat vegetation).

Photographs relating to each vegetation type are included in **Appendix 1**.

The BAL assessment addresses this topic further in **Section 2.5**.

2.3 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 2**. Slope on all land within 150 m of the subject site is effectively upslope/flat.

The BAL assessment addresses this topic further in **Section 2.5**.

2.4 Bushfire history, risk of ignition and potential bushfire scenarios

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.

Agricultural land uses within undeveloped land around the subject site contributes to the largely grass dominated fuels in these areas, all of which are subject to grazing or management. Firefighting services would have relatively straightforward access to fire-fronts through public roads and farm tracks.

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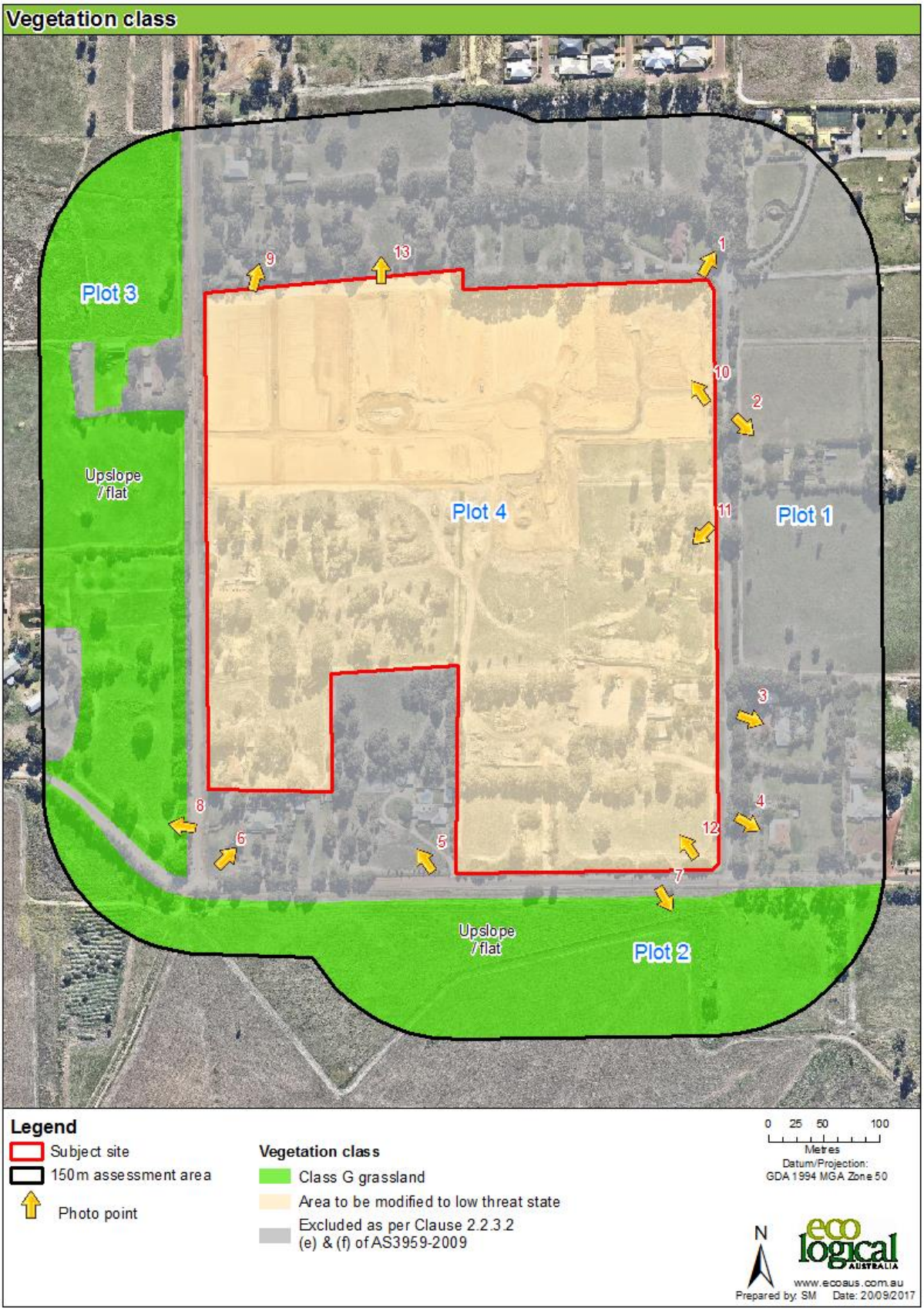

Figure 2: Vegetation class

2.5 Bushfire Attack Level (BAL) assessment

All land located within 50 m of the classified Class G grassland vegetation depicted in **Figure 2** is 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 areas 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.

2.5.1 Fire Danger Index

A blanket rating of FDI 80 is adopted for Western Australian environments, as outlined in AS 3959–2009 and endorsed by Australasian Fire and Emergency Service Authorities Council.

2.5.2 Vegetation class

Vegetation class is described in **Section 2.2**, depicted in **Figure 2** and is comprised of:

- Class G grassland.

2.5.3 Slope under classified vegetation

Slope under classified vegetation is depicted in **Figure 2**. Slope on all land within 150 m of the subject site is effectively upslope/flat.

2.5.4 Distance between proposed development areas and classified vegetation

Separation distances between proposed development areas within the subject site and classified vegetation are depicted in **Table 1**.

2.5.5 Method 1 BAL assessment

Table 1 and **Figure 3** 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.

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Table 1: Method 1 BAL calculation (BAL contours)

Plot and Vegetation classification	Effective slope	Hazard separation distance	BAL rating	Comment
Plot 1 Excluded as per clause 2.2.3.2 (f) of AS3959-2009	N/A			
Plots 2 and 3 Class G grassland	Upslope / Flat land	<6 m	BAL-FZ	No development proposed in this area
		6-<8 m	BAL-40	No development proposed in this area
		8-<12 m	BAL-29	No development proposed in this area
		12-<17 m	BAL-19	No development proposed in this area
		17-<50 m	BAL-12.5	Development proposed in this area
Plot 5 Area to be modified to low threat state	N/A			

2.6 Identification of issues arising from the BAL assessment

All proposed lots are located in areas subject to a BAL rating of BAL-12.5 or lower. 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.

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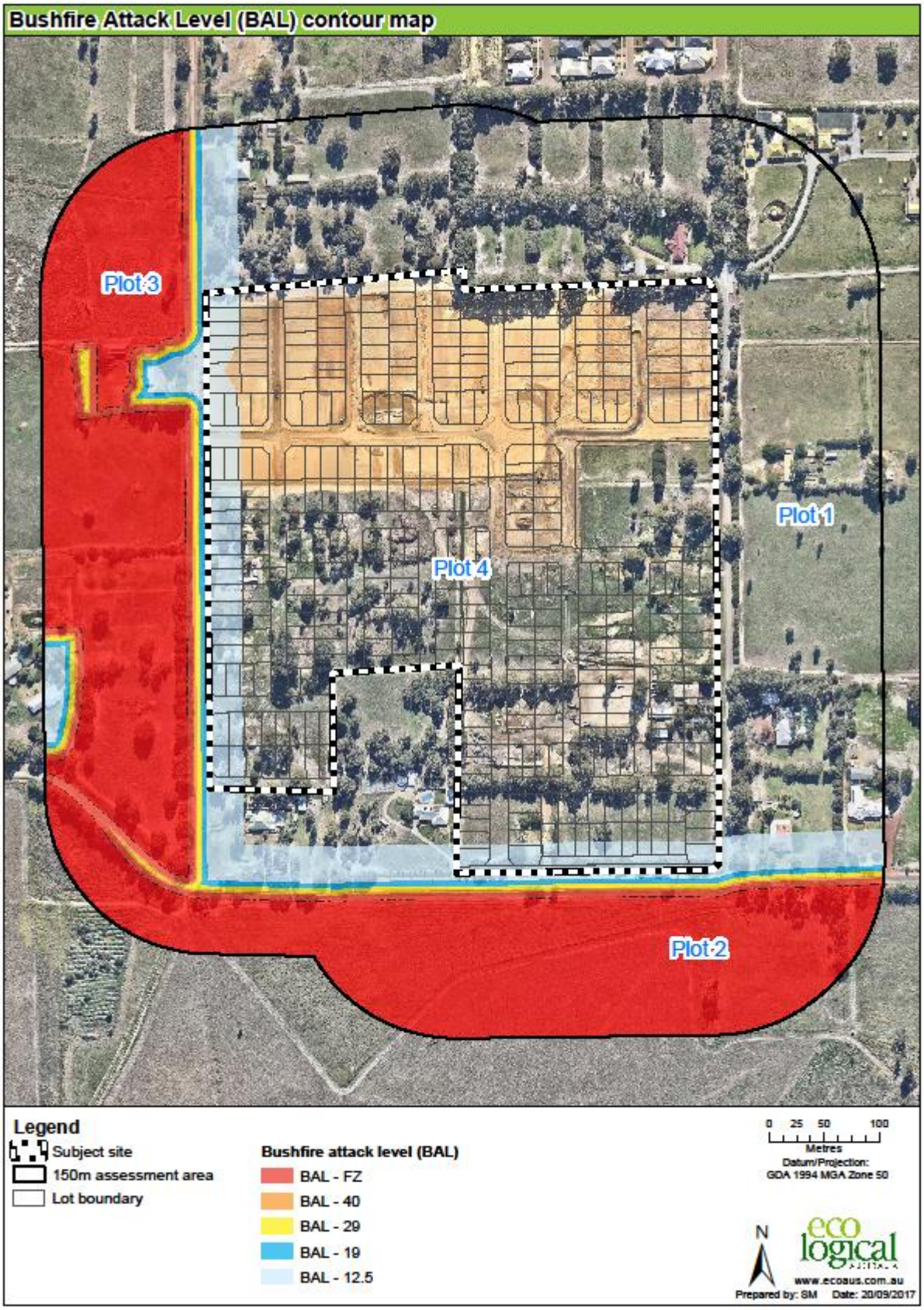

Figure 3: Bushfire Attack Level (BAL) contour map

3 Proposal compliance and justification

The proposed subdivision is required to comply with SPP 3.7 and the Guidelines, as per the following policy measures:

6.2 Strategic planning proposals, subdivision and development applications

a) Strategic planning proposals, subdivision and development applications within designated bushfire prone areas relating to land that has or will have a Bushfire Hazard Level (BHL) above low and/or where a Bushfire Attack Level (BAL) rating above BAL-LOW apply, are to comply with these policy measures.

b) Any strategic planning proposal, subdivision or development application in an area to which policy measure 6.2 a) applies, that has or will, on completion, have a moderate BHL and/or where BAL-12.5 to BAL-29 applies, may be considered for approval where it can be undertaken in accordance with policy measures 6.3, 6.4 or 6.5.

c) This policy also applies where an area is not yet designated as a bushfire prone area but is proposed to be developed in a way that introduces a bushfire hazard, as outlined in the Guidelines.

6.4 Information to accompany subdivision applications

Any development application to which policy measure 6.2 applies is to be accompanied by the following information prepared in accordance with the Guidelines:

a) BAL Contour Map to determine the indicative acceptable BAL ratings across the subject site, in accordance with the Guidelines. BAL Contour Maps should be prepared by an accredited Bushfire Planning Practitioner;

b) the identification of any bushfire hazard issues arising from the BAL Contour Map; and

c) an assessment against the bushfire protection criteria requirements contained within the Guidelines demonstrating compliance within the boundary of the subdivision site

This information can be provided in the form of a Bushfire Management Plan or an amended Bushfire Management Plan where one has been previously endorsed.

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Implementation of this BMP is expected to meet the following objectives of SPP 3.7:

- 5.1: Avoid increasing the threat of bushfire to people, property and infrastructure. The preservation of life and the management of bushfire impact is paramount;
- 5.2: Reduce vulnerability to bushfire through the identification and assessment of bushfire hazards in decision-making at all stages of the planning and development process;
- 5.3: Ensure that planning proposals and development applications take into account bushfire protection requirements and include specified bushfire protection measures where land has or will have a moderate or extreme bushfire hazard level, and/ or where a rating higher than BAL-Low applies; and
- 5.4: Achieve a responsible approach between bushfire management measures and landscape amenity and biodiversity conservation values, with consideration of the potential impacts of climate change.

In response to the above requirements of SPP 3.7 and the Guidelines, bushfire management measures, as outlined in **Section 4** have been devised for the proposed development in accordance with Guideline acceptable solutions to meet compliance with bushfire protection criteria. The 'acceptable solutions assessment' is provided in **Section 4** to assess the proposed bushfire management measures against each bushfire protection criteria in accordance with the Guidelines and demonstrate that the measures proposed meet the intent of each element of the bushfire protection criteria.

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4 Bushfire management measures

This section assesses the proposal against the Bushfire Performance Criteria as outlined in the Guidelines and listed below:

- Location;
- Siting and design of development;
- Vehicular access; and
- Water.

ELA has identified a range of bushfire management measures that on implementation will enable all proposed areas to be developed with a manageable level of bushfire risk whilst maintaining compliance with the intent of the Bushfire Performance Criteria.

Table 2 outlines the Acceptable Solutions (AS) that are relevant to the proposal, identifies where a Performance Solution (PS) has been used instead of an AS and summarises how the intent of each Bushfire Protection criteria has been achieved.

Table 3 contains a full assessment of the proposal against the Bushfire Performance Criteria.

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

Bushfire Performance Criteria	AS	PS	N/A	Comment
Element 1: Location	☒	☐	☐	All proposed lots are located in areas subject to BAL ratings of BAL-12.5 or lower.
Element 2: Siting and design of development	☒	☐	☐	APZs will be maintained between all proposed buildings and classified vegetation in the form of roads and other non-vegetated and landscaped areas.
Element 3: Vehicular access	☒	☐	☐	Seven access routes to/from the subject site are available (**Figure 4**). All roads will comply with requirements outlined in the Guidelines (**Appendix 3**).
Element 4: Water	☒	☐	☐	The subject site has a reticulated water supply.

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Table 3: Assessment against Bushfire Performance Criteria

Bushfire protection criteria	Intent and Performance Principle	Design response	Compliance statement
Element 1: Location	**Intent:** To ensure that strategic planning proposals, subdivision and development applications are in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure. **Performance Principle (P1):** The strategic planning proposal, subdivision and development application is 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 minor development in areas where BAL–40 or BAL–FZ applies, demonstrating that the risk can be managed to the satisfaction of the Department of Fire and Emergency Services and the decision-maker.	**Acceptable solution A1.1 Development location** The strategic planning proposal, subdivision and development application is 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. **Management measures / development response** All proposed lots are located in areas subject to a BAL rating of BAL-12.5 or lower (**Figure 3**).	The proposed development is considered **compliant** with Element 1 Location.

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Bushfire protection criteria	Intent and Performance Principle	Design response	Compliance statement
Element 2: Siting and design of development	**Intent:** To ensure that the siting of development minimises the level of bushfire impact. **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. That it minimises the bushfire risk to people, property and infrastructure, including compliance with AS 3959 if appropriate.	**Acceptable Solution A2.1 Asset Protection Zone (APZ)** Every building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the requirements in **Appendix 2**. **Management measures / development response** The APZs proposed as part of this development are illustrated in **Figure 3**. These APZs will encompass roads and other non-vegetated and landscaped areas.	The proposed development is considered **compliant** with Element 2 Siting and design of development.

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Bushfire protection criteria	Intent and Performance Principle	Design response	Compliance statement
Element 3: Vehicular access	**Intent:** To ensure that the vehicular access serving a subdivision/development is safe in the event of a bushfire occurring. **Performance Principle (P3):** The internal layout, design and construction of public and private vehicular access in the subdivision/development allows emergency and other vehicles to move through it easily and safely at all times.	**Acceptable Solution A3.1 Two access routes** Two different vehicular access routes are provided, both of which connect to the public road network, provide safe access and egress to two different destinations and are available to all residents/the public at all times and under all weather conditions. **Management measures / development response** Seven access routes to/from the subject site are available (**Figure 4**).	The proposed development is considered **compliant** with Element 3 Vehicular access.
		Acceptable Solution A3.2 Public road A public road is to meet the requirements in Table 4, Column 1 of the Guidelines (reproduced in **Appendix 3**). **Management measures / development response** All public roads will comply with relevant requirements.	
		Acceptable Solution A3.3 Cul-de-sac A cul-de-sac and/or a dead-end road should be avoided in bushfire prone areas. Where no alternative exists (i.e. the lot layout already exists and/or will need to be demonstrated by the proponent), the following requirements are to be achieved: • Requirements in Table 4, Column 2 of the Guidelines (reproduced in **Appendix 3**); • Maximum length: 200 metres (if public emergency access is provided between cul-de-sac heads maximum length can be increased to 600 metres provided no more than	

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Bushfire protection criteria	Intent and Performance Principle	Design response	Compliance statement
		eight lots are serviced and the emergency access way is no more than 600 metres); and • Turn-around area requirements, including a minimum 17.5 metre diameter head. **Management measures / development response** No cul-de-sacs are proposed as part of the development. All terminating internal roads will ultimately be linked to those within adjacent developments in accordance with Structure Plans for the local area.	
		Acceptable Solution A3.4 Battle-axe Battle-axe access leg should be avoided in bushfire prone areas. Where no alternative exists, (this will need to be demonstrated by the proponent) all of the following requirements are to be achieved: • Requirements in Table 4, Column 3 of the Guidelines (reproduced in **Appendix 3**); • Maximum length: 600 metres; and • Minimum width: six metres. **Management measures / development response** No battle axe lots are proposed.	

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Bushfire protection criteria	Intent and Performance Principle	Design response	Compliance statement
		Acceptable Solution A3.5 Private driveway longer than 50 m A private driveway is to meet all of the following requirements: • Requirements in Table 4, Column 3 of the Guidelines (reproduced in **Appendix 3**); • Required where a house site is more than 50 metres from a public road; • Passing bays: every 200 metres with a minimum length of 20 metres and a minimum width of two metres (i.e. the combined width of the passing bay and constructed private driveway to be a minimum six metres); • Turn-around areas designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres) and within 50 metres of a house; and • Any bridges or culverts are able to support a minimum weight capacity of 15 tonnes. • All-weather surface (i.e. compacted gravel, limestone or sealed). **Management measures / development response** No private driveways longer than 50 m are proposed.	
		Acceptable Solution A3.6 Emergency access way An access way that does not provide through access to a public road is to be avoided in bushfire prone areas. Where no alternative exists (this will need to be demonstrated by the proponent), an emergency access way is to be provided as an alternative link to a public road during emergencies. An emergency access way is to meet all of the following requirements:	

Bushfire protection criteria	Intent and Performance Principle	Design response	Compliance statement
		• Requirements in Table 4, Column 4 of the Guidelines (reproduced in **Appendix 3**); • No further than 600 metres from a public road; • Provided as right of way or public access easement in gross to ensure accessibility to the public and fire services during an emergency; and • Must be signposted. **Management measures / development response** No emergency access ways are required or proposed.	
		Acceptable Solution A3.7 Fire service access routes (perimeter roads) Fire service access routes are to be established to provide access within and around the edge of the subdivision and related development to provide direct access to bushfire prone areas for fire fighters and link between public road networks for firefighting purposes. Fire service access routes are to meet the following requirements: • Requirements Table 4, Column 5 of the Guidelines (reproduced in **Appendix 3**); • Provided as right of ways or public access easements in gross to ensure accessibility to the public and fire services during an emergency; • Surface: all-weather (i.e. compacted gravel, limestone or sealed); • Dead end roads are not permitted;	

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Bushfire protection criteria	Intent and Performance Principle	Design response	Compliance statement
		• Turn-around areas designed to accommodate type 3.4 appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres); • No further than 600 metres from a public road; • Allow for two-way traffic and; • Must be signposted. **Management measures / development response** No fire service access routes are required or proposed.	
		Acceptable Solution A3.8 Firebreak width Lots greater than 0.5 hectares must have an internal perimeter firebreak of a minimum width of three metres or to the level as prescribed in the local firebreak notice issued by the local government. **Management measures / development response** No firebreaks are required or proposed.	

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Bushfire protection criteria	Intent and Performance Principle	Design response	Compliance statement
Element 4: Water	**Intent:** To ensure that water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire. **Performance Principle (P4):** The subdivision, development or land use is provided with a permanent and secure water supply that is sufficient for firefighting purposes.	**Acceptable solution A4.1 Reticulated areas** The subdivision, development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority and Department of Fire and Emergency Services. **Management measures / development response** The subject site is currently connected to a reticulated water supply. The reticulated system will ensure a year-round supply of water is provided for the subject site which meets minimum water supply requirements.	The proposed development is considered **compliant** with Element 4 Water.
		Acceptable solution A4.2 Non-reticulated areas Water tanks for firefighting purposes with a hydrant or standpipe are provided and meet the following requirements: • Volume: minimum 50,000 litres per tank; • Ratio of tanks to lots: minimum one tank per 25 lots (or part thereof); • Tank location: no more than two kilometres to the further most house site within the residential development to allow a 2.4 fire appliance to achieve a 20 minute turnaround time at legal road speeds; • Hardstand and turn-around areas suitable for a type 3.4 fire appliance (i.e. kerb to kerb 17.5 metres) are provided within three metres of each water tank; and • Water tanks and associated facilities are vested in the relevant local government.	

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Bushfire protection criteria	Intent and Performance Principle	Design response	Compliance statement
		Management measures / development response The subject site is located within a reticulated area and therefore A4.2 is not applicable.	
		Acceptable solution A4.3 Individual lots within non-reticulated areas Single lots above 500 square metres need a dedicated static water supply on the lot that has the effective capacity of 10,000 litres. **Management measures / development response** The subject site is located within a reticulated area and therefore A4.3 is not applicable.	

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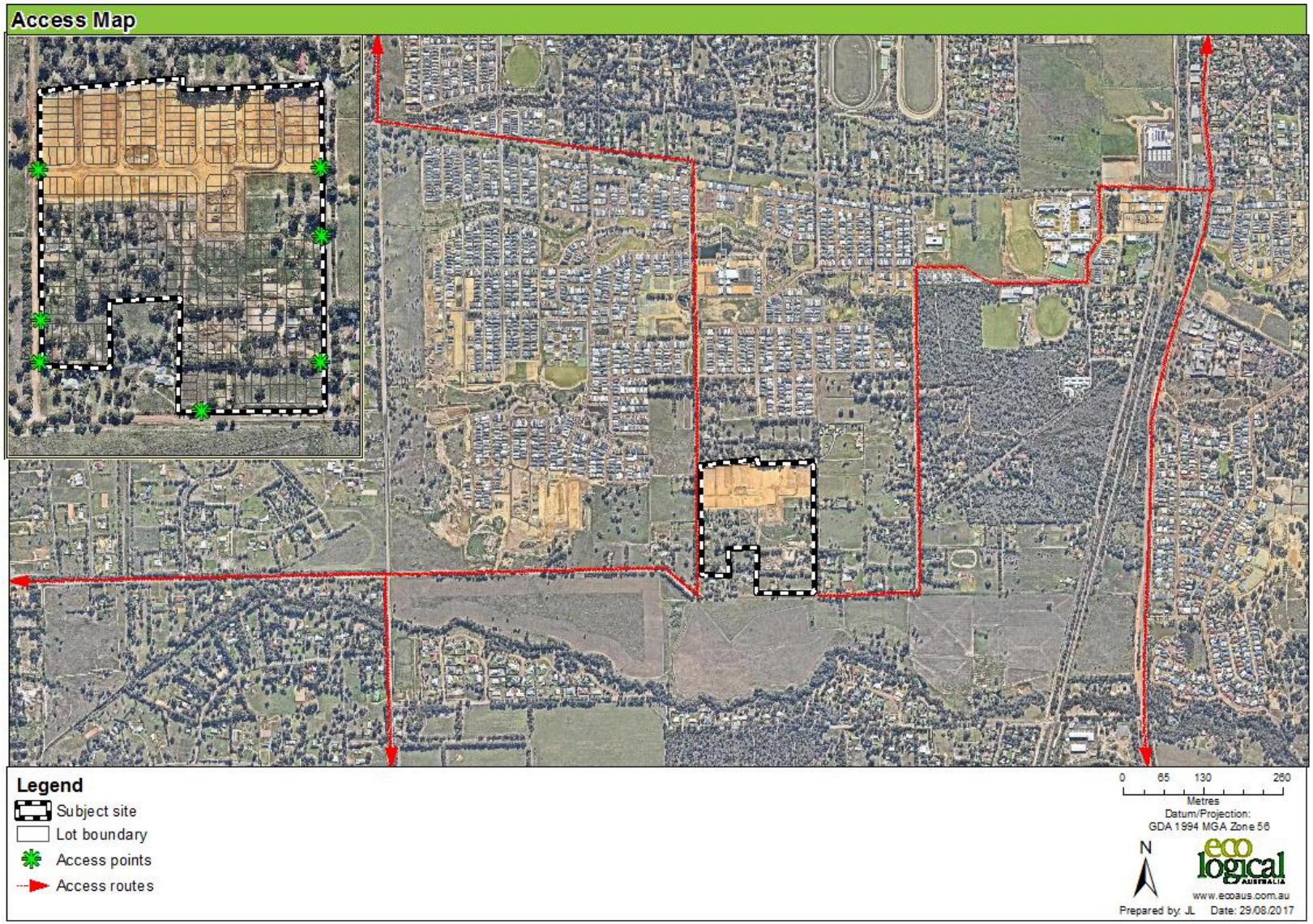

Figure 4: Access map

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5 Implementation and enforcement

Implementation of the BMP applies to Parcel Property and the Shire of Serpentine-Jarrahdale to ensure bushfire management measures are adopted and implemented on an ongoing basis. A summary of the bushfire management measures described in **Section 4**, 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 works program

Bushfire management measure	Timing for application	Responsibility
Creation of APZs	Prior to sale of lots	Parcel Property
Maintenance of APZs	As required to achieve 2 t/ha threshold all year	Parcel Property until development completion. Individual landowners thereafter
Implementation of increased building construction standards	During construction of dwellings	Builders
Construction of roads, cul-de-sac and emergency access way as per the Guidelines	During construction of the proposed resort	Parcel Property / Construction contractor
Provision of reticulated water supply	During construction of the proposed building	Parcel Property / Construction contractor
Compliance with current fire control order	All year round as specified in the current fire control order	Parcel Property until development completion. Individual landowners thereafter

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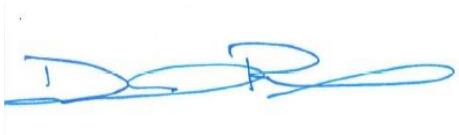
Conclusion

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.



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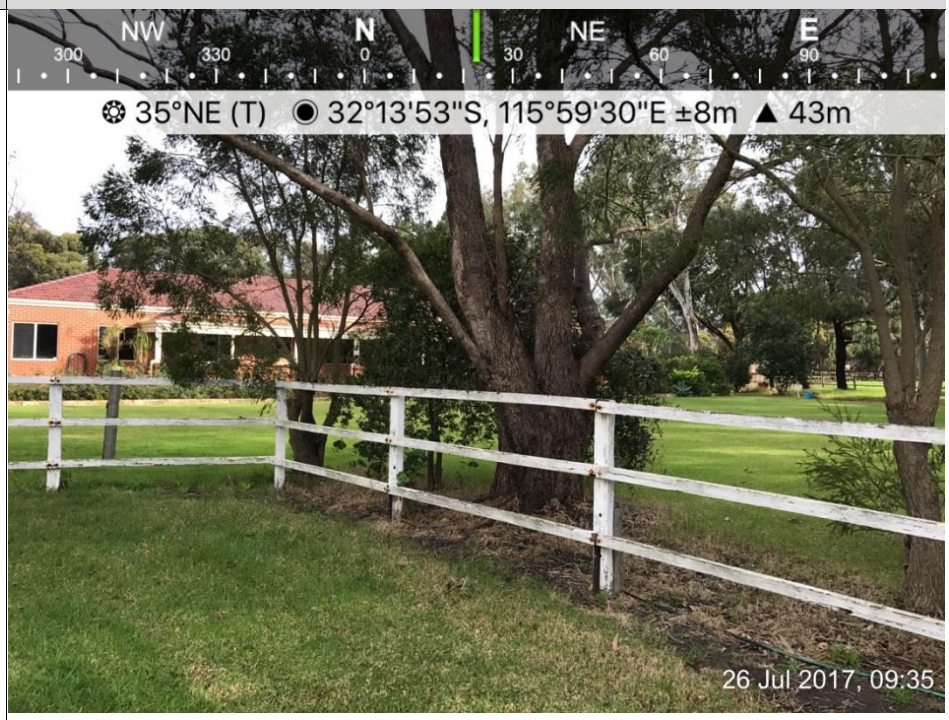
Appendix 1 Plates

Plot	Photo ID	Photo and vegetation class
1	1	 Excluded as per clause 2.2.3.2 (f) of AS 3959-2009

Plot	Photo ID	Photo and vegetation class
1	2	 Excluded as per clause 2.2.3.2 (f) of AS 3959-2009

Plot	Photo ID	Photo and vegetation class
1	3	 Excluded as per clause 2.2.3.2 (f) of AS 3959-2009

Plot	Photo ID	Photo and vegetation class
1	4	 Excluded as per clause 2.2.3.2 (f) of AS 3959-2009

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Plot	Photo ID	Photo and vegetation class
1	5	 Excluded as per clause 2.2.3.2 (f) of AS 3959-2009

Plot	Photo ID	Photo and vegetation class
1	6	 Excluded as per clause 2.2.3.2 (f) of AS 3959-2009

Plot	Photo ID	Photo and vegetation class
1	9	 Excluded as per clause 2.2.3.2 (f) of AS 3959-2009

Plot	Photo ID	Photo and vegetation class
1	13	 Excluded as per clause 2.2.3.2 (f) of AS 3959-2009

Plot	Photo ID	Photo and vegetation class
2	7	 Class G grassland

Plot	Photo ID	Photo and vegetation class
3	8	 Class G grassland

Plot	Photo ID	Photo and vegetation class
4	10	 Area to be modified to low threat state

Plot	Photo ID	Photo and vegetation class
4	11	 Area to be modified to low threat state

Plot	Photo ID	Photo and vegetation class
4	12	 Area to be modified to low threat state

Appendix 2 Standards for Asset Protection Zones

The following standards have been extracted from the *Guidelines for Planning in Bushfire Prone Areas v 1.1* (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/m² (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 5).

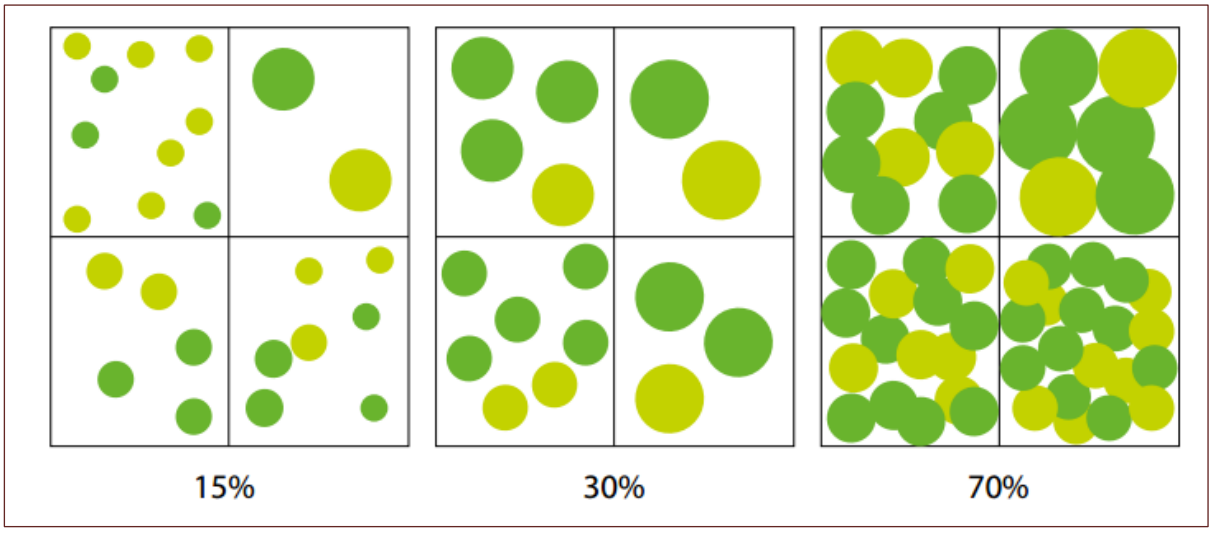

Figure 5: Illustrated tree canopy cover projection (WAPC 2017)

- **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.

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Appendix 3 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

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