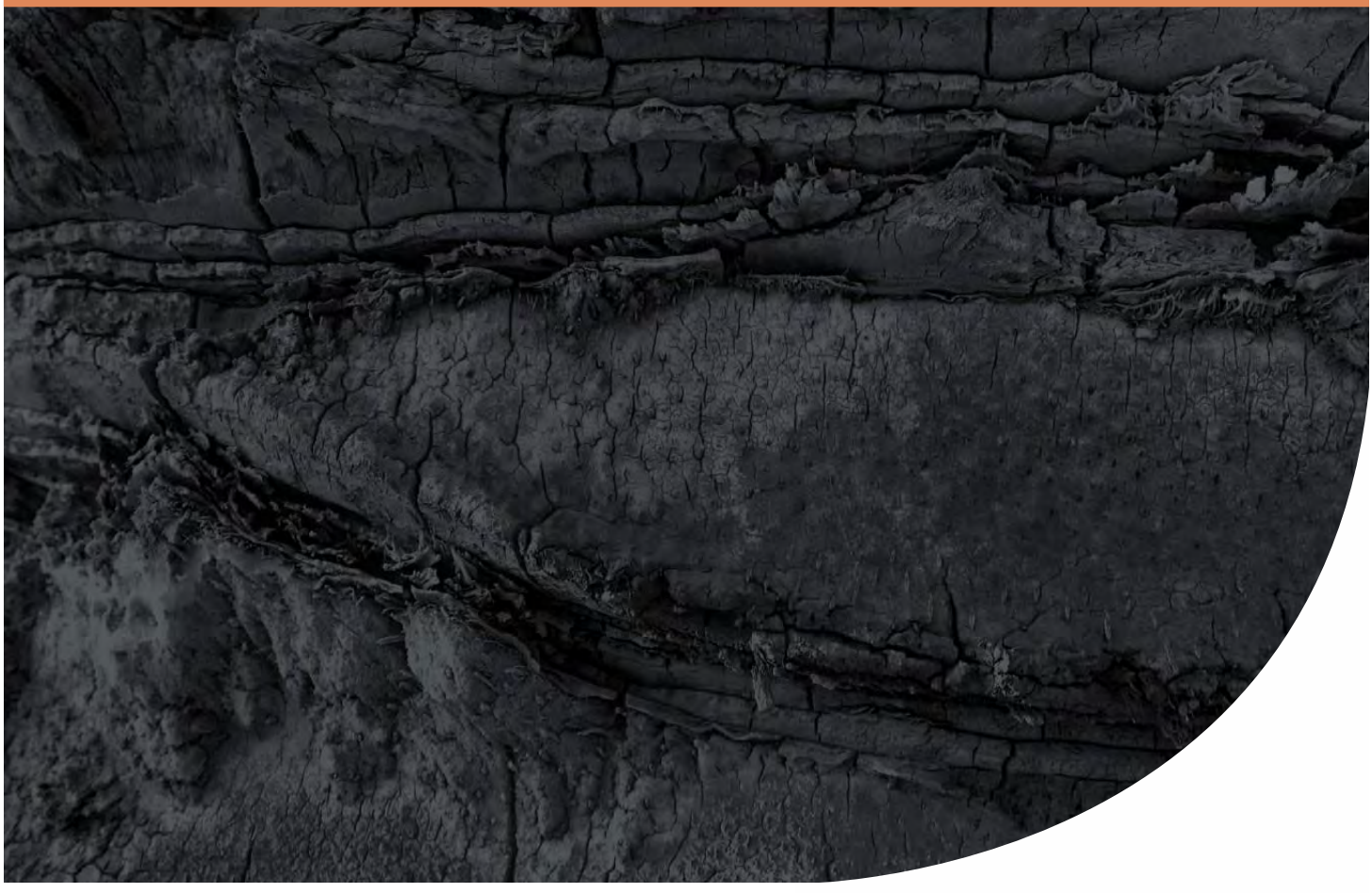
Bushfire Management Plan

Lot 1797 and 1798 Matison Street, Southern River

Project No: EP18-016(01)

Prepared for Lander Land Company Pty Ltd
March 2019



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	Appendix B updated in accordance with client feedback.				
B	March 2019	Heidi Becker	HPB	Kirsten Knox	KK
	The document was updated to address the revised structure plan, based on feedback from agencies.				

Executive Summary

This Bushfire Management Plan (BMP) has been prepared on behalf of Lander Land Company Pty Ltd (the proponent) to support a proposed structure plan for Lots 1797 and 1798 Matison Street, Southern River (herein referred to as 'the site'). The site is approximately 8 ha in area and is located approximately 20 km south east of the Perth CBD within the City of Gosnells.

The site is currently identified as a 'bushfire prone area' under the state-wide *Map of Bush Fire Prone Areas* prepared by the Office of Bushfire Risk Management (OBRM 2018). The identification of bushfire prone areas within any portion of the site requires further assessment of the bushfire hazard implications on proposed development to be undertaken in accordance with *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) and the *Guidelines for Planning in Bushfire Prone Areas Version 1.3* (the Guidelines) (WAPC and DFES 2017).

The majority of the site currently supports native vegetation and contains a portion of a conservation category wetland (CCW) which is located in the southern portion of the site. The vegetation predominantly associated with the CCW is shrubland (Class C). In addition, the western portion of the site is predominantly forest (Class A), with areas of woodland vegetation within the northern and eastern portions of the site. Grassland (Class G) vegetation has been identified to the west and north-east of the site, scrub (Class D) vegetation has been identified to the south-west and east of the site, and woodland (Class B) and shrubland (Class D) vegetation occurs to the south of the site.

For the purpose of this assessment, a post development vegetation classification scenario has been assumed in order to determine the likely long-term bushfire risk posed to future development within the site. As part of this it has been assumed that the CCW (and associated existing vegetation) will be retained and protected in perpetuity. A 50 m-wide buffer has been accommodated in the structure plan, between the CCW and future development. The 50 m wide buffer is assumed to be revegetated (and a 'forest' vegetation classification has been assumed to provide a 'worst-case' assessment of bushfire risk). All vegetation outside the site is assumed to remain in its current condition, except the portion of the Woongan Street road reserve adjacent to the site, which will be constructed as part of development.

This BMP demonstrates that as development progresses, an acceptable solution can be adopted for each of the applicable bushfire protection criteria outlined in the Guidelines. This includes:

- **Location:** future development will be located in an area that will, on completion, be subject to a low or moderate bushfire hazard, and the structure plan is able to accommodate the setbacks required to ensure future habitable buildings can achieve a BAL rating of BAL-29 or less.
- **Siting and Design:** future habitable buildings can be sited so that BAL-29 is not exceeded with appropriate setbacks able to be accommodated through the provision of public roads and public open space, or through minor (i.e. 2m-wide) rear setbacks within the north-eastern most lots. Where required increased construction standards in accordance with AS 3959 can be applied through the building licence process.

- **Vehicular Access:** The site currently has access to Matison Street to the north-west, which connects with a number of existing public roads that provide egress to the north to Southern River Road. Southern River Road then connects with the existing broader road network. The speed limit along Matison Street is 50 km/h, enabling safe entry and exit from the site. As part of the future development of the site, the portion of Woongan Street directly adjacent to the site will be constructed, providing access to Matison Street. In the future, Woongan Street will provide access to the south-east, when urban development in the broader area is progressed.
- **Water:** the development can be provided with a permanent and reticulated water supply to support onsite firefighting requirements.

The measures to be implemented through this structure plan and the associated future subdivision design process have been outlined as part of this BMP and can be used to support future planning and development approvals processes. A revised BMP may be required to support future subdivision applications, particularly if the development layout changes or the assumptions regarding treatment of the CCW buffer change.

Table of Contents

List of Tables

List of Plates

Figures

Appendices

List of Abbreviations

Table A1: Abbreviations – General terms

General terms	
AHD	Australian Height Datum
AS	Australian Standard
APZ	Asset Protection Zone
BAL	Bushfire Attack Level
BMP	Bushfire Management Plan
BPAD	Bushfire Planning and Design
CBD	Central Business District
CCW	Conservation Category Wetland
ESL	Emergency Services Levy
FDI	Fire Danger Index
FZ	Flame Zone

Table A2: Abbreviations – Organisations

Organisations	
BoM	Bureau of Meteorology
CoG	City of Gosnells
DBCA	Department of Biodiversity Conservation and Attractions (formerly Department of Parks and Wildlife)
DoW	Department of Water (now known as Department of Water and Environment Regulation)
DFES	Department of Fire and Emergency Services
OBRM	Office of Bushfire Risk Management
SES	State Emergency Services
WAPC	Western Australian Planning Commission

Table A3: Abbreviations – Legislation and policies

Legislation and policies	
Guidelines	*Guidelines for Planning in Bushfire Prone Areas version 1.3* (WAPC and DFES 2017)
SPP 3.7	*State Planning Policy 3.7 Planning in Bushfire Prone Areas* (WAPC 2015)

Table A4: Abbreviations – Planning and building terms

Planning and building terms	
AS 3959	*Australian Standard 3959-2009 Construction of buildings in bushfire prone areas*
MRS	Metropolitan Regional Scheme
TPS	Town Planning Scheme

1 Proposal Details

1.1 Background

This Bushfire Management Plan (BMP) has been prepared on behalf of Lander Land Company Pty Ltd (the proponent) to support a proposed structure plan for Lots 1797 and 1798 Matison Street, Southern River (herein referred to as 'the site'). The structure plan and proposed development layout is provided in **Appendix A** and sets out the proposed spatial framework for future residential development of the site. The site is approximately 8 ha in area and is located20 km south east of the Perth CBD within the City of Gosnells, as shown in **Figure 1**.

The site is currently identified as a 'bushfire prone area' under the state-wide *Map of Bush Fire Prone Areas* prepared by the Office of Bushfire Risk Management (OBRM 2018), as shown in **Plate 1** below. The identification of an area within a declared bushfire prone area necessitates further assessment of the bushfire risk and suitability of the proposed development to be undertaken in accordance with *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) and the *Guidelines for Planning in Bushfire Prone Areas Version 1.3* (the Guidelines) (WAPC and DFES 2017).

Plate 1: Areas within and surrounding the site identified as 'bushfire prone areas' (as indicated in purple) under the state-wide Map of Bush Fire Prone Areas (OBRM 2018).

1.2 Purpose of this report

The aim of this BMP is to assess bushfire hazards within the site and nearby areas and ensure that the threat posed by any identified hazards can be appropriately mitigated and managed and demonstrate satisfaction of clause 6.1 of SPP 3.7 the precautionary principle. It has been prepared to support the proposed development application for the site and addresses the requirements of SPP 3.7 (WAPC 2015), the Guidelines (WAPC and DFES 2017) and *Australian Standard 3959-2009 Construction of buildings in bushfire prone areas* (AS 3959) (Standards Australia 2009). The document provides an assessment of the general bushfire management strategies to be considered as part of future development of individual dwellings within proposed lots and includes:

- An assessment of the existing classified vegetation and associated bushfire hazard levels in the vicinity of the site (within 150 m) and consideration of hazards that will exist in the post development scenario (**Section 3**).
- Commentary on how future development can achieve the bushfire protection criteria outlined within the Guidelines (**Section 5**).
- An outline of the roles and responsibilities associated with implementing this BMP (see **Section 6**).

1.3 Statutory policy and framework

The following key legislation, policies and guidelines are relevant to the preparation of a bushfire management plan:

- *Fire and Emergency Services Act 1998*
- *Bush Fires Act 1954*
- Planning and Development (Local Planning Scheme Amendment) Regulations 2015
- Building Regulations 2012
- *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (WAPC 2015)
- *Guidelines for Planning in Bushfire Prone Areas version 1.3* (WAPC and DFES 2017)
- *Australian Standard AS 3959 – 2009 Construction of buildings in bushfire prone areas* (Standards Australia 2009)

1.4 Description of the proposed development

The natural topographic contours indicate that the site is generally flat and have been shown in **Figure 1**. Across the site, elevation ranges from 20 metres Australian Height Datum (m AHD) in the eastern portion of the site to 22 m in the western portion of the site.

The majority of the site supports remnant native vegetation, with some areas previously cleared including areas for access tracks and firebreaks. A portion of a conservation category wetland (CCW) has been identified within the south-western portion of the site, as shown in **Figure 1**, with Bush Forever Site 464 located immediately to the south and east. These are further discussed in **Section 2**.

The site is currently zoned 'Urban deferred' under the Metropolitan Region Scheme (MRS) (see **Plate 2**) and 'General rural' under the City of Gosnells Town Planning Scheme No. 6. It is located in an area that is undergoing a transition from rural land uses to urban development, as part of the broader Southern River Precinct 3 Structure Plan. The Southern River Precinct 3 Structure Plan provides a spatial framework for the area to be developed for residential and light industrial uses, with land to the south-east of the site to remain in its current state as part of Bush Forever Site 464.

Overall, the proposed structure plan is intended to facilitate development of the site as urban residential lots, including 'Residential – R20', 'Residential – R25', 'Residential – R30' and 'Residential – R40' and is shown in **Appendix A**.

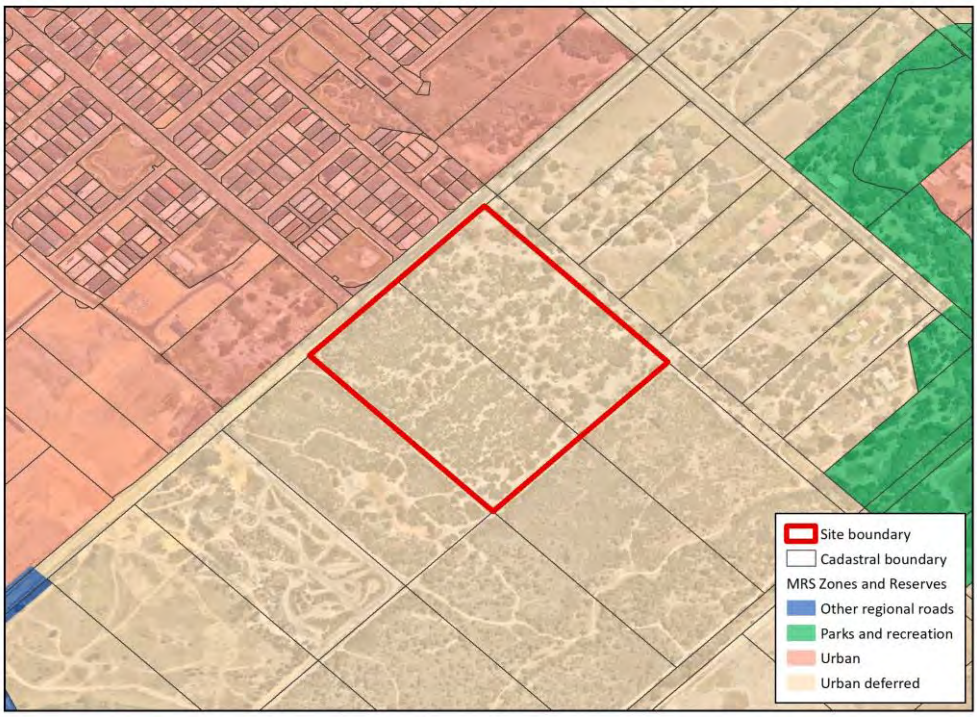

Plate 2: MRS zones and reserves within and surrounding the site

2 Environmental Considerations

The site is predominantly composed of native vegetation, although the southern portion of the site has previously been cleared on several occasions, with regrowth occurring since the early 2000's (based on a review of historical aerial photography). No permanent infrastructure has previously been built within the site.

A conservation category wetland (CCW) (Unique Feature Identifier (UFI) #15961) has been identified in the southern portion of the site, with the actual extent of this wetland within the site detailed by Aurora Environmental (2012) and shown in **Figure 1**. This wetland is proposed to be fully retained and protected as part of the proposed residential development of the site, with a 50 m-wide buffer to be provided between the wetland and future development.

The 50 m-wide buffer will be accommodated in local open space, with the entire buffer proposed to be revegetated (and has been considered as part of this assessment).

Existing trees will be retained where possible within areas identified as 'Local Open Space' within the structure plan (however will be dependent upon detailed design) and will be maintained as part of managed parkland and road reserves. Overall, the areas of local open space within the site are proposed to be utilised for recreation and drainage purposes. The detailed design of these areas will be determined in collaboration with the City of Gosnells as part of the standard development process. Based on achieving the requirements of Liveable Neighbourhoods and community expectations for urban areas, these areas will be designed to achieve low threat vegetation in accordance with Section 2.2.3.2 of AS 3959. Ongoing management is likely to include:

- Irrigation of grass and garden beds (where required).
- Regular removal of weeds and built up dead material (such as fallen branches, leaf litter etc.)
- Low pruning of trees (branches below 2 m in height removed where appropriate).
- Application of ground/surface covers such as mulch or non-flammable materials as required.
- Regular mowing/slashing of grass to less than 100mm in height.

The proponent will be responsible for the initial maintenance of the revegetation areas and local open space within the site and following handover, the City of Gosnells will be responsible for the long-term maintenance of these areas.

Bush Forever Site 464 occurs to the south and east of the site and has been identified as a 'Bush Forever Protection Area' in the Southern River Precinct 3 Structure Plan. It is assumed the Bush Forever site will remain in perpetuity, with existing firebreaks to be maintained.

3 Bushfire Assessment Results

Bushfire risk for the site has been appropriately considered in the specific context of the Guidelines (WAPC and DFES 2017) and AS 3959.

The objective of AS 3959 is to reduce the risk of ignition and loss of a building to bushfire. It provides a consistent method for determining a radiant heat level (radiant heat flux) as a primary consideration of bushfire attack on a building or object. It also prescribes simple construction responses that can resist the determined radiant heat level at a given distance from the fire and is based on six Bushfire Attack Level (BAL) ratings: BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ.

Two separate methods are outlined in AS 3959 for determining the impact of bushfire on dwellings and have been outlined below:

- **Method 1**, outlined in Section 2 and Appendix A of AS 3959, provides a basic assessment of radiant heat flux levels at various distances from classified vegetation (up to 100 m). This method assumes standard fuel loads for classified vegetation as outlined in AS 3959 and considers the effective slope beneath vegetation. This method can be used to determine appropriate setbacks to dwellings to achieve different levels of radiant heat exposure (i.e. BAL-12.5 to BAL-FZ).
- **Method 2**, outlined in Appendix B of AS 3959, provides access to the formula used to derive the Method 1 values. Where justified it enables the inputs used in Method 1 to be varied, to reflect true site conditions to provide a site-specific assessment of the radiant heat level at any given distance from the fire.

Not all vegetation is a classified bushfire risk. Vegetation and ground surfaces that are exempt from classification as a potential hazard is identified as low threat under Section 2.2.3.2 of AS 3959. Low threat vegetation includes the following:

a) Vegetation of any type more than 100 m from the site.
b) Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified.
c) Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site or each other.
d) Strips of vegetation less than 20 m wide (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified.
e) Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.
f) Low threat vegetation, including grassland managed in a minimal fuel condition, maintained lawns, golf courses, maintained public reserves and parkland, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and wind breaks.

3.1 BAL Assessment

3.1.1 BAL Assessment methodology and assumptions

In accordance with Appendix Five of the Guidelines, a method 1 BAL assessment has been undertaken to support the proposed structure plan/development of the site in order to determine the BAL ratings likely to be applicable to future habitable buildings based on the vegetation classifications and effective slopes, and to prepare the associated BAL contour plan.

3.1.2 Assessment inputs

3.1.2.1 Vegetation classification and effective slope

Assessing bushfire hazards takes into account the classes of vegetation within the site and surrounding area for a minimum of 100 m, in accordance with AS 3959. The assignment of vegetation classifications is based on an assessment of vegetation structure, which includes consideration of the various fuel layers of different vegetation types. For example, fuel layers in a typical forest environment can be broken-down into five segments as illustrated in **Plate 3** below. These defined fuel layers are considered when determining the classification of vegetation and associated bushfire hazard levels.

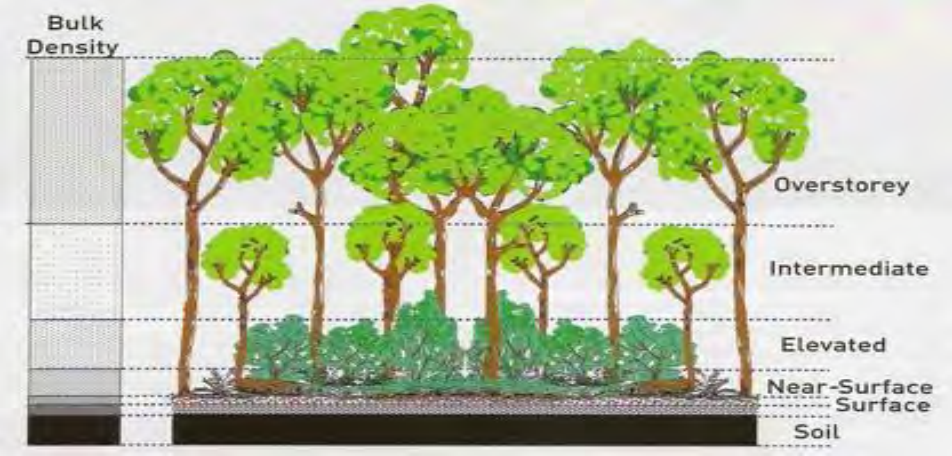

Plate 3: The five fuel layers in a forest environment that could be associated with fire behaviour (Gould et al. 2007)

An assessment of existing vegetation within the site and surrounding 150 m was undertaken on 22 February 2018 in accordance with AS 3959 and the Guidelines.

Table 1 below outlines:

- The pre-development AS 3959 vegetation classifications (and associated photo locations), which are also shown in **Figure 2.**
- The pre-development bushfire hazard ratings, also shown in **Figure 3.**
- The post-development AS 3959 vegetation classifications, also shown in **Figure 4.**
- The effective slope for each area of classified vegetation present in the post-development scenario is shown in **Figure 5.**

Table 1: Vegetation type, effective slope and future management

Pre-development			Post-development	
Plots	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot No.**	**Post-development AS 3959 classification, effective slope and assumptions**
1 - 3	Forest vegetation (with surface, near surface, elevated and overstorey fire layers) occurs within the western portion of the site in addition to a small stand adjacent to the western boundary. In addition, forest vegetation occurs adjacent to a waterway to the north of the site. **AS 3959 classification (Figure 2):** Forest (Class A) **Bushfire hazard rating (Figure 3):** Extreme	 *Plate 4: Photo location 1*  *Plate 6: Photo location 2*  *Plate 5: Photo location 3*	1	Forest vegetation within the CCW will remain in the long-term, while the 50 m-wide buffer that is proposed to be revegetated has been assumed to achieve a forest classification, in order to provide an assessment of potential worst-case scenario. The revegetation specification for the buffer will be determined as part of the future subdivision processes. **AS 3959 classification (Figure 4):** Forest (Class A) **Effective slope (Figure 5):** Flat/upslope
			2 - 3	Forest vegetation outside of the site is assumed to remain in its current state, and therefore remain a bushfire hazard for perpetuity. **AS 3959 classification (Figure 4):** Forest (Class A) **Effective slope (Figure 5):** Flat/upslope

Table 1: Vegetation type, effective slope and future management (continued)

Pre-development			Post-development	
Plots	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot No.**	**Post-development AS 3959 classification, effective slope and assumptions**
	Continued from above.	Continued from above	14	A portion of the forest vegetation in the northern portion of the site will be cleared and the area developed for residential land uses and public roads in accordance with the proposed structure plan. **AS 3959 classification (Figure 4):** Exclusion 2.2.3.2(e) **Effective slope (Figure 5):** Not applicable
			15	Forest vegetation outside the CCW and revegetation area (**Figure 4**) will be cleared and/or modified within the area identified as local open space in the structure plan. This area will be formally managed to a low threat standard, by the developer initially and then the City of Gosnells following handover. Individual existing mature trees may be retained as part of this. **AS 3959 classification (Figure 4):** Exclusion 2.2.3.2(f) **Effective slope (Figure 5):** Not applicable

Table 1: Vegetation type, effective slope and future management (continued)

Pre-development			Post-development	
Plot No.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot No.**	**Post-development AS 3959 classification, effective slope and assumptions**
4 - 7	Woodland (Class B) vegetation occurs within the northern and central portion of the site. In addition, woodland vegetation occurs to the south and east of the site within Bush Forever Site 464. **AS 3959 classification (Figure 2):** Woodland (Class B) **Bushfire hazard rating (Figure 3):** Extreme	 *Plate 7: Photo location 4*  *Plate 8: Photo location 6*  *Plate 9: Photo location 5*	1	The 50 m-wide CCW buffer is proposed to be revegetated and is assumed to achieve a forest classification, in order to provide an assessment of potential worst-case scenario. The revegetation specification will be determined as part of future subdivision processes. **AS 3959 classification (Figure 4):** Woodland (Class B) **Effective slope (Figure 5):** Flat/upslope
			4	A small stand of woodland vegetation that is associated with the CCW within the site is assumed it be retained and will therefore pose a permanent bushfire hazard to development within the site. **AS 3959 classification (Figure 4):** Woodland (Class B) **Effective slope (Figure 5):** Flat/upslope

Table 1: Vegetation type, effective slope and future management (continued)

Pre-development			Post-development	
Plot No.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot No.**	**Post-development AS 3959 classification, effective slope and assumptions**
	Continued from above	Continued from above	5-7	Woodland vegetation outside of the site is assumed to remain in its current state, and therefore remain a bushfire hazard for perpetuity. **AS 3959 classification (Figure 4):** Woodland (Class B) **Effective slope (Figure 5):** Flat/upslope
			14	Woodland vegetation in the northern portion of the site will be cleared and the area to be developed for residential land uses and public roads in accordance with the proposed structure plan. **AS 3959 classification (Figure 4):** Exclusion 2.2.3.2(e) **Effective slope (Figure 5):** Not applicable

Table 1: Vegetation type, effective slope and future management (continued)

Pre-development			Post-development	
Plot No.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot No.**	**Post-development AS 3959 classification, effective slope and assumptions**
	Continued from above	Continued from above	15	Woodland vegetation outside the CCW and revegetation area (**Figure 4**) will be cleared and/or modified within the area identified as local open space in the structure plan. This area will be formally managed to a low threat standard, by the developer initially and then the City of Gosnells following handover. Individual existing mature trees may be retained within this area. **AS 3959 classification (Figure 4):** Exclusion 2.2.3.2(f) Effective slope (Figure 5): Not applicable

Table 1: Vegetation type, effective slope and future management (continued)

Pre-development			Post-development	
Plot No.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot No.**	**Post-development AS 3959 classification, effective slope and assumptions**
8 - 9	Shrubland (Class C) vegetation (with surface and near-surface fuel layers, that include emergent low overstorey) occurs within the southern portion of the site, and is the primary vegetation class associated with the CCW. Whilst there are emergent overstorey species, these are sparse and would not significantly alter the behaviour of a bushfire, and therefore in accordance with note 2 of Table 2.3 of AS 3959 has been classified based on the understorey (which is shrubland). Surrounding the site, shrubland vegetation is located to the south of the site. **AS 3959 classification (Figure 2):** Shrubland **Bushfire hazard rating (Figure 3):** Moderate	 *Plate 10: Photo location 7*  *Plate 11: Photo location 8*	1	The 50 m-wide CCW buffer is proposed to be revegetated and is assumed to achieve a forest classification, in order to provide an assessment of potential worst-case scenario. The revegetation specification will be determined as part of future subdivision processes. **AS 3959 classification (Figure 4):** Exclusion 2.2.3.2(f) **Effective slope (Figure 5):** Not applicable
			8	Shrubland vegetation associated with the CCW within the site is assumed it be retained in its existing state and will therefore pose a permanent bushfire hazard to development within the site. **AS 3959 classification (Figure 4):** Shrubland (Class C) **Effective slope (Figure 5):** Flat/upslope

Table 1: Vegetation type, effective slope and future management (continued)

Pre-development			Post-development	
Plot No.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot No.**	**Post-development AS 3959 classification, effective slope and assumptions**
	Continued from above.	Continued from above.	9	Shrubland vegetation outside of the site within Bush Forever Site 464 is assumed to remain in its current state, and therefore remain a bushfire hazard in perpetuity. **AS 3959 classification (Figure 4):** Shrubland (Class C) **Effective slope (Figure 5):** Flat/upslope

Table 1: Vegetation type, effective slope and future management (continued)

Pre-development			Post-development	
Plot No.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot No.**	**Post-development AS 3959 classification, effective slope and assumptions**
10 - 11	Scrub (Class D) vegetation occurs to the south-west and south-east of the site, within Bush Forever Site 464. Whilst there are emergent overstorey species, these are sparse and would not significantly alter the behaviour of a bushfire. Therefore, in accordance with note 2 of Table 2.3 of AS 3959 has been classified based on the understorey, which is scrub. **AS 3959 classification (Figure 2):** Scrub (Class D) **Bushfire hazard rating (Figure 3):** Extreme	 *Plate 12: Photo location 9*  *Plate 13: Photo location 10*	10 - 11	Scrub vegetation located to the south-east and south-west of the site occurs within Bush Forever Site 464 and is assumed to remain in perpetuity and therefore pose a long-term bushfire hazard. **AS 3959 classification (Figure 4):** Scrub (Class D) **Effective slope (Figure 5):** Flat/upslope

Table 1: Vegetation type, effective slope and future management (continued)

Pre-development			Post-development	
Plot No.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot No.**	**Post-development AS 3959 classification, effective slope and assumptions**
12 – 13	Grassland (Class G) vegetation occurs to the west and north-east of the site, and is associated with rural landholdings that have not yet been subject to urban development in accordance with the Southern River Precinct 2 Structure Plan. **AS 3959 classification (Figure 2):** Grassland (Class G) **Bushfire hazard rating (Figure 3):** Moderate	 *Plate 14: Photo location 11*  *Plate 15: Photo location 12*	12 - 13	Areas identified as grassland are likely to be subject to re-development in accordance with the Southern River Precinct 3 Structure Plan in the future. Timing for this development is unknown, and while some management of grass fuels is evident, to consider a worst-case scenario, it has been assumed this vegetation will remain grassland for the foreseeable future. **AS 3959 classification (Figure 4):** Grassland (Class G) **Effective slope (Figure 5):** Flat/upslope

Table 1: Vegetation type, effective slope and future management (continued)

Pre-development			Post-development	
Plot No.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot No.**	**Post-development AS 3959 classification, effective slope and assumptions**
14	Non-vegetated areas such as roads, existing residential buildings and areas of mineral earth within and surrounding the site have been excluded in accordance with Clause 2.2.3.2(e) of AS 3959. **AS 3959 classification (Figure 2):** Exclusion 2.2.3.2(e) **Bushfire hazard rating (Figure 3):** Low. As required under the Guidelines, any areas within 100 m of moderate or extreme hazards have been shown as moderate, to reflect the potential increased risk.	 *Plate 16: Photo location 13*  *Plate 17: Photo location 14*	14	It is assumed that areas currently identified as non-vegetated will remain so as part of ongoing land uses. Future development of the site will result in currently vegetated areas being converted to road, residential buildings and/or mineral earth. **AS 3959 classification (Figure 2):** Exclusion 2.2.3.2(e) **Effective slope (Figure 5):** Not applicable

Table 1: Vegetation type, effective slope and future management (continued)

Pre-development			Post-development	
Plot No.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot No.**	**Post-development AS 3959 classification, effective slope and assumptions**
15	Areas of low threat vegetation currently exist to the north-west of the site, associate with an area of public open space and/or residential gardens, and are composed to maintained grass, turf and/or gardens, public open space and road reserves. **AS 3959 classification (Figure 2):** Exclusion 2.2.3.2(f) **Bushfire hazard rating (Figure 3):** Low. As required under the Guidelines, any areas within 100 m of moderate or extreme hazards have been shown as moderate, to reflect the potential increased risk.	 *Plate 18: Photo location 15*  *Plate 19: Photo location 16*	15	It is assumed that all existing maintenance regimes in areas surrounding the site will continue in the long term. Vegetation outside the CCW and revegetation area (**Figure 4**) will be cleared and/or modified within the area identified as local open space in the structure plan. This area will be formally managed to a low threat standard, by the developer initially and then the City of Gosnells following handover. **AS 3959 classification (Figure 2):** Exclusion 2.2.3.2(f) **Effective slope (Figure 5):** Not applicable

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3.1.2.2 Post development assumptions

The BAL assessment, to determine applicable BAL ratings, has assumed the following:

- **Designated FDI**: 80
- **Flame temperature**: 1090
- **Vegetation classification**: forest (Class A), woodland (Class B), shrubland (Class C), scrub (Class D) and grassland (Class G) (see **Figure 4**)
- **Effective slope**: flat (see **Figure 5**)
- **Setback distances**: as per Table 2.4.3 in AS 3959 with the relevant distances used to inform the BAL contour plan summarised in **Table 2.**

In addition to the above, the following key assumptions have informed this assessment:

- Areas surrounding the site that have been identified as low threat will continue to be managed to achieve low threat (in accordance with Section 2.2.3.2 of AS 3959) based on the current management regimes.
- Land to the south-west, south-east and north-east are managed to a standard as set out in the City of Gosnells' Annual Fire Hazard Reduction Notice, which includes the management of a minimum 3 m firebreak around the perimeter of their property. For Bush Forever Site 464, it has been assumed the existing firebreaks, which are a minimum of 5 m will be maintained.
- All vegetation within the northern portion of the site will be cleared for future residential development as per the proposed structure plan, attached as **Appendix A**.
- Vegetation within the CCW in the southern portion of the site will be retained in perpetuity.
- A 50 m-wide buffer has been provided from the boundary of the CCW within the southern portion of the site to protect the environmental values of the wetland. The entire 50 m buffer has been assumed to be revegetated to a forest (Class A) classification in order to inform 'worst-case' bushfire planning.
- Local open space that is outside the CCW buffer will be formally landscaped and maintained to a low threat standard in accordance with Clause 2.2.3.2(f) of AS 3959. This area will be maintained by the developer initially and following handover will be maintained by the City of Gosnells, as per the standard subdivision process.

3.1.3 Assessment outputs

As outlined above, a bushfire hazard level assessment has been undertaken for the site based on the existing site conditions, with the hazard ratings shown in **Figure 3** and is based on the process detailed in Appendix Two of the Guidelines.

The BAL ratings applicable to the proposed future residential development are shown in the BAL Contour Plan provided in **Figure 6**. **Table 2** provides a summary of the setback distances necessary to achieve the indicated BAL ratings, with the BAL Contour Plan (**Figure 6**) being a visual representation of these distances. The setback distances are based on the post-development classified vegetation (**Figure 4**), effective slope (**Figure 5**) and the associated distances specified within Table 2.4.3 of AS 3959.

Table 2: Results of BAL assessment

Post development plot number	Vegetation classification	Effective slope	Distance to vegetation	BAL Rating
1 - 3	Forest (Class A)	Flat/upslope	< 16 m	BAL-FZ
			16 - < 21 m	BAL-40
			21 - < 31 m	BAL-29
			31 - < 42 m	BAL-19
			42 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
4 - 7	Woodland (Class B)	Flat/upslope	< 10 m	BAL-FZ
			10 - < 14 m	BAL-40
			14 - < 20 m	BAL-29
			20 - < 29 m	BAL-19
			29 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
8 - 9	Shrubland (Class C)	Flat/upslope	< 7 m	BAL-FZ
			7 - < 9 m	BAL-40
			9 - < 13 m	BAL-29
			13 - < 19 m	BAL-19
			19 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
10 - 11	Scrub (Class D	Flat/upslope	< 10 m	BAL-FZ
			10 - < 13 m	BAL-40
			13 - < 19 m	BAL-29
			19 - < 27 m	BAL-19
			27 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
12 - 13	Grassland (Class G)	Flat/upslope	< 6 m	BAL-FZ
			6 - < 8 m	BAL-40
			8 - < 12 m	BAL-29
			12 - < 17 m	BAL-19
			17 - < 50 m	BAL-12.5
			> 50 m	BAL-LOW

4 Identification of Bushfire Hazard Issues

From a bushfire hazard management perspective, the key issues requiring management include:

- Provision of separation distance from permanent bushfire hazards within and surrounding the site, including the CCW and associated revegetation areas as well as Bush Forever Site 464, to ensure a BAL rating of BAL-29 or less is achieved at future habitable buildings, and that asset protection zones can be accommodated within areas of public open space, public road reserve, or within lots where required.
- Fuel management of the development is staged to ensure temporary fuels do not impact on development and/or public open space is appropriately designed and managed to achieve low threat standards.
- Providing appropriate vehicular access including temporary turn-around areas until broader urban development is progresses as per the Southern River Precinct 3 Structure Plan. If future development is staged, ensuring that each development area is provided with appropriate access and egress for residents and emergency personnel in a bushfire event.
- Provision of appropriate water supply and associated infrastructure.

These issues are considered further in **Section 5.**

5 Assessment against the Bushfire Protection Criteria

This BMP provides an outline of the mitigation strategies that will ensure that as development progresses, an acceptable solution and/or performance-based system of control is adopted for each of the bushfire protection criteria detailed within Appendix Four of the Guidelines (WAPC and DFES 2017). The bushfire protection criteria identified in the Guidelines and addressed as part of this BMP are:

- Element 1: Location of the development
- Element 2: Siting and design of the development
- Element 3: Vehicular access
- Element 4: Water supply.

An 'acceptable solution' is proposed to address the intent of all four bushfire protection criteria, and a summary and compliance statement for each has been provided in **Table 3.**

Table 3: Summary of bushfire protection criteria and compliance statement

Bushfire protection criteria	Intent	Method of compliance	Proposed bushfire management strategies	Compliance Statement
		Acceptable solution		
Element 1: Location	To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.	A1.1 Development location	Future development within the site can be located in an area subject to a low or moderate bushfire hazard in the post-development scenario and is therefore able to achieve the bushfire protection criteria. Based on the outcomes of the BAL assessment, development (i.e. future habitable buildings) within the site will be able to achieve a BAL rating of BAL-29 or less (see **Figure 6**).	The management measures proposed are considered to comply and meet the intent of Element 1: Location.
Element 2: Siting and design	To ensure the siting and design of development minimises the level of bushfire impact.	A2.1 Asset Protection Zone	One of the most important bushfire protection measures influencing the safety of people and property is to create an asset protection zone (APZ) around buildings. The APZ is a low fuel area immediately surrounding a building, and can include non-flammable features such as irrigated landscapes, gardens, driveways and roads. The post development vegetation classification (**Figure 4**) identifies permanent bushfire hazards as those associated with Bush Forever Site 464 (to the south-east and south-west), the CCW (in the southern portion of the site) and the associated 50 m wide buffer. Separation from this risk has been accommodated in the structure plan through the strategic placement of local open space and public roads, or minor in-lot setbacks. As a result, habitable buildings within the site will not be exposed to a BAL rating higher than BAL-29. It is possible that the CCW buffer location may be refined further, but currently a rear lot setback will be required in the northern-eastern most lots in order to achieve BAL-29 or less at the habitable building. This equates to an approximate 2 m-wide setback, which can be accommodated based on typical built form and R-code requirements. Overall, the acceptable solution can be satisfied. Class 1, 2 and 3 buildings, where located within a designated bushfire prone area and an area subject to a BAL rating of BAL-12.5 or higher will need to satisfy higher construction standards in accordance with AS 3959.	The management measures proposed are considered to comply and meet the intent of Element 2: Siting and design.

Table 3: Summary of bushfire protection criteria and compliance statement (continued)

Bushfire protection criteria	Intent	Method of compliance	Proposed bushfire management strategies	Complaince Statement
		Acceptable solution		
Element 3: Vehicular access	To ensure vehicular access serving a subdivision/development is available and safe during a bushfire event.	A3.1 Two access routes	The site is connected to an existing public road network, with Matison Street to the north-west of the sit. Matison Street allows for egress to the north along Bradley Road, which connects to Southern River Road, allowing for egress in multiple directions. As part of future development, Matison Street will connect to the existing road south of Holmes Road, which will provide further egress from the site. The signposted speed for Matison Street is 50 km/h, enabling safe entry and exit to the road from the site (and future development). Vehicle access is shown in **Figure 7**. A portion of Woongan Street is proposed to be constructed as part of future residential development, providing additional access to and from the site via Matison Street. In the long-term, this Woongan Street will be fully developed to the east, providing access to the broader public road network as part of the Southern River Precinct 3 Structure Plan.	The management measures proposed are considered to comply and meet the intent of Element 3: Vehicular access.
		A3.2 Public road	Surrounding public roads and all new internal roads can and will comply with the minimum standards outlined in Appendix Four of the Guidelines (WAPC and DFES 2017), which includes a minimum 6 m trafficable surface width.	
		A3.3 Cul-de-sac (including dead-end-road)	As part of the proposed development of the structure plan, only a portion of Woongan Street, adjacent to the site, is likely to be constructed. This will likely result in a temporary 110 m long cul-de-sac. Where a temporary cul-de-sac is required, a suitable turn-around area (a minimum 17.5 m diameter head) will be provided and is generally shown in **Figure 7**.	
		A3.4 Battle-axe	Not applicable	

Table 3: Summary of bushfire protection criteria and compliance statement (continued)

Bushfire protection criteria	Intent	Method of compliance	Proposed bushfire management strategies	Compliance Statement
		Acceptable solution		
Continued from above	Continued from above	A3.5 Private driveway longer than 50 m	Not applicable	Continued from above
		A3.6 Emergency access way	Where development is staged, a temporary emergency access way, may be required to provide two access routes. The requirement for this will be determined as part of subdivision in consultation with the City of Gosnells. Where required, the temporary emergency access way will comply with minimum standards in accordance with the Guidelines which includes a 6 m-wide trafficable surface suitable for two-wheel drive vehicles.	
		A3.7 Fire service access routes (perimeter roads)	Future land uses within the site will have appropriate vehicular access, as outlined above, and therefore fire service routes are unlikely to be required. However, if proposed as part of future development, fire service access routes will need to comply with minimum standards outlined within Appendix Four of the Guidelines (or as agreed with the City of Gosnells).	
		A3.8 Firebreak width	Until residential development is progressed in accordance with the proposed structure plan (and subsequent subdivision approval), the proponent will maintain the existing firebreaks adjacent to the property boundary which are a minimum 3 m-wide.	

Table 3: Summary of bushfire protection criteria and compliance statement (continued)

Bushfire protection criteria	Intent	Method of compliance Acceptable solution	Proposed bushfire management strategies	Compliance Statement
Element 4: Water	To ensure water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire.	A4.1 Reticulated areas	The development is located within an Emergency Services Levy (ESL) Category 1 area, which indicates that emergency bushfire response is provided by a network of metropolitan career fire and rescue service stations and the State Emergency Service. Fire response services require ready access to an adequate water supply during bushfire emergencies. The development will be provided with a reticulated water supply, together with fire hydrants that will be installed by the developer to meet the specifications of Water Corporation (Design Standard DS 63) and DFES. Fire hydrants on land zoned for residential purposes are required to be sited at or within 200 m of residential dwellings (Class 1a). The Water Corporation will be responsible for all hydrant maintenance and repairs.	The management measures proposed are considered to comply and meet the intent of Element 4: Water.
		A4.2 Non-reticulated areas	Not applicable	
		A4.3 Individual lots within non-reticulated areas (only for use if creating 1 additional lot and cannot be applied cumulatively)	Not applicable	

5.1 Additional management strategies

5.1.1 Future approval considerations

The BAL assessment within this document is considered to be a conservative assessment of potential bushfire risk on the basis that vegetation associated with the CCW is assumed to remain, and the 50 m-wide buffer is assumed to be revegetated to a 'forest' classification, which has the highest fuel loads within AS 3959. In addition, areas that will be developed for residential purposes in the long-term (and will therefore no longer be a hazard) but the development timeframe is currently unknown, have been assumed to be a bushfire hazard.

At the subdivision stage, a revised BMP may need to be prepared to respond to the specific lot layout (if it changes), and/or to confirm that the bushfire mitigation strategies in this document have been accommodated.

5.1.2 Landscape management

5.1.2.1 Within the site

It is assumed that as part of the development of the site, all areas of vegetation within the CCW and the revegetation area (i.e. 50m-wide buffer) will be retained and where required, can be revegetated/rehabilitated to a 'forest' classification. Outside of these areas, the local open space will be designed and managed in accordance with Clause 2.2.3.2(f) of AS 3959 and as per typical open space requirements of Liveable Neighbourhoods and the City of Gosnells.

The design and construction of public open space is generally a condition of subdivision approval. Detailed design for public open space areas is generally determined in collaboration with the local government as part of the typical subdivision construction process. Conceptual landscape designs will be developed as detailed design progresses, responding to the requirements of the City of Gosnells.

The City of Gosnells will be responsible for the long-term maintenance of the local open space, following handover from the developer.

5.1.2.2 Surrounding the site

An area of public open space to the north-west of the site has been excluded under Clause 2.2.3.2(f) and is maintained by the City of Gosnells. This area is irrigated and used by the community for recreational purposes.

Private landholdings that are zoned 'General rural' or 'Special rural', including those to the north-west are assumed to be maintained by the landowner in line with the City of Gosnells Fire Hazard Reduction Notice (which requires these landholdings to maintain the land free of all flammable matter to a height no greater than 10 cm and maintain a mineral earth firebreak of minimum 3 m-width inside the internal boundary of the site). These areas should be maintained in accordance with the City of Gosnells Fire Hazard Reduction Notice (although for the purposes of this assessment have been assumed to contain classified vegetation).

5.1.3 City of Gosnells Fire Notice

The City of Gosnells release a Fire Hazard Reduction Notice on an annual basis to provide a framework for bushfire management within the City. The City of Gosnells are able to enforce this notice in accordance with Section 33 of the *Bush Fires Act 1954*. Until residential development is progressed within the site, compliance with the Fire Hazard Reduction Notice is required, including the maintenance of minimum 3 m-wide perimeter firebreaks and/or the maintenance of internal fuel loads where required.

5.1.4 Vulnerable or high-risk land uses

As part of the structure plan, no vulnerable or high-risk land uses, as defined under SPP 3.7, are currently proposed within the site. If any high-risk or vulnerable land uses are proposed in the future, the requirements of SPP 3.7 will need to be addressed, including the assessment of bushfire risk and/or the preparation of an emergency evacuation plan (for vulnerable land uses) or risk management plan (for high-risk land uses). Currently, all habitable buildings within the site can be located in an area subject to a BAL rating of BAL-29 or less and can therefore achieve the requirements of SPP 3.7.

5.1.5 Public education and preparedness

Community bushfire safety is a shared responsibility between individuals, the community, government and fire agencies. DFES has an extensive Community Bushfire Education Program including a range of publications, a website and Bushfire Ready Groups. The DFES publication '*Prepare. Act. Survive.'* (DFES 2014) provides excellent advice on preparing for and surviving the bushfire season. Other downloadable brochures are available from http://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/pages/publications.aspx

The City of Gosnells provides bushfire safety advice to residents available from their website https://www.gosnells.wa.gov.au/Your_property/Community_safety/Fire_prevention. Professional, qualified consultants also offer bushfire safety advice and relevant services to residents and businesses in high risk areas in addition that that provided in this BMP.

Future residents of the site are able to access additional bushfire information via the above sources, or through contacting the City of Gosnells or DFES directly. In the case of a bushfire in the area, advice would be provided to residents by DFES, Department of Biodiversity, Conservation and Attractions and/or the City of Gosnells on any specific recommendations to responding to the bushfire, including evacuation if required. It is recommended that future residents should make themselves aware of their responsibilities with regard to preparing for and responding to a potential bushfire that may impact them, their family / dependents and their property.

6 Responsibilities for Implementation and Management of Bushfire Measures

Table 4 outlines the future responsibilities of the developer and the City of Gosnells regarding the implementation of the proposed structure plan, with reference to future bushfire risk mitigation measures required to support future subdivision/development of the site. These responsibilities will need to be considered as part of the subsequent planning process.

Additional bushfire mitigation responsibilities will be outlined as part of future BMP/s prepared to support future subdivision for the site, including responsibilities for future lot owners (and certification of BAL ratings) as well as the City of Gosnells.

Table 4: Responsibilities for the implementation of the BMP

Management action	Timing
Developer/landowner	
Provide a copy of this BMP to the relevant decision makers to support the proposed structure plan.	To support the structure plan approval process.
If required, prepare with a revised BMP in accordance with SPP 3.7, the Guidelines and AS 3959 to support future subdivision applications, based on the proposed detailed layout and in consideration of existing bushfire hazards or those that will be present following development (i.e. revegetation areas).	To support each future subdivision application.
Where required, and based on the outcomes this BMP or subsequent BMP/s, make spatial provision within the subdivision layout/design to accommodate: • A suitable public road network that provides at least two access routes, and is at least 6 m-wide. The proposed structure plan supports this requirement. • Recommend APZs, either as per Table 2 in this BMP or in accordance with subsequent BAL assessments. This may include the provision of public roads, managed local open space, and/or by ensuring proposed residential lots are an adequate depth, to ensure BAL-29 is not exceeded at future habitable buildings.	To support each future subdivision application.
Ensure that any foreshore management plan for the CCW and associated buffer is prepared in accordance with the assumptions of this BMP and/or subsequent BMPs. This includes: • Revegetation of the associated wetland buffer aligns with that outlined in this BMP and/or subsequent BMPs. If a lesser vegetation classification is proposed (i.e. woodland or scrub), the BAL assessment should be revised. • Existing mature trees can be retained outside the CCW and revegetation area, however should form part of well-managed parkland areas and be low-pruned to 2 m high. • Firebreaks within the adjacent Bush Forever Site 464 will be maintained.	When the Foreshore Management Plan is prepared.
City of Gosnells	
Monitoring vegetation fuel loads in private landholdings and existing public reserves against the requirements of the City's Fire Hazard Reduction Notice and liaising with relevant stakeholders to maintain fuel loads at minimal/appropriate fuel levels.	Ongoing, as required.
Maintaining existing public road reserves to appropriate standards and ensuring compliance with the City of Gosnells Fire Hazard Reduction Notice/s (as published).	Ongoing, as required.

7 Applicant Declaration

7.1 Accreditation

This BMP has been prepared by Emerge Associates who have been providing bushfire risk management advice for more than six years, undertaking detailed bushfire assessments (and associated approvals) to support the land use development industry.

Anthony Rowe is a Fire Protection Association of Australia (FPAA) Level 3 Bushfire Planning and Design (BPAD) accredited practitioner (BPAD no. 36690) with over nine years' experience and is supported by a number of team members who have undertaken BPAD Level 1 and Level 2 training and are in the processing of gaining formal accreditation.

7.2 Declaration

I declare that the information provided is true and correct to the best of my knowledge.

Signature:

Name: Anthony Rowe

Company: Emerge Associates

Date: 22/03/19

BPAD Accreditation: Level 3 BPAD no. 36690

Signature:

Name: Kirsten Knox

Company: Emerge Associates

Date: 22/03/19

8 References

8.1 General references

Department of Fire and Emergency Services (DFES) 2014, *Prepare. Act. Survive.*, Perth.

Leondard, J. 2009, *Report to the 2009 Victorian Royal Comission Building Performance in Bushfires*, CSIRO.

Standards Australia 2009, *AS 3959-2009 Construction of buildings in bushfire-prone areas*, Sydney.

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

WAPC and DFES 2017, *Guidelines for Planning in Bushfire Prone Areas Version 1.3*, Western Australia.

8.2 Online references

Department of Water 2008, *LIDAR derived 1 m elevation contours* dataset, Government of Western Australia.

Office of Bushfire Risk management (OBRM) 2018, Map of Bush Fire Prone Areas, viewed January 2018, https://maps.slip.wa.gov.au/landgate/bushfireprone/

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Figures

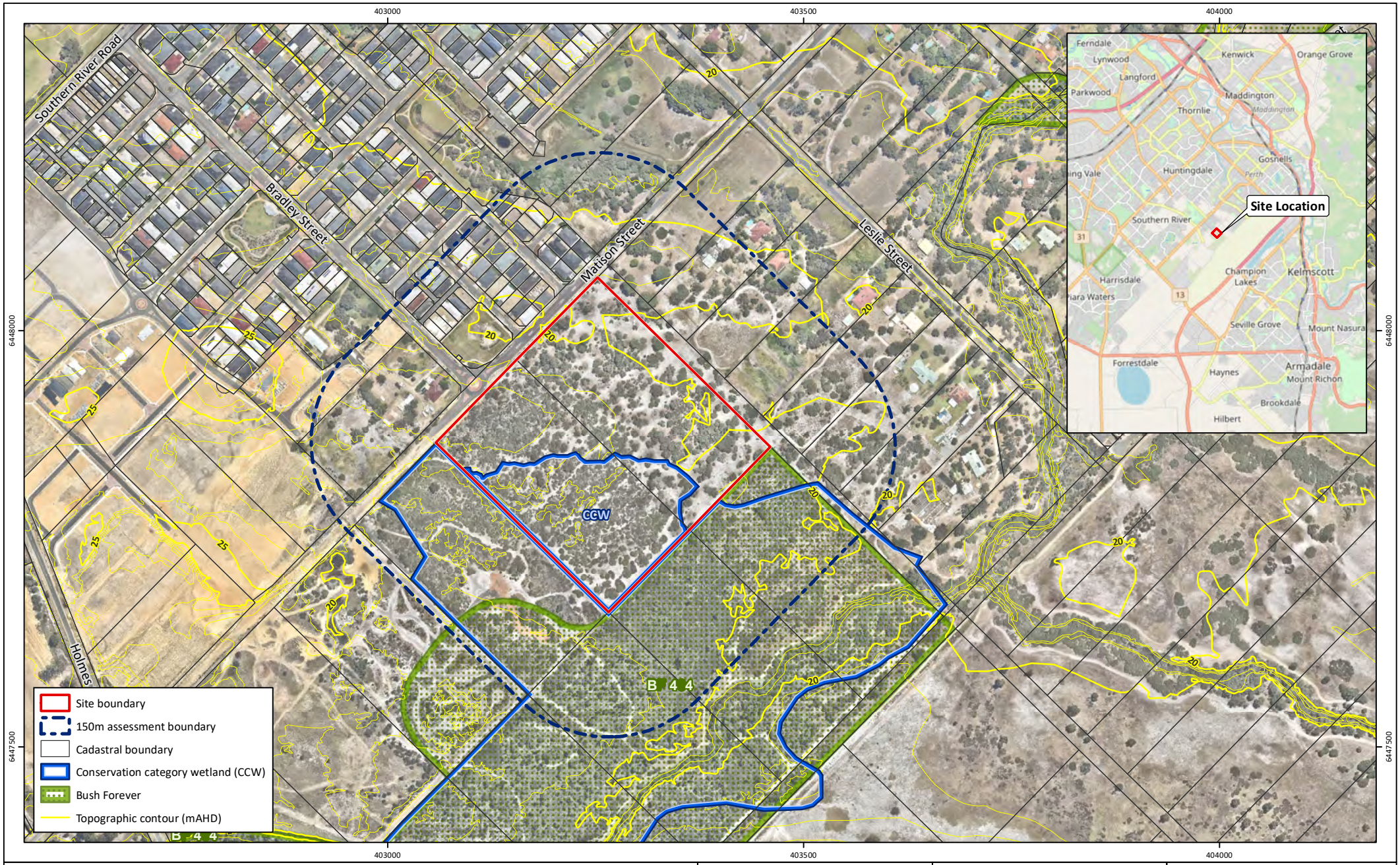

Figure 1: Site Plan and Topographic Contours

Project: Bushfire Management Plan
Lots 1797 and 1798 Matison Street Southern River
Client: Lander Land Company Pty Ltd

Plan Number:
EP18-016(01)--F02b

Drawn:	SCM
Date:	20/03/2019
Checked:	KK
Approved:	KK
Date:	20/03/2019

N

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Metres

Scale: 1:6,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

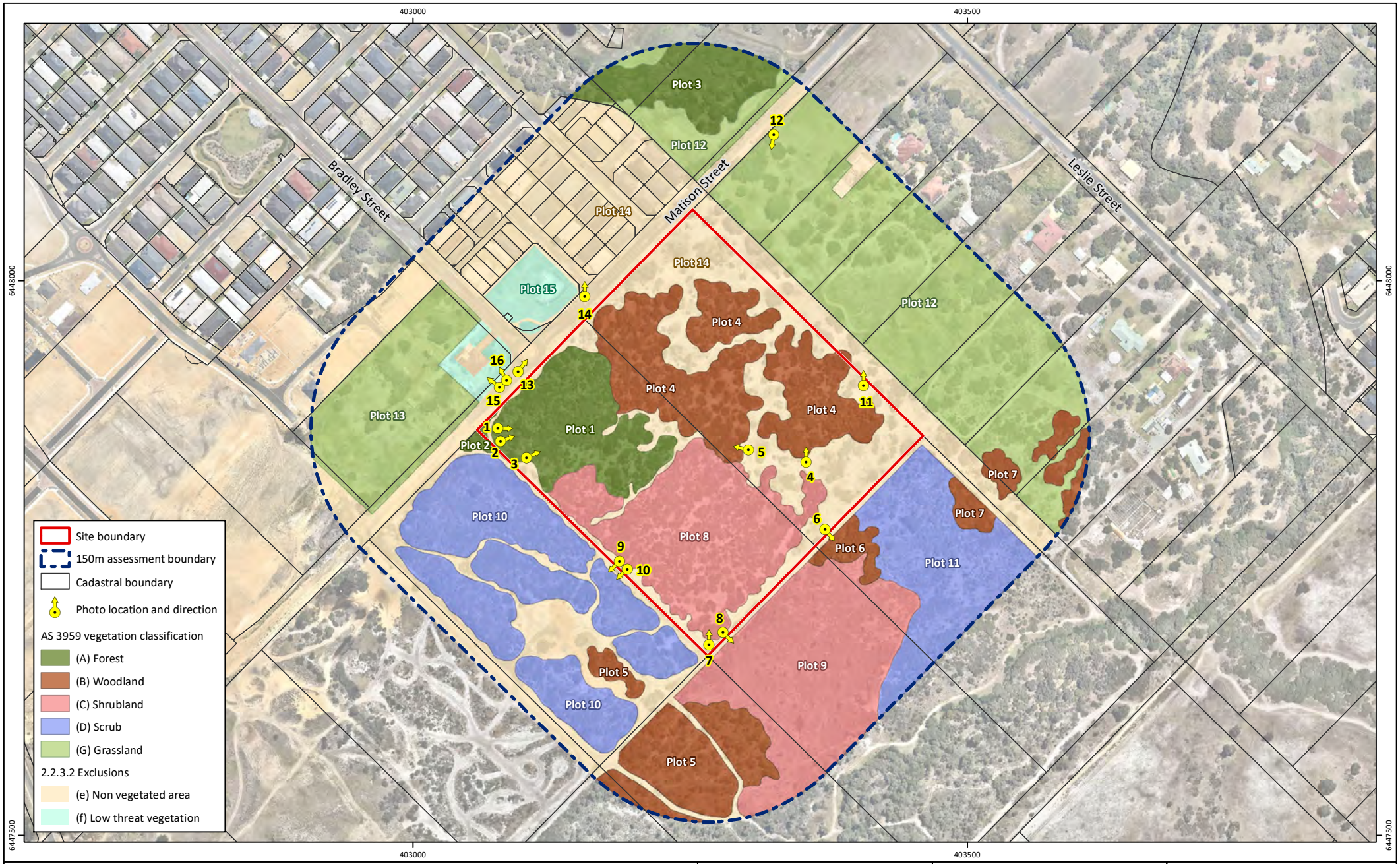

Figure 2: Existing Site Conditions - AS 3959 Vegetation Classifications

Project: Bushfire Management Plan
Lots 1797 and 1798 Matison Street Southern River
Client: Lander Land Company Pty Ltd

Plan Number:
EP18-016(01)--F03b
Drawn: SCM
Date: 20/03/2019
Checked: KK
Approved: KK
Date: 20/03/2019

N

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Metres
Scale: 1:4,500@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

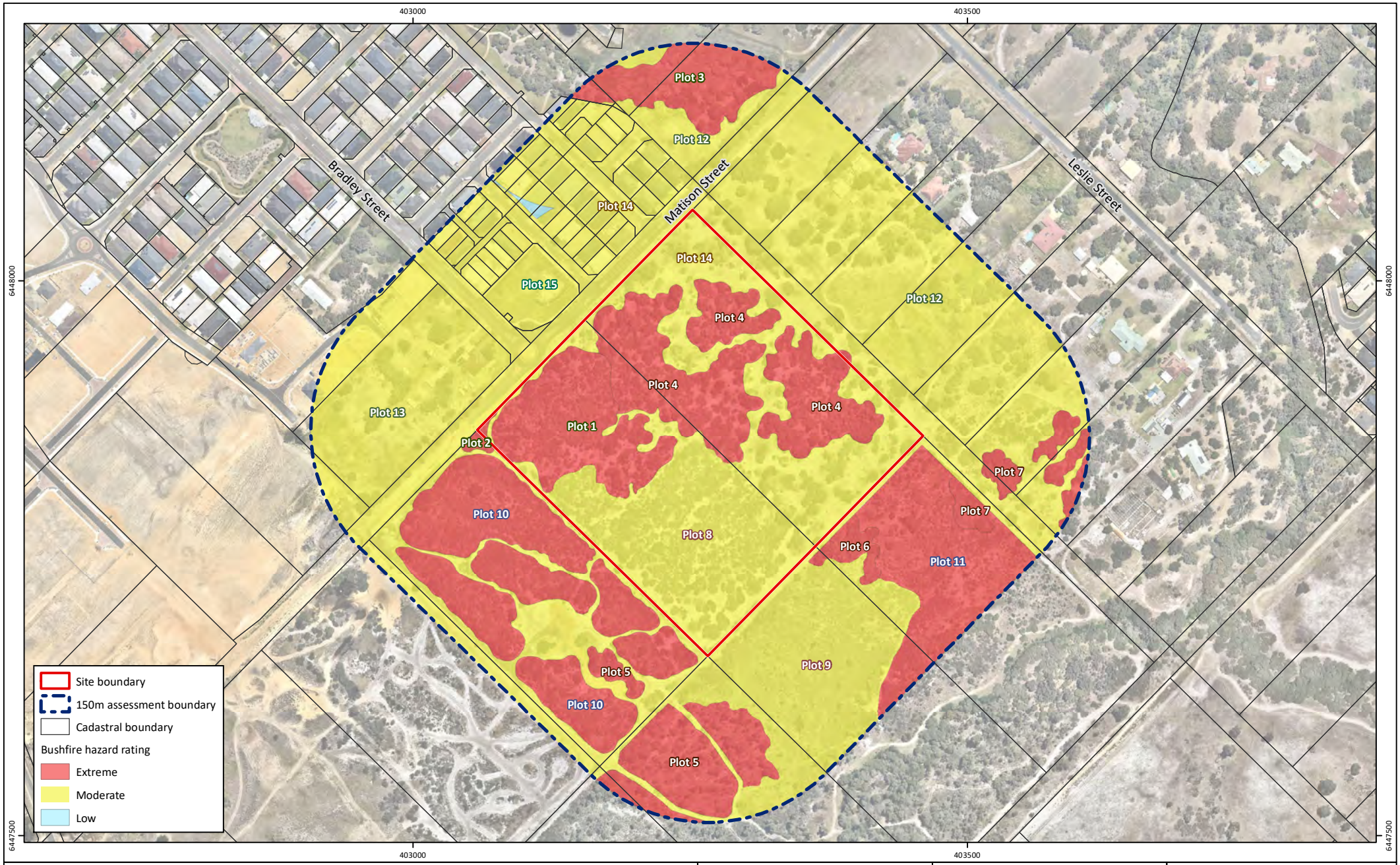

Figure 3: Existing Site Conditions - Bushfire Hazard Rating

Project: Bushfire Management Plan
Lots 1797 and 1798 Matison Street Southern River
Client: Lander Land Company Pty Ltd

Plan Number:
EP18-016(01)--F04b
Drawn: SCM
Date: 20/03/2019
Checked: KK
Approved: KK
Date: 20/03/2019

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Scale: 1:4,500@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

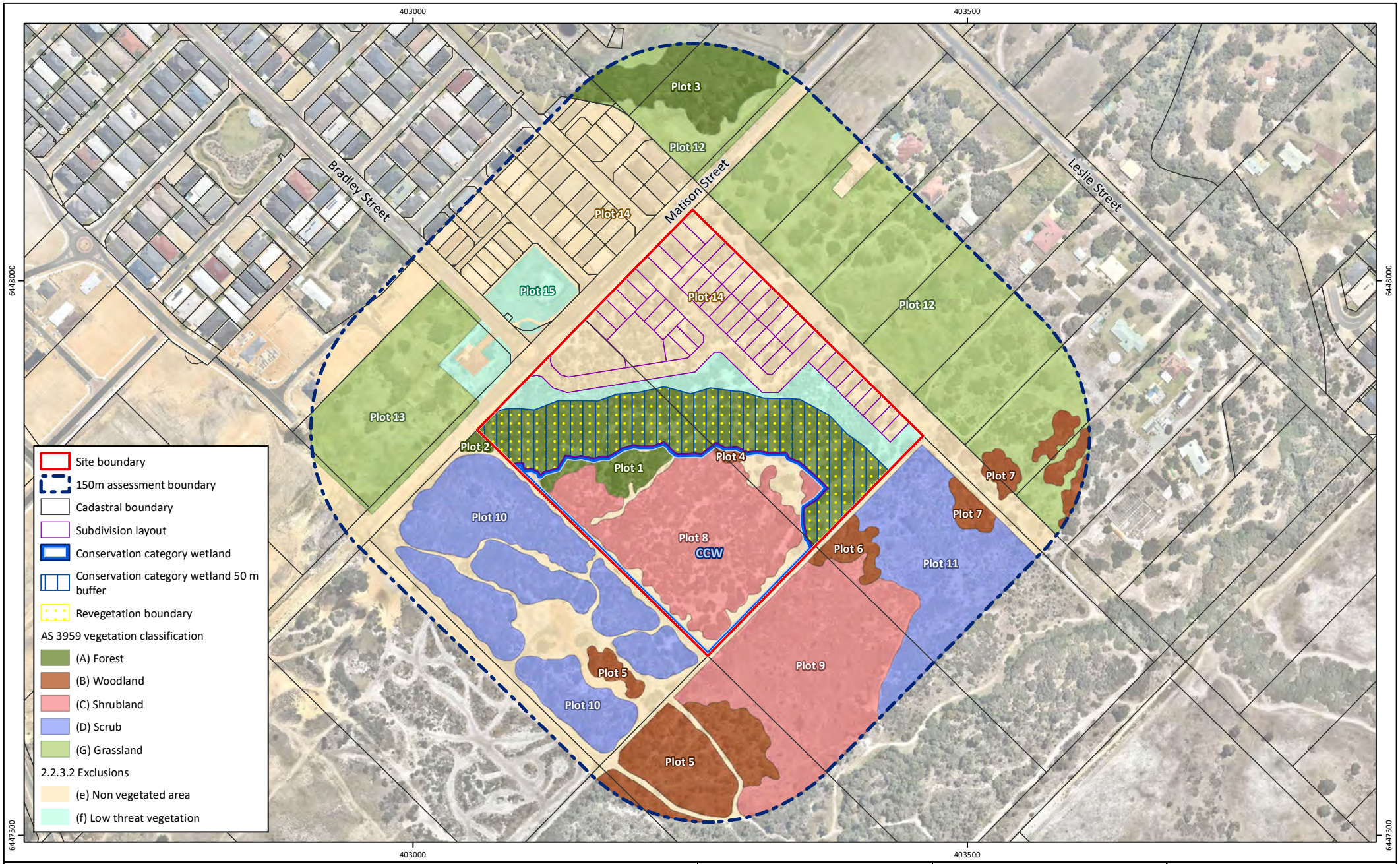

Figure 4: Post-Development Site Conditions - AS 3959 Vegetation Classification

Project: Bushfire Management Plan
Lots 1797 and 1798 Matison Street Southern River
Client: Lander Land Company Pty Ltd

Plan Number:
EP18-016(01)--F05b
Drawn: SCM
Date: 20/03/2019
Checked: KK
Approved: KK
Date: 20/03/2019

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GDA 1994 MGA Zone 50

emerge ASSOCIATES

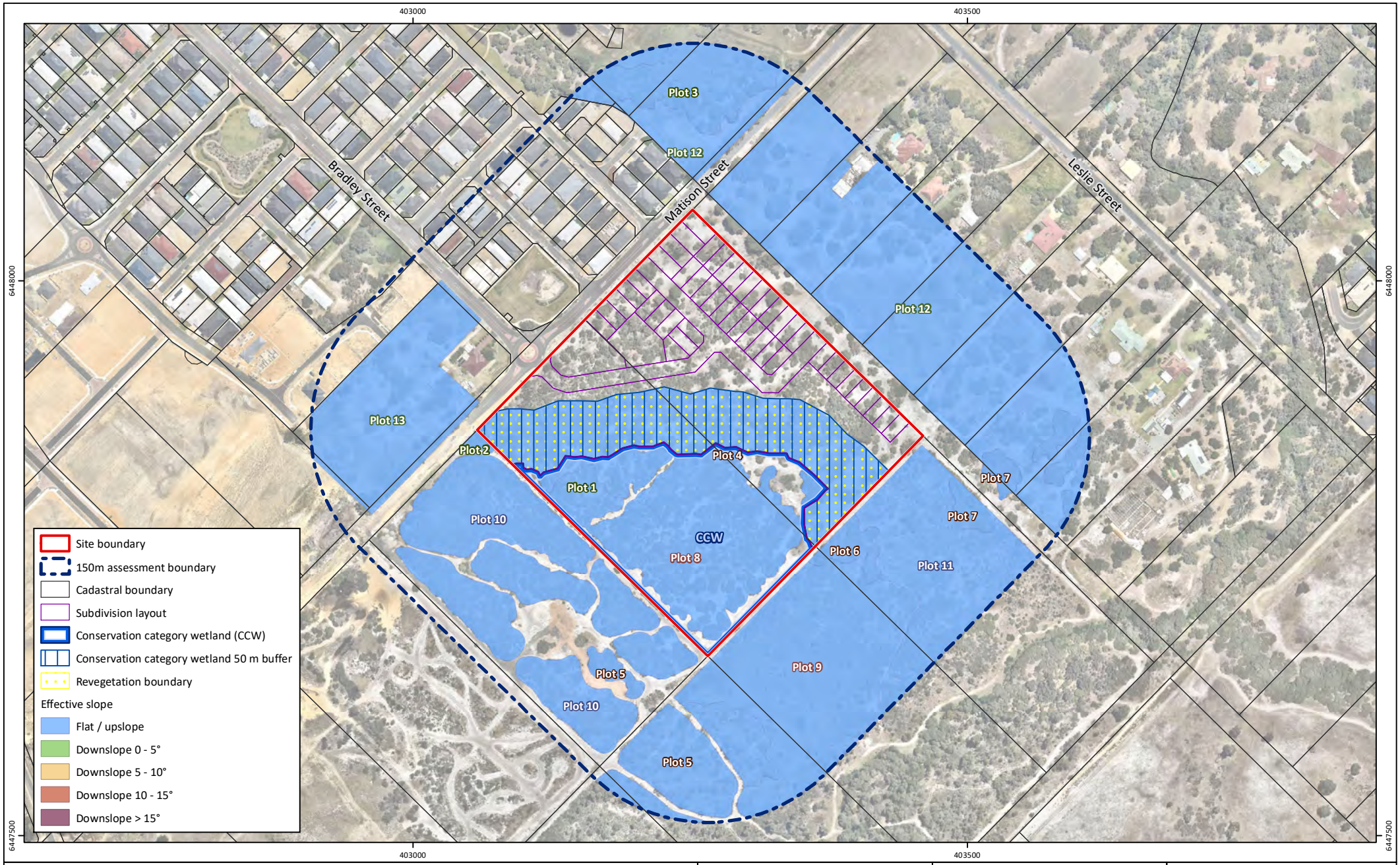

Figure 5: Effective Slope

Project: Bushfire Management Plan
Lots 1797 and 1798 Matison Street Southern River
Client: Lander Land Company Pty Ltd

Plan Number:
EP18-016(01)--F06b
Drawn: SCM
Date: 20/03/2019
Checked: KK
Approved: KK
Date: 20/03/2019

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GDA 1994 MGA Zone 50

emerge ASSOCIATES

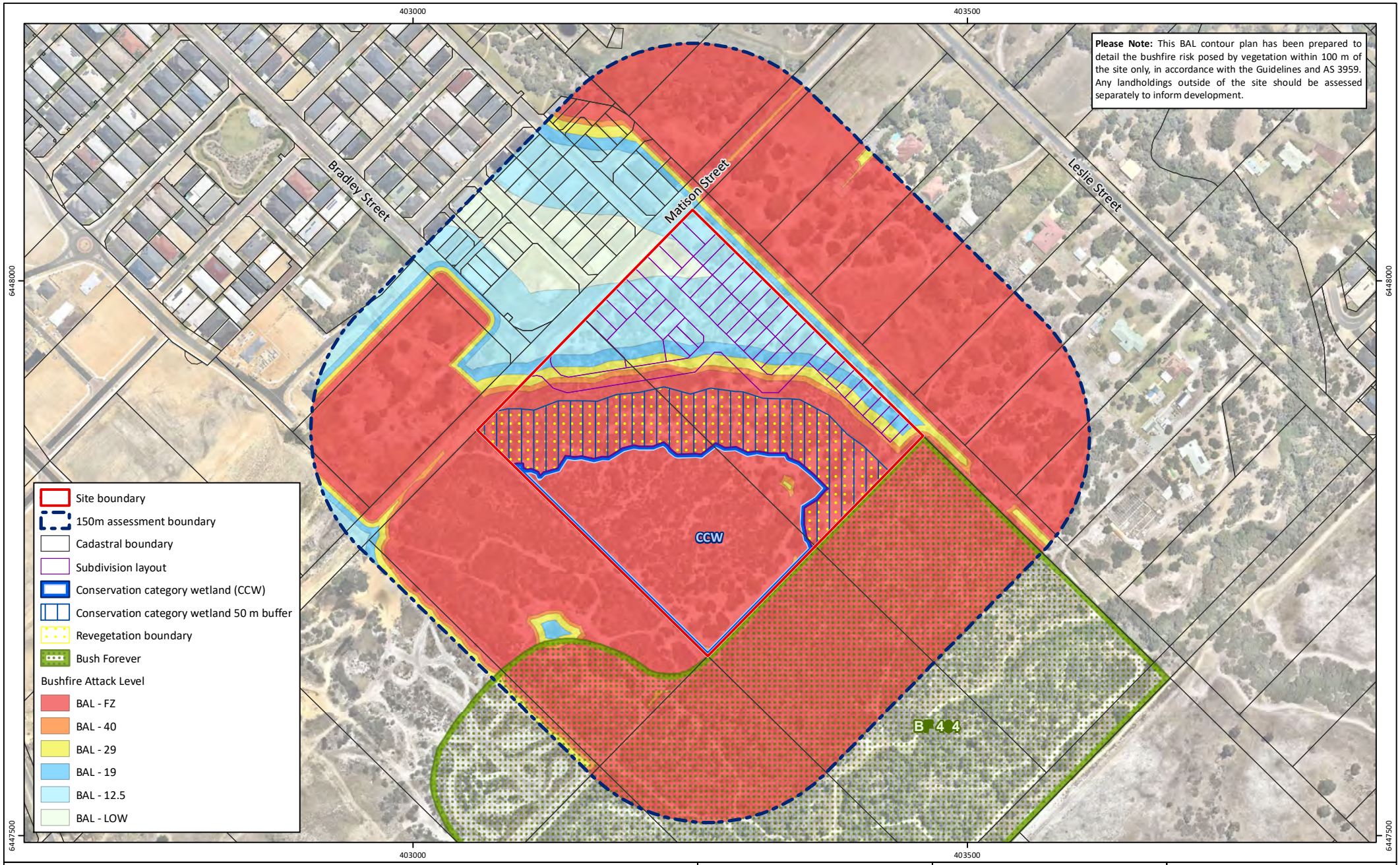

Figure 6: Bushfire Attack Level Contour Plan

Project: Bushfire Management Plan
Lots 1797 and 1798 Matison Street Southern River
Client: Lander Land Company Pty Ltd

Plan Number:
EP18-016(01)--F07b
Drawn: SCM
Date: 20/03/2019
Checked: KK
Approved: KK
Date: 20/03/2019

N

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Scale: 1:4,500@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

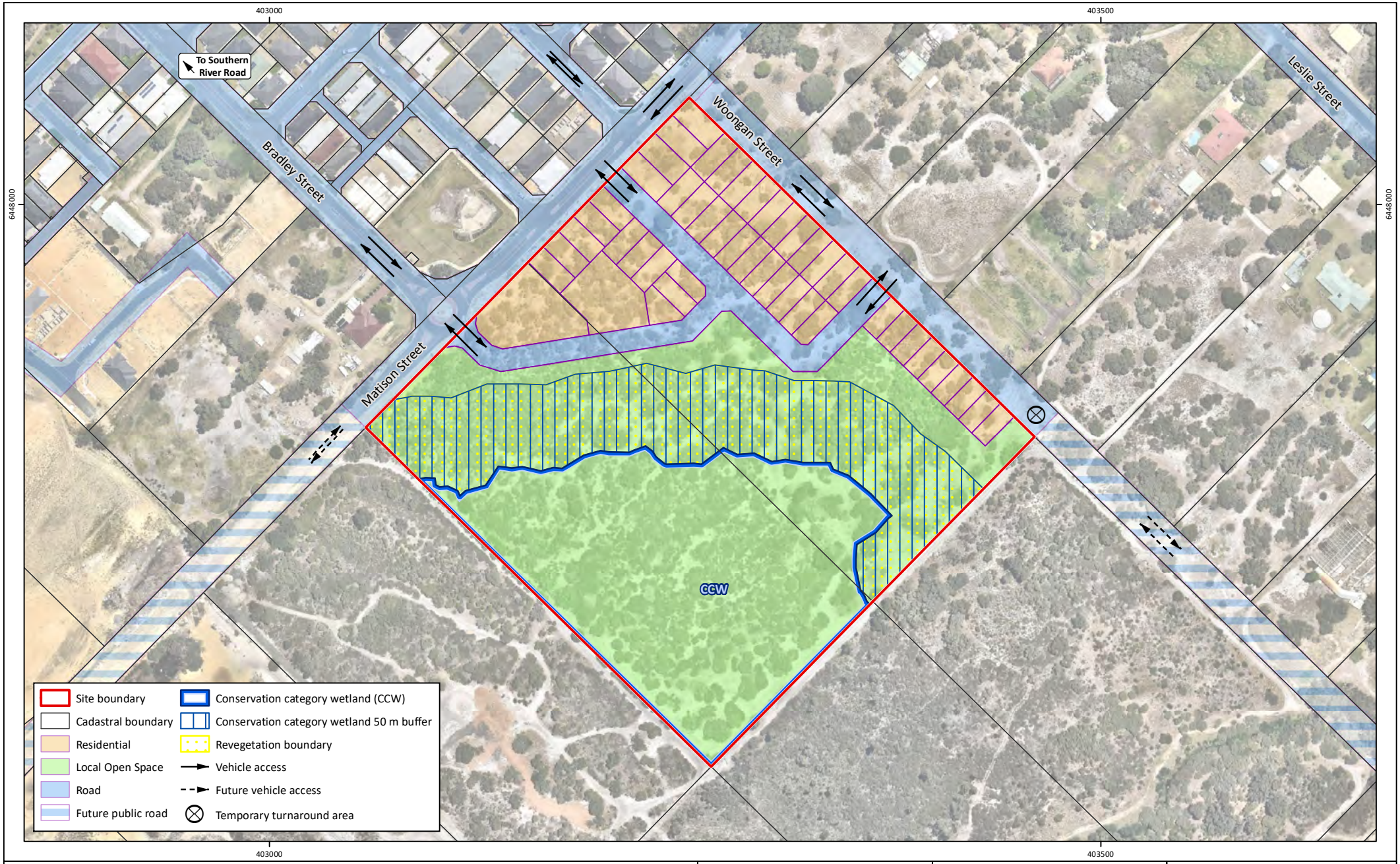

Figure 7: Vehicle Access

Project: Bushfire Management Plan
Lots 1797 and 1798 Matison Street Southern River
Client: Lander Land Company Pty Ltd

Plan Number:
EP18-016(01)--F10b
Drawn: SCM
Date: 20/03/2019
Checked: KK
Approved: KK
Date: 20/03/2019

N

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Metres
Scale: 1:3,000@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

Appendix A

Proposed Structure Plan (Urbanism 2019)

STRUCTURE PLAN

Sub-Precinct 3C (ii)

Southern River

Lots 1797 & 1798 Matison Street, Southern River, City of Gosnells

LOCALITY:

LEGEND:

- Structure Plan Area
- Residential R25
- Residential R30
- Residential R40
- Local Open Space
- Conservation Category Wetland (CCW)
- CCW Buffer
- ey Access Roads
- Shared Access and Par ing
- ootpaths

Notes:

* Re uirement for Local evelopment Plan to address access boundary walls dwelling orientation to open space and shared access path and setbac s.

CCW boundary defined by Aurora Environmental on 12 10 201 and surveyed by MG on eature Survey 101081- E-001-A dated 2 10 201 .

Roads and intersection design to be detailed during subdivision stages.

Note:
This version 5.0 has been prepared in response to the City of Gosnells' conditional approval of 28 August 2018. The LSP will be refined through technical modeling and in consultation with the WAPC during its assessment of the plan.

STRUCTURE PLAN MAP

(PLAN 1)

Date: 21/01/2019 **Ver: 5.0**

N

Scale (A1) 1 : 750

0m 10m 20m 50m

Scale (A3) 1 : 1,500

P s are to scale as indicated when printed on A3 or A1.

Urbanism
PO Box 1804
Subiaco WA 6904
Ph. 08 9385 9667
corey@urbanism.com.au
www.urbanism.com.au

LEGEND:

- Proposed Sub-Precinct Boundary
- Wetland (CCW)
- Wetland Buffer (50m)

LOCAL SCHEME

- Residential (R20)
- Residential (R25)
- Residential (R35)
- Residential (R40)
- Access Streets
- Local Open Space

Note:
This version 5.0 has been prepared in response to the City of Gosnells' conditional approval of 28 August 2018. The LSP will be refined through technical modeling and in consultation with the WAPC during its assessment of the plan.

LOTS 1797 & 1798 MATISON STREET, SOUTHERN RIVER
STRUCTURE PLAN ~ SUB-PRECINCT 3C ii
Concept Layout (Ver. 5.0)

Urbanism
www.urbanism.com.au

21 January 2019

Scale 1: 2,000 (A4)