

# Bushfire Hazard Assessment

Stage 04 - Werrington Subdivision  
741 - 755 Great Western Highway,  
Werrington

Prepared for  
**Statewide Planning Pty Ltd**

## Document Tracking:

<b>Project Name:</b>	Stage 04 - Werrington Subdivision 741 - 755 Great Western Highway, Werrington
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<b>Project Number</b>	J2422

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## Document Control:

Version	Primary Author(s)	Description	Date Completed
1.0	Lew Short	Final	25 February 2021




## Lew Short | Director

Blackash Bushfire Consulting

B.Sc., Grad. Dip. (Design for Bushfire Prone Areas)

Fire Protection Association of Australia BPAD Level 3 – BPAD16373

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## Glossary of Terms

<b>APZ</b>	Asset protection zone
<b>AS2419</b>	<i>Australian Standard – Fire hydrant installations</i>
<b>AS3745</b>	<i>Australian Standard – Planning for emergencies in facilities</i>
<b>AS3959</b>	<i>Australian Standard – Construction of buildings in bushfire-prone areas 2009</i>
<b>BAL</b>	<i>Bushfire Attack Level</i>
<b>BCA</b>	<i>Building Code of Australia</i>
<b>BFA</b>	Bush Fire Safety Authority
<b>EPA Act</b>	<i>Environmental Planning &amp; Assessment Act 1979</i>
<b>FDI</b>	Fire Danger Index
<b>ha</b>	Hectare
<b>m</b>	Metres
<b>PBP</b>	<i>Planning for Bush Fire Protection 2019</i>
<b>RF Act</b>	<i>Rural Fires Act 1997</i>

## 1. Introduction

Blackash Bushfire Consulting has been engaged by Statewide Planning for a proposed residential subdivision of 134 housing lot residential subdivision which sits on the corner of French Street and Great Western Highway at 741-755 Great Western Highway, Werrington (the site) which is legally known as Lot 125 & Lot 126 DP 1215199 (Figure 1). The site is zoned R3 Medium Density Residential.

This is the final stage of residential subdivision for the precinct with existing development to the north, west and an area within the Stage 4 scheduled for further development (Figure 2). The Great Western Highway is to the south of the site (Figure 1). The site has been used as a transport and/or works compound, and has been subject to significant filling, in recent years. The site plan is at Figure 2. The pre lodgment advice received from Penrith Council (Council) on 24 July flagged that the site was Bushfire Prone, and Bushfire Hazard Assessment Report would be required. No specific bushfire issues were raised by Council.

Residential subdivision triggers the integrated development referral requirements of Section 4.46 of the *Environmental Planning and Assessment Act, 1979* (EPA Act) and require assessment by the NSW Rural Fire Service (RFS) under Section 100B of the *Rural Fires Act, 1997* (RF Act).

The site is identified as Vegetation Category 2 Bushfire Prone Land which will be cleared and developed with the approval of the subdivision. The site is accessed by a number of proposed roads within the existing approved road network. Land to the east of the site is owned and managed by Western Sydney University which is managed land. The site is regularly mown and is not identified as being bushfire prone. Bushfire risk to the site has been managed and bushfire will not be a risk for the development. The site and surrounding land are managed and cleared (Figure 3).

As a new residential subdivision, the application is able to meet Bushfire Attack Level (BAL) of a maximum of BAL-29. The proposal meets all the deemed to satisfy (DTS) provisions of the NSW RFS document *Planning for Bushfire Protection 2019* (PBP 2019) and as such, is afforded appropriate bushfire protection.

This assessment was completed by Lew Short who is a BPAD Level 3 certified practitioner (BPAD Level 3 BPAD16373).



## 2. Legislative Framework

Development on land that is identified as being bushfire prone must comply with the NSW RFS document *Planning for Bushfire Protection* (PBP 2019) under s.4.46 of the EPA Act.

A residential subdivision development is categorised as Integrated Development, under s.4.46 of the EPA Act and requires assessment by the RFS under Section 100B of the Rural Fires Act, 1997 (RF Act). Integrated development requires development consent from Council and General Terms of Approval from the RFS. Any development applications for such a purpose must obtain a Bush Fire Safety Authority (**BFSA**) from the Commissioner of the RFS in accordance with Section 100B of the RF Act.



A BFSA authorises development to the extent that it complies with PBP 2019 including standards regarding setbacks, provision of water supply and other measures in combination considered by the Commissioner necessary to protect persons, property or the environment from danger that may arise from a bushfire.



Figure 1 Site Location



**Legend**

-  Watercourse
-  Subject Land



 DKGIS

Date: 26/10/2020

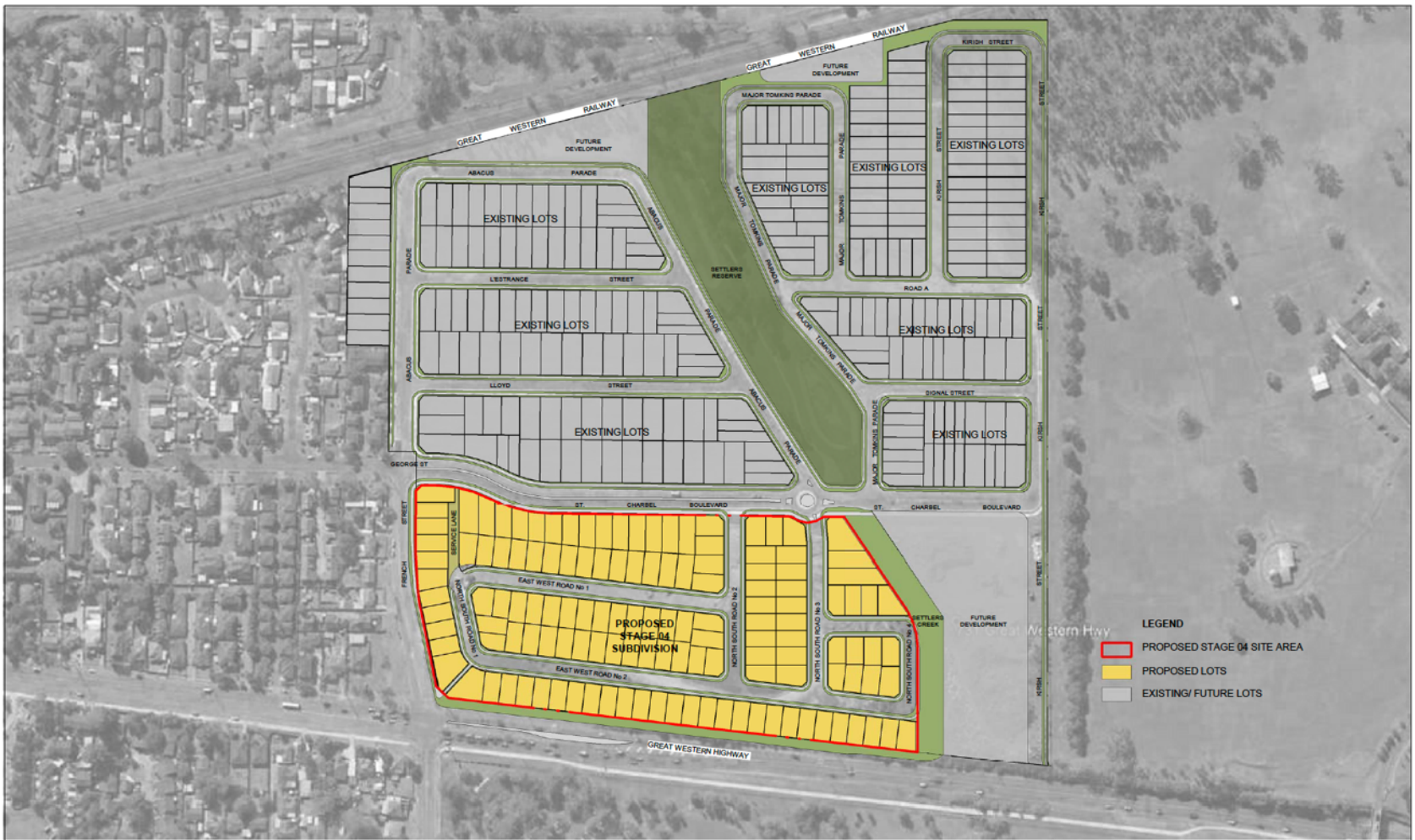
0 50 100 200 300

Metres

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

Figure 2 Site Plan



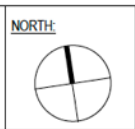
ISSUE	DATE	REVISION	BY
B	15/09/2020	AMENDED AS PER PRE-DA ADVICE	CD
A	21/04/2020	ISSUED FOR REVIEW	CD

**IMPORTANT NOTES:**  
 Do not scale from drawings. All dimensions to be checked on site before commencement of work. All discrepancies to be brought to the attention of the Designer. Larger scale drawings and written dimensions take preference. This drawing is copyright and the property of the author, and must not be retained, copied or used without the express authority of STATEWIDE PLANNING

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**PROJECT: STAGE 04**  
 741 - 755 GREAT WESTERN HIGHWAY,  
 WERRINGTON

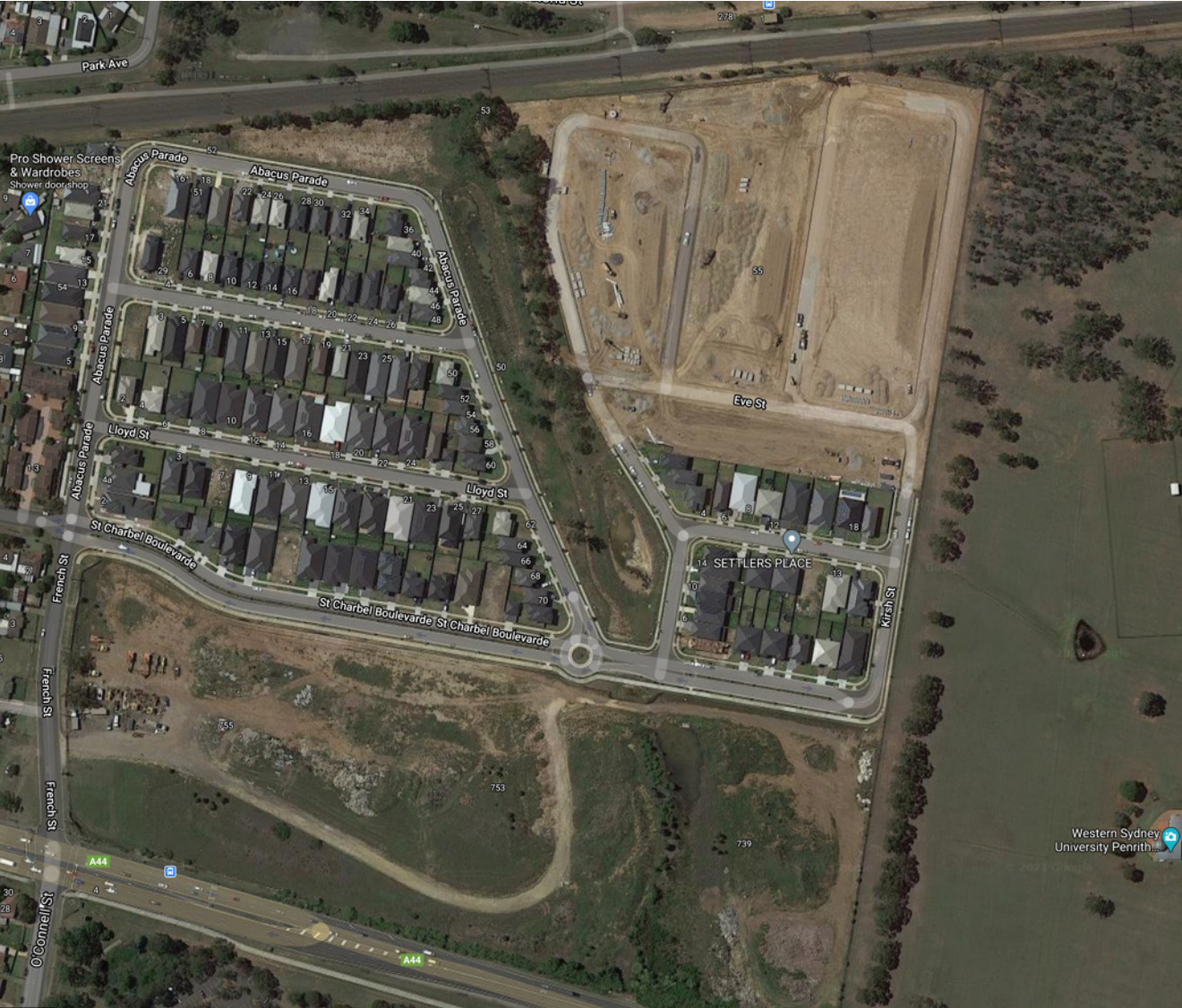
**DRAWING TITLE:**  
 SITE PLAN



PROJECT NO: --	DATE: 15/09/2020	DRAWING NO: DA 102	REV: B
DRAWN BY: CHD	SCALE: 1 : 2500		



Figure 3 Air Photo of the site showing cleared land and surrounding uses – source Google Maps



### 3. Bushfire Prone Land

Bushfire prone land (BFPL) is land that has been identified by council which can support a bushfire or is subject to bushfire attack. Bushfire prone land maps are prepared by local council and certified by the Commissioner of the NSW RFS.

The identification of Bushfire prone land in NSW is required under s.10.3 of the EPA Act. The maps provide a trigger for the various development assessment provisions.

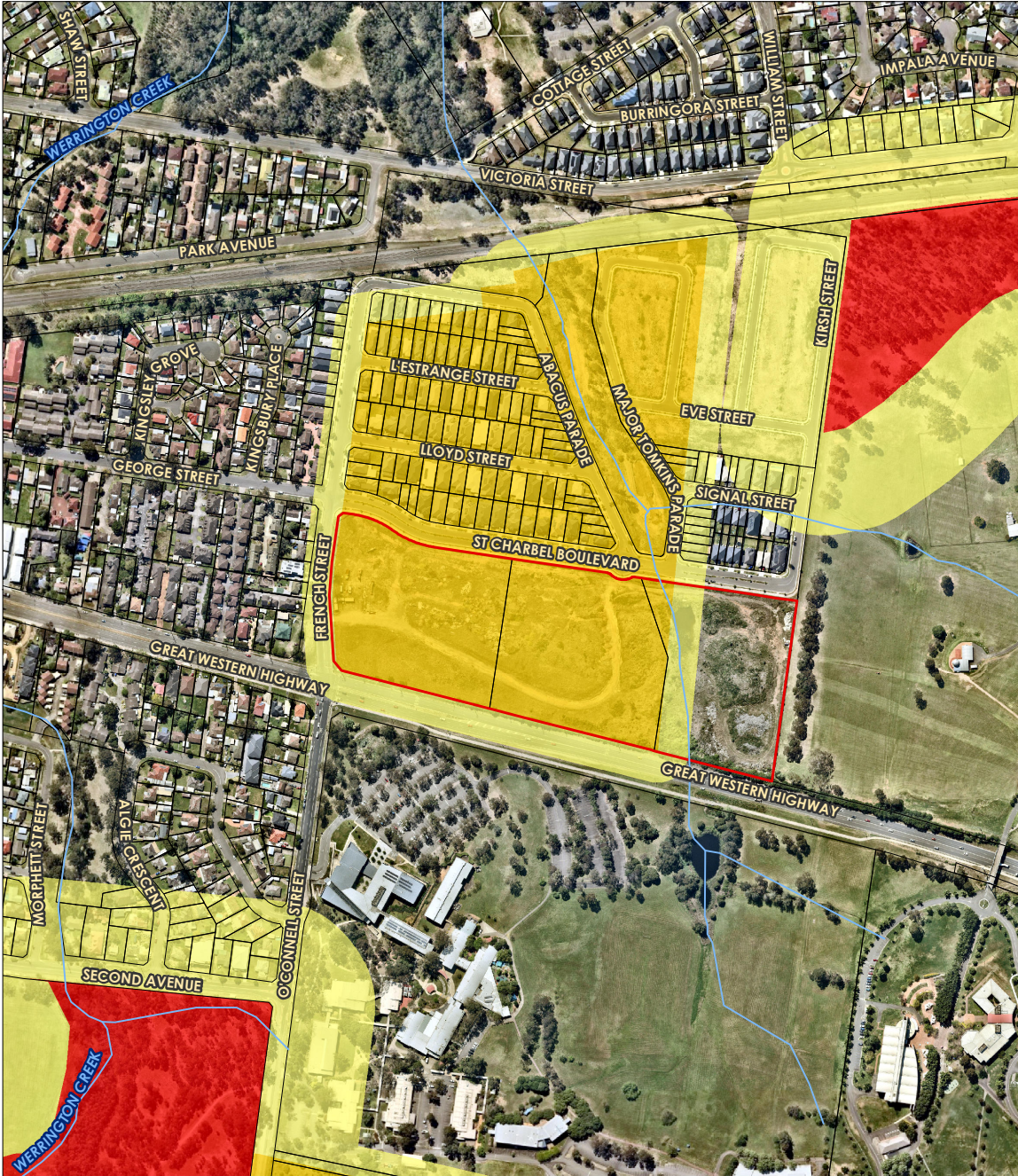
The site has Category 2 vegetation designated within the western part of the site. This will be cleared and developed with approval of the site. The development of Stage 4 will remove the Bushfire Prone Vegetation. Sate 5 will be developed to the east of the drainage channel in the near future which will remove the grassland hazard. This area is currently not mapped as Bushfire Prone Land.

The site has Category 2 Bushfire Prone Land (Figure 4) identified within the site. Land to the north of the site has been developed with housing throughout the area. Figure 1 shows recent aerial photography for the site with housing removing the Category 2 land within the bounds of Abbacus Parade, Lloyd Street, L'Estrange Street, Major Tomkins Parade, St Charbel Boulevard and Signal Street. As such, the Bushfire Prone Map is out of date and does not reflect the development of adjoining sites.








The Great Western Highway is to the south of the site. The road reserve is 40m which is cleared and managed. At the western part of the site, the Great Western Highway is 6 lanes wide (3 lanes each way) which narrows to 4 lanes wide adjacent to the east of the site. French Street to the west of the site is two lanes each way. Both these roads provide perimeter access around the site.

Land to the east of the site is owned and managed by Western Sydney University which is managed land. The site is regularly mown and is not identified as being bushfire prone. Bushfire risk to the site has been managed and bushfire will not be a risk for the development. The site and surrounding land is managed and cleared (Figure 3).

Figure 4 Bushfire Prone Land



**Legend**

-  Watercourse
-  Subject Land
-  Cadastre
-  **Bushfire Prone Land** Vegetation Buffer
-  Vegetation Category 1
-  Vegetation Category 2
-  Vegetation Category 3

N  
DKGIS  
Date: 26/10/2020  
0 25 50 100 150  
Metres  
Coordinate System: GDA 1994 MGA Zone 56  
Imagery: © Nearmap

## 4. Bushfire Threat Assessment

### 4.1. Methodology

PBP 2019 provides a methodology to determine the bushfire threat and commensurate size of any asset protection zone (**APZ**) that may be required to offset possible bushfire attack. These elements include the potential hazardous landscape that may affect the site and the effective slope within that hazardous vegetation. For new residential subdivision, APZ requirements are based on keeping radiant heat levels at new buildings below 29kW/m<sup>2</sup>.

The following assessment is prepared in accordance with Section 100B of the RF Act, Clause 44 of the RF Reg and PBP 2019. This assessment is based on the following resources:

- Planning for Bush Fire Protection (NSW RFS, 2019);
- Cowra Council Bushfire Prone Land Map;
- Aerial mapping;
- Detailed GIS analysis;
- Site inspection and analysis.

The methodology used in this assessment is in accordance with PBP 2019 Appendix 1 Site Assessment Methodology and is outlined in the following sections.

- Step 1: Determine vegetation formation in all directions around the building to a distance of 140 metres
- Step 2: Determine the effective slope of the land from the building for a distance of 100 metres
- Step 3: Determine the relevant FFDI for the council area in which the development is to be undertaken and
- Step 4: Match the relevant FFDI, vegetation formation and effective slope to determine the APZ required from the appropriate table of PBP 2019.

## **4.2. Forest Fire Danger Index**

The Forest Fire Danger Index (FFDI) measures the degree of danger of fire in Australian vegetation. For the purposes of PBP 2019, the FFDI required to be used for development assessment purposes is based on local government boundaries.

The FFDI for Penrith Council is FFDI 100 and Table A1.12.2 of PBP 2019.

## **4.3. Bushfire Hazard**

An assessment of the site and surrounding areas is necessary to determine the application of bushfire protection measures such as APZ locations and future building construction levels.

The vegetation formations (bushfire fuels) and the topography (effective slope) combine to create the bushfire threat that may affect bushfire behavior at the site, and which determine the planning and building response of PBP 2019.

The site is cleared and will be developed, removing potential bushfire threat.

## **4.4. Vegetation Assessment**

The RF Regulation requires a classification of the vegetation on and surrounding the property (out to a distance of 140 metres from the boundaries of the property) in accordance with the system for classification of vegetation contained in PBP 2019.

Vegetation types give rise to radiant heat and fire behaviour characteristics. The predominant vegetation is determined over a distance of at least 140 metres in all directions from the proposed site boundary or building footprint on the development site. Where a mix of vegetation types exist, the type providing the greater hazard is said to predominate.

Predominant Vegetation is classified by structure or formation using the system adopted by Keith (2004) and by the general description using PBP 2019 and is shown in Figure 7. Vegetation within the site will be cleared as part of the development. A narrow band of vegetation will be provided within Settlers Reserve as a drainage reserve.

The drainage reserve will be revegetated but has been designed to minimise fuel load and bushfire risk to the development (both to the east and west). The Streetscape Masterplan is at Figure 5 and the detailed Landscape Plan for the drainage channel is at Figure 6. The drainage channel is approximately 15m wide and does not constitute a significant risk to the development.

As a redundancy, the development has been designed to provide a perimeter road to part of the drainage channel with access to the northern part of the channel by the existing St. Charbel Road.

The species list (see Figure 6) has been carefully chosen by the bushfire expert and landscape architect to provide species that are fire resistant in the drainage channel.

Vegetation to the east of the channel will be cleared as part of a future Stage 5 development. It is currently grassland.

Importantly, the planting has been scheduled (see Figure 6 and inset cross section) to separate the few trees that will be planted within the drainage channel. The channel will not revegetate to a woodland or forest state and is at best considered a riparian/ drainage corridor with minimal current and future risk.



Figure 5 Streetscape Masterplan

PLANT SCHEDULE

Botanical Name	Common Name	Expected Mature Height	Install Size	Spacing
<b>Street Trees</b>				
<b>Trees</b>				
<i>Corymbia maculata</i>	Spotted Gum	30m	100L	As Shown
<i>Eucalyptus tereticornis</i>	Forest Red Gum	25m	100L	As Shown
<i>Melaleuca linearifolia</i>	Snow-in-summer	8m	100L	As Shown
<i>Melaleuca stypheloides</i>	Prickly-leaved Paperbark	4m	100L	As Shown

STREET TREE IMAGES



LEGEND

- Site Boundary
- Lot boundary
- Eucalyptus tereticornis street tree planting
- Melaleuca linearifolia street tree planting
- Melaleuca stypheloides street tree planting
- Existing vegetation
- Footpath to council standard
- Grass verge to council standard
- Corymbia maculata continuation of street tree planting to French Street (as per Stage 1)



Drawing Title:  
**STREETSCAPE MASTER PLAN**  
DWG No:

**LDA-01**

**GEOSCAPES** LANDSCAPE ARCHITECTS  
 Suite 215, 294 Victoria Av, Chatswood NSW 2067  
 Ph: (02) 9411 1465  
 www.geoscapes.com.au  
 ABN 94 620 205 781 ACN 620 205 781

Client: **STATEWIDE PLANNING**

Scale: 1:500 @ A1  
1:1000 @ A3  
Date: 24.02.2021  
Job Number: 170815  
Project: **Werrington Stage 4 - Residential**  
731 - 769 Great Western Hwy, Werrington, NSW

Revision		FOR DEVELOPMENT APPLICATION	
Rev	Date	Description	
B	08.05.18	FEED DA	JT BG
C	20.11.20	FEED DA	PT BG
D	18.02.21	FEED DA	MR BG
E	24.02.21	FEED DA	PT BG

Figure 6 Landscape Plan - Drainage Channel

PLANT SCHEDULE AND IMAGES

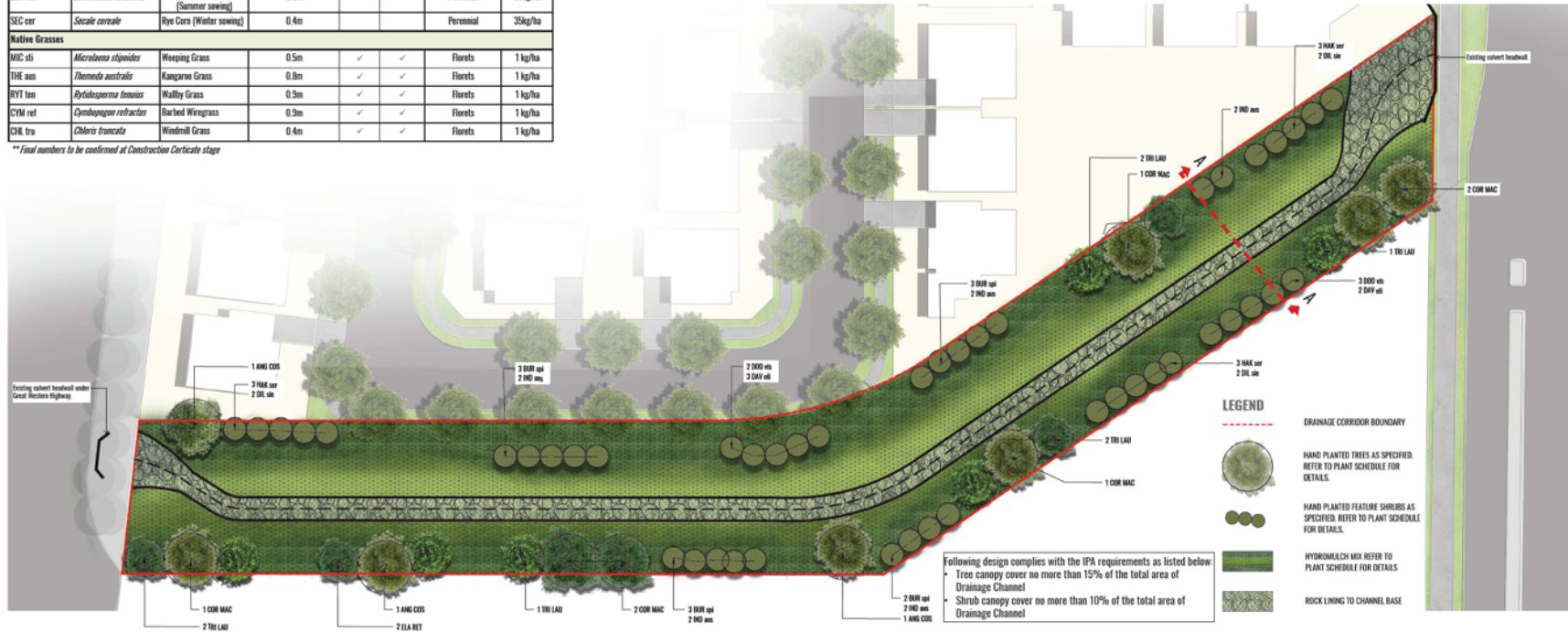
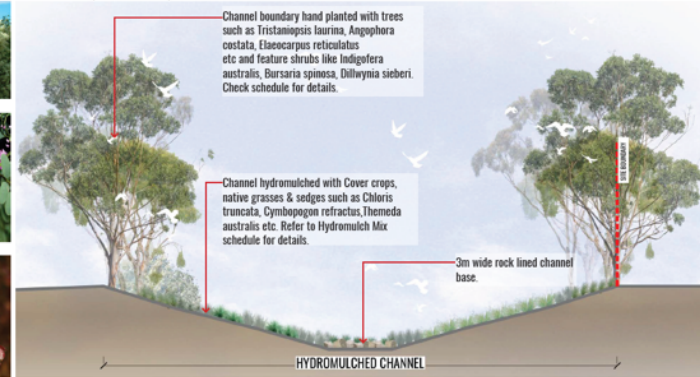
DRAINAGE CORRIDOR PLANTING SCHEDULE							
CODE	BOTANICAL NAME	COMMON NAME	SIZE	PLANTING DENSITY	QTY*	NATIVE	ENDEMIC
<b>Trees</b>							
ANG COS	<i>Angophora costata</i>	Smooth barked Apple	45L	As shown	3	✓	✓
COR MAC	<i>Corymbia maculata</i>	Spotted Gum	45L	As shown	7	✓	✓
ELA RET	<i>Elaeocarpus reticulatus</i>	Parramatta Wattle	45L	As shown	2	✓	✓
TRI LAU	<i>Tristanopsis laurina</i>	Water Gum	45L	As shown	8	✓	✓
<b>Shrubs</b>							
BUR spi	<i>Bursaria spinosa</i>	Sweet Bursaria	Tubestock	As shown	11	✓	✓
DAV uli	<i>Daviesia ulicifolia</i>	Gorse Bitter pea	Tubestock	As shown	5	✓	✓
DIL sie	<i>Dillwynia sieberi</i>	Prickly parrot-pea	Tubestock	As shown	6	✓	✓
DOD vis	<i>Dodonaea viscosa sub. canata</i>	Sticky hop bush	Tubestock	As shown	5	✓	✓
HAK ser	<i>Hakea sericea</i>	Bushy Needlewood	Tubestock	As shown	9	✓	✓
IND aus	<i>Indigofera australis</i>	Australian Indigo	Tubestock	As shown	10	✓	✓
<b>HYDROMULCH MIX</b>							
PLANT CODE	BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	NATIVE	ENDEMIC	SEED TYPE	APP RATE
Hydromulch Mix 1 (HMT) Area = 2845 m <sup>2</sup> @ 0.20 ha							
Covercrop grass (Species chosen as per sowing season)							
ECH esc	<i>Echinochloa occulenta</i>	Japanese millet (Summer sowing)	0.6m			Perennial	35kg/ha
SEC cer	<i>Secale cereale</i>	Rye Corn (Winter sowing)	0.4m			Perennial	35kg/ha
<b>Native Grasses</b>							
MIC sti	<i>Microstema stipoides</i>	Weeping Grass	0.5m	✓	✓	Florets	1 kg/ha
THE aus	<i>Themeda australis</i>	Kangaroo Grass	0.8m	✓	✓	Florets	1 kg/ha
RYT ten	<i>Rytidosperma tenuis</i>	Wallby Grass	0.9m	✓	✓	Florets	1 kg/ha
CYM ref	<i>Cymbopogon refractus</i>	Barbed Wiregrass	0.9m	✓	✓	Florets	1 kg/ha
CHI tre	<i>Chloris truncata</i>	Windmill Grass	0.4m	✓	✓	Florets	1 kg/ha

\*Final numbers to be confirmed at Construction Certificate stage

PLANT IMAGES



SECTION AA (SCALE 1:100)



Drawing Title:  
**LANDSCAPE PLAN - DRAINAGE CHANNEL**  
DWG No: **LDA-02**

**GEOSCAPES** LANDSCAPE ARCHITECTS  
Suite 215, 284 Victoria Ave, Chatswood NSW 2067  
Ph. (02) 9411 1485  
www.geoscapes.com.au  
ABN 64 620 205 781 ACN 620 205 781

Client: **STATEWIDE PLANNING**

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1:500 @ A3  
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FOR DEVELOPMENT APPLICATION				
Revision	Date	Description	Drawn	Checked
B	08.05.19	FOR I.D.	JT	RS
C	20.11.20	FOR I.D.	PT	RS
D	18.02.21	FOR I.D.	MR	RS
E	24.02.21	FOR I.D.	PT	RS



## **4.5.Slopes Influencing Bushfire Behavior**

The RF Reg requires an assessment of the slope of the land on and surrounding the property (out to a distance of 100 metres from the boundaries of the property or from the proposed development footprint).

The effective slope<sup>1</sup> influencing fire behaviour approaching the sites has been assessed in accordance with the methodology specified within PBP 2019. The effective slope is the slope of the ground under the hazard (vegetation). It is not the slope between the vegetation and the building (slope located between the asset and vegetation is the site slope).

Figure 7 shows the effective slopes affecting the site. The slope to the east of the drainage channel is upslope grassland.

Figure 7 Vegetation and Slope Assessment



**Legend**

- |  |              |                             |           |
|--|--------------|-----------------------------|-----------|
|  | Contour - 2m |                             | Cadastré  |
|  | Watercourse  | <b>Vegetation Formation</b> |           |
|  | Stage 1      |                             | Grassland |
|  | Subject Land |                             | Woodland  |

N

**DKGIS**  
Date: 26/10/2020

0 25 50 100 150  
Metres

Coordinate System: GDA 1994 MGA Zone 56  
Imagery: © Nearmap

## 4.6.Asset Protection Zones

For proposed new residential subdivision, PBP 2019 requires that a minimum separation is provided in the form of Asset Protection Zones (**APZ**). The APZ is a fuel-reduced, physical separation between buildings and bushfire hazards. For residential developments, APZ requirements are based on keeping radiant heat levels at buildings below 29kW/m<sup>2</sup> as the maximum exposure on all sides of a building.

The conservative deemed to satisfy (DTS) APZ requirements are shown in Figure 8. This APZ is based on an assessment of upslope grassland to the east of the drainage channel and the drainage channel being assessed as a riparian area. However, given the narrow width (15m) of the drainage channel, we have completed calculations using the Short Fire Run Methodology (SFR Methodology) approved by the RFS.

Using the SFR Methodology, **a radiant heat load of 26.39kWm can be achieved at 8m separation from the drainage channel.** The Short Fire Run (SFR) inputs and calculations are shown in Table 1. The following SFR inputs were used:

Input	Comment
<b>Vegetation</b>	Riparian – based on the narrow width of the drainage channel at 15m and the modified planting schedule
<b>Surface &amp; Elevated Fuel Load</b>	10t used as per NSW RFS Comprehensive Vegetation Fuel Loads. Note: this is considered to over represent the maximum fuel load for the climax community.
<b>Overall Fuel Load</b>	12t used as per NSW RFS Comprehensive Vegetation Fuel Loads. Note: this is considered to over represent the maximum fuel load for the climax community.
<b>Average canopy height</b>	Default for Rainforest
<b>Average elevated fuel height</b>	Default for Rainforest. This is considered overly conservative as the bulk of the area will be planted with grasses with a maximum height of .5 of a metre.
<b>Distance to Vegetation</b>	8m has been used as the minimum distance to achieve less than 29kW.
<b>Effective Slope</b>	5 degrees downslope which is overly conservative for the approximately 7m down to the drainage line centreline and then upslope away from the drainage line
<b>Nominal Head Width</b>	15m which is the width of the drainage reserve. A wider head cannot develop. A longer head could develop, however, this would have a lower radiant heat load as a flank fire which has not been used.
<b>Fire Weather</b>	FDI 100 as default
<b>Flame Temperature</b>	1090K as default
<b>SFR Length</b>	15m which is the width of the drainage reserve. A wider head cannot develop. A longer head could develop, however, this would have a lower radiant heat load as a flank fire which has not been used.

Figure 8 DTS APZ Requirements



**Legend**

- |              |                             |                              |
|--------------|-----------------------------|------------------------------|
| Contour - 2m | Cadastre                    | <b>Asset Protection Zone</b> |
| Watercourse  | <b>Vegetation Formation</b> |                              |
| Stage 1      | Grassland                   | Asset Protection Zone - 10m  |
| Subject Land | Woodland                    | Asset Protection Zone - 16m  |

N

**DKGIS**  
Date: 26/10/2020

0 25 50 100 150  
Metres

Coordinate System: GDA 1994 MGA Zone 56  
Imagery: © Nearmap

**Table 1 Short Fire Run calculations**

<b>Common and bushfire behaviour contributor inputs:</b>			
Predominant vegetation	Dry Rainforests - 10 & 13.2 - Medium - 0.9 m - 1.4m		
Surface & Elevated Fuel Load	10	tph	Overall fuel load
			13.2
			tph
Average Canopy Height	20	Metres	Fire weather district
			100
			FDI
Average elevated fuel height	1.4	Metres	Flame temperature
			1090
			Kelvin
Distance to vegetation	8	Metres	Target elevation of receiver
			2
			Metres
Effective slope	5	Degrees	Ambient temperature
			308
			Kelvin
Site slope	2	Degrees	SFR fire run length
			15
			Metres
Nominal head width	15	Metres	
<b>Outputs - Fully Developed Fire (FDF)</b>		<b>Outputs - Developing Fire Run (DFR)</b>	
Wind Speed	45	kph	Wind speed
			30
			kph
Default elevation of receiver	6.299	Metres	Default elevation of receiver
			5.108
			Metres
FDF Flame Angle	28	Degrees	SFR Flame Angle
			32
			Degrees
FDF Flame Length	12.60	Metres	SFR Flame Height
			10.216
			Metres
FDF Intensity	11556	kW/m	SFR Intensity
			8754
			kW/m
FDF FROS	1.6944	kph	SFR FROS
			1.6944
			kph
FDF Flame transmissivity	0.8941	kW/m	SFR Flame transmissivity
			0.8889
			kW/m
FDF View Factor	0.7190		SFR View Factor
			0.3904
			Calculated SFR Head Width
			5.491
			Metres
			SFR fire run length
			15
			Metres
			Approx. SFR travel time
			8:51
			min/sec
<b>FDF Radiant Heat</b>	<b>48.88</b>	<b>kW/m<sup>2</sup></b>	<b>SFR Radiant Heat</b>
			<b>26.39</b>
			<b>kW/m<sup>2</sup></b>

## 5. Water Supplies

The area will be serviced by reticulated water. Water meets PBP 2019.

## 6. Gas and electrical supplies

Electricity supply for the new development should comply with PBP 2019. Where practicable, all electrical transmission lines should be underground. Where overhead, electrical transmission lines should be as follows:

- lines are installed with short pole spacing of 30m, unless crossing gullies, gorges or riparian areas; and
- no part of a tree is closer to a power line than the distance set out in *ISSC3 Guideline for Managing Vegetation Near Power Lines*.

Any gas services are to be installed and maintained in accordance with *Australian Standard AS/NZS 1596 'The storage and handling of LP Gas'* (Standards Australia 2008). This complies with PBP.

In relation to any gas services to the proposed development:

- Reticulated or bottled gas should be installed and maintained in accordance with AS/NZS 1596:2014 - *The storage and handling of LP Gas*, the requirements of relevant authorities, and metal piping is used;
- All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side;
- Connections to and from gas cylinders are metal;
- Polymer-sheathed flexible gas supply lines are not used; and
- Above-ground gas service pipes are metal, including and up to any outlets.

## **7. Access**

The design and construction of the access for the development must ensure safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing the area.

Figure 1 shows recent aerial photography for the site with housing removing the Category 2 land within the bounds of Abbacus Parade, Lloyd Street, L'Estrange Street, Major Tomkins Parade, St Charbel Boulevard and Signal Street.

The Great Western Highway is to the south of the site. The road reserve is 40m which is cleared and managed. At the western part of the site, the Great Western Highway is 6 lanes wide (3 lanes each way) which narrows to 4 lanes wide adjacent to the east of the site. French Street to the west of the site is two lanes each way. Both these roads provide perimeter access around the site.

Roads within the site are 15.6m wide (Figure 7) with North Road No. 4 providing perimeter access to Settlers Way.

The site is accessed by a number of proposed roads within the existing with access into the site being off St Charbel Road.

Road access complies with PBP 2019.

Figure 9 Proposed Road Network



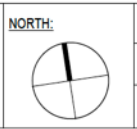
ISSUE	DATE	REVISION	BY
B	15/09/2020	AMENDED AS PER PRE-DA ADVICE	
A	21/04/2020	ISSUED FOR REVIEW	CD

**IMPORTANT NOTES:**  
 Do not scale from drawings. All dimensions to be checked on site before commencement of work. All discrepancies to be brought to the attention of the Designer. Larger scale drawings and written dimensions take precedence. This drawing is copyright and the property of the author, and must not be retained, copied or used without the express authority of STATEWIDE PLANNING

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**DRAWING TITLE:**  
 FOOTPRINTS



<b>PROJECT NO:</b> --	<b>DATE:</b> 15/09/2020	<b>DRAWING NO.:</b> DA 103	<b>REV.:</b> B
<b>DRAWN BY:</b> Author	<b>SCALE:</b> 1 : 1000		





## 8. Recommendations & Conclusion

The proposal Stage 4 residential subdivision can meet all the relevant requirements of *Planning for Bush Fire Protection 2019*.

The Bushfire Prone Land will be removed as part of the development and the drainage channel presents minimal bushfire risk. The layout has been designed to meet the requirements of PBP 2019.

The following recommendations are made for the bushfire protection of the proposed development:

**Recommendation 1:** Water, services and gas meet *Planning for Bush Fire Protection 2019*.

The development and sites are afforded adequate setbacks that can provide for compliance with *Planning for Bush Fire Protection 2019*.

In the authors professional opinion, the bushfire protection measures demonstrated in this report comply with the aim and objectives of *Planning for Bush Fire Protection 2019* and therefore the site and proposed development is considered suitable in the context of bushfire. The development conforms to the relevant specifications and requirements of *Planning for Bush Fire Protection 2019*.



Lew Short | Director

**Blackash Bushfire Consulting**

## Appendix 1 References

Councils of Standards Australia AS3959 (2009) – *Australian Standard Construction of buildings in bushfire-prone areas.*

Councils of Standards Australia AS2419 (200) – *Fire Hydrant Installations.*

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