

Bushfire Threat Assessment

Planning Proposal to Rezone Land within the South West Growth Area, Catherine Field Precinct, Catherine Field NSW.



Prepared for: Springfield Rd Pty Ltd C/- Urbanco 15 March 2022 **AEP Ref: 2438 Revision: 00**

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1.0 Introduction

Anderson Environment & Planning was commissioned by Springfield Rd Pty Ltd (the client) to undertake a Bushfire Threat Assessment (BTA) to inform a Planning Proposal to Rezone Land within the South West Growth Area, Catherine Field Precinct, Catherine Field NSW, refer **Figure 1**.

The Planning Proposal will be assessed as per Division 3.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). As a result, Section 3.18 requires concurrence from the Rural Fire Service (RFS) to enable the planning proposal to proceed on Bushfire Prone Land. This report addresses the required heads of consideration relevant to obtaining concurrence from the RFS.

This report is specifically intended to assess the bushfire protection measures required by "Planning for Bushfire Protection 2019" (PBP) and the construction requirements for proposed development in accordance with the provisions of the Building Code of Australia – Volume 2, Edition 2010 and Australian Standard 3959-2009 (AS 3959) – "Construction of buildings in bushfire-prone areas", to provide direction for future development planning within the site.

For the purposes of referencing, this document should be referred to as:

Anderson Environment & Planning (2022). *Bushfire Threat Assessment Report for Planning Proposal to Rezone Land within the South West Growth Area, Catherine Field Precinct, Catherine Field NSW*. Unpublished report for Springfield Rd Pty Ltd. March 2022.



2.0 Site Particulars

Table 1 – Site Particulars

Detail	Comments	
Client	Springfield Rd Pty Ltd	
Address	Charlesworth Close, Springfield Road, Camden Valley Way & Catherine Field Road i Catherine Field NSW	
Precinct	'Catherine Field Precinct' within the South West Growth Area	
Lot Title(s) Assessed During Field Assessment	Springfield Road Lots 3 – 4 DP215520, Charlesworth Close Lot 302 DP716446, Lots 10 – 11, DP618175, Lots 204 – 206 DP249147 and lots contained within Precinct 1, identified within the land adjacent to Springfield Road, Camden Valley Way and Catherine Fields Rd, Catherine Field, NSW.	
	Numerous other lots are included in the rezoning application (as identified within the Subject Site), however, they were not assessed as part of the field survey due to access constraints.	
Subject Site	The Subject Site covers approximately 104ha and includes the entirety of the lots within the Subject Site boundary (refer Figure 1).	
LGA	Camden	
Zoning	As per Camden LEP 2010, the Subject Site is predominately zoned RU4 – Primary Production Small Lots, with the exception of lots in the northern part zoned R5 – Large Lot Residential.	
Current Land Use The Subject Site comprises rural dwellings consisting of cattle paddocks, farming and equipment, industrial waste and croplands (refer Figure 2).		
Surrounding Land Use	The Subject Site is bounded Camden Valley Way to the east, Springfield Road to the south, Catherine Fields Road to the north and lots zoned R5 and RU4.	
Proposed The Catherine Field Planning Proposal is a Proponent-led proposal that see rezone approximately 104 hectares of land within the Catherine Field Precinct to en urban development for new housing, open space and recreation, riparian protect major roads and stormwater management. The site is located wholly within Camden Local Government Area and is approximately 42 kilometres south-west of Sydney CBD.		
	The draft Indicative Structure Plan delivers approximately 2080 dwellings and a population of around 5,800 people. There will be a range of housing types at varying densities throughout the site. The site is identified for low and medium density residential development with single dwellings on lots ranging in size up from 250 square metres and averaging around 350 square metres and attached and semi-attached housing, typical of recently developed urban growth areas in other parts of Sydney.	
	The Proposal will provide a range of social infrastructure, including open space, recreation and community facilities for the future community, and deliver road and utilities infrastructure to service the broader South West Growth Area.	

Figure 1 depicts the extent of the site overlain on an aerial photograph of the locality. **Figure 2** depicts the Concept Plan for the Planning Proposal within the Subject Site.





Indicative Structure Plan Springfield Road, Catherine Field





 plan:
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 02/02/2022
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aerial: nearmap revision: 05 proj: MGA94-56 drawn: BR





3.0 Bushfire Hazard Assessment

3.1 Bushfire Prone Land Mapping

Examination of the Camden Council LGA Bushfire Prone Land (BPL) Mapping (NSW Planning Portal) confirms that part of the site is mapped as "Vegetation Category 3" as shown in **Figure 3**. This designation has triggered the need for this assessment as part of the Planning Proposal submission.

3.2 Planning for Bushfire Protection 2019

Planning for Bush Fire Protection 2019 aims to provide an assessment and review process for proposed development within NSW on land identified as bush fire prone to minimise the risk of bush fires to life and property.

Section 4.2 and Table 4.2.1 within the PBP (2019) outline the bush fires issues and assessment considerations for a strategic development proposal. **Table 2** outlines these components and assessment as relates to the Subject Site.



Client: Springfield Rd Pty Ltd

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Issue	Detail	PBP 2019 Considerations	AEP Assessment	
		 The bush fire hazard in the surrounding area, including: Vegetation Topography Weather 	The site and surrounds occur within the Greater Sydney region, with existing vegetation subsequently classified with a Fire Danger Index (FDI) of 100 as per Appendix 1 Section A1.6 of the PBP. All retained on-site vegetation and other vegetation within 140m of the site has been subject to this assessment as per PBP guidelines: • West / South West corner hazard vegetation –	
	A Bush fire landscape assessment considers the		Predominantly managed rural lots with sparse canopy trees managed understory derived from Cumberland Plain Woodland. This has been defined as "Grassy and Semi-Arid Woodland" as defined in the PBP and therefore represent a future hazard to the development as proposed on the site, refer Plate 1 .	
Bush fire landscape assessment likelihood of a bush fire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape.	its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding	its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding	its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding	 South east corner hazard vegetation – Predominantly managed rural lots with sparse canopy trees and managed understory derived from Cumberland Plain Woodland. This has been defined as "Grassy and Semi-Arid Woodland" as defined in the PBP and therefore represent a future hazard to the development as proposed on the site, refer Plate 2.
			• North hazard vegetation - Predominantly managed rural lots with sparse canopy trees and managed understory derived from Cumberland Plain Woodland. This has been defined as "Grassy and Semi-Arid Woodland" as defined in the PBP and therefore represent a future hazard to the development as proposed on the site, refer Plate 3 .	
			Central Riparian Corridor north of Charlesworth close – This vegetation will be managed under a Vegetation Management Plan and will be rehabilitated back to "Forested Wetland" as defined in the PBP and therefore represent a future hazard to	

Table 2 - Bushfire Issues and Strategic Assessment



Issue	Detail	PBP 2019 Considerations	AEP Assessment
			the development as proposed on the site, refer Plate 4 .
			Figure 4 provides an indication of the vegetation surrounding the site that constitute the future hazard post development for the proposal.
		The potential fire behaviour that might be generated based on the above.	Canopy fire may occur in the forest vegetation to the west / south west, south east, north and central riparian corridor hazard vegetation.
			However, lack of substantial mid and ground structure in the areas of identified hazard vegetation would be likely to reduce intensity and movement of fires in the area.
		Any history of bush fire in the area.	No information available on Camden Council webpage, Rural Fires Services webpage or other local historical sites.
		Potential fire runs into the site and the intensity of such fire runs.	Canopy fire may occur in the forest vegetation to the west / south west, south east, north and central riparian corridor hazard vegetation.
			Considering the managed nature of the site, urban landscape and lack of substantial patches of vegetation in the area it is unlikely that there will be high intensity fires and opportunity for fire runs into the site.
			Further to this much of the identified hazard vegetation is separated by roads which will also limit the movement of fire runs into the site.
		The difficulty in accessing and suppressing a fire, the continuity of bush fire hazards or the fragmentation of landscape fuels and the complexity of the associated terrain.	The draft Indicative Structure Plan (ISP) has perimeter roads along the interface with riparian areas and the APZs (BAL FZ and BAL 40) can be accommodated within the road reserve. As such the draft ISP includes perimeter roads, provision for APZs and appropriate access/egress to meet bushfire standards.
			The Proposal has ample space to provide the required APZs, perimeter roads, hydrants and, given the location to local fire station (2.5km), this is not considered an issue.
Land use assessment	The land use assessment will identify the most	The risk profile of different areas of the development layout based on the above landscape study.	Slope Analysis



Issue	Detail	PBP 2019 Considerations	AEP Assessment
	appropriate locations within the masterplan area		From the plan presented in Figure 4 examination of slope class to relevant hazard areas reveals:
	or site layout for the		 North – 0-5 degrees downslope
	proposed land uses.		East – Upslope / flat
			 South – 0-5 degrees downslope
			West – Upslope / flat
			Central Riparian area – Upslope / flat
			Asset Protection Zones
			Based on the information presented previously, the following derivation of required Asset Protection Zones (APZ's) was concluded. Examination of slope class to relevant hazard areas reveals:
			Fire Danger Index Rating = 100
			West hazard vegetation
			 Predominant Vegetation – Grassy and Semi-Arid Woodland
			Effective Slope – Upslope / flat.
			Required minimum APZ – 12m.
			South West corner hazard vegetation
			 Predominant Vegetation – Grassy and Semi-Arid Woodland
			Effective Slope – 0-5 degrees downslope.
			Required minimum APZ – 16m.
			North / South East corner hazard vegetation
			 Predominant Vegetation – Grassy and Semi-Arid Woodland
			Effective Slope – Upslope / flat.
			Required minimum APZ – 12m.
			North Corner hazard vegetation
			 Predominant Vegetation – Grassy and Semi-Arid Woodland
			 Effective Slope – 0-5 degrees downslope.



Issue	Detail	PBP 2019 Considerations	AEP Assessment
			Required minimum APZ – 16m.
			Central Riparian Corridor hazard vegetation
			 Predominant Vegetation – Forested Wetland
			Effective Slope – Upslope / flat.
			Required minimum APZ – 10m
			As per Section A4.1.2 of PBP2019, the APZ may be composed of an Inner Protection Area (IPA) and an Outer Protection Area (OPA) with management summarised as follows:
			 IPA: up to 15% canopy cover; 2-5m minimum canopy separation; no shrubs at the base of trees; shrub cover under 10%; grasses kept to no more than 100mm in height;
			 OPA: up to 30% canopy cover; 2-5m minimum canopy separation; shrub cover under 20%; grasses kept to no more than 100mm in height;
			• The OPA can be located within 10 metres from the outer edge of the APZ.
			Figure 5 shows the required APZs.
		The proposed land use zones and permitted uses.	Given the above assessment the proposed Residential zone is deemed suitable within the Subject Site.
		The most appropriate siting of different land uses based on risk profiles within the site (i.e., not locating development on ridge tops).	Given the above assessment the proposal to rezone the land to medium and low density residential land is deemed the most appropriate area within the Lots.
		The impact of the siting of these uses on APZ provision.	Refer Above APZ assessment.
Access and egress	A study of the existing and proposed road networks both within and external to the masterplan area or site layout.	The capacity for the proposed road network to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile.	The draft Indicative Structure Plan (ISP) has perimeter roads along the interface with riparian areas and the APZs (BAL FZ and BAL 40) can be accommodated within the road reserve. As such the draft ISP includes perimeter roads, provision for APZs and appropriate access/egress to meet bushfire standards.



Issue	Detail	PBP 2019 Considerations	AEP Assessment
			Perimeter roads adjacent to hazards will need to be 8m wide and sealed.
			Emergency response times would be expected to be prompt as the Catherine Field Rural Fire Brigade is 2.5km from the site.
			The Proposal has ample space to provide the required
			APZs, perimeter roads, hydrants and, given the location
			to local fire station (2.5km), this is not considered an issue.
		The location of key access routes and direction of travel.	As discussed above.
		The potential for development to be isolated in the event of a bush fire.	Given the development within the growth centres region, urbanised nature of the location and numerous roads and access and egress points, it is unlikely that in the event of a fire the Subject Site would become isolated.
Emergency services	An assessment of the future impact of new development on emergency services.	Consideration of the increase in demand for emergency services responding to a bush fire emergency including the need for new stations/ brigades.	Given the proximity to Camden Valley Way and the local fire station it has been determined that the planning proposal to rezone the land would not significantly increase the demand on fire vehicles nor emergency timeframes.
		Impact on the ability of emergency services to carry out fire suppression in a bush fire emergency.	The draft Indicative Structure Plan (ISP) has perimeter roads along the interface with riparian areas and the APZs (BAL FZ and BAL 40) can be accommodated within the road reserve. As such the draft ISP includes perimeter roads, provision for APZs and appropriate access/egress to meet bushfire standards.
			There is ample land for the site to be accessed via a perimeter road, therefore it has been determined that this would provide suitable access to undertake suppression activities if required.
Infrastructure	An assessment of the issues associated with infrastructure and utilities.	The ability of the reticulated water system to deal with a major bush fire event in terms of pressures, flows, and spacing of hydrants.	It is expected that future development would be serviced by a reticulated water supply system extended from existing and proposed residential areas.
			The reticulated water supply and street hydrant access will need to be delivered in accordance with AS 2419.1–2017.



Issue	Detail	PBP 2019 Considerations	AEP Assessment
		Life safety issues associated with fire and proximity to high voltage power lines, natural gas supply lines etc.	All components considered and deemed a minimal risk given they will be situated below ground.
Adjoining land	The impact of new development on adjoining landowners and their ability to undertake bush fire management.	Consideration of the implications of a change in land use on adjoining land including increased pressure on BPMs through the implementation of Bush Fire Management Plans.	The planning proposal is likely to reduce the risk of Bush Fire to the adjoining land, given the area proposed residential zone land will be managed, reducing the risk of grass fires into the adjoining residential in the north, south, east and west directions.





Plate 1: Forest Hazard Vegetation in the north east.



Plate 2:Managed roadside vegetation looking east.





Plate 3: Managed land looking north.



Plate 4: Neighbouring lots looking south.





Plate 5: Neighbouring lots looking west.



Plate 6: Neighbouring lots looking south west.





Plate 7: Managed roadside vegetation looking south east.



Plate 8: Managed roadside vegetation and intersection looking north east.



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4.0 **Bushfire Hazard Determination**

4.1 Construction Standards – AS 3959:2018

As outlined above, the identification of proximate hazards post development has resulted in the need for APZs, and hence consideration of related construction standards.

The Australian Standard 3959:2018 "Construction of buildings in bushfire prone areas", details six (6) levels of construction standard that are required for buildings, depending upon the expected impact of a bushfire from adjacent areas. These Bushfire Attack Levels (BAL) are measured from the edge of the hazard and incorporate vegetation type and slopes (Section 4) to determine the relevant distance for each BAL rating (and associated construction standard).

The relationship between the expected impact of a bushfire and the BAL rating is provided in **Table 1** below. BALs and APZs are shown in **Figure 5**.

Bushfire Attack Level	Maximum radiant heat impact (kW/m²)	Level of construction standard under AS 3959:2018
Low		No special construction requirements
12.5	≤12.5	BAL – 12.5
19	12.6 to 19.0	BAL – 19
29	19.1 to 29	BAL - 29
40	29 to 40	BAL – 40
Flame Zone	≥40	BAL – FZ (Not deemed to satisfy provisions)

Table 3- BAL Construction Standard

The BAL construction standards applicable for the planning proposal are indicative and will be subject to detailed assessment for further Development Applications for subdivisions and/or residential buildings. The current BAL construction standards for the site include:

Upslope / flat West hazard vegetation – Grassy and Semi-Arid Woodland

- <9m BAL-FZ
- 9 to <12m BAL-40
- 12 to <18m BAL-29
- 18 to <26m BAL-19
- 26 to < 100m BAL-12.5

0-5 degrees downslope South West corner hazard vegetation – Grassy and Semi-Arid Woodland

- <12m BAL-FZ
- 12 to <16m BAL-40
- 16 to <23m BAL-29
- 23 to <32m BAL-19
- 32 to < 100m BAL-12.5



Upslope / flat North / South East corner hazard vegetation - Grassy and Semi-Arid Woodland

- <9m BAL-FZ
- 9 to <12m BAL-40
- 12 to <18m BAL-29
- 18 to <26m BAL-19
- 26 to < 100m BAL-12.5

0-5 degrees downslope North Corner hazard vegetation – Grassy and Semi-Arid Woodland

- <12m BAL-FZ
- 12 to <16m BAL-40
- 16 to <23m BAL-29
- 23 to <32m BAL-19
- 32 to < 100m BAL-12.5

Upslope / flat Central Riparian Corridor hazard Vegetation - Forested Wetland

- <7m BAL-FZ
- 7 to <10m BAL-40
- 10 to <14m BAL-29
- 14 to <21m BAL-19
- 21 to < 100m BAL-12.5

Figure 5 shows the indicative APZ and BALs for the Subject Site.





5.0 Other Considerations

The following analysis applies to the site in reference to environmental features present.

- **Riparian Corridors** One 1st order stream present on site that will be managed and rehabilitated as a Vegetated Riparian Zone (VRZ) under a Vegetation Management Plan (VMP) back to a forested wetland. VRZ would be a total of 20m wide (10m either side of the stream).
- SEPP (Coastal Management) N/A.
- SEPP Koala 2021 N/A
- Areas of geological interest none present.
- Environmental protection zones or steep lands (>18°) none present.
- Land slip or flood prone areas none present.
- National Parks estate or various other reserves none present.
- **Threatened species matters** Several threatened species known from the area. A Biocertification Report prepared by AEP accompanies this BTA report as part of the submitted Planning Proposal. No threatened species would be notably impacted by the proposed land use.
- Aboriginal Heritage none known to be present.



6.0 Conclusion

Investigations undertaken for this Bushfire Threat Assessment report have revealed that the Planning Proposal will be affected by Grassy and Semi-Arid Woodland to the west, south west, east and north of the site and forested wetland within the riparian corridor located on site post rezoning and development. It is noted here however, that the broader area of the Catherine Fields Precinct is subject to similar developments / planning proposals and it is likely that some of these hazards will be removed / managed in the future. Further to this, final landscape plan for the riparian corridor will also impact the required BAL construction standards within this area and consideration will need to be applied to how that area is vegetated. The riparian corridor BALs have currently been assessed as a forested wetland that only requires and APZ of 10m.

As such the BAL construction standards applicable for the planning proposal are indicative and will be subject to detailed assessment for further Development Applications for subdivisions and / or residential buildings.

The indicative APZs and associated BAL construction standards have been derived and applied to the site. It has been shown that existing and future hazards associated with the vegetation to the west, south west, east and north of the site and forested wetland within the riparian corridor located on site will result in the indicative APZ encroaching into the Subject Site. As such, the position of future building envelopes along the north western interface will need to take this into consideration. Based on a review of the Concept Plan, it is not considered that the APZ encroachinents prohibit a building envelope to be positioned to allow building to BAL-29 standards on any proposed Lot.

The draft Indicative Structure Plan (ISP) has perimeter roads along the interface with riparian areas and the APZs (BAL FZ and BAL 40) can be accommodated within the road reserve. As such the the draft ISP includes perimeter roads, provision for APZs and appropriate access/egress to meet bushfire standards.

Suitable access / egress is provided off Springfield Road, Camden Valley Way, Catherine Fields Road proposed Rickard Road Extension (Future Road as indicated in the indicative structure plan) and via the proposed internal road network. It is considered that the proposed access and egress arrangements are appropriate, and no issues have been identified with evacuation, safe haven zones, or firefighting logistics.

A reticulated water supply system from established residential areas is expected to service the site, and street hydrant access will need to be delivered in accordance with AS2419.1 – 2017.

It is considered that the proposed protection measures, principally APZ's, perimeter roads and relevant construction standards, would comply with the relevant requirements of PBP 2019 and AS-3959. When applied, these measures should provide adequate protection to life and property within the proposed development in the event of a bushfire occurring in the immediate locality.

As such, it is considered that the Planning Proposal is able to meet the required objectives and principles of PBP 2019. However, it can never be guaranteed that the site and residents and property therein will not at some stage be affected by a bushfire event.



7.0 References

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