



Attachment 15 to Item 2.1.1.

Appendix 15 Preliminary Bushfire Constraints Analysis

Date of meeting: 18 April 2024
Location: Council Chambers or audio-visual link
Time: 12:30pm

19 September 2023

Our ref: 22SYD3519

Golden Vale Projects Pty Limited
35 Grose River Road
GROSE WOLD NSW 2753

Attention: Eugene Kavanagh

Dear Eugene,

Re: 35 Grose River Road, Grose Vale - Preliminary Bushfire Constraints

Eco Logical Australia (ELA) was engaged by Golden Vale Projects Pty Limited (GVP) to investigate the bushfire constraints associated with a rezoning proposal at 35 Grose River Road, Grose Vale (Figure 1). ELA understands that the concept for the site is to rezone it from RU1 to facilitate residential development and other land uses.

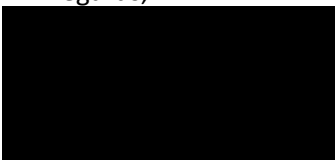
The purpose of this constraints analysis is to assist with the development of the masterplan, through consideration of bushfire constraints and the requirements of Planning for Bushfire Protection (PBP) 2019.

This assessment has been updated from the previous constraints advice issued on 30 March 2023 due to the provision of a revised concept Masterplan

This constraints assessment is suitable for the purpose for which it was commissioned, and further assessment will be required as the development concept evolves, including changes to proposed land uses, concept design or changes in State bushfire protection legislation.

If you have questions regarding any aspects of this assessment, please do not hesitate to contact us.

Regards,



Melinda Losh
Bushfire Consultant



Bruce Horkings
Senior Bushfire Consultant
FPAACertified Practitioner No. BPAD29962-L3



OVERVIEW

The subject land encompasses an area of 120 hectares and is located within the Hawkesbury Council LGA and is situated 2.5 km south of the North Richmond CBD. It adjoins planned urban release areas in North Richmond and an existing large scale health facility to the Northeast.

ELA understands that the subject land is currently zoned RU1, and it is proposed to rezone the land to create a variety of housing options including seniors living, residential dwellings, cluster housing, and large lot properties. It will include a central riparian corridor and a range of natural, passive and active recreation spaces. It is also proposed to provide a tourism hub and a small local centre accommodating business and retail facilities.

The site is mapped as bushfire prone on the Hawkesbury Council's bush fire prone land map (BFPL; 2016). (Figure 2).

Section 9.1 (2) of the *EP&A Act* triggers consideration of PBP for strategic planning. Chapter 4 of PBP contains strategic planning principles, 'inappropriate development' exclusions and assessment considerations required for strategic planning proposals. Chapter 4 of PBP prescribes the completion of a Strategic Bushfire Study, which provides the opportunity to assess whether proposed land uses associated with master planning are appropriate in the bushfire risk context. It also provides the ability to assess the strategic implications of future development for bushfire mitigation and management.

The strategic planning principles of PBP are:

- *Ensuring land is suitable for development in the context of bush fire risk;*
- *Ensuring new development on BFPL will comply with PBP;*
- *Minimising reliance on performance-based solutions;*
- *Providing adequate infrastructure associated with emergency evacuation and firefighting operations; and*
- *Facilitating appropriate ongoing land management practices.*

These planning principles trigger the consideration of bushfire protection measures at the strategic planning stage, to provide an opportunity to assess the suitability of future land uses within the broader bushfire risk setting and that future land uses can meet the aim and objectives of PBP.

In addition, Chapter 4 of PBP prescribes that strategic planning should exclude 'inappropriate development' in bushfire prone areas, where:

- *the development area is exposed to a high bush fire risk and should be avoided;*
- *the development is likely to be difficult to evacuate during a bush fire due to its siting in the landscape, access limitations, fire history and/or size and scale;*
- *the development will adversely affect other bush fire protection strategies or place existing development at increased risk;*
- *the development is within an area of high bush fire risk where density of existing development may cause evacuation issues for both existing and new occupants; and*
- *the development has environmental constraints to the area which cannot be overcome.*

This bushfire constraints and opportunities assessment (BOCA) assesses the bushfire risk context and the appropriateness of the development to comply with the strategic planning principles of PBP.







 <p>Masterplan 35 Grose River Rd, Grose Wald Client:</p>		 <p>0 75 150m scale: 1:4000 @ A2</p>	<p>plan: 071.NR.007 date: 12/01/2023 aerial: April 2021</p>	<p>revision: 02 proj: MGA94-56 drawn: BR</p>	 <p><small>hello@urbanco.com.au www.urbanco.com.au © COPYRIGHT URBANCO. ALL RIGHTS RESERVED. Areas and dimensions depicted are subject to detail survey.</small></p>
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Figure 1: Revised structure plan

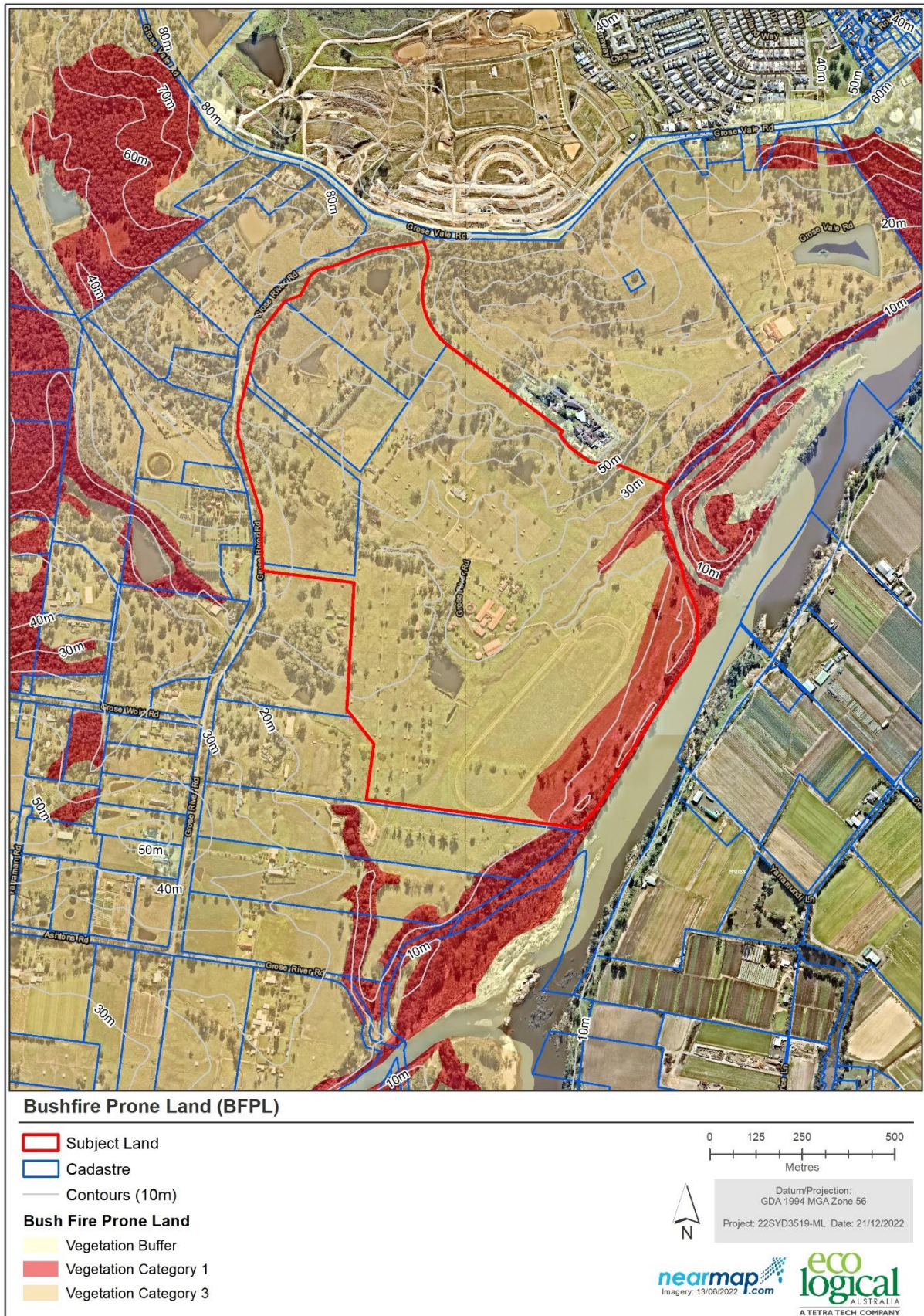


Figure 2: Bush fire prone land mapping (HCC 2016)

PRELIMINARY HAZARD ASSESSMENT

A preliminary hazard assessment has been undertaken based on the proposed land uses, and indicative APZ requirements for future development have been identified (Figure 3 and Table 1).

Hawkesbury Council LGA is situated in the Greater Sydney Region fire weather district, which has a Fire Danger Index (FDI) of 100.

Vegetation

The predominant vegetation has been determined in accordance with the methodology within PBP.

As shown in Figure 3, there is bushfire prone vegetation external to the subject land, a revegetated riparian corridor proposed within the subject land and potential grassland hazard to the southeast. The majority of the existing vegetation within the subject land is grassland with some small areas of grassy woodland and existing riparian vegetation which is to be retained and enhanced throughout the site.

The predominant vegetation type external to the subject land was assessed for a distance of 140 m and is identified in the State Vegetation Type Map (SVTM (DPIE 2019)) as PCT 3320 Cumberland Shale Plains Woodland which is classified as 'grassy woodland' by PBP, and this was confirmed by site assessment on 7/10/2022. The vegetation to the northeast and east of the subject land was assessed as forested wetland.

Onsite assessment on the 7/10/2022 identified that while a strip along the road to the neighbouring health facility is being mown the extent of ongoing management of this area is currently unknown. If confirmation of ongoing management in perpetuity is confirmed, then opportunity exists to reduce the APZ along the northern boundary up to the existing hospital facility.

The adjacent properties to the southwest have been assumed to be managed land due to being within the curtilage of houses and property access roads.

The riparian corridor is assumed to meet the classification of 'forested wetland' where it is influenced by the floodplain and a classification of 'grassy woodland' upstream. Pending the final revegetation requirements, the APZ may need to be adjusted if these assumptions are incorrect.

The identified open spaces are assumed to meet the requirements of managed land and have not been assessed as a bushfire hazard.

Opportunity exists to modify the grassland bushfire hazard APZ identified southeast of the proposed tourism hub with confirmation of ongoing management, noting however that this hazard likely doesn't provide a significant constraint to development.

Slope

The slope class 'most significantly affecting fire behaviour' has been assessed from 2 m contour data for a distance of at least 100 m in accordance with the methodology within PBP.

The effective slopes under the bushfire hazards are identified as either 'all upslope and flat land', '>0-5 degrees downslope' and '>5-10 degrees downslope' across and external to the subject land. Figure 3 shows where this slope assessment occurs.

INDICATIVE APZ REQUIREMENTS

The widths of the required APZ for future residential and SFPP development were determined using the vegetation and slope data identified above and Tables A1.12.1 and A1.12.2 of PBP. Table 1 details the results of this assessment which are also shown in Figure 3.

Future buildings will need to be located outside of any APZ and the final structure plan should facilitate this. Some lots are constrained by APZ setbacks, particularly in relation to the Special Fire Protection Purpose (SFPP) APZ which may be required for the proposed cluster housing, central hub and tourism hubs. Figure 3 identifies the SFPP APZ to the assessed bushfire hazard vegetation adjacent to the proposed seniors living site. SFPP APZ has only been shown in those areas as indicated by the structure plan. If this changes then the map and advice will need to be updated.

Future residential lots constrained by APZ requirements include those in the north, northeast, and adjacent to riparian corridor hazards where no perimeter access is proposed.

It is recommended that the final concept design for Planning Proposal submission considers the APZ requirements.

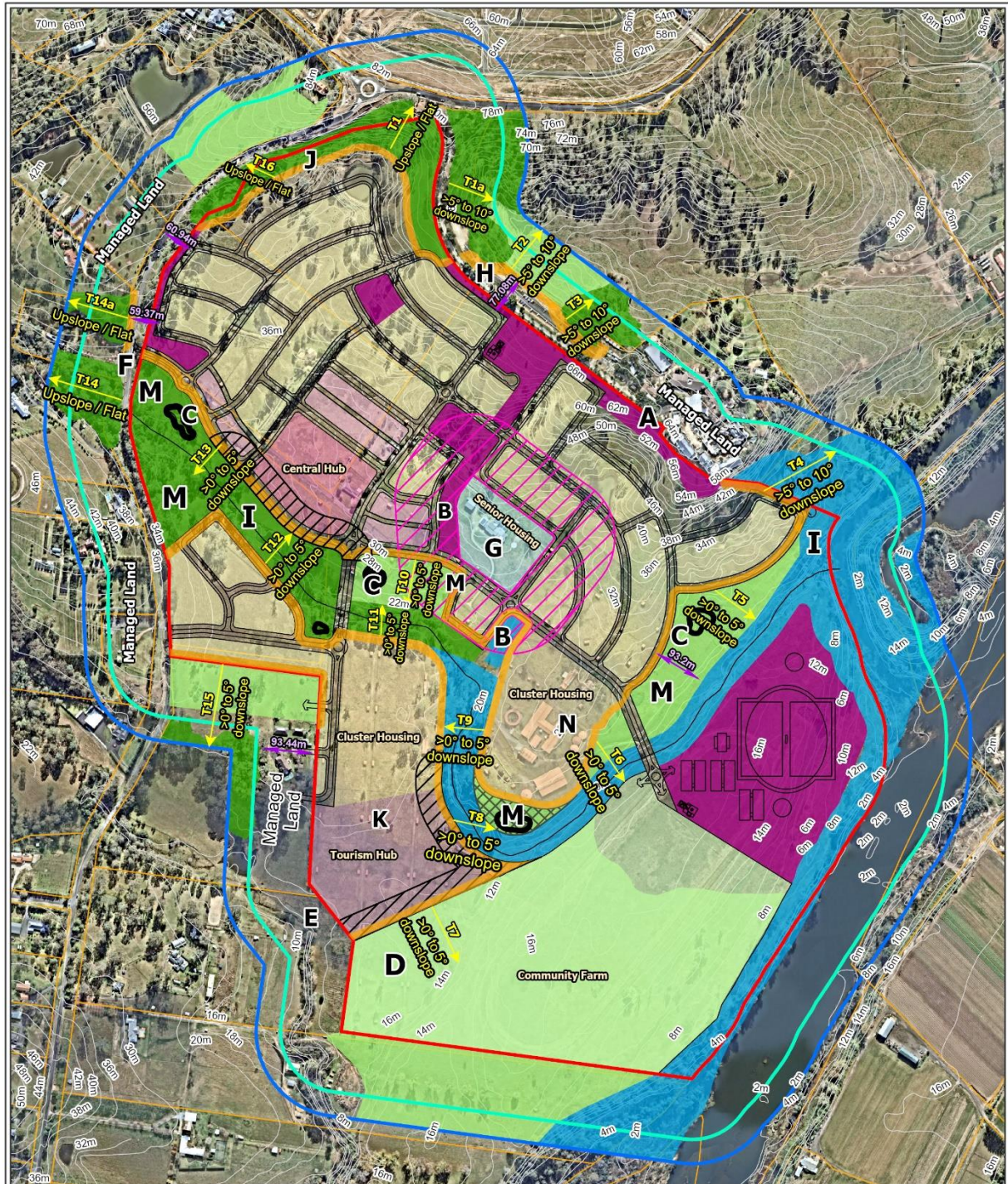
The residential dwellings proposed on the acreage lots will need to achieve residential APZ setbacks so proposed buildings are not exposed to radiant heat levels exceeding 29 kW/m². The widths of these will be dependent on the vegetation hazard on these lots and any vegetation management or revegetation within the lots.

There is opportunity to reduce APZ requirements where vegetation management reduces or removes the bushfire hazard extent and this is clarified by means of Vegetation Management Plans, Open Space management or 88b instruments on title.

Table 1: Indicative APZ requirements

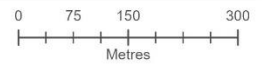
Transect	Direction from subject land	Slope	Vegetation	PBP Required Residential APZ	PBP Required SFPP APZ	Comment
1	Northeast	All upslope and flat land	Woodland	12 m	42 m	APZ to be provided within subject land.
1a	Northeast	>5° to 10° downslope	Woodland	20 m	60 m	APZ to be provided within subject land
2	Northeast	>5° to 10° downslope	Grassland	13 m	45 m	APZ provided by existing road adjacent to subject land and within subject land.
3	Northeast	>5° to 10° downslope	Woodland	20 m	45 m	APZ provided by existing road adjacent to subject land and within subject land.
4	Northeast	>5° to 10° downslope	Forested Wetland	16 m	51 m	APZ to be provided within subject land.
5	Southeast (riparian)	>0° to 5° downslope	Grassland	12 m	42 m	APZ to be provided within the subject land.
6	Southeast (riparian)	>0° to 5° downslope	Forested Wetland	12 m	42 m	APZ to be provided within the subject land.
6	Southeast	>0° to 5° downslope	Grassland	12 m	40 m	APZ to be provided within the subject land.
7	South	>0° to 5° downslope	Grassland	12 m	42 m	APZ to be provided within the subject land.
8	East (riparian)	>0° to 5° downslope	Forested Wetland	12 m	42 m	APZ to be provided within the subject land.
9	West (riparian)	>0° to 5° downslope	Forested Wetland	12 m	42 m	APZ to be provided within the subject land.
10	South	>0° to 5° downslope	Grassland	12 m	42 m	APZ to be provided within the subject land.
11	North (riparian)	>0° to 5° downslope	Woodland	16 m	50 m	APZ to be provided within the subject land.
12	Northeast (riparian)	>0° to 5° downslope	Woodland	16 m	50 m	APZ to be provided within the subject land.
13	Southwest	>0° to 5° downslope	Woodland	16 m	50 m	APZ to be provided within the subject land.
14	West	All upslope and flat land	Woodland	12 m	42 m	APZ provided by existing road adjacent to subject land and within subject land.
14a	West	All upslope and flat land	Woodland	12 m	42 m	APZ provided by existing road adjacent to subject land and within subject land.

Transect	Direction from subject land	Slope	Vegetation	PBP Required Residential APZ	PBP Required SFPP APZ	Comment
15	South	>0° to 5° downslope	Grassland	12 m	40 m	APZ to be provided within the subject land.
16	Northwest	All upslope and flat land	Woodland	12 m	42 m	APZ to be provided within the subject land.
All other directions				Managed Land		



Bushfire Hazard Assessment

- | | |
|-----------------------------------|-------------------------------|
| Subject Site | 100 m Buffer |
| 140m Vegetation Assessment Buffer | Open Space (proposed managed) |
| 100m Slope Assessment Buffer | Drainage |
| Cadastre | Vegetation Hazards |
| Contour (2m) | Grassland |
| Residential Asset Protection Zone | Forested Wetland |
| SFPP Asset Protection Zone | Grassy Woodland |



Datum/Projection:
GDA2020 MGA Zone 56
Project: 22SYD3519-SK
Date: 19/09/2023

nearmap
Imagery: 11/04/2023



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Figure 3: BHA and indicative APZ

ACCESS

In regard to access, chapter 4 of PBP requires the following assessment considerations to be addressed for rezoning proposals:

- *The capacity of the proposed road network to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile;*
- *The location of key access routes and direction of travel and;*
- *The potential for development to be isolated in the event of a bushfire.*

In addition to the above, chapter 5 of PBP prescribes the access requirements for residential development, which amongst other matters specifies the following 'Acceptable Solutions':

- *Perimeter roads are provided for residential subdivisions of three or more allotments (minimum 8m carriageway width kerb to kerb, with parking provided outside of the carriageway width);*
- *Perimeter roads are provided between bushfire hazards and buildings;*
- *Non-perimeter roads are designed to meet the specifications in Table 5.3b of PBP;*
- *Subdivisions of three or more allotments have more than one access in and out of the development;*
- *Dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end; and*
- *Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.*

The following recommendations are made in regard to access, such that compliance with both chapter 4 and chapter 5 of PBP can be demonstrated for the structure plan:

- Perimeter roads should be provided between the vegetation and any future subdivisions containing three or more allotments. This will need to be considered for future development adjacent to the Steading Creek riparian corridor traversing the site, the northern boundary and southern boundaries where bushfire prone vegetation has been identified and no existing perimeter access exists.
- Dead end roads are not recommended, but if unavoidable should be less than 200 m in length and provide a PBP compliant turning head.
- Internal access roads should link to perimeter roads at an interval of no greater than 500 m.
- The capacity of the road network will need to adequately facilitate safe off-site evacuation to appropriate evacuation destinations, with consideration to the planned increased density of the estate.
- SFPP access is required to address the provision that firefighting vehicles are provided with safe, all-weather access to all structures and hazard vegetation.

Consideration should be given to proposed vegetation management within the acreage lots and if a bushfire hazard is present or created, some form of perimeter access should be provided that allows for firefighting vehicle access.

WATER SUPPLY AND UTILITIES

It is assumed that future development within the precinct will be serviced by reticulated water supply and compliant with the requirements specified in Table 5.3c of PBP. Adequacy of water pressures for firefighting purposes will need to meet AS-2419.1:2021 and, feasibility to achieve this should be demonstrated to support the planning proposal. However, given the surrounding land use and current utilisation of the site, this is not expected to be a significant constraint to the proposal.

It is preferable that future development is serviced by underground electricity services where possible and should be demonstrated to support the planning proposal where proposed. If aboveground supply is required, compliance with ISSC3 *Guideline for Managing Vegetation Near Power Lines* will need to be considered in future design.

The provision of gas services will need to comply with AS/NZS 1596:2014 and future planning should consider the placement of any above ground gas services, particularly in areas adjacent to retained vegetation. The future provision of electricity and gas services will need to comply with Table 5.3c of PBP, however this is not considered a constraint to the planning proposal.

CONCLUSION

This bushfire opportunities and constraints assessment shows that the bushfire risk context allows for the proposed rezoning as it is not exposed to a high bushfire risk and with consideration to lot layout will be able to achieve the performance criteria and acceptable solutions of PBP.

RECOMMENDATIONS

Key recommendations based on this preliminary constraints assessment include the following:

- As shown in Figure 3, some lots are constrained by PBP APZ requirements, and it is recommended that perimeter roads are provided to the bushfire hazard vegetation, or lot sizes are increased to accommodate appropriate APZ to achieve the required residential APZ setbacks.
- Future SFPP development is best located where the APZ requirements and perimeter access in accordance with the acceptable solutions of PBP are more readily achievable. It is recommended this is > 100 m from any existing or future bushfire prone vegetation.
- Perimeter roads between any future development and the identified bushfire hazard(s) is a requirement of PBP and the layout should be redesigned to facilitate this.
- Ensure more than one access road in and out of the development is maintained.
- Non-perimeter roads to meet the specifications in Table 5.3b of PBP
- The provision of services will need to demonstrate compliance with PBP requirements.

Opportunities exist to refine the preliminary concept plan to meet all the requirements of PBP by implementing the recommendations above and the additional commentary provided in Table 2 below.

Table 2: Additional Recommendations

Map Key	Comment	Recommendation
A	This area is adjacent to a hospital and has been assessed as managed land	This area must be managed to APZ standards to avoid any increased bushfire risk on adjacent SFPPP development
B (south)	This section of the riparian corridor has been assessed as forested wetlands.	This area must be managed to APZ standards to ensure there is capacity for SFPP development (seniors housing)
B (west)	This section of the riparian corridor has been assessed as managed land.	This area must be managed to APZ standards to ensure there is capacity for SFPP development (seniors housing)
C	Drainage areas can accommodate APZ requirements, however should these constitute a hazard, there will be BAL construction requirements	Confirmation of drainage basin vegetation management needed
D	Community Farm -assessed conservatively as grassland	Pending typology of this area perimeter roads would be required between this hazard and adjacent development
E	Has been assessed as managed land	Confirmation required. If unable to be confirmed
F	Existing road provides APZ for external hazard in this area	
G	To avoid APZ impacts and BAL construction requirements on Senior Housing, surrounding areas have been assessed as managed land	Areas B, G and C within 100m of the seniors housing must be managed to APZ standard to ensure there is capacity for SFPP development (seniors housing)
H	Existing road provides APZ for external hazard in this area	
I	Riparian corridor assessed as 0-5 downslope to south west and 5-10 downslope to south east	Confirmation required of final slope required assuming earthworks.
J	This areas has been assessed as a hazard	Perimeter road should be provided
K	No perimeter access adjoining riparian corridor or community farm	Perimeter access to be provided
M	Consideration to access to the hazard in these areas	Access for firefighting purposes should be provided along the riparian corridor, and perimeter roads provided where this adjoins development
N	APZ requirement based on forested wetland hazard	Perimeter road required. If SFPP land uses then additional APZ requirements will apply

REFERENCES

Hawkesbury City Council (HCC), 2016. *Bush Fire Prone Land Map*.

Industry Safety Steering Committee 3 (ISSC3). 2016. *Guide for the Management of Vegetation in the Vicinity of Electricity Assets*. ISSC3, Sydney.

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