

Appendix B

Bushfire Assessment



BUSHFIRE THREAT ASSESSMENT

FOR
A PROPOSED MANUFACTURED HOME
ESTATE

AT
WOLLOMBI ROAD,
FARLEY

Prepared:

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Disclaimer

Notwithstanding the precautions adopted within this report, it should always be remembered that bushfires burn under a wide range of conditions. An element of risk, no matter how small always remains, and although the standard is designed to improve the performance of such buildings, there can be no guarantee, because of the variable nature of bushfires, that any one building will withstand bushfire attack on every occasion.



Executive Summary

A Bushfire Threat Assessment Report (BTA) has been prepared by Firebird ecoSultants Pty Ltd at the request of Ravensfield Downs Pty Ltd for the proposed development of a Manufactured Home Estate at Wollombi Road, Farley.

The report forms part of the supporting documentation for a Development Application (DA) to be submitted to Maitland City Council (MCC). The report also demonstrates compliance with Planning for Bushfire Protection 2006 (PBP 2006), AS3959-2009 Construction of Buildings in Bush Fire Prone Areas and the addendum to appendix 3 of PBP 2006.

The RFS views long term accommodation as exceeding 6 weeks in duration and considers that long term occupants will be familiar with their surrounds, safe refuge areas and escape routes. As such, long term accommodation within holiday parks may be treated as residential development under certain circumstances.

This assessment has been undertaken to ensure that the development complies with residential development in accordance with Planning for Bushfire Protection (RFS, 2006) (PBP). To comply with the intent of PBP, long term accommodation will need to comply with the APZ requirements of Appendix 2 of PBP and construction requirements of AS3959. Manufactured housing (demountable dwellings/relocatable homes etc.) can be built to achieve all levels of construction required under AS3959.

This assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to the proposal. Recommendations are provided with regard to fuel management, access, provision of emergency services, building protection and construction standards to facilitate an acceptable level of bushfire protection. In summary, the following is recommended:

- Permanent APZ of minimum widths as shown in Table 4-1 and displayed on Figure 4-1 should be implemented;
- A Monitoring and Fuel Management Plan should be prepared by detailing the maintenance of the APZs and landscaping within the site;
- All future habitable buildings are required to comply with AS3969-2009 and be constructed to the relevant BAL as determined in Section 5 of this report;
- The site is connected to reticulated water. The development will be linked to the water pressure mains and the proposed internal fire hydrant spacing, sizing and pressures are to comply with AS 2419.1-2005 Fire Hydrant Installations – System design, installation and commissioning (2005); and
- An Emergency Response and Evacuation Plan is to be prepared for the site and is recommended



Provided the recommendations stated above are implemented in full Firebird ecoSultants Pty Ltd is of the opinion that the proposed development will meet the aims and objectives of PBP (RFS, 2006).



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Terms & Abbreviations

Abbreviation	Meaning
APZ	Asset Protection Zone
AS2419 -2005	Australian Standard – Fire Hydrant Installations
AS3959-2009	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BCA	Building Code of Australia
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BFPL Map	Bush Fire Prone Land Map
BPMs	Bush Fire Protection Measures
BFSA	Bush Fire Safety Authority
<i>EPA Act</i>	<i>NSW Environmental Planning and Assessment Act 1979</i>
FDI	Fire Danger Index
FMP	Fuel Management Plan
ha	Hectare
IPA	Inner Protection Area
LGA	Local Government Area
MCC	Maitland City Council
OPA	Outer Protection Area
PBP	Planning for Bushfire Protection 2006
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation



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I INTRODUCTION

A Bushfire Threat Assessment Report (BTA) has been prepared by Firebird ecoSultants Pty Ltd at the request of Ravensfield Downs Pty Ltd for the proposed development of a Manufactured Home Estate at Wollombi Road, Farley hereafter referred to as the “site” (refer to Figure 1-1 for site locality).

This BTA is suitable for submission with a Development Application (DA) and provides information on measures that will enable the development to comply with ‘Planning for Bushfire Protection’ (NSW RFS, 2006), hereafter referred to as PBP (RFS, 2006) and also AS3959-2009 – Construction of Buildings in Bushfire Prone Areas.

This assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to such a proposal, and to outline the minimum mitigative measures which would be required in accordance with the provisions of the Environmental Planning and Assessment Amendment (Planning for Bushfire Protection) Regulation 2007 and the Rural Fires Amendment Regulation 2007 (RF Amendment Regulation 2007).

I.1 Site Particulars

Locality: Wollombi Road, Farley

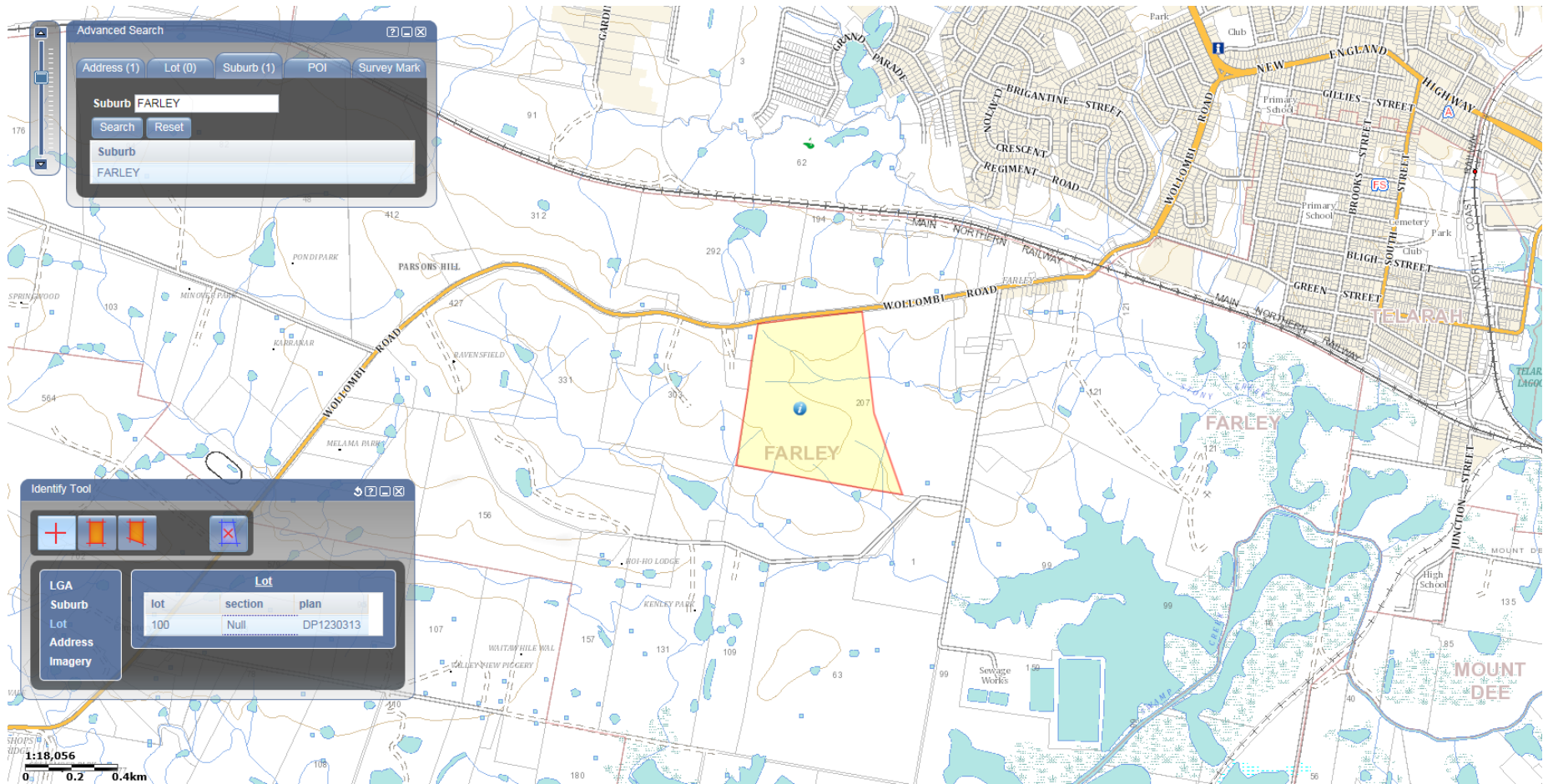
LGA: Maitland City Council (MCC)

Forest Danger Index: 100 FDI

Boundaries: The site bordered by forest to the east, south and west, and by a drainage reserve, followed by an approved subdivision to the north.



Figure 1-1: Site Location





I.1 Description of the Proposal

A Development Application is lodged by Ravensfield Downs Pty Ltd for a Manufactured Home Estate (Relocatable Home Village) on land located on the southern part of the residential estate known as 'Ravensfield' in Farley.

It is proposed to develop a village with 295 relocatable manufactured home sites, a manager's residence, and associated community and recreational facilities in the southern part of the site. The land is to be subdivided for lease purposes. The development is targeted to provide housing for residents over 50-years of age.

Refer to Attachment 1 for proposed site plans.

I.2 Legislative Requirements

Part of the site has been identified as bush fire prone land on the MCC LGA Bush Fire Prone Land Map (BFPLM). Any proposed development on land that has been mapped as BFPL needs to comply with PBP.

This BTA has been prepared using current legislative requirements and associated guidelines for assessment of bushfire protection, these being

- Section 100b of the RFS Act 1997;
- PBP (RRS, 2006); and
- AS3959-2009 Construction of Buildings in Bushfire Prone Areas

I.3 Objectives of Assessment

The proposal relates to the development of a Caravan Park (permanent residence) and ancillary facilities such as community facilities, parking and landscaping within the site boundaries. The Rural Fire Service (RFS) Fast Fact 1/08 (NSW RFS, Version 3, Oct 2011), attached as Annexure 3 and referred to as FF1.08 provides clarification on the position of the RFS in relation to the construction of new or the expansion of existing holiday parks upon lands identified as bushfire prone.

The FF1.08 notes that "holiday parks" may cater for both short term transient and long term accommodation. It is viewed by the RFS that long term accommodation (being accommodation that exceeds 6 weeks in duration) is considered to house long term occupants who will be familiar with their surrounds, safe refuge areas and escape routes. As such, long term accommodation within holiday parks may be treated as residential development under certain circumstances.

Therefore, In accordance with FF1.08:



“To comply with the intent of Planning for Bushfire Protection (PBP), long term accommodation will need to comply with the APZ requirements of Appendix 2 and construction requirements of Australian Standard 3959. Manufactured housing (demountable dwellings/relocatable homes etc.) can be built to achieve all levels of construction required under AS3959.

This report has been prepared to address the requirements of clause 44 of the Rural Fires Regulation for an application for a BFSA. This BTA also addresses the six key Bush Fire Protection Measures (BFRMs) in a development assessment context being:

- The provision of clear separation of buildings and bush fire hazards, in the form of fuel-reduced APZ (and their components being Inner Protection Areas (IPA's) and Outer Protection Areas (OPA's));
- Sitting and design of the proposal;
- Construction standards;
- Appropriate access standards for residents, fire-fighters, emergency workers and those involved in evacuation;
- Adequate water supply and pressure, and utility services; and
- Suitable landscaping, to limit fire spreading to a building.



2 BUSHFIRE THREAT ASSESSMENT

2.1 Methodology

2.1.1 Vegetation Assessment

Vegetation surveys and vegetation mapping carried out on the site has been undertaken as follows:

- Aerial Photograph Interpretation to map vegetation cover and extent.
- Confirmation of the vegetation assemblage typology present.

2.1.2 Slope Assessment

Slope assessment has been undertaken as follows:

- Aerial Photograph Interpretation in conjunction with analysis of electronic contour maps with a contour interval of 10m.

3 SITE ASSESSMENT

The following assessment has been undertaken in accordance with the requirements of PBP (RFS, 2006). The fieldwork methodology used to determine and identify the predominant vegetation formation has been conducted in accordance with the ‘Standards Australia (2009). AS 3959 – 2009: Construction of Buildings in Bushfire-prone Area’ and Appendix 2 in ‘NSW Rural Fire Service (2006) and Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners’ and as per Keith D. 2004 in: “Ocean Shores to Desert Dunes: the vegetation of New South Wales and the ACT (Department of Environment and Conservation NSW: Hurstville)”. The site inspection was undertaken on the 27 November 2013 and 2 December 2013. The following assessment has been undertaken in accordance with the requirements of PBP (RFS, 2006).

3.1 Vegetation and Slope Assessment

In accordance with PBP (RFS, 2006), an assessment of the vegetation that may be considered a bushfire hazard over a distance of 140m in all directions from the site boundary was undertaken. This assessment is depicted in Table 3-1 and Figure 3-1.

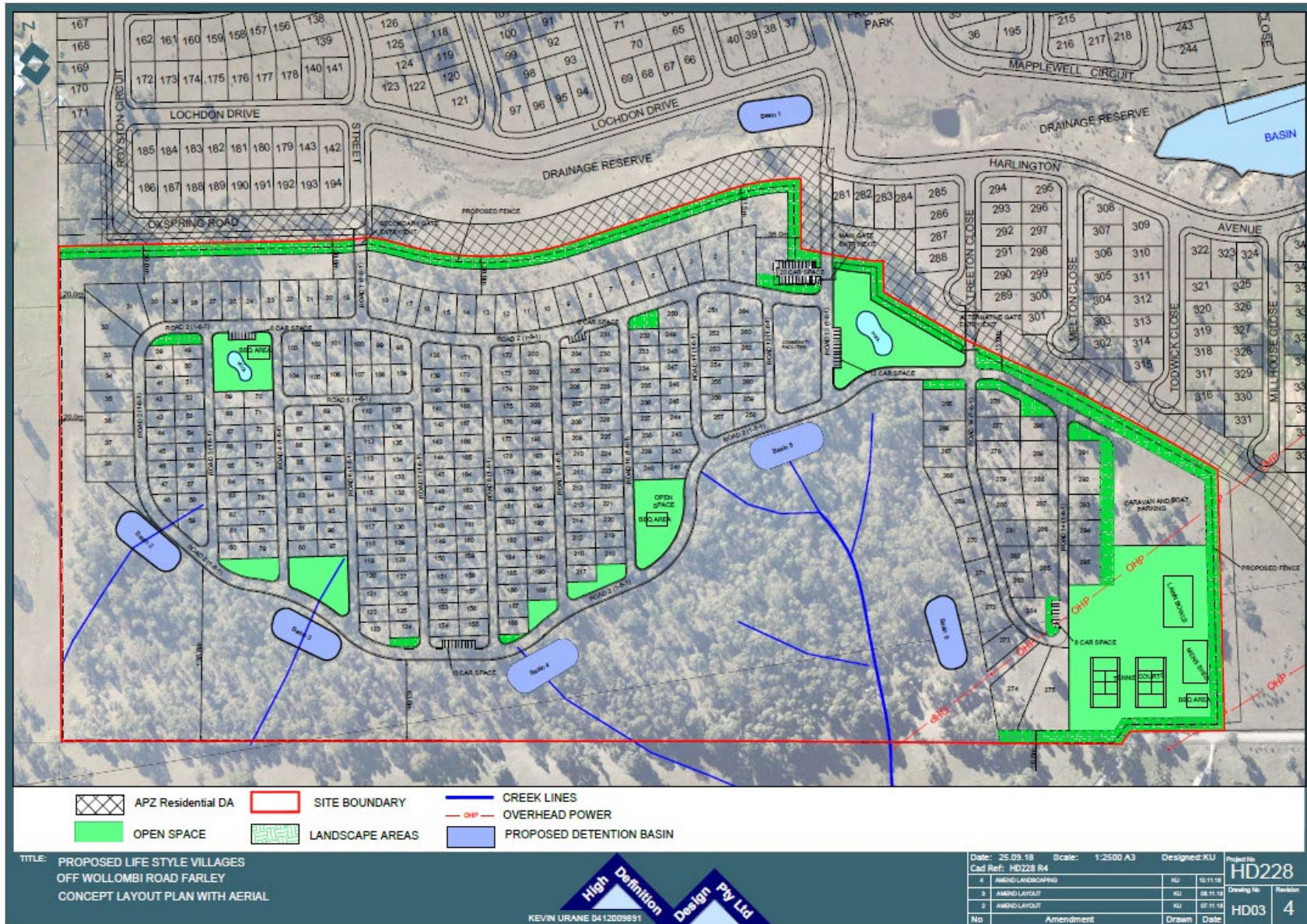
In accordance with PBP (RFS, 2006), an assessment of the slope affecting the bushfire behaviour was undertaken for a distance of 100m from the edge of the bushfire hazard. The slopes leading away from the site have been evaluated to identify both the average slope and by identifying the maximum slope present. These values help determine the level of gradient which will most significantly influence the fire behaviour of the site and the results are presented in Table 3-1 and Figure 3-1 below.

Table 3-1: Vegetation & Slope Classification for Site

Direction	Vegetation Type	Slope
North	Vegetation associated with a drainage line assessed as remnant vegetation in accordance with PBP 2006, followed by an approved subdivision.	Flat Land
East	Managed Land	N/A Managed Land
South	Open Forest	>5-10 degrees
West	Woodland	Cross-slope



Figure 3-1: Vegetation Map



4 BUSHFIRE PROTECTION ASSESSMENT

4.1 Asset Protection Zones (APZ)

The PBP guidelines has been used to determine the width of the APZ for the proposed development using the vegetation and slope data identified in Section 3-1 of this report.

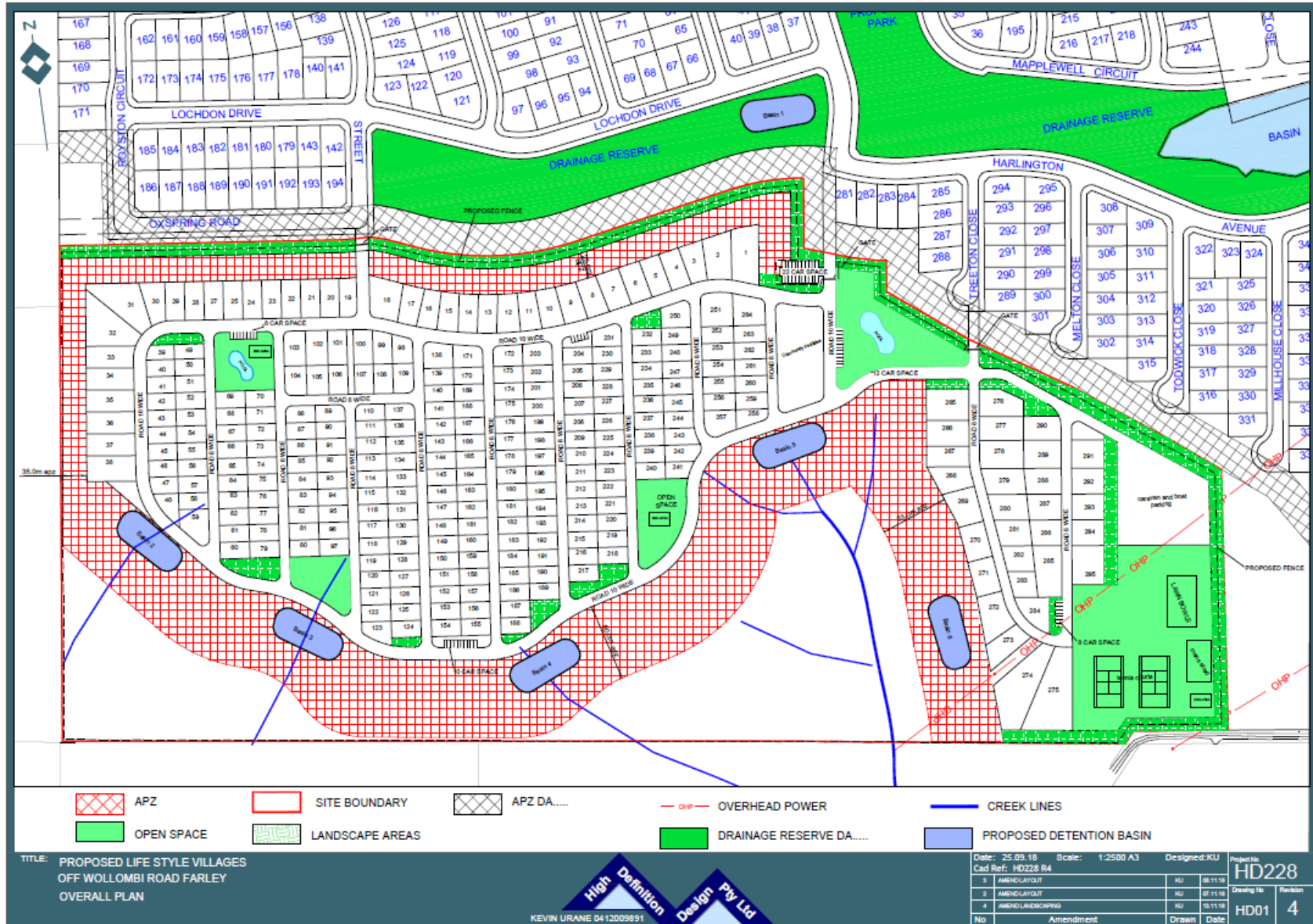
The site lies within MCC and therefore is assessed under a FDI rating of 100. Using the results from the Site Assessment (section 3-1 of this report) the deemed to satisfy APZ requirements for future buildings within the site was determined using Table A2.4 APZs for Residential Purposes in PBP 2006. Table 4-1 below details the required APZs between identified hazards and the manufactured homes refer to Figures 4-1 for required APZs.

Table 4-1: Recommended Asset Protection Zones

Direction from Site	Vegetation Classification within 140m	Effective Slope (within 100m)	Required APZ in accordance with PBP	APZs to be provided
North	Vegetation associated with a drainage line assessed as remnant vegetation in accordance with PBP 2006, followed by an approved subdivision.	Flat Land	10 m	25 m
East	Managed Land	N/A Managed Land	N/A	N/A – managed land
South	Open Forest	>5-10 degrees	35 m	60 m
West	Woodland	Cross-slope	10 m	25 m
East of lots 265 - 291	Open Forest	>5-10 degrees	35 m	53 m



Figure 4-1: Asset Protection Zone Map





4.2 Fuel Management of the APZ

A Fuel Management Plan is to incorporate the maintenance of the vegetation within the undeveloped areas of the site.

In choosing plants for landscaping consideration should be given to plants that pose properties, which help to protect buildings. If the plants themselves can be prevented from ignition, they can improve the defence of buildings by:

- Filtering out wind-driven burning debris and embers;
- Acting as barriers against radiation and flame; and
- Reducing wind forces.

Consequently landscaping of the site should consider the following:

- Priority given to retaining or planting species which have a low flammability and high moisture content;
- Priority given to retaining planting species which do not drop much litter in the bushfire season and which do not drop litter that persists as ground fuel; and
- Discontinuous or gaps in the vegetation to slow or break the progress of fires towards the sites.
 - The land surrounding each cabin, caravan and camp site, is managed as an IPA with limited canopy and manicured lawns.
 - It is recommended that a Fuel Management Plan is prepared for the site.



5 BUSHFIRE ATTACK ASSESSMENT

5.1 Dwelling Design & Construction

On 6 March 2009, Council of Standards approved the revised Australian Standard AS3959-2009 *Construction of buildings in bushfire prone areas* (AS3959-2009). This standard was published by Standards of Australia on 10 March 2009 and replaces the 1999 version of the document.

AS3959-2009 was formally adopted by the BCA as the national standard on 1 May 2010. The BCA 2010 references AS3959-2009 as the deemed-to-satisfy (DTS) solution for construction requirements in bush fire prone areas for NSW. In order to clarify the NSW development approval process, the RFS has prepared an addendum to *Planning for Bush Fire Protection* 2006 (PBP (RFS, 2006)) which replaces the existing Appendix C. The addendum aligns PBP (RFS, 2006) Appendix C with the BCA DTS separation distance requirements for the Bushfire Attack Levels (BAL) of AS3959-2009. It also maintains ember protection consistent with current requirements.

Building design and the materials used for construction of future dwellings should be chosen based on the information contained within AS3959-2009, and accordingly the designer / architect should be made aware of this recommendation. It may be necessary to have dwelling plans checked by the architect involved to ensure that the proposed dwellings meet the relevant Bushfire Attack Level (BAL) as detailed in AS3959-2009.

The determinations of the appropriate BAL are based upon parameters such as weather modelling, fire-line intensity, flame length calculations, as well as vegetation and fuel load analysis. The determination of the construction level is derived by assessing the:

- Relevant FDI = 100
- Flame temperature
- Slope
- Vegetation classification; and
- Building location.

The following BAL, based on heat flux exposure thresholds, are used in the standard:

- (a) **BAL – LOW** The risk is considered to be **VERY LOW**

There is insufficient risk to warrant any specific construction requirements but there are still some risks.

- (b) **BAL – 12.5** The risk is considered to be **LOW**



There is a risk of ember attack.

The construction elements are expected to be exposed to a heat flux not greater than 12.5 kW/m².

(c) **BAL – 19** The risk is considered to be **MODERATE**

There is a risk of ember attack and burning debris ignited by wind borne embers and a likelihood of exposure to radiant heat.

The construction elements are expected to be exposed to a heat flux not greater than 19 kW/m².

(d) **BAL-29** The risk is considered to be **HIGH**

There is an increased risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to an increased level of radiant heat.

The construction elements are expected to be exposed to a heat flux no greater than 29 kW/m².

(e) **BAL-40** The risk is considered to be **VERY HIGH**

There is much increased risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to a high level of radiant heat and some likelihood of direct exposure to flames from the fire front.

The construction elements are expected to be exposed to a heat flux no greater than 40 kW/m².

(f) **BAL-FZ** The risk is considered to be **EXTREME**

There is an extremely high risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to an extreme level of radiant heat and direct exposure to flames from the fire front.

The construction elements are expected to be exposed to a heat flux greater than 40 kW/m².



5.2 Determination of Bushfire Attack Levels

Using a FDI of 100, the information relating to vegetation, slope and according to Table 2.4.2 of AS3959-2009 and or the RFS Bushfire Attack Assessor (RFS and Addendum: Appendix 3 of PBP (RFS, 2006), Table 5-1 below illustrates the required BALs within that any proposed manufactured home and buildings will need to be constructed to and Figures 5-1 illustrates the BALs within the site.

Table 5-1: Determination of BALs within the Site

Vegetation Type	Average Slope of Land (degrees)	Separation Distance	Bushfire Attack Level (BAL)	Construction Section
Open Forest	Downslope >5-10 degrees	39-<53m	BAL-29	Sect 3 & 7 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
		53-<69m	BAL- 19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
		69-<100m	BAL-12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP
		>100m	BAL-LOW	No specific building requirements in accordance with AS3959-2009
Woodland	Cross-slope	16-<24m	BAL-29	Sect 3 & 7 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
		24-<33m	BAL- 19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
		33-<100m	BAL-12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP



Vegetation Type	Average Slope of Land (degrees)	Separation Distance	Bushfire Attack Level (BAL)	Construction Section
		>100m	BAL-LOW	No specific building requirements in accordance with AS3959-2009
Remnant vegetation	Flat	11-<16m	BAL-29	Sect 3 & 7 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
		16-<23m	BAL- 19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
		23-<100m	BAL-12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP
		>100m	BAL-LOW	No specific building requirements in accordance with AS3959-2009

6 PROPERTY ACCESS / EGRESS & PUBLIC ROADS

6.1 Capacity of Public Roads

In the event of a bush fire emergency the public road servicing the subject land has the capacity to handle the increased volume of traffic associated with the development.

All vehicle access to the site would be provided via Lochan Drive that allows for connection with the greater road network.

6.2 Internal Roads

The proposed internal road has direct access with Binder Road which connects to Nelson Bay Road which are Public Roads. Table 6.1 below details either the performance criteria or acceptable solutions of the internal road in accordance with PBP.

Table 6-1: Internal Roads Compliance with PBP (RFS, 2006)

Performance Criteria	Acceptable solutions	Compliance with PBP (RFS, 2006)
The intent may be achieved where:		
internal road widths and design enable safe access for emergency services and allow crews to work with equipment about the vehicle	Internal roads are two-wheel drive, sealed, all-weather roads;	Complies with the acceptable solution
	Internal perimeter roads are provided with at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb) and shoulders on each side, allowing traffic to pass in opposite directions;	A perimeter road does not occur internally around the entire development, as external road bounds the site on three sides. These roads satisfy this acceptable solution for the sites north, south and western boundaries. Land to the east is not considered to be a bushfire threat due to other rural residential developments.
	Roads are through roads. Dead end roads are not more than 200 metres in length from a through road, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end;	Complies - No dead end roads greater than 100m occurs.

Performance Criteria	Acceptable solutions	Compliance with PBP (RFS, 2006)
	Traffic management devices are constructed to facilitate access by emergency services vehicles	Complies - Traffic management devices will be constructed to facilitate access by emergency services vehicles
	A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches, is provided	Complies - A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches, is provided
	Curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress	Complies – the design of the road will ensure that all curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress
	The minimum distance between inner and outer curves is six metres	Complies - the design of the road will ensure that minimum distance between inner and outer curves is six metres
	Maximum grades do not exceed 15 degrees and average grades are not more than 10 degrees	Complies – the design of the road will ensure that grades do not exceed 15 degrees and average grades are not more than 10 degrees
	Crossfall of the pavement is not more than 10 degrees	Complies – the design of the road will ensure crossfall of the pavement is not more than 10 degrees
	Roads do not traverse through a wetland or other land potentially subject to periodic inundation (other than flood or storm surge)	Complies – the design of the road will ensure that proposed roads do not traverse through a wetland or other land potentially subject to periodic inundation (other than flood or storm surge)
	Roads are clearly sign-posted and bridges clearly indicate load ratings	Complies – roads will be clearly signposted
Roads that are clearly signposted (with easily distinguishable names) and buildings / properties are clearly	Public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire	The road is 10 m wide and is designed to ensure accessibility to reticulated water for fire suppression.

Performance Criteria	Acceptable solutions	Compliance with PBP (RFS, 2006)
numbered.	suppression. Public roads between 6.5 metres and 8 metres wide are No Parking on one side with the services (hydrants) located on this side to ensure accessibility to reticulated water for fire suppression.	
There is clear access to reticulated water supply	Public roads up to 6.5 metres wide to provide parking in parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression.	The road is 10 m wide and is designed to ensure accessibility to reticulated water for fire suppression

Given the information in the above table it is considered that the proposed road layout is able to provide safe operational access for emergency services personnel in suppressing a bush fire, while residents accessing or egressing an area. The internal road layout connects directly with Lochan Drive which connects to the greater road network and provides evacuation either to the east or north. The Emergency Response or an Evacuation Plan that has been recommended to be submitted as part of the conditions of consent for the development application approval and will be prepared consistent with the RFS document *A Guide to Developing a Bushfire Evacuation Plan* (2004) that will address safe evacuation and refuges within the site.



7 SERVICES

7.1 Water Supply & Pressure

The subject land is serviced by reticulated water and will extend into the development area. The proposed internal fire hydrant spacing, sizing and pressures are to comply with AS 2419.1-2005 Fire Hydrant Installations – System design, installation and commissioning (2005).

7.2 Gas & Electricity Supply

Any gas services are to be installed and maintained in accordance with AS 1586. The relief valves of any gas cylinder located near the dwelling will be directed away from the buildings and away from combustible materials.

8



8 EMERGENCY & EVACUATION MANAGEMENT PLAN

The assessment does not provide an Emergency Response or an Evacuation Plan. These will be submitted for approval prior to the occupation of buildings and will be prepared consistent with the RFS document *A Guide to Developing a Bushfire Evacuation Plan* (2004). This report will address the safe refuge area within the community amenities within the site.



9 AIMS & OBJECTIVES OF PLANNING FOR BUSHFIRE PROTECTION

The aim of PBP (RFS, 2006) is to use the NSW development assessment system to provide for the protection of human life and to minimize impacts on property from the threat of bushfire, while having due regard to development potential, on site amenity and protection of the environment.

More specifically the objectives are to:

- Afford occupants of any building adequate protection from exposure to bush fire;
- Provide for a defensible space to be located around buildings;
- Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;
- Ensure that safe operational access and egress for emergency personnel and residents is available
- Provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the APZ; and
- Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bush fire-fighting).

The following comments are provided in relation to satisfying the objectives of PBP (RFS, 2006).

9.1 Objective 1

(i) *Afford occupants of any building adequate protection from exposure to bush fire*

Measures have been identified within this assessment that will afford occupants adequate protection. APZs will be provided as shown in section 4 of this report.

9.2 Objective 2

(ii) *Provide for a defensible space to be located around buildings*

Permanent APZ of minimum widths as shown in Table 4-1 and displayed on Figure 4-1 should be implemented. A Fuel Management Plan will be prepared for the site that details the maintenance of landscaping within the site.



9.3 Objective 3

- (iii) *Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition*

The recommended APZs, combined with other BFPMs such as, landscaping of the site and water supply will prevent flame contact and material ignition.

9.4 Objective 4

- (iv) *Ensure that safe operational access and egress for emergency personnel and residents is available*

The internal road layout connects directly with Lochan Drive which connects to the greater road network and provides evacuation either to the east or north. All internal roads are of a width and design to ensure safe operational access and egress for emergency personnel and residents.

9.5 Objective 5

- (v) *Provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the APZ*

A Fuel Management Plan will be prepared for the site, detailing the maintenance of the required landscaping within the site.

9.6 Objective 6

- (vi) *Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bush fire-fighting)*

It is expected that water mains will be extended into the site. To facilitate quick and efficient action by the Fire Brigade / Rural Fire Service upon arrival, it is recommended that all necessary connections / pumps etc be clearly marked and visible, and in good working order.

10

10 CONCLUSION & RECOMMENDATIONS

This assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to the proposal. Recommendations are provided with regard to fuel management, access, provision of emergency services, building protection and construction standards to facilitate an acceptable level of bushfire protection. In summary, the following is recommended to enable the proposal to meet aims and objectives of PBP:

- Permanent APZ of minimum widths as shown in Table 4-1 and displayed on Figure 4-1 should be implemented;
- A Monitoring and Fuel Management Plan should be prepared by detailing the maintenance of the APZs and landscaping within the site;
- All future habitable buildings are required to comply with AS3969-2009 and be constructed to the relevant BAL as determined in Section 5 of this report;
- The site is connected to reticulated water. The development will be linked to the water pressure mains and the proposed internal fire hydrant spacing, sizing and pressures are to comply with AS 2419.1-2005 Fire Hydrant Installations – System design, installation and commissioning (2005); and
- An Emergency Response and Evacuation Plan is to be prepared for the site and is recommended

Provided the recommendations stated above are implemented in full Firebird ecoSultants Pty Ltd is of the opinion that the proposed will meet the aims and objectives of PBP (RFS, 2006).



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APPENDIX A APPENDIX B

CONCEPT PLAN



APPENDIX B