

Moojebing Heights
Trimmer Road
Shire of Katanning

Fire Management Plan

Prepared for

Farcrest Investments Pty Ltd

By

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1.0 Introduction

This Fire Management Plan is prepared for the Moojebing Heights Estate, Trimmer Road Katanning.

The subject land is part of the Moojebing townsite which is located on the Great Southern Railway between Woodanilling and Katanning (see Figure 1). The subject land is situated within the Shire of Katanning.

This Fire Management Plan has been prepared in consultation with the Shire of Katanning and FESA to provide:-

- The interim fire measures until such time as the site is developed; and
- A long term framework for the provision of fire services to the subdivision.

The aim of this plan is to set down the responsibilities of all parties and the measures that need to be taken that will reduce the impact of fires both within the subject land and on the adjoining or nearby land. The primary objective of this Plan is to ensure the protection of Life, then Property and Environment (bushland) as the Estate develops.

Nothing in this Plan prevents the Council from requiring additional fire management measures to be implemented on any individual property where it is deemed that such measures are required for the ongoing fire safety of the subdivision.

Figure 1
Location Plan



2.0 Description of the Area

2.1 Existing Conditions

The subject land is vacant and has traditionally been used for general farming (cropping and grazing). It comprises of fifteen existing allotments as shown in Figure 2.

The site is located approximately 12 km from Katanning on Trimmer Road. Trimmer Road which is a secondary rural road connecting to the Great Southern Highway on the edge of the Katanning townsite. Trimmer Road is sealed from the highway to the railway line near to the southern boundary of the subject land.

On the southern side of the railway line Trimmer Road intersects with Shenton Road which provides access to the Woodanilling townsite. This is the normal connecting route between Woodanilling and Katanning.

The surrounding land has generally been developed for general farming purposes while the land to the south is a conservation reserve which borders onto the Boyerine Creek.

The locality is described as having a Mediterranean type climate, experiencing cool winters and long, hot summers. The summer months are characterised by hot, dry winds from the east and south-east. Winter months are characterised by cold fronts that generate in the Southern Ocean. Winds tend to come from the west and north-west under the influence of frontal activity.

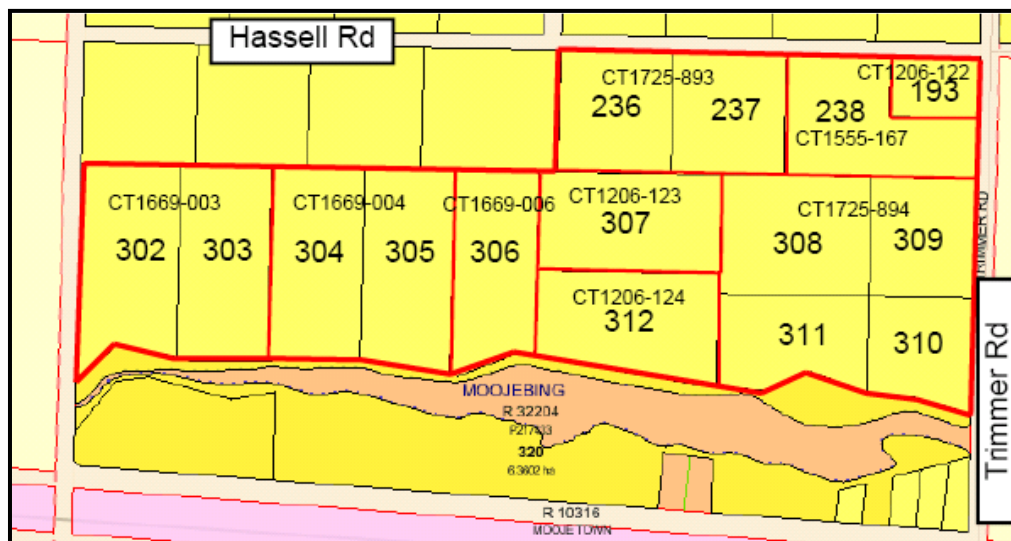
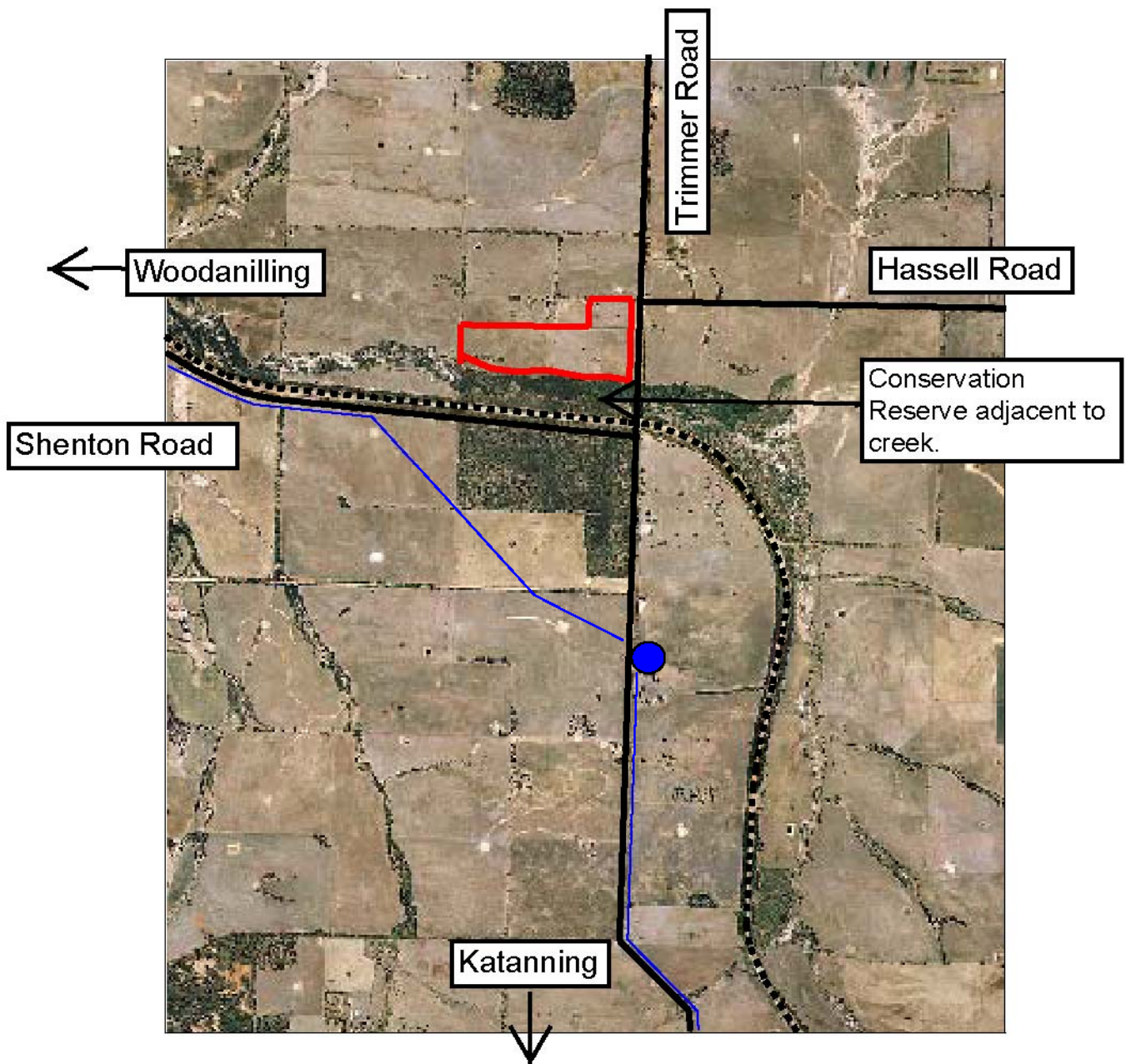


Figure 2 – Existing Allotments

The average annual rainfall for the area is estimated to be 450mm with an average of 99 rain days per year. The subject land is characterised by gently undulating rising from the creek line in the south. The slopes on the subject land are less than ten degrees as shown in Figure 3.

Figure 3
Looking from Wake Road
south towards the creek









-  Subject Land
-  Railway Line
-  Water Pipeline
-  Water Supply Point Standpipe

FIGURE 4
Local Features



The subject land is not serviced by reticulated water supply, and there are no fire hydrants.

To the south of the site is the Great Southern Town Water Supply Scheme. This is an above ground pipeline which runs parallel to the railway line. A standpipe is located on Trimmer Road approximately 2km south of the subject land.

These features are shown in Figure 4.

2.2 Proposed Development

It is proposed to develop the site for 13 rural residential lots varying size from 1.6110 hectares to 2.5845 hectares.

This is effectively a resubdivision of the existing allotments and providing access via a new subdivision road. The proposed subdivision plan is shown in Figure 5.

The Western Australian Planning Commission approved this subdivision (Ref No 130758) on the 21st June 2006 and Condition 5 of the approval states that:

A Fire Management Plan being prepared and implemented to the specifications of the local government and the Fire and Emergency Services Authority. (Local Government)

This Plan has been prepared to satisfy the above requirement and to ensure that appropriate fire management measures are implemented in the subdivision for the long term protection of residents.

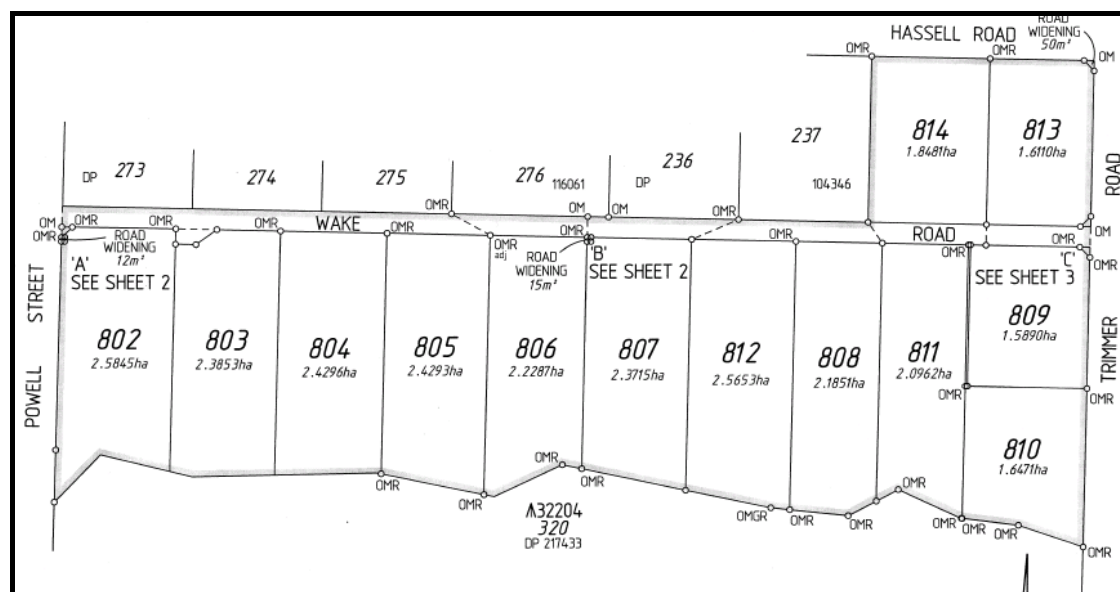


Figure 5 – Proposed Subdivision

3.0 Bush Fire Hazard Assessment

The principle type of fire which is relevant to the subject land being is a bush fire ie grass/scrub fire. Fires within dwellings (structural fires) also pose a threat. The most likely cause of fire will be from human activity (both accidental and deliberate).

Bush fire behaviour will be determined by five key factors:-

- Fuel type;
- Fuel quantity;
- Wind speed;
- Slope; and
- Weather conditions.

An analysis of the bushfire hazard should take into account the following factors:

- Frequency of the Fire Season;
- Length of the Annual Fire Season;
- Steepness of the Site;
- Vegetation Characteristics;
- Vegetation – Annual Driest State;
- Local Fire History;
- Development Density;
- Access to the Area; and
- Effectiveness of the Fire Fighting Service.

The vegetation on and adjoining the site is one of the most important factors. The level of fire risk is directly related to the type and extent (area) of vegetation and its characteristics.

The subject land is an open grassland which has been traditionally farmed by grazing or cropping. As shown in Figure 6, farming properties in the locality will often be devoid of vegetation following grazing by stock.



Figure 6 – Grazing land opposite the subject land.

Planning for Bushfire Protection (FESA 2001) lists the categories of bush fire hazard and defines a “low” hazard as including areas devoid of native vegetation; or areas used for pasture and cropping, where the slope is less than ten degrees.

Table 1 Vegetation Rating

Vegetation	Distance from Hazard							
	<15m		15m-40m		>40m-100m		>100m	
	>10°	<10°	>10°	<10°	>10°	<10°	>10°	<10°
Forest	Extreme	Extreme	High	High	Medium	Medium	Low	Low
Woodland	Extreme	Extreme	High	High	Medium	Low	Low	Low
Tall Shrubs	Extreme	Extreme	High	High	Medium	Low	Low	Low
Low Shrubs	High	Medium	Medium	Low	Low	Low	Low	Low
Open Woodland / shrubland.	Medium	Medium	Low	Low	Low	Low	Low	Low
Grassland	Medium	Low	Low	Low	Low	Low	Low	Low

Source – Planning for Bush Fire Protection Table 4.

Table 1 shows the relationship between vegetation classes and the hazard rating as a function of the separation distance to the development. It shows that that grazing land usually has a low fire hazard in comparison to other vegetation classes, where buildings are located more than 15 metres from the paddock areas. However where grasslands are not managed and the length of “cured” grass increases, the level of the fire hazard and risk also increases.

The adjoining Nature Reserve comprises of vegetation which is predominantly Sheoaks (*Casuarina*) with a degraded understory which is heavily infested by weeds (refer to Figure 7). The trees are generally less than 10 metres high and although the area of leaves is much reduced compared to other forest species, the foliage cover is still more than 30%. Australian Standard AS 3959 classifies this as a Class A “Forest” vegetation class which has an ‘extreme’ hazard rating.



Figure 7 – Moojebing Conservation Reserve adjoining the site

Table 2 provides an analysis of the overall fire hazard in the area having regard to the other previously nominated factors. This shows that despite the site comprising of grassland vegetation, it still has a medium to high fire risk.

In this environment houses should be constructed in accordance with Australian Standard AS 3959 – Construction of Buildings in Bush Fire Prone Areas (1999).

Table 2 – Hazard Assessment Rating

	FACTOR	HAZARD RATING	HAZARD SCORE	SUBJECT LAND
1	Frequency of Fire Season Every year or two Two to ten years Ten years +	VH M VL	5 3 1	5
2	Length of Annual Fire Season Five months or more Four months Three months Two months One month	VH H M VL VL	5 4 3 2 1	5
3	Slope Steepness Very steep > 15° (<30%) Steep 11° - 15° (21% - 30%) Moderate (rolling hills) 7° - 10° (13% - 20%) Gentle (undulating) 3° - 6° (4% - 12%) Flat 0° - 2° (0% - 2%)	VH H M L VL	10 8 6 5 4	5
4	Vegetation Forest; OR Very heavy > 24 TPH Heavy 20 – 24 TPH Medium 15 – 19 TPH Sparse 10 – 14 TPH V.Sparse < 9 TPH Grassland, scrub Tall and dense Medium dense Short dense Medium Sparse	VH H H L VL VH H H L VL	5 4 3 2 1 5 4 3 2 1	4
5	Vegetation – Annual Driest State Forest Dry Medium Green Grassland 100% cured Partially cured 50% Total green fuel	VH M VL VH M VL	5 3 1 5 3 1	5

	FACTOR	HAZARD RATING	HAZARD SCORE	SUBJECT LAND
6	Fire History Very frequent outbreaks (several every year) Frequent (every 1 – 2 years) Occasional (every 3 – 5 years) Rarely (every 5 – 10 years) None recorded	VH H M L VL	5 4 3 2 1	3
7	Development Density High Homes on interface with bush or heavy grass areas, one home per 0.1 to 1.0 ha Moderate One home per 2 – 10 ha Low One home per 10 – 50 ha	H M L	4 3 2	3
8	Access to the Area Very poor – one direction road 4WD Poor – one direction road 2WD Fair – two direction road single width 2WD Good Excellent – two direction road double width 2WD	VH H M L VL	5 4 3 2 1	2
9	Effectiveness of Fire Fighting Service Ineffective, no close brigade, no access, no water Effective fire brigade, but some distance from site Effective well equipped brigade, in close proximity, good fire access tracks, available water	VH M VL	5 3 1	3
	Total Points			35

Legend

Total Points	Fire Hazard Rating
43-50	Very High (VH)
35-42	High (H)
26-34	Moderate (M)
18-25	Low (L)
10-17	Very Low (VL)

4.0 Fire Prevention Strategies

4.1 Hazard Management

From the previous examination the following key fire management issues have been identified relevant to the proposed subdivision:

- a) Fires can be expected to occur anytime during the period November to May each year when fuels have dried out.
- b) Vegetation on the site consists of grassland that unless slashed or grazed is susceptible to ignition and will become a fire hazard.
- c) The adjoining reserve contains areas of remnant bushland which is major fire hazard and which need to be separated from development on the site.
- d) The site is not serviced by reticulated water which means that residents must rely upon alternative means of supplies.
- e) The development density is only moderate but with the likelihood of absentee landowners. Each property should have appropriate boundary firebreaks.
- f) Although the site is zoned as 'Rural' in Council's Town Planning Scheme the nature of the development is more akin to a special rural estate which would normally have more specific development conditions.
- g) Houses should be constructed in accordance with Australian Standard AS 3959 – Construction of Buildings in Bush Fire Prone Areas (1999).

The proposed fire management measures are shown on the attached Fire Management Plan. These have been prepared having regard to:

- The likely increased fire threat occurring in vacant or un-managed small rural lots;
- The previously nominated fire management issues;
- The intended subdivision design and provision of services; and
- Accepted fire management measures as contained in Planning for Bushfire Protection.

The proposed measures for ensuring appropriate fire protection within the subject land are:-

1. Provision of a 100m wide hazard separation zone from the adjoining Reserve 32204. This should be both a low fuel zone and building restriction area. Any pasture in this area should be grazed or slashed.
2. The implementation of the building exclusion area will need specific measures as no planning approval for a dwelling is normally required. To give this provision statutory weight, the Fire Management Plan will need to be formally adopted by Council under Section 33 of the Bush Fires Act.
3. That all lots provide a 2.5m wide (bare mineral earth) firebreak around the boundaries of each lot.
4. A 20m low fuel zone is to be provided around each house.
5. Each dwelling shall provide 10,000L of water dedicated for fire fighting purposes with a suitable coupling and non electric fire fighting pump.
6. Compliance with annual Council's Fire Notice
7. A Notification should also be placed on the Certificates of Title indicating that there is a Fire Management Plan applicable to the property.
8. Houses should be constructed having regard to Australian Standard AS 3959 – Construction of Buildings in Bush Fire Prone Areas (1999).

4.2 Low Fuel Zones

Low fuel zones around buildings provide access for fire personnel during fire operations, and to reduce the effect of radiated heat from fires on buildings. A minimum area of 20 metres around all buildings and around electricity boxes and supply points should be kept free of bush fire hazards. These areas need to have the level of ground fuel minimised and suspended fuel eliminated. While this does not require the removal of trees, branches within 10 metres of the buildings should be removed and lower branches within the zone should also be trimmed. Flammable hazards such as boxes, crates, firewood, loose timber, tyres etc should be removed from the low fuel zone.

4.3 Hazard Separation Zone

A 100m wide hazard separation zone is proposed along the southern boundary of the subdivision. In this area:

- No buildings will be permitted; and
- The land is to be maintained in a low fuel condition during the fire season.

The purpose of introducing and maintaining hazard separation zone is to reduce the impact of a fire coming from the neighbouring conservation reserve. It will assist in restricting the spread of a crown fire which enters or spots into the property and in reducing the spread / speed of ground fire

4.4 Firebreak Notice Requirements

The Council's Annual Firebreak Notice currently contains the gazetted fire protection measures which apply to private land. All Fire Management measures are to be implemented by the commencement of the fire season and maintained throughout the defined fire season. This is currently between the 1st November and the 30th April 2008.

The Regulated Burning Times are:-

Restricted Period (permit required to burn)

- 1st October to 31st October inclusive; and
- 15th February to 30th April inclusive.

Prohibited Period (no burning allowed)

- 1st November to 14th February inclusive.

The dates given above are subject to annual approval and may be varied during the fire season depending upon conditions.

Those sections of the 2007/2008 Notice, which are would normally apply to the land are:-

Rural Land and Special Rural land outside of the townsite boundary.

- (a) A 10 metre wide firebreak around any dwelling; or
- (b) A 2.5 metre wide boundary firebreak (not compulsory).

It is noted that Special Rural Land inside the townsite boundary must have a 2.5 metre wide firebreak cleared of all flammable material immediately inside and along all internal boundaries.

4.5 Access and Firebreak System

The purpose of the Firebreak System, is to provide continuing access along a defined alignment for Fire Fighting Appliances in order to contain and suppress fire. These firebreaks have a twofold function being:-

- firstly they form a barrier against low intensity fires and assist in the suppression of fires even under severe weather conditions; and
- secondly they form a static defence line from which brigades can mount an attack on fires and are an ideal base from which to back burn.

All lots will require boundary firebreaks being at least 2.5 metres wide. These are to be bare mineral earth and either sprayed or cultivated to remove vegetation.

A strategic firebreak will be provided along the inside of the southern boundary of the subdivision. The strategic firebreak is to be constructed of durable materials, to allow the passage of a 2.4 fire appliance vehicle and other vehicles in an emergency. The strategic firebreak should be constructed so as to minimise removal of existing vegetation. Gates of at least 4.2m are to be provided in each fence line to provide access along the firebreak. The strategic firebreak is to be maintained by the individual landowners.

The strategic firebreak will then extend northwards along the unconstructed road reserve (Powell Street) linking in to the internal subdivision road (Wake Road) as a fire accessway. It is also proposed to extend this further north along Powell Street, so that it can also link into Hassell Road. The fire accessway is to be constructed with a minimum 4.0 m wide compacted gravel surface.

4.6 Water Supply

Provision of and maintenance of reliable water supplies is essential in bushfire control and a suitable water supply must be readily available and accessible to Fire Appliances at all times.

Each residence is required to have a static water supply for fire fighting purposes. This is to be a minimum of 10,000 litres and can either be a separate tank or part of the domestic water supply. This can be sourced from either roof catchment or from domestic water bores.

The water supply is to be fitted with 38mm female cam-lock coupling (as shown in Figure 8) with full flow valves.¹ These fittings are to be positioned at the base of the tank so that the total tank capacity is available for fire fighting purposes at any time.

Figure 8 “cam-lock” coupling

Access shall be permitted to these domestic water supplies for emergency fire fighting purposes only. Adequate hard standing access must also be provided adjacent to such connection/s and must be readily identifiable.

In addition to the static water supply each dwelling must provide a non electric fire fighting pump (normally 5.5hp) with sufficient hose to protect the dwelling and surrounding low fuel zone.



¹ FESA (2004) – Static Water Supplies and Hard Suction Connections

The standpipe located in Trimmer Road also provides an accessible water supply point for the refilling of fire appliances. The Water Corporation has confirmed that there is up to 50m of head at this pipe which should be sufficient to fill a 1,000L Fast Attack Unit in between two and four minutes.

4.7 Construction Standards

The subject land has been defined as having a high bush fire hazard. Dwellings are to be constructed having regard to Australian Standard AS 3959 – 1991 “Construction of Buildings in Bush Fire Prone Areas”.

The standards contain different construction measures to areas of medium, high and extreme bush fire hazard.

Further information regarding these standards can be obtained from Council’s Building Department or from FESA.

4.8 Planning For Bushfire Protection (2001)

FESA and the Department for Planning and Infrastructure have developed Planning for Bushfire Protection (2001) as a protection planning tool for the design and approval of subdivisions.

This Plan has been prepared having regard to this document while noting that the design and development of the subject land has occurred prior to the final approval of Planning for Bushfire Protection (2001). The subdivision has incorporated where possible the relevant provisions of the guidelines and these are summarised in Appendix 1.

4.9 Advice to Purchasers

All prospective purchasers must be made aware of the fire management issues, measures and responsibilities associated with the subdivision. This can be done by providing:-

- A notification placed upon the Certificate of Title pursuant to Section 70A of the Transfer of Land Act advising landowners of the Fire Management Plan.
- A copy Fire Management Plan to purchasers; and
- A copy of the attached Information Sheet.

Moojebing Heights Estate

Fire Management Information Sheet



RESTRICTED	PROHIBITED	RESTRICTED
Permit Required		Permit Required
1 October to 31 October	1 November to 14 February	15 February to 30 April

Dates may change annually

All fire prevention measures are to be installed on or before 1st November and maintained until the 30th April.

Long-term precautions

- Provide boundary firebreaks and a 100m hazard separation zone for lots backing onto the Moojebing Nature Reserve.
- Provide 10,000L emergency water supply for fire fighting with non electric pump and hose.
- Develop a 20 metre low fuel zone around the dwelling.
- Provide a strategic fire break along the southern boundary of the estate with gates on each boundary.
- Discuss fire prevention with your neighbours - is your locality safe?
- Discuss your preparedness with your neighbours.

Autumn and winter (May-August)

- Tree pruning around the dwelling. Remove lower branches and check that power lines are clear.
- Reduce fuel levels around the house. Clear long grass, leaves, twigs and flammable shrubs.
- Overhaul the emergency water pump, fixtures and hoses.
- Store petrol and other fuels in a shed away from the home.
- Make sure your personal and home protection equipment is in good order.
- Make sure everyone in the family knows what to do in a fire.
- Prepare an emergency kit.

Spring (September-November)

- Prepare boundary firebreaks.
- Carry out maintenance of strategic firebreak.
- Reduce grass levels within the hazard separation, extending 100m from the southern boundary of the Estate.
- Move woodpile and stacked timber away from the house.
- Keep the grass short on the remainder of the property.
- Prune the dead material from the shrubs in the building protection zone.
- Clean out gutters, remove debris from roof.

Early summer (December onwards)

- Water lawns, trees and shrubs near the house to keep them green.
- Re-check personal and home protection gear, screens, water supplies and gutters.
- Keep yards as free as possible from combustible materials, fuels and debris.
- Avoid storing any felled trees and rubbish on your property.
- Keep compost heaps or piles of grass clippings away from buildings.
- Remove dead shrubs and avoid long grasses, bracken or neglected masses of tall quick-curing annuals.
- Decide whether to stay and defend your property in the event of a fire or go early

FURTHER INFORMATION regarding property maintenance and fire safety is available from the FESA web site (www.fesa.wa.gov.au).

(SOURCE – FESA Homeowner's Bush Fire Survival Manual).

5.0 Conclusion

This Fire Management Plan has identified the potential fire risks associated with the estate. While these might not be any more severe than for other parts of the Shire, it is important that landowners take responsible action to protect their property.

The recommended fire management strategies are designed to ensure that appropriate measures can be implemented to provide appropriate bushfire safety. Ultimately this becomes the responsibility of the landowner in the annual management of their property and dwelling.

Within this Plan the following

Developer's Responsibilities

The current landowner who is developing the subdivision is responsible for:-

- The management of fire risk on the undeveloped site;
- Development of the fire accessway and strategic fire break system; and
- Preparation of this report.

Property Owner's Responsibilities

The new owners of the individual lots are responsible for:-

- The maintenance of fire breaks;
- The maintenance of a low fuel zone around the dwelling;
- The maintenance of a low fuel zone within 100m of the southern boundary of the Estate (where applicable);
- To conduct annual fire protection maintenance as indicated on the attached information sheet;
- To provide building protection in terms of low fuel zones, building design and construction;
- To provide and maintain a static water supply of a minimum of 10,000L for fire fighting;
- To provide and maintain a non electric fire pump, fittings and hose; and
- To ensure a reduction of any excessive fuel build up on lots.

Local Authority's Responsibility

The Shire of Katanning is responsible for:-

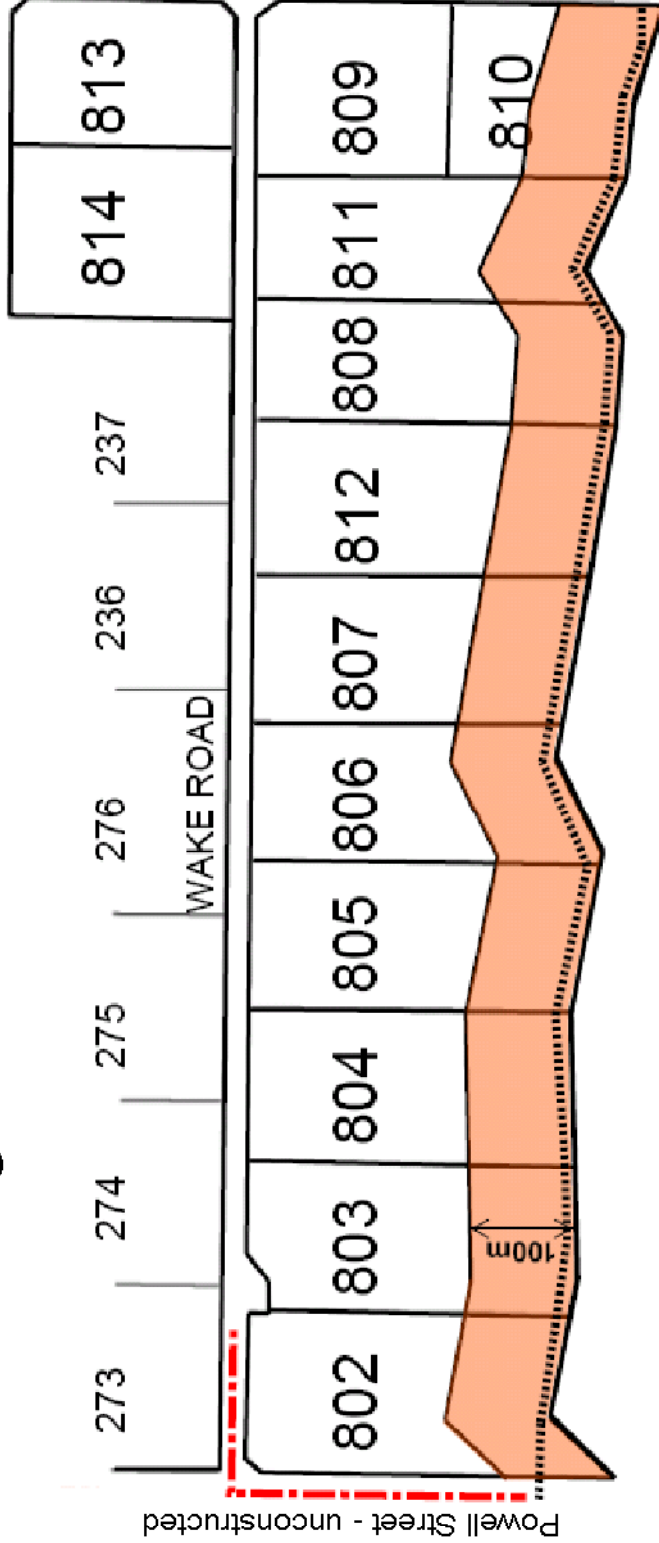
- Developing and maintaining Regional fire fighting facilities throughout the Shire;
- Ensuring compliance with its Annual Fire Break Notice; and
-
- Encouraging membership of local volunteer brigades and providing assistance with training.

All relevant measures required under this Plan shall be implemented by the 1st November each year (or other such date as stipulated in the annual Firebreak Notice) and maintained throughout the fire season.

MOOJEBING HEIGHTS Fire Management Plan

**IN THE EVENT OF FIRE
DIAL 000**

- LEGEND**
- Hazard separation zone 
 - Fire accessway 
 - Strategic fire break 



All fire protection measures are to be implemented by the 1st November and maintained throughout the fire season. Dates may change annually, please refer to Council's Fire Notice

CONTACTS

Development queries should be directed to the Shire of Katanning - 98 214 200

Moojebing Bush Fire Brigade
FCO G Poett 98 214 870



NOTES

- 1 The hazard separation zone is to provide a safety buffer from the adjoining nature reserve. No buildings are permitted within the hazard separation zone. The area is to be grazed or slashed and maintained throughout the fire season as a low fuel zone.
- 2 The strategic firebreak is to be maintained by individual land owners to allow access for fire fighting. This includes the maintenance of gates on each boundary. On Lot 802 the firebreak will be positioned to avoid existing vegetation in the SW corner. On Lot 810 the firebreak access to Trimmer Road will be offset from the southern boundary due to slope of the road shoulder.
- 3 The fire accessway is to be constructed with a 4m wide compacted gravel surface to allow access by fire vehicles.
- 4 All lots are to have a 2.5m wide firebreak around all boundaries.
- 5 On the western boundary of Lot 809 there is a 2m wide portion of Lot 810 extending to Wake Road. The power supply for Lot 810 is located within this 2m wide strip of land and care must be taken with the construction of any fire break.
- 6 All dwellings shall be provided with a static water supply for fire fighting of minimum volume 10,000L. This shall be fitted with appropriate couplings and shall either be a separate tank or may be included as part of the domestic water supply provided that the system is constructed so as to guarantee the required volume for fire fighting. In addition each dwelling shall have a non electric fire fighting pump and sufficient hose to protect the dwelling and low fuel zone.
- 7 All properties shall maintain a 20m wide low fuel zone around the dwelling.
- 8 All dwellings should be constructed in accordance with Australian Standard 3959 - Construction of Buildings in Bushfire Prone Areas

Appendix 1

PC	Performance Criteria	AS	Acceptable Solution	Comment
	<i>Specified outcomes required for protection from bush fires/wildfires.</i>		<i>Acceptable means of complying with the requirements of a corresponding performance criterion.</i>	
3.1	Information Requirements			
3.1.1	Rezoning, subdivision & development proposals	(i)	Prepare fire hazard report addressing <ul style="list-style-type: none"> • bush fire hazard and land suitability assessment • subdivision and development design in terms of access, fire services access, hazard separation and building protection • water supply • building siting • maps and plans of fire protection measures Prepare a fire management plan.	<i>Complied with by the preparation of this report and subsequent preparation of a Fire Management Plan for the estate.</i>
3.2	Fire Suppression Response			
3.2.1	Response requirement	(i)	Developments to address both structural and bush fire threats	<i>The report focuses upon bush fire threats. The local brigade has no structural fire capacity which would require assistance from the Katanning Fire & Rescue.</i>
		(ii)	5 to 10 minute response time between the fire station and subdivision.	<i>The subject land is midway between Katanning and Woodanilling with a 10 to 15 minute response from both centres.</i>
3.3	Subdivision & Development Design			
3.3.1	Incorporate fire protection features commensurate with the level of bush fire hazard.	(i)	Medium and high hazard areas to address <ul style="list-style-type: none"> • Safe access for residents • Safe access for fire services • Hazard separation zones • Building protection zones 	<i>Appropriate design measures have been included ie:</i> <ul style="list-style-type: none"> • <i>Safe access for residents by the construction of Wake Road;</i> • <i>Safe access for fire services by the construction of the strategic firebreak along the southern boundary of the Estate linking to the fire accessway along Powell Street which links back into Wake Road;</i> • <i>Provision of a 100 m wide hazard separation zone along the southern boundary of the Estate; and</i> • <i>Provision of a 20m wide building protection zone around each dwelling.</i>

PC	Performance Criteria	AS	Acceptable Solution	Comment
		(ii)	Habitable buildings not permitted in areas of extreme hazard	<i>There are no areas within the subdivision with an 'extreme' hazard rating.</i>
3.4	Access			
3.4.1	Safe two way access and egress to be available to residents in bush fire prone areas.	(i)	2 different access routes are required.	<i>The site has means of access from the north, south and east.</i> <i>Internally the primary access is from Wake Road with secondary access via the strategic firebreak along the southern boundary.</i>
		(ii)	Development is to be separated from an area of extreme hazard by a public road on the perimeter of the property.	<i>Adjoining conservation reserve along the creek can be defined as an area of extreme hazard. While no perimeter subdivision road has been provided a trafficable strategic firebreak and a 100m hazard separation zone have been provided.</i>
3.4.2	Safe access and egress for fire services	(i)	Provide access for fire service vehicles.	<i>Access is provided from the subdivision road, fire accessway along Powell Street and the strategic firebreak.</i>
		(ii)	Roads, emergency accessways, driveways etc to be able to accommodate 3.4 appliance.	<i>Is provided for in the road construction specifications.</i>
3.4.3	Construction standards	(i)	Public roads <ul style="list-style-type: none"> allow for 2 way traffic 6m trafficable surface (4m paving & 1m shoulders); 6m horizontal clearance; max grade of 1:8; max grade < 50m of 1:5; max average grade of 1:7; min weight capacity 15 tonnes; max crossfall of 1:33; and curve radius min of 12m. 	<i>The road design confirms with this and the detailed construction specifications for fire vehicles meet the normally expected road construction standards required by the Council.</i>
		(ii)	Cul-de-sacs <ul style="list-style-type: none"> Generally are not encouraged Maximum length of 200m Can be increased to 600m where joined by accessway provided no more than 8 lots are serviced. Standards as per (i) plus 21m diameter turning head 	<i>The subdivision road is 800m in length.</i>
		(iii)	Emergency accessways. <ul style="list-style-type: none"> To provide alternative links to public roads during emergencies. 	<i>Has been provided along Powell Street linking Wake Road to the strategic firebreak.</i>

PC	Performance Criteria	AS	Acceptable Solution	Comment
			<ul style="list-style-type: none"> Standards as per (i) plus sign posting. 	
		(iv)	<p>Driveways</p> <ul style="list-style-type: none"> Constructed driveways are required where house sites are more than 50m from a public road. minimum trafficable surface: 4m horizontal clearance: 6m maximum grades: 1 in 8 maximum grade over <50m: 1 in 5 maximum average grade: 1 in 7 minimum weight capacity: 15tonnes maximum crossfall: 1 in 33 curves minimum inner radius: 12m passing bays: every 200m turn around areas: every 500m and within 50m of a house 	<p><i>There does not appear to be any driveways proposed more than 50m length. It is noted that the minimum setback in Council's Town Planning Scheme for a dwelling is 50m.</i></p>
		(v)	<p>Battle axes legs.</p> <ul style="list-style-type: none"> Generally are not encouraged Construction as per driveways. 	<p><i>There are no battleaxe legs used for access.</i></p>
		(vi)	<p>Fire service linkage roads</p> <ul style="list-style-type: none"> Act as a linkage between public roads. Construction as per accessways. No dead ends. Turn around areas: every 500m Access to road network: every 1000m 	<p><i>(see Emergency Accessway above)</i></p>
		(vii)	<p>Turn around areas</p> <ul style="list-style-type: none"> Provide for 3.4 trucks cul-de-sac heads & house sites; 500m intervals along driveways & fire service accessways. 	<p><i>Complied with via the road design.</i></p>
		(viii)	<p>Passing bays</p> <ul style="list-style-type: none"> Every 200m on driveways and battle axe legs. Min length 20m Combined 6m width 	<p><i>Not applicable.</i></p>
		(ix)	<p>Gates</p> <p>Provide on emergency accessways. Min width of 3.6m.</p>	<p><i>Gates have been provided along the strategic firebreak on each property boundary. These have a minimum width of 4.2m.</i></p>
		(x)	<p>Signs</p>	<p><i>Not applicable</i></p>

PC	Performance Criteria	AS	Acceptable Solution	Comment
			<ul style="list-style-type: none"> • Provide on emergency accessways. • Min height of 900mm. 	
3.5	Water Supply			
3.5.1	Scheme areas	(i)	Hydrants <ul style="list-style-type: none"> • 200m residential; • 100m industrial; and • 400m rural residential. 	<i>Not applicable</i>
3.5.2	Hydrant requirements	(i)	<ul style="list-style-type: none"> • Flow rate of 600L/min for 4 hrs • Be easily accessible • Be identified by road and pole markings 	<i>Not applicable</i>
3.5.3	Non Scheme areas	(i)	Special Rural / Tourist <ul style="list-style-type: none"> • 50,000L tank & standpipe / 25 lots; or • 200m³ dam / 25 lots 	<ul style="list-style-type: none"> • <i>There are 13 lots in the subdivision.</i> • <i>Water supply point (standpipe) is located 2km from site on Trimmer Road.</i> • <i>Each dwellings is required to have static water supply for fire fighting. This is to be a minimum of 10,000L with a non electric fire pump, hose and fittings.</i>
3.5.4	Water supply map	(i)	Supply map of water points.	<i>Provided in this report (see Figure 4).</i>
3.6	Siting of Buildings			
3.6.1	Subdivisions to include Hazard Separation Zones (HSZ)	(i)	100m distance from areas of extreme hazard	<i>Complied with.</i>
(ii)		HSZ to be located within subject land	<i>Complied with.</i>	
(iii)		Low fuel load required in HSZ of; <ul style="list-style-type: none"> • 8t/ha jarrah + marri; • 12-15t/ha mallee heath; • 15t/ha karri 	<i>Complied with. Fuel loading will be below 8t/ha.</i>	
3.6.2	Development design to include Building Protection Zones (BPZ)	(i)	BPZ to be provided around all buildings. <ul style="list-style-type: none"> • Min radius of 20m on slope of up to 10 degrees • Min radius of 25m on slope of up to 15 degrees • Min radius of 30m on slope of up to 20 degrees • Min radius of 40m on slope greater than 20 degrees 	<i>Complied with.</i>