



**Bushland Protection
Systems**
Specialising in
**BUSHFIRE HAZARD
PLANNING & MITIGATION**

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BUSHFIRE HAZARD ASSESSMENT AND MITIGATION PLAN

FOR

**THE PROPOSED SUBDIVISION
OVER
LOT 1 RP57746 & LOT 1 RP105238
NO. 84 SAMSONVALE ROAD
STRATHPINE**

PREPARED BY

BUSHLAND PROTECTION SYSTEMS PTY LTD

COMMISSIONED BY

PEET LTD

DATE: 18th March, 2019.

1. Background

A Bushfire Mitigation Plan is designed to identify and minimise the potential bushfire risk to a given property and to help property owners to minimise bushfire risk to themselves, their property and their neighbours, although it will not completely eliminate that risk. Ultimately it is a community responsibility to protect the environmental values, life and property in their area.

This plan is for the proposed residential subdivision over Lot 1 RP57746 & Lot 1 RP105238, No. 84 Samsonvale Road, Strathpine, as shown in Appendix 1 of this report. This plan is based on the following material supplied by Peet Ltd.

1.1. The Concept Bushfire Setbacks Plan, drawn by Peak Urban, Drawing No. 18-0139-GP4, Amendment B, dated 18/3/19, is included as Appendix 1 in this report.

This plan is produced in accordance with the Moreton Bay Regional Council (MBRC) Planning Scheme 2016, Section 9.4.1.6.3 General Residential Zone, Next Generation Neighbourhood Precinct Code and SC6.4 – *Bushfire Prone Areas*, based on the State Planning Policy 7/17, under the Planning Act 2016.

2. Site Description and Assessment

The southern portion of the site currently consists of a pineapple plantation while the northern portion is slashed grassland with scattered eucalypts. There is a small creek (Four Mile Creek) running across the middle of the site between the two existing lots, which has a vegetated corridor along its length consisting of riparian vegetation including melaleuca, grass and weed.

With the exception of open space parkland along the creek, the site is surrounded by residential housing with a Vegetation Hazard Class (VHC) of 42.6 resulting in a 'Not Bushfire Prone Area' hazard rating. The proposed residential component of the development will also have this same rating. The proposed local park at the southern end of the site is proposed to be mostly active park with only small strips and pockets of landscaping. The landscaping would be downgraded to a Low hazard rating under corridor and patch filtering, due to being too limited in size to provide a substantial bushfire hazard.

The larger parkland area in the north of the site is of assessable size. The vegetation along the actual creek would be technically assigned a VHC 22.1 with associated fuel loads of up to 28.4t/Ha, over slopes of up to 2 degrees with an FFDI of 56, providing for a potential fire line intensity of up to 32,148kw/m equating to a 'High' hazard rating. It should be noted that the small strip of melaleuca is limited in size and is not purely melaleuca vegetation but also interspersed with less flammable riparian vegetation, therefore the high hazard rating is somewhat exaggerated, from a qualitative assessment view point a Medium Hazard rating would be more appropriate. Post development, the broader parkland area north of the creek will be open grassy eucalypt woodland area and would be assigned a VHC 16.1 with associated fuel loads of up to 15.9t/Ha, over slopes of up to 1 degree with an FFDI of 56, providing for a potential fire line intensity of up to 9,405kw/m equating to a 'Medium' hazard rating.

Table 1

POTENTIAL HAZARD CLASS	POTENTIAL FIRELINE INTENSITY
Not Bushfire Prone Area (Low)	<4,000 kw/m
Medium	4,000 to 20,000 kw/m
High	20,000 to 40,000 kw/m
Very High	>40,000 kw/m

The Bushfire Hazard Mapping also incorporates a 100 metre Potential Impact Buffer meaning that any land within 100 metres of a Potential Bushfire Hazard is also assigned the same rating as that bushland and triggers the Bushfire Code if Medium, High or Very High. Whilst having the same distance for all three levels of hazard is not considered a fit for purpose application, it is unfortunately what is legislated at this current time. Therefore dwellings on proposed Lots 24-41, 77-106, 1000 & 10001 would be assigned a Hazard rating whilst the remaining lots would be assigned a Low/No hazard rating.

3. Roads and Driveways

The site is accessed in seven different locations from the surrounding road network. Which lead into Low/No hazard rated residential areas. The proposed internal road network provides through roads with good access/egress. It is considered unlikely that access/egress for the site would be denied due to bushfire.

Being a residential estate the allotments will have short direct driveways.

With the proposed road network there is ample access for fire service vehicles for fire suppression and hazard reduction opportunities.

4. Appropriate Building Site Location

The bushland is over relatively level ground without steep hills, ridgelines or north to west facing steep slopes.

E56(c) of Council's constraint code requires a minimum separation from bushland of 20 metres or the distance required to achieve a Bushfire Attack Level (BAL) whichever is the greater. The code doesn't state which BAL, however it is assumed that this refers to a BAL-29 which is the level State Government and most Councils are treating as a tolerable risk level. In the circumstances of the subject site, an 11 metre separation would achieve a BAL-29 rating under AS3959-2009. Therefore 20 metres being greater will be the required separation.

As the majority of the proposed northern parkland has been managed with a low rating, the adjoining existing lots have dwellings in close proximity with little to no bushfire buffering and would not be constructed to AS3959. As it is proposed that the area now become passive open space, the necessary bushfire buffers will need to be managed as shown in Appendix 1 of this report, in order to provide mitigation for these lots. This affects neighbouring Lot 330 RP158265 and Lots 398-399 & 402 RP158252. Lot 330 and Lot 402 in particular have no separation and will require a 10 metre inner buffer zone and 10 metre outer buffer zone as outlined in Section 5 of this report. Lots 398 & 399 do have road separation and will only require an outer buffer zone of approximately 8 metres to establish a total 20 metre separation.

It is proposed that Lot 1000 is provided a 10 metre inner buffer zone and 10 metre outer buffer zone around the allotment as shown in Appendix 1.

To the south of Lots 92-106, on the opposite side of the road reserve is to be a 3 metre wide outer buffer zone which when combined with the 15 metre wide road and 2 metre front in-lot building setback a total of 20 metres separation is provided, as shown in Appendix 1.

To the north of Lots 36-39 & 83, on the opposite side of the road reserve is to be a 4 metre wide outer buffer zone. For Lot 83, when combined with the 15 metre wide road and 1 metre in-lot building setback a total of 20 metres separation is provided. For Lots 36-39 with a 2 metre in-lot building setback and a 15 metre wide road, a total of 21 metres is provided, as shown in Appendix 1.

For the eastern side of Lots 32-35, the lots have a 2 metre front in-lot building setback, an additional 8 metres of inner buffer zone (which will mostly be provided by the 9 metre roadway), and a 10 metre outer buffer zone, as shown in Appendix 1.

Lot 35 has a building setback of just over 1 metre from the northern lot boundary. 9 metres of inner buffer zone and 10 metres of outer buffer zone are to be provided to the north of Lot 35 so as to provide a minimum 20 metres separation, as shown in Appendix 1.

It is considered that the roadways, buffers and setbacks mentioned above achieves a tolerable risk level in regard to E56(c) of the constraint code. Buffer zones are not to have a slope greater than 1:4 (25%).

5. Appropriate Clearing and Landscaping

Residential allotments are to be maintained with low ground fuel levels at all times and may include domestic gardens, lawns with grass kept under 100mm in height and scattered trees with discontinuous canopy.

As a guide to landscaping and gardening in a bushfire prone area, the document 'Landscaping for Bushfire' produced by the CFA Victoria, is a useful guide on plant selection, garden design and ongoing maintenance. It can be found at <https://www.cfa.vic.gov.au/plan-prepare/landscaping>.

All road reserves are to be managed to their full widths with low ground fuel levels at all times (grass kept under 100mm).

The inner buffer zones shown in Appendix 1 are to be mowed grass kept under 100mm high and may contain scattered tall tree species with discontinuous canopy.

The outer Buffer zones shown in Appendix 1 and the small park on the eastern side of Lot 106 is to be managed so as not to result in an area of future bushfire hazard. This can be achieved by:

- Retention of mature tall canopy trees
- Selective retention of juvenile tall canopy tree species
- Removal of limbs less than 2 metres high on trees over 4 metre tall

- Removal of weed growth
- Mowing/brush cutting of grass, keeping grass under 100mm high.
- Minimise mid-storey vegetation (except the juvenile trees in dot point 2) to prevent ladder fuel structure
- Occasional dis-continuous clumps of evergreen ground covers would be permissible, such as Lomandra, which should be trimmed back prior to the start of fire season (fire season generally starts in July/August).
- Removal of fallen timber
- Restricting leaf litter build-up to 5t/Ha (approx. 10mm deep), allowing for a total of 8t/ha overall fuel load.

Fibrous bark trees, such as melaleuca, swamp mahogany and stringy bark, have a tendency to increase ember attack during a bushfire, due to the fire running up the tree trunk and burning bark breaking off, creating large quantities of airborne burning embers. Ribbon bark tree species (trees that shed their bark in long strips) are also an issue, significantly increasing the potential for spot fires. For this reason tree species with these bark types should not be used as revegetation/rehabilitation/regeneration plantings in Urban interface areas.

In bushland areas, the areas around the fringes of the bushland and along fire trails have a tendency to have increased ground fuel loading, as a result of increased sunlight penetration producing better growing conditions for grass and weeds (known as 'Edge Effects'), which can have an adverse impact on the local ecosystem and safety issues for fire suppression personnel during unplanned fire events. These non-endemic grasses penetrate into the edges of the retained bushland, creating conditions for high intensity fire which damages the edges of the bushland, opening up the canopy which then allows more sunlight in and promotes grass and weed intrusion further into the bushland. This cyclic process has the effect of decreasing the size of quality bushland and increasing grass and weed dominated areas. The most cost effective way to control grass and weed growth is to create a good closed in canopy cover, which will shade out the undesirable species. The control of fuel loads along the edges by regular mowing, brush cutting or in some cases poisoning may be suitable. Areas with a build-up of volatile fuel levels along the open edges of bushland, where full sunlight is available, can be where the most damage is inflicted on the bushland during a bushfire.

If the development is to take place in stages, care should be exercised to ensure the developed stages are not threatened by bushfire from the undeveloped stages.

All previous or future cleared timber and foliage or accumulated rubbish would need to be removed from the site or mulched and not simply moved aside as this would result in a concentrated area of fuel loading which would increase the PBH from that direction.

For optimal bushfire safety and best practise, the required vegetation management practises for allotments must be established during operational works and maintained by the developer until sold. Once sold the purchaser must maintain the allotment at all times, before, during and after construction of the dwelling.

6. Appropriate Building Construction

The bushfire provisions of the Building Code of Australia (BCA) are applied to Class 1, 2 & 3 buildings and associated Class 10a buildings, located in designated bushfire prone areas. “Designated bushfire prone area means land which has been designated under a power in legislation as being subject, or likely to be subject, to bushfires” (*BCA 1.1.1 Definitions*).

The Scheme’s Table 1.6.1 identifies Very high potential bushfire intensity, High potential bushfire intensity, Medium potential bushfire intensity and Potential impact buffer on the Bushfire Hazard Areas Overlay Map as the 'designated bushfire hazard area' for the purposes of section 12 of the Building Regulation 2006, except on land in the Centre zone, General residential zone, Industry zone or Township zone.

Dwellings on the proposed allotments within 100 metres of the northern park, being Lots 24-41, 77-106, 1000 & 10001, require the BCA and where relevant the Australian Standard for Construction of Buildings in Bushfire-Prone Areas (AS3959) to be addressed.

P2.3.4 of the BCA requires:- A Class 1 building or a Class 10a building or deck associated with a Class 1 building that is constructed in a designated bushfire prone area must, to the degree necessary, be designed and constructed to reduce the risk of ignition from a bushfire, appropriate to the –

- (a) Potential for ignition caused by burning embers, radiant heat or flame generated by a bushfire; and
- (b) Intensity of the bushfire attack on the building.

Section 3.7.4.0 (Qld variation) of the BCA states:-

- (a) *Subject to (b), Performance Requirement P.2.3.4 is satisfied for—*
 - (i) *a Class 1 building; or*
 - (ii) *a Class 10a building or deck associated with a Class 1 building, located in a designated bushfire prone area if it is constructed in accordance with—*
 - (iii) *AS 3959; or*
 - (iv) *NASH Standard – Steel Framed Construction in Bushfire Areas.*
- (b) *The requirements of (a) do not apply when, in accordance with AS 3959, the classified vegetation is Group F rainforest (excluding wet sclerophyll forest types), mangrove communities and grasslands under 300 mm high.*

These levels of construction are reliant on the proposed vegetation management and recommendations of this report being implemented and maintained.

6.1. Lots 31-34

The future dwellings on Lots 31-34 have a minimum 20 metres of separation from the hazard rated bushland.

In accordance with AS3959-2018 – Table 2.4.5 ‘*Determination of Bushfire Attack Level (BAL)-FDI 40 (1090K)*’, the vegetation class is woodland and slope is 0-5 degrees. The distance between the building and the eastern lot boundary will determine the standard of construction required.

- If the distance between the eastern lot boundary and the building is less than 5 metres, the Bushfire Attack Level for the proposed dwelling will equate to BAL-19. A BAL-19 level requires Sections 3 and 6 of AS3959-2018 to be applied.
- If the distance between the eastern lot boundary and the building is 5 metres or more, the Bushfire Attack Level for the proposed dwelling will equate to BAL-12.5. A BAL-12.5 level requires Sections 3 and 5 of AS3959-2018 to be applied.

Section 3.5 of AS3959-2018 states “*The construction requirements for the next lower BAL than that determined for the site may be applied to an elevation of the building where the elevation is not exposed to the source of bushfire attack.*” Therefore the southern elevation of the proposed building can be constructed to the next lower Bushfire Attack Level, unless the level is already at BAL-12.5.

6.2. Lot 35

Lot 35 has an exposure to the north and east, with a minimum 20 metre separation from both.

For the bushland to the north; In accordance with AS3959-2018 – Table 2.4.5 ‘*Determination of Bushfire Attack Level (BAL)-FDI 40 (1090K)*’, the vegetation class is woodland, distance from unmanaged vegetation is between 20 and 23 metres and slope is 0-5 degrees, which equates to a BAL-19 Bushfire Attack Level for the proposed dwelling.

For the bushland to the east; In accordance with AS3959-2018 – Table 2.4.5 ‘*Determination of Bushfire Attack Level (BAL)-FDI 40 (1090K)*’, the vegetation class is woodland and slope is 0-5 degrees. The distance between the building and the eastern lot boundary will determine the standard of construction required.

- If the distance between the eastern lot boundary and the building is less than 5 metres, the Bushfire Attack Level for the proposed dwelling will equate to BAL-19.
- If the distance between the eastern lot boundary and the building is 5 metres or more, the Bushfire Attack Level for the proposed dwelling will equate to BAL-12.5.

Section 3.5 of AS3959-2018 states “*The construction requirements for the next lower BAL than that determined for the site may be applied to an elevation of the building where the elevation is not exposed to the source of bushfire attack.*” Therefore:

- If the BAL rating from the east is BAL-19 then the whole dwelling is to be constructed to a BAL-19 rating requiring Sections 3 & 6 of AS3959-2018 to be applied.
- If the BAL rating from the east is BAL-12.5, then the southern elevation of the proposed building can be constructed to a BAL-12.5 rating requiring Sections 3 and 5 of AS3959-2018 to be applied, while the remainder of the dwelling must be constructed to a BAL-19 Bushfire Attack Level, requiring Sections 3 & 6 of AS3959-2018 to be applied

6.3. Lots 36-39 & 83

The future dwellings on Lots 36-39 & 83 have a minimum 20 metres of separation from the hazard rated bushland.

In accordance with AS3959-2018 – Table 2.4.5 ‘*Determination of Bushfire Attack Level (BAL)-FDI 40 (1090K)*’, the vegetation class is woodland and slope is 0-5 degrees. The distance between the building and the northern lot boundary will determine the standard of construction required.

- If the distance between the northern lot boundary and the building is less than 4 metres, the Bushfire Attack Level for the proposed dwelling will equate to BAL-19. A BAL-19 level requires Sections 3 and 6 of AS3959-2018 to be applied.
- If the distance between the northern lot boundary and the building is 4 metres or more, the Bushfire Attack Level for the proposed dwelling will equate to BAL-12.5. A BAL-12.5 level requires Sections 3 and 5 of AS3959-2018 to be applied.

Section 3.5 of AS3959-2018 states “*The construction requirements for the next lower BAL than that determined for the site may be applied to an elevation of the building where the elevation is not exposed to the source of bushfire attack.*” Therefore the southern elevation of the proposed building can be constructed to the next lower Bushfire Attack Level, unless the level is already at BAL-12.5.

6.4. Lots 91-106

The future dwellings on Lots 91-106 have a minimum 20 metres of separation from the hazard rated bushland, with a 2 metre in-lot building setback..

In accordance with AS3959-2018 – Table 2.4.5 ‘*Determination of Bushfire Attack Level (BAL)-FDI 40 (1090K)*’, the vegetation class is woodland and slope is 0-5 degrees. The distance between the building and southern lot boundary will determine the standard of construction required.

- If the distance between the southern lot boundary and the building is less than 5 metres, the Bushfire Attack Level for the proposed dwelling will equate to BAL-19. A BAL-19 level requires Sections 3 and 6 of AS3959-2018 to be applied.
- If the distance between the southern lot boundary and the building is 5 metres or more, the Bushfire Attack Level for the proposed dwelling will equate to BAL-12.5. A BAL-12.5 level requires Sections 3 and 5 of AS3959-2018 to be applied.

Section 3.5 of AS3959-2018 states “*The construction requirements for the next lower BAL than that determined for the site may be applied to an elevation of the building where the elevation is not exposed to the source of bushfire attack.*” Therefore the northern elevation of the proposed building can be constructed to the next lower Bushfire Attack Level, unless the level is already at BAL-12.5.

6.5. Lots 24-30, 41-40, 77-82, 84-90 & Part Lot 1001

The future dwellings on Lots 24-30, 41-40, 77-82, 84-90 & Part Lot 1001 are within 100 metres of the northern park but have over 23 metres of separation from the hazard rated bushland.

In accordance with AS3959-2018 – Table 2.4.5 ‘*Determination of Bushfire Attack Level (BAL)-FDI 40 (1090K)*’, the vegetation class is woodland, distance from unmanaged vegetation is between 23 and 100 metres and slope is 0-5 degrees, which equates to a BAL-12.5 Bushfire Attack Level for the proposed dwelling. A BAL-12.5 Bushfire Attack Level requires Sections 3 and 5 of AS3959-2018 to be applied.

Note: Only the northern 50 metres of Lot 1001 is within 100 metres of the park. Dwellings outside the northern 50 metres of the lot would be assigned a Low hazard and AS3959-2018 would not apply to them.

6.6. Lot 1000

Future dwellings on Lot 1000 have a minimum 20 metres of separation from the hazard rated bushland.

In accordance with AS3959-2018 – Table 2.4.5 ‘*Determination of Bushfire Attack Level (BAL)-FDI 40 (1090K)*’, the vegetation class is woodland and slope is 0-5 degrees. The distance between the building and east or south lot boundary will determine the standard of construction required.

- If the distance between the east or south lot boundary and the building is less than 3 metres, the Bushfire Attack Level for the proposed dwelling will equate to BAL-19. A BAL-19 level requires Sections 3 and 6 of AS3959-2018 to be applied.
- If the distance between the east or south lot boundary and the building is 3 metres or more, the Bushfire Attack Level for the proposed dwelling will equate to BAL-12.5. A BAL-12.5 level requires Sections 3 and 5 of AS3959-2018 to be applied.

6.7. Remaining Lots

Dwellings on the remaining lots have a Low hazard rating being over 100 metres from the unmanaged bushland.

A site with a Low/No PBH rating does not require assessment under the Building Code of Australia or under the Australian Standard (AS3959) for *Construction of Buildings in Bushfire Prone Areas* and therefore no specific level of construction would be required in relation to bushfire.

7. Provision of Adequate Water Supplies

The area of the proposed development is to be serviced by reticulated water supplies with the inclusion of fire hydrants for firefighting purposes. These services are to

comply with the relevant standards as required by the local authorities, including a minimum pressure and flow of 10 litres per second at 200kPa.

8. Provision of Fire Fighting Infrastructure

Buildings should have external taps and hoses that are positioned so water supply is capable of reaching to all parts of the building. All water lines are to be covered by at least 300mm of soil. Residents should maintain good access around the buildings for fire suppression activities by fire authorities.

9. Local Fire Brigades

The subject property is currently in the Urban Fire & Rescue district and they would respond to a 000 emergency call.

10. Improved Community Awareness

Managing ground fuel in small pockets of bushland at the interface between urban development and bushland (Izone) is the easiest way of reducing bushfire hazard, particularly the removal of non-endemic grass and weeds.

It is recommended that a copy of the fire management plan be placed on display at any sales office, and a copy of the plan including the information in Appendix 2 be given to the purchasers of lots with a hazard rating to provide them with the necessary information required for the building application process.

A copy of the plan should be retained by residents and passed on to future residents including the information in Appendix 2 on “being prepared” to assist them in minimising the risk of bushfire damage. It is recommended that regular liaison with the local fire brigade takes place as a way of being informed of danger periods.

It would be recommended that residents with a hazard rating prepare a ‘Bushfire Survival Plan’, a template for which is available from the Rural Fire Service Queensland website at www.ruralfire.qld.gov.au. The ‘Bushfire Survival Plan’ document provides information on Bushfire Danger Ratings, Community Warning Information, how to prepare your property, what to do in the event of a bushfire and what to expect. The Bushfire Survival Plan should be updated annually. Further information is also available through the Prepare•Act•Survive brochure also available on the Rural Fire Service website. For further information contact your local Fire Brigade for assistance or phone 1300 369 003.

11. Conclusion

With the appropriate setbacks and buffers, adequate water supply, good access provisions and minimisation of ground fuels; the risk of bushfire damage can be managed and the safety of residents and fire services in attending to a bushfire threat can be improved.

All buildings can achieve a 19kW/m^2 radiant heat flux (BAL-19) or less when assessed under AS3959-2018 (see Section 6 of this report), and are therefore considered to be at a tolerable risk level.

This plan remains current for a period of 5 years, until 2024, at which time it should be subject to review to take account of changing land use and vegetation patterns. Any major bushfire event affecting the subject site should also trigger a review in order to determine effectiveness of protection measures and annual hazard reduction initiatives.

Ultimately, persons living in a bushfire prone area must take the precautions necessary to protect themselves, their families and their homes if Brigades are stretched and are unable to attend immediately.

If you require any further assistance please do not hesitate to contact this office.



C. L. Bain
Principal Consultant.

LEGEND

Site Boundary	
Stage Boundary	
Possible Open Space	
Bushfire Buffer - Inner Zone	
Bushfire Buffer - Outer Zone	
Dwelling Setbacks	



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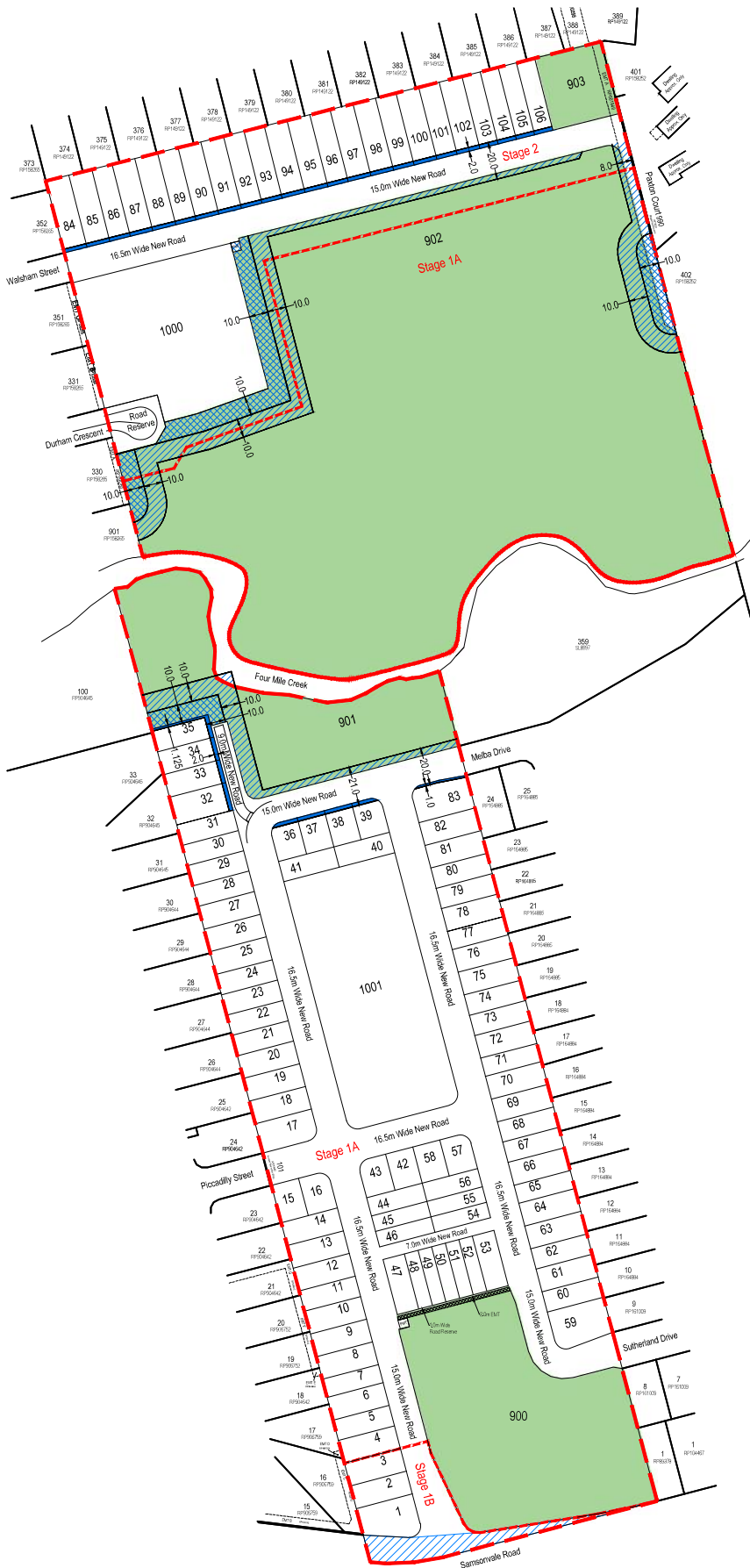
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This plan remains subject to, but not limited to, authority approval, detail design and final survey.

No relevance should be placed on the information on this plan for any financial dealings involving the land.

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CLIENT		PEET	
PROJECT			
CONCEPT BUSHFIRE SETBACKS PLAN		SAMSONVALE ROAD, STRATHPINE	
1/RP57746 and 1/RP105238			
AMENDMENTS		DATE	
A	Original	13/03/19	
B	Amend Bushfire and Plan extents	18/03/19	
C			
D			
E			
F			
DESIGNED	KS	DATE	18/03/19
SURVEYED		DATE	
DRAWN	KS	DATE	18/03/19
NOTES			
SHEET NO... 1 OF 1SHEETS			
COMPUTER FILE 18-0139-GP4-B			
SCALE 1:2,500 @A3			
DRAWING No		AMEND	
18-0139-GP4		B	

APPENDIX 2

Being Prepared

Knowing how to prepare your property for bush fire, both pre-fire and during a fire, can assist in protecting people and property. It can also alleviate a lot of the stress and panic and the feeling of helplessness that is commonly felt by the inexperienced and by the ill-prepared.

It is generally accepted that South East Queensland does not experience the same degree of extreme fire conditions as the southern states of New South Wales, Victoria and South Australia. Having said this it is also accepted that this State's bushland experiences a relatively regular fire regime. From time to time conditions may occur that will institute a serious and potentially destructive fire. These conditions can be recognised and precautions taken. It must be remembered that during extreme fire conditions the fire services may be stretched to the limit and may not be able to respond immediately to your particular emergency. Fire trucks and fire fighters are a limited resource so it is important that they are deployed in an appropriate manner to best manage the fire. The Queensland Fire and Rescue Service do not guarantee a fire truck will be available to defend every structure during a large bushfire. So it would be desirable to be as prepared and self-reliant as possible to protect yourself, your family and your assets. It is not difficult if appropriate preparation is undertaken and the following information is provided to be of some assistance.

1. Conditions that may lead to a Serious Fire:

- 1.1. Higher than average air temperatures for prolonged periods.
- 1.2. Large and very dry fuel loads.
- 1.3. Prolonged dry spell with little or no rain resulting in low soil moisture content.
- 1.4. Very low relative humidity, ie. there is very little moisture in the air.
- 1.5. Strong and gusty winds, usually from the north through to the west contribute to increased fire hazard. The longer these winds continue the drier the conditions become, and the higher the risk of serious fire.

Observation of local weather conditions past and present will give the best indication of the potential intensity of a fire at any given time or place.

Notification of potential bushfire conditions are available from the Queensland Rural Fire Service and Local Brigades, in the form of Fire Danger Ratings often seen on roadside signs, Advice Messages, Watch and Act Messages and Emergency Warnings. More information on these information sources, where to find them and what they mean, is available on the Rural Fire Service Website www.ruralfire.qld.gov.au or through the local Fire Brigade.

2. Basic Fire Behaviour.

Having some idea of what a fire is likely to do in your local area, will help you make the right decisions and give you the confidence to deal with an approaching fire if necessary. Following are some basic fire behaviours.

- 2.1. Fire will travel faster and hotter uphill. The steeper the slope the faster the rate of spread, in some cases allowing little time to react. The speed of a fire will double for every 10 degrees of upslope.
- 2.2. Fire will usually travel relatively slower down hill even with reasonably high fuel loads, which will give more time to prepare. The speed of a fire will halve for every 10 degrees of down slope.
- 2.3. A fire will generally travel faster and at higher intensities with a wind behind it. The stronger the wind, the faster the rate of spread. Likewise a fire will slow considerably when burning against the wind in some cases it may even go out.
- 2.4. The fire will usually burn at a higher intensity and spread faster during the hottest times of the day and tend to slow down considerably as the evening approaches and air temperatures drop.
- 2.5. The greater the supply of dry ground fuel available to the fire, ie. grass, dry leaf litter, hanging bark and twigs, the greater the intensity of the fire. If the ground fuel is minimised the intensity of the fire reduces considerably and so does the personal risk and the potential for damage.
- 2.6. If ground fuels are kept relatively low the chances of a fire progressing into the treetops (crown fire) would be considerably reduced within the Queensland coastal bushlands. For a fire to progress into the tree tops ground fuels and elevated fuels must be present providing a 'ladder' of fuels from ground level to tree top. Control of these fuels is the best way of minimising fire intensity and therefore limiting the destructiveness of a bushfire.

Talk to neighbours that have been present during previous bushfires or consult the local Fire Brigade to develop an understanding of usual fire behaviour for your specific location.

3. Preparing for the bushfire season.

Most cases of damage to property are caused by radiated heat, direct flame contact or most commonly by burning debris or sparks landing in, on, or around buildings and starting small spot fires which if not attended to may destroy the property long after a fire front has passed. There are many steps that should be taken prior to the onset of a fire season to help protect your property.

- 3.1. Keep ground fuel cleared from around buildings such as long dry grass, branches, dead leaves, bark and thick undergrowth.
- 3.2. Remove elevated fuels, such as hanging bark and fallen debris hung up on lower branches.

- 3.3. Ensure fire breaks/trails/buffers are checked and maintained, even a well-watered lawn can be an effective firebreak.
- 3.4. Flammable material around buildings should be kept well clear, such as firewood piles, rubbish, fuels, hazardous materials, plant pots, boxes, paper, patio and garden furniture.
- 3.5. Ensure flammable materials are not stored in open areas under the building.
- 3.6. Make sure that rainwater gutters are kept clear of leaf litter build-up. Consider a method of blocking off down pipes so gutters can be filled with water during a fire to extinguish sparks landing in gutters. There are commercially made products available or you can create your own.
- 3.7. Make sure that the roofing is well secured, as winds created during a fire may lift roofing and allow the entry of burning embers into the roof space. Also clear any leaf litter or debris build-up from roof areas.
- 3.8. All windows and vents should be screened with fine wire mesh and all roof areas closed in to prevent entry by sparks.
- 3.9. Ensure gas tanks have their emergency relief valves facing away from the building (this includes barbeque bottles).
- 3.10. Make sure of reserve water supplies. Power frequently fails during a fire. If petrol or diesel pumps are available make sure they and associated hoses and fittings are in good working order.
- 3.11. Ensure your bushfire survival kit is up to date and complete.

The Queensland Fire and Rescue Service provide detailed lists for preparation prior to fire season and what to do during a bushfire event. This information can be found at www.ruralfire.qld.gov.au or obtained from your local fire brigade.

4. Green Fire Breaks

Added protection from bushfire can be achieved by establishing green fire breaks which include green lawns, trees arranged to create a shield to catch sparks or fire brands or the expanding of tropical rainforest species. Excess rainwater or tertiary treated waste water could be stored and used for this purpose during dry periods to maintain the green fire breaks. Trees and shrubs not subject to drought stress will cope better during bushfires. The higher the moisture content in the plant the slower it burns. Therefore by keeping the surrounding area green and low in dry ground fuel, the intensity of an approaching fire will be reduced and the risk of spot fires minimised.

5. Personal Protection

- 5.1. If you plan to evacuate, make sure you do so early, long before the fire front arrives. Evacuating at the very last moment results in the majority of deaths at bushfires. People remaining to fight the fire need to be physically and mentally fit to do so.

5.2. Those staying to protect the property should make sure they protect themselves from radiant heat, flying embers, smoke and most importantly heat stress. Protection measures should include the following:

- Long trousers and long sleeve shirt made of wool, denim or cotton (no synthetics)
- Woollen socks and sturdy work boots for foot protection
- Goggles for eye protection
- A good pair of work gloves to protect hands from burns
- A smoke mask or a damp cloth (non-synthetic), to cover your nose and mouth to protect you from inhaling smoke and embers.
- Have plenty of drinking water available to protect against dehydration (not refrigerated as this can cause cramping).

5.3. During the fire

When a fire is approaching and given that you have already carried out your pre-fire precautions, established adequate buffers, implemented mitigation measures and established the degree of risk to your property, protection from the actual fire should be relatively straight forward.

5.3.1. Dress in the appropriate clothing and be sure to drink water regularly.

5.3.2. Fill up bathtubs, sinks, buckets, laundry tubs etc. in case of blackouts.

5.3.3. Close doors and windows.

5.3.4. Close gaps under doors and windows with wet towels.

5.3.5. Block up down pipes, wet down roof, walls and gardens, paying particular attention to the side the fire is approaching from.

5.3.6. Have a battery-powered radio on hand to listen for information about the fire's progress from local radio stations.

5.3.7. Patrol your property while the fire is approaching and take shelter inside as the fire front passes. Then continue patrolling the property for many hours after it has passed, to ensure that any spot fires or smouldering debris do not get a chance to develop into a major fire, paying particular attention to the roof cavity of your buildings. Smouldering embers have been known to start fires hours or even days after the initial passing of the bushfire front.

The Queensland Fire and Rescue Service provide detailed lists for preparation prior to the arrival of a bushfire and what to do during a bushfire event. This information can be found at www.ruralfire.qld.gov.au or obtained from your local fire brigade.

6. Further Information?

The local fire brigade is a good source of local district knowledge, they also have pamphlets and literature produced by the Queensland Fire and Rescue Service available. Most brigades will also be happy to advise local residents.

The information provided above is only a basic guide. Further and more details information is available from the Queensland Fire and Rescue Service. It would be recommended that residents in bushfire prone areas prepare a 'Bushfire Survival Plan', which is available from the Queensland Rural Fire Service website at www.ruralfire.qld.gov.au. The 'Bushfire Survival Plan' document provides information on Bushfire Danger Ratings, Community Warning Information, how to prepare your property, what to do in the event of a bushfire and what to expect. The Bushfire Survival Plan should be updated annually. Further information is also available through the Prepare•Act•Survive brochure also available on the Rural Fire Service website. For further information contact your local Fire Brigade for assistance or phone 1300 369 003.



Bushland Protection Systems

Specialising in

**BUSHFIRE HAZARD
PLANNING & MITIGATION**

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Fire is a part of nature. Its effects can be catastrophic and fire can never be totally eliminated, however there are steps that can be taken to reduce the chances of uncontrolled fires occurring and the risk to life, property and the environment, in the event of uncontrolled fires. This is what we concentrate on, how the threats from bushfire can be minimised. There are many methods to do so, however deciding which method/s is best to use can be a complex decision to make. There are so many factors to consider such as ecological values, biodiversity, fire history, availability of resources, cost effectiveness and public awareness just to name a few. No guarantees can ever be given when dealing with Mother Nature, with ever increasing complexities it has now become a specialist field to be able to create plans to try and minimise the risk from bushfire. Ultimately it is a community responsibility to protect the environmental values, life and property in their area

COMPANY PROFILE

Bushland Protection Systems Pty Ltd (BPS) is a leading Bushfire Management Consultancy firm in Queensland, with many clients, ranging from private landowners to multi-national companies and government bodies.

BPS consultants began operating as Bushfire Management Consultants with the introduction of the Gold Coast Bushfire Management Strategy in 1998 and spread their operations across the state with the implementation in 2003 of the State Planning Policy for mitigating the adverse impacts of flood, bushfire and landslide.

During that time over 3000 projects have been successfully completed, including large residential estates such as Coomera Waters, Spring Mountain, Pacific Pines, Coomera Springs, Observatory, Highland Reserve, Delfin Woodlands & Yarrabilba as well as commercial or Government project sites such as Paradise Country, Wacol Police Academy, Numinbah Correctional Facility, Silkwood Steiner School, Canon Hill Community Links Project & Griffith University. Clyde Bain, the Principal Consultant, is also one of the two most highly sought after expert witnesses for Land and Environment Court Appeals, in Queensland, having worked as the Bushfire Expert for several Regional and City Councils throughout the state on a number of various projects before the Land and Environment Court.

With a strong background in bush fire fighting and involvement with numerous industry bodies, Bushland Protection Systems continues to deliver realistic and cost effective advice, solutions to provide higher levels of safety for the community, improve wildfire suppression and mitigation options for emergency services and land managers, while maintaining and improving environmental values for the future. All our Consultants are members of the Rural Fire Association of Queensland.