



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

ACN 109 667 101 ABN 97 782 336 595 Phone: 07 5546 7933 Fax: 07 5546 7988 PO Box 40, Ormeau, Qld, 4208
E-mail: admin@bpsfire.com.au

**BUSHFIRE HAZARD ASSESSMENT
AND MITIGATION PLAN**

FOR

**PROPOSED STAGES 5.2 – 5.5
OF GAINSBOROUGH GREENS ESTATE
YAWALPAH ROAD
PIMPAMA**

PREPARED BY

BUSHLAND PROTECTION SYSTEMS PTY LTD

FOR

MIRVAC GROUP

DATE: 14th May, 2015.

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, 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 Stages 5.2 - 5.5 of the Gainsborough Greens Estate and is consistent with the approved concept plan for the overall estate, produced by Bushland Protection Systems, dated 2/5/07.

This plan is produced in accordance with the State Planning Policy 1/03, *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide*, under the Queensland Sustainable Planning Act 2009 and the Gold Coast Councils Constraint Codes- Part 7 Division 3 Chapter 2, *Bushfire Management Areas*.

This plan is based on the following material supplied by Mirvac Group and numerous site inspections over a number of years. It also takes into account the Open Space Management Plan for Precinct 5 – Open Space Balance, Project No. 15052, Issue C, dated April 2015. This Bushfire Plan is consistent with the Open Space Management Plan (OSMP)

- 1.1. A copy of the Master Plan showing the overall Precinct Layout, provided by Mirvac, is included as Appendix 1 in this report.
- 1.2. A copy of Stages 5.2 – 5.5 Layout Plan, Page 1 of 2, drawn by KN Group P/L, Drawing No. 14-234-ROL-01, Revision A, dated March 2015, is included as Appendix 2A in this report.
- 1.3. A copy of Stages 5.2 – 5.5 Layout Plan, Page 2 of 2, drawn by KN Group P/L, Drawing No. 14-234-ROL-02, Revision A, dated March 2015, is included as Appendix 2B in this report.
- 1.4. A copy of the Bushfire Managed Areas from the OSMP, Issue C, dated April 2015, is included as Appendix 3 in this report.

2. Land Use.

Stages 5.2 to 5.5 are located to the east and north of Swan Road (see Appendix 2A & 2B). The site is over relatively level land with slopes under 5% gradient.

To the west of Swan Road is residential development and to the south is Stage 5.1 which has been developed. To the east, north and northwest of Stages 5.2 to 5.5 is proposed open space with a variety of different purposes as set out in the OSMP, Issue C, dated April 2015, which includes bushfire buffer zones, fire trails, bushland reserves and conservation areas (see Appendix 3).

At present the area to be dedicated to bushland reserve is predominantly unmanaged grassland however with the proposed regeneration of the area, it will become more of a grassy eucalypt and acacia forest type area with some melaleuca. Therefore the severity

of bushfire hazard as calculated in accordance with appendix 3 of the State Planning Policy 1/03 Guidelines (SPP1/03) would assign a vegetation score of 6 (grassy eucalypt), a slope score of 1 (Plain 0-5%) and an aspect score of 0 (slopes under 5%), equating to a severity of bushfire hazard score of 7 Medium (see Table 1).

The area bordering the proposed allotments shown as bushfire buffer zone in Appendix 3 would be classified as managed grassland. Maintained grassland areas, in accordance with appendix 3 of the State Planning Policy 1/03 (SPP1/03), would be assigned a vegetation score of 2 (grazed/slashed grass), and therefore would be given a PBH rating of 0 low, in accordance with table A3.1 and section A3.14 of the SPP 1/03 and the SPP 1/03 guideline - errata.

Table 1

TOTAL HAZARD SCORE	SEVERITY OF BUSHFIRE HAZARD
13 or greater	High
6 to 12.5	Medium
1 to 5.5	Low

Section A3.24 and table A3.5 of the SPP 1/03 sets out inclusion zones when calculating a PBH level. Any land within 50 metres of medium PBH rated bushland is deemed to have a medium PBH rating. Any land within 100 metres of high PBH rated bushland is deemed to have a high PBH rating. Therefore the majority of Lots would have a Low PBH rating, with only those within 50 metres of the unmanaged bushland having a Medium PBH rating.

3. Roadways & Driveways

3.1. Roadways

Stages 5.2 to 5.5 have multiple access/egress options back to Swan Road, which is located in a Low PBH area, it would be highly unlikely that access/egress would be compromised during a bushfire event in the area.

3.2. Driveways

Being a residential development, driveways will be short and direct.

4. Appropriate House Site Location.

The housing is located on relatively level land which would be classified in order of degree of fire safety as 1, as the safer location in accordance with section A7.6 and figure 1 of the SPP 1/03, providing the most desired outcome for development in a bushfire prone area.

All dwellings should be located within the allotments so as to maximise separation from unmanaged bushland. Allotments adjacent to the bushland areas all have a minimum 20 metres separation or more from the medium rated bushland.

5. 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 Gold Coast City Council Planning Scheme, section 7.3.2.1, states “*Land identified on Overlay Map OM10 – Potential Bushfire Hazard Areas, and confirmed through site-based assessment as being in a Medium or High Potential Bushfire Hazard Area, should be considered as designated bushfire prone areas for the purposes of the Building Code of Australia and AS 3959-1999 Construction of Buildings in Bushfire-Prone Areas, and all Building Work must be carried out in a manner consistent with this standard.*” AS3959-1999 has been superseded by AS3959-2009 and therefore AS3959-2009 should be adhered to.

Under the Gold Coast Councils Constraint Codes- Part 7 Division 3 Chapter 2, Section 1 & PC3, a dwelling with a low PBH rating (over 50 metres from the bushland to the north and east) 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.

For dwellings with a medium PBH rating under the SPP1/03 (within 50 metres of the bushland to the north and east), the Gold Coast Council’s Constraint Codes- Part 7 Division 3 Chapter 2, PC3, requires the Building Code of Australia (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 be designed and constructed to reduce the risk of ignition from a bushfire while the fire front passes.” Section 3.7.4.0 of the BCA states:- “*Performance requirement P2.3.4 is satisfied for a Class 1 building or 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 AS 3959*”.

The level of construction for dwellings, if any, should be assigned prior to plan sealing stage (or prior to selling off the plan) when the actual risk would be more readily assessable for individual allotments, allowing for potential alterations during development to terrain and vegetation types.

Providing the recommendations of this report are implemented and maintained, Construction ratings for affected dwellings are not expected to exceed BAL-19.

6. Appropriate Clearing and Landscaping.

All allotments in the estate 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.

The Recreational Linkage that doubles as a bushfire buffer zone, which incorporates the fire trail clearway, is to be managed predominantly as mowed grassland with scattered canopy trees with discontinuous canopy, at all times. The Bio-basin areas are also to be managed areas by the control of non-endemic grass and weed growth.

Quality trees and habitat trees can be retained or planted within these buffer zones provided they do not provide a continuous canopy cover or pose a threat to persons or property.

For optimal bushfire safety and best practise, the allotments must be cleared during operational works and maintained by the developer with low ground fuel levels until sold. Once sold the purchaser must maintain the allotment at all times, before, during and after construction of the dwelling.

The bushland reserve and conservation areas will be subject to considerable revegetation, therefore care needs to be taken to ensure that grass and weed growth do not out-compete the desired species. In the longer term 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.

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 rainforest species. 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. Waste water may possibly be utilised to achieve this outcome.

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 fire fighting purposes. These services are to comply with the relevant standards as required by the local authorities.

8. Provision of Fire Fighting Infrastructure.

Dwellings should have external hose cocks 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 their homes for fire suppression activities by fire authorities.

9. Local Fire Brigades.

The subject property is currently in the Ormeau Rural Fire Brigade district and they would be responded on a 000 emergency call. If back-up is required, further units would be engaged by the Gold Coast Rural Fire Brigades Group. Urban fire appliances would be responded in the event of a structural fire or specialised structural protection being required. In time it would be expected that the proposed development would become the responsibility of the Urban Service.

10. Improved Community Awareness.

It would be recommended that a copy of the fire management plan be placed on display at any sales office, and a copy of the plan including Appendix 4 on being prepared, be given to the purchasers of lots with a Medium PBH rating to provide them with the necessary information required for the building application process.

The Bushland open space is a very sensitive ecosystem and could be altered drastically if not cared for properly. Residents can assist in maintaining this fragile ecosystem by preventing unwanted fires from encroaching into the parkland, ensure that dumping of rubbish does not degrade the area and that exotic plant species do not invade the bushland. Hot fires on a regular basis will degrade the bushlands biodiversity.

It would be recommended that residents of dwellings with a Medium PBH rating 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.

11. Summary of recommendations.

- All dwellings should be located within the allotments so as to maximise separation from unmanaged bushland. Allotments adjacent to the bushland areas all have a minimum 20 metres separation or more from the medium rated bushland.
- The level of construction for dwellings, if any, should be assigned prior to plan sealing stage (or prior to selling off the plan) when the actual risk would be more readily assessable for individual allotments, allowing for potential alterations during development to terrain and vegetation types.

- All allotments in the estate 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.
- The Recreational Linkage that doubles as a bushfire buffer zone, which incorporates the fire trail clearway, is to be managed predominantly as mowed grassland with scattered canopy trees with discontinuous canopy, at all times. The Bio-basin areas are also to be managed areas by the control of non-endemic grass and weed growth.
- Quality trees and habitat trees can be retained or planted within these buffer zones provided they do not provide a continuous canopy cover or pose a threat to persons or property.
- For optimal bushfire safety and best practise, the allotments must be cleared during operational works and maintained by the developer with low ground fuel levels until sold. Once sold the purchaser must maintain the allotment at all times, before, during and after construction of the dwelling.
- Dwellings should have external hose cocks 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 their homes for fire suppression activities by fire authorities.
- It would be recommended that a copy of the fire management plan be placed on display at any sales office, and a copy of the plan including Appendix 4 on being prepared, be given to the purchasers of lots with a Medium PBH rating to provide them with the necessary information required for the building application process.
- It would be recommended that residents of dwellings with a Medium PBH rating prepare a 'Bushfire Survival Plan', which is available from the Queensland Rural Fire Service website at www.ruralfire.qld.gov.au.

12. Conclusion.

Stages 5.2 to 5.5 are located north and east of Swan Road with bushland reserve to the east, north and northwest. Housing within 50 metres of this retained medium rated bushland would have a Medium PBH rating, with all other housing having Low PBH rating. A minimum 20 metre buffer has been established between housing and retained Medium rated bushland.

This bushfire mitigation plan and the Open Space Management Plan for Precinct 5 – Open Space Balance, Project No. 15052, Issue C, dated April 2015, are consistent in their objectives and outcomes.

With the appropriate management of the open space areas, adequate water supply, good access provisions and minimising of ground fuels, the risk of bushfire damage can be managed and improve the safety of residents and fire services in attending to a bushfire threat, as well as maintaining the localised ecosystems.

As 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.

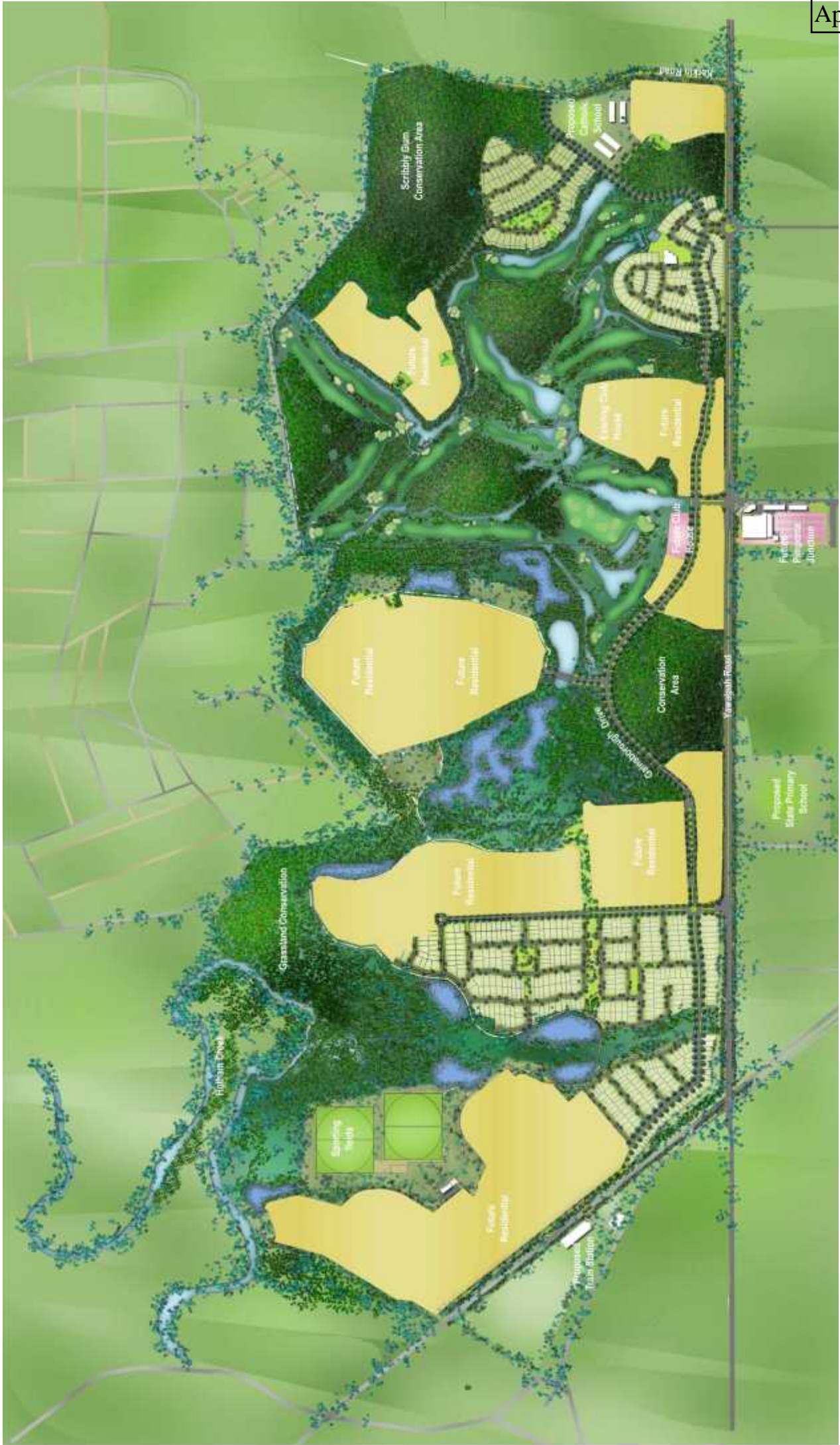
This plan should remain current for a period of 5 years, until 2020, at which time it should be subject to review to take account of changing land use and vegetation patterns. Any major bush fire event affecting the subject site should also trigger a review in order to determine effectiveness of protection 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.



DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

REVISIONS			
No	Description	Date	By
A	COUNCIL APPROVAL	03.2015	CH

NORTH

Associated Consultants

VPM CONSULTING
LANDPARTNERS
Form
DesignFlow

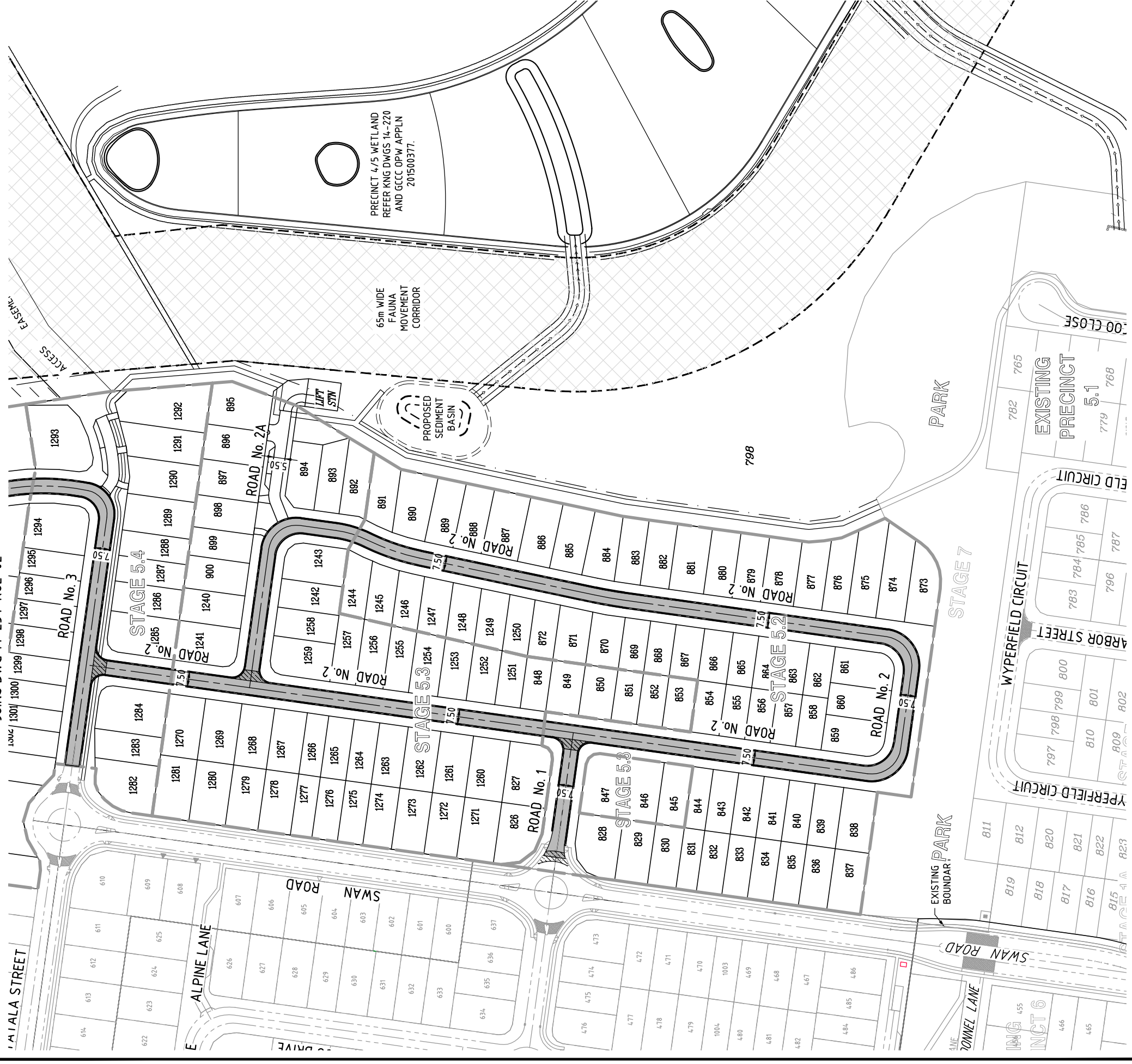
Client
mirvac

Project
GAINSBOROUGH GREENS
STAGES 5.2 - 5.5

EKN GROUP PTY LTD
CONSULTING ENGINEERS
LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@eknpl.com.au
ABN 35 112 053 611

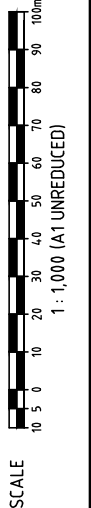
Approved Director: BREB 1498

Drawing Title			
PRELIMINARY FUNCTIONAL LAYOUT PLAN SHEET 1 OF 2			
Drawn	Designed	Checked	Date
CH	CH	GBG	MAR 15
Scale			Sheet
1:1000			01 of -
Drawing No			Revision
A1			14-234-ROL-01
			A



LEGEND

- PROPOSED ROAD CENTRELINE
- - - PROPOSED KERB AND CHANNEL
- ▲ PROPOSED DRIVEWAY POSITION
- ▨ THRESHOLD TREATMENT
- - - 10m GREENWAY OFFSET



JOINS DWG 14-234-ROL-02

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

REVISIONS

No.	Description	Date	By
A	COUNCIL APPROVAL	03.2015	CH



Associated Consultants



Client

Project
GAINSBOROUGH GREENS
STAGES 5.2 - 5.5



LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@knp.com.au
ABN 35 112 053 611

Approved Director: BRFC 1188

Drawing Title
PRELIMINARY
FUNCTIONAL LAYOUT PLAN
SHEET 2 OF 2

Drawn	Designed	Checked	Date
CH	CH	GBG	MAR 15

Scale	Drawing No.	Sheet	Revision
1:1,000	14-234-ROL-02	02 of -	A



LEGEND

- PROPOSED ROAD CENTRELINE
- PROPOSED KERB AND CHANNEL
- PROPOSED DRIVEWAY POSITION
- THRESHOLD TREATMENT
- 10m GREENWAY OFFSET
- EXISTING "AREA A2" BORROW



3.5 BUSHFIRE MANAGEMENT

- LEGEND**
- ▬ Stage boundary
 - Fire trail clear way nom 6m wide.
 - Bush land reserve and Conservation area
 - Fire buffer zone



Access

A Fire trail of a minimum 6 metres wide will allow fire emergency vehicles access along Greenway path and the secondary pedestrian path.

Materials

Reduced fire risk species outlined in *section 4.1* suggested species list, have been selected for this area. Planting in the Recreation linkage as seen in *Figure 5 Open Space Balance Master Plan* consists of 15% planting of canopy trees, as per *DRMP*.

Distance

A fire buffer zone of 23-50 metres located within the Recreation Linkage area provides adequate distance to areas of denser planting within the Conservation Area and the Bush Land Reserve.

Maintenance

The elements included in this design require a low maintenance regime. The plants can be maintained through a routine and scheduled slashing and mowing.

Figure 9: Bushfire Managed Areas

APPENDIX 4

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 Pty Ltd

Specialising in
**BUSHFIRE HAZARD
PLANNING & MITIGATION**

ACN 109 607 101 ABN 97 762 336 595 Phone: 07 5546 7933 Fax: 07 5546 7986 PO Box 40, Ormeau, Qld, 4208
E-mail: admin@bpfire.com.au

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 2500 projects have been successfully completed, including large residential estates such as Coomera Waters, Spring Mountain, Pacific Pines, Coomera Springs, Highland Reserve & Delfin Woodlands 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.