Bushland Protection Systems
Specialising in
BUSHFIRE HAZARD PLANNING & MITIGATION

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UPDATED
BUSHFIRE HAZARD ASSESSMENT AND MITIGATION PLAN

PROPOSED MIXED INDUSTRY BUSINESS AREA
IN
Precinct 5
MIBA South ROL 1
Yarrabilba

FOR

Stockland

DATED

12th June 2025

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2025/1646

Date: 22 Sept 2025

Queensland Government

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

Bushland Protection Systems
Document Control:

Version	Date	Details	Prepared	Checked
1	27/05/25	Draft BMP	Brett Bain	
2	12/06/25	Finalised BMP	Brett Bain	

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1. Background

This plan is for the proposed Mixed Industry Business Area (MIBA) South – ROL 1 of Yarrabilba, as shown in Appendix 1 of this report.

This plan is based on the following material supplied by Stockland.

1.1. MIBA South Application 1 – Plan of Development, drawn by RPS, Plan Ref. 375162-04, Revision A, Dated 11/6/25, is attached as Appendix 1.

This plan is produced in accordance with:

- Bushfire hazard assessment in accordance with the Logan Planning Scheme 2015, Section 8.2.3 – Bushfire Hazard Overlay Code and Sc6.2.6 – Planning Scheme Policy 6, based on State Planning Policy 7/17, support document – Bushfire Resilient Communities 2019, under the Planning Act 2016.
- This report also takes into consideration the 'Pre-Development Bushfire Mitigation Concept' Plan prepared by Bushland Protection Systems, dated 30/1/12, and the approved 'Conceptual Bushfire Risk Assessment and Mitigation Plan' (BMP), produced by Bushland Protection Systems, dated 18/7/2012.

2. Site Description and Bushfire Hazard Assessment

MIBA South ROL 1 is the northern end of MIBA South in Precinct 5 and consists of industrial/commercial allotments, which will be cleared for development. The proposed lots will be managed and be assigned a Vegetation Hazard Class (VHC) 42.6, resulting in a 'Not Bushfire Prone Area' hazard rating.

To the west is Tamborine Waterford Road, with managed properties opposite, providing a 'Not Bushfire Prone Area' hazard rating. To the south is future stages of MIBA which currently consist of open slashed grassland, also providing a 'Not Bushfire Prone Area' hazard rating.

The bushland exposure for the area is a corridor along the northern boundary and bushland to the east.

Along the northern boundary is to be a vegetated corridor which would be assigned a Vegetation Hazard Class (VHC) 16.1 with associated fuel loads of up to 16t/Ha, over a slope of up to 4 degrees with a Forest Fire Danger Index (FFDI) of 54, providing for a potential fire line intensity of up to 8,486kW/m equating to a 'Medium' hazard rating.

To the east the bushland would be assigned a Vegetation Hazard Class (VHC) 16.1 with associated fuel loads of up to 16t/Ha, over a slope of up to 4 degrees with a Forest Fire Danger Index (FFDI) of 54, providing for a potential fire line intensity of up to 8,486kW/m equating to a 'Medium' hazard rating.

Table 2.1: Potential Bushfire Hazard Rating

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, proposed Lots 100-107, 132-147 & 149-150 would be assigned a 'Medium' hazard rating, while Lots 108-131 & 148 would be assigned a Low/No hazard rating.

3. Roads, Driveways and Trails

3.1. Roads

The proposed development has substantial internal road network with future connections to the south and north. It is considered unlikely that access/egress would be compromised by bushfire.

3.2. Driveways

Being industrial/commercial allotments, the driveways would be short and direct.

3.3. Trails

A fire trail is to be installed to the northern side of Lots 100 & 101 (within the Open Space Area) providing vehicle access between the lots and bushland that don't have road separation. Connection is to be provided to the roadways at each end

Fire trails would be low impact preferably with a mowed or slashed surface which would minimise disturbance or erosion, have a maximum grade of 25% and maximum cross slope of 5%. Fire trails are to have a minimum cleared width of 6 metres and minimum formed width of 4 metres. Where fire trails deviate away from lot boundaries the area between the trail and lot boundary must be managed with low fuel levels so as not to compromise the buffer function that fire trails provide in addition to vehicle access. Appendix 3 on fire trails is included in this report as a guide on establishing and maintaining fire access trails.

A Pedestrian Link is provided along the northern side of Lots 145 & 150 within a buffer zone. As this is only a short distance, it is considered that a vehicle fire trail is not warranted.

4. Appropriate Building Location

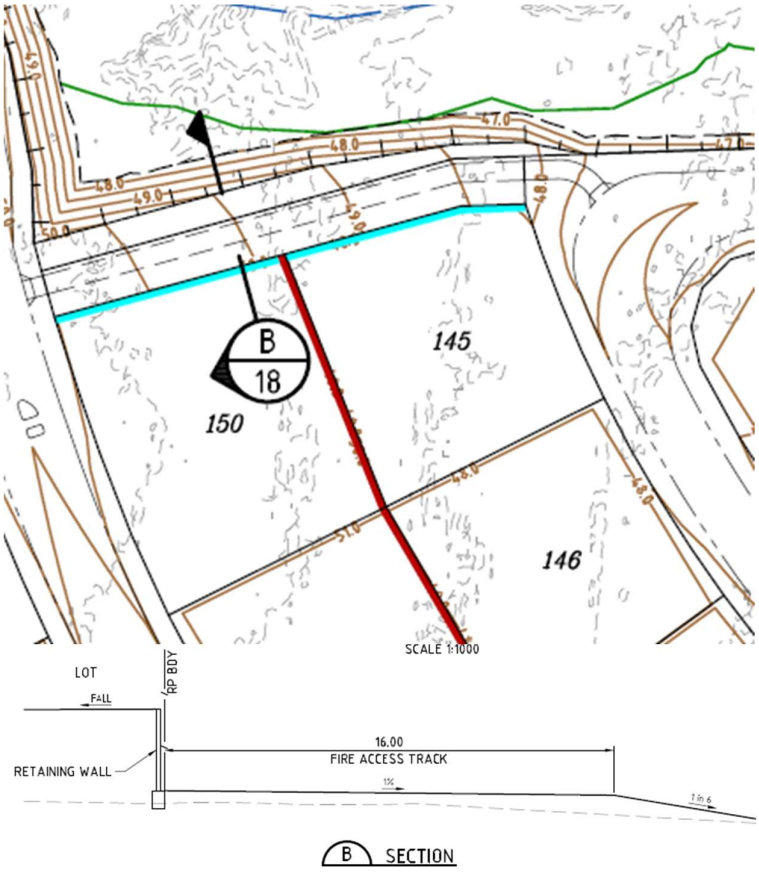
The proposed allotments are located on relatively level ground with a short slope down to the vegetation corridor in the north, away from steep slopes and ridgelines, in an already disturbed area.

The State Planning Policy 7/17 support document - Bushfire Resilient Communities Technical Reference Guide 10/19, requires a separation distance between buildings and unmanaged bushland that limits the radiant heat flux impact on the building to less than 29kW/m^2 when assessed under the methodology specified in the Bushfire Resilient Communities Technical Reference Guide 10/19. The minimum distance equates to 16 metres separation between buildings and bushland in this location.

Future buildings on Lots 100 & 101 are to have a minimum 10 metre setback from the northern lot boundaries, which combined with the 6 metre wide fire trail provides a minimum separation of 16 metres from unmanaged bushland. The 10 metre setback may include driveways or carparking.

Buildings on Lots 145 & 150 are to have a minimum separation from the bushland of 16 metres. This is predominantly provided by the managed buffer along the northern boundary of the lots to the top of batter as shown in Figure 4.1 below, taken from the Functional Drawings. The first 10 metres is to be managed as an inner Asset Protection Zone (APZ) with the remainder managed as an outer APZ. There is 16 metres of buffer to the north of Lot 150, and for Lot 145 the buffer tappers in a little at the eastern end, therefore some building setback within the lot will be required, as shown in Appendix 1.

Figure 4.1: Lot 145 & 150 buffer separation



Vulnerable Uses, Community Infrastructure for Essential Services and Hazardous Material Sites (as defined in Table 7 of the State Planning Policy – state interest guidance material – Natural hazards, risk and resilience – Bushfire 12/19), see Table 4.1 below, are preferably not located in a bushfire prone area (within 100 metres of bush). If an overriding community need for the use to be in a bushfire location can be proven and it cannot go anywhere else, then these uses must have a separation distance that achieves a 10kW/m^2 radiant heat flux or less, which equates to a minimum distance of 37 metres for those uses in this location.

Table 4.1: Vulnerable Use, Community Infrastructure & Hazardous Materials

Group	Uses
Vulnerable uses	*childcare centre, community care centre, detention facility, educational establishment, hospital, nature-based tourism, relocatable home park, rooming accommodation, residential care facility, resort complex, retirement facility, tourist park*
Community infrastructure for essential services	*educational establishment, emergency services, hospital*
Hazardous materials in the context of bushfire hazard	Hazardous chemicals that are present at the levels or in the quantities that would constitute the use being a hazardous chemical facility Hazardous materials that are present in the quantities identified in the Work Health and Safety Regulation, schedule 15

Table 7 – Vulnerable uses, community infrastructure for essential services and materials that are hazardous in the context of bushfire hazard

5. Appropriate Clearing and Landscaping

The proposed 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.

A managed buffer is to be provided along the northern side of Lots 145 & 150 to the top of batter as shown in Figure 4.1 above, with the first 10 metres managed as an inner Asset Protection Zone (APZ) and the remainder managed as an outer APZ.

The vegetation corridor to the north and bushland to the east should be managed by control of non-endemic grass and weed growth. All slash pine is to be removed.

All previous or future cleared timber and foliage or accumulated rubbish should be removed from the site or mulched and not simply moved aside as this will result in a concentrated area of fuel loading which will increase the potential bushfire hazard from that direction.

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 and weeds penetrate into the edges of the retained bushland, creating conditions for higher 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.

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.

Where 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. When operational clearing approvals are applied for, the application needs to include cleared buffers of 100 metres into developable areas in adjoining stages and these areas must be managed until developed.

6. Building Construction

The bushfire provisions of the National Construction Code (NCC) 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" *(NCC Schedule 3 Definitions)*.
As the proposed development is an industrial/commercial area, future buildings will not be Class 1, 2, 3 or associated 10A structures and therefore the bushfire requirements of the NCC, including AS3959-2018, are not applicable.

Under the National Construction Code (NCC) 2022 (adopted May 2023) there are proposed new bushfire mitigation requirements for certain Class 9 buildings in or within 100 metres of bushfire prone areas. These structures include difficult to evacuate facilities, such as early childhood centres, primary and secondary schools, residential care buildings, health-care buildings (as defined in the NCC 2022 G5D4). If any buildings associated with these uses are proposed within 100 metres of the Medium hazard rated bushland, additional requirements will be applicable under Specification 43 of the NCC, and further advice should be sought at building application stage. The increase in minimum separation between buildings and bushland would be covered by the minimum separation for Vulnerable Uses outlined above.

Fencing that adjoins bushland areas are to be non-combustible.

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 a second at 200kPa or that which is able to be supplied by the local reticulated network.

Fire Hydrants are to be installed in accordance with the *Fire Hydrant and Vehicle Access Guidelines for residential, commercial and industrial lots*, Queensland Fire and Emergency Services, 2015, unless otherwise specified by the relevant water authority.

8. Provision of Fire Fighting Infrastructure

Buildings are to have external taps and hoses (or hose reels) 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 or be of metal above ground. Occupants should maintain good access around their buildings for fire suppression activities by fire services.

9. Local Fire Brigades

The subject property is in the urban Fire & Rescue district, and they would be responded on a 000 emergency call, with back-up from Logan Village and Tamborine Rural Fire Brigades. If further back-up is required, additional units would be engaged by the Beaudesert/Logan Rural Fire Brigade Groups.

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 this report be placed on display at any sales office, and a copy of the report be given to the purchasers of lots to provide them with the necessary information required for the building application process.

A copy of this plan should be retained by lot owners and occupants 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.

Further useful information on Bushfire Preparedness and Local Rural Fire Brigades can be obtained through the Rural Fire Service Division of the Queensland Fire and Emergency Service at www.ruralfire.qld.gov.au or by phoning 1300 369 003.

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.

11. Summary of Recommendations

- A fire trail is to be installed to the northern side of Lots 100 & 101 (within the Open Space Area) providing vehicle access between the lots and bushland that don't have road separation. Connection is to be provided to the roadways at each end.

- Fire trails would be low impact preferably with a mowed or slashed surface, have a maximum grade of 25% and maximum cross slope of 5%. Fire trails are to have a minimum cleared width of 6 metres and minimum formed width of 4 metres. Where fire trails deviate away from lot boundaries the area between the trail and lot boundary must be managed with low fuel levels so as not to compromise the buffer function that fire trails provide in addition to vehicle access.

- A Pedestrian Link is provided along the northern side of Lots 145 & 150 within a buffer zone. As this is only a short distance, it is considered that a fire trail is not warranted.

- Future buildings on Lots 100 & 101 are to have a minimum 10 metre setback from the northern lot boundaries, which combined with the 6 metre wide fire trail provides a minimum separation of 16 metres from unmanaged bushland. The 10 metre setback may include driveways or carparking.

- Future Buildings on Lots 145 & 150 are to have a minimum separation from the bushland of 16 metres. This will require a small building setback in Lot 145 as shown in Appendix 1.

- A managed buffer is to be provided along the northern side of Lots 145 & 150 to the top of batter as shown in Figure 4.1 above, with the first 10 metres managed as an inner Asset Protection Zone (APZ) and the remainder managed as an outer APZ.

- Fencing that adjoins bushland areas are to be non-combustible.

- The proposed 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.

- The vegetation corridor to the north and bushland to the east should be managed by control of non-endemic grass and weed growth. All slash pine is to be removed.

- All previous or future cleared timber and foliage or accumulated rubbish should be removed from the site or mulched and not simply moved aside as this will result in a concentrated area of fuel loading which will increase the potential bushfire hazard from that direction.

- 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.

- Edge effects are to be managed.

- 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.

- Where 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. When operational clearing approvals are applied for, the application needs to include cleared buffers of 100 metres into developable areas in adjoining stages and these areas must be managed until developed.

- 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 a second at 200kPa or that which is able to be supplied by the local reticulated network. Fire Hydrants are to be installed in accordance with the *Fire Hydrant and Vehicle Access Guidelines for residential, commercial and industrial lots*, Queensland Fire and Emergency Services, 2015, unless otherwise specified by the relevant water authority.

- Buildings are to have external taps and hoses (or hose reels) 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 or be of metal above ground. Occupants should maintain good access around their buildings for fire suppression activities by fire services.

- It is recommended that a copy of this report be placed on display at any sales office, and a copy of the report be given to the purchasers of lots to provide them with the necessary information required for the building application process.

- A copy of this plan should be retained by lot owners and occupants 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.

12. Conclusion

With the appropriate maintenance of fuel levels around the development, adequate water supply, good access provisions and minimising ground fuels, the risk of bushfire damage can be managed and improve the safety of occupants and fire services in attending to a bushfire threat.

This plan remains current for a period of 5 years, until 2030, 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 to determine effectiveness of protection measures and annual hazard reduction initiatives.

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

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

Brett Bain, MDIA, MRFAQ
Lead Bushfire Consultant.

13. Bibliography

Articles/Books/Reports/Guidelines/Standards

Australian Building Codes Board, March 2019, National Construction Code Handbook, "Bushfire Verification Method"

Leonard, J, Et al., 2014, "A new methodology for State-wide mapping of bushfire prone areas in Queensland", CSIRO.

Leonard, J and Opie, K, 2017, "Estimating the potential bushfire hazard of vegetation patches and corridors", CSIRO.

Queensland Department of State Development, Manufacturing, Infrastructure and Planning, December 2019, "Natural hazards, risk and resilience – Bushfire: State Planning Policy – state interest guidance material"

Queensland Fire and Emergency Services, October 2019, Bushfire Resilient Communities, "Technical Reference Guide for the State Planning Policy State Interest: Natural Hazards, Risk and Resilience – Bushfire"

Queensland Fire and Emergency Services, March 2019, "Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots"

Standards Australia, 2018, "Australian Standard 3959: Construction of buildings in bushfire-prone areas" (First Edition 1991; Second Edition 1999; Third Edition 2009; Fourth Edition 2018)

Standards Australia, Barry Eadie Et al., 2009, HB330-2009, "Living in bushfire-prone areas – A guide to reducing the threat and impact of bushfire attack and an explanation of the basis of AS3959"

The State of Queensland (Queensland Reconstruction Authority), CSIRO, July 2020, Bushfire Resilient Building Guidance for Queensland Homes

Vic Department of Sustainability and Environment, July 2010, "Overall fuel hazard assessment guide", 4th Edition.

Legislation

Fire and Rescue Service Act 1990 (Qld)
https://www.legislation.qld.gov.au/view/html/inforce/current/act-1990-010

Building Act 1975 (Qld)
https://www.legislation.qld.gov.au/view/html/inforce/current/act-1975-011

Building Regulation 2006 (Qld)
https://www.legislation.qld.gov.au/view/html/inforce/current/sl-2006-0227

Planning Act 2016 (Qld)
https://www.legislation.qld.gov.au/view/html/inforce/current/act-2016-025

Vegetation Management Act 1999 (Qld)
https://www.legislation.qld.gov.au/view/html/inforce/current/act-1999-090

Work Health and Safety Regulation 2011 (Qld)
https://www.legislation.qld.gov.au/view/html/inforce/current/sl-2011-0240

Other Legislative Materials

Australian Building Codes Board, National Construction Code (NCC) Volumes 1 & 2

Department of Local Government and Planning, Department of Emergency Services, June 2003, State Planning Policy Guideline, "Mitigating the Adverse Impacts of Flood, Bushfire and Landslide" (SPP1/03)

Department of Infrastructure, Local Government and Planning, April 2016, State Planning Policy – State interest guideline "Natural hazards, risk and resilience" (SPP 7/17)

Council Planning Scheme

Appendix 1

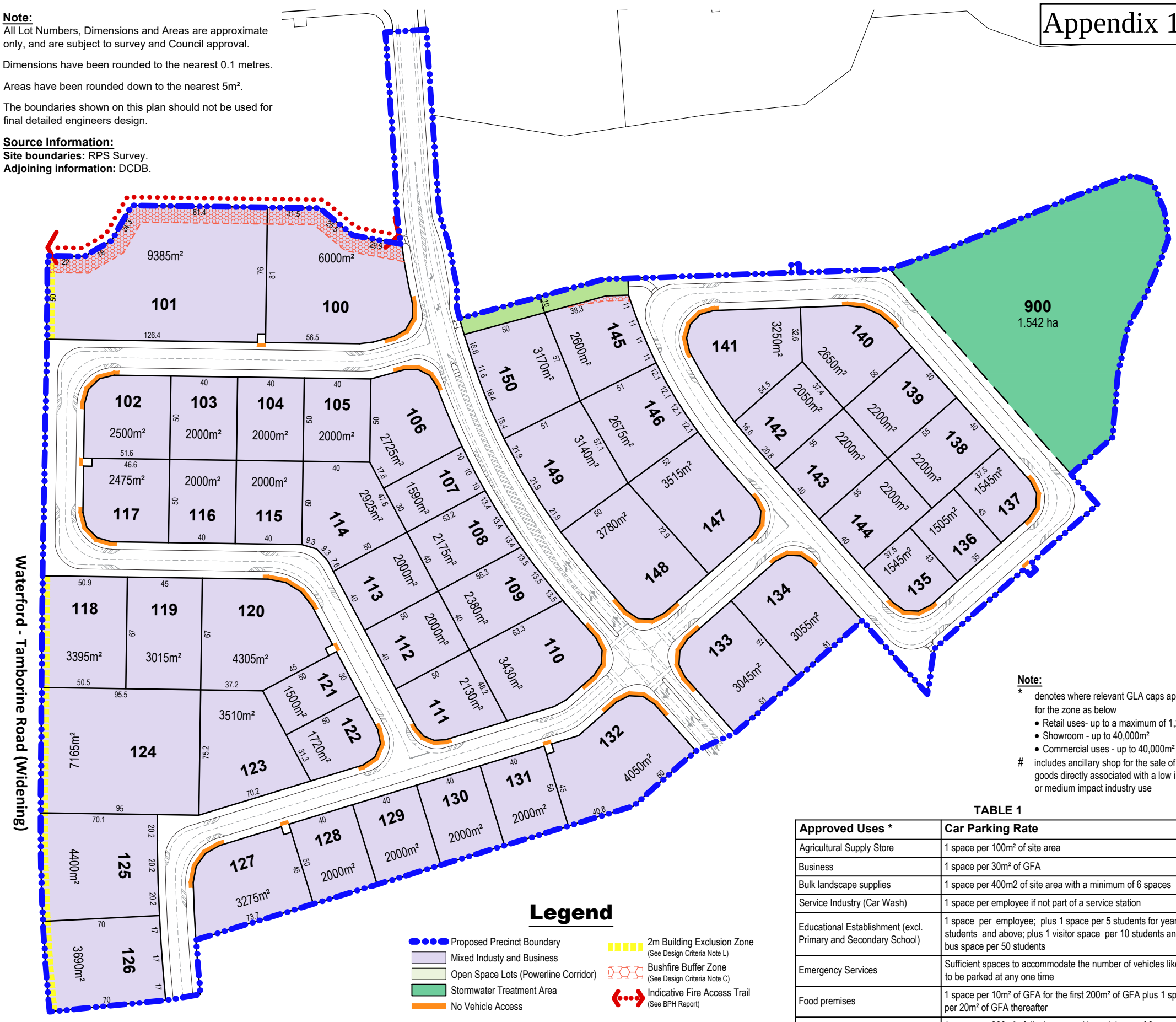
Note:
All Lot Numbers, Dimensions and Areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

Areas have been rounded down to the nearest 5m².

The boundaries shown on this plan should not be used for final detailed engineers design.

Source Information:
Site boundaries: RPS Survey.
Adjoining information: DCDB.



Legend

- Proposed Precinct Boundary
- Mixed Industy and Business
- Open Space Lots (Powerline Corridor)
- Stormwater Treatment Area
- No Vehicle Access
- 2m Building Exclusion Zone (See Design Criteria Note L)
- Bushfire Buffer Zone (See Design Criteria Note C)
- Indicative Fire Access Trail (See BPH Report)

DESIGN CRITERIA

Development is to be in accordance with the provision of the Industry and Business Area - PDA Guideline No. 10 (May 2015 version), except for the following provisions:

A. All advertising devices are to be in accordance with Logan City Council's Planning Scheme.
B. End of trip facilities can be provided by operators if deemed necessary.
C. Buildings and the location of storage facilities for flammable materials, are to be outside the bushfire buffer zones for Lots 100, 101 and 145 and storage of flammable materials is not to be above ground for all lots.
D. A dedicated refuse storage area is to be provided on site. Waste collection is to be in accordance with Logan City Council's Planning Scheme Policy 9 - Waste Management.
E. All refuse storage areas, materials, plant areas and services will be suitably screened from to all boundaries.
F. Except as otherwise provided buildings are shaped, designed and finished so that the maximum length of unvaried or unarticulated (blank) wall does not exceed 20 metres (unless facing a side or rear property boundary).
G. Roofing materials are pre coloured and non-reflective.
H. Glazing treatment must use non-reflective materials/products.
I. Where buildings face the public realm areas, including streets, parks and walkways, significant overlooking and surveillance opportunities must be incorporated with positive CPTED practice. Where public use walkways are incorporates between or within sites, the buildings must front activated zones to these walkways in accordance with positive CPTED practice.
J. All service areas, plant and air conditioning plant is to be screened, integrated into the building, or located on the roof with screening.
K. Site coverage may be up to 80% provided:-
- All other landscaping and development requirements of the Plan of Development are complied with;
- Development is in context with, and visually compatible with the appearance of any neighbouring buildings;
- Adequate pedestrian access and amenity is provided at ground level.

L. Buildings on lots 101, 118, 124, 125 and 126 must;
- be setback a minimum of 2.0 metres from either the boundary or any part of a retaining wall to the future Waterford-Tamborine Road, whichever is closer; and
- include an articulated facade and/or a minimum of 2 colours (which may contain glazing) along any elevation facing Waterford-Tamborine Road.

M. Zero setbacks to side and rear boundaries will be permitted subject to sight lines and other constraints affecting adjoining development.
N. Bicycle parking will be provided at the rate of one space per five car parking spaces.
O. Landscaping:-
- Preference is to be given to utilising plant species that are native and endemic to the area and are low maintenance species.
- All street frontages will require a 2.0m minimum width landscape strip, except at vehicular and pedestrian access points.
- Provide a 1.8m high black tubular steel fence (or similar) along the Waterford-Tamborine Rd frontage.
- Canopy trees and landscape will be provided by Stockland within the street and verge. These must be retained, or otherwise relocated, as part of the development and incorporated into any final verge surface treatments, maintaining compliance with the specifications within Logan City Council's *Standard Specification No.2 (Landscaping) 2015*.

P. Car parking and vehicle manoeuvring:-
- Car parking will be provided in accordance with Table 1.
- Car parking areas are to be external to the building and kept, used and maintained exclusively for the parking of vehicles and are accessible to all employees and visitors during the normal hours of operation of the use with no encumbrance.
- Service vehicles must enter and leave the Site in a forward direction.
- Where an onsite refuse collection area is provided, access and manoeuvring areas are designed and provided to enable access and collection by a refuse collection vehicle based on the Design Service Vehicle in Austroads/Standards Australia HB72 Design Vehicles and Turning Path Templates.
- All premises are identified by the provision of a street number in a prominent location, preferably near the site entry, i.e. on the kerb or letterbox or by signage on the building or site.
- Where more than one lot is purchased by the same owner or adjoining lots are being developed at the same time, shared parking and access at the side and rear of lots is encouraged between adjoining properties to improve parking efficiency.

DEVELOPMENT STANDARDS

All engineering works are to comply with the PDA Guideline No. 13 Engineering Standards, dated September 2017, unless otherwise approved by this PoD. Retaining wall construction is to be in accordance with Council standards. Driveway construction is to be in accordance with Council standards.

Note

Development for a Concrete Batching Plant is required to demonstrate that it's environmental emissions will be commensurate with the definition of *Medium impact industry* in the Yarrabilba PDA Development Scheme. A separate development application to EDQ will be required for a concrete batching plant.

Note:

* denotes where relevant GLA caps apply for the zone as below
- Retail uses- up to a maximum of 1,200m²
- Showroom - up to 40,000m²
- Commercial uses - up to 40,000m²

\# includes ancillary shop for the sale of goods directly associated with a low impact or medium impact industry use

TABLE 1

Approved Uses *	Car Parking Rate
Agricultural Supply Store	1 space per 100m² of site area
Business	1 space per 30m² of GFA
Bulk landscape supplies	1 space per 400m2 of site area with a minimum of 6 spaces
Service Industry (Car Wash)	1 space per employee if not part of a service station
Educational Establishment (excl. Primary and Secondary School)	1 space per employee; plus 1 space per 5 students for year 12 students and above; plus 1 visitor space per 10 students and 1 bus space per 50 students
Emergency Services	Sufficient spaces to accommodate the number of vehicles likely to be parked at any one time
Food premises	1 space per 10m² of GFA for the first 200m² of GFA plus 1 space per 20m² of GFA thereafter
Garden centre	1 space per 300m² of display area with a minimum of 6 spaces; plus 1 space per 20m² of indoor retail use area
Shop (Hardware and Trade Supplies)	1 space per 60m² of GFA
Indoor Entertainment	1 space per 10m² of GFA
Indoor sport and recreation	1 space per 15m² of GFA
Low Impact Industry #	2 spaces per tenant + 1 per 100m² of GFA
Medium Impact Industry #	1 space per 80m² of GFA up to 500m²; plus 1 space per 100m² GFA thereafter
Outdoor sales	1 space per 300m² of display area; plus 1 space per 1.5 employees
Outdoor Sport and Recreation (All other uses)	Subject to traffic assessment
Outdoor Sport and Recreation (Bowling green)	4 spaces for the first rink; plus 2 spaces for the subsequent rink
Outdoor Sport and Recreation (Clubhouse)	1 space per 30m² of GFA
Place of Assembly	1 space per 10m² of GFA
Research and Technology Facility	2 spaces per tenant + 1 per 100m² of GFA
Service Industry	1 space per 50m² of GFA
Showroom	1 space per 35m² of GFA
Telecomunicaitons Facility	1 space per employee with a minimum of 2 spaces
Indoor Entertainment (Theatre)	1 space per 8 seats
Service Industry (Transport Depot)	1 car space for every truck space; plus 1 space per 2 non-driver employees
Utility Installation	1 space per employee with a minimum of 2 spaces
Veterinary Hospital	1 space per 30m² of GFA
Warehouse	1 space per 2 employees or, 1 space per 100m² GFA, whichever is greater
Wholesale Nursery	1 space per employee plus 1 visitor space
Funeral Parlour	1 space per employee plus 1 space per 10m² of GFA associated with a chapel
Crematorium	1 space per employee
Warehouse (Self Storage)	1 space per 100 storage units plus 1 space per employee

PLAN REF: 375162 – 04
Rev No: A
DATE: 11 June 2025
CLIENT: STOCKLAND
DRAWN BY: WNW / GM
CHECKED BY: WNW

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Appendix 2: Asset Protection Zones

This Appendix on Asset Protection Zones (APZs) is included in this report as a guide on how to implement and maintain Asset Protection Zones, however **the dimensions required for these zones are those stipulated in the report**, not the generalised examples stated in this appendix.

What is an APZ

Generally, buildings or infrastructure located in a bushfire prone area are required to have a minimum separation between the buildings/infrastructure and the unmanaged hazardous bushland (hazardous bushland being bushland assigned a Medium, High or Very High bushfire hazard rating). This separation is known as an Asset Protection Zone (APZ) and is also sometimes referred to as a Radiation Zone or bushfire buffer.

The Asset Protection Zone can include roadways, fire trails, car parking, driveways, active park and managed areas (i.e. lawns and correctly designed landscaping). For example, on rural allotments the APZ would most often be provided by managed areas with a Low hazard rating (lawns and gardens), whilst in an area of small residential allotments adjacent to large areas of bushland the APZ may consist of a roadway or fire trail possibly supplemented by managed areas within the allotments.

An APZ provides an area for bushfire impact mitigation and a defendable space for active fire suppression. An APZ;

- Allows the radiant heat from a bushfire in adjacent bushland to at least partially dissipate before impacting on buildings or infrastructure, thereby mitigating the bushfires impact on the asset,
- Reduces the chance of direct flame contact on buildings,
- Usually includes vehicle access or firefighter pedestrian access,
- Provides an area of defendable space around the asset, allowing firefighters room to work safely and defend structures during direct, indirect and defensive suppression strategies,
- Provides a work area and break for hazard reduction burning activities to be conducted, if desirable.

Dimensions of APZs

Often the APZ will be split into two zones, an ‘inner APZ’ and ‘outer APZ’, particularly where the APZ is a managed vegetation area. As a general rule of thumb the first ten metres around the building would be an inner APZ while the remainder of the required separation would be an outer APZ, however the exact dimensions are those stipulated in the bushfire mitigation plan, not the generalised examples stated in this appendix, as it may vary depending on individual site conditions. The dimensions may vary depending on site factors, for example with a building on a slope, the APZ may be less on the upslope side of the building than on the downslope side. A change in vegetation type or size of vegetation area that the building is exposed to may also vary the dimensions of the APZ. An extended outer APZ is also sometimes used to extend the outer APZ in consideration of slope. The extended outer APZ is usually managed the same as the outer APZ.

Slopes in APZs

Generally, APZs require ongoing vegetation management and therefore need to be located where management can be physically possible. APZs on public land should not include slopes with a grade greater than 1:4, on private land APZs should avoid slopes greater than 1:3. For example, where a roadway (including road verge) provides the required separation, the road verge cannot consist of a batter greater than 1:4. Where a retaining wall is located within an APZ, access to all levels need to be provided permitting management of the entire APZ.

Vegetation in APZs

It should be noted that APZs do not necessarily call for complete clearing of all vegetation, as tall canopy tree retention, for example, is a common feature within outer APZs. The management of fuel levels within these zones is designed to reduce the intensity of bushfires before the bushfire impacts on assets such as buildings and property. The correct and continued maintenance of fuel levels within a buildings APZ may result (depending on factors such as terrain, fuel types and climatic conditions) in reduced flame height, a slowing of the rate of spread of the fire and a reduced risk of direct or radiant heat attack on buildings and other property assets.

The following is a guide for vegetation within APZs, however where there is an inconsistency between the main body of the Bushfire Mitigation Plan (BMP) and this Appendix, the requirements of the BMP applies.

<u>The inner APZ;</u>

- Trees have less than 15% canopy cover at maturity and canopy is discontinuous.
- Trees do not touch or overhang buildings.
- Near surface fuels (shrubs, ground covers) are not to be planted underneath tree canopies, are less than 300mm in height and have less than 10% plant cover.
- Lawns/grass is kept to less than 100mm height.
- No accumulated Leaf litter or fallen timber.

An example of 15% canopy – If the tree species being used have a maximum 5 metre diameter canopy at maturity then there could be up to one tree per 166m^2.

<u>The outer APZ;</u>

- Trees have less than 30% canopy cover at maturity.
- Trees do not touch or overhang buildings.
- Near surface fuels (shrubs, ground covers) are not to be planted underneath tree canopies, are less than 300mm in height and have less than 20% plant cover. Gaps between fuel patches are greater than the size of the patches.
- Lawns/grass are kept to less than 300mm height.
- No fallen timber.
- Leaf litter is not allowed to accumulate to more than 5t/Ha (10mm deep).

An example of 30% canopy – If the tree species being used have a maximum 5 metre diameter canopy at maturity then there could be up to one tree per 83m^2.

General for both zones;

- No mulch, woodchip, bark or leaf litter build-up against structures or flammable fencing.
- Shrubs and ground covers should not be species that accumulate a lot of dead fuel underneath.
- Creepers used as ground cover must not be climbers.
- Creepers should be low broadleaf succulents, such as Myoporum ellipticum.
- Tree selection is not to include fibrous bark trees or ribbon bark trees.
- Tree species have a well-defined trunk with upper canopy, not short bushy trees with foliage from ground to canopy, providing ladder fuels. Trees have branches lower than two metres removed, providing separation between canopy and ground fuels.
- Weed growth is removed.

The above criteria for an outer APZ, would approximately allow up to 8t/Ha overall fuel load in the outer zone.

Plant/Canopy cover is defined as the amount of ground blocked out by that fuel layer if viewed while looking straight down from above. Each plant is considered opaque – any ground within the perimeter of the plant cannot be seen.

Pebbles, gravel or scoria may be useful substitutes for garden mulch. Pathways and gravel areas in addition to lawn can assist in separation of plantings resulting in less continuity of fuels.

How to select the correct plant species for APZs

In selecting the correct plant species to use for landscaping in a bushfire prone area, consideration needs to be given to plant moisture content, branching patterns, texture, foliage density, leaf type, bark type, retention of dead material, and presence of oils, waxes and resins.

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. Section 5 of the document provides a good description of the above characteristics and which are good or bad, and Section 7 of the document provides a plant selection key, which is a step by step guide on how to select plants based on those characteristics and should be used when choosing what plants to have in APZs.

There are a number of different terms used to identify suitable plants, some of the more common ones include Fire Resistant, Fire Retardant and Firewise. Not all of these are correct and such plant lists are often confused by some as to their purpose.

'Fire Resistant Plants' is a term that describes plant species that survive being burnt and will regrow after a bushfire. They are resistant to being killed by a bushfire, but not to being burnt. Therefore, they may be highly flammable and inappropriate for bushfire risk areas. You can often find lists of 'Fire Resistant Plants' being used for the wrong purpose due to people not understanding this, so beware, it does not necessarily mean low flammability.

'Fire Retardant Plants' can be confused by some as being plants that will not burn. All plants will burn under the right conditions, so don't be misled. Plants with low flammability are good, but can still burn, which is why positioning, planting density and ongoing management is also just as important.

'Firewise Plants' is the term used in the 'Landscaping for Bushfire' document to describe suitable lower flammability plants.

Other Features within APZs

Non-flammable features such as tennis courts, in-ground swimming pools, dams, driveways, paved or concreted areas, uncovered patios and non-combustible water tanks may be located within the APZs. (Note: a timber deck around a pool, is not non-flammable and if connected to the building is part of the building.)

Retaining walls and fencing within APZs should preferably be non-flammable.

Piles of timber, firewood and other flammable material should not be stored within the APZ unless shielded from bushfire.

Management of APZs

Management requirements in the APZ include:

- Tree branches below two metres being removed.
- Selective removal of tree saplings.
- Fallen Timber, bark and twigs being removed.
- Leaf Litter being controlled to the appropriate level, which can be achieved by raking or using a blower/vac.
- Removing of weed growth regularly, especially woody weed.
- Regular mowing, slashing or grazing.
- Trimming back of shrubs and ground covers
- Regular watering to keep lawns and vegetation lush and green at all times, particularly during drought, when fires are more likely to happen.
- If poisoning is used, ensure dead material has time to collapse and begin to rot prior to the onset of fire season and not provide standing dead material as fuel for a potential bushfire.

Ongoing management of vegetation in the APZ is just as critical as getting the right type of plants and correct landscape design.

Building construction ratings (or BALs) are calculated with consideration of the amount of separation between the building and hazardous bushland. Not properly maintaining the APZ separation may mean the designated construction of the dwelling is not sufficient and could compromise building survivability in the event of bushfire. This could also lead to issues with insurance claims in the event of building damage or loss.

Appendix 3: Fire Trails

Recommendations for Fire Trails

Fire trails can be a very effective tool in the management of bushland, for weed control, hazard reduction requirements, prescribed burns and fire suppression activities. A good well maintained trail network can effectively enhance and maintain desired ecosystems, while providing added safety for the protection of life and property. The following is some ways in which fire trails can be constructed and maintained to improve their viability.

1. Fire trails should preferably be constructed to a cleared width of 6 metres and a formed width of 4 metres, and be able to be negotiated by light and medium 4 wheel drive fire appliances.

2. They should preferably have a maximum gradient of 25%, a maximum cross slope of 5%, avoid large cut and fill and avoid sharp corners.

3. Fire trails up to 25% can be of compacted earth surface designed with water shedding devices, such as pipes under trail, whoa boys or change of gradients, to prevent washouts or gouging of slopes. It would also be advantageous in some cases if grass coverage can be established, which with periodic slashing or mowing will assist in preventing washouts.

4. Fire trails should have access at each end and multiple access/egress points where possible.

5. Fire tails are to have passing and turn around areas at maximum intervals of 400 metres.

6. Periodic management of ground fuel levels along the edges of fire trails should be implemented to at least one metre each side to improve accessibility during a fire event.

7. Trees alongside fire trails should have low branches removed to a height of 2 metres to assist in preventing fire from climbing into treetops. Branches overhanging fire trails should be removed to a minimum height of 4 metres to ensure access by fire vehicles.

8. Fire trails should be inspected each year prior to fire season, to ensure their condition and carry out remedial work if required.

9. Dead or dying trees that are close to fire trails and may pose a risk to fire services should be removed.

10. Fire trails should not be seen as fire breaks. They are an aid in the management of fuel levels and fire suppression activities.

11. Fire trails should be identifiable to land managers and fire services by signage and map records. Where a fire trail network exists, intersections should also be identifiable.

Bushland Protection Systems
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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 3500 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.

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 and 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.

Our Consultants are registered with the Rural Fire Association of Queensland (RFAQ) as Level 2 Accredited Bushfire Practitioners.