

PLANNING POLICY NO. 12

Assessment of Bushfire Hazard and Preparation of Bushfire Management Plans

1.0 Purpose

The purpose of this Planning Scheme Policy is to:

- define the procedure to be followed in carrying out a bushfire hazard assessment to ascertain the severity of bushfire hazard a site may have; and
- provide guidance on the process necessary and the items that need to be addressed in the preparation of a Bushfire Management Plan; and
- facilitate in the identification of areas of bushfire hazard to reduce the risk of damage to property or loss of life; and
- ensure that any development is responsive to, and cognisant of, bushfire hazard.

1.1 Application of the Policy

The provisions of this policy apply to development required to undertake a bushfire hazard assessment and / or provide a Bushfire Management Plan to assist in achieving the purpose of this Policy.

The content in this policy is sourced from Appendix 3 and 8 in the *State Planning Policy Guideline 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide*.

2.0 Preparation of a Bushfire Hazard Assessment

A Bushfire Hazard Assessment is the most appropriate method for determining the hazard severity of a site, and hence to ascertain the level and degree of controls that apply to the site under the Bushfire Risk Minimisation Code. The methodology contained within this policy for the carrying out of this assessment is recognised and endorsed by the Rockhampton Regional Council. Any other methodology proposed to be used in the preparation of a Bushfire Hazard Assessment must be approved by Council as acceptable, in consultation with the Queensland Fire and Rescue Service, prior to the preparation of the Bushfire Hazard Assessment. Without such an approval, the methodology and any assessment based upon it, cannot be approved.

Climate change will over a considerable period of time influence the health, vigour and extent of vegetation types within the community and accordingly their bushfire risk. The changes are however difficult to predict and expected to occur gradually over a considerable period of time and therefore it is not considered to be practical to consider climate change in a Bushfire Hazard Assessment at present.



2.1 Methodology

The methodology used in this policy is based on both a quantitative and qualitative assessment.

The quantitative assessment is based on the three (3) key characteristics of land found to have the greatest influence on determining the bushfire hazard severity of land – vegetation communities, slope and aspect.

The area being assessed needs to be disaggregated into sub-units for each characteristic. Each sub-unit is allocated a score for each of the three characteristics. The total score for each sub-unit determines the severity of bushfire hazard for that sub-unit. A qualitative review of these findings should then be undertaken to verify the results of the quantitative assessment. The qualitative review should consider the known bushfire behaviour.

Finally a safety buffer of land in close proximity to the identified bushfire hazard area needs to be provided. This buffer is required because bushfires can affect nearby un-vegetated land in close proximity, particularly due to winds fanning flames, smoke, embers and radiant heat. These buffer areas are however accommodated within the Bushfire Risk Minimisation Code.

2.2 State Interests

This policy is based on and sources information from the *State Planning Policy Guideline 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide*. Should the contents of this policy differ in any regard to the contents of an amended State Planning Policy and any guideline supporting the State Planning Policy; the State Planning Policy and guideline will take precedence.

2.3 Carrying out a Bushfire Hazard Assessment¹

Step 1: Assessment of vegetation communities

The different types of vegetation communities determine the rate at which dry fuel accumulates. Some vegetation communities protect fuel from drying out in all but extreme bushfire seasons and can then be susceptible to very destructive bushfires. Alternatively, vegetation communities may expose fuels to drying and therefore be frequently available for burning. Frequent bushfires can result in the development of bushfire-tolerant grassy woodlands or grasslands and less destructive bushfire behaviour. The characteristics of different vegetation

¹ This section is an extract from the *State Planning Policy Guideline 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide 2003*. Department of Local Government and Planning and Department of Emergency Services.



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communities are reflected in Table 1. This table also presents the hazard scores for a range of vegetation communities.²



² Vegetation community data is available in digital map form from the Queensland Herbarium, Environmental Protection Agency, at a scale of 1:100,000.

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Table 1

Vegetation communities ³	Fire behaviour	Hazard Score
Wet-sclerophyll forest, tall eucalypts (>30m), with grass and mixed shrub understorey.	Infrequent fires under severe conditions, flame lengths may exceed 40 m, floating embers attack structures for 1 hour, radiant heat and direct flame are destructive for 30 minutes.	10
Paperbark heath and swamps, eucalypt forest with dry-shrub ladder fuels.	Fire intensity depends on fuel accumulation, but can be severe, with flame lengths to 20 m, spot fires frequent across firebreaks, radiant heat and direct flame for 15 minutes.	8
Grassy eucalypt and acacia forest, exotic pine plantations, cypress pine forests, wallum heath.	Fire intensity may be severe with flame lengths to 20 m, but less attack from embers.	6
Native grasslands (ungrazed), open woodlands, canefields.	Fast moving fires, available to fire annually to 4 years. Usually no ember attack, radiant heat for >10 m, duration <2 minutes.	5
Intact acacia forests, with light grass to leaf litter, disturbed rainforest.	Fires infrequent, usually burn only under severe conditions, relatively slow fires, usually little ember attack.	4
Orchards, farmlands, kikuyu pastures.	Fires very infrequent, slow moving, may be difficult to extinguish, frequent fire breaks.	2
Grazed grasslands, slashed grass.	Grazing reduces intensity and rate of spread of fire, duration <2 minutes.	2
Desert lands (sparse fuels), mowed grass.	Gaps in fuel, usually slow fire spread.	1
Intact rainforest, mangrove forest, intact riverine rainforest.	Virtually fire proof.	0

Where the vegetation community is assessed as having a vegetation community hazard score of zero, no other factors need to be taken into account and the relevant sub-units should be given a Low severity of overall bushfire hazard. No further action is required.

Step 2: Assessment of slope

Studies have shown that fires burn more quickly and with greater intensity up slopes, generally doubling every 10 degrees of slope. Also, the steeper the slope the more difficult it is to construct ring roads, firebreaks

³ Vegetation assessment should be based upon examination of the vegetation on the subject site and surrounding the subject site. Narrow strips of vegetation may be flammable; however, bushfires will not generally reach their full intensity where bushfire fronts are less than 100 metres wide. For this reason the following examples may be viewed as having the next lower hazard score (ie paperbark heath would have a score of 6 not 8, cypress pine forest 5 not 6):

- areas with a linear shape (e.g. roadside vegetation beside a cleared paddock); and
- units of vegetation of less than 50 hectares in area and more than one kilometre from the nearest extensive vegetation.



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and provide access for emergency crews. Trees situated downhill from structures will have their crowns close to the structures. This presents bushfire hazards particularly for exposed structures such as timber decks. Table 2 presents the hazard scores for different categories of slope.



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Table 2

Slope ⁴	Hazard Score
Gorges and mountains (>30%)	5
Steep Hills (>20% to 30%)	4
Rolling Hills (>10% to 20%)	3
Undulating (>5% to 10%)	2
Plain (0% to 5%)	1

Note. For site specific assessment of bushfire hazard, if the site is downhill from the hazard, the slope effect may be taken as zero as the fire intensity will be less. However, burning heavy fuels may roll downhill and trees may fall down, so recommended setbacks from the hazard still need to be observed.

Step 3: Assessment of aspect

Aspect affects bushfire hazard due to the effects that exposure to direct sunlight has on different vegetation communities, including the drying rates of fuels. Aspect also correlates closely with exposure to low humidity winds that increase bushfire intensity. In extremely broken country where there is a variety of aspects, the predominant aspect is to be used.

As aspect has only a minor influence on flatter land, aspect is not significant on land with a slope less than 5%. Table 3 lists the hazard score for different aspects and Figure 1 illustrates the compass degree ranges for each aspect category.

Table 3

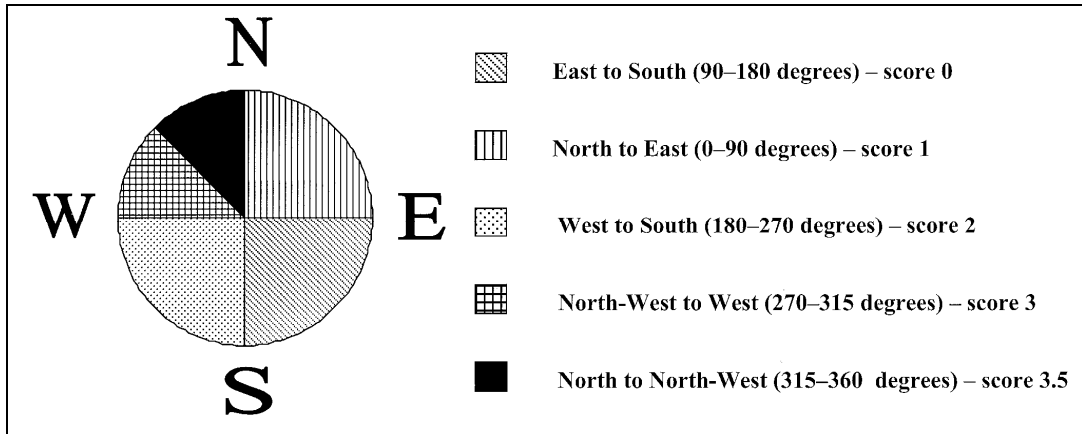
Aspect	Hazard Score
North to North-West	3.5
North-West to West	3
West to South	2
North to East	1
East to South and all land under 5% slope	0

Figure 1



⁴ Slope is to be calculated in accordance with the Steep or Unstable Land Code.

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Step 4: Combining scores to identify the severity of bushfire hazard

The scores for the individual factors determined for vegetation communities, slope and aspect are added together to give a total for each sub-unit. The total hazard score determines the severity of bushfire hazard for each sub-unit as set out below in Table 4.

Table 4

Total hazard score	Bushfire Hazard Severity
13 or greater	High
6 to 12.5	Medium
1 to 5.5	Low

Step 5: Field verification

Field verification or 'ground truthing' of these preliminary results must then be undertaken. A number of sample areas are to be evaluated to test the accuracy of the preliminary bushfire hazard findings.

Step 6: Qualitative Assessment

Known bushfire behaviour complements the quantitative assessment and should be considered as part of the qualitative review.

Known bushfire behaviour is extremely difficult to use as a quantitative planning tool. This is because the absence of bushfire, even for an extended period of time, does not mean that an area will not burn and may lead to massive fuel accumulation with dangerous bushfire behaviour if it does ignite. Known bushfire behaviour may identify sites where combinations of slope and wind have led to severe bushfire behaviour in the past, and where extra precautions to protect assets might be required. The reliability of known bushfire behaviour may be difficult to assess and the Queensland Fire and Rescue Service should be consulted if questions arise.

2.4 Documentation of a Bushfire Hazard Assessment



In carrying out an assessment in accordance with section 3.3 of this policy, the person carrying out the assessment is required to clearly document each step. With any application submitted to the Rockhampton Regional Council stating that land is of a certain Hazard Severity, the applicant must submit with any such statement the documentation of each step carried out in the assessment to verify that statement. Failure to submit the documentation means that the Bushfire Hazard Assessment can not be accurately assessed by Council.

3.0 Preparation of a Bushfire Management Plan⁵

3.1 Who should prepare a Bushfire Management Plan?

A Bushfire Management Plan is to be prepared by a suitably qualified professional with appropriate technical expertise in the identification and mitigation of bushfire hazard. Suitable professionals may include those in the environmental management, landscape architecture, architecture, surveying, town planning and civil engineering fields.

3.2 Who should be consulted?

At a minimum, the author of the Bushfire Management Plan is to consult with the Rockhampton Regional Council, responsible Rural and/or Urban Fire Brigade and managers of adjacent parks or reserves. It is also desirable to consult other agencies or individuals, such as the previous owners of the land or neighbours, who may have local knowledge of the severity and nature of the bushfire hazard.

3.3 What should be included in the Bushfire Management Plan

A comprehensive Bushfire Management Plan is to include the following:

- (a) An assessment of the nature and severity of the bushfire hazard affecting the site. This should comprise a detailed site-based assessment using the methodology set out in section 2.1 of this Planning Scheme Policy. The assessment should also address other site specific factors that are important in devising suitable bushfire mitigation strategies. These factors could include matters such as:
 - the likely direction of bushfire attack; and
 - the environmental values that may limit mitigation options; and
 - the location of evacuation routes and/or safety zones.
- (b) An assessment of the specific risk factors associated with the development proposal, including matters such as:
 - the nature of activities and materials to be conducted / stored on the site; and

⁵ This section is an extract from the *State Planning Policy Guideline 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide 2003*. Department of Local Government and Planning and Department of Emergency Services.



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- the numbers and types of persons likely to be present; and
 - particular warning and / or evacuation requirements.
- (c) A plan for mitigating the bushfire risk identified in (a) and (b) above. The plan should address the relevant performance criteria in the Bushfire Risk Minimisation Code and recommend specific mitigation actions for the proposed development including:
- (1) road and lot layout and land use allocations;
 - (2) firebreaks and buffers;
 - (3) building locations or building envelopes;
 - (4) landscaping treatments;
 - (5) warning and evacuation procedures and routes;
 - (6) firefighting requirements including infrastructure;
 - (7) any other specific measures such as external sprinkler systems and alarms;
 - (8) purchaser/resident education and awareness programs; and
 - (9) ongoing maintenance and response awareness programs.

3.4 *What level of detail is required*

The level of detail required will vary with the nature of the development proposal and site,
and with the type of development application.

If the application must be followed by another application to the Rockhampton Regional Council before works can commence (e.g. a Material Change of Use application that must be followed by a Reconfiguring a Lot application), then matters of detail could be dealt with at the later application stage.



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The level of detail required to accompany a particular application should be determined in consultation with the assessment manager. However, it is recommended, at a minimum, that items (a), (b) and (c) (1) – (3) outlined above be addressed in any Bushfire Management Plan.

