

SC6.7 Planning scheme policy for the bushfire hazard overlay code

SC6.7.1 Purpose

The purpose of this planning scheme policy is to:-

- (a) provide advice about achieving outcomes in the **Bushfire hazard overlay code**;
- (b) identify and provide guidance about information that may be required to support a development application where subject to the **Bushfire hazard overlay code**; and
- (c) identify guidelines that may be relevant to achieving outcomes in the **Bushfire hazard overlay code**.

Note—nothing in this planning scheme policy limits Council's discretion to request other relevant information under the Development Assessment Rules made under section 68(1) of the Act.

SC6.7.2 Application

This planning scheme policy applies to development which requires assessment against the **Bushfire hazard overlay code**.

SC6.7.3 Advice for bushfire hazard assessment and management outcomes

The following is advice for achieving outcomes in the **Bushfire hazard overlay code**:-

- (a) compliance with Performance Outcomes PO1 to PO9 of **Table 8.2.4.3.2 (Performance outcomes and acceptable outcomes for assessable development)** of the **Bushfire hazard overlay code** may be demonstrated in part or aided by the submission of a bushfire hazard assessment report and a bushfire hazard management plan prepared by a competent person in accordance with **Section SC6.7.4 (Guidance for the preparation of a bushfire hazard assessment report and bushfire hazard management plan)**.

Note—for the purposes of this planning scheme policy, a competent person is an appropriately qualified and experienced consultant with appropriate and proven technical expertise in the preparation of bushfire hazard assessment reports and management plans.

Note—the **Planning scheme policy for development works** provides advice in relation to Performance Outcome PO10 of **Table 8.2.4.3.2 (Performance outcomes and acceptable outcomes for assessable development)** of the **Bushfire hazard overlay code**.

SC6.7.4 Guidance for the preparation of a bushfire hazard assessment report and bushfire hazard management plan

Bushfire hazard assessment report

- (1) A bushfire hazard assessment report is to:-
 - (a) be prepared generally in accordance with the methodology prescribed in **Appendix SC6.7A (Methodology for undertaking bushfire hazard assessment)**;
 - (b) include more detailed site specific calculations of the bushfire hazard score(s) for the site based upon:-
 - (i) a quantitative assessment of predicted bushfire behaviour including calculation of predicted fire intensity and rate of spread using McArthur's equation and radiant heat flux using a recognised model (i.e. the View Factor Model or the Leicester Model). Calculations should be based on an Forest Fire Danger Index (FFDI) of 50 (Sunshine Coast) and maximum predicted fuel loads to determine appropriate setbacks;
 - (ii) a quantitative assessment including discussion of past fire behaviour/history, any prescribed burning undertaken on the site or adjoining sites, likely fire paths, site factors that would minimise or maximise fire behaviour, fuel arrangements and loads, potential ignition points, fire run distances towards houses (or proposed house sites), slopes and any other matter considered important in respect to the issue; and
 - (iii) a comparison of the above to the more general calculation methodology prescribed in **Appendix SC6.7A (Methodology for undertaking bushfire hazard assessment)**;

- (c) include a bushfire hazard management summary detailed on an A3 size map/s at a scale of 1:500; and
- (d) be informed by consultation with the local Fire Brigade and where the land adjoins Council, State or Commonwealth land, the relevant land manager.

Bushfire management plan

(2) A bushfire management plan is to:-

- (a) state the purpose, aim and objectives of the bushfire management plan (e.g. to define the level of hazard on the land and identify actions and responsibilities for the management of the hazard);
- (b) summarise the results of the bushfire hazard assessment undertaken for the land, including identification of the various parts of the land that have been determined to be high, medium and low bushfire hazard area;
- (c) be informed by consultation with the local Fire Brigade and where the land adjoins Council, State or Commonwealth land, the relevant land manager;
- (d) include consideration of potential off-site sources of fire hazard including particular land uses or physical features of the surrounding area (including details of properties within 100 metres of the land);
- (e) address the impacts of the proposed development on the level of fire hazard experienced by other land in the surrounding area, including any land containing water, electricity, gas or telecommunications infrastructure;
- (f) address any implications for ecologically important areas, areas of cultural heritage significance or areas of landscape significance, including steps taken to minimise the potential impacts of specified fire hazard mitigation measures;
- (g) address the potential impacts of bushfire hazard mitigation measures on slope stability, and on water quality in local receiving waters;
- (h) specify fire hazard mitigation measures, such as:-
 - (i) elements of the development design, including the layout of roads and driveways, and the location, size and orientation of lots and buildings;
 - (ii) specifications and materials for building design and construction in accordance with the Building Code of Australia;
 - (iii) fire fighting infrastructure, including water supply and storage, equipment and fittings, fire breaks and maintenance/access trails;
 - (iv) potential areas of clearing of native vegetation based on an ecological assessment report or environmental management plan recently prepared for the site;
 - (v) details of landscape design requirements, including installation and maintenance requirements;
 - (vi) information for occupants, including required training for persons employed on the site during both construction and operational phases;
 - (vii) details of long term management requirements, including the frequency, extent and intensity of burning in areas proposed to be subject to regular controlled ignitions;
 - (viii) details of areas to be subject to mosaic or patch burning techniques and manual fuel reduction zones; and
 - (ix) any other measures based on or identified in a recently approved ecological assessment report or environmental management plan for the site;
- (i) identify the parties to be responsible for specific actions taken under the terms of the bushfire management plan; and
- (j) provide justification for any variation from the bushfire hazard mitigation measures outlined in the **Bushfire hazard overlay code**.

Appendix SC6.7A Methodology for undertaking bushfire hazard assessment

Step 1: Assessment of vegetation communities

- 1.1. 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 behavior. The characteristics of different vegetation communities are reflected in **Table SC6.7A.1 (Hazard scores and associated fire behaviors for various vegetation communities)**. This table also presents the hazard scores for a range of vegetation communities. Vegetation community data is available in digital map form from the Queensland Herbarium, Environmental Protection Agency, at a scale of 1:100,000.

Table SC6.7A.1 Hazard scores and associated fire behaviors for various vegetation communities

Vegetation communities ¹	Fire behaviour	Hazard score
Wet sclerophyll forest, tall eucalypts (>30 m), 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 fireproof.	0

Note 1—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 (i.e. paperbark heath would have a score of 6 not 8, cypress pine forest 5 not 6):

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

- 1.2. 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

- 2.1. 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 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 SC6.7A.2 (Hazard scores for slope)** presents the hazard scores for different categories of slope.

Table SC6.7A.2 Hazard scores for slope

Slope	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.

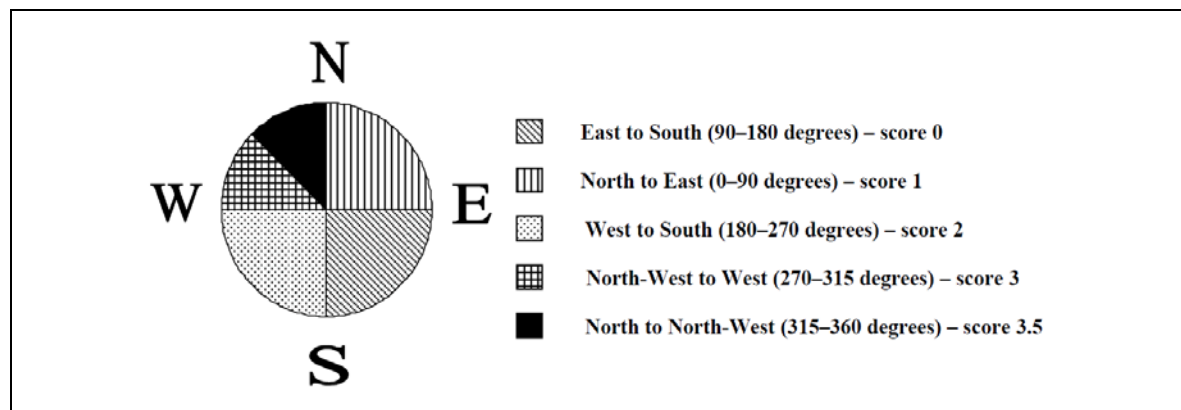
Step 3: Assessment of aspect

- 3.1. 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 should be used.
- 3.2. As aspect has only a minor influence on flatter land, aspect is not considered to be significant on land with a slope less than 5%. **Table SC6.7A.3 (Hazard score for aspect)** lists the hazard score for different aspects and **Figure SC6.7A.1 (Compass degree ranges for each aspect category)** illustrates the compass degree ranges for each aspect category.

Table SC6.7A.3 Hazard score for aspect

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 SC6.7A Compass degree ranges for each aspect category



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

- 4.1. The scores for the individual factors determined for vegetation communities, slope and aspect are added together to give a total for each sub-unit as follows:

Total hazard score = vegetation community hazard score + slope hazard score + aspect hazard score.

- 4.2. The total hazard score determines the severity of bushfire hazard for each sub-unit as set out in Table SC6.7A.4 (Hazard score ranges to identify the severity of bushfire hazard).

Table SC6.7A.4 Hazard score ranges to identify the severity of bushfire hazard

Total hazard score	Severity of bushfire hazard
13 or greater	High ²
6 to 12.5	Medium
1 to 5.5	Low

Note 2—Buildings in High severity bushfire areas should be constructed in accordance with the Level 1 requirements of AS 3959:1999 'Construction of Buildings in Bushfire-prone Areas'.

Step 5: Field verification

- 5.1. Preliminary bushfire hazard maps should be prepared based on the results of Step 4 above by aggregating all sub-units with similar levels of bushfire hazard severity into High and Medium severity classifications³. Field verification or 'ground truthing' of these preliminary results should then be undertaken. A number of sample areas should be evaluated to test the accuracy of the preliminary bushfire hazard findings.

Step 6: Qualitative assessment

- 6.1. Known bushfire behaviour complements the quantitative assessment and should be considered as part of the qualitative review.
- 6.2. 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 Queensland Fire and Rescue Service (QFRS) should be consulted if problems are indicated.

Step 7: Safety buffers

- 7.1. The final step in identifying bushfire hazard areas is to add a safety buffer, as land adjacent to bushfire hazard areas is vulnerable to bushfire attack from these areas.
- 7.2. Any land within 100 metres of an area identified as having a High bushfire severity classification should be included in the High bushfire hazard area and any land within 50 metres of an area identified as having a Medium bushfire severity classification should be included in the Medium bushfire hazard area⁴. The safety buffers should be integrated into the preparation of maps identifying bushfire hazard areas. Table SC6.7A.5 (Total hazard score and severity of bushfire hazard with safety buffers) shows the width of the safety buffers that apply to the various bushfire hazard severity classifications.

Table SC6.7A.5 Total hazard score and severity of bushfire hazard with safety buffers

Total hazard score	Severity of bushfire hazard	Width of safety buffer
13 or greater	High	100 metres
6 to 12.5	Medium	50 metres
1 to 5.5	Low	Not applicable

Note 3—areas of Low bushfire hazard severity may also be mapped, but the natural hazard management area (bushfire) for the purposes of the SPP comprises only areas identified as being of High or Medium severity.

Note 4—safety buffer areas on the boundary between High and Medium bushfire severity areas should be included in the High bushfire severity area.