

Division 4**Natural Disaster Overlays****About the Natural Disaster Overlays**

- The Natural Disaster Overlays comprise the following;
 - The Flood Prone Land Overlay;
 - The Bushfire Prone Land Overlay; and
 - The Landslide Prone Land Overlay.
- The Flood Prone Land Overlay regulates development on land as shown by Map B10.
- The Bushfire Prone Land Overlay regulates development on, and within 100m and 50m of High Hazard Severity areas and Medium Hazard Severity areas, respectively, as shown by Maps B8 & B9.
- The Landslide Prone Land Overlay regulates development which is on steep slopes, being those of 15% or greater, anywhere in the Shire. There is no specific Overlay Map, because the Overlay applies to the whole Shire.
- Development which is particularly sensitive to the potential impacts of these types of infrastructure e.g. safety risks to residential development, and development which is incompatible with the operation of these activities, is regulated by this Code.

5.4.1 Assessment tables for the Natural Disaster Overlays**(1) Assessment categories for the Natural Disaster Overlays**

The assessment categories¹⁰¹ are identified for development in the Natural Disaster Overlays in Column 2 of Tables 5.4.1(1) and 5.4.1(2) as follows:

- (i) Table 5.4.1(1)—making a material change of use¹⁰² for a defined use, or another use in a defined use class, listed in Column 1; or
- (ii) Table 5.4.1(2)—other development¹⁰³ listed in Column 1, including;
 - (a) Operational work;
 - (b) Reconfiguring a lot; and
 - (c) Carrying out operational work for reconfiguring a lot.

(2) Relevant assessment criteria for self assessable and assessable development in the Natural Disaster Overlays

The relevant assessment criteria in the Natural Disaster Overlays are referred to in Column 3 of Tables 5.4.1(1) and 5.4.1(2).

For self-assessable development and development requiring code assessment, the relevant assessment criteria are applicable codes.

¹⁰¹ Information about assessment categories is provided in the Fitzroy Shire Planning Scheme User's Guide.

¹⁰² Works associated with an application for a material change of use may be assessed together with the material change of use. Also, see Fitzroy Shire Planning Scheme Explanatory Notes giving examples that explain the type of development involved in different proposals.

¹⁰³ See Fitzroy Shire Planning Scheme Explanatory Notes giving examples that explain the type of development involved in different proposals.

TABLE 5.4.1 (1) ASSESSMENT CATEGORIES AND RELEVANT ASSESSMENT CRITERIA FOR THE NATURAL DISASTER OVERLAYS – MAKING A MATERIAL CHANGE OF USE		
Column 1 Defined use or use class ¹⁰⁴	Column 2 Assessment category – (where Self assessable development does not meet the Acceptable Solutions in the applicable codes, it requires Code assessment. Refer to Section 1.2.9),	Column 3 Relevant assessment criteria ¹⁰⁵ — are the applicable codes for self assessable and code assessable development
FLOOD PRONE LAND OVERLAY		
Rural Use Class		
Grazing; Agriculture (not involving filling and excavating > 50m ³)	Exempt	Natural Disaster Overlay Code – Flood Prone Land Overlay
All other uses in the Rural Use Class	Code	
All Uses in All Other Use Classes		
All other circumstances	Impact	
BUSHFIRE PRONE LAND OVERLAY		
All Uses (except Public facility – operational) in All Use Classes		
All uses in all Use Classes which (i) Constitute a type of development to which the code applies, as referred to in Section 5.3.2 (A)(5); and (ii) Are located in the Bushfire Prone Land Overlay	Self assessable	Natural Disaster Overlay Code – Bushfire Prone Land Overlay
All uses in all Use Classes which; (i) Constitute a type of development to which the code applies, as referred to in Section 5.3.2 (A)(5); and (ii) Are located on or within 50m of land with a Medium Bushfire Severity (as determined by a Bushfire Hazard Assessment)	Code assessable	
All uses in all Use Classes which; (i) Constitute a type of development to which the code applies, as referred to in Section 5.3.2 (A)(5); and (ii) Are located on or within 100m of land with a High Bushfire Severity (as determined by a Bushfire Hazard Assessment)	Code assessable	
All uses in all Use Classes which do not constitute a type of development to which the code applies, as referred to in Section 5.4.2 (A)(5); or Public facility – Operational Uses.	Exempt	N/A
LANDSLIDE PRONE LAND OVERLAY		
All Uses (except Public facility – operational) in All Use Classes		
All uses in all Use Classes which; (i) Constitute a type of development to which the code applies, as referred to in Section 5.4.2 (A)(5); and (ii) Are located on land within the Landslide Overlay	Self assessable	Natural Disaster Overlay Code – Landslide Prone Land Overlay
All uses in all Use Classes which; (i) Constitute a type of development to which the code applies, as referred to in Section 5.4.2 (A)(5); and (ii) Are located on land with Steep slopes (15% or greater as determined by a Slope Analysis)	Code assessable	

¹⁰⁴ See Dictionary (Division 1 Schedule A (Defined Uses and Use classes).

¹⁰⁵ For impact assessable development the 'relevant assessment criteria' are provided for assistance and in no way affect the regard given to the planning scheme as a whole in accordance with section 3.5.5 of the IPA.

<i>LANDSLIDE PRONE LAND OVERLAY (continued)</i>		
All Uses (except Public facility – operational) in All Use Classes		
All uses in all Use Classes which do not constitute a type of development to which the code applies, as referred to in Section 5.4.2 (A)(5); OR Public facility – Operational Uses.	Exempt	N/A

TABLE 5.4.1 (2) ASSESSMENT CATEGORIES AND RELEVANT ASSESSMENT CRITERIA FOR THE NATURAL DISASTER OVERLAYS – OTHER DEVELOPMENT		
Column 1 Defined use or use class	Column 2 Assessment category – (where Self assessable development does not meet the Acceptable Solutions in the applicable codes, it requires Code assessment. Refer to Section 1.2.9),	Column 3 Relevant assessment criteria— are the applicable codes for self assessable and code assessable development
FLOOD PRONE LAND OVERLAY		
All Operational work associated with a Code or Impact assessable Material Change of Use (not including operational work associated with reconfiguring a lot) Filling and Excavating (>50m ³ net volume)	Code assessable	Natural Disaster Overlay Code – Flood Prone Land Overlay
BUSHFIRE PRONE LAND OVERLAY		
Works – Roads Works – Water and Works – Sewerage Works – Stormwater Drainage Works – Electricity and Telecommunication Services Works – Parks, Landscaping and Street Trees Clearing of vegetation on freehold land Other Operational work associated with a Code or Impact assessable Material Change of Use (not including operational work associated with reconfiguring a lot)	Code assessable Code assessable where for a park. Self assessable where the circumstances for Code assessment do not apply. Self assessable Code assessable	Natural Disaster Overlays Code – Bushfire Prone Land Overlay
Reconfiguring a lot¹⁰⁶		
Reconfiguring a Lot	Code assessable if creating a new lot or lots Exempt if only reconfiguring boundaries of existing lots	Natural Disaster Overlays Code – Bushfire Prone Land Overlay N/A
Carrying out operational work for reconfiguring a lot		
All circumstances	Code assessable	Natural Disaster Overlays Code – Bushfire Prone Land Overlay
Other		
All other works	Exempt	N/A

¹⁰⁶ Under IPA, Schedule 9, the reconfiguring of a lot is exempt and cannot be made self-assessable or assessable by a planning scheme if the proposal is for amalgamating 2 or more lots, for a building format plan that does not subdivide land, in relation to the Acquisition of Land Act 1967, or on Strategic Port Land.

LANDSLIDE PRONE LAND OVERLAY		
Operational work		
Excavating and Filling	Code assessable	Natural Disaster Overlays Code – Landslide Prone Land Overlay
Work – Roads		
Work – Water and Sewer		
Work – Stormwater Drainage		
Work – Electricity and Telecommunication Services		
Work – Park provision	Self assessable	
Work – Landscaping		
Clearing of vegetation on freehold land		
Other Operational work associated with a Code or Impact assessable Material Change of Use (not including operational work associated with reconfiguring a lot)	Code assessable	
Reconfiguring a Lot¹⁰⁷		
Reconfiguring a Lot	Code assessable if creating a new lot or lots	Natural Disaster Overlays Code – Landslide Prone Land Overlay
	Exempt if only reconfiguring boundaries of existing lots	N/A
Carrying out operational work for reconfiguring a lot		
All circumstances	Code assessable	Natural Disaster Overlays Code – Landslide Prone Land Overlay
Other		
All other works	Exempt	N/A

¹⁰⁷ Under IPA, Schedule 9, the reconfiguring of a lot is exempt and cannot be made self-assessable or assessable by a planning scheme if the proposal is for amalgamating 2 or more lots, for a building format plan that does not subdivide land, in relation to the Acquisition of Land Act 1967, or on Strategic Port Land.

5.4.2 Natural Disaster Overlays Code

(1) Natural Disaster Overlays Code

The provisions in this division comprise the Natural Disaster Overlays Code. They are;

- (i) The Purpose of the Natural Disaster Overlays Code – Section (2); and
- (ii) The Specific Outcomes, Probable Solutions and Acceptable Solutions for the Natural Disaster Overlays – Table 5.4.2. Natural Disaster Overlays

(2) The Purpose of the Natural Disaster Overlays Code

The purpose of the Natural Disaster Overlays Code is to achieve the following overall outcomes;

- (a) The overall outcome sought for **all** areas in the **Natural Disaster Overlays** is that;
 - (i) Development minimises the potential adverse impacts of flood and bushfire on people, property, economic activity and the environment.
 - (ii) Wherever practicable, community infrastructure is located and designed to function effectively during and immediately after natural hazard events commensurate with a specified level of risk.
 - (iii) Development is compatible with the nature of a natural hazard management area (eg. Flood Prone Land Overlay, Bushfire Prone Land Overlay or Landslide Prone Land Overlay), as it satisfies all of the relevant Specific Outcomes of this Code.
 - (iv) Development as listed below in point 5, is compatible with the nature of the natural hazard management area (eg. Flood Prone Land Overlay, Bushfire Prone Land Overlay or Landslide Prone Land Overlay), unless;
 - a. there is an overriding need (refer to *State Planning Policy 1/03: Mitigating the adverse impacts of flood, bushfire and landslide*) for the development in the public interest and no other site is suitable and reasonably available for the proposal; or
 - b. the development proposal is a development commitment and it would have a lower level of risk than generally applies to development in the vicinity. Eg building floor levels proposed are higher than those which exist for other buildings in the vicinity.
 - (v) Only certain types of development are regulated by the Natural Disaster Overlays, as follows;

Land uses:

- a. Development that increases in the number of people living, working, or congregating in those areas eg. Residential development, shopping centres, tourist facilities, industrial or commercial uses involving large numbers of workers or customers;
- b. Development that involves institutional uses where evacuating people may be particularly difficult eg. Hospitals, education establishments, child care centres, aged care, nursing homes, and high security correctional centres;
- c. Development that increases the amount of hazardous materials that are manufactured or stored in bulk;
- d. Development that involves removal of vegetation (other than that required to clear a site for a single house or for routine management including bushfire protection measures); and

- e. Development that involves redirecting the existing flow of surface or groundwater in the Landslide Prone Land Overlay.

Community Infrastructure

- a. Police and emergency services facilities including emergency shelters;
 - b. Hospitals and associated institutions;
 - c. Stores for valuable records or items of cultural or historic significance;
 - d. Railway lines, stations, and associated facilities;
 - e. Aeronautical facilities;
 - f. Communication network facilities;
 - g. Operating works under the *Electricity Act 1994*; and
 - h. Water Cycle management infrastructure.
- (b) The overall outcome sought for the **Flood Prone Land Overlay** is that;
- (i) The number of people and properties subject to flood risk are minimised by regulating building location and design; and
 - (ii) Evacuation is facilitated in the event of any flood threat;
- (c) The overall outcome sought for the **Bushfire Prone Land Overlay** is that;
- (i) The number of people and properties subject to bushfire hazards are minimised by regulating building location and design;
 - (ii) Evacuation is facilitated in the event of any bushfire threat; and
 - (iii) The risk to life and property is minimised in areas of High and Medium Hazard Severity, with appropriate siting and design of lots and buildings, or the exclusion of inappropriate uses.
- (d) The overall outcome sought for the **Landslide Prone Land Overlay** is that;
- (i) Development on land with slopes of 15% or greater, is regulated to minimise the risk to people and properties due to landslide;
 - (ii) Buildings are sited and designed to ensure that the risk of landslide is minimised; and
 - (iii) Operational works – Filling and excavating and Clearing of vegetation on freehold land is regulated to ensure that land stability is not exacerbated.

TABLE 5.4.2 NATURAL DISASTER OVERLAYS CODE	
Specific outcomes (S) for Code and Impact assessable development	Probable Solutions (P) for Code and Impact assessable development; and Acceptable Solutions (A) for Self assessable development. (where Self assessable development does not meet the Acceptable Solutions in the applicable codes, it requires Code assessment. Refer to Section 1.2.9).
<i>All Uses and Works on land in the Flood Prone Land Overlay</i>	
All Flood Prone Land	
<p>S1 Development must be protected from adverse flooding and must not interfere with the passage, storage or quality of storm water, overland flow or the natural flow of a waterway.</p> <hr style="border-top: 1px dashed black;"/> <p>S2 Structures have acceptable levels of flood immunity.</p>	<p>P1.1 Development is not conducted within the passage of any storm water, overland flow or natural flow path.</p> <p>P1.2 Development is not conducted on flood prone land (as indicated on the Flood Prone Land Overlay Map in Appendix 2).</p> <p>P2.1 Where the lot is subject to a resolution about minimum floor levels of habitable rooms under the <i>Building Regulation 2006</i>, the floor level of all new rooms satisfied the level determined in the resolution;</p> <p style="text-align: center;">or</p> <p>Where the house is on floodable land but the lot is not subject to a resolution about minimum floor levels of habitable rooms under the <i>Building Regulation 2006</i>, the floor level of all habitable rooms is not less than 600mm above the level of a storm or flood event having an annual exceedance probability one (1) percent.</p> <p>P2.2 Where a lot is on floodable land, the minimum levels for non-habitable areas (including utility areas, garage, laundry and storage room) are not less than 300mm above the defined flood event for the type of development.</p>

TABLE 5.4.2 NATURAL DISASTER OVERLAYS CODE	
Specific outcomes (S) for Code and Impact assessable development	Probable Solutions (P) for Code and Impact assessable development; and Acceptable Solutions (A) for Self assessable development. (where Self assessable development does not meet the Acceptable Solutions in the applicable codes, it requires Code assessment. Refer to Section 1.2.9).
<i>All Uses and Works on land in the Bushfire Prone Land Overlay</i>	
All Bushfire Prone Land	
<p>S3 Development does not put the safety and lives of people, and property seriously "at-risk" from bushfire.</p>	<p>P/A3.1 Development is not conducted; (i) In an area of High or Medium bushfire hazard severity; or (ii) Within 100 linear metres of an area that has a High bushfire hazard severity; or (iii) Within 50 linear metres of an area that has a Medium bushfire hazard severity; (a) result in a material increase in the number of people living, working or congregating at the site or in the area; and (b) involve any new building work other than a minor extension (≤ 20 m² total use area) to an existing building when no previous extension has been made in the previous 2 years, and (c) increase the number of lots within an area of High or Medium bushfire hazard severity.</p> <p>OR P3.2 The development is; (i) In an area of High or Medium bushfire hazard severity; or (ii) Within 100 linear metres of an area that has a High bushfire hazard severity; or (iii) Within 50 linear metres of an area that has a Medium bushfire hazard severity; (a) and the development does not places life or property at risk from bushfire (eg school, hospital, tourist resort, home host accommodation, etc).</p>
<p>S4 Community infrastructure is able to function effectively during and immediately after bushfire hazard events.</p>	<p>P/A4.1 Development is not conducted; (i) In an area of High or Medium bushfire hazard severity; or (ii) Within 100 linear metres of an area that has a High bushfire hazard severity; or (iii) Within 50 linear metres of an area that has a Medium bushfire hazard severity.</p> <p>P/A4.2 The development is; (i) In an area of High or Medium bushfire hazard severity; or (ii) Within 100 linear metres of an area that has a High bushfire hazard severity; or (iii) Within 50 linear metres of an area that has a Medium bushfire hazard severity.</p> <p>But will not:</p> <p>(i) Involve any new building work other than a minor extension (≤ 20 m² total use area) to an existing building when no previous extension has been made in the previous 2 years, and (ii) Increase the number of lots within an area of High or Medium bushfire hazard severity.</p>

TABLE 5.4.2 NATURAL DISASTER OVERLAYS CODE

Specific outcomes (S) for Code and Impact assessable development	Probable Solutions (P) for Code and Impact assessable development; and Acceptable Solutions (A) for Self assessable development. (where Self assessable development does not meet the Acceptable Solutions in the applicable codes, it requires Code assessment. Refer to Section 1.2.9).
<i>Areas of High or Medium Bushfire Hazard Severity (as determined by a Bushfire Hazard Assessment) or within 100m and 50m respectively of such an area</i>	
<p>S5 Development provides for firebreaks; (i) To ensure that adequate access is provided for fire fighting and other emergency vehicles; and (ii) To ensure that there are proper setbacks between assets and hazardous vegetation; and (iii) Are secure in tenure and maintained.</p>	<p>P/A5.1 The development is provided with a side (or perimeter) road that; (i) Is located between the boundary of the lots and the hazard; and (ii) Has a minimum cleared width of 20 metres; and (iii) Is constructed to the standard required by the Development Standards – Reconfiguration of a Lot Code regardless of whether it is new road reserve or an existing road reserve.</p> <p>OR</p> <p>P5.2 Where it is not practicable to comply with P/A3.1 above, the site area of the development incorporates fire/maintenance trails located as close as possible to the boundaries of each allotment and the adjoining bushland, and the fire/maintenance trails; (i) Have a minimum cleared width of 6 metres; (ii) Have a minimum formed width of 4 metres and maximum gradient of 1 in 6 (16%); (iii) Have vehicular access at each end; (iv) Provide areas for vehicles to pass or turn around at least every 400 metres; (v) Are either located on public land or within an access easement granted in favour of the Fitzroy Shire Council, fire brigades and other emergency services and where applicable, relevant state government departments (e.g. Environment Protection Agency when adjoining a National Park); and (vi) Use existing trails wherever possible to reduce environmental and cultural heritage impacts.</p>
<p>S6 Where development involves reconfiguring a lot and opening a new road, the road layout, location and design provides; (i) Easy, effective and safe movement away from any encroaching fire for the evacuation of residents and/or emergency vehicles; and (ii) An alternative safe access routes, should access in one location be blocked in the event of a bushfire; and (iii) For the safe and effective operational use of firefighting vehicles.</p>	<p>P6.1 The road layout uses through roads only and does not include cul-de-sac and “dead end” roads, except where a perimeter road extending around the development area isolates the development from the hazard, or, an alternative emergency access linking the cul-de-sac to other through roads is provided.</p> <p>P6.2 Where the use of a single entry road is unavoidable because of topographical constraints, a properly established and maintained fire trail is incorporated into the layout to allow for safe emergency access in an alternative location, and if possible, direction to the road.</p> <p>P6.3 Road gradients are not more than 12.5%.</p>
<p>S7 Newly created lots as a result of development for reconfiguration of a lot are designed to; (i) Mitigate bushfire hazard; and (ii) Provide safe sites for houses; and (iii) Prevent the fragmentation of land with a high bushfire hazard severity.</p>	<p>P7.1 Newly created lots are located in parts of the site with the lowest bushfire hazard severity.</p> <p>P7.2 The size and shape of lots facilitates emergency access to buildings and fire fighting infrastructure.</p> <p>P7.3 New lots (or parts of new lots) are not created; (i) In areas that have a high bushfire hazard severity; or (ii) Within 100 linear metres of an area that has a high bushfire hazard severity.</p>

TABLE 5.4.2 NATURAL DISASTER OVERLAYS

Specific outcomes (S) for Code and Impact assessable development	Probable Solutions (P) for Code and Impact assessable development; and Acceptable Solutions (A) for Self assessable development. (where Self assessable development does not meet the Acceptable Solutions in the applicable codes, it requires Code assessment. Refer to Section 1.2.9).
<i>Areas of High or Medium Bushfire Hazard Severity (as determined by a Bushfire Hazard Assessment) or within 100m and 50m respectively of such an area (continued)</i>	
<p>S8 Buildings are sited or able to be sited on land which is the least prone to bushfire risk having regard to aspect, elevation, slope and vegetation type.</p>	<p>P/A8.1 Buildings and structures are sited:</p> <ul style="list-style-type: none"> (i) In a location with the lowest level of hazard; and (ii) Not on the tops of ridgelines and not on north-west to west facing vegetated slopes; and (iii) So as to have a minimum setback from the closest hazardous vegetation, the greater of either of the following: <ul style="list-style-type: none"> (a) 1.5 times the predominant mature canopy tree height of the hazardous vegetation; or (b) 10m; and (iv) With a minimum setback of 10 metres from any retained vegetation strips or small areas of vegetation; and (v) Are sited so that less susceptible elements of the development are sited closest to the bushfire hazard.

TABLE 5.4.2 NATURAL DISASTER OVERLAYS CODE	
Specific outcomes (S) for Code and Impact assessable development	Probable Solutions (P) for Code and Impact assessable development; and Acceptable Solutions (A) for Self assessable development. (where Self assessable development does not meet the Acceptable Solutions in the applicable codes, it requires Code assessment. Refer to Section 1.2.9).
<i>Areas of High Bushfire Hazard Severity (as determined by a Bushfire Hazard Assessment) or within 100m of such an area</i>	
S9 Development that materially intensifies the use of High bushfire hazard areas incorporates effective siting, design and management measures to minimise bushfire hazard.	P9.1 Development does not increase the number of people living, working or congregating in the area or involve the storage or manufacture of flammable, explosive or noxious materials.
S10 An adequate and accessible water supply is provided for bushfire fighting purposes.	P10.1 The development can connect to reticulated water supply that is reliable and has the necessary flow and pressure characteristics for bushfire fighting purposes at all times. P10.2 For any use in the Residential Use Class which cannot connect to a reticulated water supply, the development has; (i) An on-site, in-ground, swimming pool located within 25 metres of the outermost projection of the main residential building on the site; or (ii) A dam that is easily accessible to a fire fighting vehicle and located within 100 metres of the outermost projection of the main residential building on the site; or (iii) A concrete tank with fire brigade fittings located within 25 metres of the outermost projection of the main residential building on the site that is able to contain not less than 5000 litres per residential building.
<i>All Uses and Works on land in the Landslide Prone Land Overlay</i>	
All Landslide Prone Land	
S11 Development does not put the safety and lives of people, and property seriously "at-risk" from landslide, wherever practicable to determine land with steep slopes.	P/A11.1 Development: (i) Does not result in any new building work other than an addition to an existing building; (ii) Does not require the removal of vegetation; and (iii) Does not alter ground levels or stormwater conditions. P11.2 A site-specific slope analysis prepared in accordance with Division 4 - Schedule C - Preparation of a Slope Analysis accompanies development applications for; (i) Filling and excavating for more than 50m ³ of material; (ii) Reconfiguring a Lot involving the creation of a new lot or lots; or (iii) Material Change of Use for uses which are Impact assessable in the relevant Zone/Precinct/Area (as determined by the relevant Tables of Assessment) and demonstrates that the site area of the development contains slopes less than 15% (approximately 1:6.67). P11.3 Where a prepared site-specific slope analysis for development listed in P9.2 above demonstrates that the site area of the development contains slopes of 15% or greater, the development will; (i) Meet all other Probable Solutions and Acceptable Solutions in this Code as it applies to the particular development; and (ii) Will not result in a high concentration of people at the site or in the area that places life or property at risk from landslide (eg school, hospital, tourist resort, home host accommodation, etc).

TABLE 5.4.2 NATURAL DISASTER OVERLAYS CODE	
Specific outcomes (S) for Code and Impact assessable development	Probable Solutions (P) for Code and Impact assessable development; and Acceptable Solutions (A) for Self assessable development. (where Self assessable development does not meet the Acceptable Solutions in the applicable codes, it requires Code assessment. Refer to Section 1.2.9).
<i>All Uses and Works on land in the Landslide Prone Land Overlay</i>	
All Landslide Prone Land (continued)	
<p>S12 Community infrastructure (the subject of this Code) is able to function effectively during and immediately after landslide hazard event.</p>	<p>P/A12.1 Development: (i) Does not result in any new building work other than an addition to an existing building; (ii) Does not require the removal of vegetation; and (iii) Does not alter ground levels or stormwater conditions.</p> <p>P12.2 A site-specific slope analysis prepared in accordance with Division 4 - Schedule C – Preparation of a Slope Analysis accompanies the development application, and demonstrates that the site area of the development contains slopes less than 15% (approximately 1:6.67).</p> <p>P12.3 Where a prepared site-specific slope analysis for development listed in P10.2 above demonstrates that the site area of the development contains slopes of 15% or greater, the development will; (i) Meet all other Probable Solutions and Acceptable Solutions in this Code as it applies to the particular development; and (ii) Will not result in a high concentration of people at the site or in the area that places life or property at risk from landslide (eg school, hospital, tourist resort, home host accommodation, etc).</p>
<i>Areas of Steep Slopes (as determined by a Slope Analysis)</i>	
<p>S13 Development does not compromise the safety of people or property from landslide.</p>	<p>P13.1 A site-specific geotechnical analysis prepared by a registered professional engineer is provided to address any potential stability problems and describes solutions that may be implemented to ensure; (i) The long-term stability of the site; (ii) The long-term stability of the proposed development; and (iii) Access to the site will not be restricted during a landslide event.</p>

Division 4: Schedule A - Preparation of a Bushfire Hazard Assessment**What is 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 Natural Disaster Areas Overlay Code.

Essentially the assessment 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. 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. The hazard severity for land is defined

The measures for carrying out a Bushfire Hazard Assessment below are sourced from *State Planning Policy 1/03: Mitigating the adverse impacts of flood, bushfire and landslide*.

Preparing a Bushfire Hazard Assessment¹⁰⁸***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 communities are reflected in Table 1. This table also presents the hazard scores for a range of vegetation communities.¹⁰⁹

¹⁰⁸ This section is an extract from *State Planning Policy 1/03: Mitigating the adverse impacts of flood, bushfire and landslide*.

Department of Local Government and Planning and Department of Emergency Services.

¹⁰⁹ Vegetation community data is available in digital map form from the Queensland Herbarium, Environmental Protection Agency, at a scale of 1:100,000.

VEGETATION COMMUNITIES ¹¹⁰	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, cane fields.	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

Table 1

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 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.

¹¹⁰ Vegetation assessment based upon examination of the vegetation on the subject land and surrounding it is required. 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):

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

SLOPE	HAZARD SCORE
Gorges and mountains (>30%)	5
Steep Hills (>20% to 30%)	4
Rolling Hills (>10% to 20%)	3
Undulating (>3% to 10%)	2
Plain (0% to 3%)	1

Table 2

Note: Slope is to be calculated in accordance with Division 4 - Schedule C of this Code – Preparation of a Slope Analysis

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 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.

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

Table 3

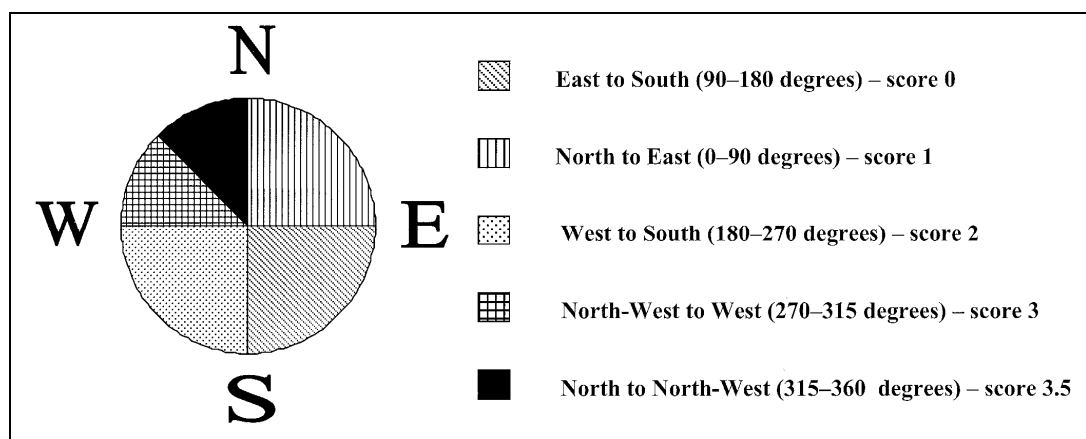


Figure 1

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;

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

Table 4.

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.

Documentation of a Bushfire Hazard Assessment

In carrying out a Bushfire Hazard Assessment, the person carrying out the assessment is required to clearly document each step. With any application submitted to the 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.

Division 4: Schedule B- Preparation of a Bushfire Management Plan**Preparation and Consultation**

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.

As a minimum, the author of the Bushfire Management Plan is to consult with the 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.

Contents of a 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 Division 4 - Schedule A – Preparation of a Bushfire Hazard Assessment. 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;
 - 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
 - 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 Specific outcomes, Probable Solutions and Acceptable Solutions of the Natural Disaster Area Code, applicable to Bushfire Prone Land 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.

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

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

Division 4: Schedule C Preparation of a Slope Analysis

What is a Slope Analysis?

A Slope Analysis is the most appropriate method for determining the slope of any land, and in doing so ascertaining if the land contains steep slopes. Steep slopes are defined as those of 15% or greater, and are those which are more susceptible to landslide.

Preparing a Slope Analysis

Step 1: Obtaining the necessary information

Topographical information, namely contour information for the land, is required to be able to undertake a Slope Analysis. Given the size of the Shire, available mapping is limited, and in most cases it will be necessary for proponents to have the land surveyed by a qualified surveyor to acquire contour information.

Step 2: Determining Slope

Slope can be described in two different ways, a percent gradient or an angle of the slope. For the purposes of implementing this Code, a percent gradient is used. The methodology for calculating the percent of gradient of slope is as follows:

1. Determine the site area of the development, over which to calculate slope. Note, it should be an area where the slope direction does not change. Do not cross the top of a hill or the bottom of the valley.
2. When an area of interest is determined, draw a straight line perpendicular to the contours of the slope. For better accuracy, start and end the line on, rather than between, contours on the map.
3. Measure the length of the line drawn and, using the scale of the map, convert that distance to metres.
4. Determine the total elevation change in metres along the line drawn (i.e. Subtract the elevation of the lowest contour used from the elevation of the highest contour used). No conversions are necessary on this measurement, because it is a real-world elevation change.
5. To calculate a percent slope, divide the elevation change in metres by the distance of the line drawn (after convertin it to metres). Multiply the resulting number by 100 to get a percentage value equal to the percent slope of the hill. If the value you calculate is, for example 20, this means that for every 100 metres covered in a horizontal direction, 20 metres will be gained (or lost) in elevation.

EXAMPLE

Length of measured line = 425m

Elevation Change = 20m (read off contours)

Percentage Slope = $20/425 \times 100 = 4.7\%$ slope