Natural hazards, risk and resilience state interest – Bushfire

Example planning scheme assessment benchmarks

Queensland Government

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1.0 Introduction

The department's **Integrating state interests in a planning scheme – Guidance for local governments** document assists local government in the interpretation, integration and advancement of the state interests articulated in the state planning instruments – the State Planning Policy July 2017 (SPP) and statutory regional plans – when making or amending a planning scheme.

These measures to be included in a planning scheme include applying zones or other locally specific provisions to land (such as overlays and local plans) and including assessment benchmarks, being the matters against which a development proposed in a development application must be assessed against.

Assessment benchmarks to effectively integrate the bushfire elements of the Natural hazards, risk and resilience state interest can be technically complex and as such, this document provides example assessment benchmarks.

A local government may choose to adopt or otherwise adapt these assessment benchmarks when making or amending a planning scheme. The example assessment benchmarks should not be seen as the only way to appropriately reflect the bushfire hazard component of the Natural hazards, risk and resilience state interest.

Where a local government seeks to adopt the example assessment benchmarks, it is not intended they be used verbatim, as variations will be required to reflect the local circumstances, opportunities and aspirations of each local government area.

The careful drafting of the planning schemes assessment benchmarks, against which development related to this state interest will be assessed, will assist in facilitating development that supports the delivery of the Natural hazards, risk and resilience state interest.

Note - Where a local government has designated all or part of its area as a designated bushfire prone area, the provisions of the Building Code of Australia (BCA) or QDC that apply to a designated bushfire prone area apply for any building assessment work that relates to that area in conjunction with any planning provisions. It should be noted that a local planning instrument must not include any provisions about building work to the extent the building work is regulated under the building assessment provisions, unless allowed under the Building Act 1975.

Building development applications in a 'designated bushfire prone area' are required to meet the mandatory bushfire provisions in the National Construction Code (NCC) and in AS 3959–2018 Construction of buildings in bushfire prone areas. Bushfire protection provisions in the NCC apply to Class 1, 2 and 3 residential buildings and accommodation buildings and associated Class 10a structures such as garages, sheds and carports.

2.0 Example Assessment Benchmarks

2.1 Application

The department's **Integrating state interests in a planning scheme – Guidance for local governments** document identifies the circumstances in which assessment benchmarks should be included in a planning scheme as part of the integration of the bushfire hazard component of the Natural hazards, risk and resilience state interest.

This includes where a planning scheme's provisions are to enable a local government to properly assess development within the bushfire prone area identified in the planning scheme mapping.

2.2 Overall intent

To articulate the overall intent of the planning scheme provisions, it is recommended the planning scheme include the following overall assessment benchmarks:

The purpose of the following specific provisions in this planning scheme is to ensure that risk to life, property, and the environment as a result of bushfire is mitigated to an acceptable or tolerable level, through development and activities that achieve the following outcomes:

- Development is laid out and located to minimise the exposure and vulnerability of people and property at risk from bushfires.
- Development contributes to effective and efficient emergency response and recovery capabilities.
- Rehabilitation, revegetation and landscaping does not increase the risk to people or property.
- Development only establishes or intensifies vulnerable uses within the bushfire prone area where no other option exists to provide the necessary level of service.
- Development only establishes or intensifies community infrastructure providing essential services within the bushfire prone area where necessary to provide an adequate level of service to the existing and projected population.
- Development avoids or mitigates the risk from the manufacture or storage of materials that are hazardous in the context of bushfire.

Note – It is recognised there may be circumstances where flexibility in the application of the assessment benchmarks to development applications in mapped bushfire prone areas may be appropriate, for example:

1. Where mapping contains inconsistencies that are yet to corrected through state or local government verification, for example potential bushfire intensity areas over roads or fully developed areas; or
2. Where mapping does not reflect the most up to date situation, for example areas have been cleared as part of earlier approvals.

2.3 Specific assessment benchmarks

2.3.1 Bushfire hazard area provisions

To deliver on the above purpose, it is recommended the planning scheme include the following specific assessment benchmarks:

Outcomes	Measures
Section A	
Reconfiguring a lot (RaL) – where creating any number of lots of more than 2,000 square metres:	
Outcome 1 The subdivision layout: (a) enables future buildings to be located away from slopes and land forms that expose people or property to an intolerable risk to life or property; and (b) facilitates emergency access and operational space for firefighters in a reduced fuel area between future buildings and structures and hazardous vegetation, that reduce risk to an acceptable or tolerable level. Note – An applicant may seek to undertake a site-level verification of the location and nature of hazardous vegetation and resulting potential bushfire intensity levels, for example where changes in foliage have occurred (e.g. as a consequence of adjoining permanent urban development) or where an applicant seeks to verify the regional ecosystem map inputs. This verification should form part of a bushfire hazard assessment in accordance with the methodology in the QFES **Bushfire resilient communities** document. The outcomes of this assessment can demonstrate how an alternate solution to the measure can deliver an acceptable or tolerable level of risk.	Measure 1.1 A development footprint plan is identified for each lot that avoids ridgelines, saddles and crests where slopes exceed 28 per cent. Measure 1.2 A development footprint plan is identified for each lot that is separated from the closest edge to the adjacent mapped medium, high or very high potential bushfire intensity area by: (a) a distance that is no closer than the distances specified in Table 1 at all development footprint plan boundaries; or (b) a distance that achieves a radiant heat flux level of 29 kW/m^2 or less at all development footprint plan boundaries. Note – This separation area is often termed an asset protection zone. Note – The radiant heat flux levels can be established by undertaking a bushfire hazard assessment in accordance with the methodology in the QFES **Bushfire resilient communities** document.
Outcome 2 The subdivision layout enables: (a) future buildings to be located as close as possible to property entrances to facilitate safe evacuation during a bushfire event; and (b) future site access to be located and designed to allow safe evacuation of the site by occupants and maintain access by emergency services under critical event conditions.	Measure 2 A development footprint plan is identified for each lot that: (a) is located within 60 metres of the street frontage; and (b) sited to enable a route between the development footprint plan and the street frontage with a gradient that does not exceed of 12.5 per cent.

Section B	
Reconfiguring a lot (RaL) – where creating any number of lots of 2,000 square metres or less:	
Outcome 3 The subdivision layout: (a) avoids creating lots on slopes and land forms that expose people or property to an intolerable risk to life or property; and (b) facilitates emergency access and operational space for firefighters in a reduced fuel area between future buildings and structures and hazardous vegetation, that reduce risk to an acceptable or tolerable level. Note – An applicant may seek to undertake a site-level verification of the location and nature of hazardous vegetation and resulting potential bushfire intensity levels, for example where changes in foliage have occurred (e.g. as a consequence of adjoining permanent urban development) or where an applicant seeks to verify the regional ecosystem map inputs. This verification should form part of a bushfire hazard assessment, in accordance with the methodology in the QFES **Bushfire resilient communities** document. The outcomes of this assessment can demonstrate how an alternate solution to the measure can deliver an acceptable or tolerable level of risk.	Measure 3.1 The subdivision layout results in lots that are sited so that they are separated from the closest edge to the adjacent mapped medium, high or very high potential bushfire intensity area by: (a) a distance that is no closer than the distances specified in Table 1 at all lot boundaries; or (b) a distance that achieves a radiant heat flux level of 29 kW/m^2 or less: (i) at the building envelope, if identified at RaL stage; or (ii) where a building envelope is not identified, at all lot boundaries. Note – This separation area is often termed an asset protection zone. Note – The radiant heat flux levels can be established by undertaking a bushfire hazard assessment in accordance with the methodology in the QFES **Bushfire resilient communities** document. Note – For staged developments, temporary separation areas may be absorbed as part of subsequent stages. Note – Existing cleared areas external to the site may only be used in calculating necessary separation where tenure ensures that the land will remain cleared of hazardous vegetation (for example the land is a road, watercourse or highly managed park in public ownership). Measure 3.2 The subdivision layout does not create lots that are within bushfire prone areas and on ridgelines, saddles and crests where slopes exceed 28 per cent (roads and parks may be located in these areas).
Section C	
Reconfiguring a lot (RaL) – additional provisions where creating more than 20 lots:	
Outcome 4 The subdivision layout is designed to minimise the length of the development perimeter and number of lots exposed to hazardous vegetation. Note – For example, avoid finger-like subdivision patterns or substantive vegetated corridors between lots.	No measure is prescribed.
Outcome 5 The subdivision layout provides for adequate access and egress and safe evacuation routes, to achieve an acceptable or tolerable risk to people.	Measure 5.1 The subdivision layout: (a) avoids the creation of bottle-neck points in the movement network within the development (for example, avoids hourglass patterns); and (b) ensures the road network has sufficient capacity for the evacuating population. Measure 5.2 The subdivision layout ensures evacuation routes: (a) direct occupants away from rather than towards or through areas with a greater potential bushfire intensity; and (b) minimise the length of route through bushfire prone areas. Refer Figure 1.

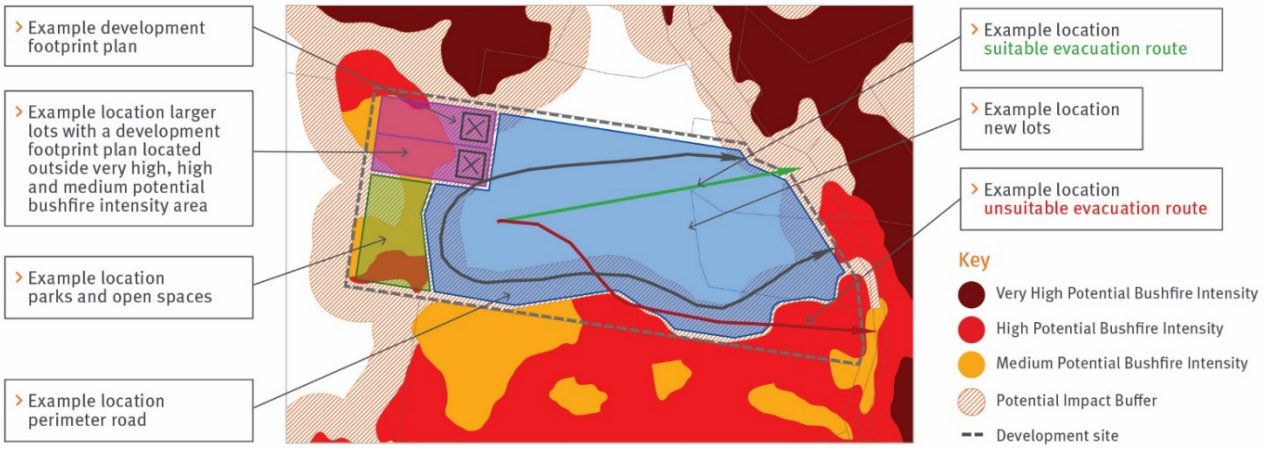


Figure 1 – Subdivision layout and evacuation routes

Outcome 6 The subdivision layout provides adequate buffers between hazardous vegetation and development. Note – An applicant may seek to undertake a site-level verification of the location and nature of hazardous vegetation and resulting potential bushfire intensity levels, for example where changes in foliage have occurred (e.g. as a consequence of adjoining permanent urban development) or where an applicant seeks to verify the regional ecosystem map inputs. This verification should form part of a bushfire hazard assessment, in accordance with the methodology in the QFES **Bushfire resilient communities** document. The outcomes of this assessment can demonstrate how an alternate solution to the measure can deliver an acceptable or tolerable level of risk.	Measure 6.1 The subdivision layout results in an asset protection zone being located to create a separation area from adjacent mapped medium, high or very high potential bushfire intensity areas.
	Measure 6.2 The asset protection zone is comprised of: (a) parks and open spaces; and/or (b) lots greater than 2000 square metres; and/or (c) public roads (termed perimeter roads). Note – Parks and open space may be located within the mapped medium, high and very high potential bushfire intensity areas to create a separation between the development and the balance of the bushfire prone area. Note – Portions of lots greater than 2000 square metres may be located within the mapped medium, high and very high potential bushfire intensity areas. Refer Figure 1.
	Measure 6.3 Where the asset protection zone includes lots greater than 2000 square metres a development footprint plan is identified for each lot that is located in accordance with Measure 1.2.
Outcome 7 Parks or open space provided as part of the asset protection zone do not create additional bushfire prone areas. Note –The undertaking of a bushfire hazard assessment, in accordance with the methodology in the QFES **Bushfire resilient communities** document may assist in demonstrating compliance with this outcome.	Measure 7 Where the asset protection zone includes parks or open spaces, they: (a) comprise only low threat vegetation, including grassland managed in a minimal fuel condition, maintained lawns, golf courses, maintained public reserves and parklands, cultivated gardens and nature strips; or (b) are designed to ensure a potential available fuel load is maintained at less than eight tonnes/hectare in aggregate and with a fuel structure that remains discontinuous. Note – Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack, for example short-cropped grass to a nominal height of 10 centimetres.
Outcome 8 Perimeter roads are accessible for fire-fighting vehicles, to facilitate emergency access and operational space for fire-fighting, maintenance works and hazard reduction activities.	Measure 8.1 Where the asset protection zone includes a perimeter road it: (a) has a two-lane sealed carriageway clear of hazardous vegetation; and (b) is connected to the wider public road network at both ends and at intervals of no more than 200 metres; and

	(c) does not include design elements that may impede access for fire-fighting and maintenance for fire-fighting purposes (for example traffic calming involving chicanes).
	Measure 8.2 Where the subdivision contains a reticulated water supply, the road network and fire hydrants are designed and installed in accordance with: (a) *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 entity; and (b) the *Road Planning and Design Manual 2nd edition*, Department of Transport and Main Roads, 2013.
Section D	
Reconfiguring a lot (RaL) – where creating additional lots for the purpose of residential development and a reticulated water supply is not provided:	
Outcome 9 The subdivision layout provides for perimeter roads or fire trail and working areas that are accessible by the type of fire-fighting vehicles servicing the area, to facilitate emergency access and operational space for fire-fighting, maintenance works and hazard reduction activities.	Measure 9 The subdivision layout includes: (a) a fire trail and working area designed and constructed in accordance with the design parameters in Table 2 that separates the residential lot or development footprint plan from adjacent mapped medium, high or very high potential bushfire intensity areas; or (b) a perimeter road designed and constructed in accordance with Measure 8.1. Refer Figure 2.

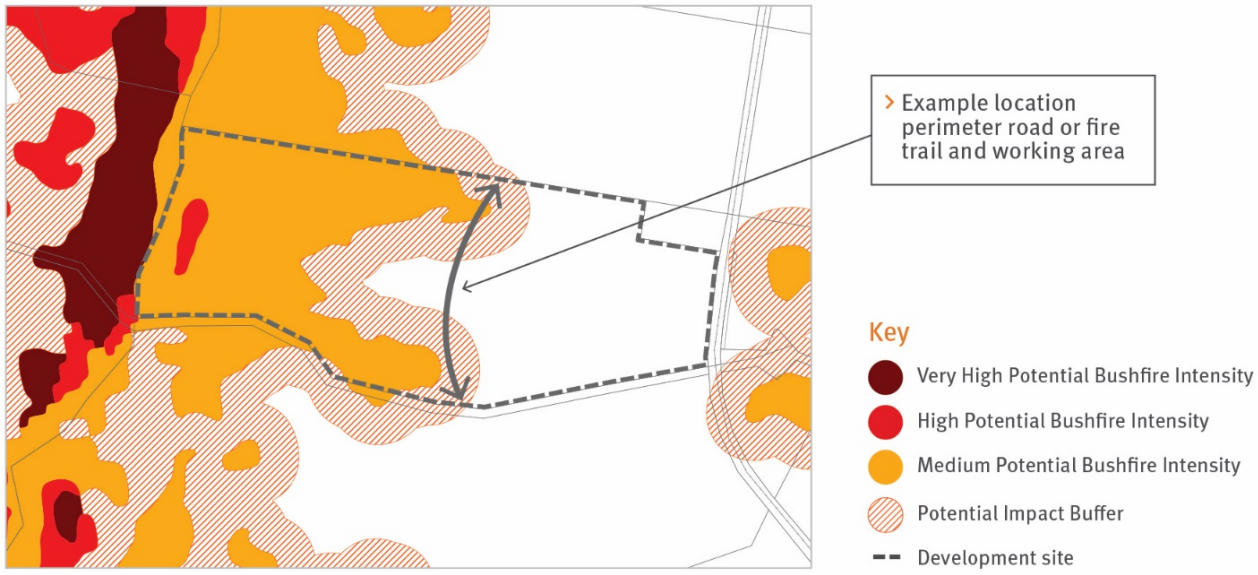
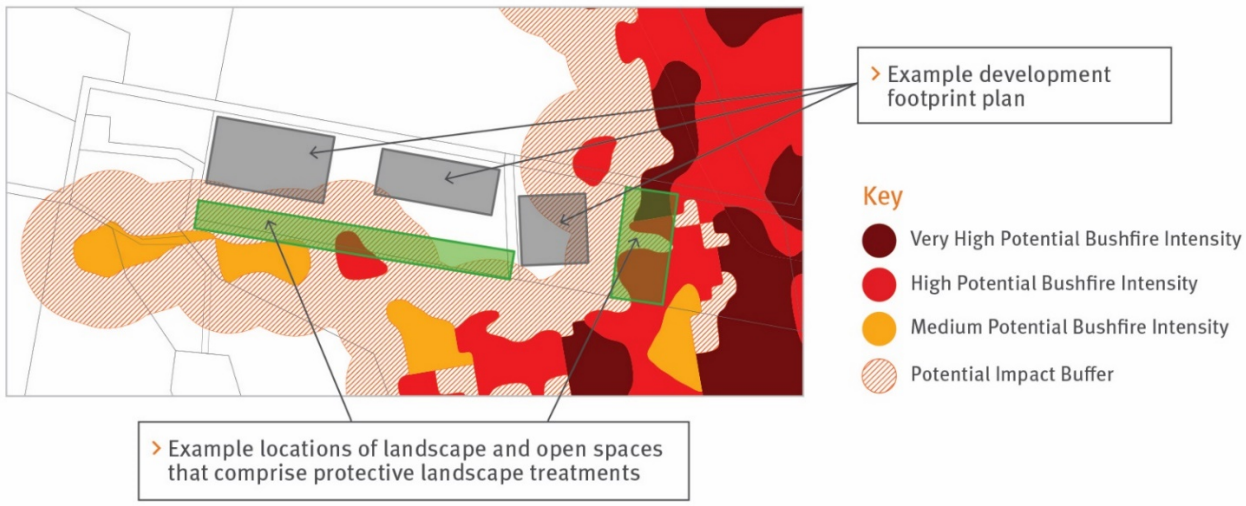


Figure 2 – Siting of fire trail and working area

Section E	
Material change of use:	
Outcome 10 Site layout achieve an acceptable or tolerable risk to people. Landscape or open space provided as part of the development: (a) acts as a buffer between hazardous vegetation and development; and (b) does not create additional bushfire prone areas. Note – An applicant may seek to undertake a site-level verification of the location and nature of hazardous vegetation and resulting potential bushfire intensity levels, for example where changes in foliage have occurred (e.g. as a consequence of adjoining permanent urban development) or where an applicant seeks to verify the regional ecosystem map inputs. This verification should form part of a bushfire hazard assessment in accordance with the methodology in the QFES **Bushfire resilient communities** document. The outcomes of this assessment can demonstrate how an alternate solution to the measure can deliver an acceptable or tolerable level of risk.	Measure 10.1 Site layout places the landscape and open spaces within the site between premises and adjacent mapped medium, high or very high potential bushfire intensity areas. Refer Figure 3. Measure 10.2 This landscaping and open space comprises protective landscape treatments that: (a) comprise only low threat vegetation, including grassland managed in a minimal fuel condition, maintained lawns, golf courses and cultivated gardens; or (b) are designed to ensure a potential available fuel load is maintained at less than 8 tonnes/hectare in aggregate and that fuel structure remains discontinuous. Note – Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack, for example short-cropped grass to a nominal height of 10 centimetres.
 *Figure 3 – Siting of protective landscape treatments*	
Outcome 11 The development establishes evacuation areas, to achieve an acceptable or tolerable risk to people.	Measure 11 If in an isolated location, development establishes direct access to a safe assembly/evacuation area. Note – Guidance on identifying safe evacuation areas is contained in the QFES **Bushfire resilient communities** document.
Outcome 12 If on a lot of over 2000m^2, where involving a new premises or an existing premises with an increase in development footprint, development: (a) locates occupied areas as close as possible to property entrances to	No measure is prescribed.

facilitate safe evacuation during a bushfire event; and (b) ensures vehicular access is located and designed to allow safe evacuation of the site by occupants and maintain access by emergency services under critical event conditions.	
Outcome 13 Development is located within a reticulated water supply area or includes a dedicated static water supply that is available solely for fire-fighting purposes and can be accessed by fire-fighting vehicles. Note – Swimming pools, farm ponds and dams are not considered reliable sources of static water supply in Queensland due to regular drought events. [Note for Local Government – Information on how to provide an appropriate static water supply, may form a condition of a development approval. For further information on preferred solutions refer to the QFES **Bushfire resilient communities** document.]	No measure is prescribed.
Outcome 14 Vulnerable uses listed in Table 3 are not established or intensified within a bushfire prone area unless: (a) there is an overriding need in the public interest for the new or expanded service the development provides; and (b) there are no other suitable alternative locations within the required catchment; and (c) site planning can appropriately mitigate the risk (for example, siting ovals for an educational establishment between the hazardous vegetation and structures. Note – The preparation of a bushfire management plan in accordance with the methodology in the QFES **Bushfire resilient communities** document may assist in demonstrating compliance with this outcome.	No measure is prescribed.
Outcome 15 Community infrastructure providing essential services listed in Table 3 are not established within a bushfire prone area unless: (a) there is an overriding need in the public interest for the new or expanded service the development provides (for example, there are no other suitable alternative locations that can deliver the required level of service or meet emergency service response times during and	No measure is prescribed.

immediately after a bushfire event); and (b) the infrastructure can function effectively during and immediately after a bushfire event. Note – The preparation of a bushfire management plan in accordance with the methodology in the QFES **Bushfire resilient communities** document may assist in demonstrating compliance with this outcome.	
Outcome 16 Development avoids or mitigates the risks to public safety and the environment from the manufacture or storage of materials listed in Table 3 that are hazardous in the context of bushfire to an acceptable or tolerable level. Note – The preparation of a bushfire management plan in accordance with the methodology in the QFES **Bushfire resilient communities** document may assist in demonstrating compliance with this outcome. Editor's note – In addition to these provisions, the *Work Health and Safety Act 2011* and associated Regulation and Guidelines, the *Environmental Protection Act 1994* and the relevant building assessment provisions under the *Building Act 1975* contain requirements for the manufacture and storage of hazardous substances. Information is provided by Business Queensland on the requirements for storing and transporting hazardous chemicals, available at: **www.business.qld.gov.au/running-business/protecting-business/risk-management/hazardous-chemicals/storing-transporting**.	No measure is prescribed.
Section F	
Where involving an asset protection zone:	
Outcome 17 Asset protection zones are designed and managed to ensure they do not increase the potential for bushfire hazard. Note – The preparation of a landscape management plan undertaken in accordance with the methodology in the QFES **Bushfire resilient communities** document may assist in demonstrating compliance with this outcome.	Measure 17 Landscaping treatments within any asset protection zone comprise only low threat vegetation, including grassland managed in a minimal fuel condition, maintained lawns, golf courses, maintained public reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks. Note – Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack, for example short-cropped grass to a nominal height of 10 centimetres. OR Landscaping management within any asset protection zone maintains a: (a) potential available fuel load which is less than eight tonnes/hectare in aggregate; and (b) fuel structure which is discontinuous. Note – The preparation of a landscape management plan undertaken in accordance with the methodology in the QFES **Bushfire resilient communities** document may assist in demonstrating compliance with this measure.

Section G	
Where planning provisions or conditions of approval require revegetation or rehabilitation:	
Outcome 18 Revegetation or rehabilitation areas are designed and managed to ensure they do not result in an unacceptable level of risk or an increase in bushfire intensity level. Note – The undertaking of a bushfire hazard assessment in accordance with the methodology in the QFES **Bushfire resilient communities** document may assist in demonstrating compliance with this outcome.	Measure 18.1 Required revegetation or rehabilitation: (a) is located outside of any asset protection zone; or (b) maintains a potential available fuel load which is less than eight tonnes/hectare in aggregate and fuel structure which is discontinuous. Note – The preparation of a landscape management plan undertaken in accordance with the methodology in the QFES **Bushfire resilient communities** document may assist in demonstrating compliance with measure (b).
	Measure 18.2 Revegetation or rehabilitation of areas located within mapped medium, high or very high potential bushfire intensity areas, revegetate and rehabilitate in a manner that maintains or reduces the existing fuel load. OR Revegetation or rehabilitation of areas located within the mapped potential impact buffer area, revegetate and rehabilitate in a manner that maintains or reduces the existing fuel load. Note – The preparation of a vegetation management plan undertaken in accordance with the methodology in the QFES **Bushfire resilient communities** document may assist in demonstrating compliance with this measure.

Mapped hazard category (predominant potential fireline intensity of hazardous vegetation adjacent to development)	Position on slope of the hazardous vegetation relative to lot boundary or development footprint plan	Acceptable asset protection zone width between hazardous vegetation and the lot boundary or development footprint plan
Very high potential bushfire intensity: + 40,000 kW/m²	Upslope[1]	<xx> metres
	Downslope[2] – Flat[3]	<xx> metres
	Downslope – Moderate	<xx> metres
	Downslope – Steep	<xx> metres
High potential bushfire intensity: 20,000–40,000 kW/m²	Upslope	<xx> metres
	Downslope – Flat	<xx> metres
	Downslope – Moderate	<xx> metres
	Downslope – Steep	<xx> metres
Medium potential bushfire intensity: 4,000–20,000 kW/m²	Upslope	<xx> metres
	Downslope – Flat	<xx> metres
	Downslope – Moderate	<xx> metres
	Downslope – Steep	<xx> metres

Table 1 – Default separation distances

[Note for Local Government – This table identifies acceptable default separation distances that are designed for the circumstances of each local government area. This table may be included where the local government seeks to provide a quantifiable measure for applicants that removes the need to determine radiant heat flux levels. The table is a template only – this table can be developed upon request to the QFES.]

[1] Upslope: Hazardous vegetation is upslope from building envelope.

[2] Downslope: Hazardous vegetation is downslope from building envelope.

[3] Flat: 0.0–4.9 deg. Moderate slope: 5.0–9.9 deg. Steep 10+ deg.

Parameter	Provisions
Width	Contains a width of at least 20 metres including: 1. A **trafficable area** (cleared and formed): a. with a minimum width of 4 metres that can accommodate a rural firefighting vehicle b. with no less than 4.8 metres vertical clearance from canopy vegetation c. with no adjacent inhibiting embankments or retaining walls 2. A **working area** each side of the trafficable area: a. with a minimum width of 3 metres each side b. cleared of all flammable vegetation greater than 10 centimetres in height 3. The **balance** (i.e. 10 metre width) managed vegetation area: a. sited to separate the trafficable area from adjacent mapped medium, high or very high potential bushfire intensity areas managed vegetation b. comprising managed vegetation clear of major surface hazards.
Access	Access is granted in favour of the local government and Queensland Fire and Emergency Services Note – This access is commonly granted in the form of an easement that is to be maintained by the grantor.
Egress	Contains trafficable vehicle routes in to low hazard areas, every 200 metres

Table 2 – Fire trail and working area design parameters

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

2.3.2 Revegetation / rehabilitation provisions

These specific assessment benchmarks would be contained in the part of the planning scheme requiring the revegetation/rehabilitation – a biodiversity or waterway corridor code for example:

Outcomes	Measures
Bushfire hazard considerations:	
Outcome 1 Revegetation or rehabilitation areas are designed and managed to ensure the area does not have the potential to become a medium, high or very high potential bushfire intensity area in the future. Note – The undertaking of a bushfire hazard assessment in accordance with the methodology in the QFES **Bushfire resilient communities** document may assist in demonstrating compliance with this outcome.	Measure 1.1 Revegetation or rehabilitation areas: (a) contain patches of less than one hectare of continuous fuel (i.e. surrounded by either no fuel or non-continuous fuel) and are further than 100 metres from the interface with mapped medium, high or very high potential bushfire intensity patches greater than two hectares in size; and (b) contain corridors of continuous fuel less than 50 metres in width; and (c) contain isolated patches of continuous fuel, less than 0.5 hectare. Note – Steps 1, 2, and 4 in Section 4.2.6 of the QFES **Bushfire resilient communities** document provide further detailed guidance regarding the patch and corridor methodology that has been adapted for this measure to ensure revegetation or rehabilitation in this manner does not create an additional area that would meet the criteria of being a bushfire prone area in the future if assessed in accordance with the methodology used to generate the SPP IMS mapping.
	Measure 1.2 Where the dimensions, configuration and location of revegetation or rehabilitation areas does not comply with Measure 1.1, the revegetation or rehabilitation areas are designed and managed to achieve and maintain: (a) a potential available fuel load which is less than 8 tonnes/hectare in aggregate; and (b) fuel structure which is discontinuous. Note – The preparation of a vegetation management plan undertaken in accordance with the methodology in the QFES **Bushfire resilient communities** document may assist in demonstrating compliance with this measure.

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