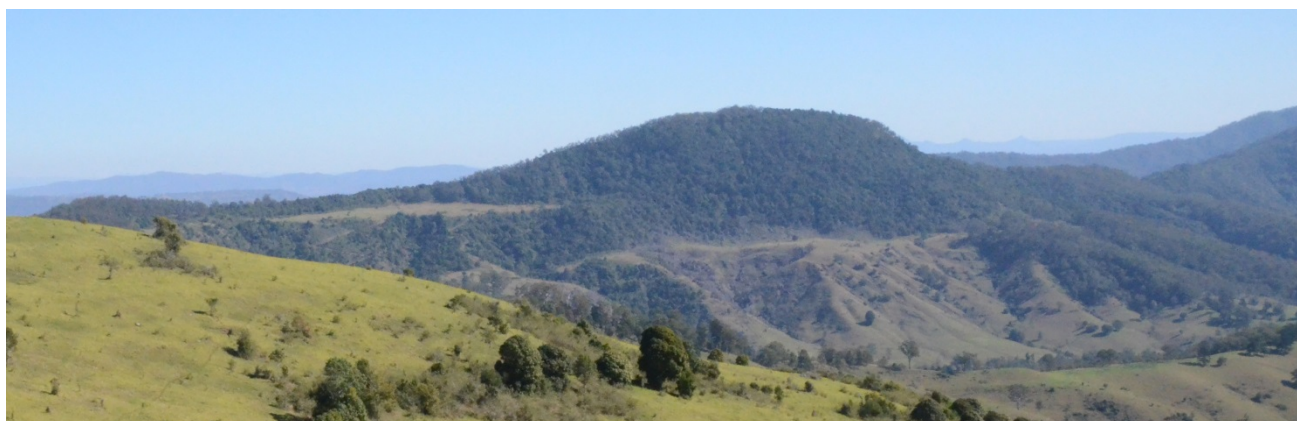


8.2.7 Landslide Hazard and Steep Slope Overlay Code



8.2.7.1 Application

This code applies to development:

- (1) within the Landslide Hazard and Steep Slope Overlay as identified on the overlay maps contained in **Schedule 2 Mapping**; and
- (2) identified as requiring assessment against the Landslide Hazard and Steep Slope Overlay Code by the tables of assessment in **Part 5 Tables of Assessment**.

Editor's Note: The following reports may be referred to in relation to landslide and slope stability:

- (i) *Slope Stability And Its Constraints On Closer Settlement On Tamborine Mountain, Southeast Queensland* by W.F. Willmott May 1981 Record 1981/14; and
- (ii) *Slope Stability And Its Constraints On Closer Settlement In The Canungra-Beechmont-Numinbah Area, Southeast Queensland* by W.F. Willmott May 1981 Record 1983/64

8.2.7.2 Purpose and Overall Outcomes

- (1) The purpose of the Landslide Hazard and Steep Slope Overlay Code is to ensure development on land containing unstable slopes or steep slopes protects people, property and the environment from landslide hazards.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Development does not materially increase the extent or severity of landslide risk on the site or to other properties;
 - (b) Development is not located in areas of intolerable landslide risk;
 - (c) Where risk cannot be practicably avoided, development is designed, located and managed to ensure the safety of people is maintained and the damage to property is mitigated to an acceptable or tolerable level;
 - (d) The potential for erosion or landslide are avoided or effectively mitigated;
 - (e) Development does not increase the number of people living and working in an area of high and very high landslide risk, except where the premises are occupied on a short term or intermittent basis;
 - (f) The risk of landslides damaging property or endangering persons is minimised;
 - (g) Development does not involve the manufacture of hazardous materials in bulk;
 - (h) Development avoids involving the establishment or intensification of vulnerable uses within or near areas that are subject to risk of landslide;
 - (i) Stormwater runoff and wastewater disposal is effectively managed so as not to increase the risk of landslide;
 - (j) Erosion events on slopes exceeding an average gradient of 15.1% are minimised;
 - (k) Visual amenity is not adversely affected by development;
 - (l) Safe and efficient vehicular and pedestrian access onto steeply sloping land is provided;

- (m) Development supports, and does not unduly burden disaster management response or recovery capacity or capabilities.
- (n) Natural processes and the protective function of landforms and/or vegetation are maintained in landslide hazard areas;
- (o) Vegetation clearing, filling and/or excavation does not create a landslide risk and/or rectifies potential pre-existing landslide risks.

8.2.7.3 Assessment Benchmarks

Table 8.2.7.3.1 — Landslide Hazard and Steep Slope Overlay Code - for Accepted and Assessable Development

Performance Outcomes	Acceptable Outcomes
Steep Slope Area - Slope Hazard 15.1 - 20% or Steep Slope Area - Slope Hazard 20.1 - 25%, and Landslide Hazard - Medium	
<p>PO1 Development siting and access: (1) ensures the safety of people on sites containing unstable or steep slopes is maintained; and (2) mitigates the potential damage to property to an acceptable or tolerable level.</p>	<p>AO1 Development involving building, earthworks, vegetation clearing or an increase in the number of people living and working on a site, is undertaken on land identified as a <i>Steep Slope Area - Slope Hazard 15.1 - 20%</i> or <i>Steep Slope Area - Slope Hazard 20.1 - 25%</i>, and <i>Landslide Hazard - Medium</i>, only where a geotechnical stability assessment report, prepared and certified by a Registered Professional Engineer in Queensland (RPEQ), confirms that the proposed development: (1) is designed, located and managed to ensure the safety of people is maintained; (2) is located so that it is geologically stable in the long term and not at risk from landslide; (3) is appropriate for the sloping nature of the site; and (4) that the risk of landslide adversely affecting the subject lot, adjoining properties and the proposed development is at a low level.</p> <p><i>Note - Certification is to consider all relevant matters including but not limited to safety of persons using the site, adjacent land stability impacts, rockfall, development siting and layout, vegetation and vegetation removal, waste disposal areas, stormwater management, earthworks, driveways, car parking and manoeuvring areas.</i></p>

Table 8.2.7.3.2 — Landslide Hazard and Steep Slope Overlay Code - for Assessable Development

Performance Outcomes	Acceptable Outcomes
Landslide Hazard and Steep Slope Constraints (Slope Hazard over 25% and Landslide Hazard Area - High and Very High)	
<p>PO1 Development is not located in areas of intolerable landslide risk.</p>	<p>AO1 Development is not undertaken on land identified as: (1) Steep Slope Area - Slope Hazard Over 25%; or (2) Landslide Hazard Area - High and Very High; unless: (a) a location with less slope and/or less</p>

Performance Outcomes	Acceptable Outcomes
	<p>geological instability risk is not available on the site for the development; and (b) a geotechnical stability assessment report undertaken by a suitably qualified person certifies that the development:</p> <ul style="list-style-type: none"> (i) is designed, located and managed to ensure the safety of people is maintained; (ii) is located so that it is geologically stable in the long term and not at risk from landslide; (iii) is appropriate for the sloping nature of the site; and (iv) that the risk of landslide adversely affecting the subject lot, adjoining properties and the proposed development is at a low level; (v) can manage the evacuation of people if involving institutional uses. <p><i>Note - A geotechnical stability assessment report, prepared and certified by an RPEQ, is to consider all relevant matters including but not limited to safety of persons using the site, adjacent land stability impacts, rockfall, development siting and layout, vegetation and vegetation removal, waste disposal areas, stormwater management, earthworks, driveways, car parking and manoeuvring areas.</i></p>
Specific Land Uses	
<p>PO2 Development involving <i>vulnerable uses</i>: (1) is only established or expanded in areas of low or no risk; and (2) is not likely to burden disaster management response or recovery capacity and capabilities by having:</p> <ul style="list-style-type: none"> (a) an increased number of people calculated to being at risk from land instability or landslide; (b) increase the number of people likely to need evacuation; and (c) impact on the ability of traffic to use evacuation routes, or unreasonably increase traffic volumes on evacuation routes in higher risk areas. 	<p>AO2 A <i>vulnerable use</i> is not established or expanded in areas designated: (1) Landslide Hazard Area - High; or (2) Landslide Hazard Area - Very High; or (3) Steep Slope Area – Slope Hazard Over 25%.</p>
<p>PO3 The manufacture or storage of hazardous material in bulk is not located on land, or in the immediate surrounds of land, with a slope in excess of 15%, or in a Landslide Hazard Area.</p>	<p>AO3 No acceptable outcome prescribed.</p>
<p>PO4 Development involving <i>infrastructure activities</i> includes measures identified by a site-specific geotechnical stability assessment report prepared by a <i>suitably qualified person</i> that ensures: (1) <i>infrastructure activities</i> are able to function effectively during and immediately after landslide events; (2) the long term stability of the site including</p>	<p>AO4 No acceptable outcome prescribed.</p>

Performance Outcomes	Acceptable Outcomes
<p>associated buildings and infrastructure; (3) access to the site will not be impeded by a landslide event; and (4) the <i>infrastructure activities</i> will not be adversely affected by landslides originating from other land including land above the site.</p>	
Built Form	
<p>PO5 Development in Steep Slope Areas and Landslide Hazard Areas incorporates measures to minimise landslide risk level for the development site and for areas immediately surrounding the development site without significantly altering the characteristics of the land.</p>	<p>AO5.1 Development located in a Steep Slope Area is located on the least steep part of the subject site.</p> <p>AO5.2 Existing vegetation is retained on land with a slope of 15% or greater.</p> <p>AO5.3 Development creates minimal disturbance to the natural ground levels.</p>
Stormwater Drainage	
<p>PO6 Development ensures that stormwater runoff does not: (1) increase the susceptibility of the site to landslide; and (2) does not cause detriment to the natural environment or to any other lots.</p>	<p>AO6 Stormwater drainage (including roof guttering and rainwater tank overflows) is managed to avoid an increase in on-site groundwater, ponding of water and water concentration into slopes and discharges to a lawful point of discharge.</p>
Wastewater	
<p>PO7 Wastewater disposal does not create or increase the likelihood of instability of the site or neighbouring sites.</p>	<p>AO7 Development ensures that: (1) where sewerage reticulation is available, wastewater is disposed of via a connection to sewerage reticulation; or (2) where sewerage reticulation is not available on site: (a) subsurface disposal of effluent is not used; and (b) effluent disposal areas are located in areas so as not to cause potential instability on site or on a neighbouring site.</p> <p><i>Note - Certification is to be provided by a RPEQ, confirming that the location of the effluent disposal areas is appropriate for the sloping nature of the site.</i></p>
Vehicle and Pedestrian Access	
<p>PO8 Development provides that vehicle and pedestrian access is designed and located to address slope stability issues and control of erosion.</p>	<p>AO8.1 Development is positioned on a site so that: (1) vehicle and pedestrian access avoids areas identified as: (a) Steep Slope Area - Slope Hazard over 25%; and (b) Landslide Hazard Areas; and (2) the amount and depth of any excavation required to construct internal vehicle and pedestrian access is minimised.</p>

Performance Outcomes	Acceptable Outcomes
	<p>AO8.2 Paths, driveways and roads: (1) are designed to: (a) follow natural contours and have the minimum length necessary; (b) minimise the number of crossings of water courses and drainage lines; and (c) allow for traffic to enter and leave the site in a forward gear; and (2) be sealed with asphalt, concrete or another type of hardstand where traversing a slope greater than 10%; and (3) do not traverse land with a slope exceeding 25%.</p>
Operational Works	
<p>PO9 Operational works (not associated with building work), is minimised and must not; (1) adversely affect slope stability; or (2) cause geological instability; (3) create erosion potential; or (4) create a potential risk to structures or personal safety.</p>	<p>AO9.1 Development involving operational works is supported by a RPEQ certified geotechnical report, which: (1) adequately addresses and documents the site's geotechnical stability and constraints; (2) incorporates necessary mitigation measures so that the level of landslide risk to property and persons is low; (3) ensures surface waters are managed and will not cause erosion both during the works being undertaken, and in an ongoing basis.</p> <p>AO9.2 Development creates minimal disturbance to the natural ground levels.</p>
Vegetation	
<p>PO10 To minimise the risk of landslide, land instability, degradation of slopes, erosion or scouring, development: (1) creates minimal disturbance to existing vegetation significant to the stabilisation of the land; and (2) revegetates areas to increase the stabilisation of the land.</p>	<p>AO10 Development: (1) retains vegetation in slopes, gullies, existing and potential landslip areas; and (2) revegetates slopes, gullies, existing and potential landslip areas with: (a) grasses; (b) dense landscaping; or (c) a combination of (a) and (b).</p> <p><i>Note - Vegetation management is to be considered by a RPEQ in a Geotechnical Stability Assessment Report.</i></p>
<p>PO11 Development for <i>community services</i> activities: a) is not at risk from landslide hazards; or will function without impediment from a landslide; b) provides access to the infrastructure without impediment from the effects of a landslide c) does not contribute to elevated risk of landslide to adjoining properties.</p>	<p>AO11 Development involving <i>community services</i> activities includes measures identified by a site-specific geotechnical assessment prepared by a competent person that ensures: a) the long-term stability of the site including associated building and infrastructure b) access to the site will not be impeded by a landslide event, and c) the community infrastructure will not be adversely affected by landslides originating from other land, including land above the site.</p>

Performance Outcomes	Acceptable Outcomes
Reconfiguring a Lot	
<p>PO12 Development involving reconfiguration of a lot:</p> <ul style="list-style-type: none"> (1) has a low level of landslide risk; (2) does not increase the landslide hazard risk for adjoining and nearby sites; and (3) does not result in an increase in the number of people living, congregating or working on land in high risk areas. 	<p>AO12.1 Additional lots are not created in:</p> <ul style="list-style-type: none"> (1) Landslide Hazard Area - High; or (2) Landslide Hazard Area - Very High; or (3) Steep Slope Area – Slope Hazard Over 25%. <p>AO12.2 Development does not involve reconfiguring a lot for a vulnerable use.</p> <p>AO12.3 Retaining walls have a maximum height of 1.5 metres.</p> <p>AO12.4 Development involves minimal disturbance to the natural ground levels.</p>
<p>PO13 Reconfigured lots provide building envelopes that:</p> <ul style="list-style-type: none"> (1) are large enough to at least accommodate a dwelling house, outdoor recreation area, water supply/storage, and on site wastewater treatment system (where not connected to the reticulated network); (2) are geologically stable in the long term and does not increase the rock fall or landslide risk for adjoining and nearby sites; and (3) do not impose unreasonable building constraints for future uses; (4) would not result in the removal of vegetation important to ground stability; and (5) achieves a safe and efficient access by vehicles and pedestrians to a formed legal road access. 	<p>AO13.1 Reconfigured lots intended to accommodate a future dwelling house provides a building envelope:</p> <ul style="list-style-type: none"> (1) with a minimum area of 1,000m²; (2) with a minimum dimension of 18 metres; (3) on land with a slope less than 15.1%; (4) is demonstrated to have a low level of landslide risk; and (5) provides any benching or retaining walls at a maximum height of 1.5 metres. <p>AO13.2 Reconfigured lots intended to accommodate uses other than a dwelling house provides a building envelope:</p> <ul style="list-style-type: none"> (1) with a minimum area of 1,000m²; (2) with a minimum dimension of 18 metres; (3) on land with a slope less than 15.1%; (4) that has an area large enough to facilitate the proposed use, car parking, water supply/storage and on site wastewater treatment system (where not connected to the reticulated network); (5) is demonstrated to have a low level of landslide risk; and (6) provides any benching or retaining walls at a maximum height of 1.5 metres. <p>AO13.3 The building envelope is connected to a constructed public road by a driveway or road that:</p> <ul style="list-style-type: none"> (1) is designed to: <ul style="list-style-type: none"> (a) follow natural contours and have the minimum length necessary; and (b) minimise the number of crossings of water courses and drainage lines; and (2) be sealed with asphalt, concrete or another type

Performance Outcomes	Acceptable Outcomes
	<p>of hardstand where traversing a slope greater than 10%; and (3) does not traverse land with a slope exceeding 25%.</p> <p>AO13.4 The building envelope is located in an area that: (1) does not require the removal of vegetation; or (2) is located in an area with a slope less than 15.1% slope.</p>