Landslips in the Nambucca Valley

Reducing your risk

This landslide on Riverside Drive Nambucca Heads took a passing car with it after heavy rains in 2012

A landslide or landslip is a rapid downward movement of earth and rock.
Development in the Nambucca Valley, with its mountainous hinterlands and coastal landscape and often intense rainfall, is at risk of landslides if good design and construction practices are not followed. This **fact sheet** helps you identify a potential landslide area as well as gives some good design practices for building in such areas.

Where are landslides likely?

Features that indicate instability include:

Irregular surfaces	Areas of hummocks and depressions
Benches	Flat areas in an otherwise uniform surface
Scars	Areas where vegetation has been stripped during slope movements
Scarps and cracks	Linear features showing vertical or lateral displacement of the ground surface
Debris mounds	Deposits of loose soil and rock on or at the base of slopes
Disturbed vegetation	Tilted trees
Seepage	Presence of springs and dense vegetation regrowth

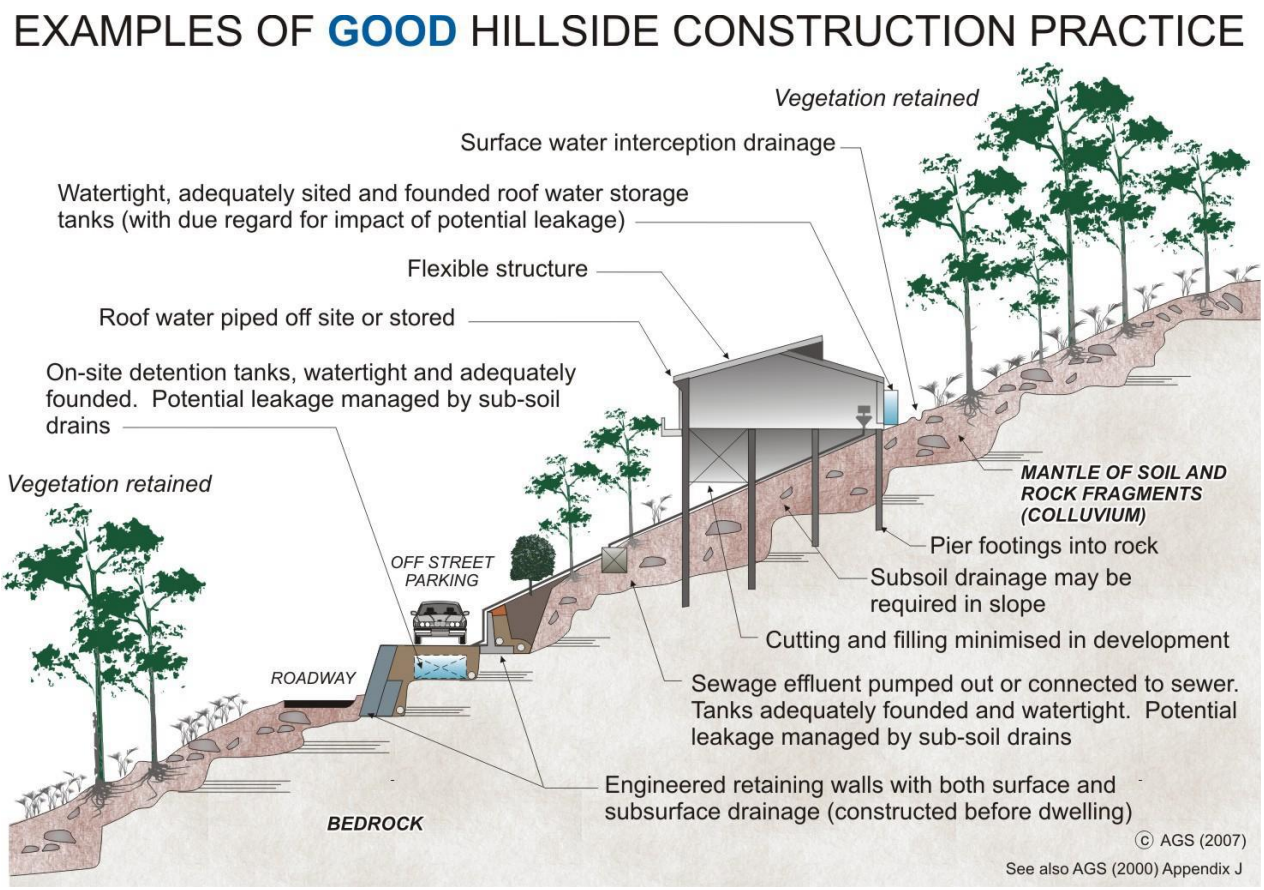
In developed areas, you may see:

- Cracking or tilting of walls
- Cracking or slumping of embankment slopes
- Cracking and fall of material from excavated slopes
- Broken pipes and fractured drains
- Tilted powerlines and fences

When out walking or driving, be aware of potentially dangerous areas and avoid them, especially after heavy rains.

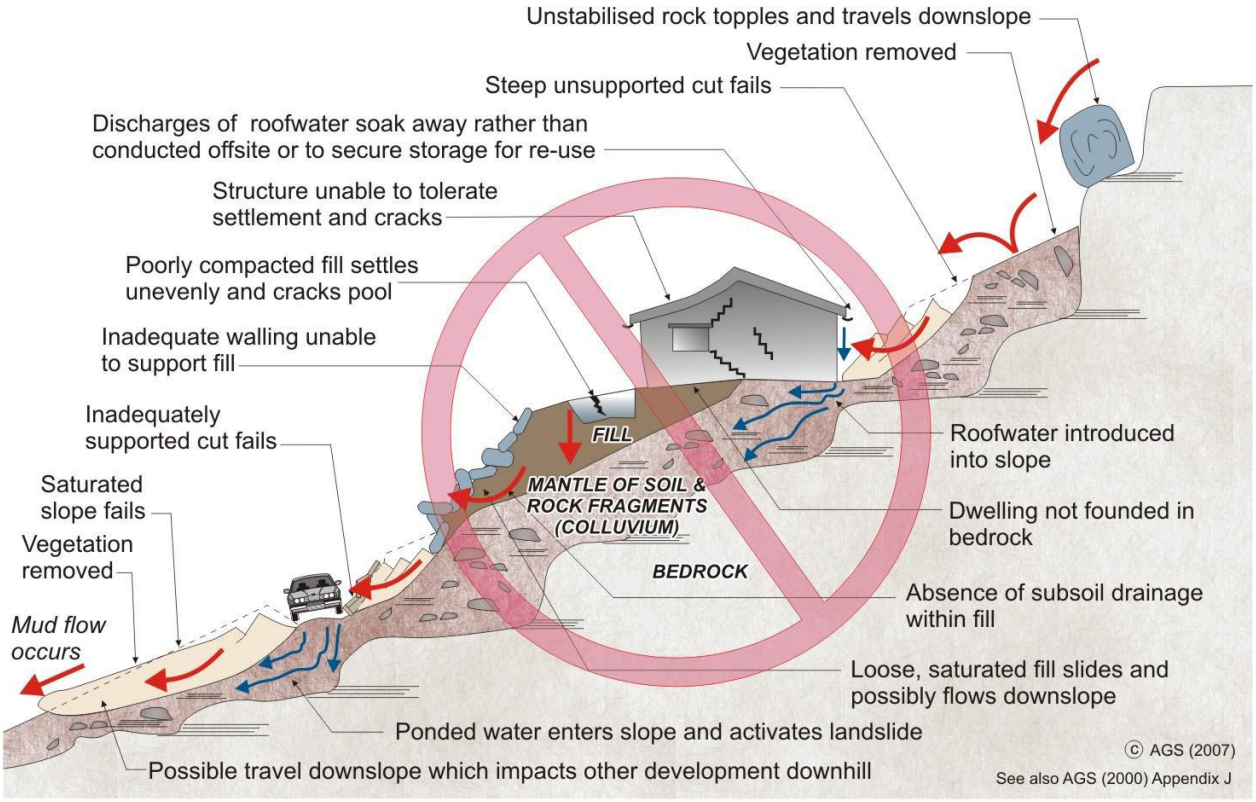
Building considerations

If you are considering the purchase of land or construction of buildings on a sloping site, you need to consider slope stability. If the land is sloping or even next to a slope, site stability could be a hazard. The best advice on landslide issues comes from qualified engineering geologists and geotechnical engineers. These practitioners should follow Australian Standards for Geotechnical Site Investigations to ensure that all relevant factors have been considered and that the report is comprehensive, because it will determine the design of building work.



- Roadways and parking areas are paved and have kerbs which prevent water discharging straight into the hillside.
- Cuttings are supported by retaining walls.
- Retaining walls are engineer designed to withstand the expected lateral earth pressures and surcharges and include drains to prevent water pressures developing in the backfill. Where the ground slopes steeply down towards the high side of a retaining wall, the force can be two or more times that in level ground.
- Sewage, whether treated or not, is taken away in pipes or contained in properly founded tanks so it cannot soak into the ground.
- Surface water from roofs and other hard surfaces is piped away to a discharge point and not allowed to infiltrate the ground.
- Surface loads are minimised. No fill embankments have been built. The house is a lightweight structure. Foundation loads have been taken down below the level at which a landslide is likely to occur and preferably to rock.
- Flexible structures have been used because they can tolerate a certain amount of movement with minimal signs of distress and maintain their function.
- Vegetation clearance on soil slopes has been minimal as trees and other vegetation take large quantities of water out of the ground each day, which lowers the groundwater table which in turn helps stabilise the slope.

EXAMPLES OF **POOR** HILLSIDE CONSTRUCTION PRACTICE



Poor construction practice is not as unusual as one might expect, usually because they save the developer or the owner money. Dealing with the impacts of these poor practices is likely to be much more expensive than the small savings at the construction stage.

- Roadways and parking areas are unpaved and don't have proper drains or gutters, causing surface water to pond and soak into the ground.
- Cut and fill has been used to balance earthworks quantities and level the site, leaving unstable cut faces and adding large surface loads to the ground. Failing to properly compact the fill leads to settlement which will continue for several years after construction. The house and pool have been built on the fill and have settled with it and cracked.
- Retaining walls have been avoided to cut cost and hand place rock walls used instead. The walls have not been designed with engineering principles and are likely to fall.
- A heavy, rigid house has been built on shallow, conventional footings. Not only has the brickwork cracked but it is also likely to collapse in a landslide.
- Soak-away drainage has been used for sewage and surface water run-off from roofs and pavements, which soaks into the ground and raises the water table.
- Rock debris from landslides greater up the slope seems likely to pass through the site. Even quite small boulders are likely to weigh many tonnes and do a lot of damage when they begin to roll.
- Vegetation has been completely cleared, leading to a possible rise in the water table.

Further information

- Speak to Council Staff for advice on building regulations associated with landslip areas. Phone 6568 2555, or come into Council's Administration Centre at 44 Princess Street between the hours of 8.30am and 4.00pm.
- For an interactive, web-based information resource on landslides, visit www.australiangeomechanics.org/