



# Cliffs and Slopes

This fact sheet has been prepared specifically for owners of properties adjacent to coastal cliffs and slopes where stability has been identified as a risk.

## Background

Shoalhaven City Council has updated previous coastal cliff and slope risk studies. The Shoalhaven Coastal Cliffs and Slopes Risk Management Recommendations Report and Emergency Action Sub Plan (2018) are available on Council's website.

The documents provide updated geotechnical assessments for Shoalhaven's 10 risk areas, makes recommendations for monitoring and managing risk and serve as the basis for emergency action planning.

The ten risk areas are;

- Penguin Head & Culburra Beach
- Plantation Point, Vincentia
- Hyams Point, Hyams Beach
- Berrara Point, Berrara
- Inyadda Point, Manyana
- Narrawallee
- Bannisters Point, Mollymook
- Collers Beach headland, Mollymook
- Rennies Beach, Ulladulla and
- Racecourse Beach, Ulladulla

## August 2015 Storm

Following the August 2015 East Coast Low, landslips occurred due to intense rainfall. On August 24 & 25, Nowra recorded a total of 390mm, its highest 2-day total for any month since records began in 1942.

Landslips occurred at Berrara, Manyana and Mollymook.

The aim of this fact sheet is to provide property owners in the 10 risk areas with information regarding;

- Geotechnical hazards relevant to cliffs and slopes
- Risk management actions for Council to implement

- Risk management actions for property owners to implement

## The five geotechnical hazards

- Instability of overhang/undercut features, blocks & wedges of rock on cliffs
- Instability of foreshore soil slopes, small scale and impacting the width of a residential lot
- Large scale cliff face instability
- Instability of landslip remediation measures
- Creep of steep soil slopes

It's difficult, if not impossible, to predict exactly where and when a cliff or slope failure will occur. It is important to be prepared for intense rainfall events and implement pre-emptive risk management actions.

**Cliff and slope failure is generally caused by soil saturation. During the August 2015 storm, all land slips were the result of supersaturation in the upper slopes, causing them to shear away from the underlying strata. Monitoring and maintaining, public & private infrastructure, can play a role in mitigating soil saturation.**



Manyana landslip caused by the August 2015 storm

For further information, contact Council's Natural Resources Unit on 4429 3392 or visit Council's website: [shoalhaven.nsw.gov.au/czmp](http://shoalhaven.nsw.gov.au/czmp)





Mollismook landslide caused by the August 2015 storm

### Council's Responsibilities

Council will implement the following actions:

- Monitor and repair water, sewer and stormwater infrastructure
- Vegetation management programs on public land to stabilise exposed areas if required
- Remediate landslips on public land where required
- Require geotechnical assessments for landslide remediation works on private property
- Require geotechnical assessments for development applications in risk areas
- Provide information to property owners on potential cliff and slope hazards
- Provide advice to property owners on specific actions that can be taken to minimise risk
- Undertake 10 yearly reviews of the risk areas

### Property Owners' Responsibilities

Property owners are advised to undertake regular monitoring of properties to check for evidence of slope movement. Monitoring should be undertaken yearly and after significant rain events. It is very important that monitoring is documented and a monitoring template is provided in Appendix C of the Cliffs and Slopes Risk report. Monitor for:

- ✓ cracked, leaning or deformed retaining walls
- ✓ evidence of rock falls and/or soil slumping at the base of slopes
- ✓ cracking along, or immediately behind, the crest of cliffs and slopes
- ✓ deformed fence posts or failing fencing

Also monitor for leaks from

- ✓ storm water drainage
- ✓ sewer system
- ✓ pool backwash systems (should be discharged to the main sewer)

- Stormwater should be directed to the street drain or piped to the base of the slope or cliff. **Stormwater should not outlet onto a slope as this increases soil saturation and contributes to slope failure.** Unmanaged stormwater can also cause erosion which further destabilises the slope
- Retain natural vegetation where possible and ensure vegetation cover is maintained on the slope. Vegetation plays an important role in holding the slope together and taking up water
- Remediate existing landslips in accordance with geotechnical advice.

**NOTE:** An approved Development Application is required before remediation works can be implemented. Council will assess the proposed works under the Environmental Planning and Assessment Act 1979 with reference to the Australian Geomechanics Society (2007c) Practice Note Guidelines for Landslide Risk Management.



Berrara landslide caused by the August 2015 storm

### Coastal Cliffs and Slopes Risk Areas

The Coastal Zone Management Plan 2018 shows mapping for the ten coastal cliffs and slopes risk areas similar to the map below: [shoalhaven.nsw.gov.au/czmp](http://shoalhaven.nsw.gov.au/czmp)

