INQ.0004.0001.0001

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What influences where landslides occur?

- Movement of rock and soil downslope under the action of gravity.
- Preparatory Factors

1. Geology – type and thickness of soil
2. Slope angle
3. How much water is in the soil
4. Previous history of landslides

- Development can influence the first 3 factors. Planning controls are in place to protect people, assets and the environment from landslide impacts.

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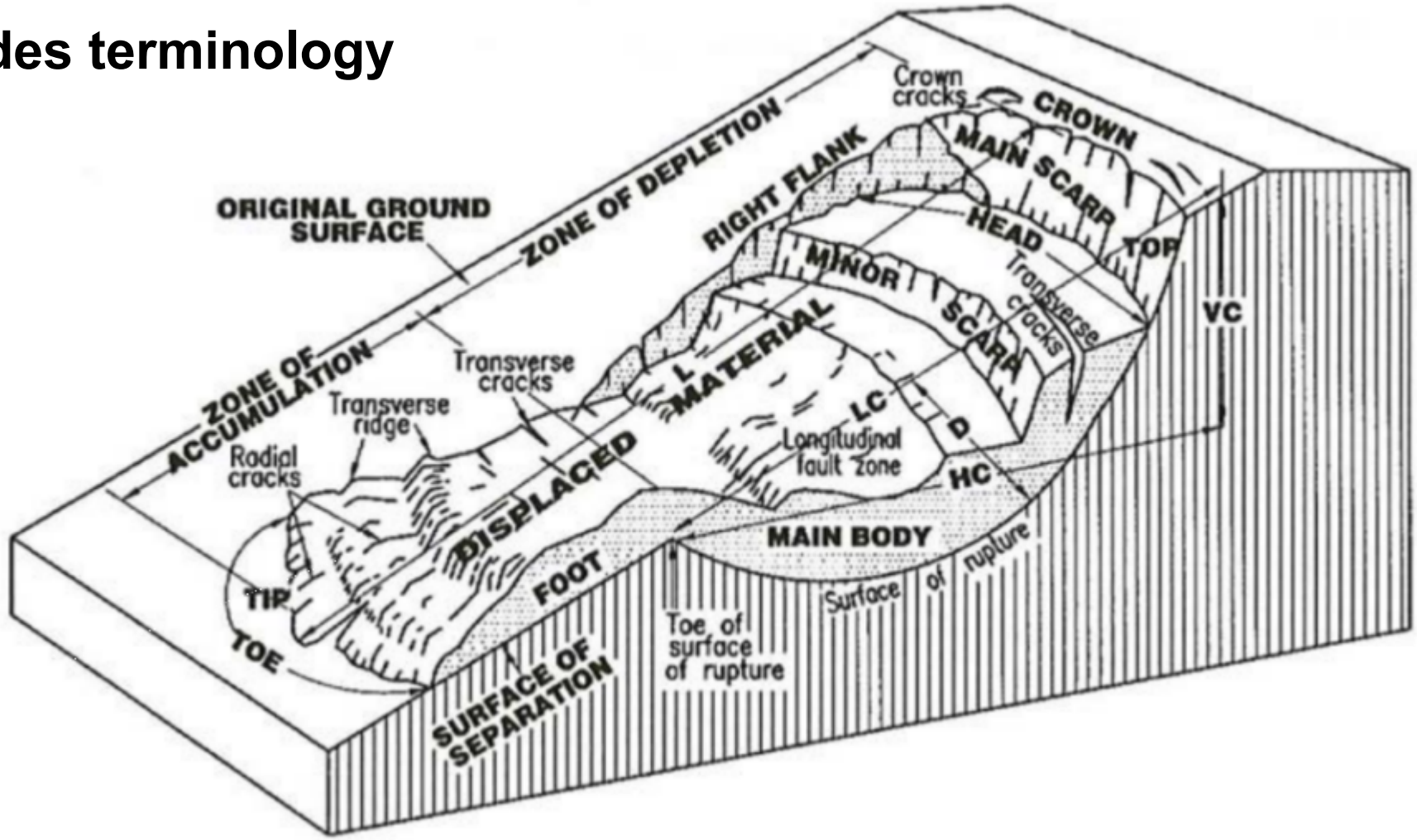
Landslides terminology



Board of Inquiry
into the McCrae landslide

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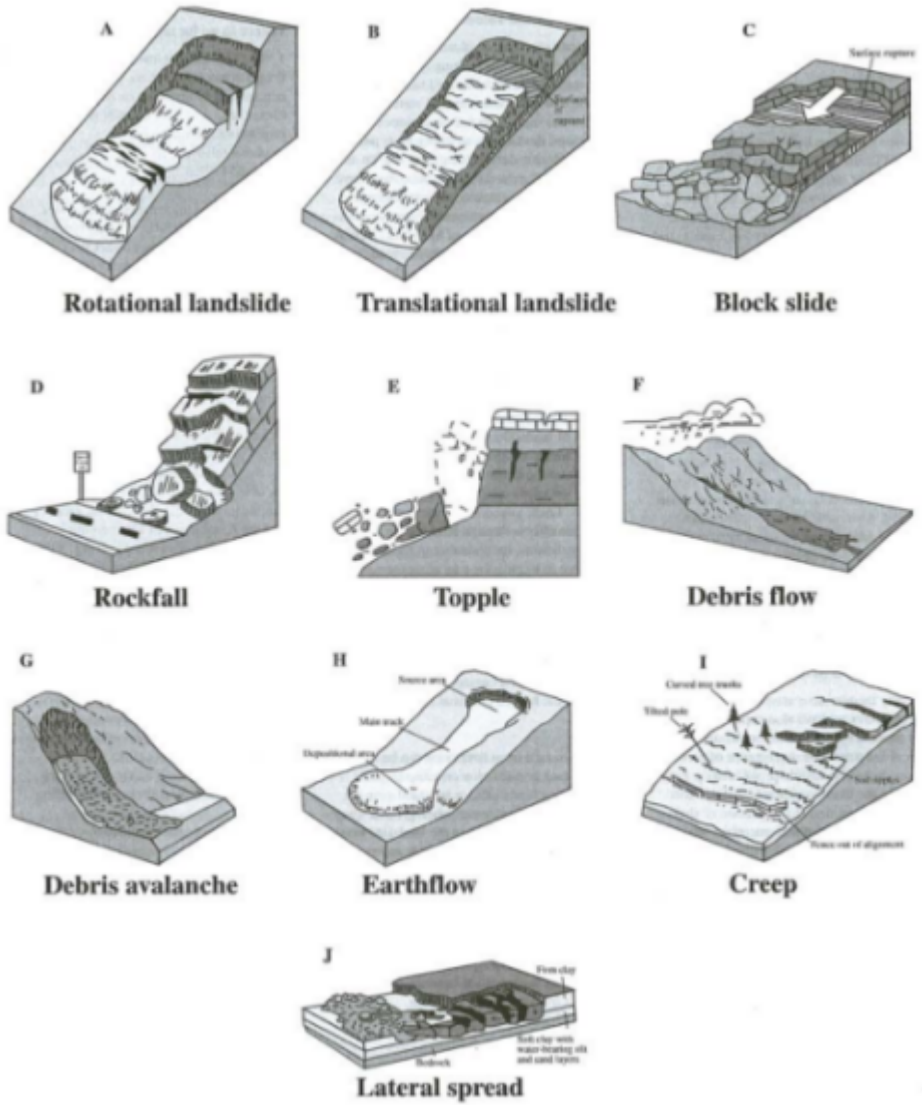
Landslides terminology



Board of Inquiry
into the McCrae landslide

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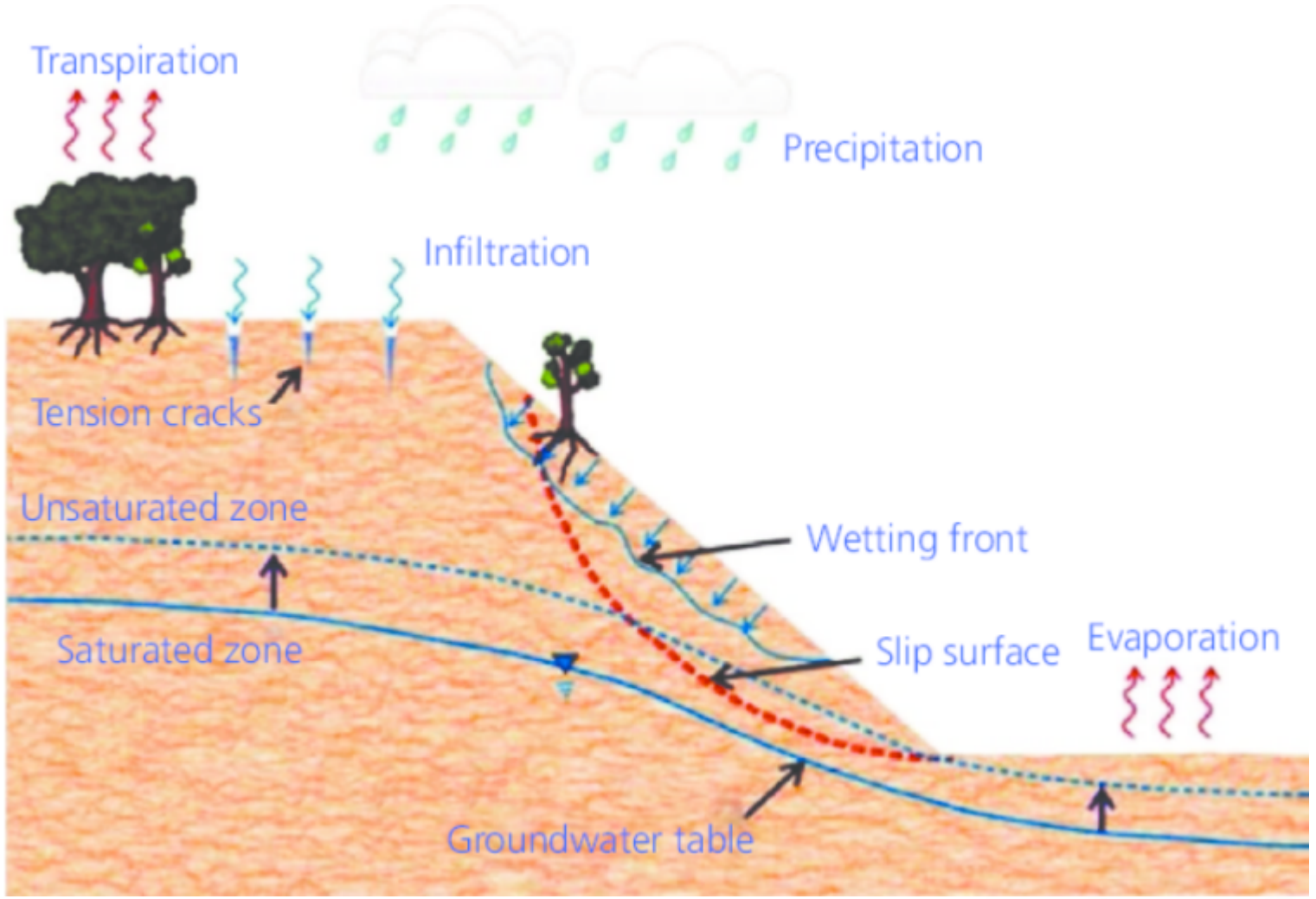
Preparatory factors



Board of Inquiry
into the McCrae landslide

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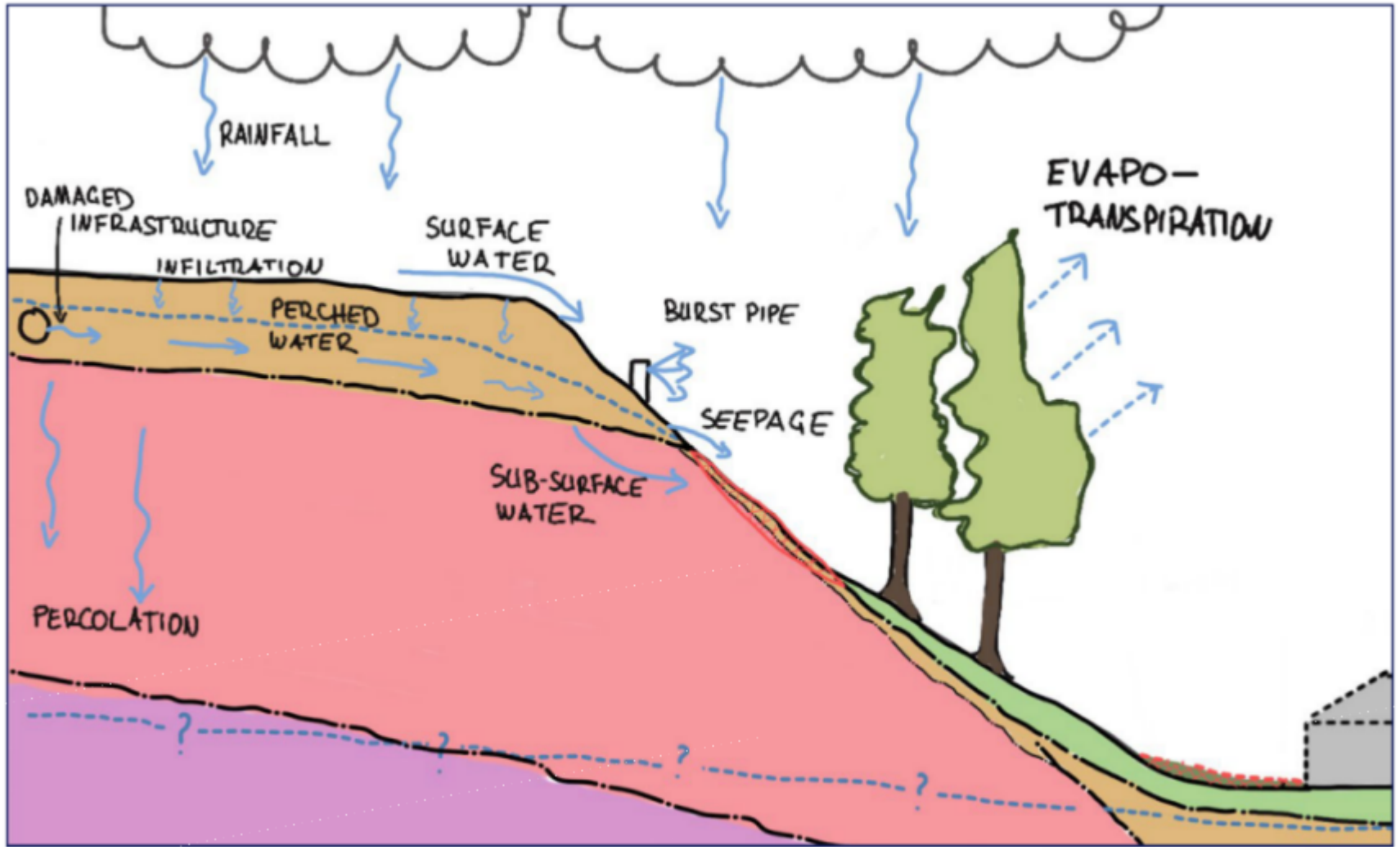
Preparatory factors



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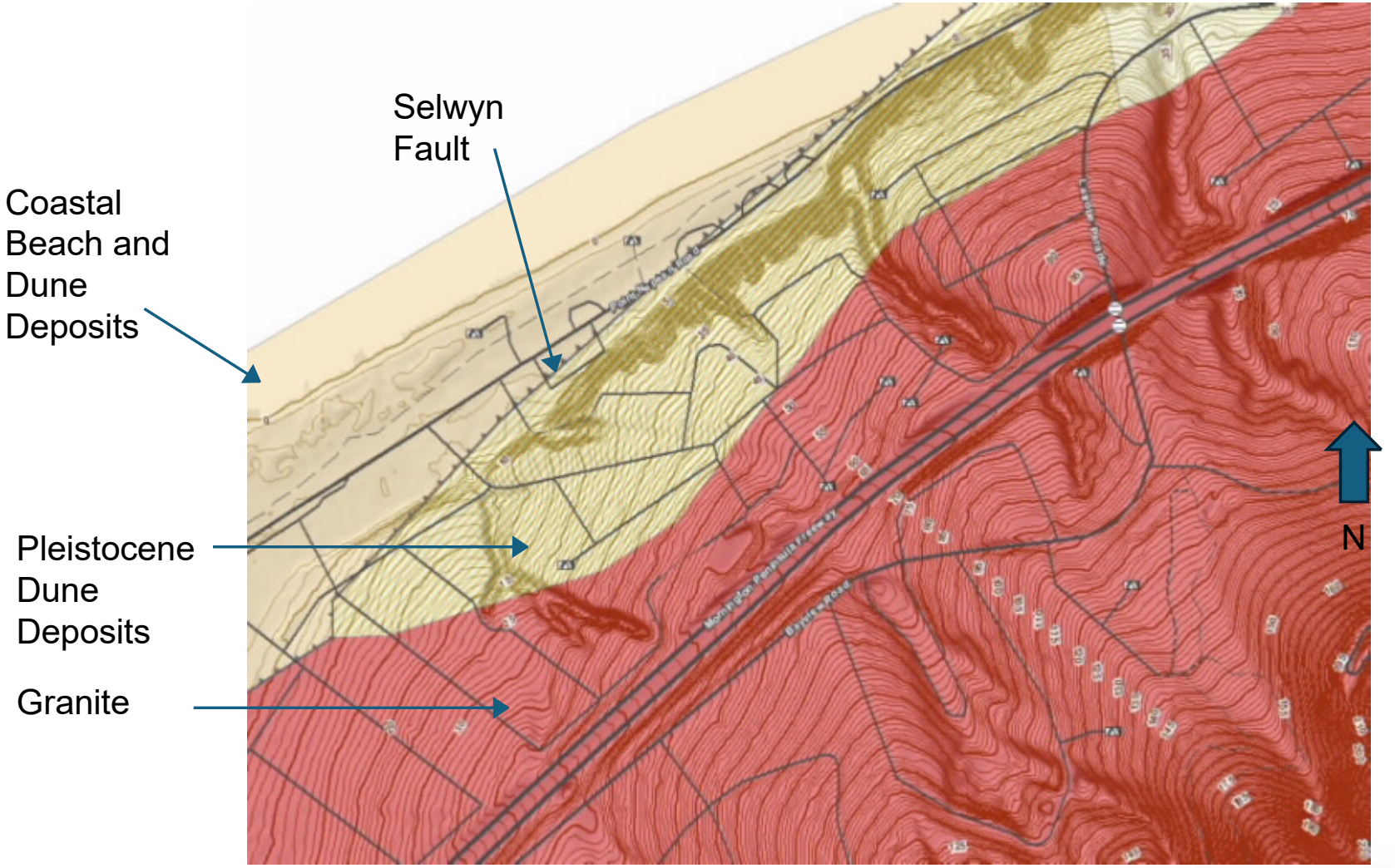
Preparatory factors – Geology and Slope angle



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Victorian Planning Provisions

- CLAUSE 13.04-2S EROSION AND LANDSLIP

- **Objective**
- To protect areas **prone** to erosion, landslip or other land degradation processes.

- **Strategies**
  - Identify areas subject to erosion or instability in planning schemes and when considering the use and development of land.
  - Prevent inappropriate development in unstable areas or areas prone to erosion.
  - Promote vegetation retention, planting and rehabilitation in areas prone to erosion and land instability.

  - Landslip is dealt with under the **Erosion Management Overlay (EMO)**.

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How are landslide risks managed through the planning scheme?

- Identify and map all areas susceptible to landslides based on geology, slope angle and past landslide. This defines the Erosion Management Overlay.

- There are planning provisions or development controls that apply to proposed development in the overlay. These include:
  - Limiting earthworks that could destabilise landslide prone slopes.
  - Reducing the potential for water to infiltrate into the soil.
  - Ensuring landslide risk is assessed by geotechnical specialists with the objective of making sure development includes appropriate controls to maintain a tolerable risk.
  - Retaining vegetation where possible.
  - In some cases preventing development in areas where landslide risks cannot otherwise be reasonably managed through other controls, for example in channels prone to debris flow.

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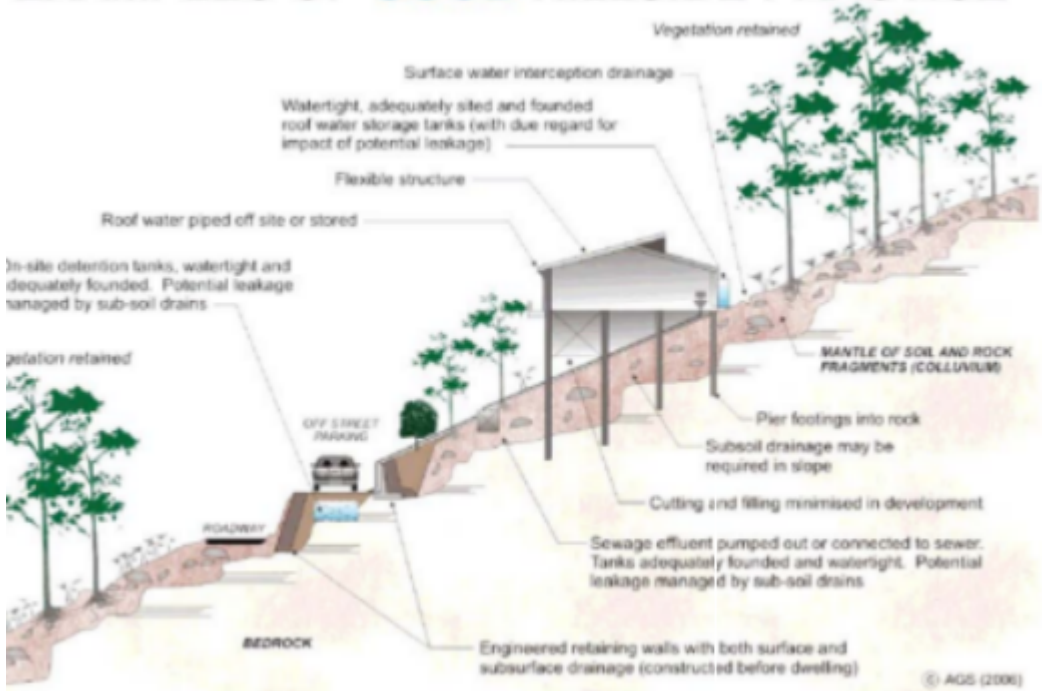
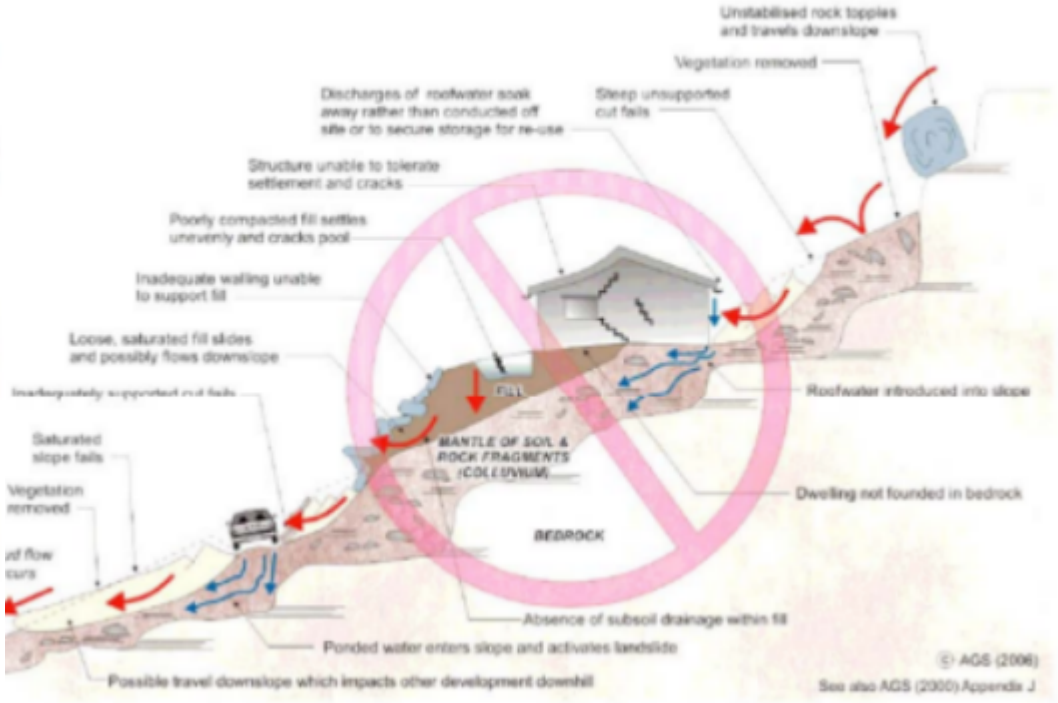
EXAMPLES OF GOOD HILLSIDE PRACTICE



EXAMPLES OF POOR HILLSIDE PRACTICE



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Landslide susceptibility mapping – previous technology

Used to indicate areas susceptible to landslide

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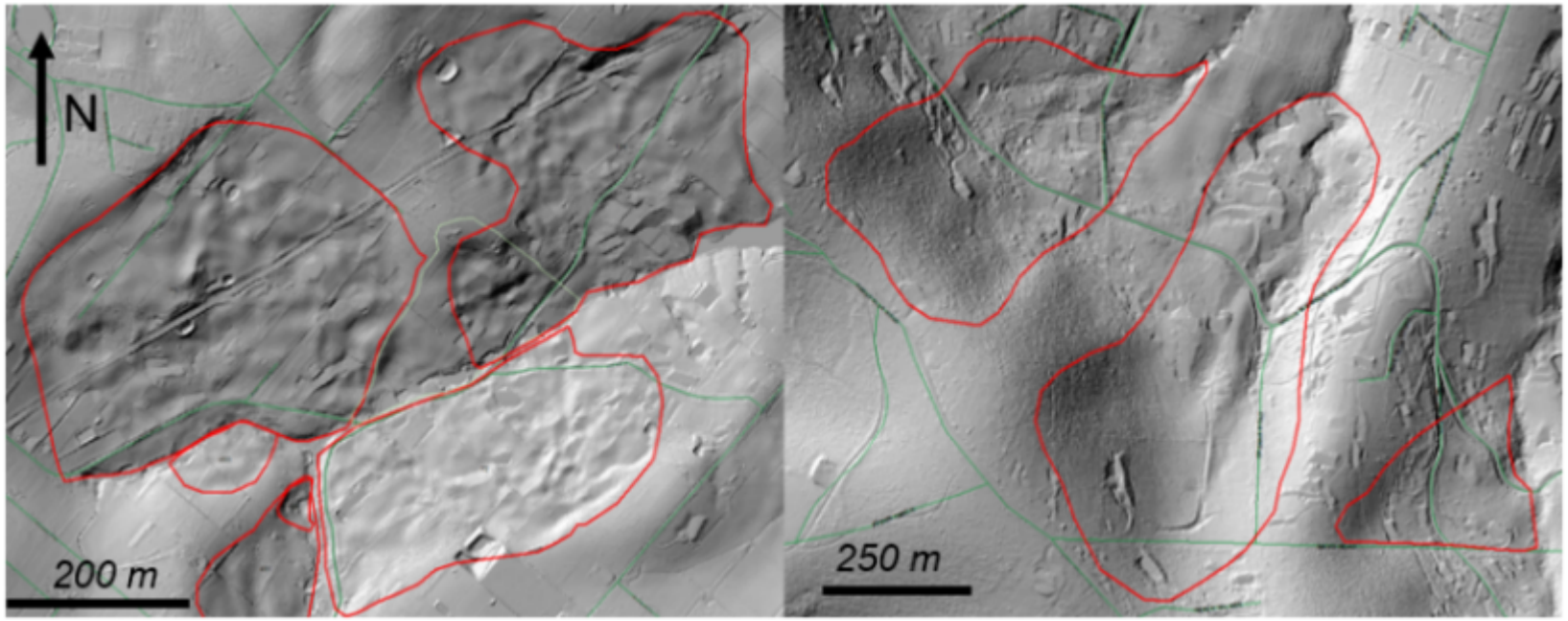
Previously unmapped landslides identified from LiDAR



Sharp features – more recent or active

Subdued features – less active

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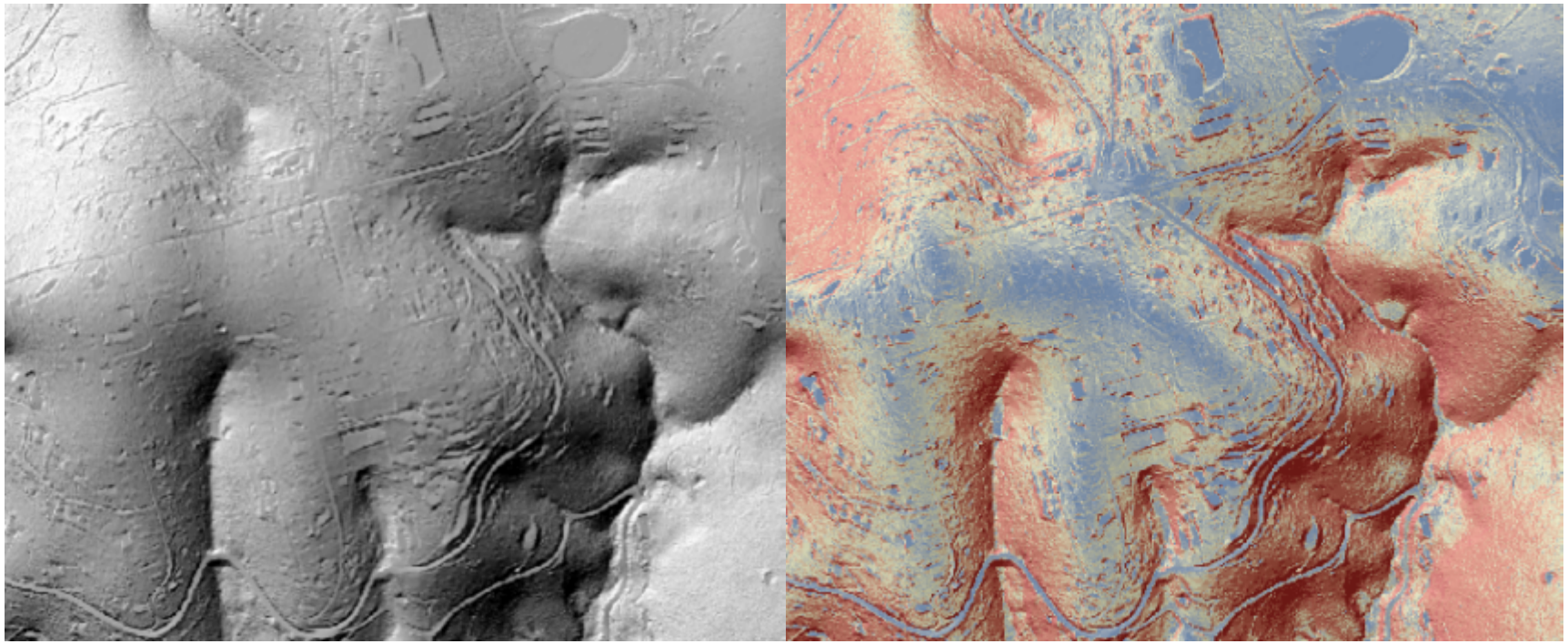
Current mapping technology – improved measure of slope angle

Current (2015/2017) LiDAR technology allows improved application of susceptibility criteria and mapping of EMO extent.



Olinda township. High resolution, 1m elevation grid

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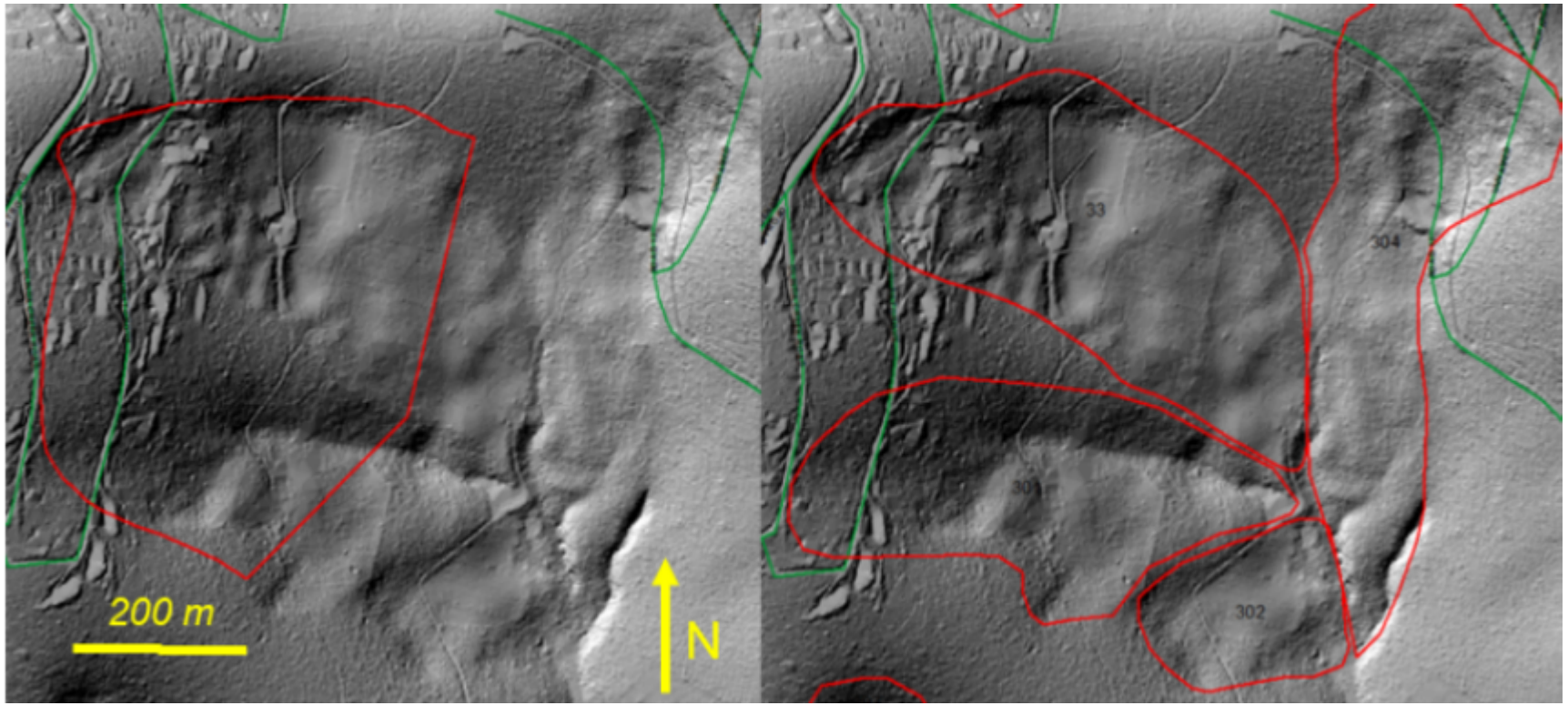
Updated to landslide inventory



Previous mapped

Revised mapped

Woodhurst Grove, Kalorama

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Landslide susceptibility mapping to define EMO extent

- The inventory informs what landscape attributes are susceptible to landslide.

- Landslide susceptibility and the extent of an EMO mainly relates to:
  - Geology
  - Slope angle
  - Known history of instability

- The EMO extent is based on criteria relating to these attributes.

- Landslide triggers or causal factors can include rainfall, leaking services, earthworks, earthquakes.

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Thredbo Landslide