

What issues are we solving?



Many developments contain slopes, either man-made or naturally occurring. Failure to properly account for these slopes during development can result in them failing and causing damage to property and infrastructure, and in extreme cases cause injury or death.

These failures can occur at any time and be triggered by natural events such as heavy rainfall or erosion. However, construction activities such as excavation at the toe of a slope, surcharging the crest, changing the drainage regime or vegetation cover can also trigger instability in slopes.

There are a number of factors that can impact the stability of slopes, these include:



- Strength of soil and rock.
- Type of soil and stratification.
- Discontinuities and planes of weakness.
- Groundwater table and seepage through the slope.
- External loading.
- Geometry of the slope.
- Vegetation cover.

A competent slope stability analysis can address these issues and help design a solution that minimises the chance of any failures.

Need to talk to an expert?

Geo-Environmental Services Limited is an independent practice of geotechnical engineers, environmental consultants and site investigation contractors, who have been a trusted and established supplier of geotechnical and environmental services since 1996.

We are proud of the reputation our organisation has gained through our commitment to quality, health and safety, reliability, and value for money.

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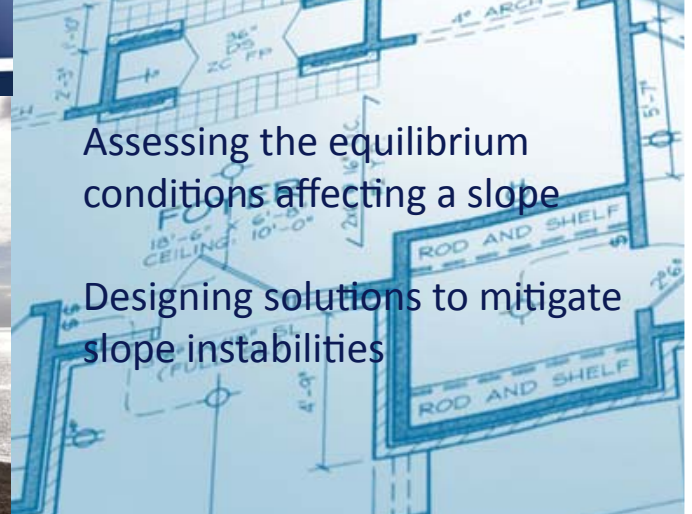
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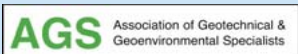
We Value:
Quality
Health and Safety
Environmental Management
Sustainability
Equal Opportunity

Slope Stability Analysis and Design



Assessing the equilibrium conditions affecting a slope
Designing solutions to mitigate slope instabilities

Members of



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How can we help?

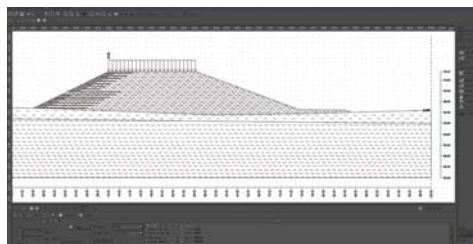
At Geo-Environmental we can perform slope stability analysis to assess a man-made or natural slope (e.g. embankments, road cuttings, open-pit mining, excavations, etc.) and the equilibrium conditions affecting it, and ensure that a safe design is produced. We can also model and provide recommendations with respect to soil reinforcement and soil nailing where required.

A successful slope stability analysis requires geological information and site characteristics, e.g. geotechnical properties of soil/rock mass, slope geometry, groundwater conditions, faulting, joint or discontinuity systems etc., the choice of correct analysis technique depends on both site conditions and the potential mode of failure, with careful consideration being given to the varying strengths, weaknesses and limitations inherent in each methodology.

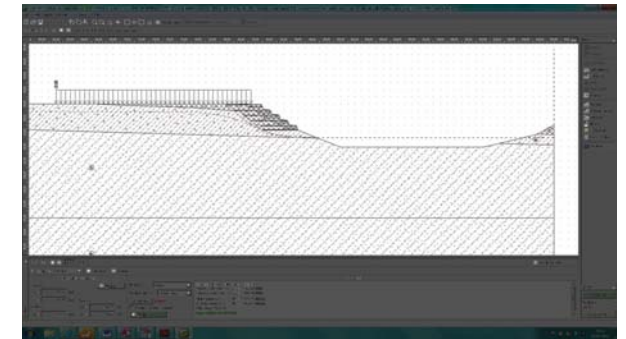
We have a team of highly qualified geotechnical engineers and engineering geologists, who have the technical skill to assess a slope and its specific conditions and to progress the assessment from site investigation to final modeling. Our engineers also have experience of carrying out back analysis on slopes that have already failed in order to determine the cause and recommendations on remedial measures.

The objectives of a slope stability analysis can be varied ranging between an assessment of the impact a new development may have on an existing slope, designing of optimal slopes with regard to safety, reliability and economics, designing possible remedial measures, e.g. soil nailing and soil reinforcement.

The assessment of a slope's stability can be highly complex and in order to perform this modeling, we have invested in geotechnical software. The example below shows the modeling of a reinforced earth embankment



Whilst the example detailed below shows the modeling of a reinforced earth bank for a retention pond on a new development.



Performing the modeling allows us to advise our clients on the best solution for their slope design. This advice can include measures such as:

- Improved drainage to enhance stability by controlling the flow of water.
- Planting appropriate vegetation to effectively bind the slope.
- Reducing the surcharge at the crest - by using lightweight fills.
- Increasing the surcharge on the toe at the bottom of the slope.
- Soil stabilisation, e.g. with cement
- Using geotextiles to reinforce the earth or soil nailing.
- Reducing the height of the slope
- Reducing the angle of the slope
- Call us or email us to speak to one of our Directors and find out how we can help you with your development.

