



# limitstate:GEO

THE COMPLETE STABILITY ANALYSIS SOLUTION



## LIMITSTATE:GEO

**LimitState:GEO combines advanced limit analysis and optimization to pinpoint the critical failure mechanism and factor of safety, giving you fast, reliable insight into any geotechnical challenge.**

### ADVANCED OPTIMIZATION ANALYSIS

LimitState:GEO quickly identifies critical failure mechanisms that hand calculations, spreadsheets, or conventional geotechnical software often miss, delivering insights that could otherwise take a lifetime to uncover.

Its unique Discontinuity Layout Optimization (DLO) method, developed at the University of Sheffield, produces highly accurate limit analysis solutions, handling problems of any geometry and loading conditions. There's no need for multiple specialised tools or lengthy trial-and-error calculations.

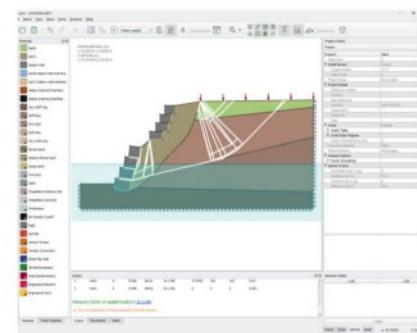
Unlike general-purpose approaches such as non-linear finite element analysis, LimitState:GEO is very fast, accessible, and intuitive, letting you set up problems efficiently and quickly gain reliable results with confidence.

### INSIGHT DRIVEN SOLUTIONS

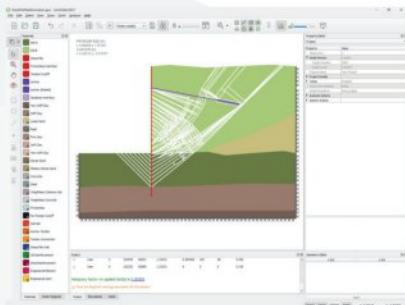
LimitState:GEO lets you explore 'what if' scenarios in seconds, revealing the corresponding failure mechanisms each time. This helps build a clear understanding of likely responses and highlights the key factors influencing safety, helping you make smarter, more efficient engineering decisions.

### EFFORTLESS WORKFLOW

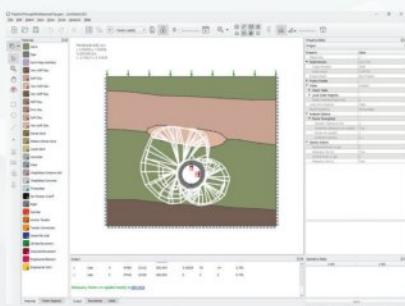
The LimitState:GEO interface is modern, fully interactive, and intuitive, letting even new users build a model from scratch in minutes. Predefined wizards make common geotechnical problems even faster to set up and analyse. Changing geometry, loads, materials, or partial factors is straightforward and instantaneous, providing full control over the model without the complexity of other approaches.



Determine the true collapse state of any scenario, a DLO analysis gives you the freedom to move beyond fixed problem & failure types



Investigate force, moment and pressure profiles



Simulate real-world behaviours with precision - make informed, dependable engineering decisions





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## DEFINE



**+** Fully interactive UI for rapid, flexible modelling

**+** Import CAD to quickly define complex geometries

**+** Mohr-Coulomb, rigid, cutoff & reinforcement material types

**+** Model water pressures globally or as individual zones

**+** Verify your model using object explorers & diagnostic tools

**+** Built-in wizards speed up common problem definition

**+** Supports Eurocode 7 & other limit state frameworks

## ANALYSE



**+** DLO analysis quickly identifies the critical collapse state

**+** Include seismic forces via pseudo-static loading

**+** Include multiple partial factors & drainage types in one analysis

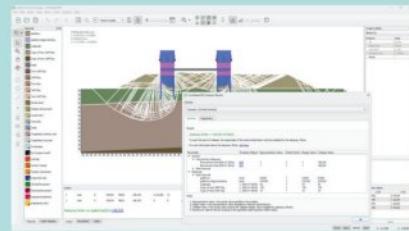
**+** Optimization technology delivers fast, accurate results

**+** Explore 'what if' scenarios and understand key effects

**+** Console mode add-in enables parametric & batch analysis

**+** Consider spatially varying material strengths

## EVALUATE



**+** Directly calculate factors of safety on loads or materials

**+** Generate comprehensive, customisable reports

**+** Query post-solve diagrams of forces, stresses & moments

**+** Identify key failure modes to guide robust, efficient solutions

**+** Easy to verify solutions using free body diagram output

**+** Access key analysis data via the Property Editor

**+** Export screenshots and animations of mechanisms

## ABOUT LIMITSTATE



We specialize in the development of powerful, yet easy-to-use software tools for civil and structural engineers.



Our expert support team are on hand for swift assistance with technical and licensing queries.



From independent firms to multinational corporations, engineers in over 30 countries around the world rely on our software.

## STATE OF THE ART

The powerful Discontinuity Layout Optimisation (DLO) method uses rigorous upper bound limit analysis to automatically determine the full critical slip line layout in a failing soil mass.

With DLO there is no need to pre-select which failure mechanisms might be critical. The method considers all possible collapse patterns, delivering highly accurate and reliable results.



**ABOUT GEO**



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