



CASE STUDY

Landslide assessment and slope stability solutions

OVERVIEW

GRM were engaged by a national housebuilder to investigate the cause of the landslip which had spilled over onto the main spine road through a residential development. The slip area covered an area of approximately 3500m², and it was estimated that up to 18,000m³ of material was affected.

In addition to investigating the cause, the client also requested a range of potential and costed solutions which would ensure slope stability and prevent further landslips. A quick turn around was required to allow the main road to be approved by the local authority and the residential build to continue as planned.

Data was already available from initial ground investigation studies across the development site, but additional work was required to identify specific parameters related to this area of land and the cause of the soil movement. This data would be used to model slope stability and feed into options for engineered solutions.

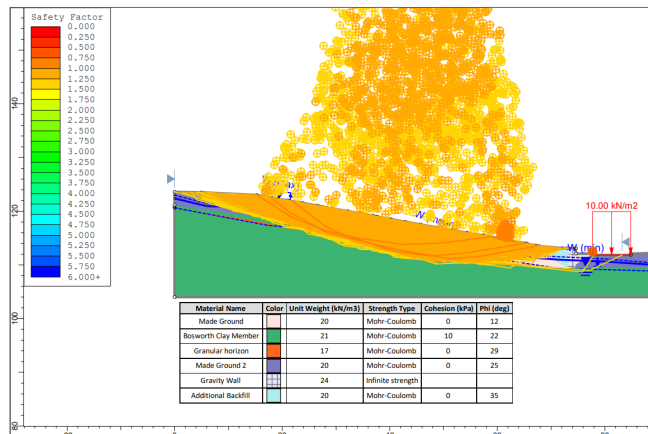
SERVICES PROVIDED

- Geotechnical investigation
- Landslide assessment
- Slope stability modelling
- Engineering solutions

THE PROCESS

GRM were able to get teams on-site quickly and start the initial ground investigation work. This involved numerous trial pits and window sample holes across and around the area of the landslip. We also started routine groundwater monitoring to establish the extent and role it might have played in ground instability.

Subsequent laboratory testing of soil samples allowed us to produce an engineering feasibility report. From this we would be able to provide the client with several solutions they could present to the local authority to satisfy their requirement that the road wouldn't be subject to slope stability issues in the future.



THE SOLUTION

Our geotechnical and engineering teams used commercially available slope stability software to ascertain an understanding of the likely controlling factors behind the slip profile. From this we were able to output the likely factors of safety associated with each engineering solution.

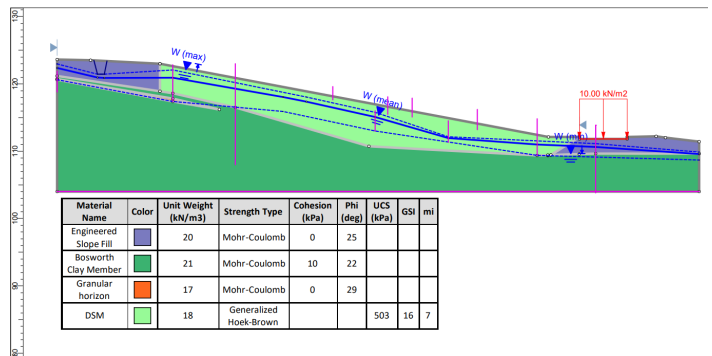
Our recommended solutions were based upon the following key parameters:

- Sustainability
- Practicality of construction
- Minimising 'hard' temporary works solutions

We identified three potential solutions, namely:

1. Construction of a retaining wall
2. Mass replacement of material with granular fill
3. Treatment of in-situ material using deep soil mixing and a cementitious binder.

The latter provided the greatest level of improvement whilst minimising the amount of material importation and exportation (something that is increasingly important both in terms of cost and environmental impact). This option was also supported by site specific testing and laboratory trials to understand the likely long-term characteristics of the improved soils.



CONCLUSION

An unexpected and potentially reoccurring landslip presented a problem for a residential housing developer. GRM were instructed to undertake a full review of the landslip and causes, and also provide recommended solutions to ensure future slope stability. The wide range of experience and expertise across the GRM teams meant that we were able to manage all phases of the project in-house. This facilitated a single point of contact for the client, saving time and money and miscommunication. The client was impressed with our final report and recommended solution, and we have since been involved with slope stabilisation work in other areas of the development site.

Land Appraisal | Environmental | Geotechnical | Design | Mining | Inspections

Please contact us for an informal discussion on how we can save both time and money on your development project:

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