

Landslide Hazard Mapping for entire Sunshine Coast

Golder Associates has recently completed a landslide hazard mapping study for the entire Sunshine Coast region on behalf of the Sunshine Coast Regional Council.

Council will soon be using the maps as a broad scale land use planning tool to ensure that landslide hazard is addressed early within the development process. The study includes guidelines for the minimum levels of geotechnical investigation required in different hazard level areas.

"The landslide maps will be incorporated into the new planning scheme for the Sunshine Coast as an overlay code. The code will require a certain level of assessment to be undertaken in applications for development on land affected by the overlay mapping," said New Planning Scheme Manager for the Sunshine Coast Regional Council, John Winsbury.

The core focus of the Golder team was to establish how the region's geology and topography could affect landslides and then to develop a model to accurately appropriate hazard ratings.

"We have previously worked with Council on more focused landslide mapping studies, so the team was very excited about taking up the challenge to map the entire Sunshine Coast region. We are confident that the study will be a highly useful resource for Council for many years to come," said Golder's Principal Geotechnical Engineer on the project, Geoff Hurley.

Enormous quantities of data were addressed in the study due to the vast and variable nature of the Sunshine Coast region – millions of data points were used within the model. The slope hazard assessment methodology also had to be adapted throughout the study to account for the significant variations in geology and topography across the Sunshine Coast and to calculate and verify hazards.

Golder is now assisting Council in drafting the code and policy relating to developments in 'Steep or Unstable Land'.



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Borehole drilling at Sunshine Coast Airport.

Planning for proposed Sunshine Coast runway

Golder Associates on the Sunshine Coast has recently undertaken a preliminary geotechnical and acid sulfate soil investigation for a new 2.4 km long and 300 m wide runway corridor for the Sunshine Coast Airport at Marcoola.

The proposed runway is a Master Plan Implementation Project and will significantly increase the amount of aircraft flying in and out of the airport.

Designed to run in a south-east to north-west direction and situated to the west of the existing runway, the proposed runway will span approximately 75 ha. The actual pavement width will be in the order of 45 m wide and will include taxiways and aprons.

The south-eastern section of the runway (approximately 750 m) would be located on an existing cleared area within the airspace grounds, the north-western section (approximately 750 m) would be located on land previously used for sugar cane plantations and the remaining part of the runway (750 m) would be located on vegetated land.

Golder's preliminary geotechnical investigation included boreholes, electronic friction cone penetration testing (CPTu), dynamic cone penetrometers testing and laboratory consolidation testing. The subsurface conditions included dense indurated sand (coffee rock) and soft 'marine' clay.

Geotechnical analysis conducted by the Golder team comprised foundation assessment (including settlement of soft clays), earthworks requirements and slope stability issues.

The preliminary ASS investigation comprised a number of boreholes drilled along the proposed runway alignment to depths of up to 2 m, the installation of standpipes to enable groundwater monitoring, field screening tests (pH testing) and laboratory analysis (chromium reducible sulphur analyses).



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Golder opens PNG company

After 40 years of delivering solutions in Papua New Guinea (PNG), Golder Associates established a PNG company in October 2010.

The new company will help meet growing demand, create new opportunities and increase business efficiency.

"We have a long history in PNG and are excited to start this new chapter," said Managing Director for Golder in PNG, Geoff Hurley.

"When we take on a project in PNG we are supported by more than 1000 Golder employees across Australasia and 7000 worldwide."

Golder offers its PNG clients solutions that span: ground engineering; environmental and social assessment; environmental management and compliance; natural resources management; planning and design; and decommissioning and decontamination.

The oil and gas and mining sectors are a core focus for Golder in PNG. For the oil and gas sector, Golder delivers solutions for onshore and offshore projects and LNG facilities. For the mining sector, Golder delivers unique open-pit and underground solutions over the full mining lifecycle – from exploration to closure.

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PNG Coastline.



Maximise efficiency with vertically integrated solutions

Vertically integrated solutions are increasingly popular, with clients realising the benefits of design and construct services provided by one company. Golder Associates on the Sunshine and Fraser Coasts and across the globe is meeting client demand for 'one stop shop' solutions through utilising Golder's contracting division.

"If we deliver the technical design, our detailed understanding of that design will often mean we are best placed to manage the delivery phase. Most importantly our contracting team will be best placed to identify, cost and manage any risks associated with the project," said Senior Geotechnical Engineer for Golder on the Sunshine and Fraser Coasts, Ashley Davey.

An effective vertically integrated solution can also eliminate communication lags that are often present when multiple companies work on the same project. A direct 'in-house' line of communication between project teams is likely to be more efficient and productive than trying to work across two firms and two sets of protocols.

While Golder is committed to meeting clients' needs across the full project life-cycle, this will not see the company move away from its core areas of expertise.

"We are ground engineering and environmental services specialists and we provide complete solutions within these fields. A Golder vertically integrated solution is of most benefit and value to one of our clients when they have a technically challenging and or high risk project."

On the Sunshine and Fraser Coasts, Golder's design through to construct experience includes landslide remediation, contaminated sites remediation and construction of specialised landfill components.

Golder's contracting division is currently 30 strong nationally and is forecasting significant growth over the next five years. The team includes geotechnical engineers and technicians, hydrologists and engineers, drillers, health and safety specialists, mechanical engineers and construction veterans.



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Innovative and cost-effective landfill closure

Landfill closure projects are increasingly subject to both stringent compliance requirements from regulators and public scrutiny.

Consultants must focus on protecting the environment, managing greenhouse gases and implications for waste management operation and maintenance costs.

To deliver the best results to both government and private sector clients, Golder Associates on the Sunshine and Fraser Coasts is increasingly utilising landfill closure solutions that move away from traditional clay liners.

Geomembrane systems are being well received by Golder clients and the Department of Environment and Resource Management (DERM), providing superior environmental performance when compared to a traditional clay lined system and also costing less to construct and maintain.

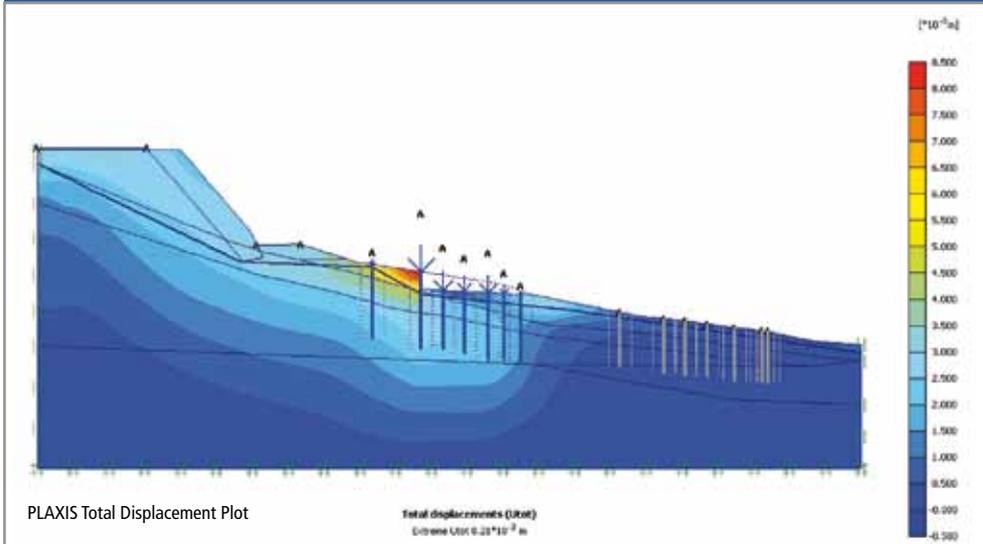
"Landfill planning and implementation requires consultation with several stakeholders – the client, the regulator and the community. Our region is extremely varied and we must carefully assess the unique needs of each site," said Manager for Golder on the Sunshine and Fraser Coasts, Darryn Quinn.

Landfill closure related services provided by Golder on the Sunshine and Fraser Coast include: scoping and implementation planning; groundwater investigations and detailed risk assessments; landfill gas formation studies, ranging from desktop modelling to large scale pumping trials to support future reuse or flaring; preparation of closure and post closure plans; detailed design of landfill capping; leachate and landfill gas management systems and transfer stations; and construction supervision.



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Thank you

A message from Darryn Quinn.

Firstly, I would like to thank all of you for your continued trust and support throughout 2010 – Golder Associates 50th year.

It has been a big year for Golder globally and for Golder on the Sunshine and Fraser Coasts.

At Golder, we believe in giving back to the communities in which we operate. As part of our 50th celebrations we are donating our time and expertise to a project that will reduce the environmental degradation of the Mooloolah River.

Technology commitment delivers results

Golder on the Sunshine and Fraser Coasts is at the forefront of the company's global commitment to utilise the most effective of the new technologies.

Using specialist software package, PLAXIS 2D, to its full potential has been an important part of this technology commitment. Dane Pope joined the Sunshine Coast team from Golder in Brisbane nine months ago to help the office use the software package to its full potential.

PLAXIS is a unique analytical tool for geotechnical applications. Its broad capabilities include deformation, stability analysis, consolidation, safety analysis and steady state groundwater flow.

The program takes the complexity of the numeric principles of finite element modelling, whilst retaining a relatively simple interface. PLAXIS can create soil models to simulate soil behaviour, using current advanced soil models as well as those that are historically popular. It is particularly effective for detailed design work for landslide slope remediation and for foundations proposed on high risk landslide sites.

"PLAXIS is an impressive piece of software and the team here have welcomed its capabilities, particularly because we do a lot of slope remediation and landslide work in the region," said Dane.

The Sunshine and Fraser Coast teams are now expanding their use of PLAXIS 2D to design retaining walls and conduct settlement analysis in soft soils.

"The capability of this technology is really only limited to the skill and experience of the user. We have found that it gives us a significant competitive edge on the Sunshine and Fraser Coasts."

Our team is working with South East Queensland (SEQ) Catchments, SEQ Water, Mooloolah Water Watch, Landcare and Sunshine Coast Council to stabilise an active landslide that deposits a considerable amount of debris into Hellhole Creek, which then feeds into the Mooloolah River. The project team is developing a solution that will stabilize and remediate the site, whilst retaining its use as grazing land.

From all of the team at Golder on the Sunshine and Fraser Coasts we wish you a happy, healthy and prosperous new year.



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Dane in brief

Academic: B.E.Civil (Hons1), Griffith University, Gold Coast, 2006

Affiliations: Institute of Engineers Australia

Experience: 4 years, including: geotechnical Investigations and reporting; geotechnical instrumentation and monitoring; pressuremeter testing; retaining wall design using PLAXIS 2D, 3D and SLOPE-W; deep basement excavation quality control – piling, anchoring and excavation methods.

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Locally Speaking Sunshine and Fraser Coast is a local publication for valued clients and employees of Golder Associates Pty Ltd. Please contact Darryn Quinn, dquinn@golder.com.au or +61 7 5475 5900, if you have any questions or comments.

A new issue of Golder's innovative newsletter Technically Speaking is now available online at www.golder.com. This issue of Technically Speaking reports on Water Resources. A special insert focused on Technical & Client Service Excellence is also featured.