



Australian Geomechanics Society

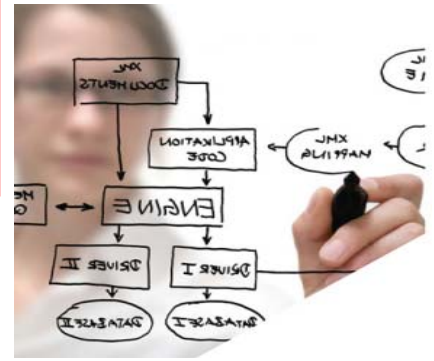
Sydney Chapter

Auditorium: Ground Floor, 8 Thomas Street, Chatswood

TECHNICAL PRESENTATION

Wednesday 11th August 2010

Light refreshments at 5.30 PM prior to 6.00 PM meeting



Highly Constrained Railway Widening Project within a Previously Unrecorded Diatreme at Hornsby, NSW

Speakers: Greg Kotze and Benjamin Rouvray

SYNOPSIS

As part of the NSW Government's Rail Clearways Program, GHD Geotechnics was the detail designer for the Hornsby Platform 5 and Stabling Project that was highly commended at the 2009 Engineering Excellence Awards. This case study relates to the widening of an existing railway embankment that is over 100 years old, under live rail traffic, located within a tightly constrained urban environment.

During the development of the detail design it became apparent that the subject site was significantly constrained by the existing embankment condition and adjacent development. These constraints prompted further detailed geotechnical investigations that revealed that the site overlies a previously unrecorded diatreme or volcanic vent.

Whilst diatremes have been recorded elsewhere in the Sydney Basin, they can be somewhat of an anomaly when encountered without warning and with significantly different geotechnical characteristics to that of the previously assumed sandstone or shale strata. Thus, developing geotechnical design within such a geological feature was challenging, given the limitations of published correlations for such materials.

The engineering implications of the presence of the diatreme warranted a detailed review of the design options which resulted in a significant anchored pile retaining wall solution. This also incorporated detailed temporary works to facilitate site access. The construction was further complicated by adverse weather, which was catered for via a risk management framework that adequately dealt with numerous localised slippages of the existing embankment under live rail.

This case study presentation provides discussion on the geotechnical design challenges, geological details of the encountered diatreme and construction risk management measures adopted for this complex site.

Attendance may be credited (1 point) towards Continuing Professional Development requirements. Members are responsible for recording CPD for audit purposes.

Booking is not required.

For further information contact Mark Adams (mark.adams@arup.com.au)



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