

## **Mining / Geotechnical Engineering**

**Expertise** Numerical stress analysis of underground excavations; open-pit slope stability analysis and design; installation and analysis of geotechnical instrumentation; mine-backfill exposure stability; mining-induced subsidence evaluation; numerical caveability analysis.

**Education** Ph.D. (Mining Geomechanics), 2003  
The University of New South Wales, Australia  
MScTech. (Engineering Geology, Environmental Geology, Hydrogeology), 2000  
The University of New South Wales, Australia  
BEng. (Geological Engineering), 1996  
Royal Melbourne Institute of Technology University (RMIT), Australia

**Honors** Franki Award (highest grade average), Geological Engineering,  
Royal Melbourne Institute of Technology, 1996

### **Professional Experience**

2007 – Present *Itasca Australia, Pty. Ltd, Melbourne, Australia*  
*Senior Geotechnical Engineer, Director*

2002 - 2007 *Itasca Consulting Group, Inc., Minneapolis, Minnesota*  
*Mining/Geotechnical Engineer*

2001 - 2002 *Goldfields Australasia Ltd., Australia, Junction Mine*  
*Contract Geotechnical/Fill Engineer (November-January)*

1999 - 2002 *University of New South Wales, Australia, School of Mining Engineering*  
*Research Student*

1996 - 1999 *BHP Iron Ore Ltd., Australia, Mt. Whaleback Mine, Geotechnical Engineer*

1995 - 1996 *Newcrest Mining Ltd., Australia, Victorious Deeps & Enterprise Mines*  
*Assistant Geotechnical Engineer (December-March)*

1994 - 1995 *Coogardie Gold N. L., Australia, Baley's Reward Mine*  
*Field Assistant (December-March)*

### **Project Experience**

#### **Cave Mining**

Numerical caveability assessment of Northparkes Mines Ltd's E48 Mine, NSW, Australia.

Numerical caveability assessment of BHP Billiton Diamonds Inc.'s Koala Mine, NWT, Canada.

Numerical modeling analysis and ground support design of undercut and extraction-level development at Northparkes Mines Ltd's E26 Lift 2 Mine, NSW, Australia.

Numerical modeling analysis and ground support design of undercut and extraction-level development at Northparkes Mines Ltd's E48 Lift 2 Mine, NSW, Australia.

Numerical modeling analysis and ground support design of undercut and extraction-level development at Newcrest Mining Ltd's Ridgeway Deeps Mine, NSW, Australia.

Analysis of crusher chamber stability at Newcrest Mining Ltd's Ridgeway Deeps Mine, NSW, Australia.

Pre-feasibility assessment of undercut and extraction-level performance at Ivanhoe Mines / Rio Tinto Ltd's Oyu Tolgoi Project in Mongolia.

Pre-feasibility/feasibility level study involving caveability assessment and assessment of separate cave interaction at Newcrest Mining Ltd's Cadia East Mine, NSW, Australia.

Pre-feasibility/feasibility level study involving assessment of extraction-level performance at Newcrest Mining Ltd's Cadia East Mine, NSW, Australia.

### ***Open-Pit Mining***

Design, installation and analysis of slope monitoring instrumentation; Supervision of mine operators in the implementation of geotechnical slope designs; Numerical modeling of pit slope stability at BHP Billiton Ltd.'s Mt Whaleback Mine, WA., Australia.

Investigation of the interaction between open-pit slope stability and underground voids using three-dimensional numerical modeling techniques at the KCGM's Super Pit Mine, WA., Australia.

Investigation of open-pit slope stability and probability of failure at Newcrest Ltd.'s Cadia Hill Mine, NSW, Australia.

Rockfall hazard mitigation at Xstrata's Ernest Henry Mine, QLD, Australia.

Three-dimensional numerical slope-stability analysis at BHP Billiton Ltd's Mt Keith Mine, WA, Australia.

### ***Open Slope Mining***

Routine underground mapping for rock mass classification; Empirical ground-support design, open-slope design and development of empirical database for crown and rib-pillar design; Optimization of the extraction strategy for a burst-prone mine environment at WMC Ltd's Junction Mine, WA, Australia.

Investigation of infrastructure deformation and ground support performance for the N3500 Project at Xstrata Copper Ltd's Enterprise Mine, QLD, Australia.

### ***Room-And-Pillar Mining***

Numerical modeling analysis and design of underground room-and-pillar limestone mine, Vulcan Materials Company Ltd, Illinois, USA.

Ground support design for Vulcan Materials Company Ltd's Bolingbrook and Lemont Mines, Illinois, USA.

### ***Mining-Induced Subsidence***

Investigation of the impact of mining-induced subsidence on residential housing at the abandoned Bethlehem Steel Ltd., Grace Mine, Pennsylvania, USA.

Evaluation of the subsidence zone-of-influence at Northparkes Mines Ltd's E48 Block Cave Mine, NSW, Australia.

Review of crown-pillar subsidence and hydrologic stability assessment for the proposed Eagle Mine, Michigan, USA.

Analysis of near-surface river bed fracturing above Peabody Coal Ltd.'s Metropolitan Colliery, NSW, Australia.

Assessment of surface subsidence caused by Newcrest Mining Ltd's Cadia East Mine, NSW, Australia.

### ***Mine Backfill***

Field and laboratory testing of the geomechanical properties of paste fill; Supervision of quality control during commissioning of continuous paste-fill mixing plant; Development and implementation of plant operation procedures for Goldfields Australasia Ltd's Junction Mine, WA, Australia.

Design, installation and numerical modeling calibration of paste-fill stress and displacement instrumentation at Goldfields Australasia Ltd's Junction Mine, WA, Australia.

Investigation, design and implementation of stabilized rockfill in order to permit dilution-free crown-pillar recovery at Goldfields Australasia Ltd's Crusader Mine, WA, Australia.

Three-dimensional numerical investigation of paste-fill exposure stability at Placer Dome Asia Pacific Ltd's, Kanowna Belle Mine and Birla Ltd's Nifty Copper Mine, WA, Australia.

Design of underhand paste-fill exposures at LionOre Ltd.'s Black Swan Mine and EKJV Ltd's Raleigh Mine, WA, Australia.

Design of paste-fill barricade structures for Placer Dome Asia Pacific Ltd's, Kanowna Belle Mine, BHP Billiton Ltd's Cannington Mine, EKJV Ltd's Raleigh Mine and at LionOre Ltd.'s Black Swan Mine, Australia.

Design of hydraulic-fill barricade structures for Cobar Management Ltd's CSA Mine, NSW, Australia.

Laboratory and numerical investigation of the liquefaction potential of paste fill at BHP Billiton's Ltd's Cliffs Nickel Project, WA, Australia.

### ***Tunnel Design***

Three-dimensional numerical analysis of tunnel behavior and ground support performance of mined and TBM tunnel sections for the Brisbane AirportLink Project.

### ***Retaining Structures***

Numerical analysis of pile wall foundation, Arup Geotechnics, Qld, Australia.

Numerical analysis of sheet-pile braced excavation, Structural Consulting Services, Connecticut, USA.

### ***Waste Isolation***

Numerical investigation of the effect of lithophysal shape and void fraction on the strength and modulus of lithophysal tuff; Numerical analysis of *in situ* slot test to determine rock-mass deformation modulus; Numerical modeling analysis of high-level radioactive waste repository underground infrastructure at the Yucca Mountain Project, Nevada, USA.