



- Country of Citizenship:** Australia
- Educational Qualifications:** BA (Geol), Macquarie University, Sydney 1973
Diploma of the Imperial College, of Science and Technology (UK) 1980
Master of Science (with Distinction), University of London, 1980
- Awards:** Project Director, Lochiel Trial Pit, 1987
SA Engineering Excellence Awards
Institution of Engineers Australia
- Professional Affiliations:** Fellow, Australasian Institute of Mining and Metallurgy
Fellow, Institution of Engineers, Australia
Chartered Professional Engineer
Chartered Professional (Mining)
Member, Mineral Industry Consultants Association
Member, Geological Society of Australia
Member, Australian Geomechanics Society.

FIELDS OF SPECIAL COMPETENCE:

- Slope Stability
- Landslide Stabilisation
- Engineering Geology
- Hydrogeology
- Soil and Rock Slope Design

Mr. Sullivan graduated from Macquarie University in 1973 with a degree in Geology. He joined Coffey and Partners Pty Ltd in 1974 and was employed with them till 1993. Mr. Sullivan was appointed a Director of the firm in 1982 and a Director of the public company Coffey Partners International Limited in 1991. In 1979-1980 Mr. Sullivan undertook post graduate studies in London and was awarded an MSc from the University of London and a DIC from the Imperial College of Science and Technology. From 1992-1993, he was a Visiting Professor at the University of New South Wales. From 1997 to 2000 Mr Sullivan was also the NSW Coroner's adviser on the Thredbo Landslide. He is currently Adjunct Professor in the School of Geotechnical Engineering, University of New South Wales.

In 1993 Mr Sullivan established his own firm Pells Sullivan Meynink Pty Ltd.

Mr Sullivan has carried out geotechnical investigations and studies for over 200 landslides on natural and man made slopes. These landslides have been at all scales, from less than 1000m³ to more than 50 million m³ and entailed slopes up to 650m in height. In addition to the above, assessments of urban land stability have been undertaken throughout the region from Newcastle to Wollongong on individual lots, major subdivisions and included the western extension of the land stability zoning for Warringah Shire Council.

Mr Sullivan is currently geotechnical consultant on slope stability for some of Australia's largest mining operations and companies; including Hamersley Iron, Newmont, BHP Billiton, Griffin Coal, Xstrata, RTZ and Newcrest.

In addition to all the states and mainland territories of Australia Mr. Sullivan has lived and worked extensively overseas. Major projects have been located in India, Papua New Guinea, Hong Kong, Indonesia, Thailand, Philippines, New Zealand and Fiji.



TIM SULLIVAN
BA MSc DIC CPEng FIEAust FAusIMM CPMIn MMICA
Civil

EXPERIENCE:

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|-----------------------|---|
| 1993 - Present | Principal, Pells Sullivan Meynink Pty Ltd Sydney |
| 2002 - Present | Adjunct Professor of Civil Engineering, University of NSW |
| 1997- 2000 | Coroner's Adviser on Thredbo Landslide |
| 1992 - 1993 | Visiting Professor, University of NSW |
| 1983 - 1993 | Director, Coffey Partners International Pty. Ltd., Sydney |
| 1979 - 1980 | Post Graduate Studies in United Kingdom |
| 1974 - 1993 | Coffey & Partners Pty. Ltd., Sydney. |

MAJOR PROJECTS RELATED TO LANDSLIDES AND MAJOR INFRASTRUCTURE Roads, Pipelines, Conveyors, Railways

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Benguet Corporation (Philippines)	Geotechnical review and risk assessment of impact of landslides on water supply and tailings pipelines, roads and tailings dams for five separate operations.
Kelian Gold Mine, Indonesia	Terrain evaluation and stability assessment for tailings pipeline and access road located across old landslides.
Coeur Gold, New Zealand	Investigative and study of impact of reactivation of major landslides on two dams, and creek diversion channel.
Tuen Mun Highway, Hong Kong	Geotechnical review consultant for major highway cutting including impact of stability on conveyor system.
Waihi Gold Mine, New Zealand	Assessment of impact of slope movements on historic Pumphouse and conveyor system. Design of remedial measures.
Macraes Gold Mine, New Zealand	Impact of reactivation historic landslide on plant site and tailings dam.
Kalgoorlie, WA	Impact of old mining on adjacent plant site.
Kaltim Prima, Indonesia	Assessment of stability and design of cross country conveyor system.
Mae Moh, Thailand	Review of the design and stability of in-pit conveyor system. Review of the stability of waste dumps constructed over rice paddies.
Perseverance Gold Mine, WA	Assessment of the stability and design of remedial measures after pit wall failure affected underground shafts and mine infrastructure.
Kidston Gold Mine QLD	Advice on siting and designs of pipelines and tasks next to unstable slopes.
Cadia Gold Mine, NSW	Geotechnical study of impact of landslides on tailings pipeline and access road. Design of remedial measures.
Hidden Valley, PNG	Geotechnical study for siting of access roads in mountainous terrain.
Northern Railway (Newcastle), NSW	Investigation, advice on stability and stabilisation of two landslides at the railway tunnel portal.

**PROJECTS RELATED TO STABILITY IN OPEN CUT MINES
Coal and Oil Shale**

1 of 4

Curragh Coal Mine, QLD	Feasibility geotechnical studies.
Mt. Sugarloaf Collieries, NSW	Feasibility geotechnical studies.
Wolfgang Coal deposit, QLD	Geotechnical studies for 300m open cut mine.
Boggabri, NSW	Appraisal of conditions for strip mine.
Oaklands, NSW	Preliminary, feasibility and design studies for strip mining.
Rosedale Brown Coal, VIC	Appraisal.
Yaamba Oil Shale, QLD	Feasibility studies for 600m deep mine.
Bulga Coal Mine, NSW	Geotechnical assessment and assessment of spoil pile stability in steeply dipping seams.
Leigh Creek Coal Mine, SA	Summary of geotechnical investigations.
Wintinna Coalfield, SA	Feasibility geotechnical study.
Lochiel Lignite, SA	Feasibility and design studies for strip mine in soils.
Wambo Coal Mine, NSW	Study for pit extension.
Condor Oil Shale, QLD	Review.
Lindsay Coal, QLD	Geotechnical audit.
Millmerran Coal, QLD	Geotechnical appraisal.
Muara Tiga Coal, Sumatra, Indonesia	Geotechnical review and specialist adviser.
Charleston Coalfield, New Zealand	Design studies.
Gretley Colliery, NSW	Slope stability.
Banko Barat Coal, Sumatra, Indonesia	Design studies.
Chatham Islands Peat, New Zealand	Feasibility studies for open cut mining and dredging.
Whaitewhena Coalfield, New Zealand	Preliminary appraisal of open cut mining.
P.T. Kaltim Prima Coal, Kalimantan, Indonesia	Preliminary and feasibility studies for open cut mining and dump design studies.
Lochiel Lignite, SA	Investigation, analysis and design for trial pit.
Stuart Oil Shale, QLD	Geotechnical study for boxcut excavation.
P.T. Berau Coal Mine, Kalimantan, Indonesia	Geotechnical studies for open cut mining.
Hill River Coal, WA	Design studies for open cut mining.
Stuart Oil Shale, QLD	Design geotechnical studies.
Ulan Coal Mine, NSW	Advice on dragline failure, spoil pile failure, and general slope design.

PROJECTS RELATED TO STABILITY IN OPEN CUT MINES
Coal and Oil Shale

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Muja Coal Mine, WA	Cable bolt design, monitoring, dump design, stabilisation.
Mae Moh Lignite Mine, Thailand	Geotechnical audit and advice.
Burton Downs Coal, QLD	Review and revised slope design.
Griffin Coal, WA	Slope design, detailed monitoring instrumentation.
Western Collieries, Muja North	Slope design.
Cumnock No. 1 Colliery	Geotechnical studies for open cut coal mining.

Gold, Iron Ore, Base Metals, Mineral Sands, etc

Cadia Copper/Gold, NSW	Feasibility studies for 250m deep pit.
Woodsreef Asbestos Mine, NSW	Advise on landslide stabilisation.
Havelock Gold Mine, WA	Advice on monitoring and stabilisation.
Woodlawn Lead Zinc, NSW	Slope design, slide stabilisation, monitoring and cable bolting.
Browns Creek Gold Mine, NSW	Slope design and slide stabilisation.
Phar Lap Gold Mine, WA	Slope design, cable bolting and monitoring.
Dizon Copper Gold Mine, Philippines	Review.
Masinloc Chromite Mine, Philippines	Review.
Wiluna Gold Mine, WA	Slope design.
Rand Gold Mine, WA	Advice on pit instability.
Rotokaua Sulphur, New Zealand	Design geotechnical studies for dredging and open cut mining.
Fenian Gold Mine, WA	Slope design.
Mt. Weld Phosphate and Rare Earth, WA	Design geotechnical studies.
P.T. Kelian Gold Mine, Kalimantan, Indonesia	Preliminary and design studies for 300m deep open cut mine, including cable bolting.
Hidden Valley Gold, PNG	Preliminary and design studies for 400m deep open cut mines.
Cork Tree Well Gold Mine, WA	Advice on pit stability.
Gibraltar Gold Mine, WA	Slope design, haulroad layout and cable bolting.
Prohibition Gold Mine, WA	Slope design, stabilisation, monitoring and bolting.
Super Pit, Kalgoorlie, WA	Slope design for 400m deep pit.
Blue Funnel Gold Mine, WA	Slope design and cable support assessment.
Croesus Gold Mine, WA	Advice on slope stability beneath crusher.
Mt. Morgans Gold Mine, WA	Pit slope design and monitoring.

PROJECTS RELATED TO STABILITY IN OPEN CUT MINES
Gold, Iron Ore, Base Metals, Mineral Sands, etc

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Chapri Copper Mine, India	Slope design.
Barrytown Mineral Sand, New Zealand	Geotechnical Study.
Jubilee Gold Mine, WA	Pit slope design and cable support.
Reefton Gold Mine, New Zealand	Geotechnical study for open cut mining.
Tom Price Iron Ore Mine, WA	Redesign of slopes in BIF and shale to 350m high.
Paraburdoo Iron Mine, WA	Slope design.
Brockman Iron Ore Mine, WA	Advice on slope stability.
Channar Iron Ore Mine, WA	Design geotechnical studies.
Marandoo Iron Ore Mine, WA	Design geotechnical studies.
Mt. Keith Nickel Project, WA	Design stage studies for 400m deep mine.
Throssel River Copper, WA	Preliminary studies.
Gabanintha Gold Mine, WA	Geotechnical design for four pits.
Nathans Deep South Gold Mine, WA	Slope design.
Labouchere Gold Mine, WA	Slope design.
Tower Hill Gold Mine, WA	Review.
Bannockburn Gold Mine, A	Slope design.
Trough Tank Copper Gold, QLD	Preliminary assessment.
Grants Gold Mine, WA	Slope design.
Cosmo Howley Gold Mine, NT	Review and slope design.
Woolwonga Gold Mine, NT	Slope design.
Mickey Doolan Gold Mine, WA	Slope design.
Marmont Gold Mine, WA	Slope design.
Globe Gold Mine, WA	Advice on stability.
Commodore - St. Francis Gold Mine, WA	Slope design.
Red Spider Gold Mine, WA	Slope design.
Halcyon/Democrat Gold Mine, WA	Slope design.
Yackabindie Nickel, WA	Review and slope design for two pits to 350m.
Macraes Gold Mine, New Zealand	Design of pit slopes.
Wafi Copper/Gold, PNG	Preliminary geotechnical studies.
Kidston Gold Mine, QLD	Slope design, cable bolting and monitoring.

PROJECTS RELATED TO STABILITY IN OPEN CUT MINES
Gold, Iron Ore, Base Metals, Mineral Sands, etc

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Mt. Leyshon Gold Mine, QLD	Review and redesign of slopes for 400m deep pit.
Lorne Hill Lead Zinc, QLD	Preliminary design.
Kanowna Belle Gold Mine, WA	Design and operating stage studies.
Waihi Gold Mine, New Zealand	Analysis and design for 250m deep pit.
Coeur Gold Mine, New Zealand	Analysis and design of pit slopes and landslide stabilisation.
Kelian Gold Mine, Indonesia	Feasibility and operating design studies.
Honeymoon Well, Nickel, WA	Preliminary and feasibility studies for 250m deep open cut mine.
Union Reefs Gold Mine, NT	Feasibility and operating studies for 200m deep open cut mine.
Orlando Gold Mine, NT	Design and operating studies.
Cleo Gold Prospect, WA	Open cut studies for 200m and 500m deep pits.
Golden Delicious Gold Mine, WA	Open cut studies for 130m deep pit.
McKinnons Gold Mine, NSW	Design of open pit.
Lake Cowal Gold Mine, NSW	Design of 300m deep open pit.
Mt Edon Gold Mine, WA	Design for 220m deep open cut mine.
Lynas Fine Gold Mine, WA	Design for two small gold pits.
Mt Keith Nickel Mine, WA	Assessment and stabilisation of slope during mining.
Perseverance Nickel Mine, WA	Assessment of impact of major pit wall movements of underground infrastructure.
Cadia Gold Mine, NSW	Investigation and stabilisation of major landslides.
Gosowong Gold Mine, Indonesia	Investigations and design of waste dump and mine slopes.
Kidston Gold Mine Eldridge Pit, QLD	Design of slopes and stabilisation of landslides.

**HYDROGEOLOGICAL STUDIES - DEWATERING, DEPRESSURISATION
AND LANDSLIDE STABILISATION**
Hydrogeological Studies

1 of 2

Hill River Coal, WA	Open cut mining to 140m.
Curragh Coal Mine, QLD	For strip mining.
Oaklands Coal, NSW	Regional hydrogeological studies covering 5000km ² .
P.T. Berau Coal, Indonesia	Hydrogeological investigations for mining.
Lochiel Deposit, SA	Regional studies covering 100km ² .
Millmeran Coal, QLD	Groundwater investigations.
Westland Ilmenite, New Zealand	Hydrogeology of 15km of coastal marine flats.
Chatham Islands Peat, New Zealand	Island wide hydrogeological appraisal.
Stuart South Oil Shale, QLD	Detailed hydrogeological investigations.
Kunwarara Magnesite Mine, QLD	Review.
Kelian Gold Mine, Indonesia	Hydrogeological investigations.
Hidden Valley Gold, PNG	Hydrogeological investigations.
Kaltim Prima Coal Mine, Indonesia	Detailed investigations for pit wall depressurisation/ dewatering.
Horsham Mineral Sands, VIC	Regional hydrogeological studies.
Lake Lindsay, QLD	Review.
Condor Oil Shale, QLD	Review of dewatering studies.
Vickery Coal, NSW	Hydrogeological study.

Slope Depressurisation and Landslide Stabilisation

Wintinna Coalfield, SA	Mine dewatering and reinjection studies.
Goonyella Coal Mine, QLD	Stabilisation of spoil pile slide with horizontal drains.
Nathans Deep South Gold Mine, WA	Stabilisation of toppling failure with horizontal drains.
Cosmo Howley Gold Mine, NT	Stabilisation of large scale toppling failure with horizontal drains.
Kidston Gold Mine, QLD	Slope depressurisation with horizontal drains.
Woodlawn Mine, NSW	Slope depressurisation and landslide stabilisation with horizontal drains.
Lochiel Trial Pit, SA	Pre-drainage ahead of mining using vertical pressure relief wells.
Democrat Gold Mine, WA	Stabilisation of large failure with horizontal drains.
Mt. Keith Nickel, WA	Slope depressurisation for pit wall steepening.
Gibraltar Gold Mine, WA	Slope depressurisation for pit wall steepening.

**HYDROGEOLOGICAL STUDIES - DEWATERING, DEPRESSURISATION
AND LANDSLIDE STABILISATION**
Slope Depressurisation and Landslide Stabilisation

2 of 2

Prohibition Gold Mine, WA Slope depressurisation.
Kelian Gold Mine, Indonesia Slope depressurisation.

Dewatering

Mae Moh Lignite, Thailand Review of dewatering of basal aquifers for prevention of floor heave.
Leigh Creek Coal, SA Review, investigation, monitoring and analysis of low wall depressurisation due to unloading.
Kaltim Prima Coal Mine, Indonesia Investigations and mine dewatering study.
Westland Ilmenite, New Zealand Water management study.
Channar Iron Ore Mine, WA Dewatering for 150m deep pit in colluvial deposits.
Stuart South Oil Shale, QLD Cutoff through marine sediments and pit dewatering.
Stuart Oil Shale, QLD Pit dewatering.
Waisoi Copper Project, Fiji Dewatering for two 400m deep open cut mines.
Wolfgang Coal, QLD Dewatering for 300m deep open cut mine.
Oaklands Coal, NSW Investigation analysis and design for one of the worlds large mine dewatering and reinjection projects.
Yaamba Oil Shale, QLD Dewatering of Tertiary overburden.
Lochiel Trial Pit, SA Dewatering for 40m deep trial mine.
Lochiel Coal, SA Dewatering studies for strip mining. Overburden dewatering and basal depressurisation.
Lake Lindsay Coal, QLD Groundwater Review.
Charleston Coal, New Zealand Mine dewatering studies.
Rotokaua Sulphur, New Zealand Dewatering for open cut mining of sulphur in hot springs are
Kunwarara Magnesite Mine, QLD Dewatering and reinjection studies.

**PROJECTS RELATED TO STABILITY IN UNDERGROUND OPERATIONS
Tunnels, Shafts and Declines**

1 of 1

Yonki, Papua New Guinea	Geotechnical investigations.
Tickhole Tunnel Newcastle, NSW	Widening of tunnel, and portal.
Buchanan Borehole Colliery, NSW	Stability of 65m high tunnel portal.
Z.C. Mine, Broken Hill, NSW	8m diameter 900m raisebore shaft. 400m decline. 330m raisebore shaft.
Peak Gold Mine, Cobar, NSW	500m raisebore shaft. 400m decline.
Sydney Harbour Tunnel, NSW	Stability of southern interface.

Underground Mines, (Investigation and Design)

Wintinna Coalfield, SA	Investigation and design of 200 to 400m deep coal mine.
Vickery Coal Project, NSW	Investigation and design for 200 to 300m deep coal mine.
Wambo Colliery, NSW	Investigation for extension to existing mine.
Baguio Gold, Philippines	Review of 6 mines.
Masinloc Chromite, Philippines	Review of 2 mines.
Whaitewhena Coal, New Zealand	Appraisal of underground mining conditions.
Rakha Copper Mine, India	Investigation, analysis and design.
Kendadih Copper Mine, India	Investigation, analysis and design.
Surda Copper Mine, India	Investigation, analysis and design.
Pathagora Copper Mine, India	Geotechnical review.
Masaboni Copper Mine, India	Geotechnical review.
West Cliff Colliery, NSW	Geotechnical investigation for mine extension.
Admiral Bay Copper, WA	Preliminary appraisal.
Wafi Copper/Gold, PNG	Preliminary assessment of underground mining.

WATER SUPPLY DAMS, AND TAILINGS DAMS

1 of 1

Ranger Uranium Mines, NT	Geotechnical investigations, retention ponds 1 and 2.
Jabiluka Uranium Project, NT	Investigation and design, tailings dam site one.
Jabiluka Uranium Project, NT	Investigation and design, tailings dam site two.
Public Works Department, NSW	Investigation and design, feasibility and design stages. Mangrove Creek dam.
Public Works Department, NSW	Assessment of foundation geology and strength, Hume weir.
Minatome Aust., Qld.	Investigation and design, Uranium tailings dam.
Coeur Gold, New Zealand	Investigation and advice on stability, tailings dam.
Coeur Gold, New Zealand	Investigation and advice on stability, Union Silt dam.
GH & D, VIC	Investigation of dam foundations, Euroa dam.
Kelian Gold, Indonesia	Safety inspection, tailings dam.
Waihi Gold Mining Co Ltd, New Zealand	Advice on surface instability and rehabilitation, tailings dam/waste embankment.
Dept Public Works, PNG	Foundation investigation, diversion tunnel and rip rap search. Yonki water supply dam.

PUBLICATIONS

Sullivan T.D. (1982). The Origin and Characteristics of Defects in Oil Shale. Coal Resources Symp., Melbourne 1982.

Sullivan T.D. and Burman B.C. (1985), Geological and Geotechnical Aspects of small basins and their effects on mining. Asian Mining Conf. Manila 1985, pp. 321-335.

Burman B.C. and Sullivan T.D. (1985). Dewatering and depressurisation studies for development of the Lochiel open pit mine South Australia. Proc. 2nd Int. Mine Water Congress Granada 1985. pp. 307-324.

Sullivan T.D. (1986). Mine and Monitor - An approach to coping with unstable pit walls. 13th CMMI Conf., Singapore.

Sullivan T.D. and Burman B.C. (1986). The Lochiel Project - A case study of geotechnical engineering studies in a difficult environment. Singapore 1986. 13th CMMI Congress.

Fell R., Sullivan T.D., Parker C. (1987). The Speers Point Landslide Proceedings Soil Slope Instability and Stabilisation. Walker and Bell, Balkema.

O'Brien M.D. and Sullivan T.D. (1988). The Lochiel Trial Pit - Design and Excavation. Conf. Minerals at the Crossroads, AusIMM, Sydney 1988, pp. 127-133.

Sullivan T.D. (1991). Pit Slope Design - an interactive way to save stripping costs. Resources Magazine.

Sullivan T.D., Duran A. and Eggers M.J. (1992). The Use and Abuse of Oriented Core in Open Pit Mine Design. Third Large Open Pit Mining Conf., Mackay 1992, pp. 387-395.

Sullivan T.D. (1993). Understanding Pit Slope Movements. Geotechnical Instrumentation and Monitoring in Open Pit and Underground. Proc. Aust. Conf. June 1993 Kalgoorlie. pp. 435-446.

Sullivan T.D. (1993). Mine Geology from a Geotechnical Perspective Int. Mining Geology Conference. Kalgoorlie WA. July 1993. pp. 255 to 262.

Sullivan T.D. (1994). Mine Slope Design - The chances of getting the answer right and the risk of getting it wrong. Fourth Large Open Pit Mining Conference Perth 1994.

Eggers M., Mostyn, G. and Sullivan, T.D. (1999). Probabilistic Stability Assessment of a High Rock Slope in Variable Strength Rocks. Proceeding 8th ANZ Conference on Geomechanics.

Mostyn G. and Sullivan T. (2002). Quantitative risk assessment of the Thredbo landslide, Australian Geomechanics, V 37 No 2, May, pp 169-181.

Sullivan T.D. (2006) Pit Slope Design and Risk – A view of the current state of the art. Proceedings Symposium S44, Stability of rock slopes in open pit mining and civil engineering situations. S.A. Institute of Mining and Metallurgy, Cape Town 2006

Sullivan T.D. (2007) Highwalls, Stockpiles and Dangers: Safety and Productivity. 2007 UNSW/Mitsubishi Lecture

Sullivan T.D. (2007) Hydromechanical Coupling and Pit Slope Movements. Keynote Lecture proceedings, International Symposium on Rock Slope Stability in Open Pit Mining and Civil Engineering, Perth. September 2007.