
Year of Birth: 1960
Nationality: British, Hong Kong Permanent Resident
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Academic and Professional Qualifications

Post Graduate Certificate in GIS, Penn State University, USA	2004
Fellow of the Institution of Materials, Minerals and Mining	2004
Chartered Engineer	2003
European Geologist	2002
Chartered Geologist	1991
Member of the International Association of Engineering Geologists	1990
Member of the Institution of Materials, Minerals and Mining	1988
Fellow of the Geological Society of London	1987
Master of Science in Engineering Geology, Imperial College, London, UK	1986
Bachelor of Science (Hons), Geology & Geography, Derby University, UK	1981

Key Experience

GeoRisk Solutions Ltd, Consulting Engineering Geologists, Hong Kong	2007 – present
Geotechnical Engineering Office, Hong Kong Government	1990 – 2006
Sir Owen Williams and Partners, Consulting Engineers, UK	1990 – 1990
Allott and Lomax, Consulting Engineers, UK	1987 – 1990
M. J. Carter Associates, Landfill & Bulk Mineral Extraction Consultants, UK	1986 – 1987
Imperial College, Royal School of Mines, UK	1985 – 1986
Geological Survey of South Africa, South Africa	1981 – 1985

Summary

Steve is an engineering geologist with over 30 year's experience, co-founding GeoRisk Solutions in early 2007. Steve was principal technical reviewer of "Engineering Geological Practice in Hong Kong" the Hong Kong Government's guidance document on the application of engineering geology and co-author of "Guidelines for Natural Terrain Hazard Studies" which forms the basis of landslide risk assessment in Hong Kong. Steve is currently leading the technical review of the guidelines for landslide assessments on behalf of the Hong Kong Government.

Steve is Chair of the International Association of Engineering Geology Committee C25 "Use of Engineering Geological Models", is a member of the European Federation of Geologists' "Group of Experts on Natural Hazards" and a member of the "Group of Experts on Engineering Geology". He is also member of the International Association of Geomorphologists' "Working Group on Applied Geomorphological Mapping" and authored a chapter in the recent book "Geomorphological Mapping; Methods and Applications".

Steve has worked in South Africa, the Middle East, the UK and Hong Kong has experience in the application of engineering geology to the assessment of geohazards, heavy foundations, dams, tunnels, quarries, geomaterials and contaminated land. He is the author of numerous technical papers on these themes including: rock engineering; engineering geology in geotechnical risk management; landslide hazard assessments; forensic landslide studies; origin and engineering implications of rock joint infill; and, engineering geological mapping techniques and applications.

Geohazard Assessments

Landslip Prevention & Mitigation Programme (LPMitP) 2008-Present. In 2008 the Hong Kong Government commenced a systematic evaluation of landslide hazards and mitigation. GRS have been involved in 17 out of 34 landslide hazard assessment consultancies awarded to date, for which Steve has either been the technical author or the technical reviewer. Clients include Halcrow (Asia) Ltd., CM Wong & Associates Ltd., Ove Arup and Partners, ESA Consulting Engineers Ltd., Jacobs China Ltd., Hyder Consulting and Fugro (Hong Kong) Ltd.

Landslide Hazard Assessments, Private Developers, Hong Kong. GRS have undertaken 17 landslide hazard assessments for private developments in Hong Kong and Steve has either been the technical author or the technical reviewer. Clients include Victor Li & Associates, Wong Pak Lam & Associates, CM Wong & Associates, James Lau & Associates, Mott Connell (Hong Kong) Ltd, ESA Consultants Ltd, Canwest Consultants Ltd., Arthur Yung & Associates, Hyder Consulting, JMK Consulting Engineers Ltd. and Hong Kong Playground Association.

West Lantau Landslide Hazard Study, Hong Kong. During a severe rainstorm on 7 June 2008, over 2,400 landslides were recorded on Lantau Island, the largest island in Hong Kong. Numerous road links were severed and many landslides affected villages. The Study involved undertaking a review of 18.5 km² to assess landslide hazard from all natural hillsides potentially affecting existing villages and selected transportation routes. This review included developing a methodology for prioritisation and selection of the thirty natural hillside catchments for detailed assessment. Client Arup-Fugro JV.

Co-author of the report “Guidelines for Natural Terrain Hazard Studies” which forms the basis of landslide risk assessment in Hong Kong.

http://www.cedd.gov.hk/eng/publications/geo_reports/geo_rpt138.htm

Author of the HK Government Technical Guidance Document TGN22 “Guidelines on Geomorphological Mapping for Natural Terrain Hazard Studies”.

http://www.cedd.gov.hk/eng/publications/guidance_notes/doc/tgn22.pdf

Co-author of the report on the investigation and instrumentation of a slow moving natural landslide in Tuen Mun, Hong Kong, the first documented landslide of this type in Hong Kong.

Client manager for the US\$1.3M Agreement No. CE 47/2000. Natural Terrain Hazard Study for the Tsing Shan Foothill Area, Hong Kong. The study covered an area of 6.5km² and contained a swarm of over 100 landslides related to a single rainstorm event.

Client Manager for the US\$0.5M Agreement No. CE 89/2002(GE). Natural Terrain Hazard Studies at North Lantau Expressway and Luk Keng Village, Hong Kong.

Technical reviewer of numerous landslide hazard studies undertaken for, or submitted to, Hong Kong Government under the Building Ordinance.

Landslide Investigations

Landslide Investigation Consultancies, Hong Kong (2008 to 2012 Agreements). Principal engineering geologist providing specialist advice as part of the Hong Kong Government Landslide Investigation Consultancy. Team Leader for landslide studies including detailed mapping of debris avalanches, debris flows and debris floods following over 1400 landslides on Lantau Island in 2008. Client: Fugro Hong Kong Limited.

Air photo interpretation specialist for the assessment of landslide hazards. Client: Halcrow Asia.

Nominated Hong Kong Government Engineering Geologist for forensic landslide studies. Involved in the technical review of most major landslide incidents in Hong Kong 1999-2007.

Project manager of a US\$0.3M, two-year research and development project “Mineralogy and shear strength of clay-rich saprolites”. This initially involved a scoping study using four international geological organisations (British Geological Survey, CSIRO, University of Canberra and the Chinese Academy of Sciences). The subsequent main phase of the study mineralogy testing was carried out in conjunction with the CSIRO. The purpose of the study was to determine the origin of clay-rich saprolite and to provide geotechnical parameters for design purposes.

http://www.cedd.gov.hk/eng/publications/geo_reports/geo_rpt132.htm

Member of the Hong Kong Government’s emergency response team, providing geotechnical advice at landslide incidents. Responsible for liaising with the emergency services at a variety of incidents including determining the need for road closures, advising on temporary remedial works and ordering the evacuation and/or closure of buildings where applicable.

Technical Reviews

Providing technical direction to the ongoing review of the Hong Kong Government’s landslide hazard assessment process. Client: Fugro Hong Kong Ltd.

Principal author of a detailed review of the engineering geological input into Hong Kong Government’s Landslip Preventive Measures (LPM) programme. The LPM rolling programme has an annual value of some US\$2.5M. The review highlighted the use and benefits of engineering geological models to slope design. It recommended that a Geological Review process should be formally adopted in the LPM programme. The Geological Review comprised two components: (a) a Geological Process Review, to monitor compliance with existing geological requirements, i.e. to assess whether specific tasks have been carried out, and (b) a Geological Model Review, to verify the quality of geological input.

Principal technical reviewer of the document “Engineering Geological Practice in Hong Kong”. Responsible for the technical control of this two-year US\$0.2M consultancy agreement. The final document produced as a GEO Publication.

http://www.cedd.gov.hk/eng/publications/manuals/manu_geo_practice.htm

Ground Investigations

Tolo Highway Widening, Hong Kong. Technical reviewer for logging and ground model development for a cost-saving design of noise barriers and retaining walls. Client GCG (Asia) Ltd. and China State Construction Engineering Ltd.

New port, Qatar. Principal Engineering Geologist responsible for supervision of onshore and offshore ground investigation. Client Scott Wilson Ltd.

Port redevelopment in Dubai, UAE. Principal Engineering Geologist responsible for supervision of offshore ground investigation. Client Van Oord FZE.

Engineer’s Representative Ground Investigations, Hong Kong. Responsible for various land and marine ground investigation, laboratory testing and geophysical survey term contracts for Hong Kong Government works departments with contract values of up to US\$10M, including preparation of tender documents; prequalification exercises; tender appraisals; contract management; cost estimation; technical advice to client departments; settlement of claims and certification of bills.

Term consultancy for ground investigations, Sheffield UK. This included the environmental assessments of

former industrial sites, often contaminated and underlain by shallow mine workings, and the provision of recommendations and cost estimations for site reclamations. Client Sheffield Development Corporation.

Quarrying

Shek O Quarry Rehabilitation, Hong Kong: provided engineering geological services related to rock slope mapping, discontinuity surveys, slope stability assessments, and retaining wall foundation stability assessment. Client SMEC (Hong Kong).

Hui Dong County Quarry, Shenzhen, China: provided an engineering geological review highlighting engineering geological uncertainties of a proposed quarry and aggregate processing area in Shenzhen, China on behalf of a private quarry developer. Client SMEC (Hong Kong).

Mooi River, Natal South Africa: exploration for 145,000m³ of concrete aggregate. The local Karoo sandstone is known to cause shrinkage problems so dolerite sills were targeted. At the most topographically favourable location montmorillonite was present in the core of the sill resulting in rapid slaking preventing its use. Client Department of Water Affairs, South African Government.

Material Assessments

New Port, Qatar: specialist sub consultant to generate an engineering geological model to predict material properties from the excavation, focusing on their reuse as construction materials. Client Scott Wilson Ltd.

Offshore Sand Assessments, Hong Kong. Work including geological modelling, drilling and geophysical surveys, dredging assessments and resource evaluations. The work involved considerable interpretation of seismic reflection surveys to form geological models that were used as the basis for ground investigation and laboratory testing. This data was synthesised to form dredging assessments and reserve evaluations. Responsible for the investigation, assessment and management of offshore sand resources, including using the 1400 tonne vessel Nanhai 503, to explore for offshore sand deposits in Chinese oceanic waters with a contract value of HK\$15M. This work proved reserves of 277Mm³ of sand, sufficient for Hong Kong's reclamation requirements into the near future.

Proposed open cast lignite mine, Northern Ireland. Independent review and analysis of geological and geotechnical data. Also responsible for an alternative mine plant scheme involving a Discounted Cash Flow analysis over the proposed life of the mine. Client Northern Ireland Electricity.

Concrete aggregate quarry, Mooi River, South Africa. Exploration for 145,000m³ volume of aggregate. The local Karoo sandstone is known to cause shrinkage problems so dolerite sills were targeted. At the most topographically favourable location montmorillonite was present in the core of the sill resulting in rapid slaking. Client Department of Water Affairs, South African Government.

Rock Engineering

Hong Kong Government Expert of Fact. Witness for the prosecution, Case No. TMS12521/1999 HKSAR vs Li Ping Kwan. Siu Lam, Tuen Mun, TMTL No. 400. The site is located between two faults which form the northeast trending Siu Lam fault zone and contains both mylonite associated with ancient ductile shearing and fault breccia due to geologically more recent brittle movement. Unlike the mylonite, the breccia is often susceptible to weathering. This results in complex ground conditions which were not recognized by the designer with the result that pile foundations were not in accordance with the specification.

Contract 901 Admiralty Station Extension Hong Kong: Acting as Independent Checking Engineer for the rock engineering aspects. Client AIM Group & Kier-Laing O'Rourke-Kaden JV.

Guangzhou-Shenzhen-Hong Kong XRL, Contract 824: detailed engineering geological reinterpretation and rock

mass discontinuity surveys. Client Donaldson Associates Ltd., Kier-Kaden-OSSA JV.

Kwun Tong Line Extension: Yau Ma Tei to Whampoa Tunnels and Ho Man Tin Station Hong Kong: independent review of proposed temporary support for a large rock excavation at tender stage, providing recommendations for improved design and reduced cost. Client Leighton Contractors (Asia) Ltd.

Rock slope assessment, above Intake Shaft C for Lai Chi Kok Drainage Transfer Tunnel: Technical Reviewer for detailed engineering geological mapping of a potentially unstable rock slope identified during construction of slopeworks above the drainage intake shaft. Recommendations made concerning potential rock block failure and overall slope failure modes and slope stabilisation measures. Client Leighton Contractors (Asia) Ltd.

Rock Slope Surveys, Proposed LNG Terminal, Soko Islands, Hong Kong: Provision of specialist engineering geological services to survey existing rock outcrops and rock cut slopes for site characterisation in association with site formation and development of the South Soko Island for the proposed LNG storage terminal and facilities. Client Fugro Geotechnical Services, Hong Kong.

Disused Tunnel, Hazard Review, Hong Kong. Responsible for a review of the hazards associated with disused wartime tunnels throughout Hong Kong.

Pre-feasibility investigation of a 32km long 3.6m diameter water transfer tunnel in Natal, South Africa. This included extensive geological mapping, seismic interpretation and some 2.6km of drillholes. Extensive groundwater inflows associated with dolerite sills were predicted and subsequently proved by drilling. Client Department of Water Affairs, South African Government.

Dams Investigations

4 years with the Geological Survey of South Africa seconded to the Department of Water Affairs. Major projects included: the feasibility investigation for a 20m high water control weir at Levubu, Northern Transvaal; the feasibility investigation for a 45m high concrete dam at Mooi River, Natal; member of the on-site design team, involving construction trials, for a 140m high rockfill dam at Mvumase, Natal; resident engineering geologist for a feasibility investigation for a 85m high dam at Mpendle, Natal. This included investigating two potential centrelines, an alternative side spillway location and potential rock quarries.

Hydrogeological Investigations

Proposed open cast lignite mine, Northern Ireland. Responsible for the independent technical review for Northern Ireland Electric of the mine dewatering programme and proposed depressurisation system of the lignite and clay interburden for a deep open cast lignite mine in Northern Ireland. The data involved over 50 drillholes up to depths of 250m, extensive piezometric data and the analysis of three pumping tests. Client Northern Ireland Electricity.

Peel Power Station, Isle of Man. Design and supervision of the hydrogeological investigation to determine the source, extent and mitigation for an oil leakage at Peel Power Station. Client Isle of Man Electricity.

Hydrogeological investigations for sand and gravel extraction and landfill construction, UK. Work included: Design of a leachate retaining bund for a landfill in a former opencast coal mine, South Wales, UK; Use of a geotextile membrane for the containment of leachate at a landfill site in Lincolnshire, UK; Design of restoring to agriculture, at a level below the local groundwater table, a proposed sand and gravel quarry in Warwickshire, UK; Detailed geotechnical and hydrogeological site investigation for a proposed landfill site in Greater Manchester, UK.

Environmental Assessments

Offshore Sand Extraction EIA, Hong Kong. Management of a two-year EIA for a proposed marine borrow area,

including liaising with the Government Departments and various environmental NGO's. Allocation and monitoring of marine borrow areas, including dredging trials and sediment plume monitoring. Detailed assessment of naturally occurring suspended sediments to demonstrate naturally occurring variability to help determine reliable and realistic baseline data prior to dredging.

http://www.cedd.gov.hk/eng/publications/geo_reports/geo_rpt106.htm

Contaminated land, Manchester UK. Investigation, analysis and design for a housing estate on a former metal powders factory, containing extensive contamination, thick loose fill and very soft fluvio-glacial deposits.

Landfill Design, UK. Involved with determining the feasibility of, and providing the geotechnical input for, domestic landfill sites throughout the UK. Landfill design including, methane gas monitoring programmes, ground and surface water quality monitoring and independent monitoring of contractors' operational procedures.

Recent Publications

- Parry, S. & Hart, J. R. (2012). Engineering Geomorphological mapping for landslide hazard assessments in Hong Kong. Proceedings of the 11th International Symposium on Landslides (ISL) and the 2nd North American Symposium on Landslides.
- Jack, C. D., Parry, S. & Hart, J. R. (2012). Structural geological input for a cavern project in Hong Kong. The Hong Kong Institution of Engineers Geotechnical Division 32nd Annual Seminar, 2012.
- Parry, S. (2011). The Application of Geomorphological Mapping in the Assessment of Landslide Hazard in Hong Kong. Chapter 15 in Developments in Earth Surface Processes, Volume 15, Geomorphological Mapping; Methods and Applications, Edited by M. J. Smith, P. Paron & J. S. Griffiths. Elsevier. ISBN: 978-0-444-53446-0.
- Parry, S., Hart, J. R. & Jack, C. D. (2011). Science, Engineering Geology and the Landslip Preventative Measures Programme. The Hong Kong Institution of Engineers Geotechnical Division 31st Annual Seminar, 2011.
- Jack, C. D., Parry, S. & Hart, J. R. (2011). Engineering Geology and Rock Engineering. Proceedings of the Joint Hong Kong Institution of Engineers – Hong Kong Institution of Planners Conference on Planning and Development of Underground Space.
- Parry, S. (2010). Engineering geological models – definitions and use with reference to landslide hazard assessments in Hong Kong. Proceedings of the 11th IAEG Congress, Auckland, New Zealand, 5-10 September 2010. Taylor & Francis Group, London p171-186.
- Parry, S., Millis, S., Clahan, K. B. & Krug, K. (2010). The Importance of Reading the Landscape: The use of Engineering Geomorphology in Regional Landslide Hazard Assessments. Proceedings of the 11th IAEG Congress, Auckland, New Zealand, 5-10 September 2010 (CD). Taylor & Francis Group, London.
- Parry, S. & Ng, K. C. (2010) The Assessment of Landslide Risk from Natural Slopes in Hong Kong: An Engineering Geological Perspective p125-130. Quarterly Journal of Engineering Geology and Hydrogeology, Volume 43, p. 307-320.
- Parry, S. & Hart, J. R. (2009) Engineering geology & the reduction of geotechnical risk: challenges facing the profession. Quarterly Journal of Engineering Geology and Hydrogeology, Volume 42, p. 499-510.
- Parry, S. & Campbell, S. D. G. (2007). A large scale, slow moving, natural terrain landslide, Tuen Mun, Hong Kong. *Bulletin of Engineering Geology and the Environment*. Volume 66 No. 2.p135-141. May 2007.
- Ng, K. C., Tattersall, J. W. & Parry, S. (2007) Engineering Geological Practice in Hong Kong. Geotechnical Advancements in Hong Kong since 1970s. Proceedings of the HKIE Annual Seminar.
- Parry, S., Ruse, M. E. & Ng, K. C. (2006). Assessment of Natural Terrain Landslide Risk in Hong Kong: An Engineering Geological Perspective. Accepted Paper No. 299, *Proceedings of the International Association of Engineering Geology Conference*. Nottingham, 2006.
- Parry, S, Campbell, S. D.C. & Churchman, G. J. (2004) The origin and shear strength of kaolin-rich zones in Hong Kong and their implications for slope stability. Advances in Geotechnical Engineering. *The Skempton Conference*. Volume 2 p1343 – 1353. Institute of Civil Engineers.