



Dr C. K. G. Choy
BEng PhD CEng MICE
Senior Partner

Areas of expertise

Tunnelling, deep excavations and foundation systems; Pipelines; Instrumentation & Monitoring; Impact of construction works on pipelines, tunnels and structures

Experience with GCG

Dr Gary Choy joined the Geotechnical Consulting Group in 2006 and was a member of the company's team acting as Specialist Geotechnical Advisors to the Crossrail project in London. In 2008, he was seconded to Cementation Skanska and worked on DLR enhancement project, slope stabilisation and a major foundation scheme for a proposed power station.

Between 2012 and 2015, Dr Choy was an integral part of the monitoring team responsible for monitoring the existing London Underground assets during the construction of a mixed use development at Victoria in London and the upgrade of London Underground Victoria Station. He helped to develop the systems and interpreted the monitoring data, identified any displacement trends where trigger values might be breached, and presented daily monitoring reports to relevant stakeholders. He also had to ensure the monitoring contractor complies with the specifications, identifies faults and verifies any remedial measures required.

Dr Choy has extensive experience of damage risk assessments to third party infrastructure (e.g. tunnels, buildings, pipelines) due to various adjacent construction activities (e.g. tunnelling, excavation, site redevelopment). He worked on assessing the potential for building damage as a result of proposed works for the upgrade of London Underground Bank Station.

During the past seven years, he has been working with Thames Water Utilities Limited (TWUL). His role is to provide highly specialised pipeline and tunnel expertise to managers across the TWUL business (including Developer Services, Asset Management, Operations and Capital Delivery) to ensure excellent services to customers and operational continuity (as part of TWUL's Statutory and Regulatory obligations) and to protect whole life asset value. This involves reviewing technical submissions; liaising with developers, engineers, contractors and other third parties to ensure the proposed works can be undertaken safely and any affected assets are protected; risk assessments and development of mitigation measures.

This risk based impact assessment approach, initiated by GCG during Crossrail works, has been assisting various schemes, ranging from small development projects to large infrastructure schemes including Thames Tideway, London Underground Northern Line Extension (NLE), High Speed 2 (HS2), London Power Tunnel Phase 2, Silvertown Tunnel and Battersea Power Station. He has also advised TWUL Asset Managers on ensuring the safety of pressurised water tunnels during the crossings by the Tideway and NLE tunnels, and mineral extraction works.

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Recently, he has worked with Affinity Water to evaluate the effects of the construction and operation of the proposed Western Rail Link to Heathrow on its pressurised water tunnels. He has also worked with other utility companies including UKPN and Anglian Water.

Dr Choy is currently the UK representative to the Research Group (WG2) of the International Tunnelling and Underground Space Association (ITA) and is preparing an extensive document on Tunnelling and Utilities at the ITA's request. He is also a member of the Project Steering Group for the new CIRIA Tunnel Management Guide.

Areas worked

UK

Previous experience

Dr Choy completed his undergraduate degree in Civil Engineering at the Hong Kong University of Science and Technology, Hong Kong with first class honours in 2000. His honours thesis involved three-dimensional numerical analysis of diaphragm wall installation effects, for which he received an academic award.

From September 2000 to March 2004, he undertook research at the University of Cambridge, studying the effects of diaphragm walls construction on a nearby piled foundation. The investigation was undertaken by using small-scale models tested within the geotechnical centrifuge. Two major developments in centrifuge modelling were achieved: firstly, an instrumented model pile was developed which can measure base load, shaft friction, bending moment and normal stress distributions. The second major breakthrough was a new technique to simulate concreting of a diaphragm wall panel in-flight. Based on the results, a conceptual framework for this soil-structure interaction problem was developed.

In April 2003, Dr Choy was awarded a Research Fellowship from St. John's College, Cambridge, and he carried out further research in soil-structure interaction problems and the development of sensors based on MEMS (microelectromechanical system) technology for field monitoring. This technology allows the development of small, low power consumption and "cheap" sensors capable of measuring very small strain during various construction activities such as excavation and tunnelling. Dr Choy was also involved with research instrumenting existing tunnels to monitor the effects of adjacent tunnel construction works.

Education/Research

PhD, Cambridge University, 2004

Research Fellow, St. John's College, Cambridge, 2003 – 2005

BEng, Hong Kong University of Science and Technology, 2000

Scholarships/Awards

Philip Turner Prize (for excellence in centrifuge modelling), Cambridge University, 2003

Research Fellowship, St. John's College, Cambridge, 2003

Scientific Instrument Makers' Post Graduate Award, The Worshipful Company of Scientific Instrument Makers, United Kingdom, 2003

Student Prize, Geotechnical Division, Hong Kong Institute of Engineers, Hong Kong, 2000

Professional Qualifications & Memberships

Chartered Engineer, Member of the Institution of Civil Engineers, 2012 to present

UK Registered Ground Engineering Professional, 2013 to present

Member of the British Geotechnical Association

Member of the British Tunnelling Society

Service on Technical/Professional Bodies

Member of Geotechnical Engineering Advisory Panel, 2013 to 2018

British Representative to the ITA Working Group 2 (Research), 2015 to present

Member of Project Steering Group for the new CIRIA Tunnel Management Guide, from 2021

Languages (other than English)

Cantonese