



Dr Michael Wan
BEng MSc PhD DIC
CEng MICE MHKIE RoGEP Specialist
Associate Director

Areas of expertise

Dr Michael Wan qualified as a chartered engineer in 2007 and has worked in the civil and geotechnical engineering industry in the United Kingdom and Hong Kong for over 20 years, with extensive experience of infrastructure and building projects involving different ground conditions ranging from stiff over-consolidated clays, residual soils to very soft marine & alluvial deposits. His areas of expertise include geotechnical instrumentation & monitoring, infrastructure structural health monitoring, buildings & utilities damage assessments, foundations & deep excavations, slopes & retaining walls, reclamations and ground improvement. Michael is a UK Registered Ground Engineering Specialist (RoGEP).

Experience with GCG

Dr Wan is a chartered engineer in the UK and Hong Kong who joined the Geotechnical Consulting Group in 2015. His roles at GCG include providing geotechnical specialist services, ranging from pre-planning advice to full engineering design, as well as independent checking, for public and private clients for foundation and deep excavation projects in central London. He was also involved in forensic investigation/expert witness work for a number of legal cases/disputes in the UK and overseas. While at GCG, Michael has written award-winning technical papers related to his research work with Imperial College and Crossrail concerning the effects of tunnel construction on adjacent ground and existing infrastructure.

Working with several structural engineering consultants, Michael provided geotechnical specialist advice and input to pile foundation and basement design schemes for various tall building and deep basement projects in central London. He is experienced in helping structural engineers develop conceptual and detailed basement and foundation schemes amid restrictions posed by ground conditions and underground obstructions. His work has involved assisting clients to satisfy 3rd party asset protection requirements by performing ground movement analyses, building & utilities damage assessments, and instrumentation & monitoring design for deep basement and tunnelling works, often focussing on potential impacts on existing cast iron and masonry lined tunnels and sewers. The major asset owners concerned include Thames Water, London Underground, Crossrail, London Overground, Network Rail and Royal Mail Group. He has worked to help clients develop schemes in vicinity of major infrastructure (Crossrail 1, Crossrail 2 and High Speed Two) to fulfil safeguarding requirements, leading to local authority planning application approval and discharge of conditions pursuant to such approvals.

Recently, Michael led an investigation into the performance of the structural health monitoring system installed in two existing Thames Water unbolted wedge-block precast concrete lined water tunnels in anticipation of the crossing of a TBM for the construction of the Thames Tideway Tunnel. The installation records, initial calibration results and background measurement readings of the vibrating wire and fibre optics strain gauges and pressure transducers were interrogated in order to determine the functionality, accuracy and fitness-for-purpose of the installed monitoring system. Michael presented and discussed the findings in a series of presentations to Thames Water and their consultants. He made practical recommendations for present and future projects including lessons learnt during installation and correction factors that would have to be applied for data interpretation.

Over the last few years, Michael has been managing a team of geotechnical engineers providing peer review services for a logistics park client who is developing dozens of large-scale sites (usually tens of hectares) for warehouses and data centres (e.g. for Amazon) across Europe. The GCG team provide critical review of the works performed by local consultants and contractors. Major geotechnical risks are being identified and managed appropriately by the GCG peer review team working with the client and the local project team from the site acquisition and ground investigation stages through to detailed design, construction, and commissioning.



GEOTECHNICAL CONSULTING GROUP

52A Cromwell Road London SW7 5BE United Kingdom
Tel: +44 (0)20-7581-8348 Fax: +44 (0)20-7584-0157 Email:admin@gcg.co.uk

Last year, Michael also led a small team of three geotechnical engineers providing geotechnical and geo-environmental technical due diligence reviews for an international developer planning to acquire a portfolio of 27 existing and new hotel development sites in central business districts of major cities across Europe including Paris, Berlin, Amsterdam, Rotterdam, Madrid, Barcelona, Rome, Florence, Bologna and Lisbon. For each development site, the GCG team reviewed and assessed the high-level ground risks including adverse ground conditions, ground subsidence, seismic impact, contaminations, underground obstructions/constraints, impact on adjacent buildings & utilities, etc. Working with other engineering disciplines within the client's project team, Michael's team advised the client regarding the potential Capex and Opex budgets for potential ground risks and associated mitigation measures. Michael coordinated the reviewing process and communicated the findings with the client via online remote meetings.

Previous experience

Prior to joining GCG, Michael worked in the Department of Geotechnics in Crossrail (UK) where he provided geotechnical support to contract delivery teams at different Crossrail sites for bored tunnels and stations. He was also seconded to the bored tunnel Framework Design Consultant team (Arup Atkins JV) where he carried out the assessment of ground settlement induced by tunnel construction and box/shaft excavation in central London.

From 2009 to 2014, Michael undertook his PhD research at Imperial College London funded by Crossrail, investigating the ground response to tunnel construction in London Clay by earth pressure balance tunnel boring machines (EPBMs). For the research investigation, he planned, designed and supervised the ground investigation and the state-of-the-art instrumentation works in Hyde Park, involving borehole instruments and surface monitoring points. Michael then obtained and interpreted research-quality field monitoring data of ground displacements and stress changes in response to EPBM tunnelling works. As part of the overall monitoring scheme, he also planned and organised the instrumentation and monitoring of the London Underground Central Line running tunnels near Lancaster Gate station. He published the research results in form of a number of peer-reviewed journal papers which won two ICE Telford Gold Medals and one BGA Medal and continue to attract significant industry interests.

Before moving to the UK in 2009, Michael was a chartered civil engineer (MICE and MHKIE) based in Hong Kong with Arup Geotechnics, where he gained significant experience in geotechnical engineering practice in Asia including Hong Kong, Macao, Mainland China and Singapore. Michael acted as the Engineer's Representative for a full-scale field trial of ground improvement techniques for the Disneyland Development in Shanghai, where extensive ground improvement works were required for very soft alluvial deposit. As a geotechnical consultant, he provided technical advice to the Chinese contractor, and interpreted the field monitoring results to assess the performance of various improvement techniques, including traditional surcharge preloading, vacuum preloading and dynamic preloading. He authored a number of field trial reports, on the basis of the monitoring result interpretation, recommending to the client the use of vacuum preloading in light of significant savings in construction time and cost.

Areas worked

UK, Germany, Netherland, Spain, Italy, Ukraine, Croatia, UAE, Hong Kong, Singapore, Malaysia, Macao, China.

Education/Research

PhD, Imperial College London, 2014
MSc and DIC, Imperial College London, 2006
BEng, University of Hong Kong, 1999

Scholarships/Awards

Telford Gold Medal (for the best paper published in all ICE journals of the year), 2020
British Geotechnical Association Medal, 2019
Telford Gold Medal (for the best paper published in all ICE journals of the year), 2018
British Chevening Scholarship, 2005-2006

Professional Qualifications & Memberships

Registered Ground Engineering Specialist (RoGEP, UK), 2020
Member of British Geotechnical Association (BGA), 2014
Member of Hong Kong Institution of Engineers (MHKIE), 2008
Chartered Engineer (CEng), 2007
Member of Institution of Civil Engineers (MICE), 2007

Service on Technical/Professional Bodies

Organising committee of ISSMGE TC220 International Symposium on FMGM, London 2022
Reviewer for ICE Chartered Professional Review, 2020
Editorial panel for Géotechnique Symposium-in-Print, 2019
Deputy Chair of UK Chapter of Hong Kong Institution of Engineers, 2020 – present

Languages (Other than English)

Cantonese and Mandarin