



**K.G. Higgins**  
**BSc MSc DIC CEng FICE FCIHT**  
**Senior Partner**  
Visiting Professor, Imperial College London

#### **Areas of expertise**

Assessment of the impact of construction on infrastructure. The design of earth retaining structures, shafts, tunnels, foundations, monitoring systems and interpretation of results.

#### **Experience with GCG**

Since joining GCG in 1986 Kelvin has worked on the application of numerical methods to engineering problems. He has extensive experience of soil-structure interaction analyses involving the design of underground structures and assessment of the effects of underground construction which includes excavations, shafts and tunnels (SCL, segmental, brick lined and cut & cover tunnels) on adjacent structures. He has also been responsible for the design of tunnels, retaining structures, highways, dams, embankments, cuttings, and foundations.

He has extensive experience of developing alternative designs, construction techniques and sequencing of works to mitigate the effects of construction on adjacent structures and services. This has involved the prediction of the effects of construction on adjacent structures, services, operational tunnels and installations within these structures (e.g. escalators, permanent way, etc.). These activities have been predominately within a railway environment. He regularly advises Clients on these issues and the infrastructure companies..

He was responsible for GCG's input to the Port of Dublin Tunnel that involved the design of shafts, cut & cover tunnels and bored tunnels. Recently he has worked on the design of the Bank Station Upgrade that included tunnel and shaft construction, the Bloomberg development in the City of London adjacent to Bank Station, the Nova development in Victoria, developments at Heathrow over existing tunnels and numerous other developments in the urban environment. In most of these cases piled foundations and retaining structure of different form have been used. His work has extended to the design of monitoring systems and the interpretation of results throughout construction and beyond. He worked for Tideway reviewing reports related to the impact on bridges, tunnels, river walls etc. and was an expert witness for the DCO. He has investigated the causes of the failures of foundations and slopes, designed remedial schemes and provided expert advice.

He has directed research projects for national and international bodies, covering earth retaining structures, slopes, sheet piling, monitoring (including new technologies) and soil behaviour. His published work includes the performance and analysis of foundations, earth retaining structures, tunnels, embankment dams, slope stability, thermal plies, monitoring and soil behaviour. Since 2012 he has been a Visiting Professor at Imperial College, London. He is currently Vice-Chairman of the British Geotechnical Association, Chairman of CIRIA's Geotechnical Advisory Panel and Chairman of the ICE's Exemption and Recognition Panel.

#### **Areas worked**

UK, Argentina, Belgium, Falkland Islands, Fiji, Iran, Ireland, Mexico, Papua New Guinea, Russia, Serbia, Sultanate of Oman, Saudi Arabia, Singapore, West Africa and the USA



#### **GEOTECHNICAL CONSULTING GROUP**

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## Previous experience

Sir Alexander Gibb & Partners: 1977 - 1985

- 1977 – 1979: Design of foundations and embankment dams.
- 1979 – 1981: Assistant Resident Engineer, road schemes in the Middle East,
- 1981 Geotechnical Engineer, design of embankment dams and monitoring.
- 1982 – 1983: Post-graduate Imperial College. Research into ground movements associated with diaphragm wall construction.
- 1983 – 1985: Project Geotechnical Engineer for the foundation design of Sizewell “B” new nuclear power station. Responsible for the geotechnical design work relating to the Mount Pleasant Airport in the Falkland Islands
- 1985 -1986: Mount Pleasant Airport Falklands Islands. Resident Engineer for all roads and services and for the construction of earth retaining structures and Design Liaison Engineer for other aspects of the development.

## Education/Research

MSc & DIC, Imperial College, London, 1983

BSc, Birmingham University, 1977

## Scholarships/Awards

Visiting Professor, Imperial College, London, 2012 – present

Institution of Civil Engineers R&D Enabling Fund: Pile-Tunnel Interaction Problems, 1999

## Professional Qualifications & Memberships

Fellow Institution of Civil Engineers, 2000 to date (Member 1981-2000)

Fellow Chartered Inst. of Highways & Transportation, 2000 to date (Member 1982-2000)

Member: British Geotechnical Association, British Tunnelling Society and the Railway

Civil Engineers Association

UK Registered Ground Engineering Adviser

## Service on Technical/Professional Bodies

Construction Industry Research and Information Association (CIRIA)

- *Geotechnical Engineering Advisory Panel: Member 2010 – 2017, Chairman 2018 –*
- *Construction impact Report: Chairman of Steering Group*

Institution of Civil Engineers:

- *Awards for Papers Panel: Member 2003 - present*
- *Exemptions & Recognition Panel: Member 2009 – 2015, Vice. Chairman 2015-2017, Chairman 2017 to date*
- *Qualifications Panel: Member 2017 to date*

Geotechnique Advisory Panel: *Member 2001 - 2004*

British Geotechnical Association:

- *Exec. Committee Member 2000 – 2003, 2015 – 2017, Vice Chairman 2017 – 2019, Chairman 2019 - ,*
- *Piling 2020 Conference: Chairman of organising committee*

International Society for Soil Mechanics and Geotechnical Engineering: *Member Committee TC207, Soil-Structure Interaction and Retaining Walls. 2015 – to date*

## Other Professional Activities

Imperial College, London.

- *CPD courses Lecturer for “Numerical Analysis in Geotechnical Engineering” and “Earth Retaining Structures: Recent developments in design and analysis”.*
- *Supervision of MEng. & MSc Soil Mechanics research projects*
- *Peter Vaughan Memorial Symposium. 2009: Member organising committee.*

International Society for Soil Mechanics and Geotechnical Engineering:

- *1<sup>st</sup> Int. Conf. on Transportation Geotechnics, 2008: Member of International Advisory Committee and Session Chairman (7).*
- *2<sup>nd</sup> Int. Symp. Pre-failure Deformation Characteristics of Geomaterials, IS Torino ‘99: Discussion Leader*

EMAP Basements & Underground Construction. 2010, London: *Conference Chairman.*

CIRIA Int. Conference “Response of Buildings to Excavation: Induced Ground Movements”. Imperial College, London, 2001: *Discussion Leader.*

Institution of Civil Engineers’:

- *Skempton Conference. 2004: Member of organising committee.*
- *“Retaining Structures”, conference 1992: Panel Member*

Imperial College, Nottingham University, Midlands Geotechnical Soc. East Midlands

Geotechnical Group: *Invited Lectures*