



| |
|-----------------------------------------------------------------------|
| British Geotechnical Association – Citation for Skempton Medal |
| Nomination for David Hartwell |
| Prepared by: Mr N Smith and Dr M Preene, February 2017 |

SKEMPTON MEDAL

The BGA criteria state:

The Skempton Medal is awarded to a BGA member who has made an outstanding contribution to the practice of geotechnical engineering over a sustained period of time. The individual will not normally have received other comparable recognition in this country. The individual's work should be closely associated with, though not necessarily carried out in, the United Kingdom. It is expected that not more than four awards would normally be made per decade.

CITATION FOR DAVID HARTWELL

David Hartwell is recognised world-wide as a leading authority on groundwater and tunnelling and the interaction between the two. He has over forty years of experience investigating and developing practical solutions to groundwater related geotechnical issues for tunnels, heavy civil engineering and mining projects.

He has been extensively involved in developing state of the art solutions to major groundwater problems including the undersea Storebælt tunnels in Denmark, the recovery of the Docklands Light Railway (DLR) tunnels under the River Thames in London and collapsed Metro tunnels in Cairo. He has served on several review panels as a Groundwater Expert for international tunnel and excavation projects and litigation cases involving serious groundwater problems.

David graduated in Civil Engineering from Hatfield Polytechnic in 1969 and took a Master's degree at Newcastle in Water Resource Engineering in 1970. He then worked with the Essex River Authority until 1973, when he joined Soil Mechanics Ltd. Since then he has specialised in groundwater and its impact on underground work – mainly construction, but also mining. At Soil Mechanics, groundwater studies were undertaken for Sizewell and Heysham nuclear power stations, as well as projects in Abu Dhabi, Macau, Hong Kong and Australia. A number of groundwater control contracts were undertaken for major civil engineering and tunnel projects including a new mine drift, pumping stations at Beckton in London, Ringsend in Dublin and Sandon Dock, Liverpool; slope stabilisation in Devon; Gas liquefaction project at Skikda in Algeria. Water resource studies were undertaken in Ireland, Sierra Leone, Iran, Afghanistan, Algeria and UK.

Since 1984, he has worked as a consultant on a range of projects across the globe. Some of the better-known projects have been:

- Denmark - Storebælt Eastern railway tunnels
- Sweden - Malmoe Citytunnel
- Hong Kong - SSDS tunnels under the sea
- Denmark - Copenhagen 1st metro
- Dublin Port tunnel
- London - Jubilee line extension
- Cairo Metro, Line 3
- New York, U.S.A. Review of freezing project for Northern Boulevard tunnel crossing
- Qatar Doha Metro tunnels



- South Africa - Gautrain railway tunnels. Member of International Expert panel reviewing grouting works
- Vietnam, Hanoi Metro

He has at least 22 published papers and has given invited lectures including at the launch of the publication *Groundwater control: design and practice*, 2nd edition (CIRIA C750).

He is an excellent communicator and extremely practical. In the UK, he is probably the first person that clients turn to when they have a difficult groundwater problem on a construction or engineering project.

Referring back to the award criteria, in relation to groundwater control David has clearly '*made an outstanding contribution to the practice of geotechnical engineering over a sustained period of time*' and is a worthy recipient of the Skempton Medal.

PUBLISHED PAPERS AND INVITED LECTURES

Hartwell, D.J. Jordan, P.G. and Gutmanis, J.C. A Hydrogeological study of the Aghinish Island Carboniferous Limestone. Karst Commission of the International Association of Hydrogeologists, Dublin, 1979.

Hartwell, D.J. and Viswanathan, M.N. Mineral Sands mining in a developed aquifer at Tomago, NSW. International Conference - Groundwater and Man, Sydney, 1983. International Association of Hydrogeologists.

Firth, U.R. and Hartwell, D.J. Groundwater Control for a major urban redevelopment project with potential settlement problems and unusual contractual arrangements. *Groundwater in Engineering Geology*, The Geological Society, Sheffield, September 1985.

Hartwell, D.J. and Nisbet R.M. Groundwater problems associated with the construction of large pumping stations. Proc. IX ECSMFE, Dublin, 1987.

Snee, C.P.N. and Hartwell, D.J. Groundwater inflows into Soft Ground Tunnels. Conference on Groundwater in Engineering, Geological Society of London, October 1989.

Hartwell, D.J. Kofoed, P., and Unterberger, W. Great Belt Tunnel; Cross Passage Construction. *Straits Crossings* 94, Balkeema, Norway June 1994.

Doran, S.R. Hartwell, D.J. et al. Storebaelt Eastern Railway Tunnel - Denmark. Implementation of Cross Passage Ground Treatment. Proc XI ECSMFE, Copenhagen May 1995.

Hartwell, D.J. Kofoed, P. and Dyer, J. Storebaelt Eastern Tunnel - Denmark. Engineering Geological Conditions encountered. Proc XI ECSMFEC, Copenhagen May 1995.

Doran, S. R. Hartwell D.J. et al. Storebaelt Eastern Railway Tunnel - Denmark. Design of cross Passage Ground Treatment. PROC XI ECSMFE, Copenhagen, May 1995.

Warren, S. Hartwell, D.J. and Doran, S.R. The Control of Groundwater in the Paleocenekertemide Marl, of the Storebaelt Eastern Tunnel project. *Channel Tunnel Engineering Geology Symposium*, September 1995.

Hartwell, D.J. Sub Horizontal Dewatering of soils: case Histories. *GeoEng 2000*, Melbourne 2000.

Hartwell, D.J. Getting rid of the water, pp 40-42, *Tunnels and Tunnelling International*, Jan 2001.

Hartwell, D.J. Dewatering Induced Settlement. Symposium on Construction Processes in Geotechnical Engineering, City University, London 2003.

Hartwell, D.J. Sand and Water. 2nd Symposium on Construction Processes in Geotechnical Engineering, City University, London 2005.

Hartwell, D.J. Control of groundwater in sands for tunnelling: case histories. XII Danube-European Conference on Geotechnical Engineering, Ljubljana, 2006.

Hartwell, D.J. Grouting and Dewatering – competing technologies? 3rd Symposium on Construction Processes in Geotechnical Engineering, City University, London 2007.



Hartwell, D.J. The Hydrogeology of Weathered Granites. Proc. 10th Australia New Zealand Conference on Geomechanics. Brisbane, 2007.

Hartwell, D.J. Ground Freezing for Tunnelling: Case histories, Invited lecture to the Egyptian Tunnelling Society, 26th January 2011.

Hartwell, D.J, Chiriotti. E and P.G. Jackson. Grouting to reduce permeability in weak rocks. WTA, Helsinki, May 2011.

Hartwell, D.J and P.G.Jackson. Permeation Grouting and Shale Gas “fracking”, inconsistent technologies? Proc. XVI ECSMGE, Edinburgh 2015.

Hartwell, D.J. Permeability testing problems in rock. Proc. XVI ECSMGE, Edinburgh 2015.

Hartwell, D.J. Three mid 19th Century Heritage Developments, Integrated into 21st Century Infrastructure. Engineering Heritage Australia 2015 Conference: “From the Past to the Future”. Newcastle, Australia 2015.

Hartwell, D.J. Invited lecture at the launch of CIRIA C750, Groundwater control: design and practice, 2nd edition. London 2016.

Hartwell, D.J. Chowilla Dam, A Case Study of how we Studied Groundwater Problems Before Computers. Engineering Heritage Australia 2017 Conference: “Putting Water to Work”. Mildura, Australia 2017.

Preene, M., Roberts, T.O.L and Hartwell, D.J. Pumping tests for construction dewatering in Chalk. Accepted for publication in Chalk 2018: Engineering in Chalk, 2018.