



Dr Stephen Richard Buss MA MSc CGeol

07923 141 650

steve@hydro-geology.co.uk

www.hydro-geology.co.uk

An experienced consultant hydrogeologist with nationally-recognised expertise in: sustainable groundwater management, groundwater quality, contaminated land risk assessment and groundwater flooding.

Career Summary

From Sept 2013: Stephen Buss Environmental Consulting Ltd

An experienced consultant providing cost-effective environmental advice and hydrogeological support.

Nov 1999 to Aug 2013: ESI Ltd

Technical Director responsible for managing and directing large consultancy projects and business development. I developed the company's catchment management and groundwater flooding capabilities by providing relevant services to water companies and the Environment Agency. I was director of innovation and managed the internal R&D budget. I developed a number of lecture series and regularly presented on internal and external training courses.

June to September 1998: Freelance hydrogeologist

Seconded to the Environment Agency in Lichfield, I provided support to the groundwater and contaminated land team.

June to August 1997: University of Birmingham

As a postgraduate research assistant I used a GIS system to predict the distribution of groundwater chemistry in an East Anglia Chalk aquifer.

Qualifications

PhD, University of Birmingham 1999

MSc Hydrogeology,
University of Birmingham 1995

BA (Hons) Geological Sciences (2:1),
University of Cambridge 1994

Professional memberships

Fellow of the Geological Society since 2000
(Chartered Geologist since April 2011)

Member of the National Ground Water
Association (NGWA) since 2006

Professional standing

Editorial Board member for the Quarterly
Journal of Engineering Geology and
Hydrogeology (2012-2015).

Committee member of the Hydrogeological
Group of the Geological Society (2005-2009).

Peer reviewer for Environmental Modelling and
Software, and Journal of Environmental
Quality. Peer Reviewer for DEFRA funded
research.

Technical software & tools

ArcGIS, Quantum GIS, Surfer, Groundwater
Vistas, MODFLOW, AquiferWin32, RAM,
HYDRUS, PHREEQC, Remedial Targets
(P20), RISC, RBCA Toolkit, ConSim,
Bioscreen, Excel, Crystal Ball, Access, Visual
Basic, Python and more...

Sustainable Groundwater Resource Management

I have managed and directed the development of several regional-scale conceptual and numerical groundwater models for the Environment Agency. I therefore have in-depth understanding of the hydrogeology of the following aquifer systems:

Birmingham; London Basin and North Downs; Yorkshire Wolds; Lower Mersey Basin and North Merseyside; Durham Magnesian Limestone; Lichfield; Manchester and East Cheshire

Outputs from these model studies included: conceptual descriptions of the hydrogeology and hydrology of the study areas; groundwater balances to aid understanding of sustainable levels of abstraction; source protection zones; extreme baseflows for flood modelling; and strategies for alleviation of low flows in sensitive streams.

I have investigated a number of catchments across the Midlands in which ecosystems are sensitive to changes in flow due to abstraction for public water supply. The aim has been to determine abstraction levels that do not impact upon the aquatic ecosystems. Studies involved collation, analysis and synthesis of hydrological and ecological data; development of conceptual models of impact; then development of models to quantify the benefits of abstraction reduction measures.

I have supervised numerous field investigation programmes including pumping tests, site characterisation and water quality sampling programmes.

Other projects have included: hydrological support for relocation of marsh club-moss, Dartmoor; prediction of dewatering impacts adjacent to Thorne Moors SSSI; water balance to assess sustainable groundwater abstraction, Bomere Pool SSSI, Shropshire; and a water balance to assess minimum flow requirements, Stowe Pool, Lichfield.

Contaminated Land and Landfill

My speciality in this area is risk assessment modelling. I have worked on some of the largest problem sites in England (The Avenue, the SABRE research site, Drigg LLWR, plus many others) and contributed to risk model development for each. I have also completed a considerable number of landfill hydrogeological risk assessments.

I led development of the Environment Agency's spreadsheet model for assessing risk to groundwater from sub-surface landfills. I had previously contributed to an in-depth review and benchmarking of risk models.

Groundwater Quality

I have supported the development of catchment management strategy for Severn Trent Water, focussing on protection of groundwater sources from nitrate. Using a bespoke nitrate concentration trending model, I managed the assessment of catchment management options for 29 groundwater sources in the Severn Trent Water area and 13 groundwater sources in the United Utilities area. In partnership with ADAS we provided advice on mitigation measures for reduction of diffuse nitrate pollution impacts at these sources. We have also advised on managing pesticide inputs to catchments.

I have developed national guidance for Water Framework Directive compliant identification and reporting of impacts of diffuse pollution, for both the Environment Agency and Irish EPA. I co-wrote Environment Agency literature reviews on the sub-surface attenuation of nitrate, ammonium and the herbicide mecoprop.

Other projects include: characterising acid mine drainage, plus options appraisal and preliminary design of a remediation system to restore local fisheries, Blaenau Ffestiniog; review, monitoring and proposed remediation of high manganese concentrations in a groundwater supply, Staffordshire; investigation of the source of nutrients causing of excessive macro-algae growth, Portsmouth Harbour.

Groundwater Flooding and Basements

With Halcrow I developed a groundwater flooding forecasting tool. This is now used live in the Environment Agency's national flood warning system.

I developed a methodology for estimating groundwater flood risk based on BGS susceptibility maps. More recently, I led development of a refined methodology using more fundamental topographic and geological information.

I have provided peer review services for several local authorities that need to understand groundwater flooding impact assessments.

I have managed and reviewed basement impact assessments for over thirty London basement developments. Some included application of modelling to highlight lack of risk to neighbouring properties.