

Projects



We are currently undertaking projects in the following areas:

Groundwater flow and solute transport processes

[Open all sections](#)

Towards a methodology for determining recharge through drift sequences

(Kate Thatcher, Mark Cuthbert, Rae Mackay, John Tellam)
Funding: NERC LOCAR thematic programme
Collaborators: British Geological Survey; Environment Agency

Quantifying the scaling of physical transport in structured heterogeneous porous media

(Rae Mackay, Zhonquiang Xie)
Funding: NERC Micro to Macro thematic programme
Collaborators: SERCO Assurance, United Kingdom Nirex Limited

Borehole and regional scale groundwater solute movement in sandstones

(John Tellam, Rae Mackay, Michael Riley, Richard Greswell, Ben Furlong, Ralf Lieb)
Funding: NERC; GEES

Ion exchange quantification in sandstone aquifers

(John Tellam, Richard Greswell, Karen Parker)
Funding: Environment Agency; NERC; M J Carter Associates
Collaborators: Xiaohong Tan, Steve Thornton (Sheffield University)

Revisiting the Kd concept

(Tim Batty, John Tellam, Michael Rivett, Joanna Renshaw)
Funding: NERC
Collaborators: Steve Buss (ESI)

Development of genetic models of the hydraulic structure of the Triassic Sandstone formations

(Mark Bunch, John Tellam, Rae Mackay, Peter Turner)

Geomicrobiology

[Bacterial reduction of radionuclides and metals \(PDF - 46KB\) \(/Documents/college-les/gees/hydrogeologymicrobialreduction.pdf\)](#)

(Joanna Renshaw)
Collaborators: University of Manchester

[Natural attenuation of chromate in the hyporheic zone \(PDF - 63KB\) \(/Documents/college-les/gees/hydrogeologychromate.pdf\)](#)

(Joanna Renshaw)

[Immobilization of metals and radionuclides by microbial biomineralization processes \(PDF - 37KB\)](#)

(Joanna Renshaw)

Particle fate and transport in groundwater

Virus migration through sandstone aquifers

(John Tellam, Richard Greswell)
Funding: Environment Agency
Collaborators: Robens Centre, Surrey University

Colloid-facilitated virus migration in sandstone groundwater

(John Tellam, Richard Greswell, Michael Riley, Jamie Lead)
Funding: NERC
Collaborators: Robens Centre, Surrey University

SWITCH – Subsurface virus migration (PDF - 90KB)

(Fernanda Aller, Veronique Durand, John Tellam, Michael Riley, Richard Greswell)

Funding: EU FP6

Collaborators: Robens Centre, Surrey University, U.K.; 32 partners led by UNESCO IHE, Delft

Manufactured nanoparticle migration in groundwater

(John Tellam, Richard Greswell, Michael Riley)

Funding: NERC

Interactions of metals and nanoparticles with bacterial biofilms

(Joanna Renshaw, Julia Climent, Jamie Lead)

Funding: EU

Interactions of viruses with colloids

(Claudia Gaebel, Jamie Lead, Joanna Renshaw, John Tellam)

Funding: EU

Organic contaminants: transport and remediation

Use of longitudinal streamtube-based monitoring approaches to determine contaminant fate within the SABRE intra-source/plume test cell (STREAMTUBE)

(PDF - 560KB) (/Documents/college-les/gees/hydrogeologystreamtube.pdf)

(Michael Rivett, Rachel White, Richard Greswell, John Tellam)

Funding: CL:AIRE; Environment Agency

Collaborator: Gary Wealthall (British Geological Survey)

Analysis of the CFB Borden (Canada) DNAPL Emplaced Source field experiment

(Michael Rivett)

Organic contamination and groundwater quality in the Birmingham aquifer

(Kevin Shepherd, Michael Rivett)

Funding: Birmingham City Council; NERC

Dissolution of multicomponent non-aqueous phase liquid sources

(Carlos Serralde, Michael Rivett)

Funding: Council for Science and Technology (CONACYT), Mexico

Transport of aromatic hydrocarbons in clay aquitards (PDF - 127KB)

(Rachel White, Michael Rivett, John Tellam, Rae Mackay)

Funding: Celtic Technologies Ltd; Environment Agency; Waste Management Research Ltd, Cleansing Services Group; EPSRC

The impact of urban groundwater upon surface water quality: Birmingham – River Tame study, UK

(Paul Ellis, Michael Rivett, Rae Mackay)

Funding: Environment Agency

Fractured rock characterisation

Advanced logging investigations of aquifers in coastal environments (ALIANCE) (PDF - 110KB)

(Michael Riley, Richard Greswell, Evgeny Isakov, Paul Ellis)

Funding: EU FP5

Collaborators: four European universities and research institutes, and three European commercial enterprises

The role of fractures in flow through sandstones (PDF 290KB)

(Anna Hitchmough, John Tellam, Michael Riley, Alan Herbert)

Funding: NERC

The role of filled fractures in contaminant transport through sandstones

(John Tellam, Richard Greswell, Michael Riley)

Funding: EPSRC

Collaborators: British Geological Survey; Sheffield University

Upscaling coupled thermo-hydro-mechanical processes for Performance Assessment – DECOVALEX (PDF - 222KB)

(Philipp Blum Rae Mackay, and Michael Riley)

Funding: United Kingdom Nirex Limited

Collaborators: nine partners within DECOVALEX III led by KTH, Sweden

Statistical characterisation of fractured rock (PDF - 68KB)

(Michael Riley)

Statistical simulation of rock fracture (PDF - 293KB)

(Michael Riley)

Hyporheic zone

Hyporheic zone research

(Jonathan Smith, Michael Rivett, John Tellam and Richard Greswell)

Funding: Environment Agency

Collaborators: Sheffield University; Lancaster University

Natural attenuation of organic contaminants in the hyporheic zone

(Rachel Roche, Michael Rivett, John Tellam)

Funding: Environment Agency

Collaborators: Sheffield University; Lancaster University

SWITCH – Quantifying Hyporheic zone mixing processes

(Veronique Durand, Fernanda Aller, Michael Rivett, Rae Mackay, John Tellam, Richard Greswell)

Funding: EU FP6

Collaborators: Environment Agency; 32 partners led by UNESCO IHE, Delft

In situ groundwater flow meter

(Richard Greswell, John Tellam, Michael Riley)

Funding: Environment Agency

Urban and engineered groundwater environments

SWITCH – Ecological and Hydrological functioning of Extensive Green Roofs

(Adam Bates, Rae Mackay, Michael Rivett, John Tellam, Richard Greswell, Jon Sadler)

Funding: EU FP6

Collaborators: 32 partners led by UNESCO IHE, Delft

SWITCH – A systems based model for urban water sustainability assessment

(Ewan Last, Rae Mackay, John Bridgeman)

Funding: EU FP6

Collaborators: John Bridgeman (Department of Civil Engineering); 32 partners led by UNESCO IHE, Delft

Urban groundwater development

(John Tellam, Rae Mackay, Michael Rivett, Richard Greswell, Abraham Thomas, Jane Harris)

Funding: NERC (“URGENT”); NATO

Collaborators: Geology Institute, Academy of Sciences, Baku, Azerbaijan

Ground heat storage

(Ryan Law, Rae Mackay)

Funding: DTI Innovation project

Collaborators: six partners led by Arup Geotechnics

Thermal transport in the Chalk and the prevention of thermal breakthrough

(Ryan Law, Rae Mackay)

Funding: EPSRC

Collaborators: Arup Geotechnics

Hydraulic retardation of contaminant transport through cement-bentonite walls

(Alex Royle, Michael Rivett)

Funding: NERC

Collaborators: Chris Rogers, David Boardman (Department of Civil Engineering); Ove Arup; Derby Pride

Where rivers meet: landscape, ritual, settlement and the archaeology of river gravels (PDF - 1.1MB)

(Mark Bunch, Michael Riley)

Funding: English Heritage (Aggregates Levy Sustainability Fund)

Collaborators: Birmingham University Field Archaeology Unit; Institute of Archaeology and Antiquity, University of Birmingham; Staffordshire County Council; Phoenix Consulting Ltd; Trent and Peak Archaeological Unit; Natural History Museum

Overseas projects

Hydrology of small scale watersheds, North-east Brazil

(Rae Mackay)

Funding: DFID

Collaborators: Mott Macdonald; Universidade Federal Rural de Pernambuco; Universidade Federal de Pernambuco, Brazil

Modelling the Brackish Rus-UER aquifer in Bahrain

(Abdulrahman al Ghamdi, Michael Riley, John Lloyd)

Collaborators: King Fahad University of Petroleum and Minerals, Dhahran

Water resources management in Al-Hassa area, Eastern Saudi Arabia

(Salah Sidahmed, Michael Riley, John Lloyd)

Collaborators: King Fahad University of Petroleum and Minerals, Dhahran

Hydrogeological assessment of the Hadat Al Sham basin, Saudi Arabia

(Nassir Al Amri, Rae Mackay)

Collaborators: King Abdulaziz University, Saudi Arabia

A model of the water balance for two Karst aquifer catchments in Lebanon

(Abdul Arkadan, Rae Mackay, John Tellam)

Collaborators: American University of Beirut, Lebanon

