

Dr Laurance John Donnelly

BSc (Hons), PhD (Geol), CGeol, CSci, EurGeol, FGS, FGSA

Geologist

EXPLORATION, MINING, MINERALS & METALS

FORENSIC GEOLOGY & POLICE SEARCHES

ENGINEERING GEOLOGY & GEOMORPHOLOGY

GEOHAZARDS & NATURAL HAZARDS



Education

PhD, Geohazards (Fault Reactivation)

1991-1994: University of Nottingham, Department of Mining and Environmental Engineering, UK

Thesis title, '*Predicting the reactivation of geological faults during mining subsidence, mineral exploitation and geotechnical engineering*'.

BSc First Class Honours Degree in Applied Geology

1986-1989: University of Leicester, Department of Geology, UK

Qualifications & Recognition

2007: Invited Fellow of the Geological Society of America (**FGSA**)

2005: Chartered Scientist (**CSci**)

2002: European Geologist (**EurGeol**)

1998: Chartered Geologist (**CGeol**)

1997: Fellow of the Geological Society of London (**FGS**)

Awards and recognition for international contributions to applied geology and forensic geology

2015: Police National Search Centre

2013: Home Office, Centre for Applied Science and Technology

2013: Russian Federal Centre for Forensic Science Award, Ministry of Justice, Moscow

2013: Geological Society of London, Forensic Geoscience Group Award

2008: Fellow of the Geological Society of America

2008: Geological Society of London, Engineering Geology Group Award

2007: Geological Society of America, Engineering Division, E.B. Burwell Memorial Award

2007: Portrait placed in the Geological Society of America Hall of Fame, Denver, Colorado, USA

1989: Institution of Mining & Metallurgy Award

International Geological Experiences

Africa: Democratic Republic of Congo (DRC), Kenya, Namibia, South Africa, Zambia.

Asia: China, India, Mongolia, Nepal, North West Pakistan (Kashmir)/Afghanistan, South Korea.

Australia: New South Wales, Queensland, Western Australia.

Europe and Scandinavia: Austria, Belgium, Greece, Finland, France, Former Yugoslavia (Slovenia), Ireland, Italy, Netherlands, Norwegian North Sea, Northern Ireland, Poland, Portugal, Romania, Sicily, Spain, Switzerland, Turkey.

Latin America & Caribbean: Antigua, Argentina, Brazil, Colombia, Chile, Costa Rica, Dominican Republic, Haiti, Guyana, Mexico, Montserrat, Nicaragua, Panamá, Puerto Rico, Trinidad & Tobago, Venezuela.

Middle East: Iran, United Arab Emirates (Dubai, Abu Dhabi & Al Ain).

Russia and FSU: Russian Federation, Far East Russia & Siberia, Kazakhstan, Kyrgyzstan, Ukraine.

USA: Arizona, California, Denver, Florida, Montana, Nevada, Wyoming, Washington, Washington DC

Employment Record

2018-Present: Head of Technical Department, Chief Geologist | Alfred H Knight International

2016-2018: Associate Director (Geologist) | Ove Arup & Partners Ltd

2014-2016: Chief Geologist (Technical Director) | Advisian (WorleyParsons Group)

2010-2014: Geohazards, Engineering & Exploration (Associate Director) | Wardell Armstrong LLP

2003-2010: Principal Engineering Geologist (Geohazards) | Halcrow Group Ltd

1994-2003: Engineering & Exploration Geologist (Geohazards) | British Geological Survey (1994-1998) secondment to International Mining Consultants (1998-2003)

Pre doctorate and temporary undergraduate positions:

1991-1994: Full time PhD Research in Geohazards | University of Nottingham

1990-1991: Exploration Geologist & Assistant Quarry Manager | Redland Aggregates Ltd

1989-1990: Offshore Petroleum Exploration Geologist | Exploration Logging Inc

1989: Exploration Geologist | ARC Eastern Ltd

Current Positions

Session co-organiser: Session on Forensic Geology, 36th International Geological Congress, Delhi, India (since 2016)
Geological adviser: Geologia Forense, Rome, Italy (since 2012)
Founder and chair: International Union of Geological Sciences, Initiative on Forensic Geology, (since 2011)
Professional member, International Association of Engineering Geologists (IAEG) (since 2011)
Expert adviser: National Crime Agency (NCA), UK Police (since 2008)
Member: Geological Society of London, Forensic Geoscience Group (since 2006)
Mentor: Geological Society of London, Chartered Geologist (CGeol) scrutineer (since 2004)
Registered participant: Geological Society and Science Council, CPD scheme (since 1998)

Former Positions

Steering group and co-author: CIRIA, Abandoned Mine Workings Manual (2010-2019)
Steering group & co-author: Geological Society of London, Working Group on Geohazards (2012-2019)
Member: Home Office, Centre of Applied Science and Technology (CAST), Search Technology User Group (2017-2019)
Session co-organiser: 4th IberoAmerican Congress on Forensic Geology, Puerto Vallarta, Mexico (2016-2019)
Special adviser: Geoforensics and Specialist Search International (GSSI), (2009-2019)
Steering group & co-author: Geological Society of London, Working Group on Glacial and Periglacial Soils (2011-2017)
Editorial board & co-author: Springer Encyclopaedia on Engineering Geology, 2014-2017
Committee member: Geological Society of London, Northwest Regional Group, 2017
Editorial board sub-editor: IAEG, Bulletin of Engineering Geology and the Environment, 2018
Conference co-organiser: Resourcing Future Generations, Vancouver, Forensic Geology & Geoethics 2016-2017
Conference co-organiser: GSL, Sharing and Uncertain World, Lessons in Managing Risk (Geohazards), 2017
Conference co-organiser: 35th IGC2016, Cape Town, Forensic Geology, 2013-2016
Technical committee: MSc in Forensic Geology, University of Messina, Sicily, 2014-2015
Technical committee: 2nd & 3rd International Conferences on Engineering Geophysics, Al Ain, UAE, 2012-2015
Editorial board member: Quarterly Journal of Engineering Geology & Hydrogeology (QJEGH), 2009-2013
Geological adviser: Ground instrument development for a USA organisation (confidential), 2012-2014
Conference co-organiser: 34th IGC2012, Brisbane, Forensic Geology & Engineering Geology, 2010-2012
Founder and first chair: Geological Society of London, Forensic Geoscience Group (FGG), 2006-2012
Honorary member: Saddleworth Archaeological Trust, 2007-2012
BSc module co-designer and lecturer: University of Leicester, Department of Geology, 2006-2011
Working group lead officer: IUGS-EM, Forensic Geology Working Group, 2009-2011
Geological adviser: Institute for Field Archaeologists (IFA), 2008-2011
Conference co-organiser: Piling & Deep Foundations, Detection and Mitigation of Cavities in UAE, 2009
Conference co-organiser and chair: Conference on Geoscientific Equipment and Techniques at Crime Scene, Geological Society, Forensic Geoscience Group, December 2008
PhD external examiner: Mining subsidence, University of Nottingham, 2000 and 2007
Committee member: Soil Forensics International, Macaulay Institute, Edinburgh, 2006-2007
Member: Geoforensic and Information Management for Crime Investigation (GIMI), 2005-2008
Conference co-organiser: International Association of Engineering Geology Conference, UK, 2003-2006
PhD external adviser: Mining Hazards and Geohazards, University of Birmingham, 2002-2006
Committee member: Geological Society of London, Fellowship and Validation Group, 2001-2004
Visiting research fellow: Nottingham Trent University, Geohazards Working Group, 2000-2004
Committee member: Geological Society of London, East Midlands Regional Group, 2000-2004
Committee member: Public Understanding of Volcanic Hazards, Geological Society of London, 1999-2000
PhD external examiner: Rock Mechanics and Mining Subsidence, University of Nottingham, 1999
Committee member: Geological Society of London, Engineering Group, 1998-2004
MSc co-designer: Engineering Geology and Geohazards, Nottingham Trent University and BGS, 1996-1998
Member: Institution of Mining & Metallurgy (IMM), 1986-1990, and 2015-2017
Member: Institution of Quarrying (IQ), 1986-1990
President: Leicester Mining Geology Society (LMG), 1988-1989

Selected Experiences: Mineral Exploration, Mining and Metals

Dr Donnelly is experienced in scoping studies, mining geology, mineral exploration, technical due diligence audits, bankable feasibility documents, competent person's reports, mine closure & abandonment, mining hazards & liabilities. He had completed projects paying cognisance to national protocols (such as GKZ in Russia and CIS) and adhering to industry approved best practice compliant with internationally recognised mineral resources and reserves reporting standards (such as JORC, AIM, PLUS and CIM/NI43-101). He has worked with a large portfolio of clients including government departments, mining companies, lending institutions, banks, law firms, traders and private minerals investors. Commodities investigated include base metals and precious metals (sulphides, gold, copper, lead, zinc, tin,

ferro-chrome, aluminium, iron-ore and rare earth elements), industrial minerals (sand, gravel, aggregates, limestone, evaporites, sandstone and mudrocks), concentrate, refinery and smelter products and coal (lignite, thermal and coking).

2017-present: Minerals and Metals: Worldwide

Head of AHK Technical Department with operations in 40 countries. Responsible for providing a comprehensive and extensive range of professional and multi-disciplinary services, advice, guidance or consultancy across the AHK Group. The specific services offered include; superintendent services, umpire analysis, weighing, sampling, inspection, FMP-TML, draught surveys, stockpile inventory, radioactivity surveys, audits, due diligence, mineral processing, mineralogy, geology, conflict minerals, mineral sample adulteration, mineral consignment substitution and technical report reviewing. The Technical Department enforces the standardisation of guidance and standard operational procedures and ensures compliance with international standards, codes, industry best practice and paying cognisance to client specifications.

2020: Technical Audit, Gwangyang and Ulsan South Korea

Implementation for a technical due diligence audit in South Korea at a mineral concentrate sample pre laboratory for transshipment of samples from South America in to China.

2019: Conflict Minerals, Lubumbashi and Rubamin, Democratic Republic of Congo

Visit to DRC to gain a better understanding of conflict minerals and the sampling of copper blister.

2019: Sample Adulteration and Substitution, Ndola, Zambia

Investigations of geological methods for the management and mitigations of risks associated with crimes that take place in the mining and minerals industry.

2019: Advice on Ore and Mineral Concentrate Sampling Strategies, Santiago, Chile

Establishment of project at AHK facilities to modernise the sampling, weighing and moisture determination ahead of assaying and to ensure international standards compliance.

2019: Meeting, British Embassy and Collaboration with the Geological Survey of Finland (GTK), Helsinki, Finland

Meeting with the British ambassador and GTK to discuss the future exploration and demand for battery minerals including lithium, cobalt, and graphite, including the potential for exploration, mining, processing and sampling in Finland.

2019: Technical Audit, Beijing, China

Establishment of a technical audit at several laboratories and workshops throughout China to ensure the compliant sampling of base metal (copper, lead, zinc, molybdenum) concentrate.

2018: Mineral sampling and assaying, Manzanillo and Guyamas, Mexico

Review of sampling procedures and FMP-TML at AHK laboratories and client warehouses to ensure international compliance with ISO standards.

2018: Base metal sampling, Antwerp, Belgium

Visit to Belgium to review weighing, sampling and moisture determination (WSMD) for copper concentrate, copper blister and copper cathode.

2016-2017: Shale Gas Exploration (Confidential)

Responsible for leading Arup's shale gas exploration and geohazards interests in Lancashire, Cheshire and the Midlands with regulators and operators. This includes determination of 3D tectonic stress field, induced monitoring of induced and triggered microseismicity using the approved Traffic Light System (TLS), peak particle velocity ground vibration monitoring, microseismicity shake map and aquifer contamination.

2016: Review of Planning Application for a Proposed Shale Gas Borehole (Confidential)

Commissioned to undertake a technical review of a proposed vertical and deviated borehole for shale gas exploration in the Midlands. This included a review of the geology, microseismicity, resource potential, 3D tectonic stress, fault locations and drilling.

2016: Mine Development, Fault Characterisation Borehole (York Potash Limited)

Geological logging and geotechnical rock mass characterisation of drill core to characterise faults and develop a conceptual fault model. Provision of ad-hoc geological advice for ground investigation, shaft sinking tunnelling and mine development.

2016: Conversion of Room and Pillar Mine for Underground Storage (Confidential)

Pre tender submission to and abandoned and pillar mines, and former military secure location, to estimate costs, time and resources required for the evaluation of shaft and pillar stability.

2014: Review of 18 Open pit Lignite Mines, Romania (Confidential)

Geological assessment and review of open pit lignite operations in Romania. This included a review of lignite resources, geological hazards and geological risks, for privatisation.

2013: Geological Hazards and Shale Gas Exploration, Lancashire (Cuadrilla Resources)

Review of subsidence, landslides, mining hazards, tectonic and induced seismicity and expansive soils within shale gas licence blocks following the 2011 Blackpool earthquakes.

2013-2014: JORC ASX Coal Resources, Lower Silesia Coal Basin, Poland (Balamara Resources)

Review of past exploration data held by a Polish design institutes, resource modelling, resource reporting (JORC) and the provision of advice for future exploration for the development of coal resources Lower Silesia coalfields. The resources were reported on the Australian Stock Exchange (ASX).

2012-2014: JORC ASX Coal Resources, Lublin Coal Basin, Poland (Prairie Downs)

Design and implementation of coal exploration including the drilling of boreholes, logging and quality control, coal quality analysis and resource assessments. These were undertaken in accordance with the requirements of JORC and reported in the Australian Stock Exchange (ASX).

2014: Review of Coal Resources, Upper Silesia Coal Basin, Poland (Omega Resources Ltd)

Provision of advice on coal exploration and coal resource assessment for concessions in the vicinity of the former Auschwitz Concentration Camp, for CBM and coal mining considerations.

2012-2014: Coal Resource Assessment, Tentekskaya 10, Karaganda, Kazakhstan (Arcelor Mittal)

Assessment of the geology, exploration strategy, coal quality and coal resources for using Vulcan modelling software, consistent with the requirements of CIM and NI-43101.

2012: Competent Persons Report (CPR) for AIM Listing, Kyrgyzstan (Mentum Inc)

Completion of a CPR report for AIM listing on the London Stock Exchange, following a visit to the Padsha Ata coal deposit, assessment of resources and advice for future exploration.

2012: Fatal Flaw Analysis and Coal Resource Review, Mongolia (Petropavlovsk)

Assessment of geology and coal resources, Sunset and Sunrise open pit mines, in South Gobi.

2012: Coal Exploration, Soumber Concession, Mongolia (Petropavlovsk)

Assessment of coal exploration strategy in the Gobi desert.

2010-2012: Billingham Anhydrite Mine, Yorkshire (ICI Petrochemicals & NPL Waste Management)

Investigations of the stability of abandoned room and pillar workings and the development of a conceptual hydrogeological model for potential storage of waste materials.

2010-2012: QA/QC Audit of Copper & Gold Exploration, Kazakhstan (Kazakhmys Exploration)

Review of mineral exploration at Sayak, Mizek, Orlovskoye, Zhezkazgan, Shatyrkul, Karaganda open pit mines and the associated sampling, testing and assaying in accredited laboratories.

2011: Due Diligence, Uryakh Gold Deposit, Eastern Russia/Siberia (Severstal Resources)

Review of exploration procedures and provision of advice on mineral exploration, sampling and assaying.

2011: Competent Persons Report (CPR), PLUS, Ervei Khushuu Magnetite Deposit, Mongolia (Jersey Holdings)

CPR on geology, mineral exploration, mining, mineral processing and magnetite resource for listing on the PLUS stock exchange.

2011-2013: Advice on Mineral Resources, Southern Mongolia (Highways Capital Plc)

Provision of advice on mineral potential and mineral occurrences in southern Mongolia for coal, metalliferous deposits and evaporites.

2000: Geology and Resources, Venezuela (GEOCONSA & Walbell Developers Inc, 2000)

Site visit to Fila Maestra to provide advice on exploration, coal resources and geohazards for investment opportunities.

2003-2005: Copper Mineralisation, Iran (National Iranian Steel Corporation & European Space Agency)

Design of an exploration strategy using satellite imagery for copper mineralisation.

2000: Bauxite Mineralisation, Guyana (International Mining Consultants)

Visit to Georgetown to develop new opportunities, with the cooperation of the Geological Survey of Guyana, following the privatisation of the bauxite industry.

2000: Geological Advice, Tabass Coal Mine, Iran (National Iranian Steel Corporation)

Provision of technical guidance for coal exploration and geological hazards.

1999-2000: CPRs, Kazakhstan (JCI, Credit Lyonnais, Samsung Deutschland)

CPR of the Ekibastuz opencast coal mine, Turgai-Kransooltyabrsk bauxite deposit, Rudny iron-ore deposit, Sabaysky, Sokolovsky, Kacharsky and Kurzhunkulsky open pit copper-gold mines, Sokolovsky copper mine and Kounrad, Sayak, Orlovskoye, Zhezkazgan, Artemyevsky, Nikolaevsky and Shemonaikhinsky copper-gold mines.

1990-1991: Industrial Minerals (Redland Aggregates Ltd)

Responsible for sand, gravel and hard rock exploration and resource estimates in the UK. Aggregate, sand and gravel exploration, resource evaluation, management of drilling and laboratory testwork. Six months resident geology at Dry Rigg Quarry, North Yorkshire, UK.

1989-1990: Offshore Petroleum Exploration Geologist (Exploration Logging Inc)

Responsible for the geological logging on offshore oil exploration platforms, in the Northern North Sea, mud logging, borehole geophysics, reporting and resources.

1988: Exploration Geologist (ARC Eastern Ltd)

Undergraduate industrial placement for a quarry extension. Responsible for surveying, exploration drilling design, logging and engineering classification, sampling schedule and testwork, resource evaluation, groundwater control and quarry design.

Selected Consultancy Experiences: Geohazards & Natural Hazards

Dr Donnelly is experienced in the investigation, monitoring and mitigation of natural hazards and geological hazards. These have been commissioned by government organisations, aid agencies, consultants and private clients. These include; landslides and mass wasting; soil and rock slope instability; geomorphological processes; volcanic eruptions; lahars and mudflows; glacial hazards; karst, dissolution and subsidence; earthquakes, fault reactivation, paleoseismology, induced and triggered seismicity, peak particle velocity vibration, problem soils (shrink-swell, collapsible, compressible, running, liquefaction), flooding and hurricanes; contaminated and derelict land (brownfield sites).

2017: Evaluation of gas hazards (confidential)

Estimation of gas geohazards associated and the provision of advice on gas hazards mitigation during tunnelling for a new mine in Europe.

2017: Peer review of mining risks assessment, (Trans-Pennine Upgrade)

Review of geohazards, mining hazards and risk evaluation for the upgrade and electrification of the Trans Pennine railway, between Manchester and Leeds.

2017: Ground Source Heat Pump (GSHP) and Energy from Flooded Mines (Confidential)

Evaluation of geology and geohazards for the possible installation of GSHP for a proposed major development in the UK. This included the consideration of open loop and closed loop systems. At another site the potential for energy from flooded mine workings was considered.

2016-2017: Evaluation of Coal Mining Hazards and Minewater Blowout (Confidential)

Development of a conceptual 2D geological and hydrogeological model to identify the potential for mining hazards including mine water blowout during the redevelopment of an inner city in the north of England.

2016: Offshore Tidal Wave Energy (Confidential)

Desk study and assessment of coastal and marine geological hazards for the development of an offshore tidal wave energy installation.

2016: Rock Slope Stability Appraisal (Salford City Council)

Engineering geological inspection and survey of a sandstone rock, at Worley Delph, Duke of Bridgewater Canal, to classify failure mechanisms and to provide advice on mitigation and stabilisation to protect the visiting public.

2016-2017: Ground Investigation, Karst, Subsidence and Seismic Geohazards, Dubai, UAE (Dubai Holdings)

Responsible for a desk study followed by the design, implementation and review of a ground investigation comprising the drilling of boreholes, trial pitting, surface and down hole geophysical surveys and laboratory test work. This also included the investigation and management of potential sinkhole, seismic hazards evaluation and geohazards.

2014-2016: Geohazards & Natural Hazards: Trans Anatolian Pipeline, Turkey (TANAP)

Lead geologist for geohazards along the c1800km route corridor of the TANAP gas pipeline, across Turkey from Georgia to Greece. This included an assessment of geomorphology, geohazards and risks associated with 14 active fault crossings, earthquakes and palaeoseismicity, landslides and mountain chain crossings, karst and subsidence, liquefaction and lateral spreading, soil erosion, flooding and river crossings. A geotechnical risk register was developed. Ground investigations were implemented for key infrastructure including roads, metering stations and pumping stations.

2014-2015: Geohazards for New Infrastructure, Turkana, East African Rift, Kenya (Tullow Oil Plc)

Responsible for geophysical and geotechnical investigations to assess the geohazards and risks associated with the siting of the Central Processing Facilities, well pads, airport, roads and associated infrastructure, require to enable future oil extraction, processing and transportation. This included an evaluation of geohazards including determining the location and tectonic activity of faults in the East African Rift (using mainly 2D & 3D seismic reflection and other geophysical methods), assessment of seismic risk (DSHA & PSHA), the design and implementation of geotechnical drilling programs, sampling, testwork and down-hole geophysical surveys.

2000 and 2007: PhD External Examiner, Mining Subsidence and Rock Mechanics

Dr Donnelly was invited to act as external PhD examiner for two PhDs'. One involved the modelling of mining subsidence and the others was on the stability of pillars in abandoned mineworkings.

2015: Geomorphology & Geohazards for Major Gas Pipelines in South Wales (Wales & West Utilities)

Review of a landslide and its potential impact on an existing major gas pipeline.

Geomorphological inspection of a river bank and a geophysical survey for the assessment of geoenvironmental risks and contamination associated with a buried gas holder.

2014-2015: Gas Holder Decommissioning and Demolition (National Grid)

Provision of geotechnical, mining hazard and geohazard advice to Advisian's Land Reclamation Team for gas holder decommissioning at several sites throughout the UK.

2014-2015: Geohazards, Gas Compressor and Infrastructure, Teesside (Px)

Design, implementation and management of a geotechnical and geoenvironmental ground investigation and associated laboratory testwork for a new gas compressor site, at Sealsands, Teesside Industrial Estate.

2014-2015: Geotechnical Team Management and Business Development (Geohazards and Geotechnical)

Responsible for the management of Advisian's geotechnical team and developing new geotechnical consultancy services in the Northern Powerhouse, UK and Internationally.

2014: Karst Geohazards and Subsidence, Cumbria and Derbyshire (Network Rail)

Provision of advice for the investigation of a sinkhole (or crown-hole) possibly associated with the collapse of shallow gypsum and fluorspar workings. The subsidence in Cumbria occurred adjacent to an operational railway line and required to be investigated and remediated.

2010-2014: Rock Slope Stability, Quarry Appraisals, Yorkshire and Leicestershire (Confidential)

Inspection of Buck Park Quarry (Yorkshire), Granitethorpe and Sapcote quarries in accordance with the Quarry Regulations (1989) and the provision of advice for the stabilisation of soil and rock slopes and hydrogeological monitoring for the potential storage of waste.

2012: Landslide Inspection, Hewden Reservoir, Yorkshire (Arley Consulting)

Inspection of a landslide on the flanks of Hewden Reservoir to support a public inquiry for domestic waste landfill.

2011-2013: Mining hazards, landslides, Hameldon Reservoir Dewatering and Decommissioning (Environment Agency)

Geotechnical ground investigations and assessment of mining hazards for the dewatering of Hameldon Reservoir, Accrington, in Lancashire.

2010-2014: Mining hazards, stability Investigation of Milwr Tunnel, North Wales, UK (United Utilities)

Underground inspection an abandoned galena mine and stabilisation of Milwr Tunnel and Herward Shaft and associated mineworkings.

2010-2011: Subsidence and Landslides, Dyffryn Clydach No. 12 Feeder, Gas Pipeline (National Grid)

Design and implementation of a geotechnical and geophysical ground investigation and an assessment of landslides, fault reactivation and mining hazards, at Rhigos Mountain, South Wales, to facilitate repairs on a major gas pipeline.

2011-2013: Carbon Capture and Storage (CCS) Pipeline, Yorkshire to Lincolnshire (MWH Ltd)

Assessment of geohazards and mining hazards for route planning for a CCS pipeline, across Yorkshire and Lincolnshire to the North Sea. This included an assessment of risks associated with major infrastructure crossings, abandoned and active coal and metal mining, landslides and karst.

2003-2010: Peat stability, landslides and mining hazards UK Wind Farms (West Coast Energy, International Power, RWE nPower & Golder Associates Ltd, AMEC, Scottish Power, nPower Renewables)

Engineering geology, geohazards and mining hazards investigation for wind farm infrastructure. This included the design, deployment and management of ground investigations and the assessment of risks associated with landslides, fault reactivation, fissures, past mining, mine entries, karst, peat and the drilling and grouting of abandoned mine shafts and shallow mine workings. Wind farm sites investigated are Farr, Blacklaw, Flimby, Carsington, Derrybrien, Whitelee and Seaham.

2007-2008: Mining Hazards and Geohazards, Housing Development and Infrastructure, Scotswood, (Newcastle upon Tyne City Council)

Design and management of ground investigation to assess hazards associated with shallow, abandoned mine workings, mine entries and mine gas for houses and associated infrastructure.

2006-2009: Mining Hazards and Geohazards, Knostrop Sewage Works (Laing O'Rourke and Yorkshire Water)

Design and management of grouting works for the stabilisation of shallow, abandoned mine workings and mine entries during the construction of the Knostrop Sewage Works.

2003-2008: Slope Stability of Cuttings and Embankments (Network Rail, English Nature & CCW)

Assessment of the stability of rock and soil slopes on the UK rail network, and at several SSSI and RIGS sites throughout the UK:

2004: Abandoned Coal Mine Shaft, BBC Site, Leeds (Downing Developments Ltd)

Investigation and stabilisation of an abandoned mine shaft, uncovered during piling works at the former BBC headquarters, Leeds city centre.

2004: Assessment of Abandoned Limestone Workings for Infrastructure, Straiton (Edinburgh City Council)

Investigations to locate shallow, room and pillar limestone workings and an abandoned mine shaft for land development and infrastructure.

1998-2003: Minewater Rebound, (The Coal Authority, Environment Agency & British Geological Survey)

Provision of engineering geology investigations for the design of mine water treatment schemes throughout the UK.

1998-2003: Mining Hazards and Liabilities (European Coal, Steel Commission & British Geological Survey)

Assessment of mining hazards associated with coalfield abandoned in the UK, including subsidence, fault reactivations, fissures, mine shafts, adits, spontaneous combustion, mine gas and dereliction.

1997-1999: Landslide at Edinburgh Castle, Dumbarton Castle & Smailholm Tower (Historic Scotland & British Geological Survey)

Investigation of landslides and unstable rock slopes to preserve the sites of historical value and to protect the visiting public. This included geomorphological mapping, trenching, geophysical surveys and the provision of rock and soil slope mitigation options.

Selected Research Experiences

1998-2019: Teaching, Training, Mentoring, Coaching

- A. Guest lecturer for BSc and MSc courses new modules in geohazards and applied geology at universities of Nottingham Trent, Leicester, Queens and Liverpool (pending).
- B. Formal and informal PhD supervision at universities of Nottingham, Birmingham and Keele.
- C. Primary and secondary school teaching and sixth form (A level) teaching and mentoring.
- D. Princes Trust scheme lecturing, mentoring and coaching.
- E. Lecturer for Earth Science Teachers Association and International School Fair, Camborne International Academy.
- F. CGeol and CSci mentor.

2011-2020: Initiative on Forensic Geology (International Union of Geological Sciences)

Dr Donnelly is the chair and founder of the IUGS Initiative on Forensic Geology. This was established to develop and promote research the applications of forensic geology around the world. This involves collaboration with CSIRO, Australia; The James Hutton Institute, Aberdeen, Scotland, UK; California Department of Justice, Los Angeles, USA; SUNY Buffalo State, New York, USA; Australia Federal Police; Federal Bureau of Investigation (FBI), Virginia, USA; Queens University Belfast, Northern Ireland; Helford Geoscience LLP, Cornwall, UK; University College London, JDI Centre for the Forensic Sciences, London, UK; University College London, JDI Centre for the Forensic Sciences, London, UK; Microtrace LLC, Illinois, USA; Washington State Patrol Crime Lab; Instituto Nacional de Medicina Legal y Ciencias Forense, Bogota, Colombia; Brazilian Federal Police, Curitiba, Brazil; Geoscienze Forensi Italia (Formerly Servizio Polizia Scientifica), Rome, Italy; Russian Federal Centre of Forensic Science and Soil Trace Evidence Experts, Moscow, Russia; Abu Dhabi Police, Forensic Evidence, United Arab Emirates; National Research Institute of Police Science, Japan; University of Technology, Sydney, Australia; Basin and Reservoir Lab, Dalhousie University, Halifax, Nova Scotia, Canada; University of Pretoria (Formerly, Forensic Science Laboratory, South African Police Service), South Africa and Institute of Forensic Science, Ministry of Public Security, Division of Trace Evidence Analysis, China.

2006-2020: Forensic Geoscience Group (Geological Society of London)

Dr Donnelly is the founder of GSL FGG and served as its first chair. This was established to develop and promote research the applications of forensic geology in Great Britain. This includes collaboration forensic geology, environmental geoforensics and geohazards. This involves collaboration with universities at Keele, Staffordshire, University College London, Queens University Belfast and University of South Wales.

1991-2017: Landslides and Fault Reactivation by Mining and De-glaciation (British Geological Survey & Various)

Ongoing research to understand the mechanism of rotational slip landslide reactivation and fault reactivation cause by mining subsidence, valley deglaciation (gravitational stress relief and rebound) in South Wales and the Pennines.

2011-2017: Glacial and Periglacial Working Group (Geological Society of London)

Dr Donnelly is steering committee member and co-author with responsibilities for landslides, fault reactivation caused by deglaciation, cambering, valley bulging and the engineering properties and behaviour of Quaternary soils.

2010-2019: Abandoned Mineworkings Manual (CIRIA, RP940)

Dr Donnelly is steering committee member and co-author for the production of the industry standard replacing, 'CIRIA 32 (1984) Construction of Over Abandoned mine Workings'. This new industry standard includes; review of mining methods, mining subsidence, faults and fissures, mining induced landslides, mining induced seismicity, surface stability, mine water rebound, acid mine drainage, legislation, regulation, ground investigation, treatment and mitigation, building foundations and health and safety.

2016-2017: Holistic Integrity Test (HIT) for Geohazards and Natural Hazards (Confidential)

The Holistic Integrity Test (HIT) was develop by Arup and it is in the early stages of research and development. This is a scalable 'stress test' that is applicable to natural hazards to assess coping capability. This advances the 'Risk = Probability x Consequence' approach. HIT is being developed to assess the capability of a natural hazards, such as flooding, landslides, volcanic eruptions and induced seismicity to cope effectively with an extreme event. The ten key stages are; awareness, preparedness, forewarning, robustness, response, recovery, resources, coping, adaptability and surveillance (ongoing).

2016-2017: Resilient Cites (Confidential)

The global exposure to natural disaster has risen in recent decades and this likely to continue to threaten global population and major cities. A new set of principles was developed by Arup for its client to guide planning, design, construction and operation of key components of city infrastructure to improve reliance. This forms the basis for future research and to better understand the impact of natural hazards, such as the Holistic Integrity Test (ongoing).

2017: 'Science4CleanEnergy' (S4CE) (European Union, Horizon 2020)

Participation in a project involving geological hazards and microseismic monitoring networks related to deep drilling in Serbia and Cornwall, UK, associated with oil and gas exploration and geothermal energy, respectively.

2003-2006: Landslide & Fault Reactivation South Wales (Blaenau Gwent Council, The Coal Authority & British Geological Survey)

Investigation of landslides, mining subsidence, fissures, graben and flooding during the rehabilitation of Ebbw Vale steel works in South Wales.

2000: Coal Mining Hazards, Ukraine (Confidential)

Provision of geological advice for the investigation and mitigation of subsidence, fault reactivation and gas hazards in the Donetsk Coal Basin, Ukraine.

2000: Coal Exploration, Geohazards and Mining Hazards Training, CMPDI, India (World Bank)

Review of coal exploration strategies and the provision of knowledge transfer events, capacity building and training at Ranchi and Singrauli. Provision of training on mineral exploration and the evaluation of mining hazards and landslides.

1996-1998 & 2005-2006: Montserrat Volcanic Eruption, West Indies (Department for International Development & British Geological Survey)

- A. Responsible for the provision of engineering geological support to assist the Montserrat Volcano Observatory (MVO) with the management of a volcanic hazards monitoring programme, during the eruption of the Soufriere Hills volcano.
- B. Design and implementation of a ground investigation for a new bridge across the Belham Valley.
- C. Landslide investigation at the MVO.

2002-2006: PhD External Supervisor (University of Birmingham)

External supervisor for PhD on mining hazards including minewater rebound and ground deformation in the UK Midlands and North-east of England.

2003-2004: Landslides, Faslane & Couplort Nuclear Bases, Scotland (HMNB Design Authority)

Investigation of landslide hazards and geotechnical risks to strategic military infrastructure at both naval bases.

2001: Geohazards and Mining Hazards NW Pakistan (Kashmir)/Afghanistan (DFID)

Investigation of geology, resources, mining hazards and geohazards at a high altitude artisanal coal mine in the Karakoram Himalaya.

1998: Low Level Radioactive Waste Repository, Dounreay (UKAEA & British Geological Survey)

Engineering geology investigation for a low level radioactive waste repository. This included the mapping of rock mass discontinuities and the design of open pit rock slopes.

1996: Landslides in the Nepal Himalayas (British Geological Survey)

Observations of landslide and glacial geohazards.

1995-1998: Karst geohazards and subsidence (British Geological Survey)

Investigations to determine cause of subsidence in Ripon North Yorkshire, following the development of sinkholes due to the dissolution of gypsum.

1995-1998: Geohazards Susceptibility Package (GHASP) (British Geological Survey)

Responsible for the management and upgrade GHASP for the UK insurance industry to evaluate house insurance premiums related to landslides, mining subsidence, shrink-swell clay, dissolution and compressible soils (peat and alluvium).

1995-1998 Geophysical Surveys, Sellafield (BNFL, NIREX & British Geological Survey)

Design and implementation of 2D resistivity and conductivity geophysical survey to characterise Quaternary sediments, for the storage of high level radioactive waste in an underground RCF facility. Cross hole seismic and resistivity tomography surveys were also conducted to verify the foundation conditions at the Mixed Oxygen (Mox) Plant:

1995-1996: Nuclear Waste, Rock Characterisation Facility (RCF), Sellafield (NIREX & British Geological Survey)

Geotechnical logging of boreholes for the characterisation of faults and rock mass discontinuities for the storage of high level radioactive waste in an underground RCF facility:

1995: 3D Cross Hole Geophysical Tomography (Fugro, Babbie, Ministry of Defence & British Geological Survey)

Near shore geophysical surveys, in the River Tamar, to characterise sea bed sediments for construction and foundation design.

1994-2003: Mining Hazards, UK (The Coal Authority and Various Clients)

Provision of advice on the cause and trigger of mining hazards associated with abandoned coal mining.

1994-2003: Mining Hazards, Colombia (Ecocarbon)

Investigations of mining induced landslides, subsidence and fault reactivation in Antioquia, Colombia. Geological inspection of open pit slope failure and spontaneous combustion at El Cerrejon Zona Norte.

1994-2003: Geohazards, Colombia (Ingeominas)

Collaboration with Ingeominas for the geohazards evaluation of Medellin and Bogota, and hazards zonation on Galeras and Nevado del Ruiz volcanoes.

1999: Abandoned Bauxite Mine, Dominican Republic, West Indies (SYSMIN, European Union)

Geological and geoenvironmental investigations for the rehabilitation of the Las Mercedes open pit bauxite mining in the Dominican Republic.

1991-1994: Mining Subsidence Induced Fault Reactivation (University of Nottingham)

Investigation of the causes and mechanisms for mining subsidence induced fault reactivation throughout the United Kingdom, Colombia and Ukraine.

1991-1994: Tectonic Fault Reactivation (British Geological Survey & United States Geological Survey)

Investigation of ground deformation and rupture at earthquake generated fault scarps in California, Nevada, Wyoming and Montana:

1991-1994: Research, Monitoring and Evaluation of Volcanic Eruptions (The Open University, British Geological Survey and various universities in Mexico, Sicily, Colombia, Nicaragua, Costa Rica)

Responsible for the 3 Dimensional surveying to quantify ground deformation and fault reactivation associated with the eruptions of Mt Etna (Sicily), Masaya (Nicaragua), Poas (Cost Rica). Further collaboration took place with volcano observatories in Italy (Vesuvius), Colombia (Nevado del Ruiz and Galeras) and the Canary Islands.

1991-1994: PhD Research, Strata Control and Rock Mass Instability (Various Underground Mines)

Geological mapping of rock mass discontinuities for strata control at Daw Mill, Asfordby and Trentham collieries and in the Donetsk Coalfield, Ukraine.

Forensic Geology

1994-2021: Forensic Geology Overview

Dr Donnelly has aided and assisted the Police and Law Enforcement in the UK and internationally by designing and implementing covert ground searches and proving advice for the UK National Search Adviser. He has pioneered and developed new search strategies and techniques now used by the Police to locate homicide graves, firearms weapons, drugs and other buried items related to critical cases, missing persons (MISPER), homicide, organised crime and terrorism. This has involve collaboration with the Home Office, Centre for Applied Science & Technology (CAST), Ministry of Defence (DSTL) and military (British Army, Royal Engineers and Royal Air Force, Joint Air Reconnaissance Intelligence Centre (JARIC)). Further details and case work can be made available on request

2017-2019: Home Office (Centre for Applied Science and Technology)

Dr Donnelly is an invite member of the Home Office (CAST) Search Technology User Group (STUG) to address gaps in technology or equipment related to front line policing operational support, serious crimes and counter terrorism.

2003-2021: Geological (Trace) Evidence (Confidential)

Provision of advice or guidance to the Police on the collection, analysis and interpretation of geological evidence, including minerals, soils, rocks, groundwater and volatile organic compounds, for major crimes including murder, rape and fraud.

2003-2019: Expert Geological Adviser for UK Police (Confidential)

Registered as an 'Expert Adviser' with the National Crime (NCA) Agency (formerly the National Policing Improvements Agency (NPIA), Serious Organised Crime Agency (SOCA)).

2006-20179 UK and International Police Training, Knowledge Transfer, Capacity Building & Outreach

Responsible for the design and delivery of forensic geology training in for the UK National Crime Agency, FBI, Australian Federal Police, Colombian Federal Police, Brazilian Federal Police, Russian Federal Centre of Forensic Science and the Japan Police Training College.

2008-2019: Leachate Plume Generation

Dr Donnelly has worked in collaboration with the University of Tennessee, Department of Forensic Anthropology & Oak Ridge National Laboratory (The Body Farm, Knoxville, USA) and the Australian Taphonic Research Facility (AFTER) to understand the influence of geology on human decomposition, the generation of leachate plumes and volatile organic compounds (VOC).

2006-2019: International Development of Forensic Geology

Dr Donnelly is the founder and First Chair of the Geological Society of London, Forensic Geoscience Group (FGG); Founder of the Geoforensic International Network (GIN); Founder and Chair of the International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG).

2002: Westminster Palace, House of Commons

Dr Donnelly was invited to the All-Parliamentary Committee for Earth Sciences to give a presentation on the Moors Murders and Forensic Geology at Westminster Palace, House of Commons.

Expert Opinion

2017: Expert Witness, CPR Part 35 Report (confidential)

Commissioned by a client's solicitor to carry out a geohazards investigation to determine if a substantial structure suffered severe damage by a landslide, subsidence or differential settlement.

2008, 2010-2011, 2015-2016: Fault Reactivation & Mining Subsidence (Coal Authority)

Provision of advice on fault reactivation and mining subsidence to Wardell Armstrong, the Coal Authority and their solicitors for alleged mining subsidence and fault reactivation damage to parts of an historical, grade I listed structure. This included an evaluation of the timing and magnitude of the alleged ground movements and an inspection of the property and adjacent ground.

2013-2014: Kellingley Colliery Potential Fault Reactivation (Confidential)

Review of potential mining subsidence and fault reactivation beneath a power station and glass production factory during coal mining from a Kellingley Colliery.

2012: Mine Inrush, South Wales (Confidential)

Provision of general advice on geology following the inrush at a Mine, which resulted in fatalities.

2006: Coal Mining Arbitration (Addleshaw Goddard)

Provision of geological advice in association with the failure of a longwall coal face due to weak floor conditions in an operating mine.

2008-2009: Fault Reactivation Expert Advice (The Coal Authority)

Provision of advice and geological support for the Coal Authority for an alleged fault reactivation claim against the Coal Authority for damage to a house in Northumberland.