



**International Union of Geological Sciences (IUGS)  
Initiative on Forensic Geology (IFG)**

**Date:** 31<sup>st</sup> May 2012

**Our ref:** IUGS-IFG/LJD/EC/Submitted

**Attention:** Professor Alberto Riccardi

Professor Alberto Riccardi  
President  
International Union of Geological Sciences  
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Dear Prof Riccardi

**Summary Report to the International Union of Geological Sciences (IUGS)  
On the Initiative on Forensic Geology (IFG), for the Period 2008-2012  
For the IUGS Executive Committee (EC) meeting  
To be held at the 34<sup>th</sup> International Geological Congress (IGC2012)  
Brisbane, Australia, 5<sup>th</sup>-10<sup>th</sup> August 2012**

Further to your letter dated 18<sup>th</sup> May 2012, we are pleased to provide information to the IUGS Executive Committee, which we understand is required for discussions at the 34<sup>th</sup> International Geological Congress, in Brisbane, to be held on 5<sup>th</sup> -10<sup>th</sup> August 2012.

The information we have provided is consistent with your request and includes the following:

- Information on IFG that covers the time elapsed since the last International Geological Congress (IGC) in 2008; and
- A list of any new officers (2012-2016) being proposed by IFG.

The information in this report as been based on and includes extracts from the following report and other published articles:

- Donnelly, L. J. 2011. IUGS-IFG Annual Report for 2011. Report for the IUGS Executive Committee, December 2011 (unpublished).

**1 Information on IFG that covers the time elapsed since the last International Geological Congress (IGC) in 2008**

**1.1 Overview of Forensic Geology**

Forensic geology involves the applications of geosciences to; policing, law enforcement or other investigations, which may potentially be relevant for a court of law. Forensic geoscientists may be called upon to be an expert witness or to provide an expert opinion for a variety of cases and these may include for example; domestic incidents, murder, rape, counter terrorism, kidnapping,



humanitarian incidents, environmental crimes, geohazards, mining incidents, geotechnical and civil engineering failures, materials engineering, precious minerals and metals theft and fraudulent crimes. In general, geologists may support the police in the following two broad fields:

- Geological (trace) evidence; and
- Ground searches for burials.

Geological (trace) evidence involves the collection of soil, rock fragments, micro-fossils or man-made materials derived from geological raw materials (such as glass, bricks, concrete and tiles). These are then analysed before being evaluated with some knowledge of the particular circumstances of the investigation. The aim may be to help determine if there could be an association between the samples collected. This is based on the premise that every contact leaves a trace and geological evidence may be transferred onto the body of a victim, offender or associated item/object. Alternatively, the samples may be analysed to determine where (the soils or fragments) may have originated. Both approaches may assist with certain types of police investigations. By comparison, ground searches are conducted to locate burials, which may include for example; homicide graves, mass genocide graves, weapons, firearms, drugs or items of value that have been buried beneath or concealed on the ground surface as part of a criminal act. These searches often may now include modified conventional mineral exploration strategies or geotechnical ground investigation techniques, which are adopted and applied in a forensic and law enforcement context. Although the documented history of forensic geology can be traced to the latter half of the 19<sup>th</sup> Century, in the past ten years or so have there been significant developments in the multidisciplinary fields of forensic geology throughout the world. Since 2008, there have been numerous international meetings, conferences, seminars and training events on or including different aspects of forensic geology. Furthermore, at least 3 text books have been published on the subject and numerous technical papers in scientific journals, conference proceedings, magazines and newspapers. This wealth of activity demonstrates the global interest in the multi-disciplinary subject of forensic geology.

## **1.2 IUGS, Commission on Geosciences for Environmental Management (GEM), 2009-2011**

Following the success of the Geological Society of London Forensic Geoscience Group (FGG) established in 2006, IUGS-GEM subsequently developed a Working Group on Forensic Geology, during the GEM annual meeting, held in Montevideo, Uruguay, in 2009. The IUGS-GEM Forensic Geology Working Group established an international committee, consisting of operationally based and research forensic geologists from different parts of the world. From 2009 to 2011 a series of training courses, knowledge transfer and outreach events on different aspects of forensic geology were held in different parts of the world (Table 2).

## **1.3 IUGS, Initiative on Forensic Geology (IFG), 2011-2012**

The International Union of Geological Sciences (IUGS), Task Group on Forensic Geology was approved during the 62<sup>nd</sup> Executive Committee meeting of the IUGS, which was held at UNESCO headquarters, in Paris, on 22<sup>nd</sup> February 2011. An inaugural meeting was held in Rome on 18<sup>th</sup> and 19<sup>th</sup> September 2011 and the Forensic Geology Task Group became formally named as the IUGS, Initiative on Forensic Geology (IFG). IUGS-IFG also held an outreach event at Roma Tre University 20<sup>th</sup> September 2012.

## **1.4 IFG Structure**

IFG governance and management is summarised on Table 1.



POSITION	NAME	COUNTRY	AFFILIATION
Chair	Laurance Donnelly	UK	Wardell Armstrong International
Vice-Chair	Rob Fitzpatrick	Australia	CSIRO
Treasurer	Duncan Pirrie	UK	Helford Geosciences LLP
Secretary	Marianne Stam	USA	California Department of Justice
Webmasters	Jan Mahoney	USA	CSIRO
Information Officer	Elisa Bergslien	USA	Buffalo State College
Geoforensic Law Enforcement Adviser	Mark Harrison	Australia	Australia Federal Police (AFP)
FBI Adviser	Jodi Webb	USA	Federal Bureau of Investigation (FBI)
Training and Publications	Alastair Ruffell	Ireland	Queens University Belfast
Communication	Lorna Dawson	Scotland	The Hutton Institute
Geological (trace) Evidence Advisors	Skip & Christopher Palenik	USA	Microtrace
Honorary Committee Member	Raymond Murray	USA	Forensic Geologist, Montana
Officer, USA	Bill Schneck	USA	Washington State Patrol Crime Lab
Officer, Latin America	Carlos Molina Gallego	Colombia	Instituto Nacional de Medicina Legal y Ciencias Forense
Officer, Europe	Rosa Maria Di Maggio	Italy	Servizio Polizia Scientifica
Officer, Russia	Olga Gradusva & Ekaterian Nesterina	Russia	Russian Federal Centre of Forensic Science
Officer, Middle East	Ahmed Saeed Al Kaabi	UAE	Abu Dhabi Police
Officer, Japan and Asia	Ritsuko Sugita	Japan	Criminal Investigation Bureau of National Police Agency
Officer, Australia	James Robertson	Australia	University of Canberra
Officer, Africa	Roger Dixon	South Africa	Forensic Science Lab South African Police Service
Officer, Pacific and Canada	Shari Forbes	Hawaii/Australia	University of Sydney

**Table 1. IUGS-IFG committee members in 2011 and their professional affiliations**



## 1.5 IUGS-IFG Aim and Objectives

The aim of IUGS-IFG is to develop forensic geology and promote its applications throughout the world. The principal objectives of the IUGS-IFG are to:

- Collate and disseminate data and information on forensic geology applied to policing and law enforcement, criminal, environmental and civil investigations;
- Promote international meetings, seminars, conferences and training;
- Develop a 'Committee' to act as principal advisers, collaborators and active participants;
- Develop an international network whereby each 'member' will act as a principal contact in their respective country for the collation and dissemination of information on forensic geology;
- Collate, make available and where appropriate review any existing documentation and publications in forensic geology; and
- Produce a document endorsed by the Committee to be called '*A Guide to Forensic Geology*'.

## 1.6 IUGS-IFG Approach

IUGS-IFG aim and objectives will be achieved consistent with the broad objectives of IUGS as follows:

- **Capacity building:** By raising levels of awareness, knowledge and providing information about forensic geology;
- **Technology transfer:** The actual improvement in skill sets; and
- **Outreach:** Educating and informing the police and law enforcement organisations and the 'general public' about forensic geology.

IUGS-IFG currently is planning to provide capacity building, technology transfer and outreach events in different parts of the world over the next 3-5 years.

## 1.7 A Guide to Forensic Geology

IUGS-IFG plans to produce a document to be called; '*A Guide to Forensic Geology*'. This seeks to providing information and guidance on the practical applications of forensic geology and is envisaged to be of value to geologists, forensic scientists and police/law enforcement that currently are or may potentially become engaged in forensic geology. This guide will be written by forensic geologists and selected specialists from consultancy, academia, the police and law enforcement and it will be subjected to internal and external peer review.

## 1.8 IFG Finance & Funding

IFG obtains financial support from IUGS amounting to \$US15,000 per year. In addition, for the period 2011-2012, 'in-kind' value of support has been considerable from the IFG committee members. An estimated commercial value to the time spent on the IFG to date would be in excess of \$US124,000 equivalent. Furthermore, participation in the IFG inaugural meeting was met directly by some of the participants' employers with a value of approximately \$16,000 equivalent.

## 1.9 Summary of Main Achievements

A summary of events in Forensic Geology since 2008, including both IUGS-GEM and IUGS-IFG are summarised in Tables 2 and 3.



EVENT	DATE	LOCATION	COMMENTS
Training	4-8 <sup>th</sup> January 2008	Manchester, UK	Forensic Geology & Search Techniques. UK Police, Tactical Aid Unit
Outreach & Knowledge Transfer	13 <sup>th</sup> March 2008	Belfast, Ireland	The Role of Geoforensics in helping the Police investigate crimes and the launch of 'Geoforensics'. Queens University Belfast, Department of Geography
Outreach	22 <sup>nd</sup> April 2008	Tennessee, USA	Collaboration in forensic geology and search, University of Tennessee, Department of Forensic Anthropology (The Body Farm)
Outreach	12 <sup>th</sup> -13 <sup>th</sup> March 2008	Buckinghamshire, UK	The Home Office Scientific Branch (HOSDB) annual conference and exhibition
Outreach	17 <sup>th</sup> May 2008	Manchester, UK	How do Geologists Help the Police Solve Crime? A Presentation on Forensic Geology. Manchester Museum Public Lecture, Oxford Road
Knowledge Transfer	12 <sup>th</sup> July 2008	Porto, Portugal	Forensic Geology & Crime Scene Searches for Missing Persons. Institute of Criminal Investigations, Department of Geology, University of Porto, Faculty of Geology, Science & Chemistry
Outreach	17 <sup>th</sup> December 2008	London, UK	Geoscientific Equipment and Techniques at Crime Scenes. 2 <sup>nd</sup> FGG Meeting of the Geological Society of London, Forensic Geoscience Group.
Outreach	October 2008	Houston, USA	The Future of Geoforensics, Abstract, GSA meeting Houston, USA
Outreach	8 <sup>th</sup> April 2009	London, UK	Sherlock Homes, Rocks, Soils & Murder. The Geological Society of London, History of Geology Group, Burlington House
Outreach	May 2010	Birmingham	Home Office, Forensic Science Regulation Unit
Outreach	2 <sup>nd</sup> June 2009	Nottingham, UK	The Applications of Forensic Geology to Assist with Search, in association with the British Geological Survey, National Policing Improvements Agency (NPIA) and the Dutch Police
Training	30 <sup>th</sup> March-4 <sup>th</sup> April 2009	Bogota, Colombia	First Ibero-American Course on Forensic Geology. Universidad Nacional de Colombia, Instituto Nacional de Medicina Legal y Ciencias Forenses Bogota, Colombia
Outreach	11 <sup>th</sup> March 2009	Bristol, UK	How do Geologists' Help the Police Solve Crime? Southwest Regional Group of the Geological Society of London, University of Bristol, Department of Geology
Outreach	15 <sup>th</sup> July 2009	London, UK	Using Geology to Assist in the Search for and Understanding of, Buried Human Remains. International Crime Conference, British Library
Outreach	27 <sup>th</sup> September 2009	Oldham, UK	How Geologists, Archaeologists & Anthropologists Help the Police Solve Crime. Saddleworth Archaeological Trust, Masonic Hall, Saddleworth
Outreach	12 <sup>th</sup> October 2009	Montevideo, Uruguay	Establishment of an International Working Group on Forensic Geology. The International Union of Geological Sciences, Geosciences for Environmental Management, Montevideo, Uruguay

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Knowledge Transfer	11 <sup>th</sup> November 2009	Bournemouth, UK	Geological and the Search for a Buried Homicide Grave. National Policing Improvement Agency (NPIA) & Police National Search Centre (PNSC). Developing the PoISA role to meet the challenges. PoISA Conference
Outreach	17 <sup>th</sup> December 2009	London, UK	Introduction to Forensic Geology and the Search for a Buried Homicide Grave? Kingston University, Faculty of Science, School of Geography, Geology and the Environment, Kingston-upon-Thames
Outreach	5 <sup>th</sup> December 2009	Japan	Development of Forensic Geology. A one day event held at the Symposium on Geo-Environments and Geo-Tectonics. Hosted by Japanese Society of Geo-Pollution Science, Medical Geology and Urban Geology
Outreach	11 <sup>th</sup> March 2010	Keele, UK	Introduction to Forensic Geology and the Search for a Buried Homicide Grave? University of Keele, Department of Geology
Training	19 <sup>th</sup> -23 <sup>rd</sup> July 2012	Aguascalientes, Mexico	Course of Forensic Geology for Experts of General Direction of Expert Services pertaining to the Attorney General of the State Justice (Procuraduría General de Justicia del estado)
Outreach	18 <sup>th</sup> September 2010	Leicester, UK	Geoforensic in Law Enforcement. Keynote Speaker. Earth Science Teachers' Association (ESTA) Conference 43rd Annual Course and Conference Department of Geology, University of Leicester
Outreach	4 <sup>th</sup> -5 <sup>th</sup> October 2010	Windhoek, Namibia	IUGS GEM Forensic Geology Working Group Forensic Geology Geological Survey of Namibia/Ministry of Mines & Energy
Knowledge Transfer	8 <sup>th</sup> October 2010	Windhoek, Namibia	Geological Techniques in Search. Presentation to the Namibian/South African Police, Friday 8 October 2010, Windhoek, Namibia, 11:00-12:00
Outreach	23 <sup>rd</sup> October 2010	Hull, UK	The role of Geoforensics in Policing & Law Enforcement: How do Geologists help the Police Investigate Crime? Yorkshire Geological Society & Hull Geological Society. Theme: Modern Techniques in Geology. University of Hull, Geography Department, Cohen Building, Cottingham Road, 14:00-15:00
Outreach & Knowledge Transfer	4 <sup>th</sup> November 2010	California, USA	3rd International Soil Forensics Conference 2010, Long Beach Hyatt Regency Hotel, California, USA
Knowledge Transfer	5 <sup>th</sup> November 2010	Los Angeles, USA	An Introduction to Forensic Geology: How may Geologists help the Police to Investigate Crime? Presentation to Los Angeles Police Department (LAPD), Federal Bureau of Investigation (FBI) & Geoforensics Search International (GSSI). Los Angeles Sheriff's Office, 1800 Paseo Rancho Castilla, Los Angeles California, USA
Outreach & Knowledge Transfer	5 <sup>th</sup> November 2010	Lyon, France	Forensic Geology INTERPOL conference

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Outreach	25 <sup>th</sup> November 2010	Cardiff, Wales	Forensic Geology in Policing & Law Enforcement. Invited after dinner speaker. Institution of Civil Engineers (ICE), The Geological Society of London (GSL) South Wales Group. Park Plaza Hotel, 2010, 21:30-2:30
Outreach	6 <sup>th</sup> December 2010	Cornwall, UK	Developing the Role of Forensic Geology (Geoforensics) in Policing & Law Enforcement: How do Geologists help the Police Investigate Crime? Wardell Armstrong International, Monthly Internal Seminars, Wheal Jane, 16:00-17:00
Outreach	16 <sup>th</sup> December 2010	London, UK	Environmental and Criminal Forensics. Invited Chair of session, Geological Society of London, Forensic Geoscience Group Conference
Knowledge Transfer	21 <sup>st</sup> December 2010	East England, UK	Forensic Geology & Search Techniques. UK Police, East of England
Outreach	10 <sup>th</sup> February 2010	Oxford, UK	The role of Forensic Geology in Policing and Law Enforcement. How do geologists help the Police investigate Crime? Oxford University, Department of Geology, 16:00-1700
Meetings	February-December 2011	UK	Establishment of IFG committee, bank account, web site, flier and logo (ongoing)
Meetings	22 <sup>nd</sup> February 2011	Paris, France	IUGS approval of the Task Group on forensic geology, 62nd Executive Committee Meeting of the IUGS
Knowledge Transfer	10 <sup>th</sup> March 2011	North England, UK	The Role of Forensic Geology in Policing: Developing a Strategy for Ground Searches and Burials. A UK North Police Headquarters
Outreach	23 <sup>rd</sup> March 2011	Hampshire, UK	The Home Office Scientific Branch (HOSDB) annual conference and exhibition
Outreach	24 <sup>th</sup> March 2011	Leicester, UK	Introduction to Forensic Geology. University of Leicester, Department of Geology, Bennett Building, 11:00-12:30
Outreach & Knowledge Transfer	13 <sup>th</sup> September 2011	Bradford, UK	Advances in Forensic Geology, BBC/Media interview. British Festival of Science, University of Bradford

**Table 2: Summary of completed IUGS-GEM, Forensic Geology events, 2008-2011**



EVENT	DATE	LOCATION	COMMENTS
IFG Inaugural meetings	18 <sup>th</sup> -19 <sup>th</sup> September 2011	Rome, Italy	Inaugural meeting of IFG, approval of committee and establishment of IFG aims and objectives
Outreach	20 <sup>th</sup> September 2011	Rome, Italy	Deliver of lectures on geological (trace) evidence and search and an overview of forensic geology to students and some police officers, at Rome Tre University
Outreach	1 <sup>st</sup> November 2011	Liverpool, UK	The Role of Geoforensics (Forensic Geology) in Policing & Law Enforcement: How do Geologists' help the Police Investigate Crime? Liverpool Geological Society, John Moores University, Byrom Street, 2011, 19:30-20:30
Knowledge Transfer & Training	4 <sup>th</sup> December 2011	Manchester, UK	Search Strategies and Geological Techniques to Locate Graves. UK Police and Home Office, Manchester, 16:00-20:00
Outreach	6 <sup>th</sup> February 2011	Blackpool, UK	How Forensic Geology can help in the solving of crimes. Blackpool Geographical Association, The Blackpool Sixth Form College, 18:30-19:30.
Outreach	21 <sup>st</sup> February 2012	Glasgow, Scotland	Developing the Role of Forensic Geology in Policing and Law Enforcement. Central Scotland Group of the Geological Society, 18:00-19:00hrs
Outreach	February 2012	Atlanta, Georgia	Forensic Geology, American Academy of Forensic Sciences meeting
Outreach	1 <sup>st</sup> March 2012	London, UK	How do Geologists' help the Police Investigate Crime? The Applications of Forensic Geology to Geological (Trace) Evidence and Search. The De Le Beche Society, 17:00-18:00
Knowledge Transfer & Training	24 <sup>th</sup> & 25 <sup>th</sup> April 2012	Coventry, UK	Support to the UKs, National Policing Improvements Agency (NPIA), training event on search and forensic archaeology
Knowledge Transfer	12th & 13th April 2012	Madrid, Spain	Support to Civil Guard Training on Soil Forensics
Knowledge Transfer & Outreach	27 <sup>th</sup> May 2012	St. John's, Canada	Geological Association on Canada (GAC), and Mineralogical Association of Canada (MAC), Forensic Geology Session
Outreach	11 <sup>th</sup> June 2011	Wirral, Cheshire, UK	How Forensic Geology can help in the solving of crimes. Neston Cricket Club, Station Road, South Wirral, Cheshire, 2012, 18:30-20:00 (pending)
Knowledge Transfer	5 <sup>th</sup> June 2012	Savannah, Georgia, USA	One day lecture and laboratory on soil analysis (Pending)
Outreach	6 <sup>th</sup> August 2012	Brisbane, Australia	International Geological Congress (IGC) 2012, Forensic Geoscience Session (Pending)
Training	8 <sup>th</sup> & 9 <sup>th</sup> August 2012	Brisbane, Australia	Joint IFG & AFP two day workshop on the design, management and implementation of ground searches using geophysical equipment (Pending)
Outreach & Training	20 <sup>th</sup> -24 <sup>th</sup> August 2012	The Hague, Netherlands	6 <sup>th</sup> European Academy of Forensic Science Conference & 4 <sup>th</sup> Soil Forensic International Conference

**Table 3: Summary (to-date) of completed and pending IUGS-IFG, Forensic Geology events, 2011-2012**



## **2.0 A list of any new officers (2012-2016) being proposed by IFG**

IUGS-IFG currently has no new officers being proposed for 2012-2016.

We trust the above information is suitable for the IUGS EC meeting in Brisbane. Should you need any further more detailed information do not hesitate to contact us.

Yours sincerely



**Dr Laurance Donnelly**  
**Chair, IUGS-IFG**