

Programme Book



# FIG Working Week 2016

2-6 MAY CHRISTCHURCH NEW ZEALAND

Recovery

from disaster

Organised by



Platinum Partners



Diamond Partner



## Contents

Welcome Messages	2
Conference Organisers	5
Organising Committee	5
Conference Theme	7
Opening Ceremony	8
Plenary Sessions	9
Partners and Supporters	12
FIG Corporate Members	15
General Conference Information	16
Contacts	16
Programme at a Glance	17
FIG Sessions and Pre-Conference Events	19
Technical Tours	20
Social Programme	21
Accompanying Persons Programme	21
Social Tours	22
Conference Venues	25
Exhibition	26
Technical Programme	27
• Pre-Conference Events (30 April – 2 May)	27
• Overview (by rooms) (3–5 May)	28
• Tuesday 3 May	30
• Wednesday 4 May	34
• Thursday 5 May	40
• Friday 6 May	45
General Information About Christchurch	47
– including timetables for the shuttlebuses	
Christchurch Central City Map	49
The FIG Foundation	50

## Welcome Messages



### Greetings from Chryssy Potsiou

*A warm welcome  
to the FIG Working Week 2016.*

The overall theme of this year's Working Week, "Recovery from Disaster", is chosen to highlight that we are or-

ganising this conference in a very special and symbolic place that suffered immensely from the devastating earthquakes of 2010–2011 and is recovering successfully, ensuring a better future. Surveyors with their innovative expertise have contributed significantly to this rapid recovery and have demonstrated the value of our profession.

As humanity experiences all types of equally harmful disasters natural, social and economic, surveyors are committed to make a global change happen quickly. They focus to develop tools and solutions that may both prevent disasters to happen or help people recover quickly if these disasters actually occur. This Working Week will be different in many respects, and special in a sense that not only will the plenary sessions concentrate on various kinds of disasters and the surveyors' rapid response to them; the Working Week also offers special sessions and other sessions in the technical programme that will cover this theme.

I would like to thank the local organisers and the New Zealand Institute of Surveyors, NZIS, that they have suggested Christchurch to be the venue for our annual major event and convinced the General Assembly back in 2012 to vote for this destination. Also I congratulate them for setting out such a supremely ambitious vision and for their very big contribution and work to make this event so special.

**Chryssy Potsiou**  
FIG President



### Greetings from Mark Allan

On behalf of the New Zealand Institute of Surveyors (NZIS), it is my privilege to welcome you all to Christchurch, New Zealand. For many of you the decision to travel to New Zealand will have been

on the basis that this is an opportunity for a once-in-a-lifetime experience. As your hosts we are working to make sure that your time in New Zealand lives up to those high expectations.

This week long conference brings together the international community of surveying and spatial professionals to share innovative science and technology solutions with policymakers and stakeholders. I encourage surveying and spatial specialists, policy and decision makers, students, practitioners and stakeholders to engage with our speakers and to join in the discussions on the important issues affecting the international surveying and spatial community today and in the future.

The FIG Working Week 2016 theme of “Recovery from Disaster” was developed against a backdrop of a host city recovering from the Canterbury Earthquake Sequence. However around the world, particularly following the Sendai Declaration of 2015 there is a renewed



### Greetings from Simon Ironside

*Dear Delegates, Exhibitors, Sponsors,  
Accompanying Partners, Colleagues and Friends,  
Kia ora koutou katoa.*

It is my pleasure to welcome you all to the 78<sup>th</sup> FIG Working Week, being held in our beautiful but slightly battered city of Christchurch in New Zealand’s South Island.

The decision of the New Zealand Institute of Surveyors to bid for, and ultimately win, the privilege of hosting the 78<sup>th</sup> FIG Working Week in Christchurch in May 2016 was a deliberate one. Christchurch, known as the Garden City as I’m sure you’ll discover, experi-

enced significant damage, trauma and loss of life as a consequence of a devastating period of earthquakes and aftershocks. This began with a magnitude 7.1 earthquake that hit Christchurch, surrounding towns and the Canterbury region on 4 September 2010, followed by a deadly magnitude 6.3 aftershock on 22 February 2011 and ongoing significant aftershocks.

sense of urgency to integrate both disaster risk reduction and the building of resilience into policy, plans, programmes and budgets. These efforts in the areas of sustainable development and poverty eradication are focussed on making the world safer from the risk of disasters for present and future generations.

It is my hope that the valuable lessons learnt and shared not only by speakers from my own home city of Christchurch but by speakers from other countries will motivate each of us to better serve our own communities.

The organising committee has crafted a wonderful programme of plenary speakers, technical sessions, exhibitions, technical tours and social events which we trust you will find rewarding and sustaining.

I would like to extend, on behalf of the New Zealand Institute of Surveyors, our thanks to the members of FIG for the opportunity to host this prestigious event here in New Zealand.

We look forward to extending our world renowned kiwi hospitality to you all.

**Mark Allan**  
NZIS President

GNS Science has reported that the region experienced 11,200 aftershocks in the two year period following the 22 February 2012 event. Fortunately these have substantially subsided and Christchurch is now in an exciting period of regrowth and regeneration. The rebuilding of Christchurch forms a poignant but ultimately positive backdrop to this year’s Working Week.

The Working Week theme is Recovery from Disaster and reflects New Zealand's response to Christchurch earthquakes sequence. Many inhabitants throughout the world face various kinds of disasters and surveying and spatial professionals are key contributors to disaster mitigation, response and reconstruction.

Christchurch surveyors and spatial professionals have some interesting stories to tell and we look forward to sharing the knowledge we have gained through a professionally challenging but rewarding period with our friends and colleagues from other parts of New Zealand and overseas.

We have compiled an exciting technical and social programme for you. New Zealanders often travel long distances to attend international events and we are well aware that you will be feeling the

effects of your travel to attend the Working Week. We sympathise and trust the pace of the programme will not be too taxing for you.

We hope you will find time to see some of our beautiful country. Christchurch is the gateway to the captivating South Island, which contains some of the most spectacular, dramatic and beautiful landforms in the world.

Welcome to Christchurch and thank you for your participation in what is the largest gathering of surveying and spatial, professionals ever held in New Zealand. I hope you are able to learn and enjoy in equal measure and please excuse the road cones!

**Simon Ironside**

Co-Conference Director



### **Greetings from Louise Friis-Hansen**

*Dear attendee,*

A warm welcome to all who have come all the way – from near and far – to New Zealand for this special Working Week. Our previous surveys show that about 40 per cent of the attendees to FIG conferences have attended more than 3 times and 30 per cent 1–3 times. 70 per cent is an amazing number of faithful and experienced attendees, and we thank you so much for returning to FIG conferences and making them special.

Around 30 per cent attend for the first time. It can be quite overwhelming to participate for the first time. You do perhaps not know anyone, you do not know the concept, and you might feel alone. There is no need for that. You will soon find your way around. And do not be afraid to ask others. They are all colleagues. Ask those who seem to have attended many times before; ask your neighbours in your sessions; get to know others and find companions that you can share all your experiences

with. For the experienced FIG conference visitors – please take good care of those who attend for the first time. Talk with them, introduce them, get to know each other. This is also an important part of a conference.

To all newcomers: find the “Newcomers Corner” at the Welcome Reception. Here you might have a possibility to meet with others who also want to find some companions (experienced participants are of course also welcome). Attend the Commission meetings on Wednesday 4 May. Finally I hope that all of you – both you who attend for the first time, and you who have participated earlier – will enjoy, get a lot of inspiration from the technical programme, and will meet and network with fellow surveyors from all over the world – and remember to ask yourself the question: which is the most important message/knowledge that I will bring home. Welcome!

**Louise Friis-Hansen**

FIG Director and Co-Conference Director

## Conference Organisers



### International Federation of Surveyors – FIG

FIG is the premier international organisation representing the interests of surveyors worldwide. It is a federation of the national member associations and covers the whole range of professional fields within the global surveying community. It provides an international forum for discussion and development aiming to promote professional practice and standards.

FIG was founded in 1878 in Paris and was known as the Fédération Internationale des Géomètres. This has become anglicized to the International Federation of Surveyors. It is a UN-recognized non-government organisation (NGO), representing more than 120 countries throughout the world, and its aim is to ensure that the disciplines of surveying and all who practise them meet the needs of the markets and communities that they serve.

The FIG vision is of a modern and sustainable surveying profession in support of society, environment and economy by providing innovative, reliable and best practice solutions to our rapidly changing and complex world, acting with integrity and confidence about the usefulness of surveying, and translating these words into action.

FIG has been organising international surveying conferences since 1878. The first one was held in Paris 18–20 July when representatives of national surveying associations of six countries met to establish the organisation. This year's Working Week is the 86<sup>th</sup> major international surveying conference that FIG has organised.

### New Zealand Institute of Surveyors – NZIS



NZIS supports the integrity and status of the surveying and spatial professionals in New Zealand. Our aim is to promote ethical and professional conduct amongst members, raise public awareness of the knowledge, skills and importance of the profession whilst representing the interests of members and the community. We are a not-for-profit organisation with a Council, Board and national office representing members in 15 branches nationwide and one in Hong Kong.

## Organising Committee

### Steering Committee

- Dr. **Chryssy Potsiou**,  
President, International Federation of Surveyors (FIG)
- Mr. **Mark Allan**, President,  
New Zealand Institute of Surveyors (NZIS)
- Mr. **Simon Ironside**, Co-Conference Director
- Ms. **Louise Friis-Hansen**,  
FIG Director and Co-Conference Director

### Local Organising Committee

- Mr. **Simon Ironside**, Eliot Sinclair, Chair
- Mr. **Warren Haynes**, Eliot Sinclair, Vice Chair
- Mr. **Alistair Greig**, Aurecon Group
- Ms. **Amanda Cockcroft**, Interpret
- Mr. **Peter McAuley**, Consulting Surveyors NZ
- Mr. **Hadyn Smith**, CEO, NZIS
- Mr. **Lyndon Telfer**, LINZ
- Ms. **Mandy Train**, Conference Innovators
- Mr. **Mark Allan**, Eliot Sinclair (NZIS Council/Board)
- Mr. **Mark Myall**, Myall & Thurlow Consultants Ltd
- Ms. **Melissa O'Brien**, Eliot Sinclair  
(Chair NZIS Young Professionals)
- Mr. **Michael Martin**, Fox Associates
- Mr. **Shane Dixon**, Harrison Grierson  
(Chair NZIS Canterbury Branch)
- Mr. **Todd Airey**, Clark Land Surveyors
- Ms. **Jayne Perrin**, Beca

*Look for us in our red shirts!*

### FIG Office

- Ms. **Louise Friis-Hansen**,  
FIG Director and Co-Conference Director
- Ms. **Claudia Stormoen Pedersen**,  
FIG Event and Support Manager
- Ms. **Maria Bargholz**, Finance and Administration
- Ms. **Tian Tian**, FIG Support





## Conference Theme

Shortly after 4:30 in the morning of Saturday, 4 September 2010, an earthquake of magnitude 7.1 on the Richter scale shocked the population of the province of Canterbury into wakefulness. It completely destroyed a few historic homesteads in the region, and caused significant damage to Christchurch city itself, but no fatalities resulted.

Cantabrians were yet to learn that this was but a taste of worse to come. Six months later, Cantabrians again experienced the earth move under their feet, and this time it was a deadly event.

The Working Week is held in post-earthquake Christchurch thus the recovery and rebuild of the Christchurch CBD, its suburbs and the surrounding region will provide a significant and poignant backdrop to the 2016 FIG Working Week. It is being held at a time when considerable re-building and renewal is underway. Many inhabitants throughout the World face various kinds of disasters, apart from earthquakes, such as flooding, storm events, tsunamis, drought, the after effects of conflict etc. that are a world-wide challenge, especially taking the effects of climate change into consideration.

Another important backdrop to the FIG Working Week 2016 is the post-2015 framework for disaster risk reduction which was recently adopted at the United Nations Third World Conference on Disaster Risk Reduction held from 14–18 March 2015 in Sendai, Japan.

To complement national action and capacity, there is a need to enhance international cooperation between developed and developing countries and between States and international organisations. The aim is to guide the multi-hazard management of disaster risk in development at all levels as well as within and across all sectors.

Disasters, natural or otherwise, directly impact surveyors and spatial professionals and their work on the land, under the seas, in the air and in space. The surveying profession is well positioned to respond in the aftermath of a disaster, natural or otherwise, but equally, and probably more importantly, to contribute to the strengthening of risk mitigation on a national and international basis, particularly in terms of resilience through infrastructure development and land administration.

One of the aims of the Working Week is to enable delegates to come away from Christchurch with a greater knowledge of the role of the surveyor and allied professionals in reducing disaster risk, responding to disasters, recovery and resilience.

## Opening Ceremony

**Tuesday 3 May at 9:00–10:30**  
**Plenary Hall, Horncastle Arena**

The opening ceremony will provide a spectacular introduction to the FIG Working Week, its theme, and its unique location – a festive start of the week.

### Welcome Addresses

- **Mark Allan**, NZIS President
- **Chryssy Potsiou**, FIG President
- **Simon Ironside**, Co-Conference Director

### Keynote Speakers



#### Sir Tipene O'Regan

Sir Tipene O'Regan is a New Zealand academic and company director. The son of Dr Rolland O'Regan and Rena Ruiha (Bradshaw), he is a director of a wide range of South Island Māori enterprises. He is best known for his role as chairman

of the Ngāi Tahu Māori Trust Board which he guided to successful land and sea fisheries claims before the Waitangi Tribunal, culminating in the Tribunal's reports of 1991 and 1992. He later led claim settlement negotiations leading to the 1998 settlement which made



#### Ms. Margareta Wahlström

Ms. Margareta Wahlström was made the first SRSG (Special Representative of the Secretary General) for Disaster Risk Reduction in 2008. Until her term was completed at the end of 2015, she was leading UNISDR (The United Nations Office for Disaster

Risk Reduction) to forge partnerships with governments to ensure a safer world for everyone.

Ms. Wahlström has over 30 years of extensive national and international experience in humanitarian relief operations in disaster

### The Powhiri – A Maori Welcome

The *Powhiri* or welcoming ceremony is the most ancient of all Maori customs and is still delivered in the same manner in which it has been by Maori for centuries.

**Wero** – A Maori warrior provides a challenge to visitors to find out if their purpose is peaceful or hostile.

**Karanga** – Once peaceful terms are established a Maori maiden will sing a karanga or song of welcome.

**Haka Powhiri** – The group will sing a haka-chant of welcome.

**Whai Korero** – Our chief will officially welcome all visitors with a formal speech.

**Waiata Kinaki** – A song is then sung by the group in an acknowledgement of the occasion.

**Hongi** – The hongi brings both visitor and local people together as one and concludes formalities.

extensive provision for customary rights in fisheries and other natural resources.

Sir Tipene is currently Associate Lecturer and Assistant Vice Chancellor (Māori) at the University of Canterbury in Christchurch, New Zealand, associated with both the history and Māori departments. He was awarded an Honorary D.Litt by the University of Canterbury in 1992. In March 2009, Sir Tipene was commemorated as one of the Twelve Local Heroes of Christchurch, and a bronze bust of him was unveiled outside the Christchurch Arts Centre.

and conflict areas, and in institution-building to strengthen national capacity for disaster preparedness, response and for risk reduction.

UNISDR's most recent achievement has been facilitating the creation of the Sendai Framework for Disaster Risk Reduction which was achieved in March 2015. It is this new framework that will guide the world globally and locally for the next 15 years.

Ms. Wahlström has an academic background in economic history, political science, social anthropology, archaeology and philosophy of science.



## Plenary Sessions

The programme is underpinned by high-level presentations in three plenary sessions covering topics within the overall theme “Recovery from Disaster”. These specially invited presenters set the agenda for each day, sharing insights into their own experiences and pitfalls, as well as presenting their vision and predictions.

### Plenary Session 1 – The Christchurch Story: “Christchurch’s Response to the 2011 Earthquake”

Tuesday 3 May 2016 at 11:00–12:30, Plenary Hall, Horncastle Arena



#### Hon. Lianne Dalziel

Mayor of Christchurch

#### “Good News. You’re More Prepared than You Think”

Hon. Lianne Dalziel will share her assessment of the building blocks that lead to community recovery and resilience. Christchurch’s neighbourhoods came together and were supported by communities throughout the city and beyond.

Hon. Lianne Dalziel was elected as the Mayor of Christchurch in October 2013, after serving for 23 years in the New Zealand Parliament, the last terms as the Member of Parliament for Christchurch East. The Christchurch East electorate was affected by the 2010/11 Earthquake Sequence and Hon Lianne Dalziel played a role in ensuring that her constituents had access to accurate information, as well as ensuring that their concerns were communicated to decision-makers.



#### Hon. Gerry Brownlee

Minister for Canterbury Earthquake Recovery  
Member of Parliament for the Christchurch constituency of Ilam

#### The New Zealand Government’s Response to the Canterbury Earthquakes

Hon. Gerry Brownlee will elaborate on the government’s leadership role, including establishing the Canterbury Earthquake Recovery Authority.

Hon. Gerry Brownlee ranked number three in Cabinet, he is Minister of Defence, Leader of the House, Minister Responsible for the Earthquake Commission, and Minister for Canterbury Earthquake Recovery. He became Canterbury Earthquake Recovery Minister since soon after a devastating 7.1 magnitude earthquake struck Christchurch on 4 September 2010.

His role became much larger following the 22<sup>nd</sup> of February 2011 when a 6.3 magnitude quake hit the city, killing 185 people and resulting in widespread residential and commercial property destruction.



#### Mr. Duncan Gibb

Founding General Manager of SCIRT

#### The Delivery Vehicle for Christchurch’s Horizontal Infrastructure Rebuild

Mr. Gibb will focus on the multi-party private-public partnership model for collaborative and organisational leadership and solution development. Further he will focus on surveyors and engineers leading collective action to deliver outcomes by involving multiple sectors and perspectives in innovative ways.

During his 30 years in civil construction Mr. Duncan Gibb has been driven by a need to find solutions to engineering problems. He is a qualified Civil Engineer whose expertise has been instrumental in the success of numerous projects and programmes of projects in Australia and New Zealand. In the period between May 2011 and December 2014 Duncan was the General Manager for the Stronger Christchurch Infrastructure Rebuild Team (SCIRT).

SCIRT was established as a unique collaborative public/private partnership to deliver the NZ\$2.2 billion programme of projects to rebuild publicly-owned, earthquake-damaged horizontal infrastructure (water, wastewater, drainage and roading) in Christchurch.

## Plenary Session 2 – Disaster Management and Recovery Framework – The Surveyors Response

Wednesday 4 May 2016 at 9:00–10:30, Plenary Hall, Horncastle Arena



### Dr. Hiroshi Murakami

Geospatial Information Authority of Japan

#### **Long Term Experiences from the 2011 Great East Japan Earthquake and Tsunami**

Dr. Murakami will present the subsequent impact on and the challenges ahead for the surveying and geospatial professional in disaster response, recovery and resilience.

Dr. Hiroshi Murakami is the Deputy Administrator of the Geospatial Information Authority of Japan. He has been working extensively on R&D and policy development in the organisation for the past 30 years including his appointment to Chief of the UN Cartographic Section in 2001 until 2005. He is currently the President of UN-GGIM-AP.

He holds Ph.D. from the University of Georgia, and Masters from Graduate School of Science, Tohoku University.



### Mr. Gregory Scott

United Nations Committee of Experts on Global Geospatial Information Management

#### **United Nations Geo-response to Disaster Management**

Mr. Scott will focus on the impact on and the challenges ahead for the surveying and geospatial professional.

Mr. Greg Scott leads the Secretariat for the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM), providing strategic policy advice and leadership in the coordination and implementation of UN-GGIM initiatives with Member States and related International Organisations involved in national, regional and global geospatial information management.

Mr. Greg Scott previously spent more than 20 years in Geoscience Australia in a number of key roles delivering Australia's national topographic mapping and derivative geospatial programs, and providing independent scientific analysis and advice in the use of geospatial information for emergency management, critical infrastructure protection, and lifeline network functionality.



### Dr. Keith Bell

World Bank

#### **Post-Disaster Recovery and Reconstruction – A World Bank Perspective**

Mr. Bell will focus on the subsequent impact on and the challenges ahead for the surveying and geospatial professional.

Dr. Keith Bell joined the World Bank in 2003 and has been the primary land specialist for the East Asia Pacific Region. During his tenure with the World Bank he has worked in some fifteen countries, including conflict and fragile states as well as in support of post-disaster reconstruction.

Prior to the World Bank, he spent more than two decades in the Australian public and private sectors, which has included heading land agencies in two states, as well as programs for national mapping and also the national coordination of spatial data infrastructure.

## Plenary Session 3 – The Public, the Private and the Peoples Response for Disaster Management and Recovery in the Surveying Profession – New Technologies

Thursday 5 May 2016 at 9:00–10:30, Plenary Hall, Horncastle Arena



**Mr. Mark Nichols**

Trimble Navigation

(In the absence of Mr. Bryn Fosburgh, Vice President Trimble)

### **The Use of Measurement Technologies in Disaster Response, Recovery and Resilience**

Mr. Nichols will focus on the challenges ahead for the surveying and geospatial professional.

Mr. Mark Nichols has over 30 years' experience with Trimble in leadership roles working on the development and application of technology products to improve productivity, work place safety and sustainability. His experience spans the Geospatial, Agricultural, Mining, Civil and Building Construction industries. His most recent roles have been as the Chief Operating Officer of the joint venture Caterpillar Trimble Control Technologies LLC between Trimble and Caterpillar for the application of geospatial information technologies to the earthmoving industry and as the General Manager for Trimble Planning Solutions Pty. This is an Australian based company using geospatial information to balance social, environmental and cost constraints to deliver the optimal alignments for new road and railway in the developing countries around the world.



**Prof. Dr. Jixian Zhang**

National Quality Inspection and Testing Center for Surveying and Mapping Products

### **The Use of Photogrammetry in China following Disasters – A Government Perspective**

Dr. Zhang will focus on the impact on and the challenges ahead for the surveying and geospatial professional in disaster response, recovery and resilience.

Dr. Jixian Zhang is Director of National Quality Inspection and Testing Center for Surveying and Mapping Products, Vice President of Chinese Society of Mapping and Geoinformation (CSSMG) and Editor-in-Chief of International Journal of Image and Data Fusion (IJIDF). He was President of Chinese Academy of Surveying and Mapping (CASM) from July 2006 to February 2016.

He has built up his reputation in China through many years' research work in the fields of photogrammetry and remote sensing, land surveying, cadastral surveying and mapping, and management of academic programmes and organisations, and made remarkable contributions to the development of the surveying profession in China. He has published over 200 articles in reputation journals and 7 books, won five prestigious National Award of Science and Technology Progress of China and one Geospatial World Excellence Awards.



**Mr. Sam Johnson**

Student Volunteer Army

### **Youth Leadership – Experiences from Natural Disasters in Christchurch, Japan, the Philippines, Vanuatu and Nepal**

Mr. Johnson will tell his story “From frustration and despair to mobilisation and repair”. It will catalyse a revolution in youth leadership.

On 4 September 2010, University of Canterbury Student Sam Johnson began a Facebook event to mobilise student volunteers to help with the earthquake response. Within a week, more than 3,500 people had joined to volunteer their time to support the community. The Student Volunteer Army, as they became known, offered assistance after every significant earthquake in clearing silt, delivering food and chemical toilets, distributing information and simply being a smiling face at the door.

#### PLATINUM PARTNERS



#### DIAMOND PARTNER



#### SILVER PARTNERS



#### PRIMARY SUPPORT PARTNERS



#### INSTITUTIONAL PARTNERS



## Platinum Partners

**TRIMBLE** – Trimble transforms the way work is done through the application of innovative positioning. By integrating a wide range of positioning technologies such as GPS, laser, optical and inertial with application software, wireless communications and services. Trimble provides complete solutions that are focused on applications requiring position or location – including surveying, construction, mining, agriculture, utilities, public safety, asset management and mapping.

**ESRI** – Esri's geographic information system (GIS) technology has given clients the power to think and plan geographically for over 40 years. Used today in more than 350,000 organisations worldwide, GIS helps cities, governments, universities, and Fortune 500 companies save money, lives, and our environment. GIS helps you understand and question data in ways that reveal relationships, patterns, and trends. ESRI supports the implementation of GIS technology on the desktop, servers, online services, and mobile devices.

## Diamond Partner

**LINZ** – Land Information New Zealand makes sure New Zealand has accurate information about where people and places are; ensures people have confidence in their property rights and that Crown property is well managed for future generations. LINZ's responsibilities include managing land titles, geodetic and cadastral survey systems, topographic information, hydrographic information, managing Crown property and supporting government decision making around foreign ownership.

#### GOLD MEDIA PARTNERS



#### SILVER MEDIA PARTNERS



#### AIRLINE PARTNER



#### SATCHEL PARTNER



#### OFFICE EQUIPMENT PARTNER



#### CLOTHING PARTNER



#### SUPPORT PARTNERS







With Trimble's tools for rapid geospatial data capture, governments, surveyors and emergency response personnel are able to quickly accomplish damage assessments and prioritize response efforts from a micro to macro scale. Trimble solutions provide you with the accurate, spatial data that forms the foundation from the immediate response effort through the final restoration.

[Stop by the Trimble booth to learn more about these solutions](#)

© 2016, Trimble Navigation Limited. All rights reserved.




# Recovery, Measurement and Results





## FIG Corporate Members

### Platinum Level

	Bentley Systems www.bentley.com
	Environmental Systems Research Institute, Inc. (ESRI), www.esri.com
	Leica Geosystems AG www.leica.com
	Trimble Navigation Ltd www.trimble.com

### Silver Level

	Geoweb S. p. A www.geoweb.it
	Meridian+ www.agpmeridian.com
	The State Enterprise "State Land Cadastre Centre", Ukraine, <a href="http://dzk.gov.ua">http://dzk.gov.ua</a>
	Thomson Reuters grm.thomsonreuters.com

### Bronze Level

	COWI A/S www.cowi.dk
	GIM International – Geomares Publishing www.gim-international.com
	KQ Geo Technologies Co www.kanq.com.cn
	RIPRO Corporation, Japan www.ripro.co.jp

### Basic Level

	Beijing iSpatial Co., Ltd, PRC ispatal.com.cn
	Derinsu Underwater Engineering & Consulting www.derinsu.com
	NEH Engineering Survey and Mapping Limited Company, Vietnam

### Regional Level

	Branco Etera Ltd, Kazakhstan
	Concord Surveying Works Co. concordsurveying.com
	Coordinates Magazine www.mycoordinates.org
	DataLife Environmental www.datalifereserve.com
	GEO:connexion Ltd www.geoconnexion.com
	Georeference Engineering Consultants, Saudi Arabia, <a href="mailto:yas@geo.sa">yas@geo.sa</a>
	Innovation for Trading and Contracting www.innovation-tc.com
	JKO Surveyors & Consultants (Pvt) Ltd, Sri Lanka, <a href="http://www.jko.lk">www.jko.lk</a>
	Orbits Engineering Firm www.orbitseng.com

**Other Sponsorship** Chinese Society for Surveying, Mapping and Geoinformation, CSSMG

## General Conference Information

### Registration and Conference Services

The FIG Registration Desk is on the ground floor of Horncastle Arena, in front of the main entrance. Any changes to the schedule will be posted at the desk.

### Presentations and Speakers Preparation Room

The speaker preparation room is located next to the Registration Desk, in front of the main entrance. You are required to meet with the AV technician here to download your presentation and check that everything is working by 16:00 the day prior to your presentation. Your presentation will be on the laptop in your session room prior to your session. Please note that you cannot bring your presentation to the session room.

In order to allow the sessions to run smoothly and in fairness to other speakers, all presentations are expected to adhere strictly to the time allocated. Check the starting time for your presentation at [www.fig.net/fig2016](http://www.fig.net/fig2016).

### Conference Web App

The free conference web app allows you to quickly get the latest information about the programme, speakers and participants. To access the app, please visit [www.fig.net/app](http://www.fig.net/app).

### Wireless Internet

Wireless Internet is available at Horncastle Arena. Log in to 'Vbase Guest Free'. No password is required.

### Refreshments and Lunches

Complimentary refreshments will be served on arrival and during the morning and afternoon breaks at coffee stations in the exhibition hall. Lunch will also be served in the exhibition hall.

### Badges

Each registered delegate will receive a name badge. This badge will be your official pass and must be worn to obtain entry to all sessions, exhibition and social functions.

### Bag and Certificates

Each full delegate will receive a conference bag. Certificates of attendance and presentation will be sent by email after the conference.

## Contacts

### International Federation of Surveyors (FIG)

Kalvebod Brygge 31–33  
DK-1780 Copenhagen V  
DENMARK  
Tel. +45 3886 1081  
Email: [fig@fig.net](mailto:fig@fig.net)  
[www.fig.net](http://www.fig.net)

### New Zealand Institute of Surveyors (NZIS)

Level 3, Gleneagles House  
69–71 The Terrace  
Wellington 6145, New Zealand  
Tel: +64 4 4711 774  
Email: [nzis@surveyors.org.nz](mailto:nzis@surveyors.org.nz)  
[www.surveyors.org.nz](http://www.surveyors.org.nz)

### Conference Web Site

[www.fig.net/fig2016](http://www.fig.net/fig2016)

### Conference Web App

[www.fig.net/app](http://www.fig.net/app)

### Conference Proceedings

[www.fig.net/resources/proceedings/fig\\_proceedings/fig2016](http://www.fig.net/resources/proceedings/fig_proceedings/fig2016)

### Social Media



[www.facebook.com/#!/internationalfederationofsurveyors](http://www.facebook.com/#!/internationalfederationofsurveyors)



[twitter.com/FIG\\_NEWS](https://twitter.com/FIG_NEWS)



[www.linkedin.com/groups?trk=group-name&gid=2669121](http://www.linkedin.com/groups?trk=group-name&gid=2669121)



## Programme at a Glance

Time	Exhibition					Friday 6 May		
	Mon 10:30–14:00	Tue 10:30–17:30		Wed 10:30–18:30	Thu 10:30–16:00			
	Monday 2 May	Tuesday 3 May		Wednesday 4 May	Thursday 5 May			
8:00	Registration 8:00–18:00	Registration 8:00–17:30		Registration 8:00–18:30	Registration 8:00–16:00	Registration 8:00–14:00		
9:00	General Assembly Part 1	Opening Ceremony		Plenary Session 2	Plenary Session 3	FIG Presidents' Meeting		
10:00								
	Coffee / Tea	Coffee / Tea   Opening of Exhibition		Coffee / Tea	Coffee / Tea	Coffee / Tea		
11:00	General Assembly Part 1 (cont.)	Plenary Session 1		9–11 Parallel Technical Sessions	9–11 Parallel Technical Sessions	FIG Member Associations Forum	General Assembly Part 2	
12:00								
13:00	Lunch 12:30–13:30	Lunch 12:30–14:00		Lunch 12:30–14:00	Lunch 12:30–14:00	Lunch 12:30–13:30		
14:00	General Assembly Part 1 (cont.)	9–11 Parallel Technical Sessions	FIG Director Generals Forum – Session 1	9–11 Parallel Technical Sessions	FIG Corporate Members Meeting	9–11 Parallel Technical Sessions	FIG Academic Forum	General Assembly Part 2 (cont.)
15:00								
		Coffee / Tea		Coffee / Tea	Coffee / Tea	Closing Ceremony and Farewell Reception		
16:00		9–11 Parallel Technical Sessions	FIG Director Generals Forum – Session 2	9–11 Parallel Technical Sessions	9–11 Parallel Technical Sessions	9–11 Parallel Technical Sessions		
17:00								
18:00				FIG Commission Annual Meetings				
19:00								
20:00	Welcome Reception at the Transitional Cathedral	Kiwi Evening / FIG Foundation Dinner at Horncastle Arena		Commission Dinners / Free evening	Gala Dinner at the Air Force Museum New Zealand	Rugby Match 19:45–23:00		
21:00								



## FIG Sessions and Pre-Conference Events

FIG Session	Date	Time	Room
General Assembly – Session 1	2 May	09:00–16:00	Plenary Hall, Horncastle Arena
FIG Regional Capacity Development Network	3 May	12:45–13:55	Concourse Room, Horncastle Arena
FIG Director Generals Forum I: Experiences on 3D Mapping	3 May	14:00–15:30	Silk room 2, level 2, Addington Raceway
FIG Director Generals Forum II: 3D Mapping and Disaster Risk Reduction	3 May	16:00–17:30	Silk room 2, level 2, Addington Raceway
FIG Task Force on Commission Structure	4 May	12:45–13:55	Concourse Room, Horncastle Arena
FIG Task Force on Scientific Journal	4 May	14:00–15:30	Christian Cullen Lounge 3, level 1, Addington Raceway
Shaping Our Future Network – FIG Young Surveyors Network	4 May	14:00–15:30	Terror of Love Lounge 2, level 3, Addington Raceway
FIG Corporate Members Meeting	4 May	14:00–15:30	Silk room 4, level 2, Addington Raceway
FIG Commission Meetings	4 May	17:30–18:30	Varied. The Commission Meetings are open for all interested. After the meeting each commission organises a dinner (self-paid).
FIG Task Force on Real Estate Market Study	5 May	11:00–12:30	Terror of Love Lounge 1, level 3, Addington Raceway
FIG Member Association Forum	5 May	11:00–12:30	Terror of Love Lounge 2, level 3, Addington Raceway
FIG Academic Members Forum joint with FAO	5 May	14:00–15:30	Concourse, Horncastle Arena
FIG Standards Network	5 May	16:00–17:30	Blossom Lady 2, level 3, Addington Raceway
Presidents’ Meeting	6 May	08:30–10:30	Concourse, Horncastle Arena
General Assembly – Session 2	6 May	11:00–15:00	Plenary Hall, Horncastle Arena

### Pre-Conference Events

3 <sup>rd</sup> Young Surveyors Network Conference	30 April – 1 May	Rydges Latimer Hotel – see <a href="http://www.fig.net/fig2016/youngsurveyors.htm">www.fig.net/fig2016/youngsurveyors.htm</a>
History Symposium	30 April – 1 May	Breakfree on Cashel – see <a href="http://www.fig.net/fig2016/history.htm">www.fig.net/fig2016/history.htm</a>
SIDS Workshop	30 April – 1 May	Rydges Latimer Hotel – see <a href="http://www.fig.net/fig2016/sids.htm">www.fig.net/fig2016/sids.htm</a>
Reference Frame in Practise – Technical Seminar	1–2 May	Rydges Latimer Hotel – see <a href="http://www.fig.net/fig2016/commission5.htm">www.fig.net/fig2016/commission5.htm</a>
STDM	2 May	Concourse Room, Horncastle Arena – see <a href="http://www.fig.net/fig2016/stdm.htm">www.fig.net/fig2016/stdm.htm</a>

## Technical Tours

A number of attractive and informative Technical Tours have been organised to complement the conference experience. All tours start at Horncastle Arena, main entrance and drop offs (except GIS tour) are at CBD Hotels then Horncastle Arena. Tickets may be available for purchase from the Registration Desk.

### **The Christchurch Rebuild and Quake City Tour**

**3, 4 and 5 May at 13:00**

The tour takes visitors on a journey through the Christchurch rebuild: what was, what's happening now and what's coming. It provides an insight into the innovative ways that Christchurch is reshaping itself following the earthquakes of 2010 and 2011.

### **Land Damage from the Canterbury Earthquakes: Flat Land and Port Hills Tours**

**3 May at 13:00**

The tour will take you through the red zoned land on the Flat and Port Hills. It will also cover the surveying and geotechnical engineering work to support the zoning decisions and showcase some of the active survey stations including CGPS, remotely operated robotic survey stations and terrestrial surveys.

### **GIS Tour**

**3 May at 13:10 (return to Horncastle Arena at 16:00)**

Stronger Christchurch Infrastructure Rebuild Team (SCIRT) was formed following the earthquakes, to rebuild Christchurch's horizontal infrastructure including wastewater, stormwater and potable water, roads, bridges and retaining walls. The tour will take you to the SCIRT office where you'll discover the pivot role that GIS plays, the survey data lifecycle and how engineers use 12d to design the best solutions by accessing the most accurate surveyed information.

### **The Arts Centre of Christchurch and Christchurch Art Gallery Tour**

**4 May at 13:30**

This is a combined tour through two of Christchurch's most iconic and treasured attractions. During the site tours, you will get the chance

to see first hand how surveying has contributed to the restoration, preservation and maintenance of the buildings. Wear sturdy shoes.

### **University of Canterbury – Earthquake Resilience Research Tour**

**4 May at 14:00**

The major focus within the Canterbury region over the next fifteen years will be the rebuilding of Christchurch. The University of Canterbury is committed to being an integral part of the rebuilding process providing high quality research to underpin the recovery effort.

### **Land Information New Zealand Tour**

**5 May at 13:00**

Land Information New Zealand makes sure New Zealand has accurate information about where people and places are, and so that people have confidence in their property rights and Crown property is well managed for future generations. This tour will offer a unique opportunity visit the LINZ office where survey and title transactions are processed.

### **Rebuilding the city: Prestons Subdivision & East Side Tour**

**5 May at 13:30**

Prestons is a dynamic new residential subdivision in the north east of Christchurch. As a consequence of the Canterbury Earthquake sequence, thousands of families were displaced from their homes due to land damage. The tour will take a look at the unique elements of this subdivision including the fast-tracked zoning changes, land mitigation measures, vacuum waste system and environmental sustainability. The tour will also take you through some of most badly damaged residential areas to the east of Christchurch.



## Social Programme

FIG Working Week wouldn't be anything without the interaction and networking of our participants. Join these events to get to know your fellow peers.

Event	Date	Time	Location	Details
Charity Run/Walk	1 May	17:00–	Hagley Park	10 EUR donation to MapAction & FIG Foundation
Home Hospitality	1 May	19:30–	Various	Tickets: 50 EUR *)
Welcome Reception	2 May	19:00–21:00	Transitional Cathedral	All participants are invited Organised transportation provided
Kiwi Evening / FIG Foundation Dinner	3 May	19:30–23:00	Horncastle Arena	Tickets: 85 EUR *) Supported by: Trimble Organised transportation provided
FIG Commission Dinners	4 May	19:30–	To be decided by each Commission – check <a href="http://www.fig.net/fig2016">www.fig.net/fig2016</a>	Individual payment
NZIS Fellow Dinner	4 May	19:30–	Canterbury Club	By invitation
Gala Dinner	5 May	19:30–23:00	Air Force Museum of New Zealand	Tickets: 95 EUR *) Organised transportation provided
Farewell Reception	6 May	15:00–16:00	Horncastle Arena	All participants are invited Hosted by FIG Working Week 2017, Helsinki, Finland
Rugby Match	6 May	19:35 Kick off	AMI Stadium, Addington Christchurch	Tickets: 45 EUR (includes cap and poster) *)

\*) Tickets available for purchase from the Registration Desk.

## Accompanying Persons Programme

Registered accompanying person for the FIG Working Week are invited to attend the Welcome Reception and Opening Ceremony. An exciting day trip has been organised Wednesday 4 May. Meet at the Novotel Hotel in Cathedral Square at 10:00. Tour ends approximately at 16:00. Lunch is included.

## Social Tours

A range of social tours will be offered for participating delegates and accompanying persons. Limited tickets may be available for purchase from the Registration Desk.

Sunday 1 May	Monday 2 May	Tuesday 3 May	Wednesday 4 May	Thursday 5 May
<b>ST1 – Transalpine Day Tour</b> Time: 7:00–18:05 Fee: 115 EUR	<b>ST3 – Akaroa</b> Time: 9:00–17:30 Fee: 100 EUR	<b>ST5 – Waipara Wine Tour</b> Time: 9:00–17:00 Fee: 50 EUR	<b>ST7 – Lord of the Rings</b> Time: 9:00–18:00 Fee: 105 EUR	<b>ST9 – Kaikoura Whale Watch</b> Time: 8:30–18:30 Fee: 105 EUR
<b>ST2 – Christchurch Sightseeing</b> Time: 13:00–16:30 Fee: 38 EUR			<b>ST8 – 4WDJet Adventure Tour</b> Time: 8:30–15:30 Fee: 106 EUR	<b>ST10 – Farm Tour</b> Time: 13:00–16:30 Fee: 38 EUR

### Meeting Point

All tours will depart from the Rydges Latimer.

### Extend Your Stay...

We recommend Scenic Pacific Tours, they offer a variety of destination and tour lengths for your post Working Week holiday. Visit [www.scenicpacific.co.nz](http://www.scenicpacific.co.nz).

## FIG YOUNG SURVEYORS NETWORK 5K CHARITY RUN/WALK

1 May 2016 Hagley Park, Christchurch



**WE WANT TO DO GOOD** – and give back. With this charity walk/run we will support MapAction and FIG Foundation.

**MAPACTION** is a humanitarian mapping charity that works through skilled volunteers. Our specialist teams help to save lives and minimise suffering by making the response to humanitarian emergencies as targeted, efficient and effective as possible.

**FIG FOUNDATION** is an independent body under the International Federation of Surveyors. The Foundation has been established for the purpose of raising funds to finance surveying education development projects and supporting young surveyors in order to build a sustainable future.

**TO REGISTER:** [www.fig.net/fig2016/charityrun.htm](http://www.fig.net/fig2016/charityrun.htm)











# Conference Venues

The FIG Working Week 2016 will be held at the Horncastle Arena and Addington Raceway and Events Centre, located in the suburb of Addington, only 10 minutes from the city centre. Horncastle Arena and Addington Raceway are located across from each other.

## HORNCASTLE ARENA

55 Jack Hinton Drive, Addington, Christchurch 8024  
 03 339 3599 | info@vbase.co.nz  
 www.vbase.co.nz

### Café and bar facilities on site:

- Spectators Bar, Addington Raceway. Open 7:30–16:30 Monday and 7:30 – late Tuesday–Friday.
- Lot 55, Horncastle Arena. Open 7:30–15:00 – thereafter subject to demand. (Licensed.)

**Commission Rooms:** Horncastle level 2

**FIG Office:** Room 8, Horncastle level 2

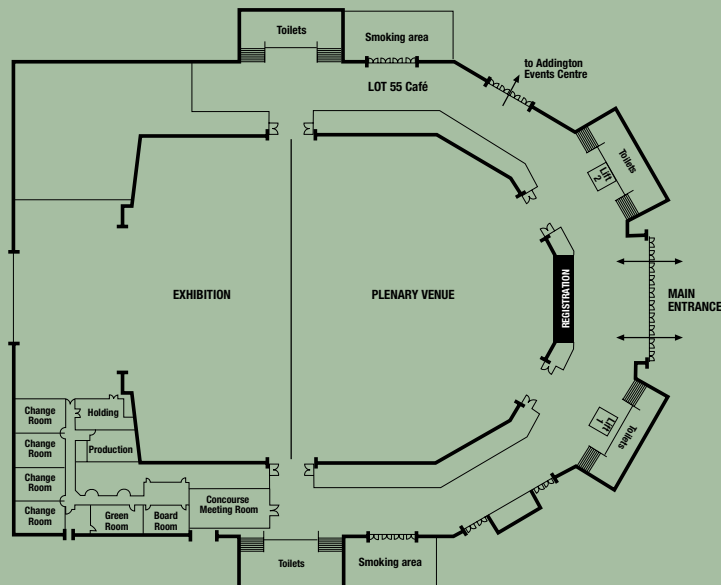
**FIG President's Office:** Room 9, Horncastle level 2

**NZIS Offices:** Rooms 12 & 13 Horncastle level 2

**Prayer Room:** Green Room, Horncastle ground floor

**Exhibitor Meeting Rooms:** Rooms 17 & 18, Horncastle level 2

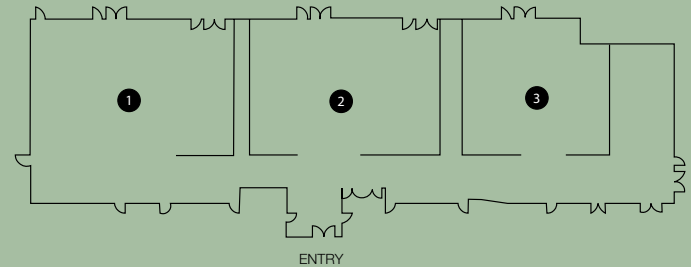
**Exhibitor Lounge:** Rooms 19 & 20, Horncastle level 2



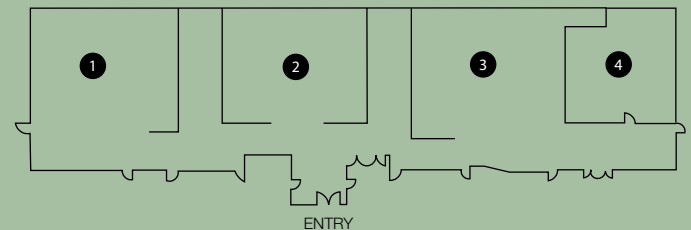
## ADDINGTON RACEWAY AND EVENTS CENTRE

75 Jack Hinton Drive, Addington  
 Christchurch 8149  
 +64 3 338 9094 | info@addington.co.nz  
 www.addington.co.nz/events-centre/

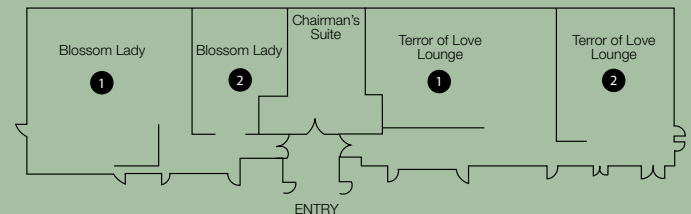
### CHRISTIAN CULLEN LOUNGE LEVEL 1



### SILKS ROOM LEVEL 2



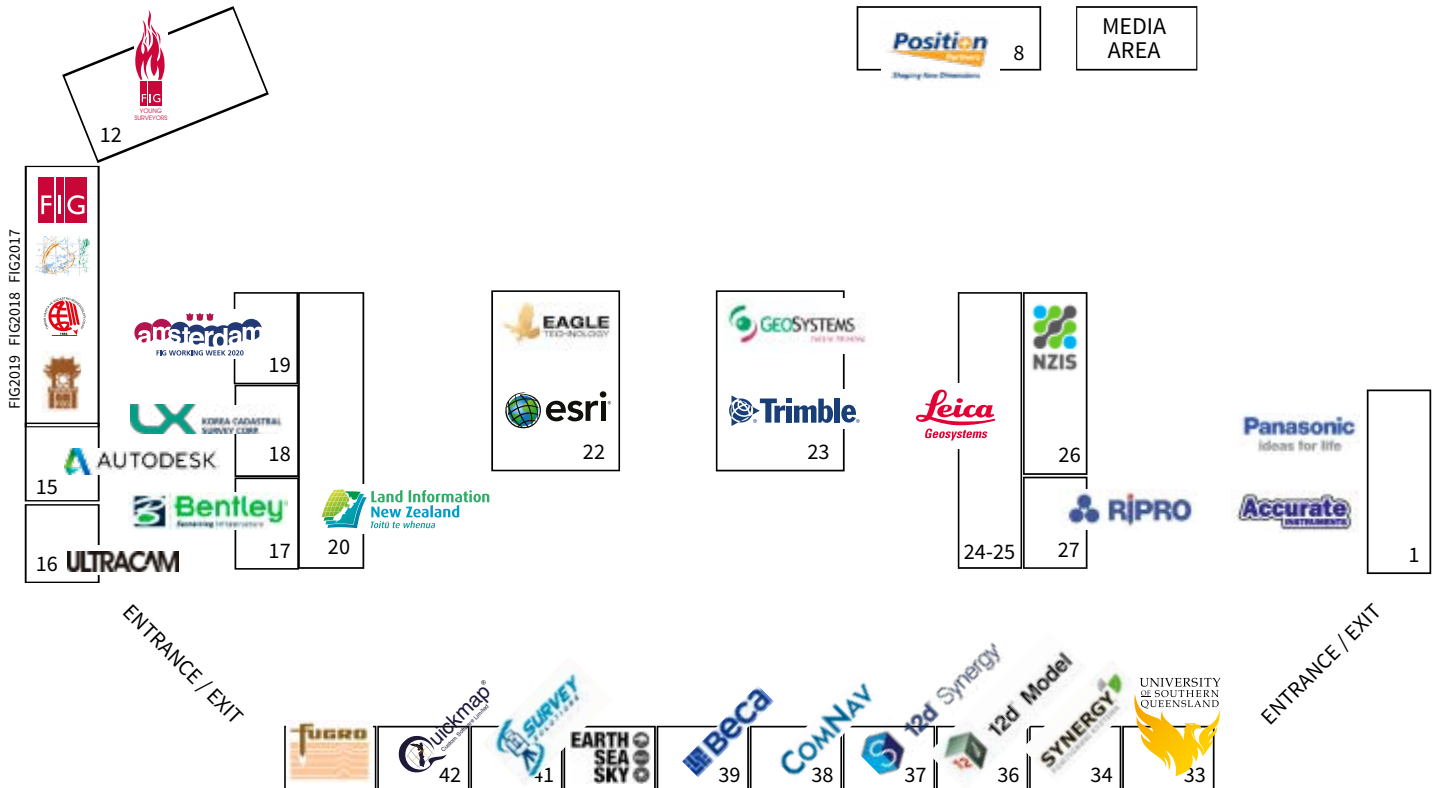
### BLOSSOM LADY & TERROR OF LOVE LOUNGE LEVEL 3



# Exhibition

An exhibition is running concurrently with the conference in the Plenary Hall, Horncastle Arena which showcases the latest and best in surveying and spatial products and services. For up-to-date information about the exhibition, please visit [www.fig.net/fig2016/exhibitors.htm](http://www.fig.net/fig2016/exhibitors.htm).

## Exhibition Area and Exhibitors



## Public Session: Emerging Technologies and Careers

Wednesday, 4 May 14:00–16:00, Plenary Hall, Horncastle Arena

The geospatial world is constantly changing. New technologies offer new ways of working and new opportunities for data acquisition, analysis & design. Speakers from education providers and software and hardware suppliers will look at industry trends and explore the technology and work that we might be doing in 5 years' time, and highlight the career opportunities that will be there.

## Opening Hours

Mon, 2 May	10:30–14:00	
Tue, 3 May	10:30–17:30	
Wed, 4 May	10:30–18:30	(open to the public 14:00–18:30)
Thu, 5 May	10:30–16:00	

# Technical Programme

## Saturday, 30 April 2016

### FIG COUNCIL MEETING

**SATURDAY, 30 APRIL 8:00–17:00**  
**VENUE:** RYDGES LATIMER HOTEL  
**CHAIR:** MS. CHRYSY POTSIOU, GREECE, FIG PRESIDENT

- By invitation only

### SMALL ISLAND DEVELOPING STATES (SIDS) WORKSHOP (DAY 1)

**SATURDAY, 30 APRIL 9:00–17:30**  
**VENUE:** RYDGES LATIMER HOTEL

For more information, please visit [www.fig.net/fig2016/sids.htm](http://www.fig.net/fig2016/sids.htm).

### 3<sup>RD</sup> FIG YOUNG SURVEYORS NETWORK CONFERENCE (DAY 1)

**SATURDAY, 30 APRIL 9:00–17:30**  
**VENUE:** RYDGES LATIMER HOTEL

For more information, please visit [www.fig.net/fig2016/youngsurveyors.htm](http://www.fig.net/fig2016/youngsurveyors.htm).

### HISTORY SYMPOSIUM (DAY 1)

**SATURDAY, 30 APRIL 9:00–17:00**  
**VENUE:** BREAKFREE ON CASHEL  
**CHAIR:** MR. JOHN BROCK, AUSTRALIA

For more information, please visit [www.fig.net/fig2016/history.htm](http://www.fig.net/fig2016/history.htm).

## Sunday, 1 May 2016

### ACCO MEETING

**SUNDAY, 1 MAY 8:30–16:30**  
**VENUE:** RYDGES LATIMER HOTEL  
**CHAIR:** MS. DIANE DUMASHIE, UNITED KINGDOM, FIG VICE-PRESIDENT

- By invitation only

### ICSM

**SUNDAY, 1 MAY 9:00–14:00**  
**VENUE:** RYDGES LATIMER HOTEL  
**CHAIR:** MR. MARK DYER, NEW ZEALAND

- By invitation only

### TECHNICAL SEMINAR ON REFERENCE FRAMES IN PRACTICE (DAY 1)

**SUNDAY, 1 MAY 8:30–17:30**  
**VENUE:** RYDGES LATIMER HOTEL  
**COMMISSION:** 5

For more information, please visit [www.fig.net/fig2016/commission5.htm](http://www.fig.net/fig2016/commission5.htm).

### SMALL ISLAND DEVELOPING STATES (SIDS) WORKSHOP (DAY 2)

**SUNDAY, 1 MAY 9:00–18:00**  
**VENUE:** RYDGES LATIMER HOTEL

### 3<sup>RD</sup> FIG YOUNG SURVEYORS NETWORK CONFERENCE (DAY 2)

**SUNDAY, 1 MAY**  
**VENUE:** EXPLORING CHRISTCHURCH

### HISTORY SYMPOSIUM (DAY 2)

**SUNDAY, 1 MAY 9:00–17:00**  
**VENUE:** BREAKFREE ON CASHEL

### CHARITY RUN/WALK

**SUNDAY, 1 MAY 17:00–19:00**  
**VENUE:** HAGLEY PARK  
**COMMISSION:** YSN

Join us – for our 5k charity walk/run. Everybody can do it – it's all about the joined activity with our friends and colleagues.

- Everyone is invited!

### HOME HOSPITALITY

**SUNDAY, 1 MAY 19:30–23:00**  
**VENUE:** VARIOUS

Our friendly Christchurch surveyors have opened their homes to delegates and partners for an informal dinner experience. Includes return transport from conference hotels to local residences, evening meal with a local host family and other FIG delegates.

- Ticket is required

## Monday, 2 May 2016

### FIG GENERAL ASSEMBLY – SESSION 1

**MONDAY, 2 MAY 9:00–16:00**  
**VENUE:** PLENARY HALL, HORNCASTLE ARENA  
**CHAIR:** MS. CHRYSY POTSIOU, GREECE, FIG PRESIDENT

- For all FIG members
- Open for observers

### FIG YSN & UN HABITAT–GLTN JOINT AWARENESS EVENT ON THE SOCIAL TENURE DOMAIN MODEL (STDM)

**MONDAY, 2 MAY 9:00–16:00**  
**VENUE:** CONCOURSE ROOM, HORNCASTLE ARENA  
**CHAIR:** MS. EVA-MARIA UNGER, AUSTRIA, CHAIR OF YSN  
**RAPPORTEUR:** MR. JOHN GITAU, UN HABITAT-GLTN

For more information, please visit [www.fig.net/fig2016/stdm.htm](http://www.fig.net/fig2016/stdm.htm)

### RECIPROCATING LICENCING BOARDS (CRSBANZ) MEETING

**MONDAY, 2 MAY 14:00–17:00**  
**VENUE:** ADDINGTON RACEWAY  
**CHAIR:** MR. MARK DYER, NEW ZEALAND

- By invitation only

### TECHNICAL SEMINAR ON REFERENCE FRAMES IN PRACTICE (DAY 2)

**MONDAY, 2 MAY 9:00–17:30**  
**VENUE:** RYDGES LATIMER HOTEL  
**COMMISSION:** 5

### WELCOME RECEPTION

**MONDAY, 2 MAY 19:00–22:00**  
**VENUE:** TRANSITIONAL CATHEDRAL

Your New Zealand hosts warmly invite you to join them at the Welcome Reception to be held at the Transitional Cathedral.

Dinner and beverages will be available with background music and a great ambience, the perfect opportunity to catch up with your fellow FIG delegates.

The Cathedral is an easy walk from the central city and most conference accommodations, however shuttlebuses are provided, see page 47.

**First time attender:** Join us at the Welcome Reception at “Newcomers Corner”, Transitional Cathedral.

# Technical Programme Overview

## TUESDAY, 3 MAY

Addington Raceway, level 1			Addington Raceway, level 2			
Christian Cullen 1	Christian Cullen 2	Christian Cullen 3	Silk room 1	Silk room 2	Silk room 3	
09:00–10:30 <b>Opening Ceremony</b> Plenary Hall, Horncastle Arena						
11:00–12:30 <b>Plenary Session 1</b> Plenary Hall, Horncastle Arena						
12:45–13:55 <b>FIG Regional Capacity Development Network</b> Concourse Room, Horncastle Arena						
14:00–15:30	TS01A – Visions and Trends in Land Administration – C: 7	TS01B – Contribution of Geodesy to Disaster Management – C: 5	TS01F – Professional Issues in Surveying – C: 1	TS01D – Deformation Monitoring and Analysis – C: 6	2016 FIG Director Generals Forum – Session 1: Experiences on 3D mapping	TS01C – GIS, Crowdsourcing and VGI – C: 3
16:00–17:30	TS02A – Infrastructures for good Governance – C: 7	TS02B – CORS – C: 5	TS02F – Mutual Recognition of Qualifications – C: 1	FIG YSN, FIG & UN Habitat-GLTN Joint Technical Session: Nepal Building Back Better	2016 FIG Director Generals Forum – Session 2: 3D mapping and Disaster Risk Reduction	TS02C – GIS and Planning – C: 3

## WEDNESDAY, 4 MAY

09:00–10:30 <b>Plenary Session 2</b> Plenary Hall, Horncastle Arena						
11:00–12:30	TS03A – New Technologies and Improvement of Systems – C: 7	TS03B – Earthquake Monitoring and GNSS Applications – C: 5 and 6	TS03F – Ethics – C: 1	TS03D – Engineering surveys for Constructive Works and Structural Monitoring I – C: 6	TS03E – Blue Economy to Blue Growth – Surveyors & Marine Spatial Planning – C: 4	TS03C – 3D Models for 3D Tenure – C: 3 and 7
12:45–14:00 <b>FIG Task Force on Commission Structure</b> Concourse Room, Horncastle Arena						
14:00–15:30	TS04A – Data Acquisition by Remote Methods and Crowdsourcing – C: 7	TS04B – Recent Crustal Movements – C: 5	FIG Task Force on Scientific Journal	TS04D – Engineering surveys for Constructive Works and Structural Monitoring II – C: 6	TS04E – Hydrographic Surveying and Power – C: 4	TS04C – GIS and Remote Sensing for the Prevention of Disaster and Recovery – C: 3
14:00–16:00 <b>Emerging technologies and Careers</b> Plenary Hall, Horncastle Arena						
16:00–17:30	TS05A – Impact of Climate Change and Disasters on Land Rights – C: 7	TS05B – National Datum – C: 5	TS05F – Forum on Engaging Private Practice – C: 1	TS05D – Sensor Fusion, Kinematic Data Acquisition and Processing Techniques – C: 6	TS05E – Maritime and Marine Spatial – C: 4	TS05C – Updated GIS to Prevent Disaster and to Faster Land Management just after Earthquake – C: 3
17:30–18:30 <b>FIG Commission Annual Meeting</b> Various rooms, Addington Raceway						

## THURSDAY, 5 MAY

09:00–10:30 <b>Plenary Session 3</b> Plenary Hall, Horncastle Arena						
11:00–12:30	TS06A – The Continuum of Land Rights – C: 7	TS06B – Multisensor Systems – C: 5	Consulting Surveyors of New Zealand – Part 1 – C: CSNZ	TS06D – Laserscanning – C: 5 and 6	TS06E – Securing Property in Pre- and Post Disaster Areas – C: 7	TS06C – GIS, Mapping and Photogrammetry – C: 3
14:00–15:30	TS07A – Transparency and Security in Land Administration – C: 7	TS07B – GNSS – C: 5	Consulting Surveyors of New Zealand – Part 2 – C: CSNZ	TS07D – Wide Area Engineering Surveys for Monitoring, Features Determination and Environmental Management – C: 6	TS07E – Hydrography for Society and Disaster Management – C: 4	TS07C – INSPIRE, NSDI & SDI – C: 3
16:00–17:30	TS08A – Impact of Land Disasters on Value, Economics and Data – C: 7	TS08B – Advance in Photogrammetry and other Measurement Methods – C: 5	Consulting Surveyors of New Zealand – Part 3 – C: CSNZ	TS08D – Geoid Determination and Vertical Datum – C: 5	TS08E – New and Emerging Technologies for Hydrography – C: 4	TS08C – GIS, 3D Data and Cadastre – C: 3 and 7



TUESDAY, 3 MAY						
Addington Raceway, level 3					Horncastle Arena	
Silk room 4	Blossom Lady 1	Blossom Lady 2	Terror of Love 1	Terror of Love 2	Concourse Room	
	TS01I – Exploring a Long Term “Fit for Purpose” Development Plan – The case of Ghana – C: 8	TS01J – French Session 1	TS01H – Round table discussions on; Working Group 9.1, 9.2 and 9.3 – C: 9	TS01G – UAV Surveying and Mapping User Forum	Platinum member: Trimble – The Changing World of the Surveyor	09:00–10:30 11:00–12:30 12:45–13:55 14:00–15:30
	TS02I – Spatial Planning Policies, Disaster Resilience Innovations and Challenges for Sustainable Development – C: 8	TS02J – The Application of Building Information Modelling and Digital Technology in the Construction Industry – C: 10	TS02H – Mass Appraisal & Real Estate Taxation in a Changing World – C: 9	TS02G – Enhancing Surveying Education – C: 2		16:00–17:30
WEDNESDAY, 4 MAY						
	TS03I – Preparedness or Response: The dilemma in Planning Policy Choices for Water as a Resource – C: 8	TS03J – French Session 2	TS03H – Real Estate Economics & Expropriation Solutions to Land Policy Problems – C: 9	UN Habitat-GLTN & FIG Joint Technical Session: Fit-For-Purpose Land Administration	Platinum member: Esri – Modernizing Land Administration	09:00–10:30 11:00–12:30
2016 FIG Corporate Members Meeting	TS04I – Land and Water for Global Food Production – C: 8	TS04J – History Session	TS04H – Land Policy and Management as a Tool for Disaster Recovery – C: 9	Shaping our Future Network – FIG Young Surveyors Network – C: YSN	NZAID, UN Habitat-GLTN, FAO & FIG Joint Technical Session: SIDS	12:45–14:00 14:00–15:30
	TS5I – Christchurch -the 2010 earthquake: Disaster Recovery and Planning and Building Resilient Infrastructure for the Future – C: 8	TS05J – Construction Economics and Management – C: 10	TS05H – Advances in the Valuation of Real Estate – C: 9	TS05G – Teaching and Learning for the Future – C: 2	UN Habitat-GLTN & FIG Joint Technical Session: Country Experiences on the Implementation of GLTN Land Tools	14:00–16:00 16:00–17:30
THURSDAY, 5 MAY						
	TS06I – Rural Development, Land Governance and Public Private Partnerships – C: 8	FIG & FAO Joint Technical Session: How can Land Professionals support the implementation of VGGTs	FIG Task Force on Real Estate Market Study	FIG Member Associations Forum	Platinum member: Leica Geosystems – when it has to be right.	11:00–12:30
	TS07I – Urban and Cities Planning, Land Consolidation and Resilience – C: 8		TS07H – Land Tenure in Cultural Context – C: 7	UN Habitat-GLTN & FIG Joint Technical Session: Land Tenure Initiative for Asia Pacific	FIG Academic Members Forum joint with FAO: VGGT	14:00–15:30
Regional Partners Meeting/Forum	TS08I – Planning, Development and Consolidation of Land Rights in Crisis Situation – C: 8	FIG Standards Network	UN Habitat-GLTN & FIG Joint Technical Session: Valuation of Unregistered Lands – C: 9	TS08G – Disaster Recovery Innovations – C: 7 and 8	Platinum member: Bentley Systems – Reality modelling for disaster management	16:00–17:30

**OPENING CEREMONY**

**TUESDAY, 3 MAY 9:00–10:30**  
**VENUE:** PLenary HALL,  
 HORNCastle ARENA

- Welcome Addresses by Ms. **Chryssy Potsiou**, Mr. **Mark Allen** and Mr. **Simon Ironside**
- Keynote Speakers: Sir **Tipene O'Regan** and Ms. **Margareta Wahlström**

**PLENARY SESSION 1**

**TUESDAY, 3 MAY 11:00–12:30**  
**VENUE:** PLenary HALL,  
 HORNCastle ARENA  
**CHAIR:** MS. **CHRYSsy POTSIou**,  
 GRECE, FIG PRESIDENT  
**RAPPOREUR:** MR. **MARK ALLEN**,  
 NEW ZEALAND, NZIS

**Theme:** *The Christchurch Story: "Christchurch's Response to the 2011 Earthquake"*

- Hon. **Lianne Dalziel**, Mayor of Christchurch
- Hon. **Gerry Brownlee**, Minister for Canterbury Earthquake Recovery and Member of Parliament for the Christchurch constituency of Ilam
- Mr. **Duncan Gibb**, Founding General Manager of SCIRT (Stronger Christchurch Infrastructure Rebuild Team)

**FIG REGIONAL CAPACITY DEVELOPMENT NETWORK**

**TUESDAY, 3 MAY 12:45–13:55**  
**VENUE:** CONCOURSE ROOM,  
 HORNCastle ARENA  
**CHAIR:** MS. **DIANE DUMASHIE**,  
 UNITED KINGDOM, FIG VICE-PRESIDENT

The Regional Capacity Development Network was established at the General Assembly of the FIG Working Week 2015 in Sofia. The Network continues the Work of the African Task Force (2009–14).

**2016 FIG DIRECTOR GENERALS FORUM – SESSION 1: EXPERIENCES ON 3D MAPPING**

**TUESDAY, 3 MAY 14:00–15:30**  
**VENUE:** SILK ROOM 2, ADDINGTON RACEWAY, LEVEL 2  
**CHAIR:** MR. **PETER MERSI**, LINZ, NEW ZEALAND AND MR. **ANDERS SANDIN**, LANTMÄTERIET, SWEDEN

- The session is open to all DGs and/or their deputies.

**PLATINUM MEMBER: TRIMBLE – THE CHANGING WORLD OF THE SURVEYOR**

**TUESDAY, 3 MAY 14:00–15:30**  
**VENUE:** CONCOURSE ROOM,  
 HORNCastle ARENA

In this session Trimble will:

- Illustrate projects where richer deliverables are achieved by utilizing a cross section of technologies from traditional survey tools to UAVs, terrestrial photogrammetry and scanning to rapidly deliver rich information.
- Describe tools that aid the Surveyor in collaborating on projects ranging from small to large, enabling the surveyor to be a key participant in adding value and ensuring quality throughout Projects
- Describe the applications for crowd sourced, collaboration, monitoring and spatial information technologies to aid in disaster response and efficient recovery



**TS01A – VISIONS AND TRENDS IN LAND ADMINISTRATION**

**TUESDAY, 3 MAY 14:00–15:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 1, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 7  
**CHAIR:** MR. **DANIEL PÁEZ**, COLOMBIA  
**RAPPOREUR:** MR. **LEIV BJARTE MJØS**, NORWAY

**Simon Hull and Jennifer Whittal** (South Africa): Towards a Framework for Assessing the Impact of Cadastral Development on Land Rights-Holders (7995)  
*This is a peer reviewed paper.*

**Markku Markkula** (Finland): How a Cadastre Might Look Like in Finland in the Year 2035? (8188)

**Thiago Marra, Kilder Barbosa, Oscar Oliveira and Eduardo Oliveira** (Brazil): Improving Land Administration in Brazil – A Proposal for a National Cadastre (8278)

**Stig Enemark** (Denmark): Facing the Post 2015 Global Agenda: The Role of Land Governance and Land Professionals (8332)

**Christiaan Lemmen** (Netherlands), **Philip Knight** (United Kingdom), **Jaques Vos** (Netherlands), **Eva-Maria Unger** (Austria) and **Bert Beentjes** (Netherlands): Blockchain/Bitcoin Functionality in Land Administration (8407)

**Daniel Steudler and Xavier Comtesse** (Switzerland): Land Administration and Management – Towards the Fifth Dimension (8415)

**TS01B – CONTRIBUTION OF GEODESY TO DISASTER MANAGEMENT**

**TUESDAY, 3 MAY 14:00–15:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 2, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 5  
**CHAIR:** MR. **GRAEME BLICK**, NEW ZEALAND  
**RAPPOREUR:** MR. **VOLKER SCHWIEGER**, GERMANY

**Christopher Pearson** (New Zealand), **Niraj Manandhar** (Nepal) and **Paul Denys** (New Zealand): Towards a Modernized Geodetic Datum for Nepal: Options for Developing an Accurate Terrestrial Reference Frame Following the April 25, 2015 Mw7.8 Gorkha Earthquake (7970)  
*This is a peer reviewed paper.*

**Nic Donnelly** (New Zealand), **Chris Rizos** and **Craig Roberts** (Australia): Using a Deformation Model to Calculate Coordinates in a Local Reference Frame (8297)

**Chris Crook, Dionne Hansen and Paula Gentle** (New Zealand): Aligning the New Zealand National Datum with the International Terrestrial Reference Frame in the Face of Tectonic Deformation (8138)

**Satoshi Kawamoto, Basara Miyahara, Yusaku Ohta, Takuya Nishimura and Masaru Todoriki** (Japan): Real-Time GNSS Positioning System REGARD for Rapid Earthquake Moment Estimates (8182)

**Basara Miyahara, Takashi Toyofuku and Tomoaki Furuya** (Japan): Reconstruction of Geodetic Reference Frame After the 2011 off the Pacific Coast of Tohoku Earthquake (8180)

**Toms Brent and Doherty Callum** (New Zealand): Automated Remote Monitoring for Earthquake Recovery Work (8167)

**TS01C – GIS, CROWDSOURCING AND VGI**

**TUESDAY, 3 MAY 14:00–15:30**  
**VENUE:** SILK ROOM 3, ADDINGTON RACEWAY, LEVEL 2  
**COMMISSION:** 3  
**CHAIR:** MR. **ENRICO RISPOLI**, ITALY  
**RAPPOREUR:** MR. **CROMWELL MANALOTO**, ITALY

**Njike Chigbu and Susan Chiwolam Nmerigini** (Nigeria): Evaluation of Urban Road Networks Accessibility in Umuahia Urban Using GIS Techniques (8056)

**Dražen Odobašić and Franka Grubišić** (Croatia): Healthsites.io – a Free, Curated, Global, Canonical Source of Healthcare Location Data for Emergency Relief, Disease Epidemic and Crisis Situations (8096)

**Gertrude Njar** (Nigeria): Driver's Perception on the Use of Geospatial Data in Traffic Management in Calabar Municipality, Cross River State (8205)

**Minkyoo Youm, Hongsik Yun and Jisung Kim** (Republic of Korea): A Study for Urban Risk Assessment Using GIS (8279)

**Dionysia-Georgia Perperidou** (Greece): Volunteer Geographic Information: How to guide volunteers to produce accurate road network data (8340)

**TS01D – DEFORMATION MONITORING AND ANALYSIS**

**TUESDAY, 3 MAY 14:00–15:30**

**VENUE:** SILK ROOM 1, ADDINGTON RACEWAY, LEVEL 2

**COMMISSION:** 6

**CHAIR:** MR. IVO MILEV, GERMANY

**RAPPOREUR:** MR. MICHAEL CUTFIELD, NEW ZEALAND

**Sjoerd van Ballegooy, James Russell, Virginie Lacrosse, Simpson Joeseeph** (New Zealand) and **Ellen Rathje** (USA): Residential Building Fragility due to Liquefaction Induced Ground Surface Movement (7966)

**Gethin Wyn Roberts, Xu Tang** (China, PR) and **Christopher Brown** (United Kingdom): Temperature Effects on the Vertical Movements of the Severn Suspension Bridge's Suspension Cable measured by GNSS (8123)

**Mohammad Amin Alizadeh Khameneh, Lars E. Sjöberg** and **Anna B. O. Jensen** (Sweden): Optimisation of GNSS Deformation Monitoring Networks by Considering Baseline Correlations (8151)

**David Martin** (France): High Precision Alignment at the European Synchrotron Radiation Facility (8183)

**Emi Sukiyah, Ildrem Syafri, Johan Budi Winarto, Muhammad Rum Budi Susilo** and **Adang Saputra** (Indonesia): Active faults and their implications for regional development at the southern part of West Java, Indonesia (8283)

**Corinna Harmening** and **Hans Neuner** (Austria): Detecting Rigid Body Movements from TLS-Based Areal Deformation Measurements (8322)

**TS01F – PROFESSIONAL ISSUES IN SURVEYING**

**TUESDAY, 3 MAY 14:00–15:30**

**VENUE:** CHRISTIAN CULLEN LOUNGE 3, ADDINGTON RACEWAY, LEVEL 1

**COMMISSION:** 1

**CHAIR:** MR. BRIAN COUTTS, NEW ZEALAND

**RAPPOREUR:** MS. WINNIE SHIU, HONG KONG

**B J Coutts** (New Zealand) and **Donald Grant** (Australia): Geospatial Surveyors – What Are They Good For? (8444)

**Leonie Newnham** (Australia): Building a Balanced Gender Workforce in a Land Management Organisation – a Case Study of the Gender Equity Work in Victoria, Australia (8220)

**Michael Allsopp, Tom Champion** and **Scott Jukes** (Australia): Raising the Profile of the Surveying Profession (8236)

**Torben Juulsager** (Denmark): Putting the Surveying Profession on the “Map”. Sketches of a Danish Branding Strategy (8473)

**Jayne Perrin** (New Zealand): I ♥ CHCH – a Personal Journey Amongst the Re-build Rubble (8134)

**TS01G – UAV SURVEYING AND MAPPING USER FORUM**

**TUESDAY, 3 MAY 14:00–15:30**

**VENUE:** TERROR OF LOVE LOUNGE 2, ADDINGTON RACEWAY, LEVEL 3

**CHAIR:** MR. MALCOLM ARCHBOLD, NEW ZEALAND

Join the session to learn how surveyors are using UAV technologies as part of their surveying and mapping workflows to produce a variety of geospatial services. This forum will be facilitated by users and will cover topics such as the NZ CAA regulations and Airways requirements, market sectors using this technology, project workflows, client deliverables and how users can collaborate. Both existing and potential UAV users are welcome to attend.

**TS01H – ROUND TABLE DISCUSSIONS – WORKING GROUPS 9.1, 9.2 AND 9.3**

**TUESDAY, 3 MAY 14:00–15:30**

**VENUE:** TERROR OF LOVE LOUNGE 1, ADDINGTON RACEWAY, LEVEL 3

**COMMISSION:** 9

**CHAIR:** MR. STEVEN NYSTROEM, UNITED STATES

**WG 9.1: Expanded Policy Framework for Sustainable Real Estate Markets**

In 2010, the United Nations published the *Policy Framework for Sustainable Real Estate Markets* booklet. The aim of Working Group 9.1 is to discuss, analyse and expand upon this work, to allow for greater understanding and applicability in its implementation.

**WG 9.2: Mass Appraisal Systems**

This working group will investigate and publish guidelines for the development of mass appraisal techniques to support property tax assessments, including the appropriateness of original data sources and of indices to monitor the property market.

**WG 9.3: Valuation Methods and Standards Worldwide**

These round table discussions will bring together real estate professionals (valuers, managers, brokers, state and private ownership organizations) to share templates and techniques used to value and analyse specific property types.

**TS01I – EXPLORING A LONG TERM “FIT FOR PURPOSE” DEVELOPMENT PLAN – THE CASE OF GHANA**

**TUESDAY, 3 MAY 14:00–15:30**

**VENUE:** BLOSSOM LADY 1, ADDINGTON RACEWAY, LEVEL 3

**COMMISSION:** 8

**CHAIR:** MR. KWAME TENADU, CHAIR OF FIG COMMISSION 8, GHANA

**RAPPOREUR:** MR. STEPHEN DJABA, GHANA

**Ibrahim Usman Jibril** (Nigeria): Thirty Five Years of Land Administration in The Federal Capital Territory (FCT) of Nigeria (8032) *This is a peer reviewed paper.*

**Jack McKenna** (USA): Fit for Purpose Parcel Mapping Methodologies for a Seamless Cadastre Database (8090)

**Samuel Mabikke, Danilo Antonio, Selebalo Cyprian, Sylla Oumar** (Kenya) and **Eugene Chigbu** (Germany): Securing Tenure through Responsive Land Use Planning: An Innovative Tool for Country Level Interventions (8191)

**TS01J – FRENCH SESSION 1**

**TUESDAY, 3 MAY 14:00–15:30**

**VENUE:** BLOSSOM LADY 2, ADDINGTON RACEWAY, LEVEL 3

**CHAIR:** MR. MARC VANDERSCHUEREN, BELGIUM

**RAPPOREUR:** MR. GODELIVE PHANZU, DEMOCRATIC REPUBLIC OF THE CONGO

**François Mazuyer and Claire Galpin** (France): Endommagement des réseaux et plan de corps de rue simplifié (8436)

**Francis Roy and Yaïves Ferland** (Canada): Défis, enjeux et stratégies de rétablissement dans le contexte de désastres naturels au Québec : inondations, verglas et changements climatiques (8371)

**Thierry Demathieu L.S** (Australia): L'éducation pour tous les géomètres sur internet (8438)

**Bertin Mwanambuka Mafine** (Democratic Republic of Congo): Le Recasement des Sinistres de la Rivière Makelele dans La Ville de Kinshasa, en République Démocratique Du Congo (8434)

**2016 FIG DIRECTOR  
GENERALS FORUM –  
SESSION 2: 3D MAPPING  
AND DISASTER RISK  
REDUCTION**

**TUESDAY, 3 MAY 16:00–17:30**  
**VENUE:** SILK ROOM 2, ADDINGTON  
RACEWAY, LEVEL 2  
**CHAIR:** MR. PETER MERSI, LINZ,  
NEW ZEALAND AND MR. ANDERS  
SANDIN, LANTMÄTERIET, SWEDEN

The session is open to all DGs  
and/or their deputies

**FIG YSN, FIG & UN  
HABITAT–GLTN JOINT  
TECHNICAL SESSION:  
NEPAL BUILDING BACK  
BETTER**

**TUESDAY, 3 MAY 16:00–17:30**  
**VENUE:** SILK ROOM 1, ADDINGTON  
RACEWAY, LEVEL 2  
**CHAIR:** MS EVA-MARIA UNGER,  
CHAIR FIG YSN, AUSTRIA

The objectives of the session  
are:

- to introduce challenges of  
building back better ini-  
tiatives in the post-earth-  
quake situation in Nepal  
including rehabilitating in-  
formal/non-formal settlers  
and risk hazard-prone  
settlements
- to present the current  
efforts of building back  
better Nepal
- to explore the way forward  
based on international  
best practices.

**TS02A – INFRASTRUCTURES  
FOR GOOD GOVERNANCE**

**TUESDAY, 3 MAY 16:00–17:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 1,  
ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 7  
**CHAIR:** MR. CONRAD TANG, HONG KONG  
SAR, CHINA  
**RAPPORTEUR:** MR. DALMASSO  
ALESSANDRO, ITALY

**Vanessa Guzman, Daniel  
Paez** (Colombia) and **Abbas  
Rajabifard** (Australia):  
Colombian Emergency Response  
Platform (PCRE): Design and  
Testing of a Sdi- Based System to  
Facilitate Disaster Management in  
Colombia (8044)  
*This is a peer reviewed paper.*

**Miodrag Roić, Siniša Mastelić,  
Ivić, Hrvoje Matijević, Vlado  
Cetl and Hrvoje Tomić** (Croatia):  
Towards Standardized Concept of  
Multipurpose Land Administration  
(8201)

**Peter Lindbo Larsen** (Denmark):  
Rethinking Infrastructure within  
Denmark's Real Property Data  
Reform (8295)

**Kees de Zeeuw** (Netherlands),  
**Cecille Blake** (USA) and **Mahashe  
Chaka** (Lesotho):  
The agenda for a Group of Experts  
on Land Administration and  
Management within the United  
Nations (8408)

**Jamal Browne** (Saint Vincent and  
The Grenadines) and **Charisse  
Griffith-Charles** (Trinidad and  
Tobago):  
Mainstreaming Land Tenure Se-  
curity in Vulnerability Reduction  
(8421)

**TS02B – CORS**

**TUESDAY, 3 MAY 16:00–17:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 2,  
ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 5  
**CHAIR:** MR. KEVIN KELLY, UNITED  
STATES  
**RAPPORTEUR:** MR. DAN ROMAN,  
UNITED STATES

**Christina Kempe, Lotti  
Jivall, Martin Lidberg and  
Mikael Lilje** (Sweden):  
On the Management of Reference  
Frames in Sweden (8179)

**Ryan Keenan and Noor  
Raziq** (Australia):  
Engaging commercial RTK Net-  
work Services for precision and  
availability – ongoing experiences  
from SmartNet Australia (8224)

**Jerom Vanderstappen,  
Craig Roberts and Thomas  
Grinter** (Australia):  
Does Beidou Enhance Position-  
ing Performance Within CORS-  
net-NSW? (8135)

**Martin Lidberg, Per Jarlemark,  
Kent Ohlsson and  
Jan Johansson** (Sweden):  
Station calibration of the SWEPOS  
GNSS Network (8293)

**Mehmet Vahdet Gezer, Ömer  
Salgin, Tahsin Kara, Serdar  
Ergüner and Sedat Bakici**  
(Turkey):  
Role and Importance Tusaga-  
Active (CORS-TR) in Basis of the  
Operations Cadastral Plan (7958)

**TS02C – GIS AND PLANNING**

**TUESDAY, 3 MAY 16:00–17:30**  
**VENUE:** SILK ROOM 3, ADDINGTON  
RACEWAY, LEVEL 2  
**COMMISSION:** 3  
**CHAIR:** MR. YERACH DOYTHER, ISRAEL  
**RAPPORTEUR:** MR. JÜRIG LÜTHY,  
SWITZERLAND

**Jacynthe Pouliot and Philippe  
Girard** (Canada):  
Subsurface Utility Network Reg-  
istration and the Publication of  
Real Rights: Pending for a Full 3D  
Cadastré (8086)

**Annet Hospers, Marije  
Louwisma, Ron van  
Lammeren and Paul Peter  
Kuiper** (Netherlands):  
Calculating Distribution and In-  
tensity of Agricultural Traffic for  
Sustainable Development (8149)

**Yuhan Chen and Shougeng  
Hu** (China, PR):  
Characteristics of Industrial Land  
Use Transition in Development  
Zone in China: A Case Study of  
Tuanfeng County (8424)

**Wonho Lee and Jae Bok  
Kim** (Republic of Korea):  
Cultural Heritage Restore using  
Spatial Information Surveying  
Data (8450)

**TS02F – MUTUAL  
RECOGNITION OF  
QUALIFICATIONS**

**TUESDAY, 3 MAY 16:00–17:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 3,  
ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 1  
**CHAIR:** MS. WINNIE SHIU, HONG KONG  
**RAPPORTEUR:** MS. ROBYN  
MCCUTCHEON, AUSTRALIA

**Kate Fairlie** (Australia):  
Developing a Roadmap for ASEAN  
Mutual Recognition (8432)

**Israel Taiwo** (Nigeria), **Constance  
Banura** (Uganda), **Kevin  
Musungu** (South Africa) and  
**Kate Fairlie** (Australia):  
Status of Mutual Recognition in  
Africa (8431)

**Fahmi Amhar, Suprajaka  
Suprajaka, Sumaryono  
Sumaryono, Budi  
Susetyo and Iksal  
Yanuarsyah** (Indonesia):  
Projection of Geospatial Human  
Resources in Indonesia until 2025  
(8235)

**Muhammad Mansur  
Kabir** (Nigeria):  
Roles of Surveyors in Conflict  
Resolution and Peace Building in  
Farmers – Herdsmen Perennial  
Resource Clashes in Nigeria with  
Special Reference to Katsina  
State, Nigeria (7974)

**Peter Hoogwerf, Paula  
Dijkstra, Jacqueline  
Meerkerk and Carline  
Amsing** (Netherlands):  
A Shift in Professional Practice:  
The Added Value of a National  
Association (8330)

**Oladunni Oyetola  
Opatoyinbo and Oluwayemisi  
Abiodun Babatunde** (Nigeria):  
Comparative Analysis of Gender  
Disparity Enrolment in Surveying  
Training in Tertiary Institution  
(8157)



**TS02G – ENHANCING SURVEYING EDUCATION**

**TUESDAY, 3 MAY 16:00–17:30**

**VENUE:** TERROR OF LOVE LOUNGE 2, ADDINGTON RACEWAY, LEVEL 3

**COMMISSION:** 2

**CHAIR:** MR. VASILY NILIPOVSKIY, RUSSIAN FEDERATION

**RAPPORTEUR:** MR. FRANCIS ROY, CANADA

**Siti Hasliah Salleh, Nor Ashikin Mohamed Yusof, Durrishah Idrus and Azleen Mohd Zain** (Malaysia):

A Conceptual Study On Criteria and Indicators of Preparedness For First Responders Towards Disaster (8029)

**Michael Nietschke, Paul Corcoran, David Bruce and Scott Allen** (Australia):

Sustainable Surveying Education in South Australia (8101)

**Lauren Vathje, Elena Rangelova, Marjan Eggermont and Robert Brennan** (Canada):

Understanding Impacts and Professional Obligations to Society: Preparing Geomatics Engineers for the 21<sup>st</sup> Century (8281)

**Neneng Fenti Fatimah, Mohammad Adiyarahman Sulistio Ardjo and Astri Aulia Safrianty** (Indonesia):

Earthquake Disaster Response Preparation for Schoolchildren in Metropolitan Bandung, Indonesia (8389)

**TS02H – MASS APPRAISAL & REAL ESTATE TAXATION IN A CHANGING WORLD**

**TUESDAY, 3 MAY 16:00–17:30**

**VENUE:** TERROR OF LOVE LOUNGE 1, ADDINGTON RACEWAY, LEVEL 3

**COMMISSION:** 9

**CHAIR:** MR. VOSS WINRICH, GERMANY

**RAPPORTEUR:** MR. ERCAN ORHAN, TURKEY

**Vince Mangioni** (Australia):

The Role of Recurrent Land Tax and Revenue Trends in Australia (8053)

*This is a peer reviewed paper.*

**Avi Hallewa** (Israel):

Mass Appraisal Techniques Combined with GIS – Ownership Transfer Project in the Israel Land Authority (8084)

**Haicong Yu and Ying Liu** (China, PR):

Integrating Geographic Information System and Building Information Model for Real Estate Valuation (8234)

**Kh Chan** (Hong Kong SAR, China):

Improving Quality from Outsourcing in Real Estate (7998)

*This is a peer reviewed paper.*

**TS02I – SPATIAL PLANNING POLICIES, DISASTER RESILIENCE INNOVATIONS AND CHALLENGES FOR SUSTAINABLE DEVELOPMENT**

**TUESDAY, 3 MAY 16:00–17:30**

**VENUE:** BLOSSOM LADY 1, ADDINGTON RACEWAY, LEVEL 3

**COMMISSION:** 8

**CHAIR:** MR. MWENDA MAKATHIMO, KENYA

**RAPPORTEUR:** MS. DIANE MORIARTY, NEW ZEALAND

**Juric Marija** (Sweden):

Urban Transformation for the Prevention of Disaster (8095)

**Robert Bell, Ryan Paulik and Sanjay Wadhwa** (New Zealand):

Coastal Hazard and Climate-Change Risk Exposure in New Zealand: Comparing Regions and Urban Areas (8102)

**Johan Groot Nibbelink and Peter de Wolf** (Netherlands):

Urban Land Development: the Meaning of the Rotterdam Case for the New Dutch Voluntary Urban Reallocation Act (8185)

**Budi Siswanto and Astri Aulia Safrianty** (Indonesia):

Evaluation of Spatial Planning in South Bandung Area for Flood Mitigation (8373)

**Hassan Chtouki** (Morocco):

The Contribution of the urban and territorial planning in the urban resilience to the hazards of earthquakes and floods: the case of Morocco (8387)

**Xiao Qin-Xing and Shan Tong-Liu** (China, PR):

The Analysis of Key Problems of the Land Use Planning During the Post-Disaster Reconstruction (8427)

**TS02J – THE APPLICATION OF BUILDING INFORMATION MODELLING AND DIGITAL TECHNOLOGY IN THE CONSTRUCTION INDUSTRY**

**TUESDAY, 3 MAY 16:00–17:30**

**VENUE:** BLOSSOM LADY 2, ADDINGTON RACEWAY, LEVEL 3

**COMMISSION:** 10

**CHAIR:** MR. SEE LIAN ONG, UNITED KINGDOM

**RAPPORTEUR:** MR. RUYA FADASON,

**Benjamin Broad** (New Zealand):  
Extracting value from BIM in Construction (8292)

**Kristoffer Spendrup Bugge** (Norway):

BIM to Construction Site (8354)

**Krishna Mochtar** (Indonesia):  
Important Factors of Green Building Construction Project Implementation in Indonesia (8075)

**Christian Clemen and Christian Manthe** (Germany):

TLS and Building Information Modeling (BIM) – The BIM Project Central Railway Station Hannover (8383)

**Andrej Mocicka** (Australia):  
Bridging the Gap Between BIM and Survey (8051)

**KIWI EVENING / FOUNDATION DINNER**

**TUESDAY, 3 MAY 19:30–23:00**

**VENUE:** HORNCastle ARENA

FIG is delighted to invite you to a cultural extravaganza at the Horncastle Arena. You will enjoy a traditional Maori show with a variety of customary entertainment numbers. You might like to partake in a haka or learn how to swing a poi!

Buffet dinner and beverages are included. Afterwards a local entertainment group will provide great music for you. Transportation is provided from and to the conference hotels (see page 47).

- Supported by Trimble
- Ticket is required



**PLENARY SESSION 2**

**WEDNESDAY, 4 MAY 9:00–10:30**

**VENUE:** PLENARY HALL, HORNCastle ARENA  
**CHAIR:** MS. **DIANE DUMASHIE**, UNITED KINGDOM, FIG VICE PRESIDENT

**RAPORTEUR:** MR. **WARREN HAYNES**, NEW ZEALAND, NZIS

**Theme:** *Disaster Management and Recovery framework – The Surveyors response*

- Dr. **Hiroshi Murakami**, Deputy Director General, Geospatial Information Authority of Japan
- Mr. **Gregory Scott**, United Nations Committee of Experts on Global Geospatial Information Management
- Mr. **Keith Bell**, World Bank

**FIG FOUNDATION MEETING**

**WEDNESDAY, 4 MAY 7:00–8:30**

**VENUE:** FIG PRESIDENT'S ROOM, HORNCastle ARENA  
**CHAIR:** MR. **JOHN HOHOL**, PRESIDENT OF FIG FOUNDATION, USA

- By invitation only

**WOMEN IN SPATIAL/ SURVEYING NETWORKING BREAKFAST**

**MONDAY, 4 APRIL 7:45–9:00**

**VENUE:** CONCOURSE ROOM, HORNCastle ARENA

With guest speaker **Winnie Shiu**, from Hong Kong, this session is open to anyone interested. Winnie is a Chartered Land Surveyor and the only female land surveyor in a senior management position in the Government of Hong Kong SAR. She is currently Vice-Chair of FIG Comm. 1, Co-chair for the Working Group on Women in Surveying, and a Member of the FIG Task Force Working Group on Commission Structure.

- A \$10.00 fee to attend

**UN HABITAT–GLTN & FIG JOINT TECHNICAL SESSION: FIT-FOR-PURPOSE LAND ADMINISTRATION**

**WEDNESDAY, 4 MAY 11:00–12:30**

**VENUE:** TERROR OF LOVE LOUNGE 2, ADDINGTON RACEWAY, LEVEL 3  
**CHAIR:** MR. **KEES DE ZEEUW**, NETHERLANDS  
**RAPORTEUR:** MR. **JOHN GITAU**, UN HABITAT-GLTN

30 minutes open discussion facilitated by Kees de Zeeuw, Netherlands.

**Stig Enemark** (Denmark), **Robin McLaren** (United Kingdom) and **Christiaan Lemmen** (Netherlands): Building Fit-For-Purpose Land Administration Systems: Guiding Principles (8323)

**Christiaan Lemmen** (Netherlands), **Stig Enemark** (Denmark) and **Robin McLaren** (United Kingdom): Building Fit-For-Purpose Land Administration Systems: Providing Security of Tenure for All (8392)

**Robin McLaren** (United Kingdom), **Stig Enemark** (Denmark) and **Christiaan Lemmen** (Netherlands): Guiding Principles for Building Fit-For-Purpose Land Administration Systems in Developing Countries: Capacity Development, Change Management and Project Delivery (8315)

**TS03A – NEW TECHNOLOGIES AND IMPROVEMENT OF SYSTEMS**

**WEDNESDAY, 4 MAY 11:00–12:30**

**VENUE:** CHRISTIAN CULLEN LOUNGE 1, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 7  
**CHAIR:** MS. **HYUNSOOK LEE**, REPUBLIC OF KOREA  
**RAPORTEUR:** MS. **ZUVANOVA VLADIMIRA**, CZECH REPUBLIC

**Kestutis Sabaliauskas, Rimantas Ramanauskas, Arvydas Bagdonavicius, Romualdas Kasperavicius and Kazys Maksvytis** (Lithuania): Information Systems for Property Administration in Lithuania (8014)

**Paul van der Molen** (Netherlands): The Art of Recording: Creating the Base for Governance (8121)

**Martin Salzmann and Kees de Zeeuw** (Netherlands): Challenges Facing Cadastral and Land Registry Agencies in the Information Age: Withdrawing into Yourself or Reinventing Yourself? (8126)

**Rodney Thompson** (Australia), **Peter van Oosterom** (Netherlands), **Kean Soon** (Singapore) and **Russell Priebbenow** (Australia): A Conceptual Model Supporting a Range of 3D Parcel Representations Through all Stages: Data Capture, Transfer and Storage (8173)

**Nihat Şahin, Baransel İzmirli and Ali Fahri Özten** (Turkey): Cadastre Renewal Project in Turkish Republic of North Cyprus (8318)

**Rohan Bennett** (Netherlands): Cadastral Intelligence, Mandated Mobs, and the Rise of the Cadastrotbots (8335)

**TS03B – EARTHQUAKE MONITORING AND GNSS APPLICATIONS**

**WEDNESDAY, 4 MAY 11:00–12:30**

**VENUE:** CHRISTIAN CULLEN LOUNGE 2, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 5 AND 6  
**CHAIR:** MR. **LEONID A. LIPATNIKOV**, RUSSIAN FEDERATION  
**RAPORTEUR:** MS. **LI ZHANG**, GERMANY

**Louie Balicanta, Enrico Paringit, John Louie Fabila, Joemarie Caballero and Wilfredo Rada** (Philippines): Analysis of Positional Displacement in Bohol Island on Aftermath of the 2013 Central Visayas Earthquake from GNSS Surveys (8048)

**Enrico Paringit, Louie Balicanta, Christopher Cruz, Christopher Joaquin and Kenneth Quisado** (Philippines): Determination of Local Geoid Model Pre and Post-seismic Event as inferred from GPS/Leveling Data: Case Study of the 2013 Bohol Earthquake (M7.2) (8380)

**Joong-hee Han, Jay Hyoun Kwon and Yong Lee** (Republic of Korea): Performance Analysis of On-board Vehicle Sensors on Positioning in GNSS Signal Blockage (8088)

**Yong Chien Zheng, Paul Denys and Christopher Pearson** (New Zealand): Consequence of 2012 Mw 8.6 Northern Sumatra Earthquakes Towards Sundaland Plate (8128)

**Oluropo Ogundipe** (United Kingdom): Global Navigation Satellite Systems (GNSS) Equipped Public Transport Buses as Information Sentinels (8209)

**TS03C – 3D MODELS FOR 3D TENURE**

**WEDNESDAY, 4 MAY 11:00–12:30**

**VENUE:** SILK ROOM 3, ADDINGTON RACEWAY, LEVEL 2  
**COMMISSION:** 3 AND 7  
**CHAIR:** MR. **MARKKU MARKKULA**, FINLAND  
**RAPORTEUR:** MR. **DANIELE BRANCATO**, ITALY

**Behnam Atazadeh, Mohsen Kalantari, Abbas Rajabifard, Tom Champion and Serene Ho** (Australia): Harnessing BIM for 3D Digital Management of Stratified Ownership Rights in Buildings (7968) *This is a peer reviewed paper.*

**Martin Andrée, Stefan Seipel and Goran Milutinovic** (Sweden): Virtual 3D Models as a Basis for Property Formation (8083)

**Jiyi Zhang, Pengcheng Yin, Gang Li and Hehe Gu** (China, PR): A New Method for 3D Cadastral Parcel Merging Based on Conformal Geometry Algebra (8110)

**Neil Pullar** (New Zealand): Open Tenure; a Crowd Sourcing Software Application Providing Fit-For-Purpose Land Administration Solutions (8158)

**Rômulo Pires, Arthur Tavares, Juciela dos Santos and Jhonathan dos Santos** (Brazil): Application of 3d Cadastre at João Pessoa County, Brazil (8339)

**PLATINUM MEMBER: ESRI – MODERNIZING LAND ADMINISTRATION**

**WEDNESDAY, 4 MAY 11:00–12:30**

**VENUE:** CONCOURSE ROOM, HORNCastle ARENA  
**CHAIR:** MR. **BRENT JONES**, UNITED STATES



Technology for Land Administration – Cadastre, National Mapping and Valuation in the Developed and Developing World.

Leveraging the cloud, webGIS, mobile devices, global standards and best practices, this session will provide attendees with an understanding of how to improve and implement new land administration capabilities quickly and easily. All conference attendees are welcome. An interactive discussion is expected.

**TS03D –  
ENGINEERING SURVEYS FOR  
CONSTRUCTIVE WORKS AND  
STRUCTURAL MONITORING I**

**WEDNESDAY, 4 MAY 11:00–12:30**  
**VENUE:** SILK ROOM 1, ADDINGTON  
RACEWAY, LEVEL 2  
**COMMISSION:** 6  
**CHAIR:** MR. GUILLAUME CLIN,  
NEW ZEALAND  
**RAPPORTEUR:** MR. JAMES KAVANAGH,  
UNITED KINGDOM

**Rozaimi Che Hasan, Khamarrul  
Azahari Razak, Mohd Nadzari  
Ismail, Nor Azura Othman  
and Anita Setu** (Malaysia):

An Improved Mapping Method for  
Assessing Underground Tunnel  
Deformation in Malaysia (8020)

**James Kavanagh** (United King-  
dom):  
Measured Surveys – at the Heart  
of Every Good Survey is a Strong  
Specification (8064)

**Eike Barnefske, Friedrich  
Keller, Gehmert Christian  
and Sternberg Harald** (Germany):  
A Comparison of Strain Measure-  
ment Systems in a Tensile Experi-  
ment (8068)

**Nacu Vasile, Stoian Ioan  
and Vele Dan** (Romania):  
Geodetic Methods Regarding the  
Crustal Movements and Earth-  
quake Prediction (8117)

**Marc Jaspers, Guillaume  
Clin and Richard Harrison**  
(New Zealand):  
Data Capture for Underground  
BIM (8136)

**Desislava Staykova and Ivo  
Milev** (Germany):  
Classical and New-Age Technology  
for Monitoring and Early-Alarm  
Systems (8334)

**TS03E – BLUE ECONOMY  
TO BLUE GROWTH –  
SURVEYORS & MARINE  
SPATIAL PLANNING**

**WEDNESDAY, 4 MAY 11:00–12:30**  
**VENUE:** SILK ROOM 2, ADDINGTON  
RACEWAY, LEVEL 2  
**COMMISSION:** 4  
**CHAIR:** MR. GORDON JOHNSTON,  
UNITED KINGDOM

Session aims at setting a forward  
looking strategy for the ‘Blue  
Economy to Blue Growth’ and  
looking at the combined views of  
research, cadastre, industry, gov-  
ernmental and nongovernmental  
organisations and how surveyors  
can contribute to the sustained  
management of our seas and  
oceans.

**TS03F – ETHICS**

**WEDNESDAY, 4 MAY 11:00–12:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 3,  
ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 1  
**CHAIR:** MR. GARY STRONG, UNITED  
KINGDOM  
**RAPPORTEUR:** MS. KATE FAIRLIE,  
AUSTRALIA

An interactive session on Interna-  
tional Ethics and FIG’s relationship  
with the International Coalition  
on Ethics.

**Gary Strong** (United Kingdom):  
Why Ethics Standards Are of Lim-  
ited Use on Their Own for Pro-  
fessionals Working in Land, Prop-  
erty and Construction and If to  
Be Effective How Such Standards  
Need to Be Embedded, Monitored  
and Regulated Against. Workshop  
on Real Life Case Studies (8055)

**TS03H –  
REAL ESTATE ECONOMICS &  
EXPROPRIATION SOLUTIONS  
TO LAND POLICY PROBLEMS**

**WEDNESDAY, 4 MAY 11:00–12:30**  
**VENUE:** TERROR OF LOVE LOUNGE 1,  
ADDINGTON RACEWAY, LEVEL 3  
**COMMISSION:** 9  
**CHAIR:** MR. STEVEN NYSTROM, UNITED  
STATES  
**RAPPORTEUR:** MR. VOSS WINRICH,  
GERMANY

**James Kavanagh, Frances  
Plimmer and Christopher  
Barlow** (United Kingdom):  
Is the Attribution of ‘value’ a  
Pre-Cursor to the Establishment of  
Land & Property Rights? (8067)

**Stefanos Giannoulakis, Nikolaos  
Karanikolas, Agapi Xifilidou  
and Linos Perchanidis** (Greece):  
The Impact of the Financial Crisis  
on Residential Property Market of  
Greece (8192)

**Batuhan Sariturk, Dursun Zafer  
Seker and Nuket Sivri** (Turkey):  
A Study to Determine The Rela-  
tions Between Living Standards  
and Carbon Footprint Among  
Geomatics Engineers in Turkey  
(8311)

**Felician Komu** (Tanzania):  
Compensation Assessment for  
Land Acquisition- the Dichotomy  
of Tanzania Laws and Develop-  
ment Partners Resettlement Re-  
quirements (8312)

**Baransel Izmirlı and Ali Fahri  
Ozten** (Turkey):  
Routing and Expropriation Pro-  
cess and Costs in Iran-Turkey  
Europe Gas Pipeline Project (8319)

**Steven Nystrom** (USA)  
and **Chryssy Potsiou** (Greece):  
The Cost of a Lack in Real Property  
Market Formalization on a Nation-  
al Economy (8348)

**Rosy Liao Rong** (China, PR):  
The Diversified Compensation  
Methods over Land Expropriation  
on the Context of Urbanization in  
Developing Countries – Taking the  
Cases from China (8320)

**TS03I – PREPAREDNESS OR  
RESPONSE: THE DILEMMA IN  
PLANNING POLICY CHOICES  
FOR WATER AS A RESOURCE**

**WEDNESDAY, 4 MAY 11:00–12:30**  
**VENUE:** BLOSSOM LADY 1, ADDINGTON  
RACEWAY, LEVEL 3  
**COMMISSION:** 8  
**CHAIR:** MR. HAKAN OLSSON, SWEDEN  
**RAPPORTEUR:** MR. JAMES KAVANAGH,  
UNITED KINGDOM

**Sam Amirebrahimi, Abbas  
Rajabifard, Priyan Mendis  
and Tuan Ngo** (Australia):  
A Planning Decision Support Tool  
for Evaluation and 3D Visualisa-  
tion of Building Risks in Flood  
Prone Areas (7999)  
*This is a peer reviewed paper.*

**Mohammad Adietyarahman  
Sulistio Ardjo, Budi Siswanto,  
Astri Aulia Safrianto and  
Anisa Permana** (Indonesia):  
Evaluation of Spatial Planning  
in South Bandung Area Towards  
Flood Resilience (8331)

**Strack Mick** (New Zealand):  
Before It Is Washed to the Sea? –  
Coastal Development and Erosion  
(8079)

**Biswajeet Pradhan** (Malaysia):  
An Automated Flood Detection  
Mapping Based on RADARSAT-2  
Satellite Image through Ensemble  
Classification Approaches (8116)

**Vincent Thomas and Felix  
Friedmann** (Canada):  
Predicting Floods by Visualizing  
and Analyzing Latest Weather  
Data (8214)

**John Louie Fabila** (Philippines):  
Assessing the Increase in Exposure  
to Flood Hazard of Critical River  
Systems Due to Climate Change  
by Integrating Predicted Change in  
Rainfall Scenarios Based on Global  
Circulation Models (8299)

**TS03J – FRENCH SESSION 2**

**WEDNESDAY, 4 MAY 11:00–12:30**  
**VENUE:** BLOSSOM LADY 2, ADDINGTON  
RACEWAY, LEVEL 3  
**CHAIR:** MR. FRANCIS ROY, CANADA  
**RAPPORTEUR:** MR. BERTIN  
MWANAMBUKA MAFINE, DEMOCRATIC  
REPUBLIC OF CONGO

**Léopold Degbegnon** (Benin):  
La Problématique de l’Aména-  
gement Foncier vue par le Géom-  
ètre-Expert : cas de la Commune  
d’Abomey-Calavi (8462)

**Marc Vanderschueren** (Belgium):  
Le Code du Développement Terri-  
torial (8417)

**Godelive Phanuz** (Democratic  
Republic of Congo):  
Les Erosions en République De-  
mocratique du Congo Les Cata-  
strophes Naruelles et Artificielles  
en R.d.congo (8418)

**Ahmed Chikhi and Nadia  
Djemaa** (Algeria):  
Comment se remettre d’un séisme  
(8416)

**Samuel Nguema Ondo** (Gabon):  
Gouvernance foncière au Gabon:  
défis et opportunités» (8437)

**FIG TASK FORCE ON COMMISSION STRUCTURE**

**WEDNESDAY, 4 MAY 12:45–14:00**  
**VENUE:** CONCOURSE ROOM, HORNCastle ARENA  
**CHAIR:** MR. MIKAEL LILJE, SWEDEN, CHAIR OF TASK FORCE

The Task Force on Commission Structure was established at the General Assembly of the FIG Working Week 2015 in Sofia. At the session the following question is asked: Do the FIG Commissions reflect the technological advances and challenges of today or is there maybe a need to restructure our Commissions to support our surveyors appropriately in the future?

Get your lunch and join the session to discuss the paper that was presented at the General Assembly and discuss how the FIG Commissions can be structured in the future.

**FIG TASK FORCE ON SCIENTIFIC JOURNAL**

**WEDNESDAY, 4 MAY 14:00–15:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 3, ADDINGTON RACEWAY, LEVEL 1  
**CHAIR:** PROF. DR. YERACH DOYTSHER, ISRAEL, CHAIR OF TASK FORCE

The Task Force on Scientific Journal was established at the General Assembly of the FIG Working Week 2015 in Sofia. The aim of the Task Force is to evaluate all aspects of establishing a journal under FIG umbrella. Join the session and join the discussion.

**SHAPING OUR FUTURE NETWORK – FIG YOUNG SURVEYORS NETWORK**

**WEDNESDAY, 4 MAY 14:00–15:30**  
**VENUE:** TERROR OF LOVE LOUNGE 2, ADDINGTON RACEWAY, LEVEL 3  
**COMMISSION:** YSN  
**CHAIR:** MS. EVA-MARIA UNGER, AUSTRIA, CHAIR OF YSN  
**RAPPORTEUR:** MS. PAULA DIJKSTRA, NETHERLANDS, VICE-CHAIR OF YSN

Be part in shaping the FIG Young Surveyors Network – and this in full speed! Get your seatbelt fasten and get to know the work, challenges and vision of our network. In this dynamical Workshop participants have the possibility of presenting and brainstorming their ideas on 'our future network'. So join us to keep on building the FIG Young Surveyors Network: International, Regional and National and more important – be part of the future.

**2016 FIG CORPORATE MEMBERS MEETING**

**WEDNESDAY, 4 MAY 14:00–15:30**  
**VENUE:** SILK ROOM 4, ADDINGTON RACEWAY, LEVEL 2  
**CHAIR:** MS. CHRYSY POTSIOU, GREECE, FIG PRESIDENT

The 2016 FIG Corporate Members Meeting is where the corporate membership within FIG meets the FIG Administration to exchange information, provide feedbacks and discuss on-going and proposed activities.

– By invitation only

**TS04A – DATA ACQUISITION BY REMOTE METHODS AND CROWDSOURCING**

**WEDNESDAY, 4 MAY 14:00–15:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 1, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 7  
**CHAIR:** MR. MARKUS SEIFERT, GERMANY  
**RAPPORTEUR:** MR. MARC VANDERSCHUEREN, BELGIUM

**Dexter Davis, Charisse Griffith-Charles, Sasha Addo and Nikita Morris** (Trinidad and Tobago): Aerial Survey Solutions for Encroachments and Informal Settlements: Case Studies in Trinidad and Tobago (8028)  
*This is a peer reviewed paper.*

**Budi Jaya Silalahi, Albert Midian Panjaitan, Faus Tinus Handi Feryandi, Pandapotan Sidabutar and Andri Novijandri** (Indonesia): Implementing Remote Sensing and Drone Mapping Technology for Land Management in Indonesia's Boundary Zone (8321)

**Jihyuk Choi** (Republic of Korea): Flood Disaster Map using UAV (8448)

**Gon Park** (Republic of Korea): Flood and Drought Prevention with Using Green Roofs and Building Spatial Information (8449)

**Yongjong Lee and Jae Bok Kim** (Republic of Korea): Searching Position in Non-Residential Areas in Emergency and Disaster Situations by Using the National Point Number (8451)

**Yoonjung Nam** (Republic of Korea): The Method of Establishing Integrated 3D Underground Geo-Spatial Data Using Terrestrial LIDAR and Its Application Plan (8452)

**TS04B – RECENT CRUSTAL MOVEMENTS**

**WEDNESDAY, 4 MAY 14:00–15:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 2, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 5  
**CHAIR:** MR. DAVID MARTIN, FRANCE  
**RAPPORTEUR:** MR. NIC DONNELLY, NEW ZEALAND

**Wanju Bo, Shengtao Feng and Jianfeng Su** (China, PR): Study on Large Area Crust Deformation with GNSS Vertical Components (7986)

**Paul Denys and Christopher Pearson** (New Zealand): Positioning in Active Deformation Zones – Implications for NetworkRTK and GNSS Processing Engines (8012)  
*This is a peer reviewed paper.*

**Arisauna Pahlevi, Kosasih Prijatna, Irwan Meilano and Ibnu Sofian** (Indonesia): Investigation of Vertical Displacement due to Ocean Tide Loading Based on GNSS Positioning in Indonesia (7949)

**Shengtao Feng, Wanju Bo, Jianfeng Su, Haitao Zhou and Xuesong Du** (China, PR): The Application of GNSS to Monitoring Fault Deformation (8074)

**Elena Rangelova and Dimitrios Piretzidis** (Canada): Empirical Models of Vertical Crustal Motion in the Great Lakes Region (8219)

**Haluk Ozener, Bahadir Aktug, Asli Dogru, Levent Tasci and Mustafa Acar** (Turkey): Gps-Constrained Estimate of Present-Day Slip Rate Along Major Faults of Turkey (8346)

**NZAID, UN HABITAT–GLTN, FAO & FIG JOINT TECHNICAL SESSION: SIDS**

**WEDNESDAY, 4 MAY 14:00–15:30**  
**VENUE:** CONCOURSE ROOM, HORNCastle ARENA  
**CHAIR:** MR. DAVID MITCHELL, AUSTRALIA

At the session the outcome of the SIDS Workshop will be discussed.

**TS04C – GIS AND REMOTE SENSING FOR THE PREVENTION OF DISASTER AND RECOVERY**

**WEDNESDAY, 4 MAY 14:00–15:30**  
**VENUE:** SILK ROOM 3, ADDINGTON RACEWAY, LEVEL 2  
**COMMISSION:** 3  
**CHAIR:** MR. ALESSANDRO DALMASSO, ITALY  
**RAPPORTEUR:** MR. GIANRICO BALDINI, ITALY

**Italian Department of Civil Protection Rispoli** (Italy): Earthquake: How to Act? (8461)

**Farzad Alamdar, Mohsen Kalantari and Abbas Rajabifard** (Australia): Development of a Sensor Web-Based Disaster Decision Support System for Integrating Multi-Agency Sensor Information (7991)  
*This is a peer reviewed paper.*

**Jisung Kim, Hongsic Yun and Minkyoo Youm** (Republic of Korea): Spatial Information Structure Modeling for an Effective Management of an Indoor Hazardous Material (8242)

**Geoff Hay** (New Zealand): Supporting Dynamic, Evolving and Emerging Land Information (8342)

**Ammar Elsayed** (Egypt): Geographic Information Systems and Remote Sensing For Disaster Recovery (8345)

**Graeme Jupp** (New Zealand): Earthquake creates a 'first' for NZ mapping (8445)



**TS04D –  
ENGINEERING SURVEYS FOR  
CONSTRUCTIVE WORKS AND  
STRUCTURAL MONITORING II**

**WEDNESDAY, 4 MAY 14:00–15:30**

**VENUE:** SILK ROOM 1, ADDINGTON

RACEWAY, LEVEL 2

**COMMISSION:** 6

**CHAIR:** MR. GETHIN WYN ROBERTS,  
CHINA

**RAPPORTEUR:** MS. DESISLAVA  
STAYKOVA, GERMANY

**Guillaume Clin and Richard Harrison** (New Zealand):  
Virtual Reconstruction –  
the Resurrection of the Lyttelton  
Timeball Station in a Digital Space  
(8140)

**Adrian Cowie** (New Zealand):  
The Canterbury Earthquake Se-  
quence – Recovery from Disaster.  
How Professionals Have Helped  
to Prevent Recovery in Canterbury  
and Have Caused a Separate Dis-  
aster for Property Owners (8211)

**Maurizio Barbarella, Stefano  
Gandolfi, Poluzzi Luca and  
Cacciamani Lucia** (Italy):  
Stability of the Reference Frame  
for Structural Monitoring Applica-  
tions Using GNSS (8333)

**Giuseppina Vacca** (Italy):  
Terrestrial Laser Scanner for  
Controlling the Deformations and  
Damage of Buildings (8356)

**Gabriel Scarmana** (Australia):  
An Application of the Least  
Squares Plane Fitting Interpolat-  
ion Process to Image Reconstruc-  
tion and Enhancement (8433)

**TS04E – HYDROGRAPHIC  
SURVEYING AND POWER**

**WEDNESDAY, 4 MAY 14:00–15:30**

**VENUE:** SILK ROOM 2, ADDINGTON  
RACEWAY, LEVEL 2

**COMMISSION:** 4

**CHAIR:** MR. GORDON JOHNSTON,  
UNITED KINGDOM

**RAPPORTEUR:** MR. MAURICE PERWICK,  
NEW ZEALAND

**Andrick Lal and Salesh Kumar**  
(Fiji):  
Positioning in the Pacific Islands  
(8021)

**Enrico Paringit, Christopher  
Uichanco, Sylvia Sueno  
and Christopher Quinton**  
(Philippines):  
Establishing Survey Protocols and  
Monitoring Systems for Advisory  
and Early Warning Systems for  
River Basins in the Philippines  
(8047)

**Dupe Olayinka and Chukwuma  
Okolie** (Nigeria):  
Satellite-Derived Bathymetry  
Modelling in Shallow Water:  
A Case Study of Lighthouse Creek,  
Lagos (8059)  
*This is a peer reviewed paper.*

**Helen Neil, Geoffroy Lamarche,  
John Mitchell, Kevin MacKay  
and Arne Pallentin** (New Zea-  
land):  
Multibeam Echosounder Mapping  
to Identify Seafloor Habitats  
(8139)

**Bani Nugroho, Emi Sukiyah,  
Nana Sulaksana and Pulung  
Arya Pranantya** (Indonesia):  
Physical-Mechanical Character-  
istics of Limestone and Under-  
ground Rivers Mapping to Support  
the Development of Micro-Hydro  
Installation in Karst Land Forms  
Case Study: Cave Seropan,  
Gunung Kidul, Indonesia (8285)

**Siti Noor Chayati and I Made  
Andi Arsana** (Indonesia):  
The Study on Potential of Electric  
Power and Energy Resulted  
From Wind Generated Wave (8317)

**TS04H – LAND POLICY AND  
MANAGEMENT AS A TOOL  
FOR DISASTER RECOVERY**

**WEDNESDAY, 4 MAY 14:00–15:30**

**VENUE:** TERROR OF LOVE LOUNGE 1,  
ADDINGTON RACEWAY, LEVEL 3

**COMMISSION:** 9

**CHAIR:** MR. BEN ELDER, UNITED  
KINGDOM

**RAPPORTEUR:** MR. DAVID SMEJKAL,  
CZECH REPUBLIC

**Manohar Velpuri** (Denmark)  
and **Anusha Pidugu** (India):  
Big Data for Disaster Management  
and Real estate Management in  
Smart Cities (7987)

**Ben Elder** (United Kingdom):  
International Standards- a Critical  
Contribution to Disaster Recovery  
(8091)

**Craig Harris** (New Zealand):  
Acquisition of land during the  
Canterbury Earthquake Recovery  
(8093)

**David Smejkal** (Czech Republic):  
Prague (czech Republic) Recovery  
from Floods in Focus to Market  
Prices of the Real Estates (8305)

**Michael McDermott and Ray  
Buckley** (Australia):  
Disasters in Darwin and East  
Timor: valuation Lessons for  
Today (8376)

**TS04I – LAND AND WATER  
FOR GLOBAL FOOD  
PRODUCTION**

**WEDNESDAY, 4 MAY 14:00–15:30**

**VENUE:** BLOSSOM LADY 1, ADDINGTON  
RACEWAY, LEVEL 3

**COMMISSION:** 8

**CHAIR:** MR. BRUCE KEITH, UNITED  
KINGDOM

**Bruce Keith** (United Kingdom):  
Food Production to Meet the Glob-  
al Needs of 2050 – The Challenges  
for Land and Water Resources: An  
Overview (8246)

**Craig Mackenzie** (New Zealand):  
Precision Agriculture –from Inno-  
vation to Field in Water Efficiency  
– the Sustainable Use of Irrigation  
Water (8255)

**Ian Yule** (New Zealand):  
Precision Agriculture –using  
Technology to Improve Water Use  
Efficiency (8256)

**TS04J – HISTORY SESSION**

**WEDNESDAY, 4 MAY 14:00–15:30**

**VENUE:** BLOSSOM LADY 2, ADDINGTON  
RACEWAY, LEVEL 3

**CHAIR:** MR. JOHN BROCK, AUSTRALIA

**RAPPORTEUR:** MS. AUNE  
RUMMUKAINEN, FINLAND

**Abiodun Liadi** (Nigeria):  
The Design of a Multifunctional  
Historical Geodatabase for Ogun  
State, Nigeria (7994)

**Kelly Henderson** (Australia):  
Light Years Ahead: the Role of  
Design and Survey in Disaster Risk  
Management, Future-Proofing  
Adelaide (8019)  
*This is a peer reviewed paper.*

**Jennifer Whittal and Jonathan  
Bell** (South Africa):  
The Relocation of Voc-Era Bosheu-  
vel Farm in the Liesbeeck River  
Valley, Cape Town: a Land Survey-  
ing Approach (8060)

**Yanti C. Sacaprawira and Tias  
R. Saraswati** (Indonesia):  
Reconstruction of Aceh Land Ad-  
ministration System Post-Tsunami  
(Case Study: Aceh, Indonesia)  
(8114)

**Chris Williams-Wynn** (South  
Africa):  
A Brief History of Land Rights in  
Kwazulu-Natal (8243)

**Juan David Méndez Niño** (Colom-  
bia) and **Francis Roy** (Canada):  
The Tragedy of Armero, Columbia:  
Studying How Land Rights Have  
Been Managed in the Aftermath of  
the Volcanic Eruption of the Neva-  
do Del Ruiz in 1985 (8368)

**EMERGING TECHNOLOGIES AND CAREERS**

**WEDNESDAY, 4 MAY 14:00–16:00**

**VENUE:** PLENARY HALL, HORNCastle

The geospatial world is constantly changing. New technologies offer new ways of working and new opportunities for data acquisition, analysis & design. Speakers from education providers and software and hardware suppliers will look at industry trends and explore the technology and work that we might be doing in 5 years' time, and highlight the career opportunities that will be there.

- Open to the public

**TS05A – IMPACT OF CLIMATE CHANGE AND DISASTERS ON LAND RIGHTS**

**WEDNESDAY, 4 MAY 16:00–17:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 1, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 7  
**CHAIR:** MR. DON GRANT, AUSTRALIA  
**RAPPOORTEUR:** MS. MARIA TERESA SÁ PEREIRA, PORTUGAL

**Daniel Paez** (Colombia), **David Mitchell** (Australia) and **Jaap Zevenbergen** (Netherlands): The Development of a Knowledge Sharing Portal on Land Administration for Climate Change and Disaster Risk Management (8009)

**Maliheh Gholamhosseini, Arbind Tuladhar and Liza Groenendijk** (Netherlands): Insecurity of Land Tenure and Women Vulnerability in Climate Change (8027)

**Dimo Todorovski, Paul van der Molen and Jaap Zevenbergen** (Netherlands): Post-Conflict Land Administration, Facilitator of Post-Conflict State Building (8071)  
*This is a peer reviewed paper.*

**Gunnar Erso and Kristin Land** (Sweden): Restoration of Property Boundaries in Sweden's Largest Forest Fire Area (8148)

**Donald Grant, David Mitchell** (Australia) and **Mark Dyer** (New Zealand): Canterbury Earthquake Response: Lessons for Land Administration Policy (8364)

**TS05B – NATIONAL DATUM**

**WEDNESDAY, 4 MAY 16:00–17:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 2, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 5  
**CHAIR:** MR. NEIL WESTON, UNITED STATES  
**RAPPOORTEUR:** MS. SUELYNN CHOY, AUSTRALIA

**Sharafat Gadimova** (Austria): International Committee on Global Navigation satellite Systems: The Way Forward to Provide Positioning, Timing and Navigation Globally (8206)

**Graeme Blick** (New Zealand): The Evolution of Crustal Deformation Monitoring in New Zealand for Datum Definition (8100)

**Alexander Karpik and Leonid Lipatnikov** (Russia): Velocities Validation in the new Russian Reference Frame GSC-2011 (8288)

**S. Susilo, Hasanuddin Z. Abidin, Irwan Meilano and Benyamin Sapiie** (Indonesia): On the Development of Deformation Model for the Indonesian Geospatial Reference System (IGRS) 2013 (8129)

**Erkin Mirmakhmudov, Shavkat Prenov and Obid Arabov** (Uzbekistan): On the Use GNSS to Create a National Reference Frame of Uzbekistan (8264)

**TS05C – UPDATED GIS TO PREVENT DISASTER AND TO FASTER LAND MANAGEMENT JUST AFTER EARTHQUAKE**

**WEDNESDAY, 4 MAY 16:00–17:30**  
**VENUE:** SILK ROOM 3, ADDINGTON RACEWAY, LEVEL 2  
**COMMISSION:** 3  
**CHAIR:** MS. REBECCA STRANG, NEW ZEALAND  
**RAPPOORTEUR:** MR. CROMWELL MANALOTO, ITALY

**Diana Maria Contreras Mojica** (Austria): The Fuzzy Boundaries Between Post-disaster Phases: The Case of L'Aquila -Italy (8070)

**Çağlar Aydın and R. Cuneyt Erenoglu** (Turkey): A GIS Based Model Development to Assess Infrastructure After Natural Disaster: a Case Study from Gökçeada Earthquake 24 May 2014 (Çanakkale, Turkey) (8202)

**Chris Scott** (New Zealand): Surveying a Broken City – A Story of Innovation and Collaboration (8216)

**Robert Deakin** (New Zealand): Canterbury SDI: Lessons Learned from Post-Earthquake Recovery (8218)

**Kyle Dow** (New Zealand): GIS Response to the Christchurch Earthquakes – Getting Started, Keeping it Going, Living with it (8358)

**Cromwell Manaloto, Daniele Brancato, Alessandro Dalmaso, Luca Dal Buono and Gianrico Baldini** (Italy): Natural Disaster: Mitigation and Management through GIS – the Italian Experience (8440)

**TS05D – SENSOR FUSION, KINEMATIC DATA ACQUISITION AND PROCESSING TECHNIQUES**

**WEDNESDAY, 4 MAY 16:00–17:30**  
**VENUE:** SILK ROOM 1, ADDINGTON RACEWAY, LEVEL 2  
**COMMISSION:** 6  
**CHAIR:** MR. IVO MILEV, GERMANY  
**RAPPOORTEUR:** MR. REMY BOUDON, FRANCE

**Paula Gentle, Chris Crook** (New Zealand) and **Ryan Ruddick** (Australia): How Accurately Can the Relationship Between a VLBI and a GNSS Antenna Be Determined? (8171)

**Lee Hellen** (Australia): 4D Survey and Geotechnical Monitoring Achieving Enhanced Project Outcomes for Construction (8175)

**Luis Elneser Gonzalez** (Australia): Review of Positioning Services and User Requirements for Machine Guidance Applications in Australia (8280)

**Mark Bell** (Australia): Advances in the use of Ground Based Radar for Disaster Recovery Risk Management (8393)

**TS05E – MARITIME AND MARINE SPATIAL**

**WEDNESDAY, 4 MAY 16:00–17:30**  
**VENUE:** SILK ROOM 2, ADDINGTON RACEWAY, LEVEL 2  
**COMMISSION:** 4  
**CHAIR:** MR. PETER BARR, AUSTRALIA  
**RAPPOORTEUR:** MR. RICHARD CULLEN, NEW ZEALAND

**Ralf Becker, Stefan Herle, Rainer Lehfeldt, Peter Fröhle and Jürgen Jensen** (Germany): Distributed and Sensor Based Spatial Data Infrastructure for Dike Monitoring (8000)  
*This is a peer reviewed paper.*

**Andrew Price** (New Zealand): Bathymetric LiDAR within the Nearshore environment (8161)

**Alex Cowdery, Nathan Quadros and Luke Chamberlain** (Australia): Acquiring 3D Samoa to Increase Climate Resilience (8169)

**Yves Pastol** (France), **Luke Chamberlain** and **Mark Sinclair** (Australia): Airborne Bathymetric LiDAR and Coastal Zone Management in French Polynesia (8170)

**Reha Metin Alkan, I. Murat Ozulu and Veli Ilci** (Turkey): Precise Point Positioning (PPP) Technique versus Network RTK GNSS (8258)

**TS05F – FORUM ON ENGAGING PRIVATE PRACTICE**

**WEDNESDAY, 4 MAY 16:00–17:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 3, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 1  
**CHAIR:** MR. MALCOLM MCCOY, AUSTRALIA

A discussion and networking group focusing on maintaining the interest and attendance of private practicing members especially challenged by competition for their attention by user-group conferences.

**UN HABITAT-GLTN & FIG JOINT TECHNICAL SESSION: COUNTRY EXPERIENCES ON THE IMPLEMENTATION OF GLTN LAND TOOLS**

**WEDNESDAY, 4 MAY 16:00–17:30**  
**VENUE:** CONCOURSE ROOM, HORNCastle ARENA  
**CHAIR:** MS. CHRYSY POTSIOU, GREECE, FIG PRESIDENT  
**RAPPOORTEUR:** MR. CHRISTIAAN LEMMEN, NETHERLANDS

**Cyprian Seballo**, UN-Habitat/GLTN  
Presentation on GLTN and its Land Tools

**John Gitau**, UN-Habitat/GLTN  
GLTN Country Level Engagement

**Charisse Griffith-Charles**, University of West Indies  
OECS Experience in Piloting the Social Tenure Domain Model

**TS05G – TEACHING AND LEARNING FOR THE FUTURE**

**WEDNESDAY, 4 MAY 16:00–17:30**  
**VENUE:** TERROR OF LOVE LOUNGE 2, ADDINGTON RACEWAY, LEVEL 3  
**COMMISSION:** 2  
**CHAIR:** MR. JOHN HANNAH, NEW ZEALAND  
**RAPPORTEUR:** MS. LIZA GROENENDIJK, NETHERLANDS

**Aune Rummukainen** (Finland): Distance Learning in the Education of Surveying Engineers (8089)

**Brett Brace and Jasbir Randhawa** (Australia): The AHSCP Certification Scheme – Achievements and The Future (8145)

**Peter Musyoki Ngau and Jasper Ntwiga Mwenda** (Kenya): Training Providers in Capacity Development for Major Land Reforms and Land Policy Implementation at Country Level (8196)

**Geoff O'malley** (New Zealand): Innovative Learning and Teaching to Grow Geospatial Capability in New Zealand (8217)

**Craig Matthew Hancock, Llewellyn Tang, Ruoyu Jin, Huib De Lig and Luke Allan** (China, PR): Building Information Management and Modelling Teaching in Geospatial Engineering, Civil Engineering and Architecture (8290)

**Yoshiro Nakahori** (Japan): Experimental use of WebClass (8316)

**Njike Chigbu and Veronica Okoye** (Nigeria): Developing Capacity for Land Reforms to Geo-spatial competencies and Education (8353)

**Christian Clemen** (Germany), **Eugene McGovern and Avril Behan** (Ireland): Teaching BIM to Geomatics Students (8384)

**TS05H – ADVANCES IN THE VALUATION OF REAL ESTATE**

**WEDNESDAY, 4 MAY 16:00–17:30**  
**VENUE:** TERROR OF LOVE LOUNGE 1, ADDINGTON RACEWAY, LEVEL 3  
**COMMISSION:** 9  
**CHAIR:** MR. DAVID SMEJKAL, CZECH REPUBLIC  
**RAPPORTEUR:** MR. VASILY NILIPOVSKIY, RUSSIAN FEDERATION

**Andreas Hendricks** (Germany): Distance Dependent Approach for the Determination of Standard Land Values by Multiple Regression (7936)

*This is a peer reviewed paper.*

**Matthias Soot, Alexandra Weitkamp, Hamza Alkhatib, Alexander Dorndorf and Anja Jeschke** (Germany): Analysis on Different Market Data for Real Estate Valuation – Investigations on German Real Estate Market (8024)  
*This is a peer reviewed paper.*

**Geoff Klein** (New Zealand): New Zealand Property Mapping: Capital Asset Valuation on the Web (8141)

**Alexander Dorndorf, Matthias Soot, Alexandra Weitkamp and Hamza Alkhatib** (Germany): Development of a Robust Bayesian Approach for Real Estate Valuation in Areas with Few Transactions (8187)

**Florence Galeon and Meneleo Albano** (Philippines): The Effect of Proximity to Fault Line as a Land Value Determinant in Metro Manila (8265)

**Michael McDermott** (Australia): Addressing Wicked Valuation Catch 22s in the Developing World (8377)

**Shijin Qu and Shougeng Hu** (China, PR): Spatial Heterogeneous Effects of Urban Lakes on Residential Land Price (8426)

**TS51 – CHRISTCHURCH – THE 2010 EARTHQUAKE: DISASTER RECOVERY AND PLANNING AND BUILDING RESILIENT INFRASTRUCTURE FOR THE FUTURE**

**WEDNESDAY, 4 MAY 16:00–17:30**  
**VENUE:** BLOSSOM LADY 1, ADDINGTON RACEWAY, LEVEL 3  
**COMMISSION:** 8  
**CHAIR:** MR. BRUCE KEITH, UNITED KINGDOM

**Greg Offer, Mark Christison and Ian Billings** (New Zealand): Earthquake Repairs at Christchurch Wastewater Treatment Plant – Lessons for Resilience (8247)

**Ian Billings, Greg Offer and Tim Scott** (New Zealand): Earthquake Repairs at Christchurch Wastewater Treatment Plant (CWTP) – Clarifying the Situation (8248)

**David Heiler and Rod Cameron** (New Zealand): Practitioners Guide to Building Resilience into Infrastructure Networks (8253)

**A Murphy** (New Zealand): Rain Rain Go Away, and Don't Come Back Some Other Day: Rebuilding Earthquake Damaged Stormwater Infrastructure in Christchurch (8250)

**TS05J – CONSTRUCTION ECONOMICS AND MANAGEMENT**

**WEDNESDAY, 4 MAY 16:00–17:30**  
**VENUE:** BLOSSOM LADY 2, ADDINGTON RACEWAY, LEVEL 3  
**COMMISSION:** 10  
**CHAIR:** MR. RUYA FADASON, NIGERIA  
**RAPPORTEUR:** MR. SEE LIAN ONG, UNITED KINGDOM

**Harrison Stewart** (New Zealand): The Insurance Industry Is Enjoying Record-Breaking Profits, But Who's Paying the Price? (8177)

**Chan Kkh** (Hong Kong SAR, China): Evaluating the Economic Values of Intelligent Building Designs (8260)

**Olufemi Oyedele** (Nigeria): Assessment of Adoption of Modern Methods of Construction (MMC) in Nigeria (7947)

**Jeetendra Shrestha, Ramila Shrestha and Niru Achrya** (Nepal): Construction Economics and Management (7984)

**FIG COMMISSION ANNUAL MEETINGS**

**WEDNESDAY, 4 MAY 17:30–18:30**  
**VENUE:** ADDINGTON RACEWAY

The Commission meetings are open for everyone interested. After the meeting each commission organises a dinner (self-paid).

- Commission 1: **Christian Cullen Lounge 3**
- Commission 2: **Terror of Love Lounge 2**
- Commission 3: **Silk room 3**
- Commission 4: **Silk room 2**
- Commission 5: **Christian Cullen Lounge 2**
- Commission 6: **Silk room 1**
- Commission 7: **Christian Cullen Lounge 1**
- Commission 8: **Blossom Lady 1**
- Commission 9: **Terror of Love Lounge 1**
- Commission 10: **Blossom Lady 2**

**FIG COMMISSION DINNERS**

**WEDNESDAY, 4 MAY 19:30–23:00**  
**VENUE:** TO BE ANNOUNCED

Check [www.fig.net/fig2016](http://www.fig.net/fig2016).

## PLENARY SESSION 3

THURSDAY, 5 MAY 9:00–10:30

VENUE: PLENARY HALL,  
HORNCastle ARENACHAIR: MR. RUDOLF STAIGER,  
GERMANY, FIG VICE PRESIDENTRAPPOREUR: MR. SIMON  
IRONSIDE, NEW ZEALAND, NZIS

**Theme:** *The Public, the Private and the Peoples Response for Disaster Management and Recovery in the Surveying Profession – New Technologies*

- Mr. **Mark Nichols**, Trimble Navigation
- Prof. Dr. **Jixian Zhang**, National Quality Inspection and Testing Center for Surveying and Mapping Products
- Mr. **Sam Johnson**, Student Volunteer Army

## FIG TASK FORCE ON REAL ESTATE MARKET STUDY

THURSDAY, 5 MAY 11:00–12:30

VENUE: TERROR OF LOVE LOUNGE  
1, ADDINGTON RACEWAY, LEVEL 3CHAIR: MR. PEKKA HALME,  
FINLAND, CHAIR OF TASK FORCE

The Task Force on Real Estate Market Study was established at the General Assembly of the FIG Working Week 2015 in Sofia. The aim is to carry out a study on the real property markets in the UNECE region.

**Vasily Nilipovskiy** (Russia): The Real Estate and Land Market of Russia: Factors of the Sustainable Development (8396)

**Chryssy Potsiou** (Greece): Assessment of Legislative Reform on Property Market in Greece (8398)

**Orhan Ercan** (Turkey): Turkish Real Estate Market (8446)

**Winrich Voss** (Germany): Market Studies and Governmental Activities Concerning Affordable Housing” (8447)

## FIG MEMBER ASSOCIATIONS FORUM

THURSDAY, 5 MAY 11:00–12:30

VENUE: TERROR OF LOVE LOUNGE  
2, ADDINGTON RACEWAY, LEVEL 3CHAIR: MR. MARK ALLAN, NEW  
ZEALAND, PRESIDENT NZIS

The 2016 FIG Member Association Forum provides national leaders of our Profession the opportunity for peer-to-peer engagement to exchange, share and discuss current and in-country challenges and opportunities facing the profession.

## FIG &amp; FAO JOINT TECHNICAL SESSION: HOW CAN LAND PROFESSIONALS SUPPORT THE IMPLEMENTATION OF VGGTS

THURSDAY, 5 MAY 11:00–12:30

VENUE: BLOSSOM LADY 2,  
ADDINGTON RACEWAY, LEVEL 3CHAIR: MS. DIANE DUMASHIE,  
UNITED KINGDOM, FIG VICE-  
PRESIDENTRAPPOREUR: MR. ROBIN  
MCLAREN, UNITED KINGDOM

*The objectives of the session are:* Improving governance of tenure requires contributions by all, including ensuring synergies with similar initiatives, as different actors and stakeholder groups can make their own specific contributions.

Surveyors, whether in their everyday work or in their contribution to country, regional and global processes play a fundamental role.

## CONSULTING SURVEYORS OF NEW ZEALAND – PART 1

THURSDAY, 5 MAY 11:00–12:30

VENUE: CHRISTIAN CULLEN  
LOUNGE 3, ADDINGTON RACEWAY,  
LEVEL 1

COMMISSION: CSNZ

CHAIR: MR. PETER MCAULEY,  
NEW ZEALAND

- Formal Welcome to CSNZ and FIG – **Peter McAuley** Introduction to Management Committee – **Guy Panckhurst**
- **Session one:** *Lesson learned from Christchurch Earthquake*
  - Technology by **Michael Martin** (Fox Associates)
  - Survey Community and Communication by **Todd Airey** (Clark Land Surveyors)
  - Insurance by **Peter McAuley** (Inovo)
- **Session two:** *Strategy, getting clear on purpose, vision and values* by **Roger Lewis** (Focal Points)

## TS06A – THE CONTINUUM OF LAND RIGHTS

THURSDAY, 5 MAY 11:00–12:30

VENUE: CHRISTIAN CULLEN LOUNGE 1,  
ADDINGTON RACEWAY, LEVEL 1

COMMISSION: 7

CHAIR: MS. GERDA SCHENNACH,  
AUSTRIARAPPOREUR: MR. LIBOR TOMANDL,  
CZECH REPUBLIC

**Tarun Ghawana** (India), **Rohan Bennett** (Netherlands), **João Oliveira** (Portugal), **Jaap Zevenbergen** (Netherlands) and **Silvane Paixão** (India):

Applying the Knowledge Innovation Value Chain Model for Land Administration Research (7969)

**Michael Barry** (Canada) and **Clarissa Augustinus** (Kenya): Evaluating Land on a Continuum of Land Rights (8159)

**Ali Tunç** and **Tahsin Yomralioğlu** (Turkey): Evaluating The Ownership Structure in Land Regeneration Applications (7980)

**Jennifer Whittal** and **Khanyisa Rikhotso** (South Africa): Initial Testing of the New Continuum of Land Rights Model in a Rural South African Case Study Area – Giyani (8016)

*This is a peer reviewed paper.*

**Brent Jones** (USA): Fit-for-Purpose Spatial Technology for Land Administration (8073)

**Mathilde Molendijk**, **Christiaan Lemmen**, **Rohan Bennett** and **Kees de Zeeuw** (Netherlands):

A Variety of Continuums for Citizen Centric Land Administration (8406)

## PLATINUM MEMBER: LEICA GEOSYSTEMS – WHEN IT HAS TO BE RIGHT.



THURSDAY, 5 MAY 11:00–12:30

VENUE: CONCOURSE ROOM, HORNCastle ARENA

CHAIR: DR. CRAIG HILL, VP MARKETING & SERVICES, LEICA GEOSYSTEMS AG,  
SWITZERLAND

Leica Geosystems is a leading global provider of information technologies that drive productivity and quality across geospatial and industrial enterprise applications. Leica Geosystems' solutions integrate sensors, software, domain knowledge and customer workflows into intelligent information ecosystems that deliver actionable information used in a wide range of vital industries. This presentation will highlight the latest Leica Geosystems geospatial solutions – when it has to be right.



**TS06B – MULTISENSOR SYSTEMS**

**THURSDAY, 5 MAY 11:00–12:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 2, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 5  
**CHAIR:** MR. GÜNTHER RETSCHER, AUSTRIA  
**RAPPORTEUR:** MR. LEONID A. LIPATNIKOV, RUSSIAN FEDERATION

**Geo Boffi** (Switzerland), **Matthias Gilgien** (Norway) and **Andreas Wieser** (Switzerland):  
 Validation of GNSS-Based High-Precision Velocity Estimation for Outdoor Sports (8443)

**Chris Rizos** (Australia):  
 Locata: Serving Those Positioning, Navigation & Timing (PNT) Applications That GNSS Can Not (8146)

**Cesar Arango** and **Daniel Paez** (Colombia):  
 Comparison Between Multicopter UAV and Total Station for Estimating Stockpile Volumes (8272)

**Guenther Retscher** and **Thomas Tatschl** (Austria):  
 Differential Wi-Fi – A Novel Approach for Wi-Fi Positioning Using Lateration (7973)  
*This is a peer reviewed paper.*

**Guenther Retscher** and **Hannes Hofer** (Austria):  
 Wi-Fi Location Fingerprinting Using an Intelligent Checkpoint Sequence (7993)  
*This is a peer reviewed paper.*

**Phil Dewar** (New Zealand):  
 Building Floor Levels and Verticality Surveys – data capture and presentation using a Canterbury example (8227)

**TS06C – GIS, MAPPING AND PHOTOGRAMMETRY**

**THURSDAY, 5 MAY 11:00–12:30**  
**VENUE:** SILK ROOM 3, ADDINGTON RACEWAY, LEVEL 2  
**COMMISSION:** 3  
**CHAIR:** MR. DANIELE BRANCATO, ITALY  
**RAPPORTEUR:** MR. GREG BYROM, NEW ZEALAND

**Abdullahi Kuta, Oluibukun Ajayi, Ekundayo Adesina, Zitta Nanpon and Hassan Samaila-Ija** (Nigeria):  
 Land Cover Classification: Comparison between Fuzzy and Boolean Classifier (7981)

**Rabieahatul Abu Bakar, Tajul Anuar Jamaluddin, Zamri Ramli, Zakaria Mohamad and Felix Tongkul** (Malaysia):  
 Remotely Sensed Geospatial Analysis Towards Disaster Preparedness: A Case Study in Malaysia Tectonically Active Earthquake Zone, Ranau, Sabah (8003)

**Njike Chigbu and Susan Chiawolam Nmeregini** (Nigeria):  
 Land Use Suitability Evaluation for Urban Planning Development in Umuahia Town, Abia State, Nigeria Using Geographic Information System (GIS) (8057)

**Ralf Schroth** (Romania):  
 Applied Photogrammetry and GIS in Large Production Environments – Challenges and Advantages (8082)

**Jana Pfefferova** (New Zealand):  
 Fulton Hogan Mobile App: Mobilising a Remote Workforce (8137)

**Steven Ramage** (United Kingdom):  
 Global Location Referencing and Addressing Opportunities (8463)

**Shougeng Hu and Chuanrong Zhang** (China, PR):  
 Downscaling Geographically Weighted Regression for Agricultural Land Use Classification with Remote Sensing (8422)

**TS06D – LASERSCANNING**

**THURSDAY, 5 MAY 11:00–12:30**  
**VENUE:** SILK ROOM 1, ADDINGTON RACEWAY, LEVEL 2  
**COMMISSION:** 5 AND 6  
**CHAIR:** MS. LI ZHANG, GERMANY  
**RAPPORTEUR:** MS. DESISLAVA STAYKOVA, GERMANY

**Wallace Mukupa, Gethin Roberts, Craig Hancock and Khalil Al-Manasir** (China, PR):  
 Change Detection and Assessment of Fire-Damaged Concrete Using Terrestrial Laser Scanning (8122)

**Michael Olsen, Dan Gilians** (USA), **Michael Eddy, Sjoerd Ballegooy and Bruce Deam** (New Zealand):  
 Terrestrial Laser Scanning Deformation Analyses of Blast-Induced Liquefaction Settlements (8271)

**Andrew Sinclair** (New Zealand):  
 Innovation from Disaster – Applying 3D Laser Scanning Technology to Earthquake Recovery Projects (8127)

**Nia HAERANI, Haerani, Hasanuddin Z. Abidin, Irwan Gumilar, Vera Sadarviana and Dudy D. Wijaya** (Indonesia):  
 On the Performance of Terrestrial Laser Scanner for Volcanic and Landslide Hazard Assessment in Indonesia (8131)

**Corinna Harmenting** (Austria), **Stephanie Kauker** (Germany), **Hans-Berndt Neuner** (Austria) and **Volker Schwieger** (Germany):  
 Terrestrial Laserscanning – Modeling of Correlations and Surface Deformations (8030)  
*This is a peer reviewed paper.*

**Vanda Kadlecikova and Rowan Hallam** (New Zealand):  
 High Definition Scanning – What's the Buzz? (8162)

**TS06E – SECURING PROPERTY IN PRE- AND POST DISASTER AREAS**

**THURSDAY, 5 MAY 11:00–12:30**  
**VENUE:** SILK ROOM 2, ADDINGTON RACEWAY, LEVEL 2  
**COMMISSION:** 7  
**CHAIR:** MR. DAVID MITCHELL, AUSTRALIA  
**RAPPORTEUR:** MS. LUDMIŁA PIETRZAK, POLAND

**Clare Robertson, Mark Dyer and Nic Donnelly** (New Zealand):  
 Locating Property Boundaries After Shallow Land Movement – the Canterbury Experience (7963)  
*This is a peer reviewed paper.*

**Charisse Griffith-Charles** (Trinidad and Tobago):  
 The Readiness of the Trinidad and Tobago Cadastral System for Recovery from Disaster (8025)

**Scott King** (New Zealand):  
 Realigning the Christchurch Digital Cadastre after the Canterbury Earthquake Sequence (8092)

**Juerg Kaufmann** (Switzerland):  
 The Comprehensive Cadastre Supports Recovery from Disaster (8155)

**Leiv Bjarte Mjøs** (Norway):  
 Use of Cadastral Data in Recovery from Disaster – Quality Issues (8351)

**TS06I – RURAL DEVELOPMENT, LAND GOVERNANCE AND PUBLIC PRIVATE PARTNERSHIPS**

**THURSDAY, 5 MAY 11:00–12:30**  
**VENUE:** BLOSSOM LADY 1, ADDINGTON RACEWAY, LEVEL 3  
**COMMISSION:** 8  
**CHAIR:** MR. KWAME TENADU, GHANA  
**RAPPORTEUR:** MS. LEONIE NEWMAN, AUSTRALIA

**Sanjaya Manandhar, Janak Raj Joshi and Subash Ghimire** (Nepal):  
 State and Public Land Management: Issues of Encroachment and Protection Technique (8109)

**Andrew Clouston, Pernilla Lofgren and Zhang Sisi** (New Zealand):  
 Enabling Decision Making Through Spatial Conversations (8097)

**Marije Louwsma and Sanne Holtslag-Broekhof** (Netherlands):  
 Land Policy Strategies – Different Approaches Examined (8156)

**Wafula Nabutola** (Kenya):  
 How Best Can Kenya Prepare for the Inevitable Disasters That Come her Way (8420)

**FIG ACADEMIC MEMBERS  
FORUM JOINT WITH FAO:  
VGGT**

**THURSDAY, 5 MAY 14:00–15:30**  
**VENUE:** CONCOURSE ROOM, HORN-  
CASTLE ARENA  
**CHAIR:** MR. PAUL MUNRO-FAURE,  
FAO, ITALY  
**RAPPOREUR:** MS. LIZA  
GROENENDIJK, CHAIR FIG  
COMMISSION 2, NETHERLANDS

Strengthening land govern-  
ance in professional survey-  
ing curricula and academic  
research.

FAO and FIG joined forces  
again and are dedicated to  
the VGGT with the intention  
to make a further step in the  
implementation of the VGGT  
in our surveying education  
and research.

The session will focus on  
take stock of actions taken;  
identify additional require-  
ments to support the inclusion  
of the VGGT into curricula and  
research; address key issues.

**UN HABITAT-GLTN &  
FIG JOINT TECHNICAL  
SESSION: LAND TENURE  
INITIATIVE FOR ASIA  
PACIFIC**

**THURSDAY, 5 MAY 14:00–15:30**  
**VENUE:** TERROR OF LOVE LOUNGE  
2, ADDINGTON RACEWAY, LEVEL 3  
**CHAIR:** MR. ROBERT SARIB,  
AUSTRALIA  
**RAPPOREUR:** MR. JOHN GITAU,  
UN HABITAT-GLTN

*Tentative programme:*

**Cheehai Teo**, Malaysia  
Overview of Tenure Security  
Challenges in Asia and the  
Pacific

**David Mitchell**, Australia  
Barriers and Limitations to  
Improved Tenure Security

**Cyprian Selebalo**, UN-Habi-  
tat/GLTN  
Approaches and Land Tools  
for Improved Tenure Security

**TS07A – TRANSPARENCY  
AND SECURITY IN LAND  
ADMINISTRATION**

**THURSDAY, 5 MAY 14:00–15:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 1,  
ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 7  
**CHAIR:** MR. DANIEL STEUDLER,  
SWITZERLAND  
**RAPPOREUR:** MS. KATE FAIRLIE,  
UNITED KINGDOM

**Leslie Downie and Jenny  
Whittal** (South Africa):  
Social Tenure Based on Intima-  
cy – Avoiding Family Disasters:  
South African Marital Contracts  
as an Innovative Pro-Poor Land  
Tool (8008)  
*This is a peer reviewed paper.*

**Haodong Zhang and Conrad  
Tang** (Hong Kong SAR, China):  
Developing a Performance Review  
Questionnaire for Hong Kong  
Cadastral Survey System (8119)

**Robin McLaren** (United Kingdom):  
How Big is Global Insecurity of  
Tenure? (8198)

**Eduardo Oliveira and Thiago  
Marra** (Brazil):  
Improving Land Tenure Security in  
Amazon (8313)

**Claire Galpin** (France):  
Tracking Progress in Land Policy,  
Strategy and Action Plan: Case of  
Algeria, Burundi, Chad, Senegal  
and Cote d'Ivoire (8390)

**Libor Tomanl and Vladimira  
Zufanova** (Czech Republic):  
With e-Services Towards Trans-  
parent and Trustworthy Cadastre  
(8402)

**TS07B – GNSS**

**THURSDAY, 5 MAY 14:00–15:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 2,  
ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 5  
**CHAIR:** DR. SUELYNN CHOY, AUSTRALIA  
**RAPPOREUR:** MR. NEIL WESTON,  
UNITED STATES

**Xu Tang and Gethin Roberts**  
(China, PR):  
The Performance of BeiDou-2  
Relative Positioning Using the  
Short Baseline and Zero Baseline  
Measurements (8302)

**Ken Harima, Suelynn  
Choy and Chris Rizos** (Australia):  
Performance of Real-time Precise  
Point Positioning in New Zealand  
(8010)  
*This is a peer reviewed paper.*

**Hiromishi Tsuji, Koji Matsuo,  
Tomoaki Furuya, Hiromi Yamao  
and Yuki Kamakari** (Japan):  
Development of a Precise Posi-  
tioning Technique Using Multi-  
GNSS (8401)

**Dirk Kowalewski and Frank  
Heinen** (Germany):  
OGRP – Open GNSS Receiver  
Protocol (8178)

**Reha Metin Alkan, Veli Ilci and  
I. Murat Ozulu** (Turkey):  
Web-based GNSS Data Processing  
Services as an Alternative to Con-  
ventional Processing Technique  
(8270)

**Neil Ashcroft** (Singapore),  
**Youssef Tawk, Anthony  
Cole, Colosimo Gabriele  
and Frank Pache** (Switzerland):  
Leica VADASE – First Autonomous  
GNSS Monitoring Solution for Fast  
Movements Onboard a Stand-  
Alone GNSS Receiver (7952)

**Shien Kwun Leong** (Malaysia):  
Performance of Ionospheric Error  
Mitigation Techniques for Sin-  
gle-Frequency GNSS Positioning in  
the South East Asian Region (8065)

**TS07C – INSPIRE, NSDI & SDI**

**THURSDAY, 5 MAY 14:00–15:30**  
**VENUE:** SILK ROOM 3, ADDINGTON  
RACEWAY, LEVEL 2  
**COMMISSION:** 3  
**CHAIR:** MR. ROBERT FOSTER, UNITED  
STATES  
**RAPPOREUR:** MR. GEOFF O' MALLEY,  
NEW ZEALAND

**Jeremiah Richard** (Nigeria):  
Analysis of Accuracy of Differential  
Global Positioning System (DGPS)  
and Google Earth Digital Terrain  
Model (DTM) Data Using Geograph-  
ic Information System Techniques  
(7983)

**Collins Mwange, Galcano Canny  
Mulaku and David N. Siriba**  
(Kenya):  
Status of Spatial Data Infrastruc-  
ture in Africa (8022)  
*This is a peer reviewed paper.*

**Wasström Peter** (Sweden):  
IMPLUS Project Is a Project About  
Cooperation, Coordination, Trans-  
parency and Data Sharing – a Sdi  
Project in the Western Balkan  
Region (8207)

**Anders Sandin** (Sweden):  
As Simple as Possible for as Many  
as Possible, to Access, Understand  
and Use of Spatial Data (8215)

**Luethy Juerg** (Switzerland):  
Expanded Data Quality Model for  
Increased Reliability in Mashed-Up  
Environments (8241)

**Susanne Kleemann** (Germany):  
National Spatial Data Strategy of  
Germany (8343)

**TS07D – WIDE AREA  
ENGINEERING SURVEYS  
FOR MONITORING,  
FEATURES DETERMINATION  
AND ENVIRONMENTAL  
MANAGEMENT**

**THURSDAY, 5 MAY 14:00–15:30**  
**VENUE:** SILK ROOM 1, ADDINGTON  
RACEWAY, LEVEL 2  
**COMMISSION:** 6  
**CHAIR:** MR. REMY BOUDON, FRANCE  
**RAPPOREUR:** MR. MICHAEL  
CUTFIELD, NEW ZEALAND

**You Shucheng** (China, PR):  
Assessment of Polarimetric and  
Spatial Features for Built-up Map-  
ping using ALOS PALSAR Polari-  
metric SAR Data (7971)

**Ioan Stoian, Nacu Vasile, Veale  
Dan** (Romania) and **Arseni  
Maxim** (Moldova):  
It System for Monitoring Climatic  
Changes (8144)

**Ildrem Syafri, Murni Sulastrri,  
Oeke Sobarin, Yunita Rossa  
and Puspa Khaerani** (Indonesia):  
Limestone Potential in Cikatomas  
Region and Its Role Towards  
Development of Southern Part of  
West Java, Indonesia (8276)

**Jasmine Alviar, Kristine Andaya  
and Pearl Mars** (Philippines):  
Strategic Survey Planning and  
Acquisition of Aerial LiDAR Data  
in the Tropical Archipelago of the  
Philippines (8324)

**Anders Nesse and  
Ulf Hagnefelt** (Norway):  
3D Data Fusion for 3D Modeling  
Applications for the Energy Sector  
(8357)

**CONSULTING SURVEYORS OF NEW ZEALAND – PART 2**

**THURSDAY, 5 MAY 14:00–15:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 3, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** CSNZ  
**CHAIR:** MR. PETER MCAULEY, NEW ZEALAND

- **Session three:** *Leadership, what exactly is leadership*  
by **Kendall Langston** (Results Group)
- **Session four:** *Governance V Management – Lets understand the  
difference*  
by **Denis Mowbray** (Gryphon Governance Consultants)

**TS07E – HYDROGRAPHY FOR SOCIETY AND DISASTER MANAGEMENT**

**THURSDAY, 5 MAY 14:00–15:30**

**VENUE:** SILK ROOM 2, ADDINGTON RACEWAY, LEVEL 2

**COMMISSION:** 4

**CHAIR:** MS. ANGELA ETUONOVBE, NIGERIA

**RAPPORTEUR:** MR. BRUCE WALLEN, NEW ZEALAND

**Maurice Perwick** (New Zealand): Innovation from Disaster (8142)

**Cullen Richard** (Australia): Floods and Hydrographers (8143)

**Erik Sisell, Rickard Hallengren and Håkan Olsson** (Sweden): The Production and Use of a Hydrographic Flow-Direction Network of Surface Waters (8153)

**Stuart Caie** (New Zealand): LINZ New Zealand Hydrography Risk Assessment (8163)

**Gordon Johnston** (United Kingdom): Blue Economy – Status and Future Growth (8428)

**TS07H – LAND TENURE IN CULTURAL CONTEXT**

**THURSDAY, 5 MAY 14:00–15:30**

**VENUE:** TERROR OF LOVE LOUNGE 1, ADDINGTON RACEWAY, LEVEL 3

**COMMISSION:** 7

**CHAIR:** MS. CHARISSE GRIFFITH-CHARLES, TRINIDAD AND TOBAGO

**RAPPORTEUR:** MR. JAN HARDOS, SLOVAK REPUBLIC

**Ngo Mau** (Viet Nam), **David Mitchell** (Australia), **Donald Grant** (New Zealand) and **Nicholas Chrisman** (Canada):

Accessibility to Land Administration by Grassroots Stakeholders in Vietnam: Case Study of Vinh Long Province (7992)

*This is a peer reviewed paper.*

**Kent Jones and Michael Barry** (Canada): History of Perceptions of Jurisdiction Boundaries and the Tsihqot'in Land Claim in Canada (8108)

**Thomas Dabiri** (Nigeria): Cadastral Survey Business Development in Nigeria Using Capacity Overhaul and Capacity Building (8355)

**Chris Williams-Wynn** (South Africa): The Current Status of Land Rights in the Transkeian Territories of South Africa (8181)

**TS07I – URBAN AND CITIES PLANNING, LAND CONSOLIDATION AND RESILIENCE**

**THURSDAY, 5 MAY 14:00–15:30**

**VENUE:** BLOSSOM LADY 1, ADDINGTON RACEWAY, LEVEL 3

**COMMISSION:** 8

**CHAIR:** MS. MARIJE LOUWSMA, NETHERLANDS

**RAPPORTEUR:** MR. MWENDA MAKATHIMO, KENYA

**Muyiwa Agunbiade** (Australia) and **Abiodun Kolawole** (Nigeria): Rethinking the Role of Land Administration in Housing Production: a Contemporary Perspective (7977)

*This is a peer reviewed paper.*

**Željko Obradović** (Bosnia and Herzegovina) and **Željko Bačić** (Croatia): Land Tenure and Land Consolidation Issues in Bosnia and Herzegovina and Croatia (8037)

*This is a peer reviewed paper.*

**James Kavanagh and Tony Mulhall** (United Kingdom): Smart Cities/smart Buildings – a Tale of Two Scales! (8052)

**Stig Enemark and Daniel Galland** (Denmark): From Planning Control to Growth Management – Evolution of the National Spatial Planning Framework in DK (8391)

**Eberchi Ethel Nwosu and Godwill Tamunobiekiri Pepple** (Nigeria): Site Selection and Analysis of Solid Waste Dumpsites in Ile-Ife, Nigeria (8363)

**REGIONAL PARTNERS MEETING/FORUM**

**THURSDAY, 5 MAY 16:00–17:30**

**VENUE:** SILK ROOM 4, ADDINGTON RACEWAY, LEVEL 2

**CHAIR:** MR. MAURICE BARBIERI, BELGIUM

**RAPPORTEUR:** MR. JEAN-YVES PIRLOT, BELGIUM

A Council of Regional Bodies will meet for the first time in Christchurch. This meeting has following goals:

- Discuss the usefulness of the creation of a Regional Council and its organization;
- Exchange priorities, trends and best practices (proposal of CLGE: IPMS, ILMS, Marine Cadastre, Code of Professional Qualifications);
- Advise FIG about possible strategies (proposal CLGE: Global Surveyors Week).

**FIG STANDARDS NETWORK**

**THURSDAY, 5 MAY 16:00–17:30**

**VENUE:** BLOSSOM LADY 2, ADDINGTON RACEWAY, LEVEL 3

**CHAIR:** MR. DAVID MARTIN, FRANCE, CHAIR OF STANDARDS NETWORK

The FIG Standards Network meets regularly to discuss relevant standards in the Survey Profession.

All interested in standards and their influence on the surveying profession are cordially invited to attend the meeting.

**PLATINUM MEMBER: BENTLEY SYSTEMS – REALITY MODELLING FOR DISASTER MANAGEMENT**

**THURSDAY, 5 MAY 16:00–17:30**

**VENUE:** CONOURSE ROOM, HORNCastle ARENA

**CHAIR:** MR. CHRIS HOFFMAN, BENTLEY

Bentley's Reality Modelling solutions provide efficient 3D modelling capabilities suited to rapid capture of disaster scenes. From localized sites to complex and widespread sites, reality modelling offers responders and disaster managers rapid access to regular data updates to assess, plan, respond and remediate disaster zones.

The session will introduce the concept of reality modelling for disaster management, including considerations for UAV and terrestrial capture, typical uses and a 45 min demonstration of the ConceptCapture technology and reality models.



**UN HABITAT–GLTN & FIG JOINT TECHNICAL SESSION: VALUATION OF UNREGISTERED LANDS**

**THURSDAY, 5 MAY 16:00–17:30**  
**VENUE:** TERROR OF LOVE LOUNGE 1, ADDINGTON RACEWAY, LEVEL 3  
**COMMISSION:** 9  
**CHAIR:** MR. STEVEN NYSTROEM, UNITED STATES  
**RAPPORTEUR:** MR. JOHN GITAU, UN HABITAT–GLTN

*Tentative programme:*

- **Cyprian Selebalo**, UN-Habitat/GLTN  
Need for Valuation of Unregistered Properties  
Progress on the initiative of developing a tool for Valuation of Unregistered Lands
- **Mike McDermott**, Australia  
Draft proposals for valuation of unregistered land methodology
- **Frances Plimmer**, United Kingdom  
Property Taxation in Developing Countries (include possible contribution of lessons learned to the development of tools for unregistered lands)
- Open discussion
- Next steps (**Steven Nystrom**, United States)

**CONSULTING SURVEYORS OF NEW ZEALAND – PART 3**

**THURSDAY, 5 MAY 16:00–17:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 3, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** CSNZ  
**CHAIR:** MR. PETER MCAULEY, NEW ZEALAND

- **Session five:** *Feedback from employee survey* by **Jay Mclean** (Tonkin & Taylor)
- **Session six:** *Key staff retention pointers* by **Jay Mclean** (Tonkin & Taylor)
- **Session seven:** Presentation by **Christina Hulbe** (OC)

**TS08A – IMPACT OF LAND DISASTERS ON VALUE, ECONOMICS AND DATA**

**THURSDAY, 5 MAY 16:00–17:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 1, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 7  
**CHAIR:** MR. ORHAN ERCAN, TURKEY  
**RAPPORTEUR:** MS. JENNIFER WHITTAL, SOUTH AFRICA

**Juhana Hiironen, Pauliina Krigsholm, Kirsikka Riekkinen, Karin Kolis and Arvo Vitikainen** (Finland):  
 Evaluation of Land Fragmentation in Agricultural Areas: Farmers Perspective (7939)  
*This is a peer reviewed paper.*

**Williams P Ganileo** (Vanuatu):  
 Land Policy and Reform to Support Sustainable Use of Land (8015)

**Jill Urban-Karr** (USA):  
 Leveraging Land Administration for Transparent, Diversified and Predictable Internally Generated Revenue (IGR) (8078)

**Setyo Anggraini, Erfan Susanto and San P. Rudianto** (Indonesia):  
 Impact of Land Disaster To The Change Of Spatial Planning And Economic Growth (Case Study: Sidoarjo, East Java, Indonesia) (8115)

**Cao Ruifen and Zhang Anlu** (China, PR):  
 Cross-Regional Compensation Mechanism under Non-Balanced Development of Land aArable Land Protection; Comprehensive Level of Arable Land; Land Finance; Transfer Payment; System Clusteringn Empirical Analysis Based on the Second National Land Survey (8423)

**Xiaoyu Wang and Shougeng Hu** (China, PR):  
 Spatial Characteristics of the Cultivated Land Resource Multi-value and its Spatially Non-stationary Relationships with Impact Factors: A Case Study in Tuanfeng County, China (8425)

**TS08B – ADVANCE IN PHOTOGRAMMETRY AND OTHER MEASUREMENT METHODS**

**THURSDAY, 5 MAY 16:00–17:30**  
**VENUE:** CHRISTIAN CULLEN LOUNGE 2, ADDINGTON RACEWAY, LEVEL 1  
**COMMISSION:** 5

**CHAIR:** MR. DAVID MARTIN, FRANCE

**RAPPORTEUR:** MR. VOLKER SCHWIEGER, GERMANY

**Mark Nichols** (New Zealand):  
 Recent Advances in High Accuracy Positioning (8150)

**Wei Hao and Ya-han Zhang** (China, PR):  
 Study on Application of Aero-photography and Remote Sensing Systems by Unmanned Aerial Vehicle in Mapping of Gansu West Plateau Mining Area (8412)

**Bara' Al-Mistarehi and Volker Schwieger** (Germany):  
 Automatic Classification for Pavement Cracks for Mobile Mapping Data (8386)

**Enrico Paringit, Louie Balicanta, Christopher Cruz, Christopher Joaquin and Lovely Gracia Acuna** (Philippines):  
 A Comparative Assessment between LiDAR and Conventional Ground Survey Methods through Cost and Efficiency Evaluation: A Case of Bohol, Philippines (8379)

**TS08C – GIS, 3D DATA AND CADASTRE**

**THURSDAY, 5 MAY 16:00–17:30**  
**VENUE:** SILK ROOM 3, ADDINGTON RACEWAY, LEVEL 2  
**COMMISSION:** 3 AND 7

**CHAIR:** MR. YERACH DOYTSHER, ISRAEL

**RAPPORTEUR:** MR. CROMWELL MANALOTO, ITALY

**Yuan Ding, Changbin Wu, Nan Jiang, Binqing Ma and Xinxin Zhou** (China, PR):  
 Construction Geometric Model and Topology for 3d Cadastre – case Study in Taizhou, Jiangsu (7961)

*This is a peer reviewed paper.*

**Markus Seifert** (Germany):  
 Multidimensional Cadastral System in Germany (8268)

**Hyo-jin Jung, Hyeyoung Kang and Jiyeong Lee** (Republic of Korea):  
 The Concepts of Level of Detail in 3D Indoor Models (8303)

**Kiseon Song** (Republic of Korea):  
 Utilization and Prospects of the Cadastral Spatial Information (8453)

**Alessandro Dalmasso, Franco Maggio, Daniele Brancato, Luca Dal Buono and Cromwell Manaloto** (Italy):  
 The Cadastral System as a Support to Land Management: the Italian Challenge (8456)

**TS08D – GEOID DETERMINATION AND VERTICAL DATUM**

**THURSDAY, 5 MAY 16:00–17:30**  
**VENUE:** SILK ROOM 1, ADDINGTON RACEWAY, LEVEL 2  
**COMMISSION:** 5

**CHAIR:** MR. DANIEL ROMAN, UNITED STATES

**RAPPORTEUR:** MR. KEVIN KELLY, UNITED STATES

**Victor C. Nnam** (Nigeria):  
 Determination of Best Fitting Geoid for Enugu State – Gravimetric Approach (7962)

**Joseph Odumosu** (Nigeria), **Kevin Kelly** (USA), **Quadri Adejare, Oluwafemi Adeleke and Abdulmalik Olaniyi** (Nigeria):  
 Empirical Geoid Modelling Using Classical Gravimetric Method (8076)

**Daniel Roman** (USA):  
 Physical Heights from GNSS-Derived Geometric Coordinates and a Geophysical Model (8174)

**Yong Lee, Joong-hee Han and Jay Hyoun Kwon** (Republic of Korea):  
 Comparison of Normal-orthometric Height and Helmert orthometric Height in Korea (8291)

**Koji Matsuo, Takayuki Miyazaki and Yuki Kuroishi** (Japan):  
 Development of a New Gravitational Geoid Model for Japan (8400)

**Matt Amos** (New Zealand):  
 Improving New Zealand's Geoid-Based Vertical Datum with Airborne Gravimetry (8103)

**Rachelle Winefield and Matt Amos** (New Zealand):  
 Enabling the Uptake of New Zealand's Improved National Vertical Datum (8081)



**TS08E – NEW AND EMERGING TECHNOLOGIES FOR HYDROGRAPHY**

**THURSDAY, 5 MAY 16:00–17:30**  
**VENUE:** SILK ROOM 2, ADDINGTON RACEWAY, LEVEL 2  
**COMMISSION:** 4  
**CHAIR:** MR. MICHAEL BEARD, AUSTRALIA  
**RAPPORTEUR:** MR. KEVIN SMITH, NEW ZEALAND

**Adam Greenland** (New Zealand): NZ Pacific Regional Navigation Initiative (8160)

**Nataly Saenz, Daniel Paez** and **Cesar Arango** (Colombia): Local Algorithm for Monitoring Total Suspended Sediments in Micro-Watersheds Using Drones and Remote Sensing Applications. Case Study: Teusacá River, La Calera, Colombia (8341)

**Sylvia Sueno** and **Hannah Grace Aventura** (Philippines): Improvement of Rating Curve Through Manning's Equation and LiDAR (8374)

**Louie Balicanta, Patrizia Mae Dela Cruz, Dexter Lozano** and **Joemarie Caballero** (Philippines): Acquiring River Bathymetric Data as Input for Agno River LIDAR DEM (8385)

**TS08G – DISASTER RECOVERY INNOVATIONS**

**THURSDAY, 5 MAY 16:00–17:30**  
**VENUE:** TERROR OF LOVE LOUNGE 2, ADDINGTON RACEWAY, LEVEL 3  
**COMMISSION:** 7 AND 8  
**CHAIR:** MR. KEES DE ZEEUW, NETHERLANDS  
**RAPPORTEUR:** MR. SHARLEEN COLE-SWAMI, NEW ZEALAND

**Mohamad Hafiz Al Faza** (Indonesia): The Land Use Planning for the Establishment of Multifunctional Emergency Buildings and Regulated Agricultural Areas to Confront the Unexpected Disasters in Christchurch (7954)

**Khamarrul Azahari Razak, Zakaria Mohamad, Razain Abd Razak, Mohd Othman Sosi Said** and **Ahmad Zufadli Ahmad Mazuvil** (Malaysia): Advanced Geospatial Data for Cascading Geo-Hazard and Disaster Risk Assessment: a Case Study of 2015 Earthquakes in Sabah (8002)

**Arthur Tavares, Jarbas Miranda** and **Harold Fowler** (Brazil): Analytical Method to Study Environmental Hazards Using High Resolution Multi-Temporal Images (8039)  
*This is a peer reviewed paper.*

**Indra R Hutabarat** and **Memby U. Pratama** (Indonesia): Utilizing Openstreetmap Tags for Road Toponyms in Post Tsunami Reconstruction Area: The Lesson From Aceh, Indonesia (8147)

**Heri Andreas, Dina Sarsito, Hasanuddin Zaenal Abidin** and **Irwan Meilano** (Indonesia): Learning a Disaster from Earthquake Cycle Deformation (Case Study Jogjakarta Earthquake with the LUSI Eruption 2006) (8194)

**Eza Nurfadli, Ildrem Syafri, Yunita Rosa** and **Murni Sulastris** (Indonesia): The Role of Physical-Mechanical Characteristics of Weathered Volcanic Rocks to the Potential Mass Movement at the Southern Part of Garut, West Java, Indonesia (8286)

**Francis Roy, Guy Mercier, Etienne Berthold** (Canada) and **Tidiane Ndiaye** (Senegal): The Making of an Interactive Atlas of Vulnerability to Climate Change for Local Communities in Quebec (8344)

**TS08I – PLANNING, DEVELOPMENT AND CONSOLIDATION OF LAND RIGHTS IN CRISIS SITUATION**

**THURSDAY, 5 MAY 16:00–17:30**  
**VENUE:** BLOSSOM LADY 1, ADDINGTON RACEWAY, LEVEL 3  
**COMMISSION:** 8  
**CHAIR:** MR. KWAME TENADU, GHANA  
**RAPPORTEUR:** MR. MWENDA MAKATHIMO, KENYA

**Walter Timo de Vries** (Germany): Post Disaster Consolidation of Land, Memory and Identity (8007)  
*This is a peer reviewed paper.*

**Nyncke Afke Emmens** and **Bert Hoeve** (Netherlands): Creating a Safer Place to Live Through Land Consolidation (8231)

**Bambang Edhi Leksono, Nanin Trianawati Sugito, Andri Rapik Ahmadi, Levana Apriani** and **Muhammad Ihsan** (Indonesia): Land Consolidation in Rural Area for Increasing Environmental Quality (Case Study: Jelegong Village, Rancaekek District, Bandung Regency, West Java, Indonesia) (8263)

**Kristine Andaya, Jasmine Alviar** and **Pearl Mars** (Philippines): Analysis of the effect of rapid urbanization on flooding in Naga City, Philippines using Landsat image analysis and flood modeling (8328)

**Xiaobin Zhang** and **Yanmei Ye** (China, PR): Land Reallocation in Land Consolidation: a Chinese Mode and Its Future Direction (8069)

**Feng You, Guomin Xian, Yongzhong Feng** (China, PR) and **Yahan Zhang** (China, PR): 'Research on Reclamation and Implementation Effect of Abandoned Cave Dwelling in Loess Area of Northwest China—Taking Xifeng District of Gansu Province for Example (8419)

**GALA DINNER**

**THURSDAY, 5 MAY 19:30–23:00**  
**VENUE:** AIR FORCE MUSEUM OF NEW ZEALAND

Dinner will be held in the Aircraft Hall, amongst the aircraft. After a splendid three course meal you will be entertained by a great band to dance the night away.

Transportation is provided from and to the conference hotels (see page 47).

- Ticket is required

**FIG PRESIDENTS' MEETING**

**FRIDAY, 6 MAY 8:30–10:30**  
**VENUE:** CONCOURSE ROOM, HORNCastle ARENA  
**CHAIR:** MS. CHRYSY POTSIOU, GREECE, PRESIDENT OF FIG  
**RAPPORTEUR:** MS. LOUISE FRIIS-HANSEN, FIG DIRECTOR

This event is convened by the FIG President and is reserved for Presidents or Heads of delegation of Member Associations (or their representatives).

- By invitation only

**FIG GENERAL ASSEMBLY – SESSION 2**

**FRIDAY, 6 MAY 11:00–15:00**  
**VENUE:** PLENARY HALL, HORNCastle ARENA  
**CHAIR:** MS. CHRYSY POTSIOU, GREECE, FIG PRESIDENT

- For all FIG members
- Open for observers

**FAREWELL RECEPTION**

**FRIDAY, 6 MAY 15:00–16:00**  
**VENUE:** HORNCastle ARENA

- All participants are invited
- Hosted by FIG Working Week 2017, Helsinki, Finland.

**FIG WORKING WEEK 2017**



**RUGBY MATCH – BNZ CRUSADERS VERSUS REDS**

**FRIDAY, 6 MAY 19:45–23:00**  
**VENUE:** AMI STADIUM, ADDINGTON CHRISTCHURCH

Rugby is the national game in New Zealand, you may have heard of the All Blacks. We have organised the right to tickets to see the Crusaders tackle the Reds. This is top tier New Zealand rugby that is not to be missed!

- Ticket is required





## General Information About Christchurch

### Getting to and from the Conference Venues

Shuttlebuses drive between the conference hotels and venues during the main conference days (Monday to Friday) as follows:

#### SHUTTLEBUSES TO/FROM MAIN VENUES AND HOTELS

##### TO HORNCASTLE ARENA AND ADDINGTON RACEWAY

###### Departure from

Rydges Latimer	7:30	8:00	8:30	9:30	10:30	11:30	12:30	13:30
Breakfree on Cashel	7:30	8:00	8:30	9:30	10:30	11:30	12:30	13:30
YMCA then Ibis	7:30	8:00	8:30	9:30	10:30	11:30	12:30	13:30
Chateau on the Park	7:30	8:00	8:30	9:30	10:30	11:30	12:30	13:30

##### TO RYDGES LATIMER, BREAKFREE ON CASHEL, YMCA & IBIS, CHATEAU ON THE PARK

Horncastle Arena	11:00	12:00	13:00	14:00	15:00	16:00	17:00	(Tue to Thu buses also at 18:00 and 19:00)
------------------	-------	-------	-------	-------	-------	-------	-------	--

#### SHUTTLEBUSES TO EVENING EVENTS

Departure from	MONDAY	TUESDAY	THURSDAY
	Welcome Reception		Kiwi Evening
Rydges Latimer	Walk	18:40	18:40
Breakfree on Cashel	18:40	18:45	18:40
YMCA then Ibis	18:20	18:30	18:40
Chateau on the Park	18:30	18:50	18:50

#### SHUTTLEBUSES FROM EVENING EVENTS

###### Departure from

Welcome Reception	21:00	21:30	22:00		
Kiwi Evening	21:00	21:30	22:00	22:30	23:00
Gala Dinner	21:00	21:30	22:00	22:30	23:00

### Taxi

Prices vary and you are advised to ask before beginning your journey. Corporate Cabs – 64 3 379 5888, Blue Star – 64 3 379 9799, Green Cabs – 0508 447 336.

### Goods and Service Tax

GST (Goods and Services Tax) of 15% is applied to the cost of all goods and services and is generally included in all prices.

### Emergency Services

In emergencies, dial 111 to call police, fire or ambulance services.

### Getting to Know Christchurch

Lonely Planet listed Christchurch as number 6 in their top 10 cities to visit in 2013 and number 2 on The New York Times' "52 Places to go in 2014". This is thanks to a resilient and enterprising community determined to forge a bright future for the city. Innovative shops, businesses and buildings are continually popping up as the city rebuilds.

### Tour the City

Take in the city sights by joining a guided bike tour, or do it on your own in style with a vintage bike. If you want to put your feet up, hop on a Hassle Free double-decker bus providing great views and an informative commentary. For something slightly different, join a segway tour, the perfect way to explore Christchurch.

### Explore Our History

If you're a history buff, take a fascinating journey through New Zealand's military aviation history at the Air Force Museum of New Zealand. Discover the history of Christchurch and the surrounding regions at the Canterbury Museum and to learn more about the 2010 and 2011 earthquakes and their aftermath, Quake City is well worth a visit. Christchurch is known as the Gateway to Antarctica and there's no better place to learn more about this connection than at the International Antarctic Centre.

### Be Entertained

Discover the passion and talent of local thespians at The Court Theatre. Delve into Māori culture at Ko Tāne, a living Maori Village, and experience the passion of the haka, and the deliciousness of a hangi.

### Parks, Gardens and Walks

Long referred to as "The Garden City" Christchurch's parks and gardens are ripe for exploration. Take a run or stroll around the vast green space of Hagley Park, or wander the blooms and foliage at The Botanic Gardens. Enjoy the beauty and the tranquillity with a punt down the Avon in a gondola.

## Things to Do and See in Central Christchurch



### Christchurch Botanic Gardens

The Christchurch Botanic Gardens have a variety of collection of exotic and local plants of New Zealand. Gardens open 7:00–18:30. Free entry.



### Canterbury Museum

Highlights include the world's greatest collection of artefacts from the age of discovery, the Māori collections, and the quirky kiwiana of Fred & Myrtle's Paua Shell House. Open daily 9:00–17:00. Free admission.



### Quake City

Quake City is a unique multi-sensory attraction aimed at informing, engaging and educating visitors about the Canterbury earthquakes. Open daily 10:00–17:00. Admission NZD 20, children free.



### Christchurch Art Gallery

The Te Puna o Waiwhetu Museum has its own substantial art collection and presents a programme of New Zealand and international exhibitions. Open daily 10:00–17:00. Free entry.



### Christchurch Tramway

Explore Christchurch in heritage style. Back on track on the city streets with a newly extended route, the Trams offer a unique experience combining history and sightseeing. Adults NZD 20, children free.



### Re:START Container Mall

A response to the 22 February 2011 earthquake, which destroyed most buildings in City Mall. Initially considered as a short-term solution, but has become popular with locals and tourists alike.

### Outside of the Map:

- For a relaxing day trip, consider a train journey through the majestic Southern Alps on the **TranzAlpine Train**.
- At the **International Antarctic Centre** you can explore an icy way of living, and cold-loving wildlife.
- Enjoy the beauty and the tranquillity of the city of parks with a punt down the Avon in **Christchurch Gondola**.
- Feed giraffes and lemurs, ride into a lion enclosure or get up close with a rhino at **Orana Wildlife Park**.
- For a New Zealand wildlife encounter, **Willowbank** is the place – you might even come face to face with the Kiwi.
- **Akaroa and Banks Peninsula** will reward you with picturesque vistas, a thriving artisan culture and marine wildlife.

Photos: A: © Elliottphotos | Dreamstime.com • B: Greg O'Baine | GFDL / Creative Commons • C: www.canterburymuseum.com/quakecity • D: Flickr - Roger T Wong | CC BY-SA 2.0

## Christchurch Central City Map

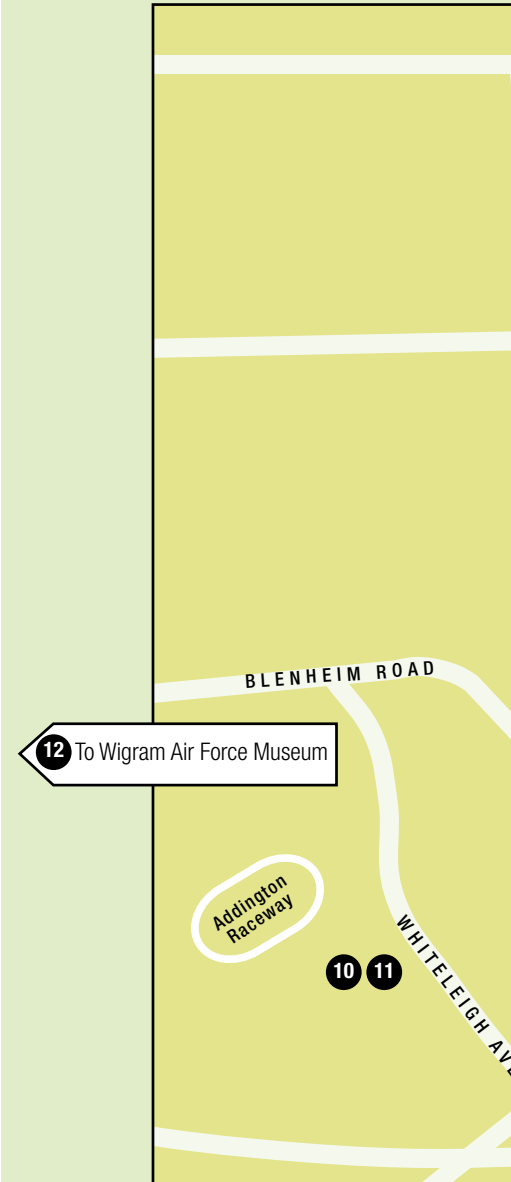


FIG is pleased to announce that Earth Sea Sky – one of New Zealand's foremost outdoor clothing manufacturers, will supply clothing for the FIG Working Week in Christchurch. Earth Sea Sky manufactures everything a surveyor may wish for at a quality only New Zealand can do. They have designed a stunning merino top using white native birds and the New Zealand map as a base with Christchurch as the centre.





### Hotels

1. Rydges Latimer, 30 Latimer Square
2. Rendezvous , 166 Gloucester Street
3. Breakfree on Cashel, 165 Cashel Street
4. Novotel, 52 Cathedral Square
5. Ibis, 107 Hereford Street
6. YMCA, 12 Hereford Street
7. The George Hotel, 50 Park Terrace
8. Chateau on the Park, 189 Deans Avenue



FIG Coach pick up / drop off point

### Venues

9. Christchurch Transitional Cathedral
10. Horncastle Arena, 55 Jack Hinton Dr, Addington
11. Addington Events Centre, 75 Jack Hinton Drive, Addington
12. Wigram Air Force Museum, 45 Harvard Ave, Wigram



Recovery from disaster

## The FIG Foundation – Building a Sustainable Future



THE FIG  
FOUNDATION

The FIG Foundation is an independent body under the International Federation of Surveyors and has been established for the purpose of raising funds to finance surveying education development projects and supporting young surveyors in order to build a sustainable future.

The FIG Foundation will build a sustainable future by:

- grants and scholarships to projects, for instance to develop curricula for surveying education, training and capacity building, especially in developing countries;
- encouraging research into all disciplines of surveying and to disseminate the results of that research;
- promoting high standards of education and training for surveyors and to facilitate continuing professional development;
- educating people in the disciplines of surveying, particularly in developing countries and countries in transition;
- promoting the use of distance learning, networking, eLearning and knowledge management in surveying education and continuing professional development;
- promoting the exchange of surveying personnel for greater understanding of all facets of the profession of surveying;
- supporting by seed funding conferences, meetings of young surveyors and similar events in co-operation with international agencies such as the United Nations.

More information at [www.fig.net/foundation](http://www.fig.net/foundation).

# New website, latest offers, start saving...



## Subscribe and stay ahead of the game!

The content that you can trust

[info@geoconnexion.com](mailto:info@geoconnexion.com)  
[geoconnexion.com](http://geoconnexion.com)



## We understand your work.

Esri® provides the technology platform that allows you to integrate and manage vast amounts of data, then use that data for planning, analysis, and visualization. View current, authoritative information from your office or the field and access additional data in the cloud to keep government officials and the public informed. Esri understands your work, and we can help you do it better.

Learn more at  
[esri.com/landadministration](https://esri.com/landadministration)



Understanding our world.

# FIG WORKING WEEK 2017

SURVEYING THE WORLD OF TOMORROW

From digitalisation to augmented reality

[www.fig.net/fig2017](http://www.fig.net/fig2017)

Helsinki Finland 29 May - 2 June



LET'S MEET WHERE

Continents & Cultures,  
Past & Present,  
Old & New,  
Modern & Traditional MEET...

LET'S MEET IN ISTANBUL

6-11 May 2018

[www.fig.net/fig2018](http://www.fig.net/fig2018)



FIG Working Week 2019  
Hanoi, Vietnam



International  
Federation of  
Surveyors (FIG)



Vietnam Association of  
Geodesy, Cartography  
and Remote Sensing (VGCR)