



**BUILT ENVIRONMENT  
RESEARCH INSTITUTE**  
ANNUAL REPORT  
1 AUGUST 2010 - 31 JULY 2011

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<b><i>CONTENTS</i></b>	<b><i>Page No</i></b>
1. Foreword from the Director of the Research Institute	5
2. Research Institute Members	11
3. Research Staff Members	13
4. Research Students	14
5. Research Publications	18
5.1 Conference Papers	26
6. Research Funding	35

## I. FOREWORD BY THE RESEARCH INSTITUTE DIRECTOR



It is a great pleasure to present the Annual Report for the Built Environment Research Institute (BERI) for the academic year 2010-2011. With the current economic environment, research plays a vital role in stimulating new products and innovation and will be central to the recovery of the UK economy. I am pleased to report that despite the current challenges, research in the Built Environment at the University of Ulster has remained resilient, indeed the period covered by this report has seen significant developments in the infrastructure that underpins our research base, there have been several new grants notably through EC FP7

funding either achieved or at advanced negotiation stage and our postgraduate doctoral programme remains vibrant with 88 students registered either on a full-time or part-time basis, and 15 PhD students graduating over the course of the year.

In this foreword, we briefly review the activities of the four research centres within the Built Environment Research Institute: the Centre for Sustainable Technologies (CST), the Fire Safety Engineering Research and Technology Centre (FireSERT), the Hydrogen Safety Engineering and Research Centre (HySAFER), and the Centre for Research on Property and Planning (RPP). The main report provides details of academic and research staff in the Research Institute, details of PhD projects and graduating PhDs, publications, research papers delivered at conferences by staff in BERI and information on new research funding notified during the year.

Over the year, the Centre for Sustainable Technologies (CST) has seen the enhancement of its test facilities through the construction of Terrace Street, a replica pair of 1900s solid wall properties representative of the 8 million houses of this property type in the UK. These highly instrumented and occupied houses will be utilised to evaluate the techno-socio-economic challenges associated with retrofitting which has been widely advocated as improving the quality and energy efficiency of the UK's housing stock. The research stemming from this investment will influence the effectiveness of low carbon solutions and inform home-owners, landlords, social housing providers, technology providers and policy makers. The development of dedicated biomass facilities incorporating gasification, engine test areas and a suite of sophisticated biomass energy analysis tools will complement the techno-economic analysis for which CST has developed an international reputation.



Terrace Street, the experimental houses constructed at the Jordanstown campus by CST and funded under the Research Capital Investment Fund.

New grant income across CST remains positive in this challenging environment with various European funded projects underway. This has enabled the Centre to retain the expertise developed through the Department for Employment and Learning (DEL) Cross Border Energy Storage Project. This project concluded with a major International Conference on Sustainable Energy Storage in February 2011, opened by the Vice Chancellor Professor Richard Barnett and incorporating the first International Energy Agency meeting to be held in Ireland.



*Prof Neil Hewitt, Prof Greg Lloyd, Dr Lr Wim van Helden (ECN, Netherlands), Prof Richard Barnett (Vice Chancellor) Professor Dorota Chwieduk (Polish Academy), Dr Lr Marc Steen (Joint Research Centre, Netherlands) and Prof Vladimir Molkov at the opening of the ICSES Conference, February 2011. Photograph courtesy of Aurora Photographic Agency.*



*ICSES Conference Dinner at Belfast City Hall, organised by CST Research Group in conjunction with HySAFER and RPP, February 2011.*

The four core areas of current activity in FireSERT: fire dynamics and materials, structural fire engineering, fire protection and human behaviour in fire were all significantly advanced over the year. FireSERT continues to attract considerable project funding from EPSRC, government, the European Union and industry. Current externally funded projects are examining building safety related to flashover and façade fires, the assessment and evaluation of fire safe nanoparticle materials including the potential for nano-engineered materials, the replacement of brominated fire retardants (FRs) with environmentally compatible FRs, fire safety of aircraft composite materials, the performance of structures (cellular beams) and elliptic cross section columns in fire situations. New European design rules were developed in a project on the fire resistance of long span cellular beams made of rolled profiles. Collaboration with Bombardier for aircraft fire safety and the assessment of composite material flammability is a major outcome of the research expertise within FireSERT.

FireSERT staff have extensive collaborations with other UK universities (University of Edinburgh, University of Greenwich, University of Manchester) and internationally (University of Science and Technology of China, Tokyo University of Science, University of Newcastle Australia). At the prestigious 10<sup>th</sup> Symposium of IAFSS (International Association of Fire Safety Science) in June 2011, FireSERT was one of the leading institutions represented with staff presenting a total of five papers.



*Prof Ali Nadjai, Dr Karen Boyce, Dr Mathieu Suzanne, Prof Michael Delichatsios and Prof Ali Nadjai attending 10<sup>th</sup> International Symposium on Fire Safety Science, University of Maryland, USA, June 2011.*

In terms of resources, the furnace at FireSERT is unique and can take different restraint effects similar to structural elements designed for real buildings. The furnace can combine axial restraint forces and applied vertical loads on structures subjected to standard temperature fire curves. Infrastructural improvement has seen the furnace at FireSERT extended to accommodate structures of 7.5m span. With this development safe structures will be designed through the research at FireSERT to avoid and eliminate the catastrophic collapse of buildings.



*Furnace at FireSERT at the Jordanstown Campus.*

The Hydrogen Safety Engineering and Research Centre (HySAFER) has successfully completed, in the reporting period, a major FP6 project EST in Fundamentals of Hydrogen Safety; the Invest NI project on development of innovative pressure relief devices for the hydrogen economy (two patent applications); and the hydrogen aspects of the DEL cross-border energy storage project. New projects that started during the year included TrainHy-Prof and HyFacts both funded through FP7 by Fuel Cell and Hydrogen Joint Undertaking (FCH JU). Three other projects: HyIndoor (FCHJU), HyCube (European Institute of Technology), and H2FC (FP7, Capacities - Research Infrastructures programme) are at negotiation

stage. HySAFER is also involved with partner institutions for example as a member of a core academic group bidding under the EPSRC SUPERGEN Hydrogen and Fuel Cells “Hub” to lead hydrogen safety activities in the UK.

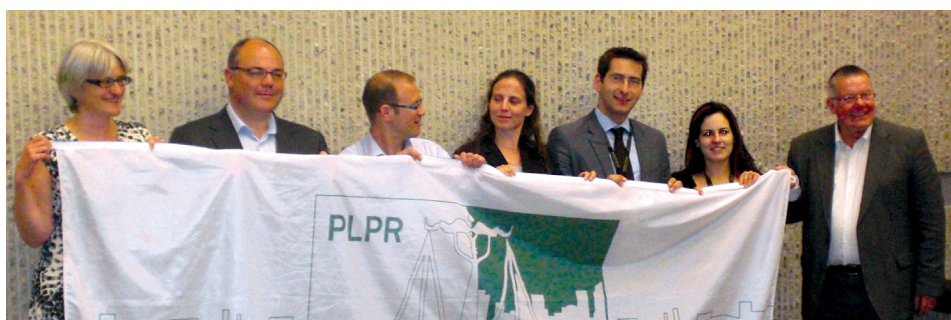
Research undertaken by HySAFER during this year included rethinking hydrogen jet flames and universal dimensionless correlation for hydrogen jet fires; simulation of lift-off phenomenon for hydrogen jet fires and enclosure fire by eddy dissipation; reproduction of experimental data on the pressure limit of spontaneous ignition of hydrogen at sudden releases; and the structure and performance of plane jets with different aspect ratio.

During the year, the 9<sup>th</sup>, 10<sup>th</sup>, and 11<sup>th</sup> international short courses and advanced research workshops “Progress in Hydrogen Safety” (<http://hysafer.ulster.ac.uk/phs/>) were organised. HySAFER was also a partner in the ICSES conference hosted in February 2011 with a dedicated track on hydrogen safety and hydrogen storage.



*HySAFER group members with participants of 9<sup>th</sup> Short Course and Research Workshop on Hydrogen Safety, October 2010.*

The Centre for Research on Property and Planning (RPP) was a co-sponsor, with three other leading real estate research centres in the UK (the universities of Aberdeen, Cambridge and Reading) and the Royal Institution of Chartered Surveyors (RICS), of the Isle of Skye Real Estate Symposium in August 2010. RPP was also a co-organiser of the ICSES Conference in February 2011 with a parallel track on the spatial planning dimension of energy storage. Prof Lloyd and Prof Peel made a successful bid at the conference of the International Association on Planning Law and Property Rights (PLPR) in Edmonton (May 2011) to host the next conference in Belfast in February 2012. The American Real Estate Society provided bursaries for three PhD students to present papers at the Annual Conference in Seattle in April 2011.



*Prof Deborah Peel (left) and Prof Greg Lloyd (right) at the Edmonton conference of PLPR, May 2011.*



Robert Peto (President of the RICS), Prof Alastair Adair, Prof Norman Hutchison (University of Aberdeen), Dr Martin Haran, Prof Stanley McGreal and Prof Jim Berry at the launch of the PPP report at the RICS, Parliament Square, London, June 2011.

Within RPP, several research projects were successfully concluded over the year. These included Housing and Neighbourhood Monitor research with the universities of Manchester and Glasgow, funded by the Joseph Rowntree Foundation and the Future of Private Finance Initiative and Public Private Partnership, funded by the RICS and undertaken with the University of Aberdeen. The latter project had high profile launches in Washington (hosted at Georgetown University) and London (hosted by the RICS) in June 2011.

Research on the housing market undertaken in RPP continues to have major impact locally through production of quarterly reports on the private market and half-yearly reports on the state of the rental market and complementary policy related research commissioned by the Northern Ireland Housing Executive. Through the Real Estate Initiative an analysis of Mortgage Market Liquidity in Northern Ireland: Constraints and Misconceptions was launched in August 2010. This research on housing and land markets is influencing the local policy dimension including engagement with members of the Northern Ireland Advisory Committee of the National Asset Management Agency (NAMA).



Joe Frey, NI Housing Executive; Alex Attwood, MLA, (then) Minister for Social Development; Dr David McIlhatton, University of Ulster and Neil Johnston, Conference Chairman, pictured at the Northern Ireland Housing Conference 2011 which took place in the Stormont Hotel, Belfast, March 2011.

Collaboration has continued through the University's role in the International Centre for Local and Regional Development (ICLRD) Cross-Border Spatial Planning and Training Network (CroSPlaN). This INTERREG-funded project has provided a unique opportunity for senior decision makers to explore areas of collaboration and mutual benefit linking across the public, private and community sectors based on evidence derived *inter alia* from ICLRd research.

Through the Education Partnerships in Africa (EPA) scheme, funded by DEL and administered by the British Council, staff from RPP have been working with

Mzuzu University and Malawi Polytechnic in Blantyre to enhance the provision of urban and regional planning education and research in Malawi. The project enabled representatives from central and local government, NGOs, the Malawi Institute of Physical Planning and the private sector to engage with academics, leading to greater levels of cooperation and coordination between all stakeholders. The project is part of ongoing collaborations with researchers in Malawi.



*Ms Rebecca Ramsey (Mzuzu University), Dr Neale Blair, Mr Mtafu Manda (Mzuzu University), Mr Jim Hetherington (ICLRD visiting researcher)*

Research students are central to the activities of the four research centres in BERI. In conjunction with the Research Graduate School, the annual PhD conference was held in March 2011 with presentations and poster displays from doctoral students in the Faculty of Art, Design and the Built Environment. Over 20 PhD researchers presented papers on their research and a similar number prepared conference posters. The keynote lecture on “Forensic Architecture” was given by Prof Eyal Weizman, Goldsmiths College.



*Dr David McIlhatton and Dr Michael McCord who received awards for best PhD thesis at the Research Graduate School Conference, March 2011.*

I would encourage you to read through this Annual Report on the activities of the Built Environment Research Institute, University of Ulster over the period August 2010 to July 2011. I look forward to receiving any comments or queries that you may have on research activities in built environment.

A handwritten signature in black ink that reads 'Stanley McGreal'. The signature is written in a cursive, flowing style.

Professor Stanley McGreal  
Director, Built Environment Research Institute

## 2. RESEARCH INSTITUTE MEMBERS

Surname	Forename	Title	Position	Institute Status
<b>Adair</b>	Alastair	Prof	PVC (Communication & External Affairs)	Core
<b>Ali</b>	Faris	Prof	Professor in Structural Engineering	Core
<b>Anderson</b>	Mark	Mr	Lecturer	Associate
<b>Berry</b>	James	Prof	Professor in Urban Planning & Property Development	Core
<b>Blair</b>	Neale	Dr	Lecturer	Core
<b>Boyce</b>	Karen	Dr	Senior Lecturer	Core
<b>Brennan</b>	Sile	Dr	Lecturer	Associate
<b>Brown</b>	Louise	Mrs	Lecturer	Associate
<b>Choi</b>	Seng-Kwan	Dr	Lecturer	Core
<b>Dahoe</b>	Arief	Dr	Lecturer	Core
<b>Davis</b>	Peadar	Dr	Lecturer	Associate
<b>Delichatsios</b>	Michael	Prof	Professor of Fire Dynamics and Material Flammability and Fire Modelling/Director of FireSERT	Core
<b>Eadie</b>	Robert	Dr	Lecturer	Associate
<b>Gray</b>	Paddy	Prof	Professor in Housing	Associate
<b>Griffiths</b>	Philip	Dr	Associate Head of School	Core
<b>Grissom</b>	Terry	Dr	Lecturer	Core
<b>Haran</b>	Imelda	Dr	Lecturer	Associate
<b>Heaney</b>	George	Prof	Professor of Construction	Core
<b>Hemphill</b>	Lesley	Dr	Lecturer	Core
<b>Hewitt</b>	Neil	Prof	Professor of Energy/ Director of CST	Core
<b>Hine</b>	Julian	Prof	Professor of Transport	Core
<b>Huang</b>	Ming Jun	Dr	Lecturer	Core
<b>Huang</b>	Ye	Dr	Lecturer	Core
<b>Hyde</b>	Trevor	Dr	Lecturer	Core
<b>Joseph</b>	Paul	Dr	Lecturer	Core
<b>Kashyap</b>	Anil	Dr	Lecturer	Associate
<b>Keenan</b>	Michaela	Dr	Lecturer	Associate
<b>Lim</b>	Lay-Cheng	Dr	Lecturer	Core
<b>Lloyd</b>	Greg	Prof	Professor of Urban Planning/ Head of School of the Built Environment	Core
<b>Lyness</b>	John	Dr	Reader	Core
<b>MacIntyre</b>	Sean	Mr	Senior Lecturer	Associate
<b>Makarov</b>	Dmitriy	Dr	Reader	Core
<b>Martinez-Perez</b>	Alona	Mrs	Lecturer	Associate
<b>McAnulty</b>	Ursula	Miss	Lecturer	Associate
<b>McCluskey</b>	William	Dr	Reader	Core
<b>McConnell</b>	Nigel	Dr	Lecturer	Associate
<b>McDermott</b>	Rodney	Mr	Lecturer	Associate

<b>Surname</b>	<b>Forename</b>	<b>Title</b>	<b>Position</b>	<b>Institute Status</b>
<b>McGreal</b>	Stanley	Prof	Professor of Property Research/Director of BERI and RPP	Core
<b>McIlveen-Wright</b>	David	Dr	Lecturer	Core
<b>McLernon</b>	Tim	Dr	Senior Lecturer	Associate
<b>McQueen</b>	Michael	Mr	Lecturer	Associate
<b>Molkov</b>	Vladimir	Prof	Professor of Fire Safety Science/Director of HySAFER	Core
<b>Mondol</b>	Jayanta	Dr	Lecturer	Core
<b>Nadjai</b>	Ali	Prof	Professor of Fire Structural Engineering	Core
<b>Novozhilov</b>	Vasily	Prof	Professor in Fire Dynamics	Core
<b>Odeyinka</b>	Henry	Dr	Lecturer	Core
<b>Peel</b>	Deborah	Prof	Professor of Planning Research and Scholarship	Core
<b>Pimenidou</b>	Panagiota	Dr	Lecturer	Associate
<b>Rafferty</b>	Gavan	Mr	Lecturer	Associate
<b>Ritchie</b>	Heather	Dr	Lecturer	Associate
<b>Ryan</b>	Donal	Dr	Lecturer	Associate
<b>Saffers</b>	Jean-Bernard	Dr	Lecturer	Associate
<b>Singhal</b>	Shaleen	Dr	Lecturer	Associate
<b>Smyth</b>	Mervyn	Dr	Reader	Core
<b>Strong</b>	Alan	Mr	Senior Lecturer	Associate
<b>Van der Krabben</b>	Erwin	Prof	Professor of Real Estate	Core
<b>Woodside</b>	Alan	Prof	Professor of Highway Engineering	Associate
<b>Woodward</b>	David	Dr	Reader	Core
<b>Yohanis</b>	Yigsaw	Prof	Professor of Building Services Engineering	Core
<b>Zhang</b>	Jianping	Dr	Lecturer	Core

BERI staff and status at 31<sup>st</sup> July, 2011.

### 3. RESEARCH STAFF MEMBERS

Surname	Forename	Title	Position	Research Centre
<b>Bragin</b>	Maxim	Dr	Research Associate	HySAFER
<b>Cave</b>	Susie	Miss	Research Associate	RPP
<b>Dave</b>	Ashok	Mr	Research Assistant	CST
<b>Fang</b>	Yueping	Dr	Research Fellow	CST
<b>Goodfellow</b>	Nathan	Dr	Research Assistant	FireSERT
<b>Han</b>	Sanghoon	Dr	Research Associate	FireSERT
<b>Haran</b>	Martin	Dr	Research Fellow	RPP
<b>Keatley</b>	Patrick	Mr	Research Associate	CST
<b>McIlhatton</b>	David	Dr	Research Associate	RPP
<b>McLarnon</b>	Dominic	Mr	Research Fellow	CST
<b>Novaes</b>	Marcio	Mr	Research Associate	CST
<b>Ramani</b>	Alwar	Dr	Research Assistant	FireSERT
<b>Redpath</b>	David	Dr	Research Associate	CST
<b>Rezvani</b>	Sina	Dr	Research Fellow	CST
<b>Suzanne</b>	Mathieu	Dr	Research Assistant	FireSERT
<b>Tretsiakova-McNally</b>	Svetlana	Dr	Research Associate	FireSERT
<b>Zacharopoulos</b>	Aggelos	Dr	Research Fellow	CST

Research Staff and status at 31 July, 2011.

## 4. RESEARCH STUDENTS

The following research students were registered on research degree programmes in the Institute during 2010-2011.

Student Name	Thesis Title
<b>Akbar, Muhammad R</b>	Sustainable Technologies, Environmental Subsidies, End User Needs and Business Opportunities in the delivery of Zero Carbon Homes
<b>Akram, Waseem</b>	Car culture and city design
<b>Alexander, Gareth O</b>	Novel floor constructions to improve the performance and energy efficiency of ground source heat pump (GSHP) powered underfloor heating
<b>Ali, Sadiq</b>	Thermal / Mechanical / Electrical storage systems suitable for deployment in the Built Environment
<b>Anderson, Mark T</b>	Biomass pelletisation, fuel variability and pelletisation for co-gassification process
<b>Arya, Farid</b>	Producing cheap vacuum glazing sheets which can be cut in different sizes
<b>Banerjee, Urbi</b>	Effect of urban form on dynamic nature of travel behaviour
<b>Brown, Louise</b>	Time on the market for single family residential property: the UK perspective
<b>Byrne, Conor</b>	Dynamical System (Lattice Boltzmann) Modelling of Compartment Fires
<b>Byrne, Orla M</b>	Investigation into the potential practical application of “smart growth” within an Irish case study
<b>Caldwell, Stephen</b>	A study into sustainable bitumen use
<b>Clarke, Mervyn C</b>	Strategic property performance management
<b>Colclough, Shane</b>	Thermal energy storage
<b>Dave, Ashok</b>	Techno – Economic assessment of novel IGCC systems with CO <sub>2</sub> capture
<b>Dixon, Andrew JP</b>	Experimental studies to investigate merging behaviour in a staircase
<b>Doheim, Rahma</b>	Development of a performance-based approach in fire codes in Egyptian architecture
<b>Eni, Sabariah</b>	Value Capture Model as a Financial Tool for Urban Regeneration
<b>Firth, Simona</b>	Vacuum window performance evaluation and characterisation
<b>Friel, Shaun</b>	Early life skid resistance
<b>Gamu, Faoziah</b>	Analysing real estate values in emerging economies. A case study of Nigeria
<b>Ghayur, Muhammad A</b>	Techno-economic modelling of bio-refinery concepts
<b>Golden, Saul</b>	Urban design decision support systems - assessment tools for successful urban civic space
<b>Gunasekera, Sanwara</b>	Modelling the relationship between organisational and supply chain performance in the construction industry
<b>Hardie, Brian</b>	The behaviour of compartment masonry walls in fires
<b>Harpur, Amy</b>	Development and analysis of a database on dwelling fire deaths in Northern Ireland
<b>Harrison, Justin</b>	Sustainable communities - mapping and measuring the balance of trade-offs
<b>Hinch, Martin</b>	The liquidity crisis within real estate markets
<b>Kashyap, Poonam</b>	Innovative storage systems suitable for deployment in the Built Environment

Student Name	Thesis Title
<b>Keatley, Patrick</b>	Dynamic techno-economic analysis of power generation systems
<b>Keenan, James J</b>	Modelling and LES of vented hydrogen-air deflagrations
<b>Kelly, Hugh F</b>	24-hour cities: advantages in commercial real estate investment
<b>Khamkanya, Thadsin</b>	Analysis of the holistic approach to workplace environments, management systems and new technologies in meeting corporate end-user requirements
<b>Lewis, John</b>	Innovation in construction procurement – case based reasoning and artificial intelligence techniques
<b>Lytvyn, Inna F</b>	Techno-economic modelling of all-Ireland energy system
<b>Lytvyn, Iurii V</b>	Novel Evacuated Glazing System
<b>Mahmoud, Moataz</b>	Design, access and security in public transport infrastructure (an integrated assessment tool for sustainable public transportation)
<b>McClements, Sharon</b>	Selection of consultants based on trust
<b>McDermott, Eva</b>	Articulating heritage values
<b>McDermott, Rodney PJ</b>	A framework for the sustainable management of public health engineering pipelines
<b>McDonald, Kiera E</b>	The linkages between mobility and lifestyle: an analysis of older people's travel behaviour in Northern Ireland
<b>McGrath, John</b>	Interchange and travel choice: implications for mode shift
<b>McIlhagga, John</b>	Existential explorations of architecture
<b>McKeown, Paul J</b>	Legislative and operational issues for sustainable urban drainage systems
<b>McNally, Yvonne</b>	Energy saving via retrofit compared to replacement housing
<b>Mellor, Kate</b>	Slippery surfaces: photography, architecture and the cityscape of seduction
<b>Millar, Philip</b>	A Spatial Rationale for Engineering Performance of Highway Surface Materials based on Digital Photogrammetry
<b>Mitchell, Ruth</b>	Durability of warm asphalts for road surfaces
<b>Moorehead, Donagh</b>	Tradable heat - Using Northern Ireland as a demonstrator for resource mapping, demand mapping and transport concepts for capturing and utilising waste heat without traditional infrastructure investment
<b>Moss, John</b>	Sustainable Rural Communities – A Carbon Model
<b>Murray, Aaron</b>	A study in traffic planning
<b>Naili, El-Hadi A</b>	Behaviour of composite floor structures in fire
<b>Nase, Ilir</b>	Impact of quality led design on real estate value and performance
<b>Novaes, Marcio F</b>	Oilseed rape as a potential feedstock for domestic boilers
<b>O'Brien, Vincent</b>	Development and performance evaluation of nano-encapsulated solar concentrating panels and their potential for modular construction techniques
<b>Oyedele, Joseph</b>	Capital markets and innovative vehicles for financing infrastructure
<b>Paul, Damasén</b>	Characterisation of Solar Concentrating Systems for Photovoltaics and their Impact on Performance
<b>Petrou, Klelia</b>	Fire compartments having long span cellular steel beams
<b>Quigley, Denise</b>	Achieving an optimum balance across capital, life-cycle and environmental costs
<b>Quinn, Matthew V</b>	Heat pumps digital compressor

Student Name	Thesis Title
<b>Quinn, Michael</b>	Behaviour of glazing panel systems in tall buildings
<b>Redpath, Gwyneth M</b>	Risk mapping of minor ('B' Class) roads in rural Northern Ireland, to examine the reasons for the high proportion of collisions resulting in death or serious injuries, especially to young drivers
<b>Rolfe, Angela</b>	Integrated wind-compressed air energy storage system with combined heating and cooling
<b>Salehi Kouhestani, Mohammad</b>	Investigation on advanced heat pumps in domestic appliances
<b>Samsudin, Salfarina</b>	Exploring the role of land administration in supporting sustainable land use management
<b>Scullion, Thomas</b>	Performance of axially restrained steel columns subjected to severe fire
<b>Shah, Nikhil K</b>	Vapour compression heat pumps driven by advanced engine concepts and incorporating heat recovery
<b>Shamsudin, Zarina</b>	Privatisation of property development in Malaysia: negotiation frameworks and equity sharing
<b>Sultan, Zahid</b>	Managing transport demand and sustainable transport
<b>Ukleja, Sebastian S</b>	Production of smoke and CO in enclosure fires
<b>Xiao, Huahua</b>	Research on the flame behaviours and characteristics of premixed hydrogen-air deflagrations
<b>Yi, Sung-Hee</b>	Research on characteristics of fire behaviour and heat release rate of Korean high-rise buildings with state-of-the-art interior materials
<b>Zanjiri, Yasser</b>	Urban regeneration policies towards a sustainable urban space development in Tehran

Graduated December 2010

Student Name	Thesis Title
<b>Goodfellow, Nathan</b>	Behaviour of composite floor cellular steel beams in fire situations
<b>Gore, Ricardo</b>	An investigation into the relationship between visual access/exposure and response time in a fire emergency
<b>Kamruzzaman, Md</b>	Examination of activity spaces: identifying transport disadvantage in rural Northern Ireland
<b>McCord, Michael</b>	Modelling affordability and access to housing markets
<b>Dan, Nchelatebe N</b>	Design, development and experimental characterisation of concentrating solar collectors for medium temperature applications
<b>Rahman, Sazzadur</b>	Knowledge-based decision support system for multi criteria roofing material selection and cost modelling
<b>Saffers, Jean-Bernard</b>	Principles of hydrogen safety engineering
<b>Yao, Wei</b>	Soot modelling in laminar and turbulent combustions
<b>Zbikowski, Mateusz</b>	Hydrogen deflagration-to-detonation transition and its mitigation technologies

Student Name	Thesis Title
<b>Akashah, Farid W</b>	Quantitative fire risk assessment by combining deterministic fire models with automatic event tree analysis
<b>Bukhari, Syed</b>	Public transport network change and transport disadvantages: a case study of Belfast City
<b>Hillis, Colin</b>	Measuring passenger perception of personal safety and security in the context of Northern Ireland public transport facilities
<b>Nichols, Emma</b>	Chemically-enhanced water mist fire suppression
<b>Quinlan, Patrick</b>	The development of a novel integrated collector storage water heater (ICSSWH) using phase change materials and partial evaluation
<b>Ramos, Reynaldo</b>	Analysis of mixed-use schemes in regeneration areas

## 5. RESEARCH PUBLICATIONS

- Adair, A, Berry, J, Gulati, M, Haran, M, Hutchison, N, Kashyap, A, McCord, M, McGreal, WS, Oyedele, J and Tiwari, P (2011) The future of private finance initiative and public private partnership. RICS. pp 95.
- Adair, A, McGreal, WS and McIlhatton, D (2011) Northern Ireland Quarterly House Price Index for Q4 2010 Report 105. Northern Ireland Housing Executive and Bank of Ireland. University of Ulster. pp 8.
- Adair, A, McGreal, WS and McIlhatton, D (2010) Northern Ireland Quarterly House Price Index for Q3 2010 Report 104. Northern Ireland Housing Executive and Bank of Ireland. University of Ulster. pp 8.
- Adair, A, McGreal, WS and McIlhatton, D (2010) Northern Ireland Quarterly House Price Index for Q2 2010 Report 103. Northern Ireland Housing Executive and Bank of Ireland. University of Ulster. pp 8.
- Adair, A, McGreal, WS and McIlhatton, D (2011) Northern Ireland Quarterly House Price Index for Q1 2011 Report 106. Northern Ireland Housing Executive and Bank of Ireland. University of Ulster. pp 8.
- Adams, P, Bengaouer, A, Cariteau, B, Molkov, V and Venetsanos, AG (2011) Allowable hydrogen permeation rate from road vehicles. *International Journal of Hydrogen Energy*, 36 (3). pp. 2742-2749.
- Agyenim, F and Hewitt, N (2010) The development of a finned phase change material (PCM) storage system to take advantage of off-peak electricity tariff for improvement in cost of heat pump operation. *Energy and Buildings*, 42 (9). pp. 1552-1560.
- Ahern, A, Hine, JP and Begley, E (2010) Transport for the elderly: what happens in rural areas? in: *World Conference on Transport Research*, World Conference on Transport Research Society (WCTR). pp 20.
- Akram, W, Hine, JP and Berry, J (2010) Managing car dependency: review of world cities experiences and lessons for the UK. in: *Irish Transport Research Network Annual Conference*, Irish Transport Research Network. pp 22.
- Ali, F, Nadjai, A and Abu-Tair, A (2011) Explosive spalling of normal strength concrete slabs subjected to severe fire. *Materials and Structures*, 44 (5). pp. 943-956.
- Ali, F, Nadjai, A and Choi, SK (2010) An Experimental and Numerical Study on the Behavior of High Strength Concrete Columns in Fire Subjected to High Restraint. *Journal of Structural Fire Engineering*, 1 (1). pp. 1-16.
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- Davis, P, McCluskey, W, McCord, M and Grissom T (2011) Addressing equity concerns in the use of simplified appraisal approaches for property taxes, 27th Annual Meeting of the American Real Estate Society, Seattle, April 2011.
- Davis, P, McCluskey, W, Montgomery, E, McIlhatton, D, Lim, LC, McCord, M and Haran, M (2011) Using a CAMA approach to model energy efficiency in housing, 18th Annual Conference of the European Real Estate Society, Eindhoven, June 2011.
- Esposito de Vita, G, Trillo, C, and Martinez-Perez, A (2010) Conflicting neighbourhoods and urban pattern: does architecture help in building conflict-resolution strategies in contested spaces?, AESOP-Inhabiting the future after Copenhagen (Naples), Naples, December 2010.
- Esposito de Vita, G, Martinez-Perez, A and Trillo, C (2011) Managing urban conflict through urban design: Insights from the Northern Ireland for Italy XIV Conferenza Nazionale Societa Italiana degli Urbanisti, (XIV National Conference of the Italian Society of Urbanists), Torino, April 2011.

Franco, F, Bolland, O, Booth, N, Machi, E, Naqvi, R, Rezvani, S and Fernandez, ES (2010) Common Framework, Base Cases and Guidelines for Transparent and Comparable Techno-Economic Evaluations of CCS Technologies – The Work of The European Benchmarking Task Force, 10th International Conference on Greenhouse Gas Control Technologies, Amsterdam, September 2010.

Gray, P (2010) Looking Ahead-Challenging Times for the Future of Housing in England.Taipei. September 2010.

Gray, P (2010) Housing Policy in Northern Ireland, Symposium of Architects and Planners, Spiru Haret University, Bucharest, September 2010.

Gray, P (2010) Green Technology for Sustainable Human Settlements:Towards sustainable communities, South African Housing Foundation, Capetown, South Africa, October 2010.

Gray, P (2010) Landlords and the Private Rented Sector in Northern Ireland, NIHE, Belfast, October 2010.

Gray, P (2010) 'The Housing Action Charitable Trust NI Federation of Housing Associations Annual Conference, Belfast, October 2010.

Gray, P (2010) Housing Policy in the UK and Hong Kong, Chartered Institute of Housing Asia Pacific Branch and Hong Kong Institute of Housing, Hong Kong, November 2010

Gray, P (2010) Housing the Environment and our Changing Climate, Green Property Management and Environmental Protection. Shenzhen, China, November 2010.

Gray, P (2010) Professionalism and the Housing Manager, Property Management and Housing Practitioners, University of Geely, Beijing, China November 2010.

Gray, P (2010) Professionalism, The Need for Housing Professionalism in China, University of Wuhan, Wuhan, China, November 2010.

Gray, P (2010) Future planning for housing and urban regeneration – global trends, Kuramo International Conference Lagos, Nigeria, November 2010.

Gray, P. (2011) Housing Policy in the UK, Chartered Institute of Housing, London History Museum, London, February 2011.

Gray, P (2011) Housing Policy in England, Chartered Institute of Housing South East AGM, Brighton, March 2011.

Gray, P (2011) Policy, Skills and Education in Housing, Chartered Institute of Housing Scotland Annual Conference, Glasgow, March 2011.

Gray, P (2011) A Brave New World: Delivering in New Times, Chartered Institute of Housing South East AGM, Brighton, March 2011.

Gray, P. (2011) Key Issues Facing Housing Professionals, Chartered Institute of Housing South West Annual Conference, Torquay, April 2011.

Gray, P (2011) An Overview of the Governance Reforms, Chartered Institute of Housing North West Branch, Wulvern Housing, Crewe, May 2011.

Gray, P (2011) Key Issues in Housing in the Midlands, Chartered Institute of Housing Midlands Annual Conference, Birmingham, May 2011.

Gray, P (2011) Housing Futures, Chartered Institute of Housing Midlands Annual Conference, Birmingham, May 2011.

- Gray, P (2011) Facing the Headwinds in Housing, Chartered Institute of Housing Annual Conference, Harrogate, June 2011.
- Gray, P (2011) Housing Policy in Northern Ireland: Recent Developments. North West Chartered Institute of Housing, Belfast, June 2011.
- Gray, P (2011) The Impact of Welfare Reforms on Tenants in the Private Rented Sector, Chartered Institute of Housing Seminar, Belfast, July 2011.
- Gray, P, McAnulty U, Shanks P (2010) Accommodation Standards for Travellers in Northern Ireland. Housing: The Next 20 Years, The Cambridge Centre for Housing and Planning Research, Cambridge, September 2010.
- Gray, P and McAnulty U (2010) The latest research evidence, Northern Ireland Housing Executive Area Planners, Belfast, October 2010.
- Gray, P and McAnulty U (2011) Growing the Private Rented Sector, European Network for Housing Research, Seminar on Private Rented Markets, Granada, March 2011.
- Gray, P, McAnulty, U and Shanks, P (2011) The views of landlords and tenants in the private rented sector, European Network for Housing Research 23<sup>rd</sup> Annual Conference, Toulouse, July 2011.
- Haran, M, Adair, A, Berry, J, Kotin, A, Peiser, R and Wang, B (2010) Returns Based Evaluation Frameworks for Urban Renewal: An International Comparative, 27<sup>th</sup> Annual meeting of the American Real Estate Society, Seattle, April 2011.
- Haran, M, McCord, M, Kashyap, A, McGreal, WS, McIlhatton, D and Davis, P (2011) House Price Determinants Across Belfast: A Geographical Weighted Regression Analysis, 27<sup>th</sup> Annual Meeting of the American Real Estate Society, Seattle, April 2011.
- Haurin, D, McGreal, WS, Adair, A and Brown, L (2011) List price and Sale Price of Residential Properties During Booms and Busts, 27<sup>th</sup> Annual Meeting of the American Real Estate Society, Seattle, April 2011.
- Hewitt, NJ (2010) Advanced Air Source Heat Pumps for UK and European Domestic Buildings, SET 2010, (9th International Conference on Sustainable Energy Technologies, Shanghai, August 2010.
- Hewitt, NJ (2010) The necessary development of smart energy networks to maximise renewable energy integration, SET 2010, 9th International Conference on Sustainable Energy Technologies, Shanghai, August 2010.
- Hewitt, NJ (2010) Built Environment Energy Storage – The Challenges for Heat Pumps and Air-Conditioning, World Renewable Energy Congress XI, Abu Dhabi, September 2010.
- Hewitt, NJ (2010) Heat Pumps and Energy Storage – The Challenges of Implementation, Sustainable Thermal Energy Management (SUSTEM 2010) Conference, Newcastle, November 2010.
- Hewitt, NJ (2010) Marine Biorefineries - A Techno-Economic Overview, Industrial Renewable Energy Applications (IREA) conference, Abu Dhabi, November 2010.
- Hewitt, NJ (2011) Challenges for low-carbon retrofits in housing. International Conference on Sustainable Energy Storage, Belfast, February 2011.
- Huang, MJ (2011) The Prediction of the Energy Conservation Potential of Building Walls Augmented with Phase Change Materials, International Conference on Sustainable Energy Storage, Belfast, February 2011.
- Huang, MJ (2011) Two Phase Change Material with Different Closed Shape Fins in Building Integrated Photovoltaic System Temperature Regulation, WREC 2011, Linköping, May 2011.

- Huang, MJ and Hewitt, NJ (2010) The Experimental Analysis of Economised Vapour Injection Compressor Air Source Heat Pump on the Defrosting Effect, SET 2010, 9th International Conference on Sustainable Energy Technologies, Shanghai, August 2010.
- Huang, Y, Wang, YD, Rezvani, S, McIlveen-Wright, DR, Anderson, M and Hewitt, NJ (2010) Biomass Fuelled Tri-generation System In Selected Buildings, SET 2010 9th International Conference on Sustainable Energy Technologies, Shanghai, August 2010.
- Huang, Y, Mcilveen-Wright, DR, Rezvani, S and Hewitt, NJ (2010) Biomass Fuelled CHP System in Selected Buildings: A Techno-Economic Assessment Based On Computational Simulations, BioTEN Conference, Birmingham, September 2010.
- Huang, Y, Wang, M, Stephenson, P, Rezvani, S, McIlveen-Wright, D, Hewitt, N, Minchener, A and Fleche, A (2010) Hybrid Coal-fired Power Plants with CO<sub>2</sub> Capture: A Technical and Economic Evaluation based on Computational Simulations, 8th European Conference on Coal Research and its Applications, Leeds, September 2010.
- Hutchison, NE, Fraser, P, Adair, A and Srivatsa, R (2011) The risk free rate of return in property pricing, 27th Annual Meeting of the American Real Estate Society, Seattle, April 2011.
- Joseph, P (2011) Syntheses and Characterization of Functional Polymeric Materials, 10<sup>th</sup> International Short Course and Advanced Research Workshop on Progress in Hydrogen Safety, Northern Ireland, January 2011.
- Joseph, P and Tretsiakova-McNally, S (2010) Passive Fire Protection of Polymeric Materials with Phosphorus: Strategies and Mechanisms, 8<sup>th</sup> Asia-Oceania Symposium on Fire Science and Technology, Australia, December 2010.
- Joseph, P and Tretsiakova-McNally, S (2011) Combustion Behaviours of Some Flame-Retarded Chain-Growth Polymers, 13<sup>th</sup> European Meeting on Fire Retarded Polymers, Italy, June 2011.
- Kashyap, A, Berry, JN and McGreal, WS (2011) Sustainability of Office Buildings, 27<sup>th</sup> Annual Meeting of the American Real Estate Society, Seattle, April 2011.
- Kattakayam T, Redpath D, Griffiths P and Hewitt N (2011) An experimental test-bed to evaluate the electrical and mechanical energy storage systems integrated with small capacity wind turbines, International Conference on Sustainable Energy Storage, Belfast, February 2011.
- Keenan, J, Makarov, D, Molkov, V and Verbecke, F (2011) Analysis of unresolved mechanisms in large scale deflagrations carried out in a vented enclosure, International Conference on Sustainable Energy Storage, Belfast, February 2011.
- Khamkanya, T, McGreal, WS and Heaney, G (2011) Using User Satisfaction and Requirements to Achieve Optimal Office Utilization, 18<sup>th</sup> Annual Conference of the European Real Estate Society, Eindhoven, June 2011.
- Lloyd, MG (2010) Delivering infrastructure to enable development – some critical issues for discussion? Scottish Planning & Environment Law 2010 Conference Infrastructure Investment and Delivery, Edinburgh, September 2010.
- Lloyd, MG (2010) Leadership and institutional arrangements for collaboration in an age of austerity, International Centre for Local and Regional Development Seminar Leadership and institutional arrangements in achieving collaboration, Letterkenny, November 2010.
- Lloyd, MG (2010) Creating a planning system that delivers on economic priorities, Agenda NI Conference Planning and the Economy, Belfast, November 2010.
- Lloyd, MG (2010) Planning matters in a dangerous world – tensions, conflicts and divisions, Planning Aid for Scotland Parliamentary Reception, The Scottish Parliament, Edinburgh, November 2010.

Lloyd, MG (2010) Planning with austerity, ambition and anomie for a new world, Paper Royal Town Planning Institute 80<sup>th</sup> Anniversary, Glasgow, December 2010.

Lloyd, MG (2011) What is land use planning or spatial planning doing in the modern world? Planning Aid for Scotland Conference The Leadership Role of Planning, Edinburgh, February 2011.

Lloyd, MG (2011) Is the new system working? Holyrood Planning Summit Planning Reform in Scotland 2011, The Royal College of Surgeons, Edinburgh, June 2011.

Lloyd, MG (2011) Emergent property rights – a critical response, First Conference of the Pacific Rim International Association of Planning, Law, and Property Rights Land Resource Compensation: A Pacific Regional Symposium, Sydney, July 2011.

Lloyd, MG and Peel D (2011) Enterprise zones in Northern Ireland – the territorial reconfiguration of property rights, Fifth International Conference of the International Association of Planning, Law, and Property Rights, Edmonton, May 2011.

Lloyd, MG and Peel, D (2011) Land matters in Scotland: a land use planning and property rights perspective, World Planning Schools Congress Planning's Future - Futures Planning: Planning in an Era of Global (Un) Certainty and Transformation, Perth, July 2011.

MacIntyre, S (2011) The Battle for Wind Power: Is the strategic message reaching the frontline? International Conference for Sustainable Energy Storage, Belfast, February 2011.

Marti, J, Ryzhakov, P, Idelshon, S, Onate, E, and Novozhilov, V (2010) A New Approach for Simulation of the Polymers in Fire Situations, International Congress on Combustion and Fire Dynamics, Santander, September 2010.

Martinez-Perez, A (2010) Belfast from an outsider's perspective, Belfast@Venice Urban Promo 2010 Conference of the INU Istituto Nazionale di Urbanistica (National Urban Institute of Italy) Cini Foundation, Venice, October 2010.

Martinez-Perez, A, Esposito de Vita, G and Trillo, C (2010) Urban Design Research: Belfast Peace lines. British Pavillion, Venice Biennale, October 2010.

Martinez-Perez, A, (2011) Conflicting Neighbourhoods and Urban Pattern: 'Architecture of Dialogue' for the Belfast Interfaces, Urban Conflicts Conference, Belfast, May 2011.

Martinez-Perez, A (2011), Le politiche per la qualita architettonica nel recupero urbano, Covegno "Il ruolo mediterraneo delle Province della Campania nel quadro del riordino federalista" con un focus su Belfast come un caso di best practice, University of Naples Federico II LUPT (Territorial Town Planning Laboratory) & Unione Regionale Provincie Campagne, Naples, May 2011.

Martinez-Perez, A, Esposito de Vita, G and Trillo, C (2011) Conflicting Neighbourhoods and Urban Pattern: 'Architecture of Dialogue' for the Belfast Interfaces, Urban Conflicts Conference, Belfast, May 2011.

McCluskey, W, Davis, P, Plimmer, F and Zulkarnain, D (2011) Property Taxes in Central and Eastern Europe: Directions and Developments, IPTI/IRRV International Conference, Property Tax Reforms: Challenges and opportunities, Dublin, May 2011.

McCluskey, WJ and Plimmer, F (2011) Property Tax and Issues of Sustainability, FIG Conference, Marakech, April 2011.

McCord, M, Haran, M, Grissom, T, McGreal, WS and Berry, J (2011) Banking on NAMA: The Fallout from Ireland's Real Estate Bubble, 27<sup>th</sup> Annual Meeting of the American Real Estate Society, Seattle, April 2011.

McDermott, RPJ, Hegarty, LM and Strong, WA (2010) Teaching strategies for sustainability management. 3<sup>rd</sup> International Symposium for Engineering Education, Cork, August 2010.

- McGreal, WS and McIlhatton, D (2011) Examining the impact of the recession on the Northern Ireland housing market, Northern Ireland Housing Conference, Belfast, March 2011.
- McGreal, WS, Newell, G and Haran, M (2011) The Role of European Property in a Portfolio, 18<sup>th</sup> Annual Conference of the European Real Estate Society, Eindhoven, June 2011.
- McIlhatton, D and McGreal, WS (2010) Effective and efficient decision-making: GIS for Real Estate, Conference of the Association of Geographic Information, September 2010.
- McIlhatton, D, McCord, M, Haran, M, McGreal, WS and Davis, P (2011) Determining Price – Going Spatial, Local and High Tech, 18<sup>th</sup> Annual Conference of the European Real Estate Society, Eindhoven, June 2011.
- McIlhatton, D, McGreal, WS, Berry, J, McLaughlin, S, McCord, M and Haran, M (2011) Modelling the effect of population change on residential development in Northern Ireland, Annual Conference of the Association of American Geographers, Seattle, April 2011.
- McIlveen-Wright, DR, Huang, Y, Rezvani S, Ghayur, A, Redpath, D, Dave, A and Hewitt NJ (2011) A Technical and Economic Analysis of Large Scale Biomass Combustion, 19<sup>th</sup> European Biomass Conference and Exhibition, Berlin, June 2011.
- Millar, P, Woodward, D and Friel, S (2011) Mapping Interfacial Stress Distributions to Digital Surface Micro-topography. 3rd International Surface Friction Conference, Safer Road Surfaces – Saving Lives, Gold Coast, May 2011.
- Molkov, V (2010) Hydrogen jet flames in still air, The 33rd International Symposium on Combustion, Beijing, August 2010.
- Molkov, V (2010) Safety issues of hydrogen-powered vehicles, 1st International Conference FIVE – Fires in Vehicles, Gothenburg, September 2010.
- Mondol JD, Smyth M and Zacharopoulos A (2010) Experimental investigation of the performance of a novel heat exchanger for solar hot water systems. WREC X, Abu Dhabi, September 2010.
- Mondol JD, Zacharopoulos A and Smyth M (2010) A state-of-the-art solar simulation facility for multidisciplinary research on sustainable technologies. WREC X, Abu Dhabi, September 2010.
- Mondol, JD, Rezvani, S, Huang, Y, McIlveen-Wright, D and Hewitt, N (2010) A Comparative Techno-Economic Analysis of Coal Fired IGCC Power Plant Systems with CO<sub>2</sub> Capture and storage. 8th European Conference on Coal Research and Its Applications, Leeds, September 2010.
- Nase, I, Berry, J and Adair, A (2011) Urban design quality and downtown office rents: a case study of Belfast city centre, 18<sup>th</sup> Annual Conference of the European Real Estate Society, Eindhoven, June 2011.
- Newell, G, Moss, A, McGreal, WS and Nguyen, K (2011) The Role of European Emerging Market Property Companies in a Portfolio, 18<sup>th</sup> Annual Conference of the European Real Estate Society, Eindhoven, June 2011.
- Oyedele, J, Adair, AS and McGreal, WS (2011) Innovative Vehicles for Financing Infrastructure Provision and the Public Private Partnership, 27<sup>th</sup> Annual Meeting of the American Real Estate Society, Seattle, April 2011.
- Pasmans, B, Van der Krabben, E and Helderma, JK (2011) The development of industrial land in the Netherlands: from public good to private good provision, 5<sup>th</sup> international Planning, Law and Property Rights Conference, Edmonton, May 2011.
- Paul D I, Smyth M, Zacharopoulos A, and Mondol JD (2010) The design and experimental characterisation of isolated cells photovoltaic module under compound parabolic concentrator. WREC X, Abu Dhabi, September 2010.

Peel, D (2011) Local Energy Infrastructure: Planning's Role in a Green Revolution, International Conference on Sustainable Energy Storage, Belfast, February 2011.

Peel, D (2011) The Edinburgh Concordat: Promising Positive Planning? Department of Land Economy, University of Cambridge. Lent Series. June 2011.

Peel, D and Lloyd, MG (2011) Planning in a Rights-based Society: See you in Court! Fifth International Conference of the International Association of Planning, Law, and Property Rights, Edmonton, May 2011.

Peel, D and Lloyd, MG (2011) Planning in the Celtic regions, Taking exception in the Nation – regions? University of the West of England Seminar Localism? The Coalition's emerging agenda for planning: theory, practice and international perspectives, Bristol, June 2011.

Peel, D and Lloyd, MG (2011) The Edinburgh Concordat: Planning with one accord? European Urban Regeneration Association 2011 Conference Cities without limits, Copenhagen, June 2011.

Peel, D and Lloyd, MG (2011) The Rathlin Island Policy: Lesson-drawing for Strategic Planning from a Small Island? World Planning Schools Congress Planning's Future - Futures Planning: Planning in an Era of Global (Un) Certainty and Transformation, Perth, July 2011.

Ploegmakers, H and Van der Krabben, E (2011) Determinants of industrial land prices, 18th Annual Conference of the European Real Estate Society, Eindhoven, June 2011.

Redpath D, Kattakayam T, Singh H, McIlveen-Wright D, Dalzell, DPA, Redpath JL, Hadavinia H, Hewitt, NJ (2011) Development of a CPC heat-pipe solar photovoltaic thermal collector, 4<sup>th</sup> International Multiconference on Intelligent Systems & Nanotechnology (IISN-2010), Klawad, India, February 2011.

Redpath DA G, Hewitt N J, Griffiths P W, Hardy M, Ritchie H, Lloyd G, Peel D and McGreal WS (2011) Planning and Energy Storage Technologies at a Utility Scale in Ireland, International Conference on Sustainable Energy Storage, Belfast, February 2011.

Redpath, DAG, Singh, H, Kattakayam, TA, Griffiths, PW and Hewitt NJ (2010) Cost effective domestic solar thermal energy conversion systems for northern maritime climates, EuroSun 2010 International conference on solar heating, cooling and buildings, Graz, Austria, September 2010.

Rezvani, S, Huang, Y, McIlveen-Wright, D, Hewitt, N and Mondol, JD (2010) Comparative analysis of energy storage options in connection with coal fired integrated gasification combined cycles for an optimised part load operation, 8th European Conference on Coal Research and Its Applications, Leeds, September 2010.

Rezvani, S, Huang, Y, McIlveen-Wright, D, Dave, A and Hewitt, N (2011) Techno-Economic Assessment of Oxygen-Transport-Membrane (OTM) Integration Options in Coal IGCC Plants with CCS, 5<sup>th</sup> International Conference on Clean Coal Technologies (CCT2011), Zaragoza, May 2011.

Rezvani, S, Hewitt, N, Huang, N and McIlveen-Wright, D (2010) Techno-Economic Evaluation of Natural Gas Oxy-Fuel and Chemical Looping Combined Cycles, Carbon Capture, and Storage: bridging the transition from fossil fuels to renewables, Dublin, March 2010.

Rezvani, S (2011), ECLIPSE ECONOMIC Modelling, CCS Cost Workshop, International Energy Agency (IEA), Paris, March 2011.

Rezvani, S, Bysveen M and Franco, F (2010), Enabling Advanced Pre-Combustion Capture Techniques and Plants, UK CCS Community Network Biannual Meeting, Leeds, September 2010.

- Ritchie, H (2011) Spatial Planning for Large Scale Infrastructure, International Conference for Sustainable Energy Storage, Belfast, February 2011.
- Ritchie, H and Ahlhorn, F (2011) Reflections on the Stakeholder Engagement Process in Marine Spatial Planning in the German Exclusive Economic Zone, Mare Conference, People and the Sea VI, Bridging science and policy for sustainable coasts and seas, Amsterdam, July 2011.
- Rossini, P, Kupke, V, Kershaw, P and McGreal, WS (2011) An analysis of Time on the Market and advertised sale price differences over time, Conference of the Pacific Rim Real Estate Society, Gold Coast, Queensland, January 2011.
- Saffers, JB and Molkov, V (2010) Towards hydrogen safety engineering for reacting and non-reacting releases, 8<sup>th</sup> International Symposium on Hazards, Prevention, and Mitigation of Industrial Explosions, Yokohama, September 2010.
- Shimada, T, Ishiko, Motoe, M, Funami, Y and Novozhilov, V (2011) Challenges in Evaluating Internal Ballistics of Hybrid Rocket Engine, Fourth European Conference for Aerospace Sciences, Saint Petersburg, July 2011.
- Singhal, S (2010) City Competitiveness, National Conference: Regeneration Opportunities for Growth, Waterford Chamber, Ireland, September 2010.
- Singhal, S (2010) Knowledge Horizon for the New Economic World Order, First Annual International Conference of Global Organisation of People of Indian Origin, London, October 2010.
- Strong, WA, Woodside, AR and McDermott, RPJ (2010) Sustainability principles provide a framework to facilitate integration of design processes. 3<sup>rd</sup> International Symposium for Engineering Education, Cork, August 2010.
- Strong, WA and Hemphill, LA (2010) Integrating Built Environment Studies through sustainable development education. 3<sup>rd</sup> International Symposium for Engineering Education, Cork, August 2010.
- Suzanne, M, Delichatsios, MA and Zhang, J (2011) Prediction of the Limiting Oxygen Index Using Simple Flame Extinction Theory and Material Properties Obtained from Bench Scale Measurements, 10<sup>th</sup> IAFSS symposium, University of Maryland, June 2011
- Taltavull, P and McGreal, WS (2011) Implicit prices: variation over time and space, XIV Applied Economics meeting, Huelva, June 2011.
- Tretsiakova-McNally, S and Joseph P (2010), Thermal Degradation and Combustion Characteristics of Some Chemically-Modified Chain-Growth Polymers", 6<sup>th</sup> International Conference on Modification, Degradation and Stabilization of Polymers, Greece, September 2010.
- Van der Krabben, E (2011) Urban redevelopment projects: American and Dutch experiences, 5<sup>th</sup> international Planning, Law and Property Rights Conference, Edmonton, May 2011.
- Van der Krabben, E (2011) The success of urban redevelopment projects: land management strategies matter, 3<sup>rd</sup> World Planning Schools Congress, Perth, July 2011.
- Woestenburg, A, Van der Krabben, E and Spit, T (2011) The cost of land acquisition on inner city redevelopment areas, 5<sup>th</sup> international Planning, Law and Property Rights Conference, Edmonton, May 2011.
- Woestenburg, A, Van der Krabben, E and Spit, T (2011) The cost of land acquisition on inner city redevelopment areas, 3<sup>rd</sup> World Planning Schools Congress, Perth, July 2011.
- Woodside, A, Woodward, D and Graham, A (2011) The Use of Glass Fibre Addition to Reinforce a Road Patch, Proceedings of the 5<sup>th</sup> International Conference Bituminous Mixtures and Pavements, Thessaloniki, Greece, June 2011.

Xiao, H, Sun, J, Makarov, D and Molkov, V (2011) Propagation of premixed hydrogen-air flame in a closed duct: experiment and LES, International Conference on Sustainable Energy Storage, Belfast, February 2011.

Zacharopoulos A, Mondol JD, Smyth M and Hyde TJ (2010) Comparison of V-trough and asymmetric CPC linear dielectric concentrating PV covers for building integration. WREC X, Abu Dhabi, September 2010.

Zhang, J and Delichatsios, MA (2011) Numerical soot modelling in fires, 13th International Conference on Numerical Combustion, Greece, April 2011.

Zhang, J and Delichatsios, MA (2011) TGA maximum heat release rate and mass loss rate and comparison with the cone calorimeter, 10th IAFSS symposium, University of Maryland, June 2011.

## 6. RESEARCH FUNDING: NEW AWARDS NOTIFIED - 1 AUGUST 2010 - 31 JULY 2011

Research Institute Member	Title of Award	Funding Body	Value
<b>Brown, Mrs L McAnulty, Miss U</b>	Young people and housing: identifying policy challenges and solutions for 2020	Joseph Rowntree Foundation	£3,474
<b>Dahoe, Dr AE Brennan, Dr SL Makarov, Dr DV Molkov, Prof V</b>	TRAINHY-PROF: Training Programmes for Young Professionals in the Hydrogen and Fuel Cell Field	CEC - Framework 7	£36,905
<b>Delichatsios, Prof M Zhang, Dr J</b>	AIRCRAFTFIRE: Fire Risks Assessment and Increase of Passenger Survivability	CEC - Framework 7	£288,302
<b>Hewitt, Prof NJ Griffiths, Dr PW Yohanis, Prof YG</b>	OCTES - Opportunities for community groups through energy storage	CEC - Northern Periphery Programme	£104,643
<b>Hine, Prof JP</b>	Rees Jeffreys Road Fund Part Funded Lecturer	Rees Jeffreys Road Fund	£66,107
<b>Hine, Prof JP</b>	Mobility Cultures: Making a usable past for transport policy	AHRC - Research Network	£8,927
<b>Keenan, Dr M</b>	Moving forward with older people's services - a home improvement agency scoping study	NIHE	£11,020
<b>Lim, Dr LC Hemphill, Dr L Adair, Prof AS McGreal, Prof WS</b>	The Role of the RICS and Global Valuation Standards in Influencing Practice within BRIC/MENA Countries	RICS	£25,000
<b>McGreal, Prof WS Adair, Prof AS McIlhatton, Mr D</b>	Analysis of private housing market performance 2011-2012:- Northern Ireland Quarterly House Price Index	NIHE	£15,000
<b>McGreal, Prof WS Adair, Prof AS McIlhatton, Mr D</b>	Resales performance of former Housing Executive Property 2011	NIHE	£10,000
<b>McGreal, Prof WS McAnulty, Miss U McIlhatton, Mr D</b>	Private Rental Index: 2011	NIHE	£15,000
<b>Molkov, Prof V Brennan, Dr SL Makarov, Dr DV</b>	HyFacts: Identification, Preparation and Dissemination Officials of Hydrogen Safety Facts to Regulators and Public Safety	CEC - Framework 7	£160,573
<b>Peel, Prof D Hemphill, Dr L</b>	Top Down or Bottom Up. Government at the relevant scale year 2 funding	The British Council - Alliance 2010	£2,400
<b>Peel, Prof D Ritchie, Dr H</b>	Teaching Exchange Scheme	Higher Education Academy - CEBE	£2,000
<b>Ritchie, Dr H</b>	RING - Researcher International Networking Grant	The British Council	£1,500

Research Institute Member	Title of Award	Funding Body	Value
<b>Woodward, Dr WDH</b>	Bond Coat Research Project	Roads Service	£10,000
<b>Woodward, Dr WDH</b>	Assessment of warm mix asphalt for road surfaces	NDP - National Roads Authority	£127,992
<b>Zhang, Dr J</b> <b>Delichatsios, Prof M</b>	Investigation of HOPE Gas Pipes Heated by a Surface Fire - Part I: Quantification of the Risk	Phoenix Natural Gas	£6,000

