

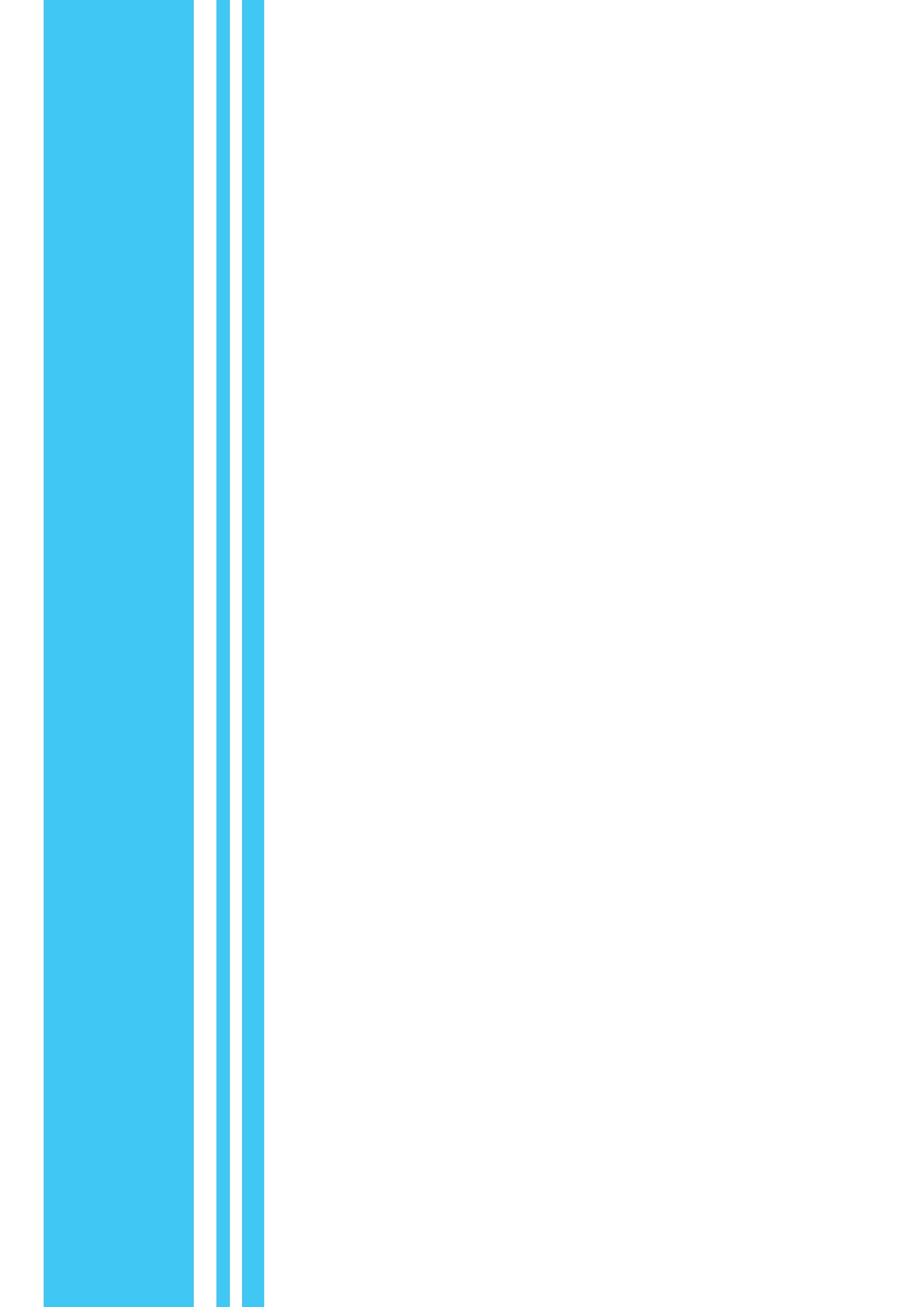


BUILT ENVIRONMENT  
RESEARCH INSTITUTE  
ANNUAL REPORT  
1 AUGUST 2006 - 31 JULY 2007

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RESEARCH INSTITUTE**

***ANNUAL REPORT***

***1 August 2006 – 31 July 2007***

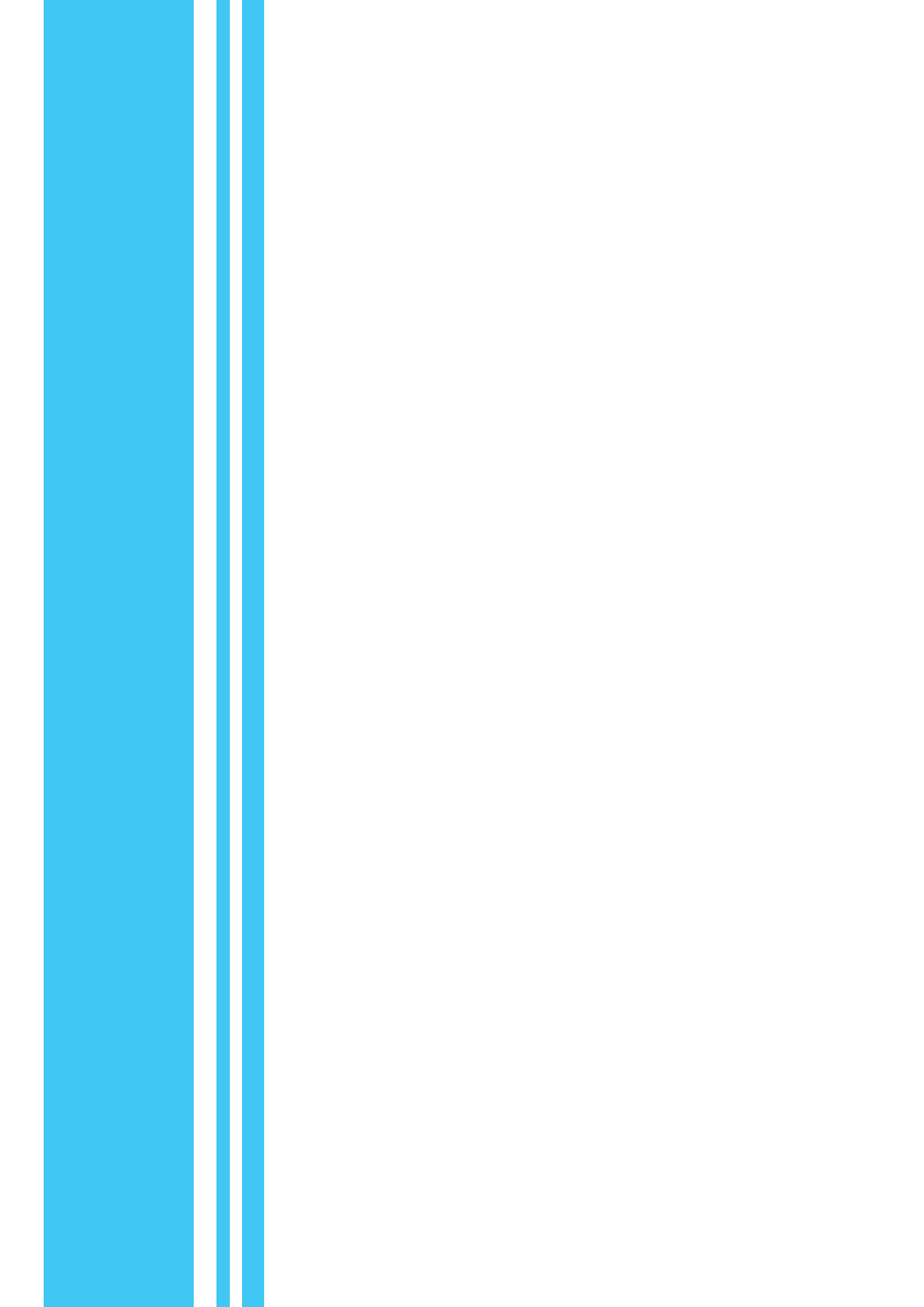


# **BUILT ENVIRONMENT RESEARCH INSTITUTE**

## ***ANNUAL REPORT***

***(1 AUGUST 2006 - 31 JULY 2007)***

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## I. FOREWORD BY THE PRO VICE CHANCELLOR (RESEARCH AND INNOVATION)



I am delighted to welcome readers to our annual reports from University of Ulster Research Institutes. We have had an excellent year marked by great achievements in recruiting superb researchers to academic and research posts, attracting external income and completing work that has led to highly prestigious papers, books and other outputs. There has been a very strong flow of research findings as new disclosures to our Office of Innovation. These are being managed as promising new intellectual property and that Office also ensures that the expertise of our staff is accessed by external organisations through

consultancy contracts. Overall our Institutes provide high quality research environments that are strongly supportive of research. Our achievements point to improved research capacity and capability amongst the University's staff – the best possible training environments for our increasing number of research students. We are very proud of every student who graduates with a doctoral degree and delighted that our statistics for successful completion rank very highly in UK national comparisons.

This past year was marked by final preparations for the forthcoming UK Research Assessment Exercise (RAE). The work to be submitted for RAE has been underway since 2001, so some of it is detailed in the current Annual Reports. The University is proud of the quality of its RAE submission and looks forward confidently to the announcement of outcomes at the end of 2008.

The enhanced research performance of recent years is in line with that planned for in our Strategy and Action Plan for Research, Research Training and Innovation, entitled SUPPORTIVE<sup>1</sup>. Developed through comprehensive, university-wide consultation, SUPPORTIVE articulates our commitment to ensuring that research at the University of Ulster fully supports our goals summarized as 'excellence, innovation and regional engagement'.

I commend this report to you as a demonstration that University of Ulster research ranks proudly amongst UK institutions; documents, analyses and shapes the modern Northern Ireland and attracts international recognition and awards.

A handwritten signature in black ink, reading 'BM Hannigan'.

Professor BM Hannigan  
Pro Vice Chancellor (Research & Innovation)

<sup>1</sup> <http://research.ulster.ac.uk/office/supportive.pdf>

## 2. FOREWORD BY THE RESEARCH INSTITUTE DIRECTOR



One of the Core Strategic Aims of the University of Ulster's Corporate Plan is to undertake excellent research in selected areas of activity. The Built Environment Research Institute (BERI) in addressing this aim embraces research that is recognized nationally and internationally as excellent and has attracted major research grants across a diverse portfolio. The research strategy of BERI is based on the promotion and delivery of research that will enhance the quality of the built environment and address the changing needs of society in a more sustainable manner. Specific objectives of BERI are:

- to embrace research at the forefront of the Built Environment
- to promote diversity in the breadth of the research portfolio coupled with specialisation in specific areas of excellence
- to work in partnership networks at local, regional, national and international levels and to share best practice
- to engage with industry and the end-users of research
- to grow the research base through enhanced post-graduate activity and to disseminate knowledge
- to promote innovation, excellence and capacity building.

The period covered by this Annual Report, August 2006 to July 2007, has been one of change, growth, achievement and transition. Change has been reflected in both personnel and structure. The former has seen Neil Hewitt appointed as Professor of Energy and Director of the Centre for Sustainable Technologies (CST) and Ali Parsa, previously of London South Bank University, taking up the newly created position of the Rotary International Chair of Urban Planning and Business Development. Structural changes within BERI include the development of a Transport and Spatial Planning research sub-group within the Centre for Research on Property and Planning (RPP) and a Sustainable Materials sub-group within CST. Growth is reflected not only in the new chair positions but in the creation of several new lectureships: the Research Institute welcomes Dr Lesley Hemphill (RPP), Mrs Louise Brown (RPP), Dr Trevor Hyde (CST) and Dr David McIlveen-Wright (CST). Achievement is reflected in several ways notably invitations to BERI members to give key-note addresses, participate in conferences and networks at a global level, the sustained level of external research income generated with awards of just under £4 million announced during 2006/07 and the success of our research students with 12 research degrees awarded. Transition is marked by a change in faculty structure with the period of this report marking Built Environment's final year within the Faculty of Engineering and from the start of August 2007, movement into the newly formed Faculty of Art, Design and the Built Environment. This creates the potential for new and innovative areas of research collaboration and provides the impetus for the growth of architectural research within the Research Institute.

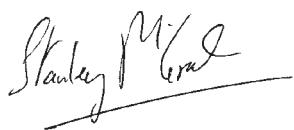
The period covered by this Annual Report has seen significant developments in each of the three research centres in BERI. In Fire Safety Engineering Research & Technology (FireSERT) there are a number of major externally funded projects include evacuation and human behaviour in very tall buildings; safety issues of using hydrogen; the design, assessment and evaluation of fire safe nano-particle materials including the potential for nano-engineered materials and the performance of structures and materials in fire situations. The HySAFER group at FireSERT has

seen significant development both in the amount of external funding and staff. Three researchers under the CEC FP6 Marie Curie project HySAFEST have joined the team in September 2006 to perform doctoral studies in fundamentals of hydrogen safety. The 2nd European Summer School on Hydrogen Safety (July 2007) brought together 90 young researchers and renowned experts from 25 countries.

CST has continued to add to its national and international reputation, securing major funding for research into subjects such as advanced solar thermal systems, gasification, advanced heat pumps and energy storage through phase change materials. Emphasising the leading role of the University of Ulster in this area, CST received funding of £2.45M from Charles Parsons Energy Awards (Irish Department of Communications, Marine and Natural Resources) to develop a series of demand-side energy reduction technologies for the built environment. Advanced evacuated glazing development has been enhanced by the commissioning of a new facility to characterise its performance, coupled with significant local industry involvement in moving the technology into the marketplace. Research within CST has been significantly strengthened by the appointment of five new Research Fellows over the past year.

Within RPP strategic developments include the Real Estate Initiative with the goal of enhancing the volume of doctoral research in real estate investment, urban development and urban design. This new initiative will promote international aspects central to which is collaboration with the Harvard Graduate School of Design. RPP's involvement as a partner with the International Centre for Local and Regional Development (ICLRD) has contributed to the advancement of spatial planning strategies on the island of Ireland with three newly funded projects. RPP has led a multi-disciplinary team to analyse tall buildings world-wide on a project funded by Roulac Global Places.

In summary the Built Environment Research Institute at the University of Ulster with currently 42 academic members of staff supported by 16 contract research staff and over 50 students registered for doctoral studies offers a highly significant and diversified research base of international status. This report summarizes the research output and activities over the period August 2006 to July 2007, a portfolio that my colleagues are intending to grow over the coming years. I look forward to receiving any comments that you may have on research activities in the Built Environment.



Stanley McGreal  
Director, Built Environment Research Institute



### 3. RESEARCH INSTITUTE MEMBERS

Surname	Forename	Title	Position	Institute Status
<b>Adair</b>	Alastair	Prof	Head of the School of the Built Environment	Core
<b>Ali</b>	Faris	Dr	Lecturer	Core
<b>Berry</b>	James	Prof	Professor in Urban Planning & Property Development	Core
<b>Blair</b>	Neale	Dr	Lecturer	Associate
<b>Boyce</b>	Karen	Dr	Lecturer	Associate
<b>Brown</b>	Louise	Mrs	Lecturer	Associate
<b>Dahoe</b>	Arief	Dr	Lecturer	Associate
<b>Davis</b>	Peadar	Mr	Lecturer	Associate
<b>Delichatsios</b>	Michael	Prof	Chair and Head of Fire Dynamics and Materials Lab (FML)	Core
<b>Elkadi</b>	Hisham	Prof	Professor of Architecture	Core
<b>Gray</b>	Paddy	Mr	Senior Lecturer	Associate
<b>Griffiths</b>	Philip	Dr	Lecturer	Associate
<b>Gunay</b>	Banihan	Dr	Lecturer	Associate
<b>Haran</b>	Imelda	Dr	Lecturer	Associate
<b>Harvey</b>	Harold	Dr	Senior Lecturer	Associate
<b>Heaney</b>	George	Mr	Senior Lecturer	Associate
<b>Hemphill</b>	Lesley	Dr	Lecturer	Associate
<b>Hewitt</b>	Neil	Prof	Professor of Energy/ Director of the Centre for Sustainable Technologies	Core
<b>Hine</b>	Julian	Prof	Professor of Transport	Core
<b>Hyde</b>	Trevor	Dr	Lecturer	Associate
<b>Lim</b>	Lay	Dr	Lecturer	Core
<b>Lo</b>	Steve	Dr	Lecturer	Associate
<b>Lyness</b>	John	Dr	Reader	Core
<b>Makarov</b>	Dmitry	Dr	Lecturer	Core
<b>McCluskey</b>	William	Dr	Reader	Core

Surname	Forename	Title	Position	Institute Status
<b>McGreal</b>	Stanley	Prof	Professor of Property Research/ Director of Built Environment Research Institute	Core
<b>McIlveen-Wright</b>	David	Dr	Lecturer	Associate
<b>McQueen</b>	Mike	Mr	Lecturer	Associate
<b>Molkov</b>	Vladimir	Prof	Professor of Fire Safety Science	Core
<b>Myers</b>	William	Dr	Reader	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	Associate
<b>Paris</b>	Christopher	Prof	Professor of Housing Studies	Associate
<b>Parsa</b>	Ali	Prof	Professor of Urban Planning & Business Development	Core
<b>Perera</b>	Srinath	Dr	Lecturer	Core
<b>Smyth</b>	Mervyn	Dr	Lecturer	Core
<b>Strong</b>	Alan	Mr	Senior Lecturer	Associate
<b>Thompson</b>	William	Dr	Lecturer	Associate
<b>Woodside</b>	Alan	Prof	Professor of Highway Engineering	Associate
<b>Woodward</b>	William	Dr	Reader	Core
<b>Yohanis</b>	YG	Dr	Senior Lecturer	Core

BERI staff and status at 31st July, 2007

## 4. RESEARCH STUDENTS

The following research students were registered on research degree programmes in the Institute during 2006-2007.

Student Name	Thesis Title
<b>Al Sheriani, Mustafa</b>	Economic globalisation and urban policy in UAE (A case study of Dubai as a global city)
<b>Bezrtzi, Georgia</b>	Technologies for the Reduction of the Carbon Intensity of the UK Built Asset Base
<b>Bragin Maxim</b>	Mechanisms of hydrogen ignition and fires
<b>Brown, Louise</b>	Time on the market for Single Family Residential Property: The UK Perspective
<b>Clarke, Mervyn C</b>	Strategic property performance management
<b>David, Peadar</b>	Computer-assisted mass appraisal of residential property values in geographical info system environment/ implications for property taxation
<b>Donnelly, Conor</b>	Business location decisions and managing transport demand
<b>Dwyer, Scott</b>	Low carbon energy solutions for high density urban housing
<b>Eadie, Robert W J</b>	e-Procurement in construction
<b>Gore, Ricardo</b>	An investigation into the relationship between visual field/exposure and response time in a fire emergency
<b>Gunasekera, Sanwara</b>	Modelling the relationship between organisational and supply chain performance in the construction industry
<b>Hamilton, Gavin John</b>	How to influence a sustainable modal change on Belfast's southern approaches
<b>Haran, Martin</b>	Interrelationship between property development and urban regeneration
<b>Hardie, Brian</b>	The behaviour of compartment masonry walls in fires
<b>McAllister, Barry</b>	Quantified risk assessment for health care facilities
<b>McClements, Sharon</b>	Selection of consultants based on trust
<b>McGarry, Marion</b>	The Norman revival in Irish architecture
<b>McKeown, Paul James</b>	Legislative and operational issues for sustainable urban drainage systems
<b>McPhillips, Karen Marie</b>	An examination of afforestation in Northern Ireland
<b>Murphy, Martina</b>	Sustainable innovation within the construction industry

Student Name	Thesis Title
<b>Nichols, Emma</b>	Chemically-Enhanced Water Mist Suppression of Fires
<b>Nguyen, Quing-Minh</b>	Development of a high temperature heat pump for domestic applications
<b>Nursetiawan, Nursetiwan</b>	The effect of hydraulics on the performance of bituminous materials
<b>Pelan, John</b>	Computerisation of supervision of asphalt and bitmac resurfacing contracts
<b>Quigley, Denise</b>	Achieving an optimum balance across capital, life-cycle and environmental costs
<b>Rahman, Sazzadur</b>	Knowledge-based cost model for optimising the selection of product and technology for building design
<b>Ramos, Reynaldo</b>	Mixed use development: practice, potential, feasibility and performance
<b>Redpath, David</b>	An investigation of the contribution of existing and potential barriers to the uptake of solar thermal technologies in Northern Ireland
<b>Reiser, Jurgen</b>	Numerical modelling of compartment walls in fire situations
<b>Rodgers, William John</b>	An investigation into non-salt based methods of anti-icing
<b>Shaheen, Abeer</b>	An ICT approach towards the development of an environmentally responsive architecture education
<b>Singh, Harjit</b>	An experimental study of natural convection heat and fluid flow phenomena in concentrating CPC and V-trough solar collector cavities.
<b>Singhal, Shaleen</b>	An evaluation of complementarities between urban regeneration and business strategies: International perspectives
<b>Stephen, Raphael C</b>	Application of computer assisted valuation in Grenada
<b>Stevenson, William</b>	The inter-relationship between property infrastructure of schools and pupil academic achievement
<b>Sultan, Zahid</b>	Managing transport demand and sustainable transport
<b>Tepe, Bulent</b>	Evaluation of Pretreatment Process in Powder Painting in Automotive Industry
<b>Vaganay, Marie</b>	The safety impact of public roads on child pedestrians/ reducing child pedestrian casualties
<b>Verbecke Franck</b>	Formation and combustion of non-uniform hydrogen-air mixtures
<b>Wong, Ing Liang</b>	Evaluation of environmental design in built environment related to cost and quality aspects.
<b>Wu, Yupeng</b>	PC concentrators: thermal management of concentrator photovoltaics.

Student Name	Thesis Title
<b>Zbikowski Mateusz</b>	Hydrogen deflagration-to-detonation transition and its mitigation technologies

#### GRADUATED DECEMBER 2006

Student Name	Thesis Title
<b>Allen, David</b>	Laboratory assessment of road side gully pot waste as an alternative material in road construction
<b>Al-Maiyah, Sura</b>	Daylighting and Sustainability of Place in Cultural Built Heritage Contexts

#### GRADUATED JULY 2007

Student Name	Thesis Title
<b>Agyenim, Francis B</b>	The development of medium temperature thermal energy storage
<b>Borst, Richard</b>	A methodology for discovering and applying neighbourhood influence patterns in mass valuation of real property
<b>Ellis, Richard</b>	The effect of skid resistance of microasphalts with the addition of calcined bauxite
<b>Imam, Aschuri</b>	Performance and stiffness model of cement mortar - reclaimed asphalt pavement (RAP) mixed
<b>Kashyap, Anil Kumar</b>	Energy use and urban form: A case study analysis of an Indian city
<b>McConnell, Nigel</b>	Neurobehavioural outcome for survivors of domestic fire
<b>McKinney, John E</b>	Risk-based approaches for the evaluation of fire safety in buildings
<b>O'Prey, Declan</b>	Sustainable highway construction materials
<b>Rafi, Mahammad Masood</b>	Fire performance of FRP in reinforced concrete structures
<b>Yaacob, Haryati</b>	Use of small aggregate chip seals in urban areas

## 5. RESEARCH PUBLICATIONS

- Adair, AS, McGreal, WS and Brown, L (2006) Northern Ireland Quarterly House Price Index Report No. 87, pp 8.
- Adair, AS, McGreal, WS and Brown, L (2006) Northern Ireland Quarterly House Price Index Report No. 88, pp 8.
- Adair, AS, McGreal, WS and Brown, L (2007) Northern Ireland Quarterly House Price Index Report No. 89, pp 8.
- Adair, AS, McGreal, WS and Brown, L (2007) Northern Ireland Quarterly House Price Index Report No. 90, pp 8.
- Adair, AS, McGreal, WS and Webb, JR (2006) Diversification Effects of Direct versus Indirect Real Estate Investments in the U.K., *Journal of Real Estate Portfolio Management*, 12 (2), pp 85-90.
- Aibinu, AA and Odeyinka, HA (2006) Construction delays and causative factors in Nigeria, *ASCE Journal of Construction Engineering and Management*, 132 (7), Pp 667-677.
- Ali, F, Nadjai, A, Talamona, D and Rafi, MM (2007) Fracture and explosive spalling of concrete slabs subjected to severe fire, Proceeding of the international conference Fracture Mechanics of Concrete and Concrete structures, Catania, Italy, pp 875-880.
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- Al-Maiyah, S and Elkadi, H (2007) The Role of Daylight in Preserving Identities in Heritage Context, *Journal of Renewable and Sustainable Energy Reviews*, Volume 11, Issue 7, pp 1544-1557.
- Blair, N, Berry, JN and McGreal, WS (2007) Regional spatial policy for economic growth: Lessons from the deployment of collaborative planning in Northern Ireland, *Urban Studies*, 44(3), pp 439-455.
- Borst, R and McCluskey WJ (2007) Comparative evaluation of the comparable sales method with geostatistical valuation models, *Pacific Rim Property Research Journal*, 13(1), pp 106-129.
- Borst, RA and McCluskey, WJ (2006) The Comparables Sales Method as the Basis for a property Tax Valuations System and its Relationship and Comparison to Geostatistical Valuation Models, First Symposium on the World's Best Practices in Mass Appraisal for Asia, Bangkok, Thailand, pp 89-115.
- Dahoe, AE and Molkov, VV (2007) On the development of an International Curriculum on Hydrogen Safety Engineering and its implementation into educational programmes, *International Journal of Hydrogen Energy*, 32 (8), 1113-1120.
- Dahoe, AE and Molkov, VV (2006) On the development of an International Curriculum on Hydrogen Safety Engineering and its implementation into Educational Programmes, *Proceedings of the World Hydrogen Energy Conference*, Lyon, France, paper S01-342.
- Dahoe, AE and Molkov, VV (2007) On the development of an international curriculum on hydrogen safety engineering and its implementation into educational programmes, *International Journal of Hydrogen Energy*, 32:1113-1120.
- Eadie, R, Perera, S, Heaney, G and Carlisle J (2007) Drivers And Barriers To Public Sector E Procurement Within Northern Ireland's Construction Industry, *ITCon*, Vol 12, pp 103-120.
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Eames, PC and Griffiths PW (2006) Thermal behaviour of integrated solar collector/storage unit with 65°C phase change material, *Energy Conversion & Management*, Vol 47(20), pp 3611-3618.

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Fang, Y, Eames, PC, Norton, B, Hyde, TJ, Zhao, J, Wang, J. and Huang, Y (2007) Low emittance coatings and the thermal performance of vacuum glazing, *Solar Energy*, Vol 81 (1), pp 8-12.

Fang, Y, Eames, PC, Hyde, TJ and Hewitt, NJ (2007) The Influence of Edge Seal and Glazing Size on the Thermal Performance of Vacuum Glazing, *Proceedings of Heat-SET 2007*, Chambéry, France, pp 969-974.

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Hemphill, LA and Strong, WA (2006) Sustainability of Health Buildings. Report prepared by the Sustainable Development Group for Health Estates and South & East Belfast Trust.

Henry, A, Woodward, WDH and Woodside, AR (2006) Use of surface profiling to predict aggregate resistance, *Asphalt Professional* No. 22, pp 17-21.

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- McCluskey, WJ, Davis, P and Lim, LC (2007) Domestic Rate Reform in Northern Ireland: A Critical review of Policy Options, *Environment and Planning: Government and Policy*, Vol. 25, pp. 131-149.
- McCluskey, WJ, Lim, LC, Adair, AS and McGreal, WS (2007) Belfast Office Market, Strategic Investment Board, Northern Ireland.
- McCluskey, WJ, Grimes, A, Aitken, A, Kerr, S and Timmins, J (2006) Rating Systems in New Zealand: An Empirical Investigation into Local Choice, *Journal of Real Estate Literature*, Vol 14(3), pp 381-397.
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- McIlveen-Wright, DR, Williams, BC and McMullan, JT (2007) Comparison of Power Generation from Biomass in a Small CFBC Plant with Biomass Co-fired with Coal in a Large CFBC, 2004 New and Renewable Energy Technologies for Sustainable Development, (eds., Maria da Graca Carvalho & Naim Hamdia Afgan), *World Scientific Publishing Company Pte Ltd.*, Singapore, pp 171-182.
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## 5.1 CONFERENCE PAPERS

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Brown, L, McGreal, WS, Gibb, K and Frey, J (2007) Examining Affordability Issues in Northern Ireland, Fourteenth Annual Conference of the European Real Estate Society, London, June 2007.

Delichatsios, MA (2006) Extinction of Flames near Solid Surfaces for High Da numbers: Some new Results using Asymptotic Analysis, 31st International Symposium on Combustion, August 2006.

Delichatsios, MA, Zhang, J and Bakitzis, D (2007) Determination of the convective heat transfer coefficient in real fire experiments, 5th Seminar on Fire and Explosion Hazards, April 2007, Edinburgh.

Delichatsios, MA, Zhang, J and Bakitzis, D (2007) Numerical studies of dispersion and flammable volume of hydrogen in enclosures, European Combustion Meeting ECM 2007, April, Crete, Greece.

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Delichatsios, MA, Zhang, J and Bakitzis, D (2007) Effect of nanofillers and fire retardant on the fire retardancy of EVA, 11th European Meeting on Fire Retardant Polymers, July 2007, Bolton, UK.

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Fang, Y, Eames, PC, Hyde, TJ, Norton, B and Hewitt, NJ (2007) Thermal Performance Analysis for an Electrochromic Vacuum Glazing with Low Emittance Coatings, Proceedings of CISBAT, Lausanne, Switzerland.

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Gray, P (2006) The Role of Community Planning in Northern Ireland, Chartered Institute of Housing Annual Conference, Belfast, November 2006.

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Gray, P (2007) Community Cohesion and Integration, Chartered Institute of National Housing Conference, Harrogate, June 2007.

Gray, P (2007) Housing Issues North and South of the Border, University of Ulster Conference of the Isles, Monaghan, June 2007.

- Gray, P (2007) The Private Rented Sector and Homelessness, Shelter, Wales National Conference, Swansea, Wales.
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- Lim, LC, McGreal, WS and Webb, J (2007) Institutional Benchmarks for International Real Estate Investment, Twelfth Annual Conference of the Asian Real Estate Society and 2007 American Real Estate and Urban Economics Association, Macau, July 2007.
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- McCluskey, WJ and Borst, RA (2007) Capturing the Premium for Location in Significant Neighborhoods, 2nd Mass Appraisal Valuation Symposium, IPTI, Toronto, Canada, May 2007.
- McCluskey, WJ, McClure, B, Lim, LC and Davis, P (2007) Property Tax Reform: No Pain No Gain. The Northern Ireland Experience, IPTI and IRRV International Conference on the Role of the Property Tax – Effective Revenue Mobilization, Vilnius, Lithuania, June, 2007.
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- McGreal, WS, Adair, AS, Brown, L and Webb, JR (2007) Assessed value versus house prices: a reality check, The Thirteenth Annual Conference of the Pacific Rim Real Estate Society, Fremantle, January 2007.
- McIlveen-Wright, DR, Huang, Y, Rezvani, S and Wang, Y (2006) A technical and environmental analysis of co-combustion of coal and biomass in fluidised bed technologies, *Proceedings of the 6th European Conference on Coal Research and its Applications*, University of Kent, September 2006.
- Molkov, VV (2007) Hydrogen safety research: state-of-the-art, 5th International Seminar on Fire and Explosion Hazards, Edinburgh, Scotland, April 2007.
- Molkov, VV, Makarov, DV, Verbecke, F and Schneider, H (2007) Supra LES of accelerating premixed hydrogen-air flames in the open atmosphere, The 3rd NEPCAP (International Symposium on Non-Equilibrium Processes, Plasma, Combustion and Atmospheric Phenomena), Sochi, Russia, June 2007.
- Mondol YD, Yohanis YD, Smyth M and Norton B (2006) Impact of array inclination and operation on performance, optimal sizing and cost of electricity for a grid-connected photovoltaic system. Renewable Energy 2006, Makuhari Messe, Cheba, Japan, October 2006.

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- Nguyen, QM, Hewitt, NJ and Eames, PC (2006) Improved Vapour Compression Refrigeration Cycles: Their Application to Heat Pumps; Eleventh International Refrigeration and Air Conditioning Conference, Purdue, 2006.
- Paris, C (2007) Multiple residence and transnational 'homes', Pursuit of Theory Symposium, University of Tasmania, February 2007.
- Paris, C (2006) Housing & the Review of Public Administration, CIH Conference, Belfast, November 2006.
- Paris, C (2007) The second homes boom in Ireland policy debates and community impacts, Symposium on Twenty-first century Housing Issues, Center for Regional Development & Research, University of North Texas, Denton, April 2007.
- Paris, C (2007) Thoughts on 'affordability' in Northern Ireland', Shelter NI Annual Conference, Belfast, June 2007.
- Parsa, A, Muwlaazadeh, M and McIntosh, A (2007) The Development of Islamic Compliant Real Estate Investment, 14th Annual European Real estate Conference (ERES), June 2007.
- Rafi, MM, Nadjai, A and Ali, F (2007) Analytical Evaluation of fire resistance of FRP reinforced concrete Beams - Part II, 5th International Conference of Fire and Explosion Hazard, Edinburgh, April 2007.
- Rafi, MM, Nadjai, A and Ali, F (2007) Application of upward flame spread for classification and prediction of intermediate standard approval tests, 5th International Conference of Fire and Explosion Hazard, Edinburgh, April 2007.
- Rafi, MM, Nadjai, A, Ali, F and Talamona, D (2006) The use of CFRP bars as reinforcing material Part I: Experimental Study, Civil-Comp. Conference, Las Palmas, 2006.
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- Rezvani, S, McIlveen-Wright, DR, Huang, Y, Hewitt, N and Wang, Y (2006) A three-level factorial design of experiment method for analyzing the co-combustion of coal with MSW in CFBC plants, 6th European Conference on Coal Research and its Applications, University of Kent, September 2006.
- Rezvani, S, Huang, Y, McIlveen-Wright, D, Hewitt, N and Wang, Y (2006) Comparative assessment of conventional versus advanced supercritical oxy-fuel fired PF boilers with CO<sub>2</sub> sequestration facilities, 6th European Conference on Coal Research and its Applications, University of Kent, September 2006.
- Roulac, S, Adair, AS and McGreal, WS (2007) Inside Value Creation and Destruction: Opportunism and Risk Management in Development Deal Making Strategies, Twenty-Third Annual Conference of the American Real Estate Society, San Francisco, April 2007.
- Strong, A, Nursetiawan, N, Woodward, WDH and Woodside, AR (2007) Sustainable drainage characteristics influenced by environmental and topographical conditions, 4th International Conference Bituminous Mixtures and Pavements, Thessaloniki, Greece, April 2007.
- Taltavull, P and McGreal, WS (2007) Are Valuations Representative of Housing Prices in the Market? Evidence from the Spanish Market, Fourteenth Annual Conference of the European Real Estate Society, London, June 2007.
- Taltavull, P and McGreal, WS (2007) Are Valuations Representative of Housing Prices in the Market? Evidence from the Spanish Market, Twelfth Annual Conference of the Asian Real Estate Society and 2007 American Real Estate and Urban Economics Association, Macau, July 2007.
- Tepe, B and Gunay, B (2007) Nano-Structured Conversion Coating for Pre-treatment Processes for HRS (Hot Rolled Steel) in Powder Coating, NanoSmart Conference, Algarve, Portugal, July 2007.

Thompson, B (2007) Quality as a Thing, Quality Conference, Cardiff, July 2007.

Wang, Y, McIlveen-Wright, DR, Huang, Y, Hewitt, N, Eames, P, Rezvani, S and McMullan, J (2006) An investigation of the application of FLOX/COSTAIR burner to reduce NO<sub>x</sub> emissions from coal power plant, 6th European Conference on Coal Research and its Applications, University of Kent, September 2006.

Woodside, AR and Woodward WDH (2006) The Effect of Safecoat on Laboratory Measurement of Skid Resistance, Cold Comfort Conference at Nottingham, September 2006.

Woodward, WDH, Woodside, AR, Phillips, P, Shammohammadi, R and Walsh, I (2007) The development of very early life skid resistance, 4th International Conference Bituminous Mixtures and Pavements, Thessaloniki, Greece, April 2007.

Woodward, WDH (2006) The future for sustainable highway surfacing materials, Bridge and Infrastructure Research in Ireland: Symposium Dublin.

Yaacob, Y, McErlean, P, Woodward, WDH and Woodside, AR (2007) Laboratory prediction of road tyre noise and rolling resistance, 4th International Conference Bituminous Mixtures and Pavements, Thessaloniki, Greece, April 2007.

Yacoob, H, Woodward, D, and Woodside, AR (2006) Predicting Surface Dressing Embedment, Bridge and Infrastructure Research in Ireland; Symposium Dublin.

Zbikowski, M, Molkov, V and Makarov, D (2007) Simulation of a blast wave propagation from a large-scale hydrogen-air detonation, International Seminar on Fire and Explosion Hazards, Edinburgh, Scotland, April 2007.



## 6. RESEARCH FUNDING

Staff Name	Title of Award	Funding Body	Value
<b>Adair McGreal</b>	Resale performance of former Housing Executive Property.	NI Housing Executive	£7,500
<b>Adair Berry McGreal</b>	University of Ulster Real Estate Initiative	University of Ulster Foundation	£50,000
<b>Adair Brown McGreal</b>	Northern Ireland Quarterly House Price Index	NI Housing Executive	£15,000
<b>Adair Elkadi Hemphill McGreal Parsa Nadjai</b>	A global analysis of tall buildings	Roulac Global Places	£120,000
<b>Ali Nadjai</b>	Fire resistance tests for polystyrene ceiling system	Halcrow Ltd	£16,000
<b>Ali Nadjai</b>	New method for reducing explosive spalling in concrete structures subjected to high temperature including fires	Invest Northern Ireland - Proof of Concept	£114,737
<b>Berry Blair McGreal</b>	Utilisation of an urban growth modelling tool to assist in the prediction of spatial planning decisions.	Ordnance Survey (NI)	£59,987
<b>Berry McGreal</b>	A multi-purpose Sports Stadium for Belfast	Belfast City Council	£29,995
<b>Berry Adair McGreal</b>	Supporting the implementation of cross-border collaborative frameworks: Newry-Dundalk sub-region	International Centre for Local and Regional Development	£29,213
<b>Blair</b>	The Small Connected Town in Cross Border Regions	International Centre for Local and Regional Development	£6,220
<b>Boyce</b>	Emergency use of lifts or escalators and fire and rescue operations	BRE	£1,903
<b>Dahoe Makarov Molkov</b>	HYPER: Installation permitting guidance for hydrogen and fuel cells stationary applications.	CEC - Framework 6 Sustainable Energy STREP	£98,703
<b>Davis Lim</b>	Impact of capital value rating by district council area	Dept Finance & Personnel, NI	£3,000

Staff Name	Title of Award	Funding Body	Value
<b>Delichatsios</b>	Undernano	INI Networking	£608
<b>Eames Hewitt McIlveen-Wright</b>	RAMSES: Renewable energy agricultural multipurpose system for farmers.	CEC Framework 6 Renewable Energies STREP	£70,451
<b>Gray Keenan McGreal</b>	Sustainable Communities	International Centre for Local and Regional Development	£27,060
<b>Gunay</b>	Evaluation of Pretreatment Process in Powder Painting in Automotive Industry (in collaboration with FG Wilson)	DEL CAST award	£22,140
<b>Hewitt Griffiths Hyde Lo McIlveen-Wright Smyth</b>	Charles Parsons Award's Programme	Dept of Communications, Marine & Natural Resources, Ireland	£2,450,191
<b>Hewitt McIlveen-Wright</b>	NANOCOFC: Enhancement of research capabilities as multi-functional nanocomposites for advanced fuel cell technology through EU-TURKISH-CHINA Co-operation.	CEC Framework 6 NMP SSA	£16,594
<b>Hewitt McIlveen-Wright</b>	Supergen Biomass Biofuels and Energy Crops II Core (SUPERGEN II)	EPSRC	£96,407
<b>Hyde Smyth</b>	Fellowships in the Built Environment	RCUK - Academic Fellowship Scheme	£125,000
<b>Lim McCluskey</b>	Rating revenue project. Analysis and impact of rating policy.	Belfast City Council	£15,000
<b>McGreal Adair</b>	Northern Ireland Quarterly House Price Index.	NI Housing Executive	£12,500
<b>McGreal Adair Brown</b>	Resale performance of former Housing Executive property	NI Housing Executive	£10,000
<b>McQueen Elkadi</b>	Riverview/Bishop Street Area, Arts and Regeneration Programme.	Arts Council of Northern Ireland	£10,500
<b>McQueen Elkadi</b>	Realising Integrated Sustainable Communities in Deconstructed Interface Environments.	CRC Peace II	£65,000
<b>Molkov</b>	Fire spread in car parks	BRE	£9,896



Staff Name	Title of Award	Funding Body	Value
<b>Molkov</b>	EST in Fundamentals of Hydrogen Safety.	CEC Framework VI Marie Curie EST	£482,510
<b>Novozhilov</b>	7th Asia-Oceania symposium on Fire Science and Technology	The Royal Society	£1,990
<b>Paris</b>	Housing & Support needs of older people in Northern Ireland	NI Housing Executive	£18,000
<b>Parsa</b>	Trends in Shariah – compliant real estate investment	RICS	£6,000

## 7. INDICATORS OF ESTEEM 2006 - 2007

### ADAIR

- 2007 Ministerial DSD appointment to Chair Advisory Panel of Experts for Implementation of Sir John Semple's Review of Affordable Housing.
- 2006 – 08 Member of Panel 3 I, Research Assessment Exercise 2008.
- ARES Real Estate Education Award 2007 for Inside Value Creation and Destruction: Opportunities in Risk Management in Development Deal Making Strategies, S Roulac, A Adair and S McGreal, paper presented at American Real Estate Society, San Francisco.

### ALI

- Member Editorial Board, Journal of Applied Science.
- Reviewer, Fire Safety Journal, UK, Journal of Structural Engineering, ASCE, American Society of Civil Engineers.

### BERRY

- Member Editorial Board, Journal of Property Research.

### BLAIR

- Reviewer, Urban Studies Journal.
- Member Brownfield European Regeneration Initiative Network group.
- Conference Facilitator, Economic Workshop, Brownfield European Regeneration Initiative project conference, Belfast 23-24th November, 2006.

### BOYCE

- Reviewer for Fire Safety Journal.
- Member of Programme Committee 9th International Symposium Fire Safety Science.

### BROWN

- Presentations, European Real Estate Society, 2007; The Council of Mortgage Lenders NI Committee, January 2007.
- Media Interviews on Housing Market Reports.

### DAHOE

- Member, EC Network of Excellence (NoH) Hysafe (Safety of Hydrogen as an Energy Carrier).
- Reviewer, International Journal of Hydrogen Energy.

## DAVIS

- Member of Steering Group 2007-08 CASLE International Conference 2008.

## DELICHATSIOS

- Associate Editor Fire Science and Technology.
- Visiting Professor Center of Excellence Tokyo University of Science 2006.
- Co-joint Professor University of Newcastle Australia 2006.
- Invited speaker EU China Conference on Nanotechnology, 3 November 2006.
- Organiser of one day conference on fire safe materials, 3 July 2007, Bolton.

## ELKADI

- UK Government consultant on setting Architecture Benchmarks, Libya, 2007.
- Reviewer, International Journal of Urban Technology.
- Invited member, UNESCO International Research Team on rural vernacular heritage, 2007.

## GRAY

- Chair of North South Housing Conference, Armagh, March 2007.
- Member National Council of Chartered Institute of Housing UK.
- Member of Management Board of National Council of Chartered Institute of Housing UK.
- Vice Chair, Professional Development Board, Chartered Institute of Housing UK.
- Chair of Communication, Marketing and Advertising Board, CIH UK.
- Member of Working Group, Housing and Urban Settlements, International Federation of Housing and Planning.
- Member of the European Network for Housing Research Working Group on Housing Market Dynamics.
- Member of Committee, NI Board, Chartered Institute of Housing.
- Editorial advisory Board, Inside Housing, London.
- Visiting Professor of Real Estate, Spiru Haret University, Romania.
- Appointed Member of Advisory Panel of Experts on the Affordability Review by the Minister for Social Development.

## GRIFFITHS

- Reviewer, International Journal of Renewable Energy, International Journal of Thermal Sciences.

## GUNAY

- Editorial Board of the Pavement Preservation Journal.
- Journal referee for Transportation Research Board – USA.
- Journal referee for ICE – Transport.
- Member advisory panel of the 11th World Conference on Transportation Research (WCTR).
- Member organizing committee of the 12th EWGT Conference.

## HARVEY

- Editor in Chief, Journal of Environmental Health Research.
- Reviewer, (Journal of) Health Policy (USA).
- Reviewer, Medical Science Monitor: International Medical Journal for Experimental and Clinical Research.
- Research Project Evaluator, Environmental Protection Agency (Ireland).
- Peer reviewer, Food Standard Agency (UK) Research contracts and publications.
- Peer reviewer, Journal of the Royal Society of Health.

## HEANEY

- Director, Constructing Excellence in Northern Ireland.
- Member, Regional Directors Forum, Constructing Excellence.
- Committee Member, Northern Centre, The Chartered Institute of Building in Ireland.

## HEMPHILL

- Reviewer for Urban Studies and Landscape and Urban Planning.
- Member, Royal Academy of Engineering 'Visiting Professor in Engineering Design for Sustainable Development' Network of 26 Universities.

## HEWITT

- Principal Investigator £2.5M Charles Parsons Energy Research Award, DCMNR.
- Secretary, Northern Ireland Branch, Institute of Refrigeration.
- Vice President, Commission B2 (Refrigerating Machinery) International Institute of Refrigeration.

## HINE

- Member of DRD Integrated Transport Stakeholder Group for Northern Ireland.
- Committee Member of Transport Geography Research Group of the Royal Geographical Society.
- Member of DETI/MATRIX Transport/Advanced Engineering Panel.

## HYDE

- RCUK Academic Fellowship Award.
- Patent holder, 'Method of Sealing Glass'. US Patent number 7,204,102 April 2007.

## LIM

- Member IAAO/IPTI Editorial Review Board.
- Visiting researcher and collaborator of knowledge transfer and research training for National Institute of Valuation, Malaysia.
- Reviewer, Journal of Valuation and Property Services.

## LYNESS

- Reviewer, American Society of Civil Engineers; Institution of Civil Engineers; Institution of Structural Engineers and Journal of Materials and Structure.
- Convener, Institution of Structural Engineers, Qualitative Analysis of Structural Behaviour Study Group.

## MAKAROV

- Session chair at 6th ISHPMIE (*International Symposium on Hazards, Prevention and Mitigation of Industrial Explosions*), Dalhousie University, Halifax, Canada, August-September 2006.
- Member of organising committee for the 2nd International Conference on Hydrogen Safety (2nd ICHS), San-Sebastian.
- Reviewer for Journal of Loss Prevention in the Process Industries.
- Reviewer for Fire Safety Journal

## MCCLUSKEY

- Board member of International Property Tax Institute.
- Editorial Board, Journal of Property Tax Assessment and Administration.
- Invited expert speaker at Southern Africa Tax Institute.
- Invited speaker at Lincoln Institute of Land Policy China Program.

## MCGREAL

- Member of RICS Steering Group on China Why Now.
- Invited panel member at Urban Land Institute workshop on the Middle East, London, February 2007.
- American Real Estate Society, Best paper award Thinking Out of the Box category 2006 for paper "Beyond Value Measurement".
- Board member of the International Real Estate Society.
- Editorial boards of Journal of Property Research (UK), Journal of Real Estate Literature (US), Journal of Real Estate Portfolio Management (US), Journal of Corporate Real Estate.
- Reviewer for the Research Council for Natural Sciences and Engineering of the Academy of Finland.
- Organising committee Lambda Alpha International visit to Ireland, May 2007.
- International Real Estate Society Service Award, Presented at Macau, July 2007.
- Invited speaker Princes Foundation for the Built Environment, Valuing Sustainable Urbanism, Highgrove, July 2007.

## MCILVEEN-WRIGHT

- Fellow, Energy Institute.
- Chairman, Steering and Management Committee of CEC FP6 Project, Ramses.
- Reviewer, Chemical Engineering Communications, Bio-mass and Bio-energy, Bio-resource Technology, and Renewable Energy.

## MCQUEEN

- Principal Investigator Riverview/Bishop Street Area, Arts and Regeneration Programme; Realising Integrated Sustainable Communities in Deconstructed Interface Environments.

## MOLKOV

- Deputy Editor-in-Chief, Fire and Explosion Safety Journal; Member of the Editorial Board of Fire Safety Journal; Guest Editor of Special Issue on Hydrogen Safety in the Journal of Loss Prevention in the Process Industries (2007).
- Reviewer Journal of Loss Prevention in the Process Industries, Fire Safety Journal, Journal of Fire Sciences, Process Safety and Environmental Protection, Combustion and Flame, Journal of Hazardous Materials, Experiments in Fluids, International Journal of Hydrogen Energy, International Symposium on Combustion, International Symposium on Fire Safety Science.
- Co-founder of International Seminar on Fire and Explosion Hazards; International Conference “Fire Bridge”; European Summer School on Hydrogen Safety. Member of the Scientific Committees of International Seminar on Fire and Explosion Hazards; International Symposium on Hazards, Prevention and Mitigation of Industrial Explosions; International Conference on Hydrogen Safety; International Symposium on Nonequilibrium Processes, Combustion and Atmospheric Phenomena. Member of the Technical Committee on Explosion Protection Systems of National Fire Protection Association (USA), The Combustion Institute (British Section), International association for Fire Safety Science.
- Invited expert to NATO Advanced Research Workshop “Urban Structure Resilience under Multi-Hazard Threats: Lessons of 9/11 and Research Issues for Future Work”, Moscow, 16-18 July 2007.
- Plenary invited lecture “Hydrogen safety research: state-of-the-art”, 5th *International Seminar on Fire and Explosion Hazards*, Edinburgh, Scotland, 23-27 April 2007.

## MYERS

- Reviewer for EPSRC & International hydraulics journals.
- Member, Rivers Agency Steering Group for Flood Management Policy Review.

## NADJAI

- Chairman of the Algiers International Conference.
- Member, EPSRC Peer Review College Panel: 2006-2009
- Member, Committee of the British Standard Institution: Fire SAFETY Engineering 2005-2007.

## NOVOZHILOV

- Editorial Board member, International Journal on Engineering Performance-Based Fire Codes.
- Editorial Board member, Works of the International Academy of Sciences “Collegium”.
- International Advisory Committee member of the Seventh Asia-Oceania Symposium on Fire Science and Technology.
- Reviewer: Physica A; 32nd International Symposium on Combustion; Ninth International Symposium on Fire Safety Science, Seventh Asia-Oceania Symposium on Fire Science and Technology.

## ODEYINKA

- Invited Conference paper: 22nd Biennial Conference of the Nigerian Institute of Quantity Surveyor, November 2006.
- Member of Scientific Committee: Postgraduate Researchers of the Built & Natural Environment (PRoBE) 2007 Conference.
- Reviewer for Journal of Financial Management of Property and Construction.

## PARSA

- Inaugural speaker – Middle East Business Forum – Islamic complaint real estate investment in Europe. Hyatt Regency Hotel, London. November 2006.
- Panel Chair Session H5: 14th Annual European Real Estate Society Conference (ERES) at CASS Business School, City University, London, UK. June 2007.

## PARIS

- Distinguished Fellow in the Institute of Advanced Study at La Trobe University (in Melbourne, Australia).

## PERERA

- Member Editorial Advisory Board, Journal of Construction, Association of Schools of Construction of South Africa.
- Member Scientific Committee CIB W89 BEAR Conference, Built Environment Education and Research, Kandalam, Sri Lanka.
- Reviewer, Journal of Computer-Aided Civil and Infrastructure Engineering, Blackwell publications.
- Reviewer, Journal of Innovation in Construction: Information, Process, Management, Emerald publications.

## SMYTH

- Committee member for the NI region Chartered Institute of Building Services Engineers.
- International Solar Energy Society best full length paper in Photovoltaics.
- Reviewer for Journal of the International Solar Energy Society.
- RCUK Academic Fellowship Award.

## STRONG

- Awarded 'Spirit of Telford Award' by Institution of Civil Engineers (ICE)
- Member of N Ireland Ministerial Advisory Group on Architecture in the Built Environment
- Member of UK Sustainable Development Panel
- Member of UK Construction Industry Council Research & Labour Market Intelligence Group
- Member of ICE Environment & Sustainability Board

## THOMPSON

- Member of International Association of People Environment Studies (IAPS)
- Member of RIBA and registered with ARB
- Member of CIAT innovation and research committee
- Member of the British Society for Phenomenology

## WOODSIDE

- Vice President for Europe for ISMARTI.
- Editor of International Journal of Pavements.
- Member of organising committee for MAIREPAV5 for 2007, Utah, USA.
- Member of organising committee for 4th ICONFBMP, Thessaloniki, April 2007.
- Presented Keynote address at 4th ICONFBMP, Thessaloniki April 2007.
- Quality in Construction Award 2006 for Best Innovation Product and Materials, Joint award to Aggregate Industries, University of Ulster, BP Bitumen and Jacobs.
- Member of Highway Agency Research Community.

## WOODWARD

- Member of BSI B510/5 Committee.
- Quality in Construction Award 2006 for Best Innovation Product and Materials, Joint award to Aggregate Industries, University of Ulster, BP Bitumen and Jacobs.
- Member of Highway Agency Research Community.
- Quality in Construction Award 2006 for Best Innovation Product and Materials.
- Member of Technical Committee for Mairepav5. Salt Lake City, 2007
- Reviewer for International Journal of Pavements.
- Member of the Scientific Committee on the 4th International Conference on Bituminous Mixtures and Pavements, Thessaloniki, 2007.

## YOHANIS

- Visiting Professor Darma Persada University, Jakarta, Indonesia.
- Member, Design Advice Environment Consultants' Network.
- Editorial Board Member, Open Mechanical Engineer Journal; Reviewer, Solar Energy Journal.
- International Solar Energy Society best full length paper in Photovoltaics.



