INFRASTRUCTURE RISK & RESILIENCE
11 October 2012

Provisional Programme

09:10 **Registration, Tea and Coffee** (Riverside Room)

SESSION 1: INFRASTRUCTURE RISK – CONTEXT (Council Chamber)
Chair: Tony Harris, Head of Discipline, Bridges and Civil Engineering Structures, Parsons Brinckerhoff Biography

09:30 **Welcome and Introduction – Infrastructure Risk**
Dr James Kimmance, Head of Risk Management, Parsons Brinckerhoff
Biography

- The scope and importance of Infrastructure Resilience
- Diversity & complexity of the problem
- Risk modelling and assessment issues to be addressed
- Current approaches & advances in knowledge

10.00 **Infrastructure Resilience - the Role of Asset Management and the implications of the impending ISO**
Dr Christian Roberts, Service Group Manager - Asset Management, GHD

- The importance of Asset Management in infrastructure and risk management
- Asset Management's role in supporting the analysis of, managing responses / treatment, and monitoring and reporting upon risk and resilience
- Asset Management as a framework for improving resilience
- Implications of the impending ISO and how this will improve infrastructure resilience

10:25 **The EC SeRoN Project – European Highway Security & Resilience**
Dr Georg Mayer, Head of Tunnel Equipment & Operation Dept, PTV
Biography

- Project structure & scope
- Problems overcome
- Lessons learnt

10:50 **Highways perspective**
Howard Owen BSc. (Hons.) BEng. (Hons.) MCIHT, Team Leader, Network Resilience Team, The Highways Agency Biography

- Quick assessment approaches
- Network
- Integration with other infrastructure
- Big event implications - Olympics

11:15 **Panel Discussion (15 mins)**

11:30 **Tea & Coffee & Poster Session** (Riverside Room)

SESSION 2: ASSESSING & MANAGING RISK (Council Chamber)
Chair: Dr James Kimmance, Head of Risk Management, Parsons Brinckerhoff

12:00 **Game theory as a framework for critical infrastructure analysis**
Urszula Kanturska, MEng MSc DIC CEng MICE MIHT, Innovation Associate at Laing O'Rourke, PhD Researcher at Imperial College London Biography

- Transport networks as complex systems
- Evaluation of network quality
- Game theory-based scenario analysis
- Example results

12:25 **Identification of Critical Infrastructures**
Ingo Kaundinya, Head of Section - Tunnel and Foundation Engineering, Tunnel Operation, Civil Security, Federal Highway Research Institute (BASt).Methods of identification Biography

- Methods of identification
- Direct and indirect consequences of service interruption
- Assessment

12:50 **Natural Hazards and Railway Systems**
John Dora, Network Rail Biography

- Threats to railway system operations,
- Importance of understanding interdependencies at a systems level
- Current assessment techniques
- Management processes
- Safety and performance
- Case Study – landslip risk
  Future prospects

13:15 **Panel Discussion**

13:30 **Lunch** (Riverside Room)

SESSION 3: RISK ANALYSIS AND SYSTEMS (Council Chamber)
Chairs: James Kimmance , Head of Risk Management Parsons Brinkerhoff Prof Steve Denton, Director of Bridge and Structural Engineering Parsons Brinckerhoff

14:30 **14:30 GIS to support risk analysis for civil protection.**
Susanne Lenz, Risk Analyst, Federal Office of Civil Protection and Disaster

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Assistance (BBK), Germany

- Risk analysis for civil protection
- Added value of GIS to support risk analysis
- Perspective

14:55 **Risk analysis and evaluation of security measures**
Christoph Zulauf, Managing Director, Ernst Basler & Partner Biography

- Risk analysis
- Identifying suitable countermeasures
- Cost benefit assessment

15:20 **Operational City Centre and Business District Resilience**
Nick Beale Managing Director, *ISARR Biography*

- Assessing and improving resilience in communities / complexes
- Business Districts and Multi Modal Transport
- Crisis Management – Case Study

15:45 **Panel Discussion**

16:00 **Conference Review & Closing Remarks**
Prof Steve Denton, Director of Bridge and Structural Engineering Parsons Brinckerhoff
The Importance of Infrastructure Resilience in the face of the multiple challenges of Climate Change, Disasters & Terrorism *Biography*

- The increasing need to understand resilience and provide assurance
- Past 'experience' is no guarantee and not always useful for future assessment
- Research and knowledge sharing
- Need for holistic qualitative supported by qualitative analysis and decision tools

16:20 **Tea & Coffee** (Riverside Room)

16:50 **SeRoN Project Software Application – Demonstration** (Council Chamber)
Modelling and Understanding Highway Asset & System Risk
Dr Alexander Dahl, Project Manager, PTV Biography

- SeRoN workflow and linked software analyses
- Software components developed for carrying out basic analyses
- Detailed analyses and applied software components

17:30 **Drinks Reception** (Riverside Room)

19:30 **Close**

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Tony Harris

Tony is Head of Discipline for Bridges and Civil Engineering Structures for Parsons Brinckerhoff Ltd Within this role he maintains a high level technical oversight of scheme designs and tender proposals in order to minimise exposure to technical risk and provide technical support and guidance to design teams during project delivery. He is an active member of the Institution of Structural Engineers and the British Group of IABSE and has more than 28 years experience in the industry including both contracting and consultancy.

He has extensive experience in design, independent checking and assessment of bridges to both British and international standards. He is a key member of the team that assisted both the Highways Agency and Network Rail to manage the implementation of Eurocodes within the UK and author and presenter of a range of training materials relating to bridge and building design to Eurocodes. He is also a key contributor to Parsons Brinckerhoff's input to the EU Security of Road Transport Networks (SeRoN) project.

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Dr James P Kimmance

James is the Head of Risk Management for Parsons Brinckerhoff, and the Chairman of the Institution of Risk Management - Construction Special Interest Group.

At Parsons Brinckerhoff he has developed a Risk Management Services Group that supports the delivery of major infrastructure projects in the Transportation and Energy sectors with expertise in technical, schedule, commercial and Enterprise-wide risk assessment and management.
Since 2003 the Group has expanded into the analysis and management of security, vulnerability and resilience of infrastructure and organisations with respect to natural and man-made hazards across. In Europe projects for the European Commission have included: the 'Definition of Critical Infrastructures in the Energy Sector' ; 'Critical Analysis of Current Practices and Methodologies in Risk Assessment including Hazard Identification and Risk Mapping'; the ' Programme For Prevention, Preparedness and Response to Natural and Man-Made Hazards – East'; and the 'Security of Road Transport Networks (SeRoN)'.

James has interests in the management of technical and emergent risk, and in the assessment and management of risk and resilience in infrastructures with complex interdependencies that may be exposed to natural and man-made hazards ranging from climate change thro to targeted terrorist action.

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Georg Mayer - Curriculum Vitae

Contact Georg Mayer
Head of Tunnel Equipment and Operation Department
PTV Planung Transport Verkehr AG Kriegerstr. 15
70191 Stuttgart, Germany
Tel.: +49 711 16270-35 mobile: +49 151 17101169
Email: georg.mayer@ptvgroup.com

Name	Dr.-Ing. Mayer, Georg
Date of birth	31st May,1966
Nationality	German
Profession	Civil engineer
Position with company	Head of Tunnel Equipment and Operation Department
Member of company since	February 2007
Qualification	Treatment of tunnel safety issues and development of safety concepts; Safety assessments by means of quantitative risk analyses (QRA); Planning and testing of tunnel equipment and operating technology, in particular tunnel ventilation systems and safety/security installations; Development of numerical models of fluid dynamics (CFD); Development of behavior and perception-based evacuation simulation; Development of a digital video analysis system (DVA) and assessment of video detection systems in tunnels; Member of several committees of Forschungsgesellschaft für das Straßen- und Verkehrswesen FGSV (German Road and Traffic Research Association), member of RABT committee; German representative in the international DACH committee (Germany, Austria, Switzerland) for tunnel ventilation systems
Education and professional experience	**Since 1.2.2007** Head of the Department of Tunnel Equipment and Operation of PTV AG **2006** Ph.D., Faculty of Civil Engineering, RWTH Aachen, „Fires in road tunnels: Assessment of the tunnel users' escape possibilities using numerical smoke propagation simulations" **2005-2007** Senior engineer at the Chair of Road Traffic, Earth Works and Tunnelling, Institute for Road and Traffic Engineering, RWTH Aachen

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	2000 – 2005 Scientific assistant at the Chair of Road Traffic, Earth Works and Tunnelling, Institute for Road and Traffic Engineering, RWTH Aachen, Tunnelling group **1998 – 2000** Scientific employee at the Chair of Road Traffic, Earth Works and Tunnelling, Institute for Road and Traffic Engineering, RWTH Aachen, Traffic planning group **1997** Dipl.-Ing. (M. Sc. equivalent) in Civil Engineering, RWTH Aachen Specialist subject: Road transport
Fields of expertise	Fields of expertise National and international research projects, risk analyses, hazardous goods analyses, ventilation studies, safety assessments, model development

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Howard Owen

Howard joined West Mercia Police in 1973, and served throughout Herefordshire and Worcestershire, retiring as Chief Inspector (Operations) at Worcester City in 2004.

During his career in the police he served as both a firearms and public order commander.

In January 2005, Howard joined the Civil Service, and was appointed to the Network Resilience Team at the Highways Agency (part of the Department for Transport). The team manages Security, Civil and Emergency Planning, for the Strategic Road Network in England. After 3 months, due to internal reorganisation, he was promoted to Head the Resilience Team.

His team were responsible for the security of the Highways Agency sections of the Olympics road network, outside London, for the 2012 Games.

He lives in Herefordshire with his wife and two daughters

Howard Owen BSc (Hons.) B.Eng (Hons.) MCIHT | Team Leader | Network Resilience Team | The Highways Agency, 2/10K, Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6HA | Tel: 0117 372 6324 | GTN: 1371 6324 | 07881 844303

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Urszula Kanturska

Innovation Associate at Laing O'Rourke & PhD Researcher at Imperial College London
Urszula is a civil engineer pursuing her industry career in parallel with academic work. She is a member of an R&D team at Laing O'Rourke tasked with advancing the company's innovation agenda. Previously she worked for three years at Arup's Advanced Technology & Research group, conducting internal and collaborative research projects. Prior to this Urszula spent six years working as a transport consultant, and in 2006 received the Polish Ministry of Infrastructure Award for developing a national-scale highway model.

Urszula has a special interest in the operational analysis and resilience assessment of infrastructure networks, which is the focus of her academic work. She has published and spoken at conferences on evaluation of transport networks and their robustness in the face of random and targeted failures, optimal routing and distribution of protective measures for risk reduction, and emergency planning.

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Ingo Kaundinya

Born in 1974

1999
Civil Engineer (Dipl.-Ing.), Ruhr-University Bochum, Germany

1999 to 2005
Maidl & Maidl Consulting Engineers, Bochum, Germany
Project leader for the design of major tunnel construction projects (road, rail and metro). Checking of design documents and on site supervision for big projects in Germany and worldwide.

Since 2005
Federal Highway Research Institute (BASt), Bergisch Gladbach, Germany
Senior Researcher in the Section for Tunnel and Foundation Engineering, Tunnel Operation, Civil Security.
Responsible for the topics tunnel construction, structural fire protection for tunnels, tunnel sealing systems and safety and security of road bridges and tunnels.
Project leader of the security research projects SeRoN, RETISS and SecMan.
Since 2012 Head of Section Tunnel and Foundation Engineering, Tunnel Operation, Civil Security.

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John Dora BSc (Hons) CEng FICE FRMetS FPWI

Position: **Principal Systems Engineer**
Department: **Asset Management Services**
Company: **Network Rail**

John Dora is a Chartered Civil Engineer and Fellow of both the Institution of Civil Engineers and of the Royal Meteorological Society. He has thirty years experience in managing flood defence and rail infrastructure, and is leading climate change adaptation systems research for the entire GB rail industry.

John's affiliations include:

Chair of the national *Infrastructure Operators' Adaptation Forum*, membership of the Institution of Civil Engineers' *Sustainability Guidance Panel Executive*; of the International Union of Railways' *Sustainable Mobility Experts' Network;* of the *UN Group of Experts on Climate Change Adaptation and Transport*; of the UK Government *Adaptation Partnership Board*; and the Defra/ Environment Agency Stakeholder Forum.

Career History:

- British Rail, Civil Engineering Management Trainee 1981
    - BR Work included technical and managerial responsibilities in railway civil engineering and track works
- Chartered Engineer/ MICE in 1987
- National Rivers Authority 1990/ Environment Agency 1996
    - Posts included Construction Engineer 1990 then Flood Defence Engineer/ Operations/Strategy for Upper Thames from 1991
    - Programme Manager for 'Y2K' Contingency Planning 1999
- Severn Valley Railway, Chief Engineer 2001
- Railtrack/ Network Rail, Standards Engineer 2002
- Network Rail, Principal Civil Engineer (Water Management) 2005
    - Weather resilience for Civil Engineering assets
- Network Rail, Principal Systems Engineer (Climate Change) 2009 to date
    - Railway system-wide weather resilience and climate change adaptation

- Honorary Senior Research Fellow at Birmingham University, June 2012
- Fellow of Institution of Civil Engineers, September 2012
- Fellow of Royal Meteorological Society, July 2012

Experience includes:

- Climate and weather and system resilience across rail infrastructure systems;
- Rail and flood defence asset management;
- Policy and strategy at regional and national levels;
- Flood incident management;
- Business continuity planning

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Christoph Zulauf

Name	Christoph Zulauf
Date of Birth	June 3, 1972
Nationality	Swiss
Current Function	Member of the Executive Management Board, Head of the Department of Safety and Security

Education

2011	Certificate of advanced studies “Leadership & Management”, Zurich University of Applied Sciences
2001 - 2002	Post-graduate course on "Risk and Safety" of the Swiss Federal Institute of Technology (ETH) Zurich and the University of St. Gallen (HSG)
1998	M.Sc. Environmental Engineer, Swiss Federal Institute of Technology Zurich (ETH Zürich)
1992 – 1998	Department of Environmental Sciences Swiss Federal Institute of Technology Zurich (ETH Zürich)

Professional Career

Since 1999	Ernst Basler + Partners, department "Safety and Security" *www.ebp.ch*
Main working tasks	- Risk analyses and cost-effectiveness investigations - Risk management - Road tunnel: Risk analysis / Safety management - Storage and transport of dangerous goods: Risk analysis / Safety management - Development of risk analysis methodologies
Memberships	- Society for Risk Analysis (SRA) - PIARC Technical Committee 3.3, Working Group 2 "Integrated Road Tunnel Safety"

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Nick Beale

Nick is the founder and Managing Director of ISARR, a web based software system that help's organisations understand, manage and reduce risk, streamline routine operations and activities, and improve controls and compliance, creating business value and competitive advantage from Risk, Resilience and Security Management.

Nick served for 10 years in HM Forces and was awarded the Queens Commendation.

Nick has an extensive background in specialist risk management. He was the Manager of the Business Strategy Group at Cyveillance International, a US based consultancy working with high profile clients such as De Beers, PWC, HSBC and JP Morgan.

Prior to Cyveillance, Nick was the Manager of Research & Development for iDEFENSE UK, (a wholly owned subsidiary of iDEFENSE Inc, a Washington based Cyber-threat intelligence service provider to the Public & Private sectors)

Nick also worked with Cable & Wireless Communications where he created a knowledge management system and process for Intelligence led commercial Fraud Investigations.

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Professor Steve Denton

Steve Denton is Parsons Brinckerhoff's Director of Bridge and Structural Engineering in UK and a Visiting Professor at the University of Bath.

Steve's interests and experience span many facets of bridge, structural and geotechnical engineering, with particular interests in the analysis, modelling and design of concrete structures, and the development of Standards. Recently, he has also been developing the UK Highways Agency's climate change adaptation strategy.

He currently has responsibilities for a portfolio of design, research and consultancy projects with a combined fee value in excess of £20 M. Steve sits on numerous national and international committees and steering groups, and has published extensively. He is a member of CEN/TC 250, the international committee with overall responsibility for the Structural Eurocodes, and chairs CEN/TC 250: Horizontal Group – Bridges, the committee with coordinating responsibilities for bridge design standards across Europe. He is the UK Head of
Delegation for the International Concrete Society, fib.

Between 1996 and 1998 Steve held a Junior Research Fellowship at Cambridge University.

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Dr. Ing. Alexander

Alexander Dahl has graduated from the Ruhr-University Bochum with a diploma in civil engineering in 2003. After leaving the Ruhr-University Bochum he started working at the Department of Transport Planning and Traffic Engineering of the Bauhaus-University of Weimar as a research assistant. In this context he wrote his doctoral thesis and received a PhD in Civil Engineering. In 2010 he joined PTV (Branch Berlin, Germany) and today he is working as project manager at the division “Research Sustainable Transport”.

Since 10 years Alexander Dahl is working on transport economics, transport models and road safety. Concerning transport economics he is focussing on the development and application of procedures for assessing the cost-effectiveness of transportation measures. He also did some research on calculation procedures for road pricing. In this area he worked on methods for including external costs. For over seven years Alexander Dahl was holding lectures on transport planning as well as traffic and transport models at the Bauhaus-University of Weimar. In the field of road safety he was involved as lecturer in training courses of road safety auditors also for seven years. Furthermore he was working on several national and international projects dealing with infrastructural aspects of road safety. During the last years more and more attention has been brought to research projects dealing with security aspects of infrastructures in traffic and transport networks. In this context Alexander Dahl has made some contributions on procedures for assessing the criticality of road links. Furthermore he has been involved in developing a methodology for calculating the importance of infrastructure objects for the transport networks. At the same time he also has worked on a procedure for assessing the cost-effectiveness of protection measures for parts of the road infrastructure network which has been identified to be critical.

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