MEGA PROJECTS AND MEGA RISKS:

Lessons for Decision-makers through a Comparative Analysis of Selected Large-scale Transport Infrastructure Projects in Europe, USA and Asia Pacific

VOLUME 6: OMEGA RESEARCH PROGRAMME FINAL REPORT APPENDICES

Findings of a five year international research programme funded by the Volvo Research and Education Foundations (VREF)

1st October 2011

Omega Centre
Centre for Mega Projects in Transport and Development

A global Centre of Excellence in Future Urban Transport sponsored by Volvo Research and Educational Foundations (VREF)

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Appendix 1: OMEGA Research programme proposal and progress reports

Global Centre of Excellence in Mega Urban Transport Project Studies, Proposal to presented by Bartlett School of Planning, University College London to Volvo Research and Education Foundations (VREF), April 2005 (CD ROM: OMEGA Research Programme Proposals And Progress Reports\OMEGA2 Proposal- OMEGA Project 2 Proposal to VREF HD 01-04-2005.pdf)

OMEGA Centre of Excellence First Year Progress Report to VREF, 1st September, 2006 (CD ROM: OMEGA Research Programme Proposals And Progress Reports\OMEGA2 Report-CoE First Year Progress Report HD-RO 07-06.pdf)

OMEGA Centre of Excellence Second Year Progress Report to VREF, 28th August 2007 (CD ROM: OMEGA Research Programme Proposals And Progress Reports\OMEGA2 Report-CoE Second Year Progress Report HD PW RO 30-08-07 .doc)

OMEGA Centre of Excellence Mid-Term (Third Year) Progress Report (and Appendices) to VREF, 1st September 2008 (CD ROM: \OMEGA Research Programme Proposals And Progress Reports\OMEGA2 Report-CoE Third Year Midterm Report HD PW RO JW 01-09-08.doc)

OMEGA Centre of Excellence Fourth Year Progress Report to VREF, 15th September 2009 (CD ROM: OMEGA Research Programme Proposals And Progress Reports\OMEGA2 Report-CoE Forth Year Report HD PW RO JW 15-09-09.doc)

OMEGA Centre of Excellence Preliminary Final Report: (Fifth Year) Progress Report to VREF, 10th April 2010 (CD ROM: OMEGA Research Programme Proposals And Progress Reports\OMEGA2 Report-CoE Preliminary Final Report - Progress on OMEGA Centre HD-PW-JW 01 04 2010.doc)

OMEGA Centre of Excellence Proposal to Extend Centre of Excellence Activities, Report to VREF, 30th April 2010 (CD ROM: OMEGA Research Programme Proposals And Progress Reports\OMEGA2 Proposal- 3 Year Extension HD-PW-JW 01-04-10.doc)

Appendix 2: OMEGA study international steering group

Prof. Sir Peter Hall, (Chairman) Bartlett School of Planning, University College London (UK)
Prof. Alan Altshuler, Graduate School of Design, Harvard University (USA)
Prof. John Black, Faculty of Architecture, University of Sydney (Australia)
Prof. George A. Giannopoulos, Department of Civil Engineering, Aristotle University of Thessaloniki, (Greece)
Prof. Rémi Prud'homme, Institut d'Urbanisme de Paris, Université Paris XII (France)
Prof. Tony Ridley, Department of Civil Engineering, Imperial College London (UK)
Prof. Werner Rothengatter, Institute of Economic Policy Research, Universität Karlsuhe (Germany)
Prof. Hugo Priemus, Faculty of Technology, Policy and Management, Delft University of Technology, (Netherlands)
Prof. Lars-Göran Mattsson, Department of Transport and Economics, Royal Institute of Technology, (Sweden)
Prof. Hideo Nakamura, President, Musashi Institute of Technology (Japan)
Dr. Dorothy Chan, Head, Centre for Logistics and Transport, School of Professional and Continuing Education, University of Hong Kong, (Hong Kong SAR, PRC)

Appendix 3: Glossary of key definitions

- **Key Definition #1:** Mega urban transport projects (MUTPs) as defined by this Study are post-1990 completed road, rail, bridge and tunnel projects or a combination of these, each costing in excess of US$0.5 billion (at 1990 prices), located wither within urban areas or having a significant impact on urban and metropolitan development.

- **Key Definition #2**: Principal Stakeholders are those 'key' people and organisations who may *directly* affect, be affected by, or perceive themselves to be *directly* affected by, a decision or activity associated with a decision(s) or an activity or a 'project' (after www.riskmanagement.qld.gov.au/info/guide/gls.htm). For the purposes of this Study, the term 'project' refers to OMEGA Case Study Projects, while the term 'key stakeholder' refers to those:

    - who's actions/decisions are/were critical to the success/failure of the project as a whole (or a component part thereof) in terms of its planning, appraisal, evaluation, implementation, operation and impacts, and/or;
    - who have either possess first hand knowledge of/involvement in the planning, appraisal, evaluation, implementation, operation or impact of the project (or a component part thereof) or are experienced observers thereof, and/or;
    - who share information and knowledge about the project (or a component part thereof) so as to influence project outcomes or opinions about project outcomes.

- **Key Definition #3: Sustainability Development Visions (SDVs)** as defined by this Study are multi-dimensional. They comprise of economic, environmental, social, *and* institutional dimensions each of which (or together) pose impose important Sustainability Development Challenges to MUTPS. Each dimension of the SDV are identified by a set of concepts, issues and methodologies/techniques which pose various levels of risks, uncertainties and complexities in different contexts.

- **Key Definition #4**: **Sustainability Development Challenges (SDCs)** are defined here as problems, issues and concerns that present obstacles to the achievement of SDVs and which therefore need to be overcome or ameliorated for significant progress to be made for MUTPs to constructively contribute toward the SDV aspired after. Progress in the achievement of this is assisted by the employment of Sustainable Development Indicators (SDIs). The main SDCs to MUTP identified for this Study are summarised in matrix already distributed to Partners.

- **Key Definition #5: Context** as defined by this Study represents "the circumstances relevant to something under consideration" and/or "the discourse that surrounds a language unit and helps determine its interpretation" (WordNet, Princeton University, http://wordnet.princeton.edu/20/12/08). It pertains to information that should be kept in mind when making a decision. Context can relate to one or more dimensions, including psychological, temporal, geographical/spatial, cultural, institutional and ideological/political dimensions that shape the way we understand the performance of an event.

- **Important Definition #6:** Lessons are defined by this Study as "experiences, examples, or observations that impart beneficial new knowledge or wisdom" (The Free Dic http:// www. thefreedictionary. com/ Lessons tionary, 20/12/07). 'Generic lessons' are seen as experiences, observations, knowledge and models that are applicable to an entire class, group or can be used by many nations, factions or groups (http://www.cs.bham.ac.uk/research/projects/poplog/computers). 'Context-specific

lessons' are experiences, observations, knowledge and/or models that pertain to particular contexts alone.

Source: Hypothesis-Led Research Questionnaire Design: Application of Cresswell's Principles to CTRL Case Study 2008, Hypothesis-Led Research Questionnaire Design: Application of Cresswell's Principles to Preparation of CTRL Hypothesis-Led Case Study Questionnaire 2008

Appendix 4: OMEGA non-core study team contributors

OMEGA Research Centre Associates

Dr. Roger Allport, Centre for Transport Studies, Imperial College London
Prof. Mike Batty[1], Centre for Advanced Spatial Analysis (CASA), UCL
Basil Dimitriou, sometime of School of Planning, Oxford Brookes University
Liane Hartley, MEND Consultants, London
Dr. Nikos Karadimitriou, Bartlett School of Planning, UCL
John Kelsey, School of Construction and Project Management, UCL
Dr. Kallia Pediaditi[2], Ministry of the Environment, Greek Government
Prof. Francis Terry[3], Consultant, London School of Economics

OMEGA Research Centre Assistants

Chia-Lin Chen[4], PhD student, Bartlett School of Planning, UCL
David Church[5], MSc student, Bartlett School of Planning, UCL
Joel Dearden[6], PhD student, CASA, UCL
Varina Delrieu[7], PhD student, OMEGA Centre/Bartlett School of Planning, UCL
Caroline Fabianski[8], PhD student, OMEGA Centre/Bartlett Graduate School, UCL
John Ferguson[9], MSc student, Bartlett School of Planning, UCL
Miho Kamel[10], MSc student, Bartlett School of Planning, UCL
Chris Martin[11], MSc student, Bartlett School of Planning, UCL
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[1] Prof. Batty has undertaken commissioned work for CoE
[2] Dr. Pediaditi has undertaken commissioned work for CoE
[3] Prof. Terry has undertaken commissioned work for CoE
[4]Funded on a part-time basis whilst pursuing postgraduate studies at UCL
[5] ditto
[6] ditto
[7] Funded by OMEGA Centre, with sponsorship provided by SEEDA.
[8] Funded by VREF Smaller Project SP-2004-3
[9] ditto
[10] Voluntary contributions
[11] Funded by VREF Smaller Project SP-2004-3
[12] Voluntary contributions

Appendix 5: The Complexity Interest Group team

Stephen Beiling, Director of Cognitive Edge Pty.
Ann Baritherwait, Consultant, Cognitive Edge Pty.
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Ken McHugh, Programmer, Complexity Interest Group
David Snowden, Director, Complexity Interest Group and Director, Cognitive Edge Pty.
Peter Stanbridge, Programmer, Cognitive Edge Pty.
Dr. Paul Thomas, Director of Research, Glamorgan University
Laurie Webster, Consultant, Cognitive Edge Pty.
Jules Yim, Data entry specialist, Complexity Interest Group

Appendix 6: Study team composition of International Academic Partnership

Australia

Prof. Nicholas Low (11%)	Principal Investigator, Australasian Centre for the Governance and Management of Urban Transport (GAMUT), Faculty of Architecture, The University of Melbourne
Dr. Carey Curtis (11%)	2nd Principal Investigator, Department of Urban and Regional Planning, Curtin University of Technology
Sophie Sturup (100%)	Research Assistant/PhD student, GAMUT, Faculty of Architecture, The University of Melbourne
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Dr. Jeremy Moss	Department of Philosophy, University of Melbourne

France

Prof. Elisabeth Campagnac (16.5%)	Principal Investigator, Laboratoire Technique Territoires et Societes (LATTS), Ecole Nationales Ponts et Chaussees
Prof. Geneviève Zembri-Mary (16.5%)	2nd Principal Investigator, UFR Lettres et Sciences Humaines, Université de Cergy-Pontoise
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Greece

Prof. Pantelis Skayannis (33%)	Principal Investigator, Department of Urban and Regional Development, University of Thessaly
George Kaparos (100%)	Research Assistant/PhD Student, Department of Urban and Regional Development, University of Thessaly
Sofia Kessopoulou	Research Assistant, Department of Urban and Regional Development, University of Thessaly
Petros Rodakinias	Research Assistant, Department of Urban and Regional Development, University of Thessaly

Germany

Prof. Gerhard Braun (16.5%)	Institute for Geographical Studies, Urban Studies, Free University of Berlin, Berlin, Germany
Dr. Markus Hesse	2nd Principal Investigator, Institute for Geographical Studies, Urban Studies, Free University of Berlin
Dr. Deike Peters (16.5%)	Center for Metropolitan Studies, Technical University, Berlin (from September 2006 to April 2009)
Matthias Kracht (100%)	Research Assistant/PhD Student, Institute for Geographical Studies, Urban Studies, Free University of Berlin

Hong Kong

Prof. Frederik Pretorius	Principal Investigator, Department of Real Estate and Construction, University of Hong Kong (16.5%)
Dr. Mee Kam Ng (16.5%)	Department of Urban Planning, University of Hong Kong

Billy Kwan (100%)	Research Assistant/PhD Student, Department of Urban Planning, University of Hong Kong (from March 2008 to August 2010)
Rachel Ng	Research Assistant, Department of Real Estate and Construction, University of Hong Kong

Japan

Prof. Yasunori Muromachi	Principal investigator, Department of Built Environment, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology
Prof. Katsutoshi Ohta	Advisor, School of Regional Development Studies, Toyo University
Professor Seiji Iwakura (11%)	2nd Principal Investigator, Shibaura Institute of Technology,
Dr. Kazuya Itaya (11%)	Research Assistant, Department of Built Environment, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology
Dr. Yuko Ohtsuka (11%)	Research Assistant, Department of Built Environment, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology

The Netherlands

Prof. Willem Salet (16.5%)	Principal Investigator, Institute for Metropolitan Studies, University of Amsterdam
Dr. Luca Bertolini (16.5%)	2nd Principal Investigator, Institute for Metropolitan Studies, University of Amsterdam
Mendel Giezen (100%)	Research Assistant/PhD Candidate, Institute for Metropolitan Studies, University of Amsterdam, Amsterdam.

Sweden

Prof. Bengt Holmberg (11%)	Principal Investigator, Department of Technology and Society, Lund University
Prof. Lars J Nilsson (11%)	2nd Principal Investigator, Department of Technology and Society, Lund University, Lund
Dr. Jamil Khan (11%)	3rd Principal Investigator, Department of Technology and Society, Lund University
Fredrik Pettersson (100%)	Research Assistant/PhD student, Department of Technology and Society, Lund University

USA

Prof. Charles Brecher (16.5%)	2nd Principal Investigator, Rudin Centre for Transportation Policy and Management, New York University
Dr. Allison C. de Cerreño (16.5%)	Principal Investigator and Co-Director, Rudin Centre for Transportation Policy and Management, New York University (from September 2006 to January 2009)
Robert Paaswell	Co-Director, Rudin Centre for Transportation Policy and Management, New York University, New York City.
Patrizia Nobbe (100%)	Research Assistant/PhD Student, Rudin Centre for Transportation Policy and Management

Appendix 7: The OMEGA International Professional Partnership Network

Australia
Details of Australian non-academic partners yet to be provided.

France
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Germany
- **State of Berlin,** Senate Administration for Urban Development, Ref. Verkehrsentwicklungsplanung, VII A,Am Köllnischen Park 3, 10173 Berlin, F: +49 (30) 9025-1650, (Contact:Ms. Doris Gerste, E: doris.gerste@senstadt.verwaltberlin.de, elke.plate@senstadt.verwalt-berlin.de)
- **Joint Planning Agency of the States of Berlin and Brandenburg**, Regional Planning and Transport Section, Lindenstraße 34°, 14467 Potsdam, T: +49 (331) 866-7692 (Contact: Ms Sabine Sperling, E: sabine.sperling@gl.brandenburg.de)
- **Federal Environmental Agency** (UBA), Bismarckplatz 1, 14191 Berlin, Fon: +49 (30) 8903-2562, (Contact: Axel Friedrich: axel.friedrich@uba.de
- **Federal Office for Building and Regional Planning (BBR),** Transport and the Environment Section, Deichmanns Aue 31 – 37, 53179 Bonn, Germany, (Contact: Mr. G. Wuerdemann, T: +49 (0) 1888401-2302, E: gerd.wuerdemann@bbr.bund.de

Greece
- **Attiko Metro S.A.,** 191-193 Messogion Ave., 115 25 Athens (Contact: Alexander Deloukas, T: +30 67052, F: +30 6726 126, E: adeloulkas@ametro.gr)
- **Attikes Odos (Attikes Diadromes S.A.),** Traffic Department, 41.9 km Attiki Odos, GR 190 02 Peania (Contact : Mr Kostas Papandreou: T : +30 (0)10 6942 496603, F: kpapandr@attikesdiadromes.gr)
- **Gefyra Consortium 300,** Rio-Antirrio Bridge, 20 Antirrio Aitoloakarnias (Contact: Mr. Ioannis Dimitropoulos, T: +30 26340 39098, E:IDIMITROPOULOS@gefralitourgia.gr)
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Hong Kong
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Japan
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Netherlands

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Sweden

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UK

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USA

- **Mass Transit Authority (MTA),** New York City Transit Authority (NYCT) (Contact: Mysore L. Nagaraja, President of MTA Capital Construction, Dept. of Capital Program Management, 2 Broadway, 8th floor, New York, NY 10004 T: 646-252-4277 F: (646) 252-226 E: mnagaraja@nyct.com)
- **Empire State Development Corporation,** New York City (Contact: Kevin Corbett, Exec. Deputy Commissioner, Chief Operating Officer, Exec. VP, Empire State Development, 633 Third Avenue, 37th floor, New York, NY 10017 T: (212) 803-3730 F: (212) 803-3734 E: kcorbett@empire.state.ny.us)

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Note: Those parties that contributed financially to the research programme are shown with an asterisk.

Appendix 8: The OMEGA international PhD student network

The following is a summary of the names, topics and state of play of the PhD thesis at the time of writing prepared with funding associated with the OMEGA research programme:

Australia

PhD candidate: **Sophie Sturup**

PhD topic: 'Managing Mentalities of Megaprojects'

Abstract of PhD thesis: *"Managing Mentalities of Mega Projects"* is a study following Foucault's theory of *Governmentality*, of the *art of government* of mega urban transport projects. The premise of the thesis is that mega urban transport projects exhibit characteristic flaws despite significant research to resolve them, because the underlying art of government prevents effective deployment of the research. Key findings are that the art of government of mega urban transport projects is: based on a sovereign decision; strongly influenced by the logic of project; and organic in the way it absorbs and grows from rationalities used to produce the project. The thesis explores how this art of government influences the development of the project, the technologies used, and delves into the way actors are influenced by the *project sublime*.

University and department of submission: Faculty of Architecture, Building and Planning, University of Melbourne

State of progress: Completed in June 2011

Funding: OMEGA VREF funding provided through GAMUT, University of Melbourne plus, part-time employment

France

PhD candidate: **Stéphanie Leheis**

PhD topic: 'The city and its bypass, a transport project at risk from long time: The case of Marseille (France)'

Abstract of PhD thesis: The by-pass, beltways and other ring roads are quite frequent in the urban road network. Most of the cities want their by-pass, considered as a magic ring to reduce the congestion in the city-centre. But at the same time, only few of them are equipped with a complete ring, and the infrastructure is also highly critized, symbolic of a new border between the city and its suburbs. In Marseille, the L2 bypass story line is symptomatic of this ambiguous relation between the city and its bypass. The project of circular boulevards appeared in the 1930's in the planning schemes; a first section of expressway was built in the 1960's; a second one was buried, in the 1990's, under a new urban area; and today the project is transformed in order to adapt the infrastructure to city. This study case reveals at the same time the project continuity (in the plans since more than 80 years), and its changes (from the circular boulevard designed on the parkway model, to the urban highway covered by a multi-functional boulevard). It raises the question of the evolutions and transformations of a transport project, and also the question of the interaction between infrastructure, territory and long time. The infrastructure, considered ad a technical object of which design and representations evolve, fits in a territory itself in change. So each transport project must integrate the transformations of the technical object and the territorial evolutions.

University and department of submission: Université Paris-Est.

State of progress: Completed in May 2011

Funding: OMEGA VREF funding provided through (LATTS), Ecole Nationales Ponts et Chaussees

Germany

PhD candidate: **Mathias Kracht**

PhD topic: "Spatial Impacts of Mega Transport Projects based on the concept of sustainability"

University and department of submission: Free University of Berlin, Department of Geography

State of progress: update not provided

Funding: OMEGA VREF funding provided through Department of Geography, Free University of Berlin

Greece

PhD candidate: **George Kaparos**

PhD topic: "Dealing with risk and uncertainty in Mega Urban Transport Projects (MUTPs): Exploring the private sector's role in their Decision-Making and Performance"

Abstract of PhD thesis: Governments are increasingly involving the private sector in the design, financing, management and operation of MUTPs, through various forms of long-term partnerships and contracting. Private sector actors have a decisive role in decision – making throughout the projects' life cycle and they determine serious aspects of the projects' performance. This research studies this involvement of the private sector with respect to the challenges it brings in dealing with uncertainty and risk in MUTPs' decision – making. Based on an inductive case – study research , I try to explore how long-term, risk – sharing partnerships between project owners and private agents contribute in managing risks associated with the technical and financial performance of projects but also risks associated with their wider utility and sustainability effects. A particular focus is placed on the differences in perceptions, motives and performance, among the public and private agents and the degree to which these differences develop collaborative conditions and synergies for the improvement in the treatment of risk. I study three cases of MUTPs. The first two are Athens Ring Road and Rion - Antirion Bridge which have been developed and operated through BOT concession type PPPs and my third case study is the Metro of Athens which is developed and operated by a state – owned company and will provide a basis for comparative study.

State of progress: Data analysis and literature review enfolding. Proposed date of submission: January 2012

University and department of submission: University of Thessaly, Department of Planning & Regional Development

Funding: OMEGA VREF funding provided through University of Thessaly, Department of Planning & Regional Development and private funds.

Hong Kong

PhD candidate: **Billy Yan-wai Kwan**

PhD topic: 'Mega Urban Transport Projects as Agents of Urban Regeneration: The Case of West Rail, Hong Kong'

Abstract of PhD thesis: Mega Urban Transport Projects (MUTPs) are very common in both the developed and developing world. They form an integral part of the urban fabric for many large cities, and play a very important role in their globalisation processes. As the world is now undergoing an 'infrastructure boom', it is important for MUTPs to be sustainable. The key questions for this research, therefore, are: What is a sustainable MUTP? How can we measure and assess the sustainability of a MUTP? How can we deliver sustainable MUTPs? What is the most appropriate mode of governance in the planning, design and implementation of MUTPs? This research aims to investigate how Hong Kong governs its MUTPs through two case studies – West Rail and Lok Ma Chau Spur Line and assess whether they are sustainable or not. Hong Kong's mode of governing MUTPs will be compared to other modes including a normative mode of governing the delivery of MUTPs. Recommendation will be put forward to governing sustainable MUTPs in the context of Hong Kong.

State of progress: Withdrawn in August 2010

University and department of submission: Department of Urban Planning and Design, The University of Hong Kong

Funding: OMEGA VREF funding provided through University of Hong Kong, Department of Urban Planning and Design.

Sweden

PhD candidate: **Fredrik Pettersson**

PhD topic: 'Infrastructure for transition? Planning, policy and governance challenges for delivering transport infrastructure for a sustainable transport system.'

Abstract of PhD thesis: The point of departure for the thesis is challenges associated with transforming the transport system in ways corresponding to the ideals of sustainable development. This implies infrastructure related challenges from several perspectives. One case in point is provided by efforts aimed at curbing road transport demand by transferring traffic to other modes, viewed as a central strategy for achieving a more sustainable transport system. The possibility to achieve this is premised on a mixture of policy measures and infrastructure improvements or additions. Another example is the introduction of new technology, also a central strategy for sustainable transport. Electric vehicles, hydrogen vehicles, congestion charging systems and Intelligent Transport Solution technologies are all examples of technologies dependent on the development of new infrastructure and/or the development of supporting policy frameworks in order to be successfully implemented. Spatial planning and the governing process of the planning process play an important role in this transition. The overall aim of the thesis is to increase the understanding of the

challenges associated with a transition to a more sustainable transport system given current policy and governance practices regarding transport infrastructure planning. This topic will be approached from two directions; one focusing on processes and forces leading to the current situation, aiming to provide an overview of infrastructure planning related challenges today. The other track will be forward looking, focusing on the challenges related to a transition to a sustainable transport system.

State of progress: Submission Autumn 2012

University and department of submission: Lund University, Dept. of Environmental and Energy Systems

Funding: OMEGA VREF funding provided through the Dept. of Environmental and Energy Systems and VINNOVA (Swedish Governmental Agency for Innovation Systems); the Swedish Transport Agency; the Swedish Environmental Protection Agency and the European Regional Development Fund.

The Netherlands

PhD candidate: **Mendel Giezen**

PhD topic: 'Finding a fit: adaptations during the planning and decision-making on mega projects

Abstract of PhD thesis: Mega Projects are riddled with complexity. In general there is a tendency to reduce the complexity of decision-making by simplification of both the process and the scope. However, by framing a project's scope or process in a narrow way at an early stage, the possibility to adapt to changes in the context, and thus deal with unexpected challenges, but also just profit from new insights and new possibilities, is limited. In order to explore this issue, this paper looks at moments of adaptation in the decision-making and planning of Mega Projects and asks what mechanisms influence adaptive and strategic capacity. We develop the concepts of adaptive and strategic capacity using organizational learning and cybernetic theory, and analyze empirical data from three mega projects in The Netherlands.

State of progress: Due to submit May 2011

University and department of submission: University of Amsterdam, Amsterdam Institute for Social Science Research

Funding: OMEGA VREF funding provided through the University of Amsterdam, Amsterdam Institute for Social Science Research and Habiform

UK

PhD candidate: **Yen-Ning Tseng**

PhD topic: 'Mega urban transport projects as a Catalyst for Sustainable Urban Regeneration, Especially when Promoted by Mega Events'

Abstract of PhD thesis: Yen-Ning's research focuses on identifying inter-relationships between different types of major projects, including major transport projects, urban regeneration schemes and mega events, such as the Olympics. Her research attempts to test the hypothesis that 'mega urban transport projects (MUTPs) can be an effective agent

for sustainable urban regeneration (SUR) and mega events (MEs)'. It further assumes that 'A well-functioning co-operation between MUTPs, SUR and MEs can bring about a favourable outcome, i.e. maximum benefits and minimum costs'. The premise of the research discussed is that an appreciation of institutional arrangements and power relationships is vital in understanding the nature of complexity in decision-making regarding MUTP planning and delivery, and their associated developments. The methodology outlined is essentially a two-strand approach applied for purposes of illustration to a case study (the Channel Tunnel Rail Link). Strand one of the methodology is pre-hypothesis led - based on an analysis of the narrative, whilst the other is hypothesis led - based on an analysis of the returns to conventional structured questionnaires. This methodology of case study is designed to answer the primary research questions, which are: (a) Can mega urban transport projects play an effective role in delivering sustainable urban regeneration and mega events? (b) Can mega urban transport projects, sustainable urban regeneration and mega events be implemented in parallel? And if so, (C) in which contexts these three domains can cooperate well and contribute the visions of sustainable development? This study concludes that conditions which allow one to coordinate the delivery of these three different types of major projects include having a proactive partnership between the public and private sectors, a brokerage role played by local authorities, visionary politicians, streamlined planning powers, good stakeholder management and continuous political commitment. Moreover, the locomotive role played by the mega urban transport project which enables the urban regeneration schemes and mega events to happen could not implement without existing brownfield sites and the injection of significant public investments. In addition, the coalition of interests that forms itself around these projects is a leading dimension of these major developments. This coalition is mostly constituted by elite groups. It is also suggested that the co-ordination between these major projects remains rhetoric which is achieved by the interdependency between project discourses.

State of progress: Submitted in November 2010, revisions underway to be submitted in June 2011

University and department of submission: OMEGA Centre, Bartlett School of Planning, UCL

Funding: OMEGA VREF funding provided through the OMEGA Centre, Bartlett School of Planning, UCL

PhD candidate: **Varina Delrieu**

PhD topic: 'A GIS toolkit to understand the socio-economic impacts of Mega Urban Transport Projects on urban communities'

Abstract of PhD thesis: This research explores the short to long-term impacts that Mega Urban Transport Projects (MUTPs) have on the communities they serve. In particular, I focus upon the intentional and unintentional social impacts that occur in the communities for the non-user of the MUTP, as by their very nature of being 'mega', these MUTPs act as catalysts for change at the physical, economical and socio-demographic level. Current appraisal methods for planning and implementing MUTPs are relatively short on a standardised framework for assessing and monitoring the social impacts that communities under-go. This PhD research proposes that GIS provides fast and powerful overview of social patterns that can assist planners and decision-makers at local, regional and national levels to consider the 'knock-on' effects of the MUTP and how to shape the change in those communities to improve the socio-economic level for the whole population, beyond the users of the MUTP. The case-studies are the two non-London hubs of the Channel Tunnel Rail Link; Ebbsfleet and Ashford, Kent, building from the 1991 census to the most recent digital datasets to create a 'planning-to-implementation' stage picture of the communities. Variables

that are mapped include accessibility, journey to work, socio-economic deprivation, social exclusion and spatial segregation.

State of progress: Submission due September 2011

University and department of submission: OMEGA Centre, Bartlett School of Planning, UCL

Funding: SEEDA funding provided through the OMEGA Centre, Bartlett School of Planning, UCL

PhD candidate: **Caroline Fabianski**

PhD topic: Complex Partnership for the Delivery of Urban Mass Transit Systems: Does Culture matter for the Treatment of Risk and Uncertainty.

Abstract of PhD thesis: **T**he research consists of an international case study of three Urban Rail Infrastructure Projects (URIP); namely: the Meteor in Paris/France, the Jubilee Line Extension in London/UK and the Taksim 4Levent in Istanbul/Turkey. The research investigates the governance process of the URIP that is *how project members coordinate themselves - or do not - over the different phases to allow the project to go forward.* Such empirical enquiry aims at tempering the convergence of governance models across the world in light of the development of Public-Private Partnerships (PPPs), including (1) the possible implementation of "*best practices*" related to the treatment of risks and uncertainty, which typically characterize the delivery of URIP, and (2) the dissemination of standard form of procurement. Concurrently, the research departs from an acknowledgement of the diverse institutional structures, PPP arrangements and procurement choices used to deliver URIP across the world. To this extent, it challenges the notion of *"asset specificity"* as a driver of procurement choices. Going further, the research proposes Cultural Theory as an original perspective that breeds from anthropology in order to highlight the cultural character of URIP governance. The core of the thesis consists of an ethnographic account of the diverse conditions for URIP delivery. Faithful to Cultural Theory's premises it focuses on the treatment of risks and uncertainty in relation to different governance mechanisms, knowledge and learning, and other local conditions. In turn, such empirical research will feed current debates on Public-Private Partnership (PPP) as a cooperative mode of governance, giving prominence to actual practices and culture.

State of progress: September 2011

University and department of submission: School of Construction & Project Management, The Bartlett, UCL

Funding: OMEGA VREF funding provided through the OMEGA Centre, Bartlett School of Planning, UCL

USA

PhD candidate: Patrizia Nobbe

PhD topic: 'Public Decision-making on Infrastructure Investments: The Case of Transportation Mega-projects'

Abstract of PhD thesis: Transportation infrastructure investment has become known for obscure decision-making processes, often resulting in cost overruns and schedule delays of projects. Problem analysis in the literature usually concentrates on project management level analysis and leaves out significant exogenous political factors. I aim to close that gap by analysing the politics of mega-project decision-making. I will identify the relevant constellations of actors and interest groups, in their political context. I specifically ask what the relationship is between actors and context and how that variation can contribute to an understanding of infrastructure politics more generally. To examine the impact of political factors on decision-making I will use a database of approximately seventy transportation mega-projects, in addition to a few crucial single-case studies on the subject. My research will explore the unique nature of large scale decision-making, the specific political challenges mega-projects face, and how they are expressions of respective power relations in a given context.

State of progress: Data analysis. Proposed date of submission/university: August 2012

University and department of submission:, City University of New York, Centre for Urban Research, Graduate Center

Funding: OMEGA VREF funding provided through the Rudin Centre, Wagner School of Public Policy, NYU, plus own funding and support from the City University of New York

Appendix 9: OMEGA guidance papers

Case study data collection (including guidance from Complexity Interest Group & Cognitive Edge Pty)

- 'Hypothesis-led Research Questionnaire Design: Application of Cresswell principles to CTRL case study' prepared by Harry T. Dimitriou, OMEGA Centre Guidance Note, 4th June 2007 (CD ROM: OMEGA Guidance Notes\OMEGA2 Guidelines-Hypothesis-led Questionaire Design based on Cresswels Framework - Application to CTRL First Background Note HD 01-06-08.doc)
- Hypothesis-led Research Questionnaire Design: Principles and practices for the OMEGA MUTP research programme,' prepared by Harry T. Dimitriou, OMEGA Centre, OMEGA Centre Guidance Note, 15th November 2007
- Hypothesis-led Research Questionnaire for CTRL Pilot Study' prepared by Harry T. Dimitriou, OMEGA Centre Guidance Note, 2nd February 2008 (CD ROM: OMEGA Guidance Notes\OMEGA2 Guidelines - Hypothesis-led Research Questionnaire for CTRL Pilot Study HD 02-08.doc)
- 'Hypothesis-led Research Questionnaire Design: Application of Cresswell Principles to CTRL Case Study Follow-up Note', prepared by Harry T. Dimitriou, OMEGA Centre Guidance Note, 16th January 2008 (amended on 4th June 2008) (CD ROM: OMEGA Guidance Notes\OMEGA2 Guidelines- Hypothesis-led Questionaire Design - Application to CTRL Second Background Note HD 01-06-08.doc)

Case study data analysis (including guidance from Complexity Interest Group& Cognitive Edge Pty)

- 'Guidelines for Preparation of OMEGA Centre Case Study Project Templates' prepared by E. John Ward, OMEGA Centre Guidance Note, July 2007 (CD ROM: \OMEGA Guidance Notes\OMEGA2 Guidelines - Project Profile Template Preparation Guidelines JW 01-07-2007.doc)
- Quantitative Template Analysis: Suggested data extract for analysis and synthesis of OMEGA case studies' prepared by John Ward, OMEGA Centre Guidance Note, 6th March 2009 (CD ROM: OMEGA Guidance Notes\OMEGA2 Guidelines-Quantitative Project Profile Template Analysis Guidance Note to Partners JW 19-03-2009.doc)
- 'Guidelines for Pre-hypothesis-led Research: Recommended approach to data extraction and analysis', prepared by E. John Ward and Phil Wright, OMEGA Guidance Note, 24th June 2009 (CD ROM: OMEGA Guidance Notes\OMEGA2 Guidelines- Pre-Hypothesis Guidelines for Data input and analysis JW PW 9-2-09.doc)
- 'Hypothesis-led Research: Recommended Approach to Data Extraction and Analysis', prepared by Phil Wright and Harry T. Dimitriou, OMEGA Centre Guidance Note, 26th March 2009 (CD ROM: \OMEGA Guidance Notes\OMEGA2 Guidelines-Hypothesis-led Recommended Approach to Data Analysis Guidance Note PW-HD 27-3-09.doc)

Case study comparative analysis and synthesis stage (including guidance from GAMUT, University of Melbourne)

- 'The Sustainability Vision: What it means for transport and sustainable development stakeholders' prepared by Harry T. Dimitriou, OMEGA Centre Guidance Note, 16th January 2007 (CD ROM: OMEGA Guidance Notes\OMEGA2 Guidelines- The Sustainability Vision - Notes for Cognitive Edge Pre-hypothesis questionnaire design HD 16-01-07.doc)
- 'Towards Normative Criteria for the Assessment of MUTP Decision Making Under Risk, Uncertainty and Complexity and a Related Context Framework' prepared by Harry T. Dimitriou and E. John Ward, OMEGA Centre Guidance Note, July 2009 (Derived from Working Paper #4: OMEGA 1 Project, June 2008) (CD ROM: OMEGA Guidance

Notes\OMEGA2 Guidelines-Towards Normative Criteria for Assessment of MUTP decision-making Under RUC and Context Framework HD JW 15-07-09.doc)

- ''Response to Australian Team on OMEGA Project Methodology: Comparative research and hypothesis-led questions', prepared by Harry T. Dimitriou and Phil Wright, OMEGA Guidance Note, July 2008 (CD ROM: \OMEGA Guidance Notes\OMEGA2 Guidelines - Response to Australian Team on OMEGA Project Methodology - Comparative research and hypothesis-led questions HD PW 06-08.doc)
- 'Some Initial Thoughts on the Comparative Analysis and Synthesis of Case Study Findings and Questionnaire Returns' prepared by Harry T. Dimitriou and Phil Wright, OMEGA Guidance Note, 22nd December 2008 (CD ROM: OMEGA Guidance Notes\OMEGA2 Guidelines - Some Intial Thoughts on the Comparative Analysis and Synthesis of Case Study Findings HD 22-12-08.doc)
- 'Bergek et al's Analytical Framework of Functional Dynamics of Technological Innovation Systems: Proposal for application to mega transport projects as researched by the OMEGA Centre' prepared by Phil Wright and Harry T. Dimitriou, OMEGA Guidance Note, 19th March 2009 (CD ROM: OMEGA Guidance Notes\OMEGA2 Guidelines-Bergek et al Framework Proposal Developed for Application to OMEGA Project HD-PW 19-03-2009.doc)
- 'Distilling the Process Criteria: A response to OMEGA Centre normative criteria paper for assessment of risk, uncertainty and complexity' prepared by Nicholas Low, GAMUT, University of Melbourne, 31st July 2009 (DR ROM: OMEGA Guidance Notes\OMEGA2 Guidelines-Distilling the Process Criteria A response to OMEGA Centre NL 31-06-2009.doc)
- 'Normative Criteria for the Assessment of MUTPs in the 21st Century: Guidelines prepared for OMEGA Centre, UCL' prepared by Nicholas Low, GAMUT, University of Melbourne, 20th August 2009 (CR ROM: OMEGA Guidance Notes\OMEGA2 Guidelines-Normative Criteria for the Assessment of MUTPs in the 21st Century Guidelines prepared for OMEGA Centre NL 20-08-09.doc)
- 'Guidelines for Preparation of Country Synthesis Report' prepared by Phil Wright, OMEGA Centre Guidance Note, 6th July 2009 (CD ROM: OMEGA Guidance Notes\OMEGA2 Guidelines - Guidelines for the Preparation of the Country Synthesis Report PW 06-07-09.doc)
- 'OMEGA Project Methodology, Comparative Research and the Hypothesis Led Questions' Prepared by Nicholas Low, Carey Curtis and Sophie Sturup, GAMUT, University of Melbourne, 26th June 2008 (CD ROM: OMEGA Guidance Notes\OMEGA2 Guidelines - OMEGA Project Methodology, Comparative Research and the Hypothesis Led Questions NL CC SS 26-06-08.doc)
- 'Outline Methodology for Completion of OMEGA Research Programme with Emphasis on Methodology to Undertake the Comparative Analysis and Synthesis of Case Studies and Arrive at Derived Lessons and Guidelines for Stakeholders of MUTPs' prepared by Harry T. Dimitriou, OMEGA Guidance Note, 24th June 2009 (CD ROM: OMEGA Guidance Notes\OMEGA2 Guidelines- Further detailed Methodology of Synthesis up to 2010 for VREF_PW_HD_20-5-09.doc)

Appendix 10: OMEGA workshops and international conference

Workshop 1: London OMEGA Workshop in January 2007
Workshop programme (CD ROM: OMEGA Workshops\OMEGA Workshop 1 London - Programme.pdf)
Workshop attendees (CD ROM: OMEGA Workshops\OMEGA Workshop 1 London - Attendees.doc)

Workshop 2: Naples OMEGA Workshop in July 2007
Workshop programme (CD ROM: OMEGA Workshops\OMEGA Workshop 2 Naples - Programme.pdf)
Workshop attendees (CD ROM: \OMEGA Workshops\OMEGA Workshop 2 Naples - Attendees.doc)

Workshop 3: Volos OMEGA Workshop in May 2008
Workshop programme (CD ROM: OMEGA Workshops\OMEGA Workshop 3 Volos - Programme.pdf)

Workshop attendees (CD ROM: OMEGA Workshops\OMEGA Workshop 3 Volos - Attendees.doc)

Workshop 4: Lund OMEGA Workshop in April 2009
Workshop programme (CD ROM: OMEGA Workshops\OMEGA Workshop 4 Lund - Programme.doc)

Workshop attendees (CD ROM: OMEGA Workshops\Omega Workshop 4 Lund - Attendees.docx)

Workshop 5: Perth OMEGA Workshop in July 2011
Workshop programme (CD ROM: \OMEGA Workshops\OMEGA Workshop 5 Perth - Programme.doc)

Transcript of Key discussions (CD ROM: OMEGA Workshops\OMEGA Workshop 5 Perth - Workshop Transcription.doc)

Appendix 11: OMEGA UK seminar programme

Seminar Programme 2009
website: http://www.omegacentre.bartlett.ucl.ac.uk/outputs/seminar2009.php

Seminar Programme 2010
(CD ROM: OMEGA Seminar Series\OMEGA_SEMINARS 2010.pdf)

Seminar Programme 2011
(CD ROM: OMEGA Seminar Series\OMEGA_SEMINARS 2011.pdf)

Appendix 12: Supporting working papers on national MUTP backgrounds' (WP Series #1) and 'MUTP sustainable development challenges' (WP Series #2)

Omega WP#1Series - An Historical and Contemporary Overview of the Main Policy, Planning and Funding Contexts for the Planning and Delivery of Major Transportation Projects Since the Second World War.

- Urban Mega Transport Projects, Country Background: Australia - Nicholas Low and Sophie Sturup, Australasian Centre for Governance and Management of Urban Transport, **The University of Melbourne, Australia. (**CD ROM: OMEGA Research Working Papers\OMEGA2 - WP1\20090313_WP1_1.pdf**)**
- National Context Of Transport Public Policies In France: 1945-2007 - Geneviève Zembri, **UFR Lettres et Sciences Humaines,** Université de Cergy-Pontoise, France, and Elisabeth Campagnac, **Laboratoire Technique Territoires et Societes,** Ecole Nationales Ponts et Chaussees, France. (CD ROM : OMEGA Research Working Papers\OMEGA2 - WP1\20090313_WP1_2.pdf)
- Decision-Making for Mega-Urban Transport Infrastructure Projects: A German Case Study - Deike Peters, Center for Metropolitan Studies, Technical University, Berlin, Germany. (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP1\20090313_WP1_3.pdf)
- Infrastructures In Greece - Pantelis Skayannis and George Kaparos, **Department of Urban and Regional Development** University of Thessaly, Greece. (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP1\20090313_WP1_4.pdf)
- Planning, Managing and Financing Mega Urban Transport Projects in Hong Kong by the Public Sector and Public-Private Partnership - Mee Kam Ng and Frederik Pretorius, **Department of Real Estate and Construction**, The University of Hong Kong, Hong Kong. (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP1\20090313_WP1_5.pdf)
- The History and Background of The Planning, Policy and Funding Frameworks of Mega Urban Transport Projects in Japan Since the Second World War - Katsutoshi Ohta, **School of Regional Development Studies, Toyo University, Japan** and Yasunori Muromachi, Department of Built Environment, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, Japan. (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP1\20090313_WP1_6.pdf)
- Dutch Infrastructure Planning Context since the Second World War - Mendel Giezen, Institute for Metropolitan and International Development Studies, University of Amsterdam, Netherlands (CD ROM: \OMEGA Research Working Papers\OMEGA2 - WP1\20090313_WP1_7.pdf)
- Delivering Swedish Transport Infrastructure: Past and Present Policy, Planning and Financing **Issues** - Jamil Khan, **Department of Technology and Society,** Lund University, Sweden (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP1\20090313_WP1_8.pdf)OMEGA Research Working Papers\OMEGA2 - WP1\20090313_WP1_8.pdf
- The History and Background of the Planning, Policy and Funding Frameworks of Mega Urban Transport Projects in Great Britain Since the Second World War - Francis Terry, Bartlett School of Architecture, University College London, UK (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP1\20090313_WP1_9.pdf).
- Political Support and Financial Mechanisms for Urban Surface Transportation Mega-Projects Since World War II: The Case of the United States - Allison L. C. de Cerreño, NYU Wagner Rudin Center for Transportation Policy & Management, New York University, USA. (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP1\20090313_WP1_10.pdf)

Omega WP#2 Series - International Insights Into Selected Key Challenges Encountered by MUTPs When Pursuing Goals of Sustainable Development.

- Challenges of Sustainable Development: UMTP Risks to Ecosystem and Human Health **-** Nicholas Low, Australasian Centre for Governance and Management of Urban Transport, **The University of Melbourne, Australia.** (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP2\20090315_WP2_1.pdf)
- Transportation Planning In France And The Challenge Of Sustainable Development: Actors, Tools And Methods **-** Stéphanie LEHEIS, **Laboratoire Technique Territoires et Societes,** Ecole Nationales Ponts et Chaussees, France (CD ROM: OMEGA Research Working Papers/OMEGA2 - WP2/20090315_WP2_2.pdf**)**
- The spatial impact of mega transport projects and its sustainability dimensions **-** Matthias Kracht and Sébastien Munafò, Institute for Geographical Studies, Urban Studies, Free University of Berlin, Germany (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP2\20090315_WP2_3.pdf)
- The Challenge of Social Cohesion in MUTP Planning - Pantelis Skayannis and George Kaparos, **Department of Urban and Regional Development** University of Thessaly, Greece (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP2\20090315_WP2_4.pdf).
- **Mega Projects & Transport: The challenge of embedding sustainability in evaluating transport project viability** - Frederik Pretorius & Mee Kam Ng**,** Department of Real Estate and Construction**,** The University of Hong Kong, Hong Kong (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP2\20090315_WP2_5.pdf).
- **Mega Urban Public Transport Projects and Mitigaton Potential of Carbon Dioxide Emmisions -** Yasunori Muromachi, Department of Built Environment, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, Japan (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP2\20090315_WP2_6.pdf).
- **Coping with Complexity and Uncertainty in Mega Projects: Linking Strategic Choices and Operational Decision Making -** Luca Bertolini and Willem Salet, Institute for Metropolitan and International Development Studies, University of Amsterdam, Netherlands (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP2\20090315_WP2_7.pdf).
- **Background Paper On Energy And Transport -** Max Åhman, Lars J. Nilsson and Bengt Holmberg, Department of Technology and Society*,* Lund University*,* Sweden (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP2\20090315_WP2_8.pdf).
- **Globalization and Mega Transport Projects: Emerging trends and challenges -** Harry T. Dimitriou, OMEGA Centre, Bartlett School of Planning, University College London, UK (CR ROM: OMEGA Research Working Papers\OMEGA2 - WP2\20090315_WP2_9.pdf).
- **Urban Surface Transportation Mega-Projects: Institutional Complexities -** NYU Wagner Rudin Center for Transportation Policy & Management, New York University, USA (CD ROM: OMEGA Research Working Papers\OMEGA2 - WP2\20090315_WP2_10.pdf)

Appendix 13: Supporting working papers on OMEGA small project on the treatment of risk, uncertainty, complexity and context'

Working Paper #1: Concept clarification: Literature review of risk, uncertainty and complexity in decision-making and planning (CD ROM: OMEGA Research Working Papers\OMEGA1 - WP1to4\WorkingPaper1.pdf)

Edited by Harry T. Dimitriou and Richard S. Oades,
University College London

1. **Introduction**
   Richard S. Oades and Harry T. Dimitriou, University College London
2. **The Significance of Concepts of Uncertainty, Risk and Complexity in Decision-making and Planning**
   Richard S. Oades, University College London
3. **Strategic Planning Thought: Lessons from elsewhere**
   Harry T. Dimitriou, University College London
4. **Conclusions**
   Richard S. Oades and Harry T. Dimitriou, University College London

Working Paper #2: The Contemporary Treatment of Risk, Uncertainty and Complexity in Decision-making in Selected Disciplines (CD ROM: OMEGA Research Working Papers\OMEGA1 - WP1to4\WorkingPaper2.pdf)

Edited by Harry T. Dimitriou and Richard S. Oades, University College London

1. **Introduction**
   Richard S. Oades and Harry T. Dimitriou, University College London
2. **Strategy: Military planning under conditions of uncertainty, complexity and Risk**
   John Stone, Kings College London
3. **Earthquake Engineering and Seismic risk**
   Tiziana Rossetto, University College London
4. **The Treatment of Risk, Uncertainty and Complexity in Project Finance: A banker's perspective**
   Mark Lemmon, Hong Kong Shanghai Banking Corporation HSBC
5. **Complexity, Uncertainty and Risk-Taking in General Insurance and the Role of the Actuary**
   Lis Gibson, Deloitte and Touche LLP
6. **Agricultural Pests and Diseases: Complexity, uncertainty and risk**
   John Mumford, Imperial College London
7. **Scientific Uncertainty And Complexity in Public Health**
   Carlos Dora, Carolyn Vickers and Katherine Walker, World Health Organisation
8. **On the Complexity of Organizational Trust: A multi-level co-evolutionary perspective and guidelines for future research**
   Steven C. Currall, University College London and Andrew C. Inkpen, Thunderbird School of Global Management
9. **A New Kind of Competence: On avoiding mistakes in large organisations**
   Oliver Sparrow, The Challenge Network
10. **Naturalising Knowledge Management**
    David Snowden, Cognitive Edge Pty
11. **Treatment of Risk, Uncertainty and Complexity in Decision-making in Various Disciplines and Professions: A summary and synthesis**
    Richard S. Oades and Harry T. Dimitriou, University College London

Working Paper #3: The Treatment of Risk, Uncertainty and Complexity in Transport, Regional and City Planning and Urban Development (CD ROM: OMEGA Research Working Papers\OMEGA1 - WP1to4\WorkingPaper3.pdf)

Edited by Harry T. Dimitriou and Richard S. Oades, University College London

1. **Introduction**
   Richard S. Oades and Harry T. Dimitriou, University College London
2. **Complexity and Emergence in City Systems: Implications for urban planning**
   Michael Batty, University College London
3. **Strategic Thought and Regional Planning: The importance of context**
   Harry T. Dimitriou and Robin Thompson, University College London
4. **Managing Risk on a Hypermobile World**
   John.Adams, University College London
5. **Great Planning Disasters: What lessons do they hold?**
   Peter Hall, University College London
6. **Risk, Uncertainty and Complexity in Construction and Civil Engineering Projects**
   John M. Kelsey, University College London
7. **The Property Sector Approach to Major Projects: Risk, uncertainty and complexity**
   Keith Perry, Asset Factor Ltd.
8. **Past and Contemporary Treatment of Risk, Uncertainty and Complexity in Transport, Regional and City Planning and Urban Development: A summary and synthesis**
   Harry T. Dimitriou and Richard S. Oades, University College London

Working Paper #4: Generic Lessons For Improving The Treatment Of Risk, Uncertainty And Complexity in The Planning Of Mega Urban Transport Projects (CD ROM: OMEGA Research Working Papers\OMEGA1 - WP1to4\WorkingPaper4.pdf)

Harry T. Dimitriou, Richard S. Oades, John Ward and Philip Wright, University College London

1. **Introduction**
2. **Key concepts, ideas, issues and methods**
3. **Advancing the future of MUTP planning practices**
4. **Transferable lessons for MUTPs**
5. **Conclusions**

Appendix 14: OMEGA publications and conference papers

Harry Dimitriou - Publications

Dimitriou, H.T. (2006). 'Urban Mobility and Sustainability and the Power of Context in Asia'. *Transportation Research Record: Journal of Transportation Research Board of the National Academies, Washington D.C.*, 140-150. ISSN: 0361-1981

Dimitriou, H. (2007), Strategic Planning Thought: Lessons from elsewhere. Chapter 4 in H.T. Dimitriou and R. Thompson (ed.) *Strategic Planning for Regional Development in the UK: A review of principles and practices*. Built Environment Series. London: Routledge, 1st edition

Dimitriou, H.T., Thompson, R. (2007), Strategic Thought and Regional Planning: The importance of context. Chapter 5 in Dimitriou, H.T., Thompson, R. (ed.) *Strategic Planning for Regional Development in the UK: A review of principles and practices*. Built Environment Series. London: Routledge, 1st edition

Dimitriou, H.T., Thompson, R. (ed.) (2007), *Strategic Planning for Regional Development in the UK: A review of principles and practices,* Built Environment Series. Series edited by John Glasson. London: Routledge, 1st edition

Dimitriou, H.T. and Gakenheimer, R. (2010) *Urban Transport in the Developing World: Perspectives from the first decade of the new millennium,* edited by, Edward Elgar, Cheltenham, (manuscript completed ready for submission)

Dimitriou, H.T. 'Transport and City Development: Understanding the fundamentals' in *Urban Transport in the Developing World: Perspectives from the first decade of the new millennium,* edited by Harry T. Dimitriou and Ralph Gakenheimer, Edward Elgar, Cheltenham, (manuscript completed ready for submission)

Dimitriou, H.T., (2010) 'Mega Transport Projects, Globalization and Private Finance: 21st Century emerging trends and major challenge' *Progress in Planning Journal*, Elsevier (in preparation)

Dimitriou, H.T., R. Harman, and E. J. Ward (2010) "*Incorporating Principles of Sustainable Development within the Design and Delivery of Major Projects: An International study with particular reference to Major Infrastructure Projects for the Institution of Civil Engineers and the Actuarial Profession: Final Report*"Prepared by the OMEGA Centre for the Institution of Civil Engineers and the Actuarial Profession

Dimitriou, H.T. (2011) 'Transport and City Development: Understanding the fundamentals' in *Urban Transport in the Developing World: Perspectives from the first decade of the new millennium"* edited by Harry T. Dimitriou and Ralph Gakenheimer, Edward Elgar, Cheltenham

Harry Dimitriou - Conf. Proceedings

Dimitriou, H.T. (2006). 'Mega Transport Projects and City and Regional Development in a Globalizing World: The case for Decentralised Cooperation'. *CODATU X11 Conference, 5th July, Lyon, France*

Dimitriou, H. T. (2007), "Planning mega transport projects: emerging lessons & challenges for China" CPN China Planning Network, 1st Transportation Congress, Beijing, 2-4th Aug,

Dimitriou, H. T. (2007), "Urban Public Transport & Economic Development" VREF TRIPP Workshop, April, Agra/Delhi, India

Dimitriou, H. T. (2007), "Strategic Planning Thought, Risk and Uncertainty, Lesson from elsewhere" Track 1.7, Risk as concept shift: implications on theory and practice AESOP, July, Naples, Italy.

Dimitriou, H. T. (2007), "Globalization and mega-transport projects. Emerging trends and challenges" Track 10.1, The challenges of Mega Urban Transport Projects: international views, AESOP, July, Naples, Italy.

Dimitriou, H. T. (2009), "Mega Transport Projects, Globalization and Private Finance: 21st Century emerging trends and major challenges" International Conference on Infrastructure Systems, Chennai, India

Dimitriou, H. T. (2009), "Globalization, Mega Transport Projects and Private Finance" 4th International Conference on Future Urban Transport Cities, Mobility and Accessibility, Göteborg, June

Dimitriou, H. T., E. J. Ward and P. Wright (2011) "Omega Project 2: Uk Case Studies – Some Key Lessons", VREF Workshop, Nairobi, Kenya.

Dimitriou, H. T., P. Wright and E. J. Ward (2011) "Key Determinants of Decision-making in the Planning, Appraisal and Delivery of Mega Urban Transport Project (MUTP): Some UK observations and lessons", Aesop 2011, Perth, Australia.

Dimitriou, H. T., P. Wright and E. J. Ward (2011) "Introduction: The International Omega Research Programme On Mega Urban Transport Decision Making And Planning", Aesop 2011, Perth, Australia.

Harry Dimitriou - OMEGA Workshop Proceedings

Dimitriou, H. T. (2007), 'Presentation of CoE Research Programme Overall Methodology" OMEGA Workshop I, RIBA, London.

Dimitriou, H. T. (2007), 'The Anatomy of the CTRL Pilot Project Study" OMEGA Workshop I, RIBA, London.

Dimitriou, H. T. (2007), 'Summary of Project Tasks and Project Logistics to be Completed by the Centre - Stage 1b" OMEGA Workshop I, RIBA, London.

Dimitriou, H. T. (2007), 'Structure and Contect of Working Papers and Hypothesis-led Questionnaire Design" OMEGA Workshop I, RIBA, London.

Dimitriou, H. T. (2007), 'Project Logistics and Summary of Tasks to be completed in Stage 2" OMEGA Workshop I, RIBA, London.

Dimitriou, H. T. (2007), 'Presentation of Overall Methodology" OMEGA Workshop II, Naples, Italy.

Dimitriou, H. T. (2007), 'Principles of Hypothesis-led Questionaire Design and Execution" OMEGA Workshop II, Naples, Italy.

Dimitriou, H. T. (2008). "Overview of Vref Coe Project: Major Activity Schedules, deliverables and Costs" OMEGA Workshop III, Athens/Volos, Greece.

Dimitriou, H. T. (2008). "Overview of hypothesis-led questionnaire design for CTRL pilot study" OMEGA Workshop III, Athens/Volos, Greece.

Dimitriou, H. T. (2008). "VREF Mid-Term Review and Logistics for Next 12 mths" OMEGA Workshop III, Athens/Volos, Greece.

Dimitriou, H. T. & P. Wright (2009). "Proposed Framework for Analysis and Synthesis of Case Study Findings: Based on Functional Dynamics of Innovation Systems Approach" OMEGA Workshop IV, Lund, Sweden

Dimitriou, H. T. & N. Low (2009). "Case Study Analysis and the '4 Tests' Test 2 – Sustainable Development Visions, Challenges & Issues" OMEGA Workshop IV, Lund, Sweden

Dimitriou, H. T. & P. Wright (2009). "Case Study Analysis and the '4 Tests' Test 4 – Synthesis of Tests 1-3" OMEGA Workshop IV, Lund, Sweden

Dimitriou, H. T. (2011). "Introductory Session" OMEGA Workshop V, Perth, Australia

Dimitriou, H. T. (2011). "Dissemination and Making a Difference Strategy" OMEGA Workshop V, Perth, Australia

Harry Dimitriou - OMEGA Work Dissemination

Dimitriou, H. T. (2007), "VREF CoE OMEGA Presentation" Royal Town Planning Institute (RTPI), London,

Dimitriou, H. T. (2007), "VREF CoE OMEGA Presentation" to Beijing VREF Centre of Excellence

Dimitriou, H. T. (2007), "VREF CoE OMEGA Presentation" to members of Risk Analysis and Management for Projects (RAMP), Institute of Civil Engineers, London

Dimitriou, H. T. & Ward, J. & Wright, P. (2009), "A Critical Examination of Forces that Mould the Planning of Mega Urban Transport Projects (MUTPs): Preliminary findings of an

international study" Royal Town Planning Institute, International Development Network, RTPI, London
Dimitriou, H. T., Ward, J. & Wright, P. (2009) "A Critical Examination of Forces that Mould the Planning of Mega Urban Transport Projects (MUTPs): Preliminary findings of an international study" The Olympic Development Agency
Dimitriou, H. T., Ward, J. & Wright, P. (2009) "A Critical Examination of Forces that Mould the Planning of Mega Urban Transport Projects (MUTPs): Preliminary findings of an international study" Transport for London, London
Dimitriou, H.T. (2009) "Building Big: A Critical Examination of the Planning of Mega Urban Transportation Projects", Wagner School of Public Policy, New York University, New York
Dimitriou, H.T., Ward, J. & Wright, P. (2011) Appraising Major Projects to meet the Environmental and Social Dimensions of Sustainability using Multiple Criteria Analysis, UCL Infrastructure Planning and Delivery Seminar, London.
Ward, E. J., H. T. Dimitriou and R. Harman (2011) Appraising Major Projects to meet the Environmental and Social Dimensions of Sustainability using Multiple Criteria Analysis, UCL Infrastructure Planning and Delivery Seminar, London.
Dimitriou, H.T., Ward, J. (2011) "Treatment of Complexity, Uncertainty and Risk-taking in the Planning of Mega Urban Transport Infrastructure Projects: Lessons drawn from professions where these aspects have long been in the millieu of decision making and planning;": Complex Projects: Legal Risk Management, Contracts and Insurance, SAMRISK SEMINAR OSLO, Norway
Dimitriou, H.T., Ward, J. & Wright, P. (2011) "Decision Making in the Planning, Appraisal and Delivery of Mega Urban Transport Projects (MUTPs) : Lessons from three UK case studies and an international Comparative Study of MUTPs": Complex Projects: Legal Risk Management, Contracts and Insurance, SAMRISK SEMINAR OSLO, Norway

Richard Oades - Conf. Proceedings

Oades, R. and Dimitriou, H. T. (2006). "Improving the Treatment of Complexity, Uncertainty and Risk-taking in the Planning of Urban Mega Transport Projects: some initial research findings" The 3rd Conference on Future Urban Transport, Gothenburg, Sweden 2nd-5th April/ International Planning Research Bartlett School of Planning Conference, 7th-9th April, UCL, London
Oades, R. (2007), "Uncertainty, Risk and Complexity in decision-making and planning a MegaTransport Project: the Channel Tunnel Rail Link, UK" Track 10.2, Mega Urban Transport Projects and case studies, AESOP, Naples, Italy.
Oades, R. (2008). "Improving the treatment of complexity, uncertainty and risk-taking in the planning of Urban Mega Transport Projects" OMEGA Workshop III, Athens/Volos, Greece.

Philip Wright- Conf. and Seminar Proceedings

Wright, P. (2007), "The Use of Pre-Hypothesis Based Information Gathering: Channel Tunnel Rail Link Case Study (CTRL)" Track 10.2, Mega Urban Transport Projects and case studies, AESOP, Naples
Wright, P. & H. Dimitriou (2009). "Approach to 'SenseMaking the Narrative' of Hypothesis-led Reports on the Planning and Appraisal of the Channel Tunnel Rail Link" 4th International Conference On Future Urban Transport Cities, Mobility And Accessibility, Göteborg, June,
Dimitriou, H. T., P. Wright and J.Ward (2009) "A Critical Examination of Forces that Mould the Planning of Mega Urban Transport Projects (MUTPs): Preliminary findings of an international study" Presentation to Royal Town Planning Institute (RTPI) June, London
Dimitriou, H. T., E. J. Ward and P. Wright (2011) "Omega Project 2: Uk Case Studies – Some Key Lessons", VREF Workshop, Nairobi, Kenya.
Wright, P. & H.T. Dimitriou, (2011) "What Constitutes a 'Successful' Mega Urban Transport Project (MUTP): Some Findings from the UK", Aesop 2011, Perth, Australia.

Philip Wright- OMEGA Workshop Proceedings

Wright, P. (2007), 'CTRL Pre-Hypothesis Approach & Findings" OMEGA Workshop II, Naples, Italy.

Wright, P. (2007), 'CTRL Project Characteristics" OMEGA Workshop I, RIBA, London.

Wright, P. (2007), 'Presentation of Case Study Methodology" OMEGA Workshop II, Naples, Italy.

Wright, P. (2008). "CTRL Case Study – Pre-Hypothesis Research Experiences" OMEGA Workshop III, Athens/Volos, Greece.

Wright, P. (2008). Presentation of Terry, F. "National Policy, Planning and Funding Frameworks for Delivery of MUTPs: A synthesis of findings from Working Paper #1 Series" OMEGA Workshop III, Athens/Volos, Greece.

Wright, P. (2008). "Analysis of the Channel Tunnel Rail Link Case Study - 'High Speed 1'" OMEGA Workshop III, Athens/Volos, Greece.

Wright, P. (2009). "Case Study Analysis and the '4 Tests' Test 1 – Project Objectives" OMEGA Workshop IV, Lund, Sweden

Wright, P. (2009). "The Development of a Generic Framework for the Synthesis of Findings in Test 4" OMEGA Workshop IV, Lund, Sweden

Wright, P. (2011). "Responses to ORQs and ORHs" OMEGA Workshop V, Perth, Australia

Wright, P. (2011). "Principal Generic and Context Specific Lessons" OMEGA Workshop V, Perth, Australia

Kallia Pediaditi

Pediaditi, K. (2008). "Sustainable Development of MUTP a synthesis framework of a non-transport expert" OMEGA Workshop III, Athens/Volos, Greece.

Varina Delrieu

Delrieu, V. (2007), 'Project Spatial Context Analysis" OMEGA Workshop I, RIBA, London.

Delrieu, V. (2007), 'PhD Progress Update" Bartlett School of Planning, UCL, London.

Caroline Fabianski - Conf. Proceedings

Fabianski, C. (2006). 'Transformation des transports collectifs d'Istanbul : vers un système de transport de masse" *CODATU X11 Conference, 5th July, Lyon, France*

Fabianski, C. (2007), 'Observatoire urbain d'Istanbul, France-Turquie, Istanbul, organisation des transports et politiques urbaines' Sixièmes rencontres francophones Est-Ouest de socio-économie des transports, La ville et les transports, Tourisme et de la Mer, et Programme national de recherché, Paris, France, Université technique nationale d'Athènes Athènes, Grèce)

Fabianski, C. (2007), "Exposé sur l'expérience d'Istanbul," Séminaire sur le transport urbain artisanal, bilan et perspectives d'un secteur en discussion récurrente, INRETS, Aix-en Provence, France.

Fabianski, C. (2007), 'Pre-project appraisal in Istanbul and London" AESOP 2007, Track 10.3, Transport, social cohesion and economic development, Naples, Italy.

Caroline Fabianski - OMEGA Work Dissemination

Fabianski, C. (2007), 'PhD Progress Update" Bartlett School of Planning, UCL, London.

Yen-ning Tseng - Conf. Proceedings

Tseng, Y. (2007), "Power values between organisations delivering mega transport projects, sustainable development, urban regeneration and international mega events" Track 10.2 Mega Urban Transport Projects and case studies, AESOP, Naples, Italy.

Yen-ning Tseng - OMEGA Workshop Proceedings

Tseng, Y. (2007), 'Project Stakeholder Analysis" OMEGA Workshop I, RIBA, London.

Yen-ning Tseng - OMEGA Work Dissemination

Tseng, Y. (2007), 'PhD Progress Update" Bartlett School of Planning, UCL, London.

Tseng, Y. (2008), 'The comparison of Grounded Theory and Narrative Pattern Analysis" Bartlett School of Planning, UCL, London.

John Ward - Conference Proceedings

Ward, J. & P. Wright (2009). "Sense-making the Narrative' of Pre-hypothesis Reports on the Planning and Appraisal of Mega Transport Projects: The Case of the Channel Tunnel Rail Link" 4th International Conference On Future Urban Transport Cities, Mobility And Accessibility, Göteborg, June,

Ward, E. J. and P. Wright (2009). "Sense-making the Narrative' of Pre-hypothesis Reports on the Planning and Appraisal of Mega Transport Projects: The Case of the Channel Tunnel Rail Link" 4th International Conference on Future Urban Transport Cities, Mobility And Accessibility, Göteborg, Sweden.

Ward, E. J. (2010) "Critical Examination Of The Planning Of Mega Urban Transportation Projects (MUTP) - What Lessons From The Channel Tunnel Rail Link?" World Conference on Transport Research, Lisboa, Portugal.

Ward, E. J. (2010) "Comparative International Approaches to MUTP Planning, Appraisal and Delivery - Preliminary Findings from 30 International Case Studies" VREF CoE Workshop 15th December 2010
Nairobi, Kenya.

Dimitriou, H.T. R. Harman and E.J. Ward (2011) The OMEGA Ramp Study on Sustainable Development in Infrastructure: Appraising mega projects to meet the environmental and social dimensions of sustainability, Infrastructure Journal, London

Ward, E. J., H. T. Dimitriou and R. Harman (2011) Appraising Major Projects to meet the Environmental and Social Dimensions of Sustainability using Multiple Criteria Analysis, UCL Infrastructure Planning and Delivery Seminar, London.

Ward, E. J. and J. Taylor (2011) "Toward Development of Indicators of What Constitutes a 'Successful' Mega Urban Transport Project (MUTP): International findings from thirty case studies" Aesop 2011, Perth, Australia.

H. T. Dimitriou, P. Wright and E. J. Ward (2011) "Key Determinants of Decision-making in the Planning, Appraisal and Delivery of Mega Urban Transport Project (MUTP): Some UK observations and lessons", Aesop 2011, Perth, Australia.

John Ward - Workshop Proceedings and invited talks

Ward, J. (2007), 'Data Collection and Management" OMEGA Workshop I, RIBA, London.

Ward, J. (2007), 'OMEGA Case Study Template and Moodle" OMEGA Workshop II, Naples, Italy.

Ward, J. (2007), 'UK presentation of National Background to MUTPs" OMEGA Workshop II, Naples, Italy.

Ward, J. (2008). "OMEGA Project 1: WP2 & WP3 Comparative Analysis and Relevance for OMEGA Project 2" OMEGA Workshop III, Athens/Volos, Greece.

Ward, J. (2009). "Case Study Analysis and the '4 Tests' Test 3 – Treatment of Risk, uncertainty, Complexity and Context in Decision Making " OMEGA Workshop IV, Lund, Sweden

Ward, J. (2009). "Partner Feedback on Main Findings From 1st Case Study - CTRL" OMEGA Workshop IV, Lund, Sweden

Ward, J. (2009). "VREF Dissemination Matrix – Making a Difference" OMEGA Workshop IV, Lund, Sweden

Harman, R. & Ward, E.J. (2010, "Multi-criteria Analysis in the Planning and Appraisal of Mega Infrastructure Projects" OMEGA Seminar Series 2011, Bartlett School of Planning, UCL.

Ward, E.J. (2010) “Building Big, A Critical Examination of the Planning of Mega Urban Transport Projects: What Lessons Can We Learn?” Territorial Dynamics, Urban Quality, Investments and the Property Market, Conference, Politecnico De Milano, Friday 28th May
Ward, E. J. (2011). “Principal Typological Influences ” OMEGA Workshop V, Perth, Australia

Francis Terry

Terry, F. (2007) “The History and Background of the Planning, Policy and Funding Frameworks of Mega Urban Transport Projects in Great Britain Since the Second World War” OMEGA Working Paper #1 series
Terry, F. (2008) “National Policy, Planning and Funding Frameworks for Delivery of MUTPs: A synthesis of findings from Working Paper #1 Series” Omega Working Paper #1 Series

Cognitive Edge - OMEGA Workshop Proceedings

Darwent, S. (2007), ‘Introduction to pre-hypothesis research and narrative pattern analysis: Part I & Part II” OMEGA Workshop I, RIBA, London.
Darwent, S. (2007), ‘Illustrative demonstration of Sense-Maker suite: collector, explorer and indexer” OMEGA Workshop I, RIBA, London.
Darwent, S. (2007), ‘Narrative pattern analysis - indexes, trends and outliers: Part I & Part II” OMEGA Workshop I, RIBA, London.
Darwent, S. (2007), ‘A walk through the UK CTRL project” OMEGA Workshop I, RIBA, London.
Darwent, S. 2007). ‘Principles and Practice of pre-hypothesis research” OMEGA Workshop II, Naples, Italy.
Darwent, S. (2007), ‘Planning a pre-hypothesis based project. Lessons learnt from CTRL” OMEGA Workshop II, Naples, Italy.
Darwent, S. (2007), ‘Naïve Interviewing Case Study” OMEGA Workshop II, Naples, Italy.
Darwent, S. (2007), ‘Prompting question design and test” OMEGA Workshop II, Naples, Italy.
Darwent, S. (2007), ‘Refining the indexes and filters using the pilot data to test - deriving themes, cultural indices and archetypes” OMEGA Workshop II, Naples, Italy.
Darwent, S. (2007), ‘Making sense of the data - Using SenseMaker Explorer - Demonstration” OMEGA Workshop II, Naples, Italy.
Darwent, S. (2007), ‘Using SenseMaker Explorer - outliers, correlations and insights - pratice” OMEGA Workshop II, Naples, Italy.
Darwent, S. (2007), ‘Project planning - Engagement strategies, resourcing and invitations” OMEGA Workshop II, Naples, Italy.
Darwent, S. (2007), ‘Monitoring and Governance - sharing data, reporting results, refining indexes, agreed collaboration” OMEGA Workshop II, Naples, Italy.
Snowden, D. (2008), “Pre-hypothesis indexing and Sense Making” OMEGA Workshop III, Athens/Volos, Greece.
Snowden, D. (2008), “Illustrative demonstration of Sense Maker Suite” OMEGA Workshop III, Athens/Volos, Greece.
Snowden, D. (2008), “Commentary on Cynefin Framework” OMEGA Workshop III, Athens/Volos, Greece.

France

Campagnac, E. (2007), ‘France Part 1: Transport Policy in France” OMEGA Workshop I, RIBA, London.
Leheis, S. (2007), ‘France Part 2: Presentation of the French Case Studies” OMEGA Workshop I, RIBA, London.

Zembri-Mary, G. (2007), 'French presentation of National Background to MUTPs" OMEGA Workshop II, Naples, Italy.
Leheis, S. (2007), "Transportation Planning in France and the challenge of sustainable development: actors, tools and methods" Track 10.1 The challenges of Mega Urban Transport Projects: international views, AESOP 2007, Naples, Italy.
Leheis, S. (2007), "Transportation Planning in France and the challenge of sustainable development: actors, tools and methods" OMEGA Working Paper #2 Series, OMEGA Centre, UCL, London.
Zembri-Mary, G. (2008), 'National Context Of Transport Public Policies In France : 1945-2007' OMEGA Working Paper #1 Series, OMEGA Centre, UCL, London.
Leheis, S. and Campagnac, E. (2008). "Pilot study case – France L2, Marseille" OMEGA Workshop III, Athens/Volos, Greece.
Leheis, S. (2009) "High-speed train planning in France, lessons from Mediterranean TGV-line**."** International Conference on Urban, Regional Planning and Transportation. Special Session: Transport Governance (Prof. Nicholas LOW)
Campagnac, E (2010) "*The Millau Viaduct*" Proceedings of World Conference on Transport Research 2010, Lisbon, Portugal

Germany

Hesse, M. (2007), ' Presentation of the German MUTP Case Studies" OMEGA Workshop I, RIBA, London.
Peters, D. (2007), 'German presentation of National Background to MUTPs" OMEGA Workshop II, Naples, Italy.
Peters, D. (2007), 'German Presentation of Sustainable Development Challenges" OMEGA Workshop II, Naples, Italy.
Peters, D. (2007), 'Decision-Making for Mega-Urban Transport Infrastructure Projects: A German Case Study' OMEGA Working Paper #1 Series, OMEGA Centre, UCL, London.
Kracht, M. and Munafo, S. (2008), 'The spatial impact of mega transport projects and its sustainability dimensions' OMEGA Working Paper #2 Series, OMEGA Centre, UCL, London.
Peters, D. (2008), 'Rail stations: nodes of the network city' Paper presentation, AAG 2008, Boston
Hesse, M. (2008), 'Cities, flows and the geography of spatial interaction. A typology of urban places" Paper presentation, AAG 2008, Boston
Peters, D. (2008), 'Digging Through the Heart of Reunified Berlin: Unbundling the Story of the Tiergarten Tunnel Mega-Project' Accepted refereed paper, IEEE Infrastructure Conference, Rotterdam
Kracht, M. (2008). "Pilot Case Study Germany -Tiergarten-Tunnel Berlin" OMEGA Workshop III, Athens/Volos, Greece.
Peters, D. (2008), "The Urban Renaissance Potential of Inner-City Rail Station Redevelopment Mega-Projects" AAG2008, Boston
Kracht, Braun et al (2010) Session on Urban Transport, AAG, American Association of Geographers

Greece

Skyannis, P. and Kaparos, G. (2007), ' Presentation of the Greek MUTP Case Studies" OMEGA Workshop I, RIBA, London.
Skyannis, P. (2007), 'Greek presentation of National Background to MUTPs" OMEGA Workshop II, Naples, Italy.
Kaparos, G. and Skyannis, P. (2007), "Mega-Urban-Transport-Projects' response to the vision of sustainable development: The challenge of social cohesion" Track 10.1 The challenges of Mega Urban Transport Projects: international views, AESOP 2007, Naples, Italy.
Skyannis, P. and Kaparos, G. (2007), "The Infrastructures In Greece" OMEGA Working Paper #1 Series

Kaparos, G. and Skyannis, P. (2007),The Challenge of Social Cohesion in MUTPs' Planning" OMEGA Working Paper #2 Series
Kaparos, G (2007), "Protecting the public interest in Public Private Partnerships for the delivery of Mega Transport Projects: the case of Athens Ring Road" ASCP – AESOP 4th Joint Congress, July 6-11, 2008 Chicago
Deloukas, A. (2008) "The Athens Metro" OMEGA Workshop III, Athens/Volos, Greece.
Zekkos, K. (2008) "Athens and it's Mega Projects" OMEGA Workshop III, Athens/Volos, Greece.
Stavridis, C. (2008) "Funding the Athens Ring Road" OMEGA Workshop III, Athens/Volos, Greece.
Kaparos, G. (2008). "The Case of Athens Ring Road Project Data & Pre – Hypothesis Research" OMEGA Workshop III, Athens/Volos, Greece.
Kaparos, G. (2010) "*Analysing the case of Rion-Antirrion bridge through the lenses of a redefined notion of MUTP success: visions and challenges*" Proceedings of World Conference on Transport Research 2010, Lisbon, Portugal

The Netherlands

Salet, W. (2007), 'Presentation of the Dutch Case MUTP Studies" OMEGA Workshop I, RIBA, London.
Giezen, M. (2007), 'Dutch presentation of National Background to MUTPs" OMEGA Workshop II, Naples, Italy.
Bertolini, L. and Salet, W. (2007), "Coping with complexity in mega projects: linking strategic choices and operational decision making" Track 10.1 The challenges of Mega Urban Transport Projects: international views, AESOP 2007, Naples, Italy.
Giezen, M. (2007), "Dutch Infrastructure Planning Context since the Second World War" OMEGA Working Paper #1 Series
Bertolini, L. and Salet, W. (2007), "Coping with complexity in mega projects: linking strategic choices and operational decision making" OMEGA Working Paper #2 Series.
Giezen, M. (2008). "Pre-hypothesis phase - The Netherlands" OMEGA Workshop III, Athens/Volos, Greece.
Bertolini, L. and Salet, W. (2007), "*Coping with complexity in mega projects: linking strategic choices and operational decision making*" Track 10.1 The challenges of Mega Urban Transport Projects: international views, AESOP 2007, Naples, Italy.

Sweden

Khan, J. (2007), 'Presentation of the Swedish MUTP Case Studies" OMEGA Workshop I, RIBA, London.
Holmberg, B. (2007), 'Swedish presentation of National Background to MUTPs" OMEGA Workshop II, Naples, Italy.
Khan, J. (2007), 'Swedish Presentation of Sustainable Development Challenges" OMEGA Workshop II, Naples, Italy.
Pettersson, F. (2007), "Delivering Swedish transport infrastructure - past and present policy, planning and financing issues" OMEGA Working Paper #1 Series
Ng, M.K. and R. Lo (2007), Planning, Managing and Financing the Development Process: A Course Handbook, 100 pages, unpublished teaching materials.
Pettersson, F. (2008). "The Öresund link" OMEGA Workshop III, Athens/Volos, Greece.
Pettersson, F. (2009). "Infrastructure planning in the Öresund region, a discourse theoretical approach to sustainability and governance" ICURPT 2009, (International Conference on Urban, Regional Planning and Transportation) Paris, June 24-26
Pettersson, F. (2010) "Swedish Megaprojects and 21st century challenges: research findings from three case studies" Proceedings of World Conference on Transport Research 2010, Lisbon, Portugal

Hong Kong

Pretorius, F. (2007), 'Presentation of the Hong Kong MUTP Case Studies" OMEGA Workshop I, RIBA, London.
Ng, M.K. and R. Lo (2007), Planning, Managing and Financing the Development Process: A Course Handbook, 100 pages, unpublished teaching materials.
Ng, M.K. (2008), "From government to governance? Politics of planning in the first decade of the Hong Kong Special Administrative Region," Planning Theory and Practice, Vol.9, No.2, pp.165-185.
Ng, M.K. (2007), "Governance for sustainability in East Asian global cities: an exploratory study," in Ng, M.K. (guest editor), Special Issue on Sustainable Development in Asian World Cities, Journal of Comparative Policy Analysis, Vol.9, Issue 4, pp.351-381.
Ng, M.K. (2007), "Sustainable development and governance in East Asian world cities," in Ng, M.K. (guest editor), Special Issue on Sustainable Development in Asian World Cities, Journal of Comparative Policy Analysis, Vol.9, Issue 4, pp.321-335.
Ng, M.K. (2007), "Outmoded planning in the face of new politics," in Cheng, J. (ed.) (2007), HKSAR in its First Decade, Hong Kong: City University Press, pp.591-629.
Ng, M.K. (2007), "Planning for the world city," in Yeung, Y.M. (ed.) (2007), The First Decade: Hong Kong SAR in Introspective and Retrospective Perspectives, Hong Kong; The Chinese University Press, pp.297-319 (with Lee, J.W.Y.)
Ng, M.K. (2007), "Planning, Managing and Financing Mega Urban Transport Projects in Hong Kong by the Public Sector and Public-Private Partnership," paper presented at UCL OMEGA Centre Workshop, Faculty of Architecture, 36 Via Forno Vecchio, 80134, Naples, 9th to 11th July 2007 (with Frederik Pretorious).
Ng, M.K. (2007), "MegaProjects and Transport: The Challenge of Embedding Sustainability in Evaluating Transport Project Viability," paper presented at UCL OMEGA Centre Workshop, Faculty of Architecture, 36 Via Forno Vecchio, 80134, Naples, 9th to 11th July 2007 (with Frederik Pretorious).
Ng, M K and Pretorius, F, 2007, Planning, Managing and Financing Mega Urban Transport Projects in Hong Kong by the Public Sector and Public-Private Partnership. Omega Centre Working Paper, July 2007.
Pretorius, F., McInnes, A. & Bate, A., (2007), Public-Private Partnerships: The London Underground, Asia Case Research Centre, Ref: 07/334C, School of Business, The University of Hong Kong.
Lejot, P, Pretorius, F. & Loo, G., (2007),Politics, Institutions and Project Finance: The Dabhol Power Project, Asia Case Research Centre, Ref: 07/335C, School of Business, The University of Hong Kong.
Pretorius, F. & Ho, M., (2007),Refinancing the Western Harbour Crossing, Hong Kong, Asia Case Research Centre, Ref: 07/331C, School of Business, The University of Hong Kong.
Pretorius, F. & Ho, M., (2007),Infrastructure Finance: The Sydney Cross City Tunnel, Asia Case Research Centre, Ref: 07/324C, School of Business, The University of Hong Kong.
Chau, K. W., Wong, S. K., Yiu, Y., Tse, M. K. S. and Pretorius, F., 2008, Do land auction prices contain future real estate price information? Temporal and Spatial Analyses, Paper presented at the 2008 Asian Pacific Real Estate Research Symposium Beijing, July 10-12.
Arner, D., Hsu, B., Lou, J., Pretorius, F. and Zhou, Z., 2008, Legal Issues on the Supply of Construction Land for the 2008 Olympic Games in Beijing, Paper presented at the Shanghai University of Finance and Economics Workshop on Project Finance Arrangements at the Beijing Olympics and Shanghai Expo, May 2008.
Arner, D., Hsu, B., Li, X., Lou, J., Pretorius, F. and Zhou, Z., 2008, The Shanghai Expo Land Securitization: A Review of Legal Issues, Paper presented at the Shanghai University of Finance and Economics Workshop on Project Finance Arrangements at the Beijing Olympics and Shanghai Expo, May 2008.
Pretorius, F. & Ng, M.K., (2007), Mega Projects and Transport: The Challenge of Embedding Sustainability in Evaluating Transport Project Viability. Paper delivered at Association of European Schools of Planning Conference, Naples, July 2007.

Ng, M K and Pretorius, F, (2007),Planning, Managing and Financing Mega Urban Transport Projects in Hong Kong by the Public Sector and Public-Private Partnership. Paper delivered at Association of European Schools of Planning Conference, Naples, July 2007.
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Pretorius, F, Lejot, P. & McInnes, A., Arner, D., Hsu, B., (2007),Project Finance for Infrastructure and Construction: Principles and Cases, Blackwell Publishing.
Hsu, Berry F. C., Arner, D. W., & Pretorius, F., (2007),Roads and Tunnels, Halsbury's Laws of Hong Kong(Vol 23, 2008 Issue), Lexis-Nexis, pp 129-192.
Pretorius, F., Ng, M.K., (2007),Mega Urban Transport and Development Projects:The Challenge of Embedding Sustainability in Evaluating Project Viability, Omega Centre Working Paper, April 2008.
Pretorius, F., and Ng, R. (2008). "Western Harbour Crossing" OMEGA Workshop III, Athens/Volos, Greece.

Japan

Muromachi, Y. (2007), 'Presentation of the Japanese MUTP Case Studies" OMEGA Workshop I, RIBA, London.
Ohta, k. (2007), "The History and Background of The Planning, Policy and Funding Frameworks of mega urban Transport projects in Japan since the second world war" Omega Working Paper series #1.
Muromachi, Y. (2007), "Mega Urban Public Transport Projects and Mitigaton Potential of Carbon Dioxide Emmisions" Omega Working Paper series #2.
Muromachi, Y. (2008). "Japanese Case Studies" OMEGA Workshop III, Athens/Volos, Greece.
Omura, T. , H. Otsuka, H. Ito, S. Kawano, Y. Muromachi. (2009) "Evaluation of Mega Urban Transportation Project through Free Interview Answers" (in Japanese) Proceedings of Infrastructure Planning, Japan Society of Civil Engineers, 21 November

Australia

Low, N. (2007), 'Presentation of the Australian MUTP Case Studies" OMEGA Workshop I, RIBA, London.
Low, N. (2007), 'Australian presentation of National Background to MUTPs" OMEGA Workshop II, Naples, Italy.
Low, N. (2007), "Urban Mega-Transport Projects: Ecosystem and Human Health Risks" Track 10.1 The challenges of Mega Urban Transport Projects: international views, AESOP 2007, Naples, Italy.
Low N.P. and Sturup, S. (2007), 'Urban Mega Transport Projects, Country Background: Australia' OMEGA Working Paper 1.
Low N.P. (2007), 'Challenges of Sustainable Development: UMTP Risks to Ecosystem and Human Health' OMEGA Working Paper 2.
Low,N.P. (2008), 'The Mole and the Falcon: Eddington and Garnaut' Paper for Municipal Association of Victoria National Conference, August 20th-21st 2008.
Sturup, S. and Low N.P. (2008), 'OMEGA Project Methodology, Comparative Research and the Hypothesis Led Questions' OMEGA Working Paper 3.
Low, N.P. and Sturup, S (forthcoming) 'Transport Infrastructure Policy in Australia' *Urban Planning International*.
Russell, B. (2008), 'Who should decide infrastructure priorities?' Paper for 8th BITRE Transport Colloquium, "Australian Transport: Building Capacity and Competitiveness, Canberra June 18th 2008.
Sturup, S. (2008). "Melbourne City Link – A First Case Study" OMEGA Workshop III, Athens/Volos, Greece.
Low N.P. (2009), "Distilling the Process Criteria" OMEGA Moodle

Low N.P., Sturup, S., and Curtis, C. (2009), “Simplified Overview of OMEGA Research, with Diagram” OMEGA Moodle
Low N.P., Sturup, S., and Curtis, C. (2009), “Notes on the Conceptual Structure of the OMEGA Project” OMEGA Conference, Lund, April 2009
Sturup, S. (2009) Planning: ‘program’ and ‘project’ (Editorial), Urban Policy and Research
Sturup, S. (2009) “Assessing mega-transport projects, a question of governmentality?” International Conference on Urban and Regional Planning and Transportation, Paris, June 24-26 (Special session on urban transport governance)

USA

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Appendix 15: OMEGA advisory roles for private sector and international development agencies

- **Research:** Over and above the contract research the Centre is currently undertaking, the Centre is in discussion with the Volpe Centre for Transportation Systems of US Department of Transportation and with the VREF CoEs at Berkeley and Melbourne to jointly seeking to undertake government funded studies into the appropriate appraisal criteria suited for the recent transport infrastructure stimuli investment programmes launched in USA, Australia and UK. Meetings with the Volpe Centre are scheduled in late September 2009. Meetings are also to be held with the Rudin Centre at NYU re: the possibility of extending the OMEGA research programme to ports and airports. Funding is also currently being sought from the Economic and Social Research Council (ESRC) to publish 3 edited volumes derived from the CoE research and develop a series of MUTP practitioner focused handbooks.
- **Consultancy:** In the UK, the Centre has been approached by Capita Symonds, Colin Buchanan and Partners, and Halcrow with a view to participating in advisory work for future mega infrastructure project planning, appraisal and delivery studies in the UK, including capacity building studies. These approaches are to be held off until December 2010 given current workload in completing CoE project.

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Appendix 17: Principle sections of the MUTP OMEGA project profiles

A. INTRODUCTION
- Type of Project
- Location
- Current Status

B. BACKGROUND TO PROJECT
- Principal Project Objectives
- Key Enabling Mechanisms and Decision to Proceed
- Main Organisations Involved
- Planning and Environmental Regime
- Land Acquisition

C. PRINCIPAL PROJECT CHARACTERISTICS
- Route/Alignment Description
- Main and Intermediate Related Hubs/Nodes/Termini (including broad description, planning context and details of proposed development/regeneration)
- Project Costs
- Project Programme
- Main Engineering Features
- Main Contracts and Contractors
- Major Civil Engineering Components

D. PROJECT TIMELINE
- Project Timeline
- Project Timeline - Key Issues, Events and Decisions

E. PROJECT FUNDING/FINANCING
- Introduction
- Background to Funding/Financing
- Role of Traffic Forecasts
- Overview of Key Stages in Funding/Financing Approach
- Funding Sources
- Main Elements/Structure of Financing Package
- Commentary on Funding/Financing Approach

F. OPERATIONS
- Traffic Volume
- Commentary

G. BIBLIOGRAPHY

Appendix 18: OMEGA project profiles – 2 page summaries

UK

Channel tunnel rail link (CTRL): Channel Tunnel – St. Pancras, London
(http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/UK_CTRL_2P_080911.pdf

Jubilee line extension (JLE): Green Park – Stratford International
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/UK_JLE_2P_080911.pdf

M6 toll-road project: M42 Junctions 7/8 – M6 Junctions 6/11
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/UK_M6_2P_080911.pdf

France

Meteor Rail: Saint Lazare – Olympiades, Paris
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/FRANCE_METEOR_2P_070911.pdf

TGV Med: Valence – Marseille
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/FRANCE_TGV_MED_2P_070911.pdf

Millau Viaduct: Millau, South France
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/FRANCE_MILLAU_2P_070911.pdf

Germany

ICE: Cologne – Frankfurt/Main
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/GERMANY_NBS_COLOGNE_2P_070911.pdf

Tiergarten Tunnel: Berlin
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/GERMANY_TIERGARTENTUNNEL_2P_070911.pdf

BAB20 Motorway: Schleswig-Holstein – Brandenburg
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/GERMANY_BAB20_2P_070911.pdf

Greece

Rion-Antirion Bridge: Rion – Antirion
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/GREECE_RIONANTIRION_2P_070911.pdf

Athens Metro: Sepolia – Dafni & Monastiraki – Ethniki Amyna, Athens
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/GREECE_ATHENSMETRO_2P_070911.pdf

Attiki Oddos, Athens

http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/GREECE_ATTIKI_ODOS_2P_070911.pdf

Netherlands

HSL Zuid: Amsterdam Zuid - Antwerp/Brussels/Paris
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/NETHERLANDS_HSL_ZUID_2P_080911.pdf

Beneluxlijn: Rotterdam - Schledam/Spijkenisse
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/NETHERLANDS_BENELUXLIJN_2P_080911.pdf

Randstadrail: The Hague – Rotterdam – Zoetermeer
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/NETHERLANDS_RANDSTADRAIL_2P_080911.pdf

Sweden

Arlanda Rail Link: Stockholm Airport to Stockholm
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/SWEDEN_ARLANDA_2P_080911.pdf

Oresund Road, Rail, Bridge/Tunnel Link: Malmo-Copenhagen
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/SWEDEN_ORESUND_2P_080911.pdf

Sodra Lanken Road Tunnel: Stockholm
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/SWEDEN_SODRALANKEN_2P_080911.pdf

USA

Airtrain: JFK Airport: New York City
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/USA_AIRTRAIN_2P_080911.pdf

Alameda Rail Link: Los Angeles (Port – downtown)
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/USA_ALAMEDA_2P_080911.pdf

Big Dig Road and Tunnel Links: Boston
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/USA_BIG_DIG_2P_080911.pdf

Australia

Harbour Tunnel, Sydney
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/AUS_SYDNEY_2P_070911.pdf

Metro Rail, Perth
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/AUS_PERTH_2P_070911.pdf

City Link, Melbourne

http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/AUS_CITYLINK_2P_070911.pdf

Hong kong

Airport Rail Links: HK Central – Chek Lap Kok Airport
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/HK_AIRTRAIN_2P_070911.pdf

Western Harbour Crossing: Hong Kong Island – Kowloon
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/HK_WEST_HARBOUR_2P_070911.pdf

KCRC West Rail Link: Tsuen Wan – Yeung Long
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/HK_WESTRAIL_2P_070911.pdf

Japan

Shinkansen High Speed Rail Link: Kagoshima - Chuo – Nakata
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/JAPAN_SHINKANSEN_2P_080911.pdf

Shutu Expressway: Nishishinjuku Junction – Kumanocho Junction, Tokyo
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/JAPAN_SHINJUKU_2P_080911.pdf

Oedo Metro: Hokomae – Hikarigaoka, Tokyo
http://www.omegacentre.bartlett.ucl.ac.uk/studies/cases/pdf/JAPAN_OEDO_2P_080911.pdf

Appendix 19: Documentation from Cognitive Edge on the PHR interview technique

Cognitive Edge (2007) Cognitive Edge Accreditation Programme Naturalising sense-making , London, June (CD ROM: Cognitive Edge Guidelines\OMEGA2 CognitiveEdge Guidelines - Accreditation 2007.pdf)

Cognitive Edge (2007) Naïve Interview Guide: 8th May (CD ROM: Cognitive Edge Guidelines\OMEGA2 CognitiveEdge Guidelines - Naïve Interview GuideUCL2 - 2007.pdf)

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Snowden, D.J & C.F.Kurtz (2003) The new dynamics of strategy: Sense-making in a complex and complicated world , IBM Systems Journal, Vol42, No.3 (CD ROM: Cognitive Edge Guidelines\OMEGA2 CognitiveEdge Paper - The new dynamics of Strategy - Sense Making in an Complex and Complicated World Kurtz Snowden 2003.)

Appendix 20: An example of the pre-hypothesis questionnaire and pre-hypothesis indexes

UK JLE PHR Questionnaire

OMEGA - PRE-HYPOTHESIS RESEARCH QUESTIONS, INDEXES AND FILTERS

A. Opening Question (to be asked in *all* interviews)

Interviewees' relationship to the project

- " What is your relationship to the [Case Study] Project. Please explain which aspect of the project you were responsible for, involved in or affected by." Index their personal characteristics using the "About You" part of the index sheet.

B. Prompting Questions

1. QUESTION 1 (to be asked in *all* interviews)
   Looking back, what in your mind were the most pivotal events that shaped the [Case Study] project? (Turning points or triggers of significance, not necessarily project milestones) Please consider:
   - Which of these were most surprising? Most predictable?
   - Which of these were planned? Which were unexpected?
   - Specify the date the event occurred, who were the main people involved, where it took place and why it took place.

2. QUESTION 2 - Tell me about a time when this project was rescued or sabotaged?

3. QUESTION 3 - When were the moments of stagnation or breakthrough? What happened?

4. QUESTION 4 - When have you or members of your community suffered or been inspired as a result of this project? What happened and why?

5. QUESTION 5 - Imagine this project, 10 years ahead, is perceived as:
   - a total disaster or
   - a resounding success

   What stories would you share with others to convince or dissuade those who felt that way?

C. Indexes & Filters

1. **Country & Project** (please tick which project your story relates to:)

Australia

- ☐ Metro Rail, Perth
- ☐ City Link, Melbourne
- ☐ Harbour Tunnel, Sydney

France

- ☐ Meteor, Paris
- ☐ TGV Mediterrannee
- ☐ Millau Viaduct and A75, Midi-Pyrénées
- ☐ L2, Marseille

Germany

- ☐ Tiergarten-Tunnel, Berlin
- ☐ BAB 20 Motorway
- ☐ ICE-High Speed Line from Cologne to Frankfurt/Main

Greece

- ☐ Attiki Odos (motorway), Athens
- ☐ Rion Antirrion Bridge, Gulf of Corinth
- ☐ Metro, Athens

Hong Kong

- ☐ Airport Rail Link
- ☐ KCRC West Rail
- ☐ Western Harbour Crossing

Japan

- ☐ Shuto Expressway, Tokyo
- ☐ Linimo Aichi
- ☐ Kyushu Shinkansen

Netherlands

- ☐ HSL- Zuid (TGV - Brussels to Amsterdam)
- ☐ Randstadrail (The Hague to Zoetermeer and Rotterdam)
- ☐ Westrandweg, including 2nd Coentunnel, Amsterdam

Sweden

- ☐ Öresund Link (Copenhagen to Malmö)
- ☐ The Southern Link, Stockholm
- ☐ Metro, Copenhagen
- ☐ Air-Rail Link, Arland to Stockholm

UK

- ☐ Channel Tunnel Rail Link
- ☐ Jubilee Line
- ☐ QEII Bridge

USA

- ☐ Alameda Corridor, Los Angeles
- ☐ Air Train, New York
- ☐ Big Dig, Boston

Other

- ☐ (please specify)

2. **Is this?** (please tick appropriate box):

☐ Your personal experience?

☐ A newspaper, magazine article, or other document?

3. **How does this story make you feel?** (please tick appropriate box):

☐	Elated	☐	Don't Care
☐	Proud	☐	Disappointed/Sad
☐	Hopeful	☐	Angry

4. **Roughly when did the events in this story happen?** (please place mark on the timeline below)

1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020	2025

5. **What roles are represented in this story?** (you may tick as many boxes as you think appropriate)

☐	Advisor - Finance, Legal, Design, Technical, Business etc.	☐	Entrepreneur/Business Person
☐	Planner	☐	Financier
☐	Other Design Professional	☐	Scientist/Researcher
☐	Advocate/Representative	☐	Media/Journalist
☐	Politician	☐	Contractor/Constructor
☐	Bureaucrat	☐	Consultant
☐	Lobbyist/Stakeholder Advocate	☐	Ecologist/Environmentalist
☐	Engineer	☐	Developer
☐	Community or social worker	☐	Local Resident
☐	Commuter	☐	Other

6. **How relevant do you think your story is to the outcome of the project?** (please tick appropriate box)

☐ Very Relevant
☐ Relevant
☐ Not Relevant
☐ Don't know

7. **What key words or phrases would you associate with this story?**

_____ _____ _____

8. **Which of the following themes are relevant to this story?** (Please select relevance on a scale of 1 to 10. 1 being less relevant, 10 being extremely relevant - for all boxes):-

Public sector power	1 2 3 4 5 6 7 8 9 10
Private sector power	1 2 3 4 5 6 7 8 9 10
Political intervention in the project	1 2 3 4 5 6 7 8 9 10
Political will	1 2 3 4 5 6 7 8 9 10
Leadership	1 2 3 4 5 6 7 8 9 10
Bureaucracy	1 2 3 4 5 6 7 8 9 10
Technical solutions to unforeseen problems/issues	1 2 3 4 5 6 7 8 9 10
Solutions to unforeseen organizational issues	1 2 3 4 5 6 7 8 9 10
Visions and ideas	1 2 3 4 5 6 7 8 9 10
Scale of impact of the project	1 2 3 4 5 6 7 8 9 10
Public participation or consultation	1 2 3 4 5 6 7 8 9 10
Use of public money	1 2 3 4 5 6 7 8 9 10
Use of private sector money	1 2 3 4 5 6 7 8 9 10
Tensions between economic-social-environmental values	1 2 3 4 5 6 7 8 9 10
Degree to which project centrally controlled/driven versus ad hoc decision making	1 2 3 4 5 6 7 8 9 10
Sustainability concerns/environmental impact	1 2 3 4 5 6 7 8 9 10
Treatment of risk, uncertainty, complexity in decision making	1 2 3 4 5 6 7 8 9 10
Globalisation forces	1 2 3 4 5 6 7 8 9 10

Roles and responsibilities	1 2 3 4 5 6 7 8 9 10
Financing projects/development	1 2 3 4 5 6 7 8 9 10
Co-operation amongst those involved in the project	1 2 3 4 5 6 7 8 9 10
Real estate development associated with/triggered by the project	1 2 3 4 5 6 7 8 9 10
Other (please specify)	1 2 3 4 5 6 7 8 9 10

9. **The following situations are represented in this story** (Please select relevance on a scale of 1 to 10. 1 being less relevant, 10 being extremely relevant – for all boxes):

Reaching agreement on project financing/funding	1 2 3 4 5 6 7 8 9 10
Experiencing financial failure/under performance	1 2 3 4 5 6 7 8 9 10
Forming the vision/objectives for the project	1 2 3 4 5 6 7 8 9 10
Project start-up/mobilisation	1 2 3 4 5 6 7 8 9 10
Agreement about project specifications	1 2 3 4 5 6 7 8 9 10
Public outcry about the project	1 2 3 4 5 6 7 8 9 10
Programme slippage/advancement	1 2 3 4 5 6 7 8 9 10
Major change in project scope	1 2 3 4 5 6 7 8 9 10
Political intervention into the project	1 2 3 4 5 6 7 8 9 10
Alleviating project impacts	1 2 3 4 5 6 7 8 9 10
Implementing the project	1 2 3 4 5 6 7 8 9 10
Deciding on developments associated with the project	1 2 3 4 5 6 7 8 9 10
Implementing developments associated with the project	1 2 3 4 5 6 7 8 9 10
Performance of organizations responsible for the project	1 2 3 4 5 6 7 8 9 10
Other (specify)	1 2 3 4 5 6 7 8 9 10

10. **The following perceptions are displayed in this story** (please mark the appropriate boxes):

	Risk: the degree to which future uncertainties and unexpected events may not be manageable within allocated resources	**Uncertainty**: where imperfect knowledge makes it impossible to describe an existing state or future outcome with accuracy, and where lack of knowledge could have significant consequences	**Complexity:** where many independent factors interact in multiple and unforeseen/ unforseeable ways to generate unexpected outcomes
The circumstances (context) in which this project were planned and implemented were:	Very risky ☐☐☐☐☐☐☐☐☐☐☐ Not at all risky	Totally Certain ☐☐☐☐☐☐☐☐☐☐☐ Completely uncertain	Extremely complex ☐☐☐☐☐☐☐☐☐☐☐ Very straightforward
The degree of control exerted over the planning and implementation of this project was:	Greatly affected by risk ☐☐☐☐☐☐☐☐☐☐☐ Not affected by risk	Greatly affected by uncertainty ☐☐☐☐☐☐☐☐☐☐☐ Not affected by uncertainty	Greatly affected by its complexity ☐☐☐☐☐☐☐☐☐☐☐ Not affected by its omplexity
How did this project compare with the [Comparable project]	Much more risky ☐☐☐☐☐☐☐☐☐☐☐ Much less risky	Much more uncertain ☐☐☐☐☐☐☐☐☐☐☐ Much less uncertain	Much more Complex ☐☐☐☐☐☐☐☐☐☐☐ Much more straightforward

11. **'About Your Role on the Project'** (please tick the box that best describes your influence on the project)

- ☐ I influenced decision-makers
- ☐ I influenced project stakeholders
- ☐ I helped to build relationships/consensus
- ☐ I helped to implement the project
- ☐ I supported/advocated the project
- ☐ I observed/reported on the project
- ☐ I opposed the project
- ☐ Other

12**. 'What You Do'** (please tick the box that best describes what you do)

Private Sector			
	Entrepreneur/Business Person		Consultant/Advisor
	Business/Financial Adviser		Financial Consortium/Funding Agency
	Contractor/Constructor		Other
Public Sector			
	Central Government Employee		Politician
	Local / Regional Government Employee		Other
Non-Government Organisation/Other			
	Work for Regional or Metropolitan Agency		Lobby Group
	Local Community Member		Member of Community Action Group
	Academic		Other

13. Who indexed this SMI?

	Self indexed by Interviewee
	Indexed by OMEGA Centre/Partners

14 Indexes Refer to

	Individual Anecdote
	Whole interview

Appendix 21: The CTRL hypothesis-led questionnaire

PART 1: Overarching Research Questions

The questions below are posed to help ascertain what constitutes a 'successful' MUTP in generic terms in the 21st Century and establish whether this new context warrants a re-examination of the criteria traditionally used to pass such judgments in the past given the eminence of the sustainable development vision globally and locally.

Question 1:
What constitutes a Mega Urban Transport Project? What are the main defining features and characteristics of such projects?

Question 2:
Are the traditional appraisal and evaluation criteria relating to project cost overruns, completion dates, generation of travel time savings for users and rates of returns for project investors inadequate measures of the 'success' of MUTPs in the 21st Century as sustainable development concerns become increasingly critical both globally and locally? If so why? If not, why not?

Question 3:
Does the new emerging agenda related to visions of sustainable development offer a better framework for judging the success of MUTPs? If so why and how, and if not, why not?

Question 4:
Does the 21st Century pose a faster pace of change and a therefore a more uncertain world subsequently requiring higher levels of competence of the treatment of risk, uncertainty and complexity in MUTP planning, appraisal and evaluation exercises? If so what are the implications of these developments?

Question 5 (after Wright, 2008)**:**
To have a reasonable chance of being perceived as a 'success', the planning, delivery and operation of every MUTP *must* pay due regard to its specific context – where context concerns cultural, spatial, political, financial, institutional, environmental and other conditions. How relevant is this statement, especially where technology-transfer is involved?

Question 6 (after Tseng, 2008)**:**
Is the ultimate determining factor of the decision-making process in MUTP planning, appraisal, evaluation and delivery that of political power - not the power of the rationality of technocrats?

Question 7 (after Tseng, 2008)**:**
What is the relationship between mega events (such as the Olympic Games) and MUTP planning and delivery, and what are the lessons from previous experiences?

PART 2 – The Channel Tunnel Rail Link (CTRL): Hypotheses about its Development

A number of hypotheses are forwarded here to help explain why and how the CTRL has developed the way it has. The following questions invite interviewees to respond to the plausibility of these hypotheses.

HYPOTHESIS 1 – 'Economic Rationalism'

The hypothesis posed here is that the financing and economic rationale for the planning, appraisal of the CTRL is "ostensibly" based on an *economic cum financial rationalist* model that treats the 'line haul' as a discrete 'closed system', for which supply and demand can be forecast with reasonable accuracy - as a basis for forecasting whether sufficient revenues can be generated from the operation of the link to pay for its construction. This relies on travel forecasting methods that pay explicit attention to the economics of travel time savings and some implicit but less precise attention to spin-off benefits generated by the new infrastructure and its services with new transport links increasingly seen more as 'commodities' rather than a 'public services'.

Question 8: CTRL - a closed system?
Was the financing rationale for the planning, appraisal of the CTRL based on the belief that the 'line haul' could be treated a discrete 'closed system', for which supply and demand can be forecast with reasonable accuracy as a basis for accurately forecasting whether future revenues would be sufficient to pay for its construction?

Question 9: flawed appraisal models?
Were the appraisal and travel demand models used to forecast potential CTRL revenues fundamentally flawed and if so, why and how? Or, were they manipulated so as to generate levels of revenue that were acceptable politically in the face of new/emerging imperatives?

Question 10: CTRL - a commodity or a service?
Was the CTRL treated more as delivering a 'commodity' in direct competition with other modes of transport rather than a 'public service' to the region and its urban areas, despite the considerable aspirations and rhetoric associated with the urban regeneration agenda that this new transport investment will spawn in east London and the Thames Gateway?

HYPOTHESIS 2 – 'New Regionalism'

The hypothesis forwarded here is that public sector support for the construction of the CTRL was seen by the powers that be (namely, Central Government and the Regional Development Agencies, as well as many local authorities and industrial and commercial interests in London and the South East) as *essential,* despite its apparent poor financial prospects. Thereby, suggesting: Firstly, that the importance of CTRL can *only* be understood in a much broader context where the CTRL corridor is seen as essential to better servicing the forces of globalisation by enhancing access to London and its region to Europe, and the world economy and thus sustaining/enhancing London's competitive position as a 'world city region'. Secondly, that the continued support for the project represents in some way a form of policy intervention that overrides models of .economic rationalism.

Question 11: globalisation and policy intervention?
Do you support the above hypothesis and related two emerging premises? If so why and if not, why not?

Question 12: promoting 'New Regionalism'?
If you accept the above hypothesis, how inevitable was/is it and who were/are the principle actors who promoted this New Regionalism agenda? Who would you say ultimately benefits this vision and who pays (both in the short *and* long term)?

Question 13: decision makers and champions?

Who were the key decision makers and champions for the CTRL overall and for the hubs at the critical planning stages of the project? What did/do they stand to gain? Were these stakeholders 'managed' or 'involved' in the CTRL routing and transport hub selection process?

HYPOTHESIS 3 - 'Muddling Through'

The hypothesis posed here is that there was no clear, consistent, properly articulated or widely agreed vision of the role of CTRL at the outset, other than an imperative to link the Channel Tunnel to London in what it saw at the time was the most cost-effective manner. This position had to change when the British Government was faced with the embarrassment of high speed French trains 'grinding to a halt' in Kent when the Channel Tunnel opened. Subsequent decisions regarding such matters as upgrading the line, the approach to project funding, promoting the CTRL as the key spine for the Thames Gateway and facilitating major development around key stations/hubs were thus made on an *ad hoc* basis in response to different (sometimes competing) agendas that arose over time. This lack of clarity of vision has resulted in the introduction of delayed, ill-thought out and sub-optimal strategies by both public and private agencies in response to changing government agendas that sought different economic and political outcomes at different times (after Wright, 2008).

Question 14: an evolving project? (after Wright, 2008)
Do you subscribe to the above hypothesis? Would a more clearly articulated set of objectives (and/or vision) for CTRL at its inception have made the project less vulnerable to political and financial influences?

Question 15: influences on planning and delivery? (after Wright, 2008)
Given the CTRL was characterised by lengthy planning and implementation periods, do you believe it was inevitable over time that the interplay of competing forces, emerging agendas and changing contexts reinforced all/some/none of the following:

- The need for a 'time to breathe' – so as to allow it to evolve in response to changing circumstances over time;
- The realization that it is unrealistic to expect every aspect of the planning and delivery of the CTRL to be tightly controlled from the outset;
- 'Carpe diem' – i.e., moments in time in the planning and delivery of the CTRL when circumstances were ripe for key players to seize the occasion and adjust its focus.

Question 16: emerging agendas?
Do you believe the subsequent Sustainable Communities and Sustainable Development visions promoted by Central Government led to the emergence of new/changing stakeholder agendas and a Central Government belief that the implementation of CTRL should *not* be seen to be at the expense of the public purse but instead be the provider of new sustainable development benefits?

Question 17: responses to 'muddling through'?
Do you attribute the introduction of delayed, some ill-thought out and many sub-optimal strategies by both public and private agencies to the 'muddling-through' approach described above? If so, what scope exists for CTRL to be better retrofitted to serve the sustainable communities vision(s) advocated by Central Government and others?

HYPOTHESIS 4 - 'Smoke Filled Rooms'

The hypothesis posed here is that whilst developments at the CTRL hubs are largely positioned as maximising on the increased accessibility and travel time savings that the

project delivers in order to promote 'regeneration' and 'sustainability', it would seem that (in reality) the right to engage in such development *also* represents a significant means to support the financing of the CTRL - with promises of access to some of the 'spoils' of real estate development for line-haul investors made with varying degrees of transparency. An underlying premise here is that the development at the CTRL transport hubs is characterised by the uneasy relationship between the real estate industry's profit maximisation imperative and the public sector obligations to ensure that such development results in real benefits to the community and the environment, and that the public sector is armed with insufficient planning instruments to extract such benefits, leaving private developers with considerable room for manoeuvre. A further related premise is that these circumstances generate a difficult bargaining atmosphere often *not* conducive to 'partnership' initiatives, especially where the delivery of infrastructure support is uncertain and given the lack of clarity over the visions of sustainability that different parties promote.

Question 18: public v private sector interests?
Do you subscribe to the above hypothesis? If so why, and if not, why not?

Question 19: obtaining wider benefits from CTRL?
Do you support the underlying premises - particularly that the public sector (local authorities and central government sponsored quangos) are armed with insufficient planning instruments to extract the necessary benefits from the private sector, leaving private developers with excessive room for maneuvers, inactivity and profit-making, especially where public sector infrastructure is 'guaranteed'?

Question 20: the role of real estate in CTRL?
Do you agree that the rights to engage in property development associated with CTRL, particularly around the transport hubs, represent an effective means to support (subsidize) the financing of the CTRL with promises of access to some of the 'spoils' of real estate development for line-haul investors seen as sweeteners? How dependent is the success and viability of the development potential at the CTRL transport hubs on the provision of adequate train services? And who defines/should define the adequacy and performance criteria for such services?

Question 21: the nature and role of regeneration?
Do you consider that there has been a lack of a common consensus (and understanding) concerning the nature and role of 'urban regeneration' amongst Central government, local authorities and local communities which has produced a situation that could be/is exploited by developers associated with the delivery of development projects at key CTRL hubs (at King's Cross, Stratford, Ebbsfleet and Ashford)?

HYPOTHESIS 5 - 'Context is Everything'

The hypothesis presented here is that the CTRL project outcomes can be best explained by the forces and influences that were at work at the time (and place) of planning and constructing the project, and that the failure to fully appreciate these contributes to much of the misunderstanding about what an MUTP is expected to, and can, deliver. These context-moulding forces include those of:

- Path dependency – in particular, the notion that past practice in planning and implementing MUTPs represents 'best practice' and the consequent dismissal of institutional and professional learning from other projects worldwide has led to a rather narrow transference of skills and knowledge in the field;
- 'Big ideas' and government rhetoric – CTRL appears to have been impacted by a number of 'big ideas' that tipped into favour over the course of the project, including the

ideas of 'PPP', 'urban regeneration' and 'sustainability', without sufficient thought being given to their applicability and appropriateness for CTRL;
- Political agendas – there is evidence that politicians have had a very significant impact on the planning and delivery of the CTRL - whether for altruistic or self-aggrandisement reasons. The impact of these political agendas have meant that some contextual sensitivities received more attention than other while others were ignored where they collided with the political interests of the 'powerful;
- Community engagement – stakeholders along the CTRL were 'consulted' rather than fully 'engaged' in the project planning and appraisal process, thereby limiting the sponsor's full understanding of the contextual sensitivities of the route and contributing to missed opportunities to gather evidence about both local and more generic contextual items of concern to communities (after Wright, 2008).

Question 22: path dependency?
Is there any evidence of path dependency practices which have acted to the detriment of the project?

Question 23: transparency, trust and politics? (after Wright, 2008)
Is there any evidence of events where politicians have had a significant impact on the planning, appraisal and delivery of the project? Do you consider that political interventions of this kind, where they have taken place, have meant that contextual matters received much less consideration than the 'big ideas' and has led to reduced transparency and trust in decision-making?

Question 24: wider public benefits?
What is a reasonable 'rate of community return' from a project such as CTRL? Has the public been short-changed in the long run for short run returns? Where and how are public benefits generated and public interests protected (at the transport hubs, within the CTRL service itself and within the sub-region as a whole) or is the reality of the circumstances such that the public benefits for the CTRL project are expected to 'trickle' down to the wider community?

Question 25: risk transfer?
Do you consider it a missed opportunity when the New Labour Government in 1997 had the chance to seriously change its position on CTRL, when the restructuring of the financial deal was underway in 1997, but instead chose to follow the path of its predecessors by maintaining the 'sham' transfer of risk to the private sector?

PART 3: Concluding Questions

On the basis of the preceding questions and responses by interviewees to these, the following questions seek to identify generic lessons that can be extracted from the CTRL experiences and other similar projects and applied elsewhere.

Question 26: appraisal, evaluation and monitoring?
On the basis of the CTRL experience, how should MUTP objectives be set – by whom, in what forum, and how should they be appraised, evaluated and monitored?

Question 27: engagement, consultation and participation?
What generic lessons, if any, are there to be had from CTRL regarding community involvement (engagement, consultation and participation) in MUTP planning, appraisal and delivery – along the line-haul route and around major transport hubs?

Question 28: relationship between mega events and MUTPs? (after Tseng, 2008)

On the basis of the CTRL experience, what impacts do mega events have on the planning, appraisal and delivery of MUTPs - where these include such planned events as the Olympic Games, other global sporting events, international trade exhibitions and the like that are high priority national events of international significance and prestige, and tied into given dates/deadlines that cannot be altered.

Question 29: national planning frameworks for MUTPs?
Do you consider it essential that MUTPs such as the CTRL should only be promoted and delivered against the background of a planning framework which puts forward national development proposals expressing agreed economic, social and environmental (and other) objectives and priorities?

Question 30: other generic lessons?
What other generic lessons do the CTRL experiences offer?

Thank you

INDEXES

By completing the following indexes you will be greatly helping us to analyse the data collected in your interview. The indexes are divided into two parts:

- **About You - questions about you and your involvement in the CTRL and/or its associated developments (Questions 1-3 below);**
- **Your Views on CTRL - questions about your attitude towards certain aspects of the CTRL planning and delivery process (Questions 4-6 below)**

About You

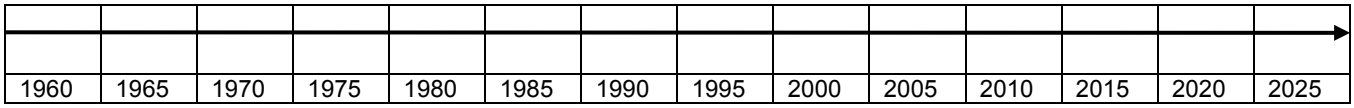
1**. What You Do** (please tick the box(es) that best describes what you do)

Private Sector			
	Entrepreneur/Business Person		Consultant/Advisor
	Business/Financial Adviser		Financial Consortium/Funding Agency
	Contractor/Constructor		Other
Public Sector			
	Central Government Employee		Politician
	Local / Regional Government Employee		Other
Non-Government Organisation/Other			
	Work for Regional or Metropolitan Agency		Lobby Group
	Local Community Member		Member of Community Action Group
	Academic		Other

2. **Your role** (please tick the box that best describes your influence on the project)

- ☐ I influenced decision-makers
- ☐ I influenced project stakeholders
- ☐ I helped to build relationships/consensus
- ☐ I helped to implement the project
- ☐ I supported/advocated the project
- ☐ I observed/reported on the project
- ☐ I opposed the project
- ☐ Other

3. **Your period of involvement in CTRL** (please place mark on the timeline below - you may show more than one period)



Your Views on CTRL

4. **Your views on the treatment of risk, uncertainty and complexity in decision making for CTRL** (please mark the appropriate boxes):

	Risk: the degree to which future uncertainties and unexpected events may not be manageable within allocated resources	**Uncertainty**: where imperfect knowledge makes it impossible to describe an existing state or future outcome with accuracy, and where lack of knowledge could have significant consequences	**Complexity:** where many independent factors interact in multiple and unforeseen/ unforeseeable ways to generate unexpected outcomes
The circumstances (context) in which this project were planned and implemented were:	Very risky ☐☐☐☐☐☐☐☐☐☐☐ Not at all risky	Completely uncertain ☐☐☐☐☐☐☐☐☐☐☐ Totally certain	Extremely complex ☐☐☐☐☐☐☐☐☐☐☐ Very straight -forward
The degree of control exerted over the planning and implementation of this project was:	Greatly affected by risk ☐☐☐☐☐☐☐☐☐☐☐ Not affected by risk	Greatly affected by uncertainty ☐☐☐☐☐☐☐☐☐☐☐ Not affected by uncertainty	Greatly affected by its complexity ☐☐☐☐☐☐☐☐☐☐☐ Not affected by its complexity
How did this project compare with the Channel Tunnel project?	Much more risky ☐☐☐☐☐☐☐☐☐☐☐ Much less risky	Much more uncertain ☐☐☐☐☐☐☐☐☐☐☐ Much less uncertain	Much more complex ☐☐☐☐☐☐☐☐☐☐☐ Much more straight -forward

5. **Which of the following types of context do you consider most important in the planning of CTRL?** (please rank each one out of ten in terms of importance, where one represents the highest priority and ten the lowest):

Types of context	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
National background, policy, planning and funding frameworks?										
Sustainability visions to be serviced?										
Geographical, special and location considerations?										
Cultural contexts?										
Temporal contexts?										
Others? (please specify)										

6. **How successfully do you consider the CTRL project has coped with the Sustainable Development Challenges (SDCs) below?** (please assign a value of one to ten to each, where one represents the highest weighting and ten the lowest):

Sustainable development challenges (SDCs) confronted by CTRL	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ensuring **accountability** in decision-making										
Providing **transparency** in decision-making										
Ensuring institutional **capacity building** & public consultation										
Addressing concerns of **biodiversity**										
Addressing concerns of **ecology**										
Promoting **health**										
Addressing concerns of **safety**										
Promoting **energy saving**										
Contributing to **social cohesion**										
Contributing to goals of **equity**										
Promoting economic c**ompetitiveness**										
Successfully involving the **private sector**										
Addressing forces of **globalisation**										
Enhancing **operations efficiency**										
Guaranteeing **affordability** of project										
Ensuring economic **viability** of project										
Promoting enhanced **accessibility**										
Contributing to planned **spatial & territorial re-structurin**g										
Addressing concerns of **subsidiarity**										
Others (please specify)										

Appendix 22: The CTRL hypothesis-led questionnaire updated, the JLE hypothesis led questionnaire and the M6 hypothesis led questionnaire.

The CTRL hypothesis-led questionnaire

PART 1: Overarching Research Questions

The questions below are posed to help ascertain what constitutes a 'successful' MUTP in the 21st Century in generic terms and in respect of the [Case Study] project.

Question 1: Project Success

1a. In generic terms, what in your view constitutes a 'successful' MUTP?

1b. Do you consider that this [Case Study] project has been a successful MUTP? If so, why. If not, why not?

Related Question:

- what constitutes a MUTP - its main defining features and characteristics?

Instructions to Interviewer

- Explain that a technical definition of 'success' (or 'failure') requires consideration of multiple criteria, and that an objective decision under such circumstances requires evaluation and weighting of each criterion.
- First ask open question (1a) about what constitutes a successful MUTPs in general and then in relation to the Case Study project (1b).

Question 2: Project Appraisal and Evaluation

2a. In generic terms, what are the most important appraisal and evaluation criteria for MUTPs?

2b. What were the most important appraisal and evaluation criteria for this project?

- which criteria proved adequate and which inadequate? Why/why not?
- did concerns about sustainable development influence the appraisal or evaluation process? If so, how? And to what effect?

Related Question:

- what value do 'traditional' appraisal and evaluation criteria (project cost overruns, completion dates, generation of travel time savings for users and rates of returns for project investors) have as measures of the 'success' of MUTPs in the 21st Century as sustainable development concerns become increasingly critical both globally and locally?

Instructions to Interviewer

- Explain that for the purposes of the OMEGA Study 'appraisal' refers to pre-project assessments and 'evaluation' refers to post-project studies assessments.
- First ask open question about the criteria that should be used for all MUTPs (2a) and then query which criteria were important in relation to the Case Study project (2b).

Question 3: 'Sustainability' Considerations

3a. Do you consider that 'sustainability' considerations should play a major part in the planning and delivery of MUTPs? If so, why and how? If not, why not?

3b. Did 'sustainability' considerations play a major part in the planning and delivery processes of this [Case Study] project? If so, how? If not, why was this?

Related Questions:

- do new/emerging visions of sustainable development offer a better framework for judging success?
- do you consider that it is possible to introduce 'retrofit' strategies that would enable MUTPs in general, and this [Case Study] project in particular, to achieve more sustainable outcomes?

Instructions to Interviewer

– First ask open question about relationship between sustainability and MUTPs in general (3a) and then in relation to Case Study project (3b).

Question 4: Project Decision-making Processes

4a. What do you consider to be the most important factors and actors that determine the outcome of decision-making process in the planning and delivery of MUTPs?

4b What were the most important factors determining the outcome of the decision-making process in the planning and delivery of this project?

- which actors had most influence on the decision-making process?
- which factors and influences worked positively and which negatively with respect to the key appraisal and evaluation criteria that you identified in response to question 2?

Related Questions:

- what influences are generated by (other) specific factors and actors (e.g. political power, rationality of technocrats, lobbying from business, community/environmental activism, influence of mega events etc.)?

Instructions to Interviewer

– First ask open questions about factors and actors (4a) and then in relation to Case Study project (4b).

Question 5: Project Risk, Uncertainty and Complexity

5a. What do you consider to be the main issues associated with risk, uncertainty and complexity in the planning and delivery of MUTPs?

5b. What were the main issues associated with risk, uncertainty and complexity faced by this project?

- How have these issues been treated in the decision-making process?
- What worked well and what failed in this respect?

Related Questions:

- the impact of closed or open decision making processes?
- how was learning organized?
- the role of emergent policies during the planning and delivery process
- whether the 21stC pace of change requires greater awareness and treatment of risk, uncertainty and complexity.

Instructions to Interviewer

- First ask open question about which risk, uncertainty and complexity in relation to MUTPs in general (5a) and then in the context of the Case Study project.

Question 6: Project Context
6a. What aspects of 'context' do you consider to be the most influential in the planning and delivery of MUTPs? Why is this?
6b. What aspects of 'context' were the most influential in the planning and delivery of this project? Why was this? What aspects of context were not adequately assessed?

Related Questions
- impact of Mega Events (if appropriate and if not covered by response to Question 4)

Instructions to Interviewer
- Explain that 'context' concerns include cultural, spatial, political, financial, institutional, environmental and other conditions.
- First ask open question about contextual influences for MUTPs in general (6a) and then in realtion to Case Study project (6b).

NB - questions will need to be adjusted so as to ensure that they are self-explanatory where used for the 'written response approach' which has been employed successfully by the OMEGA Centre Team in respect of its first Case Study.

PART 2: The Channel Tunnel Rail Link (CTRL): Hypotheses about its Development

A number of hypotheses are forwarded here to help explain why and how the CTRL has developed the way it has. The following questions invite interviewees to respond to the plausibility of these hypotheses which also explore some of the aspects of the research questions posed in Part 1 in more detail.

HYPOTHESIS 1 – 'Economic Rationalism'

The hypothesis posed here is that the financing and economic rationale for the planning, appraisal and evaluation of the CTRL is "ostensibly" based on an *economic cum financial rationalist* model that treats the 'line haul' as a discrete 'closed system', for which supply and demand can be forecast with reasonable accuracy - as a basis for forecasting whether sufficient revenues can be generated from the operation of the link to pay for its construction. This relies on travel forecasting methods that pay explicit attention to the economics of travel time savings and some implicit but less precise attention to spin-off benefits generated by the new infrastructure and its services with new transport links increasingly seen more as 'commodities' rather than a 'public services'.

Question 7: CTRL - a closed system?
Was the financing rationale for the planning, appraisal of the CTRL based on the belief that the 'line haul' could be treated a discrete 'closed system', for which supply and demand can be forecast with reasonable accuracy as a basis for accurately forecasting whether future revenues would be sufficient to pay for its construction?

Question 8: flawed appraisal models?
Were the appraisal and travel demand models used to forecast potential CTRL revenues fundamentally flawed and if so, why and how? Or, were they manipulated so as to generate levels of revenue that were acceptable politically in the face of new/emerging imperatives?

Question 9: CTRL - a commodity or a service?
Was the CTRL treated more as delivering a 'commodity' in direct competition with other modes of transport rather than a 'public service' to the region and its urban areas, despite the considerable aspirations and rhetoric associated with the urban regeneration agenda that this new transport investment will spawn in east London and the Thames Gateway?

HYPOTHESIS 2 – 'New Regionalism'

The hypothesis forwarded here is that public sector support for the construction of the CTRL was seen by the powers that be (namely, Central Government and the Regional Development Agencies, as well as many local authorities and industrial and commercial interests in London and the South East) as *essential,* despite its apparent poor financial prospects. Thereby, suggesting: Firstly, that the importance of CTRL can *only* be understood in a much broader context where the CTRL corridor is seen as essential to better servicing the forces of globalisation by enhancing access to London and its region to Europe, and the world economy and thus sustaining/enhancing London's competitive position as a 'world city region'. Secondly, that the continued support for the project represents in some way a form of policy intervention that overrides models of economic rationalism.

Question 10: globalisation and policy intervention?
Do you support the above hypothesis and related two emerging premises? If so why and if not, why not?

Question 11: promoting 'New Regionalism'?
If you accept the above hypothesis, how inevitable was/is it and who were/are the principle actors who promoted this New Regionalism agenda? Who would you say ultimately benefits this vision and who pays (both in the short *and* long term)?

Question 12: decision makers and champions?
In Part 1 we talked about the key decision makers and champions for the CTRL overall and for the hubs at the critical planning stages of the project. But, what did/do they stand to gain?

HYPOTHESIS 3 - 'Muddling Through'

The hypothesis posed here is that there was no clear, consistent, properly articulated or widely agreed vision of the role of CTRL at the outset, other than an imperative to link the Channel Tunnel to London in what it saw at the time was the most cost-effective manner. This position had to change when the British Government was faced with the embarrassment of high speed French trains 'grinding to a halt' in Kent when the Channel Tunnel opened. Subsequent decisions regarding such matters as upgrading the line, the approach to project funding, promoting the CTRL as the key spine for the Thames Gateway and facilitating major development around key stations/hubs were thus made on an *ad hoc* basis in response to different (sometimes competing) agendas that arose over time. This lack of clarity of vision has resulted in the introduction of delayed, ill-thought out and sub-optimal strategies by both public and private agencies in response to changing government agendas that sought different economic and political outcomes at different times (after Wright, 2008).

Question 13: an evolving project? (after Wright, 2008)
Do you subscribe to the above hypothesis? Would a more clearly articulated set of objectives (and/or vision) for CTRL at its inception have made the project less vulnerable to political and financial influences?

Question 14: influences on planning and delivery? (after Wright, 2008)
Given the CTRL was characterised by lengthy planning and implementation periods, do you believe it was inevitable over time that the interplay of competing forces, emerging agendas and changing contexts reinforced all/some/none of the following:

- The need for a 'time to breathe' – so as to allow it to evolve in response to changing circumstances over time;
- The realization that it is unrealistic to expect every aspect of the planning and delivery of the CTRL to be tightly controlled from the outset;
- 'Carpe diem' – i.e., moments in time in the planning and delivery of the CTRL when circumstances were ripe for key players to seize the occasion and adjust its focus.

Question 15: emerging agendas?
Do you believe the subsequent Sustainable Communities and Sustainable Development visions promoted by Central Government led to the emergence of new/changing stakeholder agendas and a Central Government belief that the implementation of CTRL should *not* be seen to be at the expense of the public purse but instead be the provider of new sustainable development benefits?

Question 16: responses to 'muddling through'?
Do you attribute the introduction of delayed, some ill-thought out and many sub-optimal strategies by both public and private agencies to the 'muddling-through' approach described above? If so, what scope exists for CTRL to be better retrofitted to serve the sustainable communities vision(s) advocated by Central Government and others?

HYPOTHESIS 4 - 'Smoke Filled Rooms'

The hypothesis posed here is that whilst developments at the CTRL hubs are largely positioned as maximising on the increased accessibility and travel time savings that the project delivers in order to promote 'regeneration' and 'sustainability', it would seem that (in reality) the right to engage in such development *also* represents a significant means to support the financing of the CTRL - with promises of access to some of the 'spoils' of real estate development for line-haul investors made with varying degrees of transparency. An underlying premise here is that the development at the CTRL transport hubs is characterised by the uneasy relationship between the real estate industry's profit maximisation imperative and the public sector obligations to ensure that such development results in real benefits to the community and the environment, and that the public sector is armed with insufficient planning instruments to extract such benefits, leaving private developers with considerable room for manoeuvre. A further related premise is that these circumstances generate a difficult bargaining atmosphere often *not* conducive to 'partnership' initiatives, especially where the delivery of infrastructure support is uncertain and given the lack of clarity over the visions of sustainability that different parties promote.

Question 17: public v private sector interests?
Do you subscribe to the above hypothesis? If so why, and if not, why not?

Question 18: obtaining wider benefits from CTRL?
Do you support the underlying premises - particularly that the public sector (local authorities and central government sponsored quangos) are armed with insufficient planning

instruments to extract the necessary benefits from the private sector, leaving private developers with excessive room for maneuvers, inactivity and profit-making, especially where public sector infrastructure is 'guaranteed'?

Question 19: the role of real estate in CTRL?
Do you agree that the rights to engage in property development associated with CTRL, particularly around the transport hubs, represent an effective means to support (subsidize) the financing of the CTRL with promises of access to some of the 'spoils' of real estate development for line-haul investors seen as sweeteners? How dependent is the success and viability of the development potential at the CTRL transport hubs on the provision of adequate train services? And who defines/should define the adequacy and performance criteria for such services?

Question 20: the nature and role of regeneration?
Do you consider that there has been a lack of a common consensus (and understanding) concerning the nature and role of 'urban regeneration' amongst Central government, local authorities and local communities which has produced a situation that could be/is exploited by developers associated with the delivery of development projects at key CTRL hubs (at King's Cross, Stratford, Ebbsfleet and Ashford)?

HYPOTHESIS 5 - 'Context is Everything'

The hypothesis presented here is that the CTRL project outcomes can be best explained by the forces and influences that were at work at the time (and place) of planning and constructing the project, and that the failure to fully appreciate these contributes to much of the misunderstanding about what an MUTP is expected to, and can, deliver. These context-moulding forces include those of:

- *Path dependency* – in particular, the notion that past practice in planning and implementing MUTPs represents 'best practice' and the consequent dismissal of institutional and professional learning from other projects worldwide has led to a rather narrow transference of skills and knowledge in the field;
- '*Big ideas' and government rhetoric* – CTRL appears to have been impacted by a number of 'big ideas' that tipped into favour over the course of the project, including the ideas of 'PPP', 'urban regeneration' and 'sustainability', without sufficient thought being given to their applicability and appropriateness for CTRL;
- *Political agendas* – there is evidence that politicians have had a very significant impact on the planning and delivery of the CTRL - whether for altruistic or self-aggrandisement reasons. The impact of these political agendas have meant that some contextual sensitivities received more attention than other while others were ignored where they collided with the political interests of the 'powerful;
- *Community engagement* – stakeholders along the CTRL were 'consulted' rather than fully 'engaged' in the project planning and appraisal process, thereby limiting the sponsor's full understanding of the contextual sensitivities of the route and contributing to missed opportunities to gather evidence about both local and more generic contextual items of concern to communities (after Wright, 2008).

Question 21: do you subscribe to the notion that 'context is everything' and that this explains much about the planning, appraisal, delivery and evaluation of the CTRL?

Question 22: path dependency?
Is there any evidence of path dependency practices which have acted to the detriment of the project?

Question 23: transparency, trust and politics? (after Wright, 2008)
Is there any evidence of events where politicians have had a significant impact on the planning, appraisal and delivery of the project? Do you consider that political interventions of this kind, where they have taken place, have meant that contextual matters received much less consideration than the 'big ideas' and has led to reduced transparency and trust in decision-making?

Question 24: wider public benefits?
What is a reasonable 'rate of community return' from a project such as CTRL? Has the public been short-changed in the long run for short run returns? Where and how are public benefits generated and public interests protected (at the transport hubs, within the CTRL service itself and within the sub-region as a whole) or is the reality of the circumstances such that the public benefits for the CTRL project are expected to 'trickle' down to the wider community?

Question 25: risk transfer?
Do you consider it a missed opportunity when the New Labour Government in 1997 had the chance to seriously change its position on CTRL, when the restructuring of the financial deal was underway in 1997, but instead chose to follow the path of its predecessors by maintaining the 'sham' transfer of risk to the private sector?

PART 3: Concluding Questions

On the basis of the preceding questions and responses by interviewees to these, the following questions seek to identify generic lessons that can be extracted from the CTRL experiences and other similar projects and applied elsewhere.

Instructions to Interviewer
The following questions to be used as a 'prompt' to elicit interviewees thoughts on generic lessons that may be derived from the [Case Study] project. Interviewees therefore have a 'free choice' of which questions to address.

Question 26: MUTP objectives?
On the basis of the CTRL experience, how should MUTP objectives be set – by whom, in what forum, and how should they be appraised, evaluated and monitored?

Question 27: engagement, consultation and participation?
What generic lessons, if any, are there to be had from CTRL regarding community involvement (engagement, consultation and participation) in MUTP planning, appraisal and delivery – along the line-haul route and around major transport hubs?

Question 28: relationship between mega events and MUTPs? (after Tseng, 2008)
On the basis of the CTRL experience, what impacts do mega events have on the planning, appraisal and delivery of MUTPs - where these include such planned events as the Olympic Games, other global sporting events, international trade exhibitions and the like that are high priority national events of international significance and prestige, and tied into given dates/deadlines that cannot be altered.

Question 29: national planning frameworks for MUTPs?
Do you consider it essential that MUTPs such as the CTRL should only be promoted and delivered against the background of a planning framework which puts forward national

development proposals expressing agreed economic, social and environmental (and other) objectives and priorities?

Question 30: other generic lessons?
What other generic lessons do the CTRL experiences offer?

Thank you
INDEXES

By completing the following indexes you will be greatly helping us to analyse the data collected in your interview. The indexes are divided into two parts:

- **About You - questions about you and your involvement in the CTRL and/or its associated developments (Questions 1-3 below);**
- **Your Views on CTRL - questions about your attitude towards certain aspects of the CTRL planning and delivery process (Questions 4-6 below)**

About You

1**. What You Do** (please tick the box(es) that best describes what you do)

Private Sector			
	Entrepreneur/Business Person		Consultant/Advisor
	Business/Financial Adviser		Financial Consortium/Funding Agency
	Contractor/Constructor		Other
Public Sector			
	Central Government Employee		Politician
	Local / Regional Government Employee		Other
Non-Government Organisation/Other			
	Work for Regional or Metropolitan Agency		Lobby Group
	Local Community Member		Member of Community Action Group
	Academic		Other

2. **Your Role on CTRL** (please tick the box that best describes your influence on the project)

- ☐ I influenced decision-makers
- ☐ I influenced project stakeholders
- ☐ I helped to build relationships/consensus
- ☐ I helped to implement the project
- ☐ I supported/advocated the project
- ☐ I observed/reported on the project
- ☐ I opposed the project
- ☐ Other

3. **Your period of involvement in CTRL** (please place mark on the timeline below - you may show more than one period)

													→
1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020	2025

Your Views on CTRL

4. **Your views on the treatment of risk, uncertainty and complexity in decision making for CTRL** (please mark the appropriate boxes):

	Risk: the degree to which future uncertainties and unexpected events may not be manageable within allocated resources	**Uncertainty**: where imperfect knowledge makes it impossible to describe an existing state or future outcome with accuracy, and where lack of knowledge could have significant consequences	**Complexity:** where many independent factors interact in multiple and unforeseen/ unforeseeable ways to generate unexpected outcomes
The circumstances (context) in which this project were planned and implemented were:	Very risky ☐☐☐☐☐☐☐☐☐☐☐ Not at all risky	Completely uncertain ☐☐☐☐☐☐☐☐☐☐☐ Totally certain	Extremely complex ☐☐☐☐☐☐☐☐☐☐☐ Very straight -forward
The degree of control exerted over the planning and implementation of this project was:	Greatly affected by risk ☐☐☐☐☐☐☐☐☐☐☐ Not affected by risk	Greatly affected by uncertainty ☐☐☐☐☐☐☐☐☐☐☐ Not affected by uncertainty	Greatly affected by its complexity ☐☐☐☐☐☐☐☐☐☐☐ Not affected by its complexity
How did this project compare with the **Channel Tunnel** project?	Much more risky ☐☐☐☐☐☐☐☐☐☐☐ Much less risky	Much more uncertain ☐☐☐☐☐☐☐☐☐☐☐ Much less uncertain	Much more complex ☐☐☐☐☐☐☐☐☐☐☐ Much more straight -forward

5. **Which of the following types of context do you consider most important in the planning of CTRL?** (please rank each one out of ten in terms of importance, where one represents the highest priority and ten the lowest):

Types of context	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
National background, policy, planning and funding frameworks?										
Sustainability visions to be serviced?										
Geographical, special and location considerations?										
Cultural contexts?										
Temporal contexts?										
Others? (please specify)										

6. **How successfully do you consider the CTRL project has coped with the Sustainable Development Challenges (SDCs) below?** (please assign a value of one to ten to each, where one represents the highest weighting and ten the lowest):

Sustainable development challenges (SDCs) confronted by CTRL	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ensuring **accountability** in decision-making										
Providing **transparency** in decision-making										
Ensuring institutional **capacity building** & public consultation										
Addressing concerns of **biodiversity**										
Addressing concerns of **ecology**										
Promoting **health**										
Addressing concerns of **safety**										
Promoting **energy saving**										
Contributing to **social cohesion**										
Contributing to goals of **equity**										
Promoting economic c**ompetitiveness**										
Successfully involving the **private sector**										
Addressing forces of **globalisation**										
Enhancing **operations efficiency**										
Guaranteeing **affordability** of project										
Ensuring economic **viability** of project										
Promoting enhanced **accessibility**										
Contributing to planned **spatial & territorial re-structurin**g										
Addressing concerns of **subsidiarity**										
Others (please specify)										

The JLE hypothesis led questionnaire

PART 1: Overarching Research Questions

The questions below are posed to help ascertain what constitutes a 'successful' MUTP in the 21st Century in generic terms and in respect of the Jubilee Line Extension project.

Question 1: project success

1a. In generic terms, what in your view constitutes a 'successful' MUTP?

1b. Do you consider that the JLE project has been a successful MUTP? If so, why. If not, why not?

1c. what constitutes a MUTP - its main defining features and characteristics?

Instructions to Interviewer
- Explain that a technical definition of 'success' (or 'failure') requires consideration of multiple criteria, and that an objective decision under such circumstances requires evaluation and weighting of each criterion.
- First ask open question (1a) about what constitutes a successful MUTPs in general and then in relation to the Case Study project (1b).

Question 2: project appraisal and evaluation

2a. In generic terms, what are the most important appraisal and evaluation criteria for MUTPs?

2b. What were the most important appraisal and evaluation criteria for the JLE project?
- which criteria proved adequate and which inadequate? Why/why not?
- did concerns about sustainable development influence the appraisal or evaluation process? If so, how? And to what effect?

2c. What value do 'traditional' appraisal and evaluation criteria (project cost overruns, completion dates, generation of travel time savings for users and rates of returns for project investors) have as measures of the 'success' of MUTPs in the 21st Century as sustainable development concerns become increasingly critical both globally and locally?

Instructions to Interviewer
- Explain that for the purposes of the OMEGA Study 'appraisal' refers to pre-project assessments and 'evaluation' refers to post-project studies assessments.
- First ask open question about the criteria that should be used for all MUTPs (2a) and then query which criteria were important in relation to the Case Study project (2b).

Question 3: 'sustainability' considerations

3a. Do you consider that 'sustainability' considerations should play a major part in the planning and delivery of MUTPs? If so, why and how? If not, why not?

3b. Did 'sustainability' considerations play a major part in the planning and delivery processes of the JLE project? If so, how? If not, why was this?

3c. Do new/emerging visions of sustainable development offer a better framework for judging success?

3d. Do you consider that it is possible to introduce 'retrofit' strategies that would enable MUTPs in general, and the JLE in particular, to achieve more sustainable outcomes?

Instructions to Interviewer
- First ask open question about relationship between sustainability and MUTPs in general (3a) and then in relation to Case Study project (3b).

Question 4: project decision-making processes

4a. What do you consider to be the most important factors and actors that determine the outcome of decision-making process in the planning and delivery of MUTPs?

4b What were the most important factors determining the outcome of the decision-making process in the planning and delivery of the JLE project?
- which actors had most influence on the decision-making process?
- which factors and influences worked positively and which negatively with respect to the key appraisal and evaluation criteria that you identified in response to question 2?

4c. What influences are generated by (other) specific factors and actors (e.g. political power, rationality of technocrats, lobbying from business, community/environmental activism, influence of mega events etc.)?

Instructions to Interviewer
- First ask open questions about factors and actors (4a) and then in relation to Case Study project (4b).

Question 5: project risk, uncertainty and complexity

5a. What do you consider to be the main issues associated with risk, uncertainty and complexity in the planning and delivery of MUTPs?

5b. What were the main issues associated with risk, uncertainty and complexity faced by the JLE project?
- How have these issues been treated in the decision-making process?
- What worked well and what failed in this respect?

Instructions to Interviewer
- First ask open question about which risk, uncertainty and complexity in relation to MUTPs in general (5a) and then in the context of the Case Study project.

Question 6: project context

6a. What aspects of 'context' do you consider to be the most influential in the planning and delivery of MUTPs? Why is this?

6b. What aspects of 'context' were the most influential in the planning and delivery of the JLE project? Why was this? What aspects of context were not adequately assessed?

6c. What was the Impact of Mega Events on the JLE (if appropriate and if not covered by response to Question 4)

Instructions to Interviewer
- Explain that 'context' concerns include cultural, spatial, political, financial, institutional, environmental and other conditions.
- First ask open question about contextual influences for MUTPs in general (6a) and then in realtion to Case Study project (6b).

PART 2: The Jubilee Line Extension (JLE): Hypotheses about its Development

A number of hypotheses are forwarded here to help explain why and how the JLE has developed the way it has. The following questions invite interviewees to respond to the plausibility of these hypotheses which also explore some of the aspects of the research questions posed in Part 1 in more detail.

HYPOTHESIS 1 – 'Economic Rationalism'

The hypothesis posed here is that the financing and economic rationale for the planning, appraisal and evaluation of the JLE was "ostensibly" based on an *economic cum financial rationalist* model that treats the 'line haul' as a discrete 'closed system', for which supply and demand can be forecast with reasonable accuracy - as a basis for forecasting whether

sufficient revenues can be generated from the operation of the link to pay for its construction. This relies on travel forecasting methods that pay explicit attention to the economics of travel time savings and some implicit but less precise attention to spin-off benefits generated by the new infrastructure and its services with new transport links increasingly seen more as 'commodities' rather than a 'public services'.

Question 7: economic rationalism and the commoditisation of the JLE?
Do you support the above hypothesis? If so why and if not why not?

Question 8: JLE - a closed system?
Was the financing rationale for the planning, appraisal of the JLE based on the belief that the 'line haul' could be treated a discrete 'closed system', for which supply and demand can be forecast with reasonable accuracy as a basis for accurately forecasting whether future revenues would be sufficient to pay for its construction?

Question 9: flawed appraisal models?
Were the appraisal and travel demand models used to forecast potential revenues fundamentally flawed and if so, why and how? Or, were they manipulated so as to generate levels of revenue that were seen to be politically 'acceptable'?

Question 10: transparency, trust and politics?
Is there any evidence of events where politicians have had a significant impact on the planning, appraisal and delivery of the project over and above the apparent economic rationalism approach postulated above? Do you consider that political interventions of this kind, where they have taken place, have meant that other contextual matters received much less consideration?

HYPOTHESIS 2 – 'Supporting London as a Financial Capital and Global City'

The hypothesis forwarded here is that the importance of JLE can *only* be understood in a much broader context where the regeneration of the JLE corridor is seen as essential to better servicing the forces of globalisation by enhancing London's status as a global financial centre and thus sustaining/enhancing London's competitive position as a 'world city region'

Question 11: the world city imperative?
Do you support the above hypothesis? If so why and if not, why not?

Question 12: globalisation
Do you agree that public sector support for the construction of the JLE was seen by the powers that be (such as Central Government, Regional Development Agencies, local authorities) as *essential* in the face of competition from Paris and Frankfurt, despite the projects apparent poor Cost Benefit Ratio. Did previous attempts to link the docklands by heavy- rail fail due ultimately to the lack of such vision?

Question 13: policy Intervention
It is true that the continued support for the project represents in some way a form of policy intervention that overrides models of economic rationalism?

Question 14: promoting 'New Regionalism'?
If you accept the above hypothesis, how inevitable was/is it and who were/are the principle actors who promoted this agenda? Who would you say ultimately benefits from this vision and who pays (both in the short *and* long term)?

HYPOTHESIS 3 - 'Muddling Through'

The hypothesis posed here is that there was no clear, consistent, properly articulated or widely agreed vision of the role of JLE at the outset, other than an imperative to link Central London to the Docklands in what was seen at the time as the most cost-effective manner. Subsequent decisions regarding such matters as upgrading the existing JLE line, the interface between the new and existing line, the choice of control system, station specification, management structure, the 1999 project deadline, and the approaches to project funding were thus made on an *ad hoc* basis in response to different (sometimes competing) agendas that arose over time.

Question 15: an evolving project? (after Wright, 2008)
Do you subscribe to the above hypothesis? Would a more clearly articulated set of objectives (and/or vision) for JLE at its inception have made the project less vulnerable to political and financial influences?

Question 16: influences on planning and delivery? (after Wright, 2008)
Given the JLE was characterised by lengthy planning and implementation periods, do you believe it was inevitable over time that the interplay of competing forces, emerging agendas and changing contexts reinforced all/some/none of the following:

- The need for a 'time to breathe' – so as to allow it to evolve in response to changing circumstances over time;
- The realization that it is unrealistic to expect every aspect of the planning and delivery of the JLE to be tightly controlled from the outset;
- 'Carpe diem' – i.e., moments in time in the planning and delivery of the JLE when circumstances were ripe for key players to seize the occasion and adjust its focus.

Question 17: responses to 'muddling through'?
Do you attribute the introduction of delayed, some ill-thought out and many sub-optimal strategies by both public and private agencies to the 'muddling-through' approach described above? If so, what scope exists for JLE to be expanded and modified (as a form of retrofitting) to serve the sustainable communities vision(s) advocated by Central Government and others?

HYPOTHESIS 4 - 'Smoke Filled Rooms'

The hypothesis posed here is that whilst developments at the JLE stations are largely positioned as maximising on the increased accessibility and travel time savings that the project delivers in order to promote 'regeneration' and 'sustainability', it would seem that property development *also* represents a significant means to support the financing of the JLE - with related deals between JLE promoters and line-haul investors made with varying degrees of transparency.

Question 18: issues of transparancy?
Do you subscribe to the above hypothesis? If so why, and if not, why not?

Question 19: the right project at the right time?
Was the JLE the right project to go ahead in 1993 or was the process of project appraisal and selection hijacked by private real estate agendas?

Question 20: the role of real estate in JLE?
Do you agree that the property development associated with JLE, particularly around Canary Wharf, represents an effective means to support (subsidize) the financing of the JLE with

promises of the 'spoils' of real estate development for line-haul investors seen as sweeteners? How dependent is the success and viability of the development potential at the JLE transport hubs on the provision of adequate train services? And who defines/should define the adequacy and performance criteria for such services?

Question 21: the nature and role of regeneration?
Do you consider that there has been a lack of a common consensus (and understanding) concerning the nature and role of 'urban regeneration' amongst Central government, local authorities and local communities which has produced a situation that could be/is exploited by developers associated with the delivery of development projects at JLE stations (such as Canary Wharf, Stratford, London Bridge, Canada Water and North Greenwich)?

HYPOTHESIS 5 – 'Private Finance at all Costs?'

The hypothesis here is that following the collapse of the JLE projects main private financier, Olympia & York, the government's continued insistence for a £400m private contribution led to numerous project setbacks, including an 18 month moratorium, spiralling costs, and considerable levels of uncertainty amongst project stakeholders, the combination of which proved considerably more costly than the Net Present Value (NPV) of the private sector's contribution. This implies the JLE was driven by a narrow adherence to the principle of 'least/no cost to public purse' and a consequent slavish adoption of private sector financing of public infrastructure.

Question 22: private finance at all costs?
Do you subscribe to the above hypothesis? If so, why? If not, why not?

Question 23: risk transfer?
Despite the fundamentally different time horizons of the public and private sector with regards to expected benefits from the line and associated developments, do you consider that the final financial arrangements for the JLE represented an adequate and appropriate distribution of project and financial risk between the public and private sector? Do you think there is a tendency for the public sector to carry the lion's share of the risks and obligations associated with PPP/PFI financed Mega Projects?

Question 24: extracting benefits from PFIs
Do you consider that the public sector has sufficient instruments/mechanisms/capacity to extract effectively the potential benefits from private sector participation in public infrastructure investment?

PART 3: Concluding Questions

On the basis of the preceding questions and responses by interviewees to these, the following questions seek to identify generic lessons that can be extracted from the JLE experiences and other similar projects and applied elsewhere.

Instructions to Interviewer
The following questions to be used as a 'prompt' to elicit interviewees thoughts on generic lessons that may be derived from the JLE project. Interviewees therefore have a 'free choice' of which questions to address.

Question 25: MUTP objectives?
On the basis of the JLE experience, how should MUTP objectives be set – by whom, in what forum, and how should they be appraised, evaluated and monitored?

Question 26: engagement, consultation and participation?
What generic lessons, if any, are there to be had from JLE regarding community involvement (engagement, consultation and participation) in MUTP planning, appraisal and delivery – along the line-haul route and around major transport hubs?

Question 27: national planning frameworks for MUTPs?
Do you consider it essential that MUTPs such as the JLE should only be promoted and delivered against the background of a planning framework which puts forward national development proposals expressing agreed economic, social and environmental (and other) objectives and priorities?

Question 28: other generic lessons?
What other generic lessons do the JLE experiences offer?

Thank you
The OMEGA Team

INDEXES

By completing the following indexes you will be greatly helping us to analyse the data collected in your interview. The indexes are divided into two parts:
- **About You - questions about you and your involvement in the JLE and/or its associated developments (Questions 1-3 below);**
- **Your Views on JLE - questions about your attitude towards certain aspects of the JLE planning and delivery process (Questions 4-6 below)**

About You

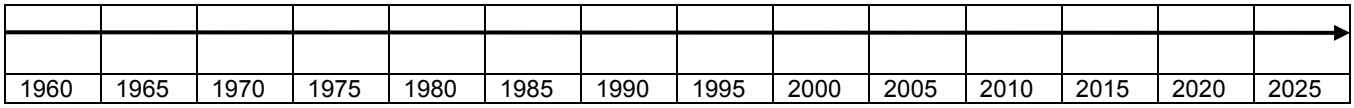
1**. What You Do** (please tick the box(es) that best describes what you do)

Private Sector			
	Entrepreneur/Business Person		Consultant/Advisor
	Business/Financial Adviser		Financial Consortium/Funding Agency
	Contractor/Constructor		Other
Public Sector			
	Central Government Employee		Politician
	Local / Regional Government Employee		Other
Non-Government Organisation/Other			
	Work for Regional or Metropolitan Agency		Lobby Group
	Local Community Member		Member of Community Action Group
	Academic		Other

2. **Your Role on JLE** (please tick the box that best describes your influence on the project)

- ☐ I influenced decision-makers
- ☐ I influenced project stakeholders
- ☐ I helped to build relationships/consensus
- ☐ I helped to implement the project
- ☐ I supported/advocated the project
- ☐ I observed/reported on the project
- ☐ I opposed the project
- ☐ Other

3. **Your period of involvement in JLE** (please place mark on the timeline below - you may show more than one period)



Your Views on JLE

4. **Your views on the treatment of risk, uncertainty and complexity in decision making for JLE** (please mark the appropriate boxes):

	Risk: the degree to which future uncertainties and unexpected events may not be manageable within allocated resources	**Uncertainty**: where imperfect knowledge makes it impossible to describe an existing state or future outcome with accuracy, and where lack of knowledge could have significant consequences	**Complexity:** where many independent factors interact in multiple and unforeseen/ unforeseeable ways to generate unexpected outcomes
The circumstances (context) in which this project were planned and implemented were:	Very risky ☐☐☐☐☐☐☐☐☐☐☐ Not at all risky	Completely uncertain ☐☐☐☐☐☐☐☐☐☐☐ Totally certain	Extremely complex ☐☐☐☐☐☐☐☐☐☐☐ Very straight -forward
The degree of control exerted over the planning and implementation of this project was:	Greatly affected by risk ☐☐☐☐☐☐☐☐☐☐☐ Not affected by risk	Greatly affected by uncertainty ☐☐☐☐☐☐☐☐☐☐☐ Not affected by uncertainty	Greatly affected by its complexity ☐☐☐☐☐☐☐☐☐☐☐ Not affected by its complexity
How did this project compare with the **CTRL** project?	Much more risky ☐☐☐☐☐☐☐☐☐☐☐ Much less risky	Much more uncertain ☐☐☐☐☐☐☐☐☐☐☐ Much less uncertain	Much more complex ☐☐☐☐☐☐☐☐☐☐☐ Much more straight -forward

5. **Which of the following types of context do you consider most important in the planning of JLE?** (please rank each one out of ten in terms of importance, where one represents the highest priority and ten the lowest):

Types of context	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
National background, policy, planning and funding frameworks?										
Sustainability visions to be serviced?										
Geographical, special and location considerations?										
Cultural contexts?										
Temporal contexts?										
Others? (please specify)										

6. **How successfully do you consider the JLE project has coped with the Sustainable Development Challenges (SDCs) below?** (please assign a value of one to ten to each, where one represents the highest weighting and ten the lowest):

Sustainable development challenges (SDCs) confronted by JLE	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ensuring **accountability** in decision-making										
Providing **transparency** in decision-making										
Ensuring institutional **capacity building** & public consultation										
Addressing concerns of **biodiversity**										
Addressing concerns of **ecology**										
Promoting **health**										
Addressing concerns of **safety**										
Promoting **energy saving**										
Contributing to **social cohesion**										
Contributing to goals of **equity**										
Promoting economic c**ompetitiveness**										
Successfully involving the **private sector**										
Addressing forces of **globalisation**										
Enhancing **operations efficiency**										
Guaranteeing **affordability** of project										
Ensuring economic **viability** of project										
Promoting enhanced **accessibility**										
Contributing to planned **spatial & territorial re-structurin**g										
Addressing concerns of **subsidiarity**										
Others (please specify)										

The M6 Hypothesis Led Questionnaire

PART 1: Overarching Research Questions

The questions below are posed to help ascertain what constitutes a 'successful' MUTP in the 21st Century in generic terms and in respect of the M6 Toll Road Case Study project.

Question 1: Project Success

Q1a. In generic terms, what in your view constitutes a 'successful' MUTP?

Q1b. Do you consider that the M6 Toll Road Case Study project has been a successful MUTP?
If so, why? If not, why not?

Q1c. What constitutes a MUTP - what are their main defining features and characteristics?

Question 2: Project Appraisal and Evaluation

Q2a. In generic terms, what are the most important appraisal and evaluation criteria for MUTPs?

Q2b. What were the most important appraisal and evaluation criteria for the M6 Toll Road project?

- which criteria proved adequate and which inadequate? Why/why not?
- did concerns about sustainable development influence the appraisal or evaluation process? If so, how? And to what effect?

Q2c. What value do 'traditional' appraisal and evaluation criteria (project cost overruns, completion dates, travel time savings and rates of returns etc.) have as measures of the 'success' of MUTPs in the 21st Century as sustainable development concerns become increasingly critical both globally and locally?

Question 3: 'Sustainability' Considerations

Q3a. What do you consider to be the main sustainability considerations in the context of MUTPs? Do you consider that 'sustainability' considerations should play a major part in the planning and delivery of MUTPs? If so, why and how? If not, why not?

Q3b. Did 'sustainability' considerations play a major part in the planning and delivery processes of the M6 Toll Road? If so, how? If not, why was this?

Q3c. Do new/emerging visions of sustainable development offer a better framework for judging success?

Q3d. Do you consider that it is possible to introduce 'retrofit' strategies that would enable MUTPs in general, and the M6 Toll Road project in particular, to achieve more sustainable outcomes?

Question 4: Project Decision-making Processes

Q4a. What do you consider to be the most important factors and actors that determine the outcome of decision-making process in the planning and delivery of MUTPs?

Q4b What were the most important factors determining the outcome of the decision-making process in the planning and delivery of the M6 Toll Road?

- Which actors had most influence on the decision-making process?
- And which factors and influences worked positively and which negatively with respect to the key appraisal and evaluation criteria that you identified in response to question 2?

Q4c. What influences are generated by (other) specific factors and actors (e.g. political power, rationality of technocrats, lobbying from business, community/environmental activism, influence of mega events etc.)?

Question 5: Project Risk, Uncertainty and Complexity

Q5a. What do you consider to be the main generic sources of risk, uncertainty and complexity in the planning and delivery of MUTPs?

Q5b. What were the main sources of risk, uncertainty and complexity faced by the M6 Toll Road_ project?

- How have these issues been treated in the decision-making process?
- What worked well and what failed in this respect?

Question 6: Project Context

Q6a. What aspects of 'context' do you consider to be the most influential generically in the planning and delivery of MUTPs? Why is this?

Q6b. What aspects of 'context' were the most influential in the planning and delivery of the M6_Toll Road? Why was this? What aspects of context were not adequately assessed?

Q6c. What was the impact of Mega Events on the M6 Toll Road project (if appropriate and if not covered by response to Question 4)

PART 2: Case Study Hypotheses

Four different hypotheses are forwarded here which postulate why and how the case study has developed the way it has. The following questions invite interviewees to respond to the plausibility of these hypotheses which also explore some of the aspects of the research questions posed in Part 1 in more detail.

HYPOTHESIS 1 – 'Economic Rationalism'

The hypothesis posed here is that the financing and economic rationale for the planning, appraisal and evaluation of the M6 Toll Road is "ostensibly" based on an *economic cum financial rationalist* model that treats the 'line haul' as a discrete 'closed system', for which supply and demand can be forecast with reasonable accuracy - as a basis for forecasting whether sufficient revenues can be generated from the operation of the link to pay for its construction. This relies on travel forecasting methods that pay explicit attention to the economics of travel time savings and some implicit but less precise attention to spin-off benefits generated by the new infrastructure and its services with new transport links increasingly seen more as 'commodities' rather than a 'public services'.

Question 7: M6 Toll Road - a closed system?
Was the financing rationale for the planning, appraisal of the M6 Toll Road indeed based on the belief that the project could be treated a discrete 'closed system', for which supply and demand can be forecast with reasonable accuracy as a basis for accurately forecasting whether future revenues would be sufficient to pay for its construction and operation?

Question 8: flawed appraisal models?
Were the appraisal and travel demand models used to forecast potential revenues fundamentally flawed and if so, why and how? Or, were they manipulated so as to generate levels of revenue that were seen to be politically 'acceptable'?

Question 9: transparency, trust and politics?
Is there any evidence of events where politicians have had a significant impact on the planning, appraisal and delivery of the project over and above the apparent economic rationalism approach postulated above? Do you consider that political interventions of this kind, where they have taken place, have meant that other contextual matters received much less consideration?

HYPOTHESIS 2 – 'M6 Toll Road, Congestion and Sustainability'

The hypothesis presented here is that the importance of the M6 Toll Road in offering a congestion-free alternative to the M6 was seen by the powers that be as overriding other sustainability and environmental concerns about facilitating yet more vehicle

movements and that this represents out-moded thinking in the context of 21st Century agendas associated with climate change.

Question 10: do you subscribe to the above hypothesis? If so, why? If not, why not?

Question 11: economic growth is paramount?
Do you subscribe to the notion that maintaining economic growth is vital, while matters such as sustainability, the environment and other societal impacts can only be dealt with in circumstances where the financial health of the community is sound and that this essentially explains the basis for the support of the M6 Toll Road.

Question 12: do sustainable mega projects exist?
Could the M6 Toll Road have been planned and implemented in such a way as to enhance the sustainable development of the areas though which it passes?

HYPOTHESIS 3 – 'Privatisation at all Costs'

Within the context of earning an adequate rate of return on capital employed as a single-asset project financed venture, the M6 Toll Road could be considered an economic success for its private sector investors. However, from a users' perspective it does not alleviate traffic congestion on the M6 to the extent originally thought. This brings into question the role of privatization of public infrastructure and value for money in delivering the intended objectives – in this case the alleviation of congestion. On this basis it may be conjectured that the rationale for building the Toll Road was driven by a narrow adherence to the principle of 'least/no cost to public purse' and a consequent slavish ideological adoption of the private sector provision of public infrastructure - with its attendant planning, appraisal and financing mechanisms.

Question 13: do you subscribe to the above hypothesis? If so, why? If not, why not?

Question 14: risk transfer?
Do you consider that the financial arrangements for the M6 Toll Road represent an adequate and appropriate transfer of project and financial risk from the public sector to the private sector?

Question 15: **extracting benefits from PFIs**
Do you consider that the public sector has sufficient instruments, mechanisms, and capacity to extract effectively the potential benefits from private sector participation in public infrastructure investment?

HYPOTHESIS 4 - 'A Straightforward and Benign Project'

The hypothesis posed here is that the relatively clear-cut and 'simple' vision of the need for, and means of financing, the M6 Toll Road over the course of its planning and implementation period meant that it was capable of tight budgetary and programme control from the outset. In particular, it is suggested that the straightforward nature of the objectives for the project and its ultimately 'benign' nature as a solution to the perceived traffic congestion problem enabled it to avoid becoming impacted by a variety of different stakeholder agendas (including political) and any accusation of muddling through.

Question 16: a straightforward project?
Do you subscribe to the above hypothesis? Would less clear objectives/need for the project have made the project more vulnerable to political and other 'outside' influences?

Question 17: influences on planning and delivery?
Do you consider that projects like the M6 Toll Road:

- need 'time to breathe' – so as to allow them to evolve in response to changing circumstances over time;
- can be tightly controlled from the outset in terms of their planning and delivery? What might be the main factors that influence the degree of effective control that can be exerted?
- are characterized by moments in time in their planning and delivery when circumstances are ripe for key players to 'seize the day' and take decisive action?
- are inevitably impacted by political influence because of their size, cost and impact?

PART 3: Concluding Questions

On the basis of the preceding questions and responses by interviewees to these, the following questions seek to identify generic lessons that can be extracted from the case study experiences and other similar projects and applied elsewhere.

Question 18: MUTP objectives?
On the basis of the case study experience, how should MUTP objectives be set – by whom, in what forum, and how should they be appraised, evaluated and monitored?

Question 19: engagement, consultation and participation?
What generic lessons, if any, are there to be had from the case study regarding community involvement (engagement, consultation and participation) in MUTP planning, appraisal and delivery – along the line-haul route and around major transport hubs?

Question 20: national planning frameworks for MUTPs?
Do you consider it essential that MUTPs such as the case study should only be promoted and delivered against the background of a planning framework which puts forward national development proposals expressing agreed economic, social and environmental (and other) objectives and priorities?

Question 21: other generic lessons?
What other generic lessons do the case study experiences offer?

Thank you
The OMEGA Team

INDEXES

By completing the following indexes you will be greatly helping us to analyze the data collected in your interview. The indexes are divided into two parts:
- **About You - questions about you and your involvement in the case study and/or its associated developments (Questions 1-3 below);**
- **Your Views on the case study - questions about your attitude towards certain aspects of the planning and delivery process (Questions 4-6 below)**

About You

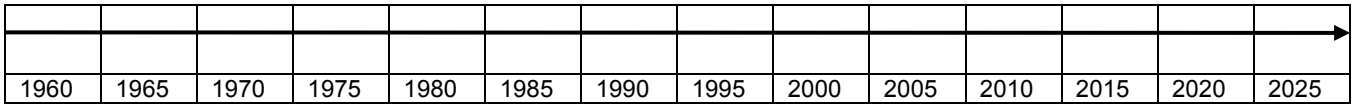
1**. What You Do** (please tick the box(es) that best describes what you do)

Private Sector			
	Entrepreneur/Business Person		Consultant/Advisor
	Business/Financial Adviser		Financial Consortium/Funding Agency
	Contractor/Constructor		Other
Public Sector			
	Central Government Employee		Politician
	Local / Regional Government Employee		Other
Non-Government Organisation/Other			
	Work for Regional or Metropolitan Agency		Lobby Group
	Local Community Member		Member of Community Action Group
	Academic		Other

2. **Your Role on the case study** (please tick the box that best describes your influence on the project)

	I influenced decision-makers
	I influenced project stakeholders
	I helped to build relationships/consensus
	I helped to implement the project
	I supported/advocated the project
	I observed/reported on the project
	I opposed the project
	Other

3. **Your period of involvement in the case study** (please place mark on the timeline below - you may show more than one period)



Your Views on the case study

4. **Your views on the treatment of risk, uncertainty and complexity in decision making for M6 Toll** (please mark the appropriate boxes):

	Risk: the degree to which future uncertainties and unexpected events may not be manageable within allocated resources	**Uncertainty**: where imperfect knowledge makes it impossible to describe an existing state or future outcome with accuracy, and where lack of knowledge could have significant consequences	**Complexity:** where many independent factors interact in multiple and unforeseen/ unforeseeable ways to generate unexpected outcomes
The circumstances (context) in which this project were planned and implemented were:	Very risky ☐☐☐☐☐☐☐☐☐☐☐ Not at all risky	Completely uncertain ☐☐☐☐☐☐☐☐☐☐☐ Totally certain	Extremely complex ☐☐☐☐☐☐☐☐☐☐☐ Very straight -forward
The degree of control exerted over the planning and implementation of this project was:	Greatly affected by risk ☐☐☐☐☐☐☐☐☐☐☐ Not affected by risk	Greatly affected by uncertainty ☐☐☐☐☐☐☐☐☐☐☐ Not affected by uncertainty	Greatly affected by its complexity ☐☐☐☐☐☐☐☐☐☐☐ Not affected by its complexity
How did this project compare with the CTRL project?	Much more risky ☐☐☐☐☐☐☐☐☐☐☐ Much less risky	Much more uncertain ☐☐☐☐☐☐☐☐☐☐☐ Much less uncertain	Much more complex ☐☐☐☐☐☐☐☐☐☐☐ Much more straight -forward

5. **Which of the following types of context do you consider most important in the planning of the case study** (please rank each one out of ten in terms of importance, where one represents the highest priority and ten the lowest):

Types of context	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
National background, policy, planning and funding frameworks?										
Sustainability visions to be serviced?										
Geographical, special and location considerations?										
Cultural contexts?										
Temporal contexts?										
Others? (please specify)										

6. **How successfully do you consider the case study has coped with the Sustainable Development Challenges (SDCs) below?** (please assign a value of one to ten to each, where one represents the highest weighting and ten the lowest):

Sustainable development challenges (SDCs) confronted by M6 Toll	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ensuring **accountability** in decision-making										
Providing **transparency** in decision-making										
Ensuring institutional **capacity building** & public consultation										
Addressing concerns of **biodiversity**										
Addressing concerns of **ecology**										
Promoting **health**										
Addressing concerns of **safety**										
Promoting **energy saving**										
Contributing to **social cohesion**										
Contributing to goals of **equity**										
Promoting economic c**ompetitiveness**										
Successfully involving the **private sector**										
Addressing forces of **globalisation**										
Enhancing **operations efficiency**										
Guaranteeing **affordability** of project										
Ensuring economic **viability** of project										
Promoting enhanced **accessibility**										
Contributing to planned **spatial & territorial re-structurin**g										
Addressing concerns of **subsidiarity**										
Others (please specify)										

Apprndix 23: Structure and outline of Country Synthesis Report

Part 1: OMEGA WORKING PAPERS

1.1 Finalised Partner Contribution to OMEGA Working Paper #1 Series on National Policy, Planning and Funding Frameworks for the Delivery of MUTPs (with additional new section on national sustainable appraisal frameworks).

1.2 Finalised Partner Contribution to OMEGA Working Paper #2 Series on Sustainable Development Challenges for MUTPs

Part 2: Details of Partner Project Team

1.1 Principal Investigator(s)
1.2 PhDs (including titles of PhD work)
1.3 Research Assistants
1.4 Associates
1.5 Others

Part 3: Details of Academic and Non-Academic Partners

3.1 Academic Partners who assisted in/contributed to Case Study and other work
3.2 Non-Academic Partners who assisted in/contributed to case Study Work
3.3 Other acknowledgements as appropriate

Part 4: Details of Publications and Presentations

4.1 Details of publications completed by the Partner Project Team
4.2 Details of presentations undertaken by the Partner Project Team

Part 5: Case Study Report (one for each Case Study)

5.1 Project Profile Report
- Project Profile Template (including project timeline) - comprising the principle template data requested and accompanying write-up of each section. This should, if not already completed, clearly identify the pivotal events/decisions that shaped the project, the reasons why these events/decisions were pivotal and the prevailing context that surrounded such events/decisions.
- Quantification analysis will be undertaken by the Centre

5.2 Pre-Hypothesis Research Report
- Stakeholder types and basis for selection
- Dates of interviews - naive and hybrid
- Reports on Principal Findings - using findings from both SenseMaker software and the 'manual oversight' approach. Each Report should be accompanied by an Executive Summary of principal findings.
- Electronic version of transcripts and indexes to be forwarded to OMEGA Centre (annonomized if required)

5.3 Hypothesis-Led Research Report
- Stakeholder types and basis for selection
- Hypothesis-led questionnaire used (including Part 2 hypotheses and questions)
- Dates of interviews
- Report on Principal Findings - each Report should be accompanied by an Executive Summary of principal findings.
- Electronic version of transcripts to be forwarded to OMEGA Centre (these can be anonymised if required)
- Quantification analysis will be undertaken by the Centre

5.4 4 Tests/Tasks Report

A Report, for each Case Study, on the outcome of the four tests ('tasks') of project achievements relative to normative values and related criteria.

- Test 1: Project Objectives (as above)
- Test 2: MUTP sustainable development challenges (as above)
- Test 3: Treatment of risk, uncertainty, complexity and context on MUTP decision-making (as above)
- Test 4: Synthesis of Tests 1-3 for each Case Study project (as above):
  - The chief 'context-specific' influences on project achievements.
  - The chief 'generic' influences on project achievements.
  - The principal stakeholder 'winners and losers' associated with project performance levels.
  - The responses to the Overall Research Questions and Overall Research Hypotheses in the form of:
    - provisional lessons considered to be of context-specific relevance that could enhance Case Study project planning and delivery of other MUTPs in similar contexts; and
    - provisional lessons considered to be of possible generic relevance that could enhance Case Study project planning and delivery of other MUTPs universally.
    - (3) the above are to include an assessment of opportunities and threats associated with external factors such as blocking and inducement mechanisms.

Part 6: Summary Report covering all 3 Country Case Studies

6.1 Context specific responses to the Overall Research Questions and Overall Research Hypotheses (as above).

6.2 Possible generic responses to the Overall Research Questions and Overall Research Hypotheses (as above).

6.3 Potential lessons of a context-specific nature (as above)

6.4 Potential lessons of a generic nature (as above)

Part 7: Concluding Remarks by Partners on technical issues.

7.1 Use this section to raise any technical issues that you consider the Centre needs to be made aware of - particularly those which might impact on the Centre's ongoing synthesis work. This may include, but should not be limited to, issues relating to use of data/restrictions on release of data etc.

7.2 The OMEGA Centre would also welcome comments on matters such as the approach to/usefulness of the pre-hypothesis research method.

Appendix 24: RAMP study literature report executive summary

1.0 Purpose of Executive Summary

This document forms an Executive Summary of the Literature Review Report submitted as the first main deliverable in the study for the Institution of Civil Engineers and the Actuarial Profession aimed at better incorporating environmental and social factors into subsequent editions of the jointly published RAMP Handbook.

The Institution of Civil Engineers now has the current overall vision of "Civil engineers at the heart of society, delivering sustainable development through knowledge, skills and professional expertise." This indicates a mission to become more sensitive in practice to the requirements of sustainable development in the planning, appraisal and implementation of all activities involving civil engineering expertise, including the planning, appraisal and implementation of major projects. This forms a key focus in the engagement by the Institution and its partner the Actuarial Profession of the Omega Centre for this task.

The RAMP Handbook defines a project as "any organised business activity where an investment is made". Most commonly this applies to the planning, appraisal and construction of infrastructure, especially major schemes, and this study is largely focused on that application. The Report forms a synthesis of material from eight commissioned working papers: seven written from the respective perspectives of different professional communities, addressing the treatment of social and environmental concerns in project appraisal, with particular reference to Mega Urban Transport Projects (MUTPs); and the eighth considering alternative frameworks for assessing sustainable development visions for such projects.

The concept of sustainable development has been of growing significance as a vision for future development for around two decades. In some form or other, the concept has now been adopted as a vision for future development by all international development agencies, most levels of government; increasingly commercial and industrial parties have also adopted it, both globally and locally, as well as community groups. Generally the concept has been associated with the environmental and social impacts of projects and their links with economic sustainability. The OMEGA Centre has added the fourth dimension of institutional sustainability: on the basis that visions of sustainability cannot be maintained without sustainable institutions and governance.

Major projects, almost by definition, have many stakeholders concerned with their effects apart from the decision makers or professionals taking forward such projects. The RAMP Handbook Glossary defines such stakeholders as "parties whose interests are affected by decisions about the operation of an asset which they do not necessarily own or enjoy property rights in". Major projects can have significant impacts on the environmental and social aspects of areas they traverse. Stakeholders interested in optimising economic, environmental and social conditions may assess a project in ways which lie outside the interests of the project's promoters and which cannot easily be converted to quantitative measures. How best

to incorporate such concerns into the more orthodox methods of project appraisal is the challenge investigated here.

Professional contexts and the working papers

Formal decisions are usually made by elected or appointed decision makers. But many decisions in bringing a major project from initial idea to final completion lie in reality with those experienced and qualified within the various professional communities whose job it is to plan, appraise and implement such projects. Typically, different professions represent different elements of a project. Major projects are likely to engage staff from most key professions to work together. Different professions bring different tools to the task of project appraisal: sometimes these overlap, in other cases they do not. Specific professions tend to be associated with particular methodologies (e.g. transport economists and many transport planners with Cost Benefit Analysis [CBA], which forms the conventional standard mode for appraising transport projects and urban and regional planners and social planners with Multi Criteria Analysis [MCA])).

The roles of the professions concerned with infrastructure development have changed over time and have mostly expanded, in line with the growing complexity of society, demand and technologies. The working papers were commissioned in order to draw out these various professional standpoints and help clarify what they have to offer in terms of the assessment of environmental and social impacts of project appraisal.

Sustainable development in principle and practice

Sustainable development as a concept and a vision is increasingly being applied in infrastructure development, involving well phrased aims and increasingly regulatory frameworks. International agreements and national policy goals are strongly focused on seeing how this vision can be operationalized and measured and relate to more traditional assessments of project performance. Sustainable development is a term that is becoming the watchword of many sectoral polices, including those for transport. However, the visions for sustainability set out in international definitions and agreements, such at the Millennium Development Goals, are often couched in general terms with their main objectives rarely specifying transport directly; transport development is generally seen as an agent of development rather than an aim in itself. But transport forms an important agent of change and an essential means of providing high quality access to goods, services, opportunities and basic needs. So it is critical to translate the sustainability concept into transport operations and appraisal, particularly, since evidence is emerging that the cost of failing to do this may be identified as very high.

In some circles this stresses the importance of the ‘precautionary principle’. One definition of this is ‘a moral and political principle which states that if an action or policy might cause severe or irreversible harm to the public or to the environment, in the absence of a scientific consensus that harm would not ensue, the burden of proof falls on those who would advocate taking the action.’ Since this principle requires that the promoters of a project should take responsibility for not causing environmental or social damage, it also implies that they should also appraise the

project comprehensively in terms of all potentially significant environmental and social factors.

Achieving the holistic vision of sustainable development involves addressing economic, environmental, social and institutional factors in a sustainable way, understanding (and acting on) the tensions between them. Creating a sustainable world society for the future implies that agents of change should become familiar with handling risk, uncertainty and complexity recognizing that different contexts impact on the nature and pace of change and the effectiveness of project management. Professions well versed in decision-making in climates of high uncertainty inform us that skills in strategic planning and strategically executed actions need to be taken (often) simultaneously in a variety of related fields at different levels. In principle, this requires the establishment of strategic policy frameworks that direct and inform project appraisal methodologies and information sets rather than strategy being led by projects; although a two way communication between policy and project development is often essential. To date the policy - project interface generates too many tensions and contradictions, while efforts to address these tensions are taking place at too slow and piecemeal a pace. Policy frameworks in the transport field against which major project promoters and sponsors may consider the validity of their project and draw their objectives are of variable quality; sometimes such policy frameworks do not exist.

Appraisal methodologies – treatment of environmental and social factors

A range of project appraisal methodologies exist but for the purposes of review they can all be considered within two main types:

- **Cost Benefit Analysis (CBA),** where all factors considered are measured in money terms over a defined period of years and the results are compiled into flows of costs and benefits, and summarised as a single rate of return.

- **Multi Criteria Analysis (MCA),** where the results of analysing each factor are presented in a summary table setting out all the criteria identified for assessment. This is a more qualitative methodology, although quantitative measures are used wherever possible.

CBA forms the main approach for major transport project appraisal; more often now in conjunction with some measure of MCA as well. For example, the approved UK methodology for transport plans and projects, the New Approach to Transport Appraisal (NATA), involves presentation of results in an Appraisal Summary Table (AST), which includes measures of economic, environmental and social factors as well. Environmental Impact Analysis (EIA), which is obligatory for major projects, and Sustainability Appraisal (SA), which is now required for plans, are in effect MCA techniques.

All these appraisal methodologies rely on the compilation and use of information in the various fields which need to be covered if the project is truly aimed at sustainable development. This can be of variable quality. In overall terms, environmental information is reasonably straightforward to deal with, especially in relation to purely ecological data; not least because environmental assessment has been of growing

importance for many years and much of it is increasingly quantifiable. Information on social factors, however, is far weaker; and social assessment has lagged behind environmental in formal appraisals, in good part because the former implicitly concerns more political issues and are often not easily quantifiable.

A major issue of concern is that appraisal decisions regarding each major project are ultimately in the hands of the project promoters (governments, major project investors or some combination of these), whose prime aim is typically a financial return on the project. Thus, the development of the project and the application of appraisal methods are typically designed ultimately to suit this aim. Major projects will also impact on areas of public interest, in terms of the environment and society, and so receive some degree of formal attention from public bodies. These can influence the project's development and appraisal; but the extent to which they can control outcomes varies greatly.

The appraisal processes for major transport projects continue to evolve in form and coverage, as does the research work to assess their potential and actual effectiveness. Some argue that this evolution has been too slow, follows existing technical paths and remains too piecemeal and insufficiently holistic in outlook; this makes the incorporation of sustainability in the appraisal approach very difficult indeed. There are, however, some positive features emerging from this evolution:

- **The extent to which environmental and social factors can be monetized** for use in CBA techniques continues to widen slowly. For those professionals engaged in using CBA techniques, this means that it is increasingly possible to compare projects, within the transport and other fields, through the single common indicator of money value.

- **The widening use of MCA** and related processes in fields such as SEAs and EIAs means that a more disciplined approach to appraisal beyond CBA is available for decision makers where it is not feasible to attribute money values.

- **The growing requirement for formal consultation** is accompanied by a greater interest in more participatory methods of involving a wider range of the project stakeholders who may be affected by a major transport project.

There are though several important areas where there remains serious doubt, and perhaps even controversy as to how best to move ahead. Some of these reflect differences between types of appraisal methodology; others reflect issues of complexity and context which are common to most forms of project appraisal:

- **Project appraisal concerns future impacts and results**. Forecasting is thus an essential part of the process. It is, nonetheless liable to error in any one factor and to serious error through the compounding of forecasts for several factors. In particular, major projects require forecasts of many factors and areas for a long period of time and are thus more liable compound error.

- **Appraisal must take into account a complete range of factors** if it is to provide a sound basis for a holistic and sustainable approach. Most appraisal

methods do not do this; some are very limited in their coverage/scope (sometimes intentionally).

- **CBA appraisal processes bring together all aspects into a single return on monetary value**. This involves attribution of monetary values to all aspects. The single value may form an apparently simpler basis for decisions but it relies on a 'black box' of processes that some would claim are dishonest in that they are often founded on unchallenged and unrealistic assumptions.

- **MCA appraisal processes present results as a table of indicator values, both quantitative and qualitative.** This provides a much clearer picture of the range of factors considered in a project appraisal but a less clear measure of the impact for each. It leaves key decision makers to weigh up and select (sometimes by default) the relationships of these various factors and their priorities. This requires of them applying judgement in a transparent manner; something that many politicians and public officials in administrative positions are less keen to do and less practiced in too.

- **Compiling relevant information on a valid basis** and, where needed, subjecting it to sensitivity analysis, is required expertise of the appraisal process and a feature of all project assessment procedures. Making available sufficient resources and time to this is also very important. Professional judgements need to be made, not only in qualified assessments but also in attributing values in the case of quantified methods.

- **There are serious differences where environmental and social factors are considered** in project appraisal for major schemes. For those professions primarily engaged in using CBA methodologies, such factors are developed principally through attribution of suitable (monetized) values. However, this rarely admits the complexity of such factors. In particular, it is weak in terms of social factors, especially over the equity (distributional) issues which are crucial in their case. This is recognised in the questions that are left in such methodologies as the UK NATA system. MCA methodologies provide a good opportunity to give a fuller picture; but even they require some quantification and selection of criteria and results.

- **Participation in appraisal exerc**ises makes the issue of context, especially institutional and policy context, of major significance. Appraisal methodologies in the recent past have been primarily set by project promoters looking to improve rates of return, albeit within broad policy guidance by governments. Their approach to projects, including the requirements for their appraisal, thus has a significant influence on the factors that are addressed and how they are covered – for the better or worse. The question that needs to be posed here is: In a context where market values are insufficient and where rate of returns are important but not most important, how else should these projects be appraised and what degree of consultation should this entail?

- **All project appraisal methodologies essentially seek to reduce uncertainty and minimise or mitigate risk**. Strangely, this is not actually stated by any of the working papers except that prepared from the actuary

perspective. This implies a tendency not to explicitly define what cannot be handled through appraisal methodologies; this perhaps is too complacent a standpoint? The question that arises here is: Whose risks should the project appraisers reduce or mitigate against – the project promoters or those parties impact on by the project – or some mix of these?

Conclusions

For those professions who work more closely with CBA and similar methodologies, more geared to a desk based approach that emphasizes the quantitative rather than the qualitative, the current situation provides (for them) a generally satisfactory basis for appraisal, with piecemeal 'add-on' considerations given to social concerns and new perceptions of sustainability 'where appropriate and/or feasible'.

However, for environmental and social planners, and many urban and regional planners too (i.e. for those parties wishing to move beyond the rhetoric of sustainability), there remains considerable dissatisfaction with the current weaknesses of CBA and its failure to reflect wider stakeholder interests. These groups prefer project appraisal to be driven far more by policy frameworks that inform MCA frameworks, which are in turn informed by CBA findings, and that rely on transparent decision-making by politicians and technocrats as to which priorities are applied when, where and why. These priorities should be drawn from a strong participation of stakeholder groups that goes beyond project sponsors and their commissioned professionals.

This will change the fundamental nature of the project appraisal process from a largely desk bound one to one where engagement (as opposed to consultation) with stakeholders becomes a key feature, and where transparency is offered as to who is ultimately determining the priorities of the project appraisal and how the conflicts are resolved between efforts to enhance transport project efficiency and efforts to mitigate against the negative project impacts on the territories and communities the project traverses and serves framed, for example, by a policy framework offered by the Millennium Development Goals or some other similar evaluative framework. .

The core vision of the Institution of Civil Engineers, 'Civil engineers at the heart of society, delivering sustainable development through knowledge, skills and professional expertise.' indicates a mission to become more sensitive to the requirements of sustainable development in project appraisal so as, among other things, to place the civil engineering profession, together with its partners such as the Actuary Profession, in a more influential role in the planning, appraisal and delivery of major projects. It requires issues of sustainability to be dealt with in a manner that goes beyond the rhetoric and in a form that firmly acknowledges project appraisal to be not just a technical process but ultimately a political process that is critically dependent on a full understanding of project context and purpose.

Appendix 25: RAMP Study List of Hypothesis-led interviewees

Notes:

1. Interviewees' contributions to this Study reflect their own professional views and not necessarily those of the organisation with whom they are affiliated or employed.
2. All interviews remain confidential to the Study team and the interviewee.
3. All case study interviewees also provided a Pre-hypothesis interview.

Title	First Name	Surname	Position	Organisation	Transcription?
			UK agency		
Mr	Stephen	Joseph	Director	Campaign for Better Transport	
Mr	Tom	Worsley	Deputy Director, Network Analysis & Modelling	Department for Transport	
Ms	Chris	Dewey	Associate	Forum for the Future	
Mr	Joseph	Lowe	[Author, the Green Book]	HM Treasury	
Mr	Lewis	Neil	Director, Infrastructure	HM Treasury	
Ms	Rachael	Miller	Head of Railways	HM Treasury	
Ms	Fiona	Lee		HM Treasury	
Mr	Derek	Turner	Director of Network Operations	Highways Agency	
Mr	Mark	Lemon		HSBC Bank	TBI
Mr	Iain	Coucher	Chief Executive	Network Rail	
Mr	Neil	Scales	Chairman / Director General	Passenger Transport Executives Group / Merseytravel	Interview scheduled
Ms	Alex	Elson	Project Finance Environment and Sustainability Adviser	Shell	
Mr	Jim	Steer	Director	Steer Davies Gleave / Greengauge21	
Mr	Bernie	Bulkin	Commissioner	Sustainable Development Commission	
Prof	Phil	Goodwin	Centre for Transport & Society	UWE	
Dr.	Peter	Jones	Professor of Sustainable Transport	UCL	
			International agency		
Mr	Todd	Litman	Principal	Victoria Transport Policy Institute, CANADA	Electronic response
Mr	Marcel	Rommerts	Transport Directorate	European Commission, BELGIUM	
Ms	Eva	Mayerhofer	Environmentalist, ESO	European Investment Bank, LUXEMBOURG	
Ms	Evelin	Lehis	Head of Social Assessment, ESO	European Investment Bank, LUXEMBOURG	
Mr	Piers	Vickers	Transport Division	European	

				Investment Bank, LUXEMBOURG	
Mr	Hans	Rat	Secretary General	International Union of Public Transport, BELGIUM	Electronic response awaited
Dr.	Elliot	Sclar	Professor	Columbia University, USA	
Mr	Jos	Dings	Director	European Federation for Transport & Environment, BELGIUM	Electronic response awaited
Dr.	Walter	Hook	Executive Director	Institute for Transport and Development Policy (IDTP), USA	
Mr	Peter	Freeman	Lead Evaluation Officer	World Bank, USA	
Mr.	Sergio	Margulis	Environmental Economist	World Bank, USA	Electronic response awaited
Dr.	Suzanne	Fainstein	Professor Urban Planning, Graduate School of Design	Harvard University, USA	
Dr.	Tom	Sanchez	Head of Committee on Socio & Economic Factors of Transportation	Transportation Research Board, USA	Electronic response awaited
Dr.	Ralph	Gakenheimer	Professor of Urban Planning & Transportation	Massachusetts Institute of Technology, USA	
Mr	Naison	Moutizwa-Mangiza	Head of Policy Analysis Branch	United Nations-HABITAT, KENYA	
Ms	Yan	Zong		Asian Development Bank, PHILIPPINES	Electronic response awaited
			Case studies		
Mr.	Ingvar	Carlsson	Former Prime Minister of Sweden	Retired, SWEDEN	
Mr.	Stig	Larsson	Director General of the Swedish State Railways (1988-98)	Retired, SWEDEN	
Mr.	Per Anders	Örtendahl	Director General, National Road Agency (1982-1995)	Retired, SWEDEN	Electronic response awaited
Mr.	Lars	Tobisson	Former Member of Parliament / Parliamentary coordinator for planning and implementation of Oresund Link	Retired, SWEDEN	
Mr	Ulf	Dahlsten	Former advisor to 2 Swedish Prime Ministers with special responsibility for Oresund Link	Retired, SWEDEN	
Mr	Jean	Bethier	Formerly Director of Roads, Chairman CNISF	Ministry of Construction & Transport, FRANCE	
Mr	Michel	Deffayet	Director, Centre d'Etudes des Tunnels	Lyon, FRANCE	
		[to be advised]	Director, Centre d'Etudes des Tunnels	Lyon, FRANCE	
Ms	Sandrine	Chotard	Director of EIA studies, Milau Viaduct	FRANCE	Interview tba
Mr	Frederick	Salvucci	Godfather of Big Dig & Advisor to Mayor, then State Secy of Transn & Constn for 3 gubernatorial terms	Senior Lecturer, Massachusetts Institute of Technology, USA	
Mr.	Glen	Weisbrod	President	Economic Development Research Group	

				Inc., USA	
Mr.	Steven	Landau	Director of Strategy Planning	Economic Development Research Group Inc., USA	
Dr.	Alan	Altshuler	Professor of Urban Planning & Government - Past Sec. of Transportation for State of Mass.	Harvard University, USA	
Mr.	Chris	Haynes	Head of Transportation Strategy	Birmingham City Council, UK	
Mr.	Chris	Crean	Campaigner	Friends of the Earth, West Midlands, UK	
Mr.	Stephen	Kelly	Head of Policy	FTA Midlands & South-West, UK	
Mr.	Colin	Mercer	Planning Manager	Highways Agency, Regional Office, West Midlands, UK	

Appendix 26: Summary findings from the sensemaking analysis of UK case studies

Table 3.1 Key themes arising from the sensemaking analysis of the CTRL:

- The presence of extensive political influence on project planning and appraisal.
- The key role played by 'visionary' political champions
- The lack of a clear focus early on in the project planning work
- The later linkage of the project planning work with 'visions' (for the Thames Gateway)
- The subsequent emergence of new growth and regeneration agendas that unified Thames Gateway vision to the CTRL
- The very lengthy planning and appraisal period that led the project to be 'open' to new influences and agendas
- The lack of any recent UK track record on railway development which meant that it was inevitable that the project would take a long time to plan and implement
- The presence of broad political consensus about private sector financing (despite misgivings about financial viability of the CTRL project in many quarters)
- The fact that by the time the project was in financial difficulty (in 1996) it had gained sufficient momentum to ensure its continued survival
- The fact that (rather surprisingly) the overall amount of public sector subsidy for the project has *never* been made clear
- The observation that overall, many different forces shaped the CTRL project due to the interplay between different (and changing) stakeholder agendas over a number of years with the result that the the project's objectives in reality evolved over time in response to new and emerging agendas.

Table 3.2: Key themes arising from the sensemaking analysis of the JLE:

- the need for a broader range of criteria for appraising and evaluating project achievements
- JLE overwhelmingly seen as "a success" despite programme and cost overruns
- extensive political influence on project planning and appraisal
- the early phases of the project were dominated by the private sector ambitions of providing a reliable direct high capacity rail link to Canary Wharf
- strong Treasury influence to ensure the private sector honoured promised financial contributions in the short term undermined the project's potential for longer-term sustainability
- perceived differences in skills and competence between public and private sector
- lack of co-operation between institutions and lack of strategic management are seen as reasons for poor project performance
- the decision to proceed with the project was more political than techno-rational (with private sector financing being a key consideration)
- the economic context surrounding the project was seen as highly significant
- lobbying was identified as key to the project in terms of private sector efforts to garner government support
- path dependent solutions impacted on the project
- project decisions during the detailed planning stages introduced risk
- project team focus on JLE as an asset, not a service
- lack of long-term strategies led to piecemeal planning
- the opaque nature of financial decisions
- untried and untested technology can introduce unsustainable levels of risk.

Table 3.3: Key themes arising from sensemaking analysis of the M6 Toll Road:

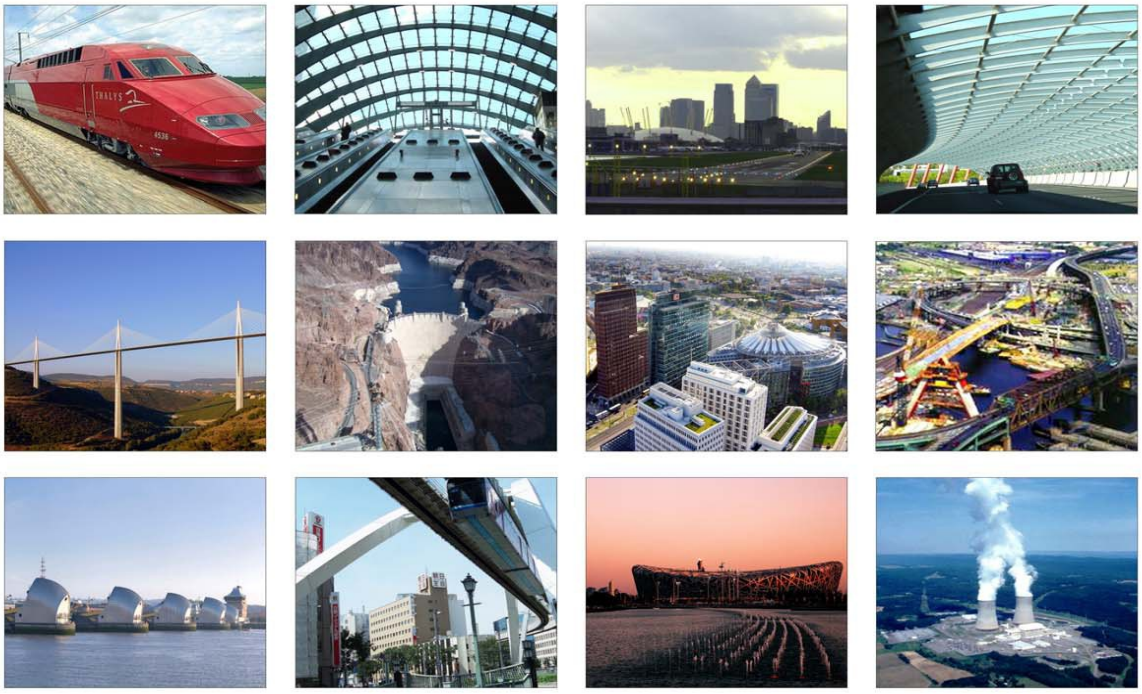
- the decision to pursue the M6 project as a PFI toll road - rather than as part of the existing motorway network - was pivotal to the development of the entire project
- this decision appears to have represented an 'about face' on the part of the Government
- the apparently self-evident need to address congestion on the existing M6 motorway meant that there was little controversy as to the need for the project which led to it being seen as a 'straightforward' project. However, the change in project objectives from a relief road to a privately funded and operated toll road *did* result in controversy, particularlarly since the change in project objectives was not abundantly clear to all stakeholders
- the government and concessionaire appear to have worked closely together to formalise project objectives and establish favourable conditions for it to be pursued as a PFI
- as the M6 project was seen as a UK 'flagship PFI', government was keen to ensure its financial viability/success
- the Public Inquiry system for projects such as the M6 was variously seen as a 'rubber stamp' approval of the project and thus, an unnecessary prolongation of the planning process, that was to boot too complex for the layman
- there is a significant perception among many that the M6 tolls are used to discriminate against HGVs so as to reduce maintenance costs
- the premise promoted by Government regarding the financial risk for the M6 project was that it was *ostensibly* passed to the concessionaire - in return for a significant degree of autonomy in the development of the project and a lengthy concession period.

Appendix 27: MSc Programme in Mega Infrastructure Planning, Appraisal and Delivery

THE BARTLETT SCHOOL OF PLANNING
FACULTY OF THE BUILT ENVIRONMENT

UCL

MSc in Mega Infrastructure Planning, Appraisal and Delivery



omega centre
Centre for Mega Projects in Transport and Development
A global Centre of Excellence in Future Urban Transport sponsored by Volvo Research and Educational Foundations (VREF)

The Bartlett School of Planning
Faculty of the Built Environment
UNIVERSITY COLLEGE LONDON

MSc in Mega Infrastructure Planning, Appraisal and Delivery

UCL's new MSc programme in Mega Infrastructure Planning, Appraisal and Delivery investigates the fundamental question of 'what constitutes a successful mega infrastructure project, programme and/or plan' in light of the many and fast changing expectations that different stakeholders have of such investments, not least in seeking to contribute to sustainable development. The programme recognises that any judgements about 'success' need to be especially examined against different contexts and therefore aims to equip students with the means to prepare appropriate planning, appraisal and delivery responses that are not only robust but also context-sensitive.

The increasingly interdependent nature of the global economy in the 21st Century has resulted in significant attention being paid to the strategic importance of mega infrastructure projects, networks and their associated developments (whether global or local, national or trans-national) for the transportation of people and goods, for the distribution of water and energy or for the treatment of industrial and human effluent. It is now widely recognised that failure to adequately invest in major urban, regional, national and trans-national infrastructure such as railways, roads, air and sea ports, power plants/lines, reservoirs and water and gas pipelines etc. can jeopardise development at all levels and negatively impact on global competitiveness. This is so because these networks are the lifeblood of cities, regions and national economies.

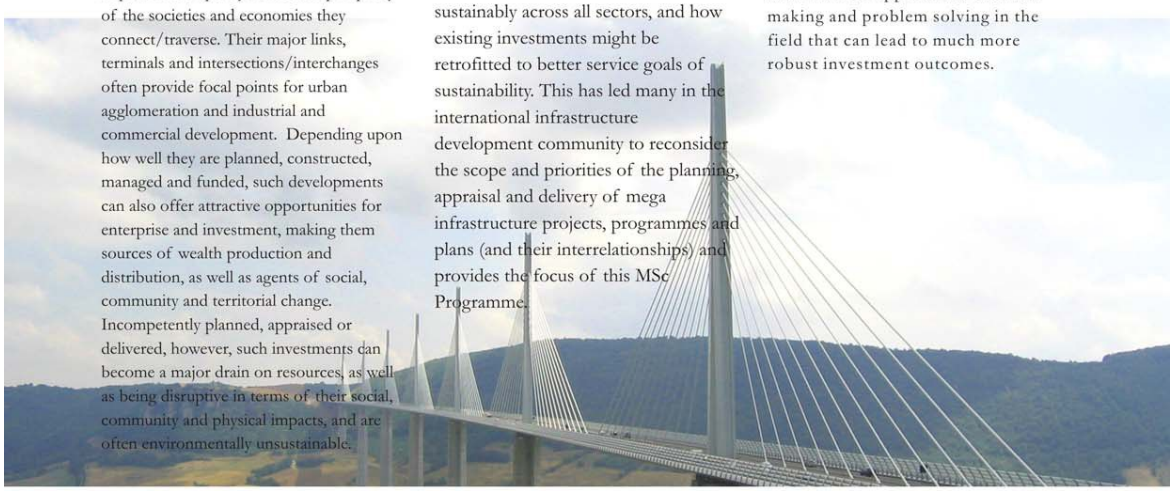
Mega infrastructure investments directly impact on the quality of life and prosperity of the societies and economies they connect/traverse. Their major links, terminals and intersections/interchanges often provide focal points for urban agglomeration and industrial and commercial development. Depending upon how well they are planned, constructed, managed and funded, such developments can also offer attractive opportunities for enterprise and investment, making them sources of wealth production and distribution, as well as agents of social, community and territorial change. Incompetently planned, appraised or delivered, however, such investments can become a major drain on resources, as well as being disruptive in terms of their social, community and physical impacts, and are often environmentally unsustainable.

The history of infrastructure developments world-wide has benefited from many waves of technological innovation and investment. Each wave has spurned new phases of urbanisation, industrialisation, modernisation, agricultural development and international trade. This is particularly apparent in the more uncertain globalised world in which we live where new mega infrastructure projects such as air and sea ports, fast train networks, dams and new energy plants are all seen as strategic agents of change that bring with them major opportunities to the communities and territories they serve.

Our growing understanding of the natural environment and the concept of sustainable development, together with the increasing risks and opportunities associated with greater global interdependence, now provide us with a fresh perspective on past infrastructure development practices. This new perspective suggests that previous practices have often been too inflexible, too narrowly focused on economic growth outcomes and too insensitive to externality costs. This has presented infrastructure specialists and policy makers alike with major challenges concerning how we should henceforth plan, appraise and deliver mega infrastructure investments more sustainably across all sectors, and how existing investments might be retrofitted to better service goals of sustainability. This has led many in the international infrastructure development community to reconsider the scope and priorities of the planning, appraisal and delivery of mega infrastructure projects, programmes and plans (and their interrelationships) and provides the focus of this MSc Programme.

The construction and planning of so many new mega infrastructure projects world-wide, together with their increasing size/impact, complexity and cost, point to an urgent need to rapidly build a contemporary professional capacity that can tackle the challenges ahead. The currently limited international professional capacity to address these needs is, however, increasingly recognised as posing a major obstacle to governments, international development agencies and the private sector in the future development of new mega infrastructure investments and the retrofitting of existing projects and schemes in a manner that can better meet goals of sustainable development.

UCL's new MSc programme in Mega Infrastructure Planning, Appraisal and Delivery is considered unique in preparing students for these major challenges. By highlighting new frameworks and methodologies that bring risk and uncertainty into the milieu of decision-making for mega infrastructure development that goes well beyond the confines of traditional project management and infrastructure engineering - extending into areas of governance, politics, finance and strategic infrastructure policy, and how sustainable development goals should/could be incorporated in future investment decisions the programme offers a more holistic approach to decision-making and problem solving in the field that can lead to much more robust investment outcomes.



Programme Objectives

The MSc programme aims to provide a critical review of the mega infrastructure theory and international practice and an assessment of how 'fit for purpose' these are for the 21st Century challenges of sustainable development. While the programme seeks to focus on generic lessons and principles that apply across the different sectors, it also covers the many sectoral and context-specific considerations that can often play a major role in determining the success of such investments.

The programme is unapologetically inter-disciplinary and consciously very international, drawing from experiences both in the developed and developing world. It seeks to provide students with insights, knowledge and skills that will assist them to better plan, appraise and deliver future mega infrastructure developments in a manner that is especially sensitive to the risks, uncertainties and complexities of different contexts. The programme has been devised to not only provide enhanced capacity-building opportunities for those currently working in the field of mega infrastructure development but to also offer an invaluable grounded qualification for new entrants into the field.

Learning Outcomes

Acquisition of understanding of the **fundamental characteristics** of mega projects, plans, programmes (and their interrelationships) from a broad range of stakeholder perspectives together with a critical understanding of the underlying contextual factors important to the success of the project;

Attainment of clear overview of **past and contemporary challenges and trends** in the theories and practice of mega infrastructure planning, appraisal and delivery, including the adequacy or otherwise of private financing structures (PPP/ PFI) and retrofit procedures for existing projects to better meet 21st Century sustainability challenges;

Appreciation of the **interrelationships and tensions between local, national and global sustainable development challenges** that mega infrastructure must address, paying particular attention to the contribution that such initiatives can/should make to environmental, social, economic and institutional objectives simultaneously;

Acquisition of basic knowledge of the **international, national and regional policy and market contexts** that surround mega infrastructure development, particularly those spawned by globalisation;

Acquire an understanding of the interrelationships between the **multiplicity of sustainability challenges and visions** of mega infrastructure and how to define the role of such initiatives in achieving environmental, social and economic objectives in developed and developing countries;

Acquire the knowledge of the **cross-disciplinary dimensions of sustainability** and critical importance of sustainable institutions and governance as the glue to this joined-up approach;

Appreciation of the **diversity of stakeholders' interests/agendas** and the need to adopt a well-structured skill in stakeholder management, negotiation and lobbying;

Understand the **different policies and planning frameworks** at the international, national and local level that impact on mega infrastructure planning, appraisal and delivery;

Attain **generic skills of strategic planning and risk management** distilled from other professions/disciplines where risk, uncertainty and complexity are at the milieu of their planning;

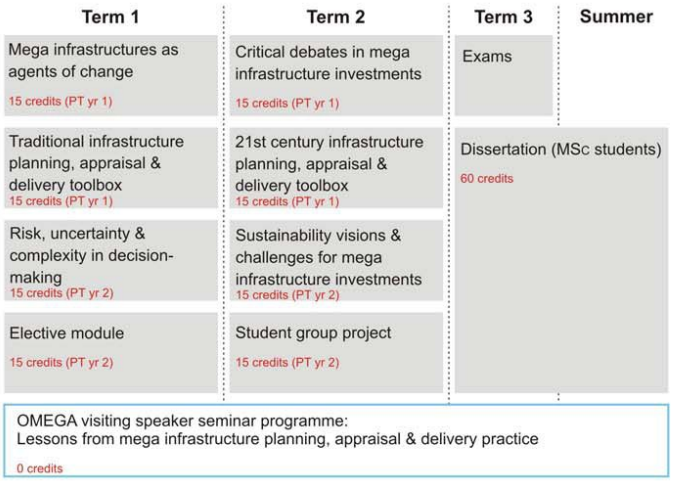
Attain a clear overview of the **critical issues involved in the traditional tool box** for mega infrastructure planning, appraisal and delivery and its historical evolution with an appreciation of how these relate to the geographical, temporal and other contextual considerations of their employment;

Understand the **principal economic, environmental, social and political challenges facing decision-makers** in mega infrastructure development and how to tackle the tensions generated by their interface.

The OMEGA Centre and the Teaching Group

The MSc programme has been prepared by the OMEGA Centre and its teaching team at the Bartlett School of Planning at University College London (UCL) and is to be delivered in association with the Department of Civil, Geomatics and Environmental Engineering and a team of internationally renowned and experienced academics and practioners in the field of mega infrastructure development. The OMEGA Centre itself is a Volvo Research and Education Foundation (VREF) Global Centre of Excellence of Mega Projects in Transport and Development that has to date conducted an extensive international comparative study of decision-making for mega transport projects in numerous countries in Asia, Europe, North America and Australia. This on-going programme of research is being undertaken with a view to providing generic and context-specific lessons and guidelines for future investments in the face of the sustainable development challenges of the 21st Century.

The Centre has in particular been engaged in the investigations of the treatment of risk, uncertainty and complexity in decision-making at all levels in the planning, appraisal and delivery of mega infrastructure projects. It has been engaged in a study funded by the Institution Civil Engineers and the Actuarial Profession in the UK of how to better incorporate social, environmental and institutional dimensions of sustainable development in major infrastructure appraisal. Dissemination of the findings of these research activities, together with the wealth of knowledge offered by the Centre's support teaching team of outside practioners and other academics, promises to offer radically new insights and approaches to planning, appraising and delivering new mega infrastructure projects, programmes and plans and retrofitting existing ones.



Programme Structure and Content

The Msc Programme has a modular structure. A schematic representation of the structure of the programme and sequence of its modules is shown in the accompanying diagram. The programme comprises nine mandatory modules, including one elective module, one group project and a compulsory dissertation, all attracting a total of 180 credits. The content of these is summarised below.

Participation in the MSc programme may be on a part-time or a full-time basis. The former is offered over 12 months, while the latter can be completed in a period of up to five years (maximum). The programme will be offered on a part-time basis from September 2010 and on a full-time basis from September 2011.

Mega infrastructures as agents of change (15 credits)

This module defines the overarching characteristics of mega infrastructure projects, programmes and plans of various kinds and examines their roles as agents of change. This encompasses both the understanding of past perspectives of the roles of mega infrastructure and the investigation of 21st Century perspectives, where the global interdependency of economic growth and environmental impacts appears to be stronger than ever before, and where sustainability looms large as a key challenge for future generations. This module pays particular attention to the development context of such infrastructure investments and forms one of the foundation modules for the overall MSc programme.

Traditional infrastructure planning, appraisal and delivery toolbox (15 credits)

This module presents the 'traditional' tools currently employed in the planning, appraisal and delivery of mega infrastructure projects, programmes and plans in the various key infrastructure sectors of transport, energy, water and urban regeneration (including, CBA, NPV, IRR and approaches to modelling risk). It critically reviews the theory and practice used in these fields, drawing extensively from case studies in the UK and overseas in the developed and developing world, utilising OMEGA Centre international case study research, the experiences of the Treasury/ Department for Transport in UK Government, the European Investment Bank and the World Bank. Particular attention is given to project viability assessments and economic growth outcomes for different development contexts.

Risk, uncertainty & complexity in decision-making (15 credits)

This module introduces and critically reviews the treatment of Risk, Uncertainty and Complexity and their relationship with decision-making contexts in mega infrastructure planning, appraisal and delivery. The module draws on academic literature that presents the 21st Century as an era of greater risk and uncertainty as global interdependencies increase. It also calls on case study research findings derived by the OMEGA Centre from an examination of decision-making in professions/disciplines where risk, uncertainty and complexity are at the milieu of their planning and appraisal processes, as in the case of the military, medicine, insurance, banking and earthquake engineering.

Critical debates in mega infrastructure investments (15 credits)

This course module will take the form of independent reading leading to seminar discussions and critical reflection. This module is made up of an introductory lecture and a combination of seminar contributions provided by experienced practitioners in mega infrastructure development focused on selected critical debates in mega infrastructure planning, appraisal and delivery, followed by student presentations on these same themes based on a literature review of critical debates, reports and studies.

21st century infrastructure planning, appraisal and delivery toolbox (15 credits)

This module follows on from the module on Traditional infrastructure planning, appraisal and delivery toolbox. It has, as its starting premise, the belief that too many conventional planning, appraisal and delivery approaches to mega infrastructure investment are not 'fit for purpose' for the 21st Century in light of the sustainability challenges they confront. The module substantiates this view by drawing from theoretical and empirically based arguments and responds to the identified shortfalls and limitations of many traditional practices - particularly the widely over-used Cost Benefit Analysis (CBA) paradigm for the monetisation and assessment of mega infrastructure costs and benefits - by proposing alternative approaches. These include the application of Multi Criteria Analysis (MCA) informed by sustainable policy and planning frameworks and of Cost Benefit/Effectiveness Analysis (CBEA) designed to assist policy makers and politicians in making critical trade-offs. Both approaches highlight the importance of transparency and accountability in the public decision-making process.

[Continued overleaf]

Sustainability visions & challenges for mega infrastructure investments (15 credits)

This module follows on from the modules on Risk, uncertainty and complexity in decision-making and Mega infrastructures as agents of change. In the context of the premise that the 21st Century is destined to encounter increasing risks (and opportunities) and uncertainties as the forces of globalisation unfold, this module examines the evolution of the vision of sustainability as it applies to mega infrastructure development across all sectors. In addition to examining the economic, environmental and social dimensions of sustainability, this module also includes the concept of sustainable institutions as a fourth dimension. This is considered imperative in light of the pressures on politicians, public authorities and private businesses (with their use of corporate social responsibility mandates) as they grapple with the challenges of how best they can comply with contemporary and future threats (and opportunities) concerning sustainability in mega infrastructure development.

Student group project (15 credits)

This module performs an integrating function between the theoretical and empirical elements of mega infrastructure planning, appraisal and delivery as presented in earlier parts of the programme. A specific study area and associated case study is selected (The Thames Gateway Area in the case of the first three years of the programme) and the relevant data and information will be made available. Students will then be asked to undertake a client-based study notionally commissioned by a national or regional development agency from the perspective of a consulting firm. The project is intended to encourage students to convert/translate the knowledge and skills learned from programme modules into mega infrastructure planning and appraisal practice, with a view to developing more effective mega infrastructure project, programme and plan delivery.

Elective module (15 credits)

Students are required to select one module, either in Terms 1 or 2, from a range of postgraduate modules offered to the programme by: the Bartlett School of Planning; the Development Planning Unit; the Department of Geography and the Department of Civil, Geomatic and Environmental Engineering of UCL. Selection of the module is undertaken following discussion with the Programme Director to ensure that students embark upon a balanced schedule of study consistent with the intended learning outcomes of the programme.

OMEGA visiting speaker seminar programme

The OMEGA Centre has an active seminar series attracting high profile speakers from all over the world. Recent contributors have included:

Prof. John Adams, University College London
Dr. Roger J. Allport, Allport Associates Ltd.
Stuart Baker, Department for Transport
Jim Berry, Canary Wharf Group
Peter Freeman, The World Bank
Marcel Hertogh, NETLIPSE
Dr. Mayer Hillman, Policy Studies Institute
Prof. Jeffrey Kenworthy, Curtin University
Joseph Lowe, HM Treasury
Prof. Tony Ridley, Imperial College London
Jim Steer, Greengauge 21/ Steer Davies Gleave
Prof. Andy Sterling, Sussex University
Peter Twelftree, Steer Davies Gleave
Ulf Dahlsten, London School of Economics

Field trip

A week's field visit to selected mega infrastructure developments in Europe will enable students to explore the way that different contexts - including cultural, political and institutional - frame mega infrastructure planning, appraisal and delivery. This event will be informed by talks from selected promoters and stakeholders of these projects.

Entry Qualifications

Applicants for the MSc programme will normally be graduates from a recognised university/institution with a minimum 2.2 pass. Since this is an inter-disciplinary international programme, entrants from all disciplines will be considered, with preference given to those with work experience in some aspects of mega infrastructure planning, appraisal and delivery. A demonstrated high level of competence in both spoken and written English is also required. Overseas students whose first language is not English will be asked to provide evidence of this. A minimum overall score of 6.5 with a minimum of 6.0 in each of the sub-tests for IELT S or 580 plus 4 for TWE in TOEFL is required.

Programme Fees

Programme Fees are fixed annually by University College London and are therefore subject to modification. Fees for the 2010-2011 session (per annum) are likely to be in the region of:

MSc	Full-time
EU students:	£7,200
Non-EU students:	£15,960

MSc	Part-time
EU students:	£3,600
Non-EU students:	£7,980

(4% inflationary increase every year)

The prospectus for University College London contains further advice on fees, the cost of living in London and on financial matters including student hardship grants.

The programme lends itself to sponsorship from employers in public, private and partnership organisations.

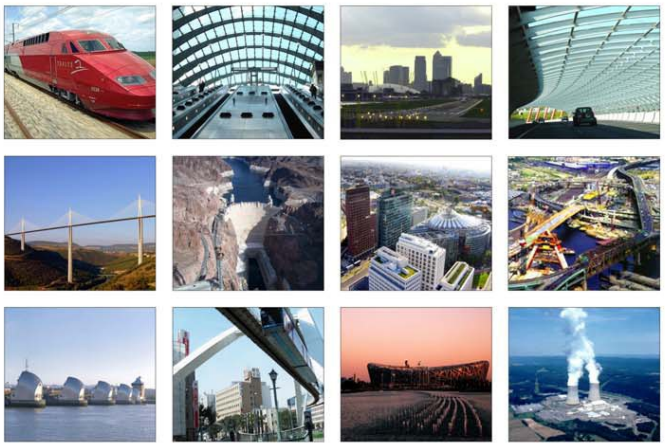
Application Procedures

We invite applications from holders of good honours degrees in any relevant discipline, preferably with some relevant professional experience. The MSc programme has been planned for a mix of graduates from civil engineering, planning, policy studies, project management, estate management, architecture, pertinent social sciences and other relevant fields. Before applying, you should obtain a prospectus and application form from the Bartlett School of Planning. You are also encouraged to contact the programme Director and Admissions Tutor.

You should return your completed application form to:

College Admissions Office, UCL,
Gower Street,
London WC1E 6BT
Tel: +44 (0)20 7679 7742 +44 (0)20 7679 7381/3

There is no fixed deadline for applications but nominations for grants and sponsorship from various sources usually close in the Spring and applicants are advised to apply as early as possible.



The Director of the MSc Programme is:
Professor Harry T. Dimitriou Dip. TP, MSc, PhD, MRTPI

The Programme Admissions Tutor is:
Ms Yen-Ning Tseng BSc, MSc

OMEGA Centre website:
www.omegacentre.bartlett.ucl.ac.uk

Bartlett School of Planning website:
www.bartlett.ucl.ac.uk/planning

Application forms can be downloaded from:
www.ucl.ac.uk/admission/graduatestudy/application-admission/

More detailed information and some updating of printed materials can be found at:
www.bartlett.ucl.ac.uk/planning

For general enquiries about UCL, applicants are advised to contact:
Admissions and General Enquiries Office.
UCL, Gower Street, London WC1E 6BT
E: Admission@ucl.ac.uk

VREF

MSc Syllabus preparation co-funded by the Volvo Research and Educational Foundations

Disclaimer

The information contained in this leaflet is correct at the time of its publication, but no guarantee can be given that it will not be amended before the commencement of, or during, the programmes to which it refers.