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Shortly after hosting the October 2010 workshop on Aviation and Maritime Security, Australia and its region faced some major challenges to its infrastructure. 2011 began with a series of natural events and human catastrophes that tested the resilience of government, frontline agencies and citizens in Australia and its close neighbours, New Zealand and Japan. In this briefing paper, Dr Tim Legrand profiles the CEPS research project on infrastructure vulnerability and government coordination. The method of drawing out the critical policy issues, from academic, policy and industry perspectives, directly shapes the direction of research. Government coordination in a federal system such as Australia requires coordination between the multiple and overlapping tiers of government - federal, state and territory, as well as local government - is essential for good legislation and regulation. The tests to our community's resilience demonstrate that cooperative federalism involves requires a strong bipartisan political commitment to an intergovernmental partnership. But more than this, as this workshop series continues to reveal, we must acknowledge and give serious attention to the central roles played by the private and non-government sectors, which share the responsibility and costs for securing a significant portion of Australia's critical infrastructure.



Professor Simon Bronitt  
Director

## Infrastructure Vulnerability and the Coordination of Government Responses

Aviation and Maritime Sector Workshop, November 2010: A Report on Research

Dr Tim Legrand

### Overview

The security of Australia's national infrastructures is of critical importance to its continued economic prosperity and well-being.

Yet, the volatility of Australia's climates and the threat of terrorism present Australia's national critical infrastructures with a set of challenges almost unique in the world. Within the past 5 years, Australia's towns and cities have encountered tropical cyclones, droughts, catastrophic flooding and destructive bush fires. Into the future, Australia's energy, water, communications, transport, food chain, health and banking and finance sectors face severe and continuing natural and human-induced hazards.

The Australian Government's Critical Infrastructure Resilience Strategy (2010) and the accompanying Supplement sets out the Government's commitment to continuing a partnership with the owners and operators of critical infrastructures. The Strategy documents outline existing challenges and articulate the importance of risk management and building resilience.

Against this backdrop, The Australian Research Council (ARC) Centre of Excellence in Policing and Security (CEPS) coordinated and hosted the next in a series of one-day workshops with partner organisations and researchers to identify joint research priorities for a stream of work aimed at strengthening the resilience of national critical infrastructure.

### About the Vulnerable Infrastructure Workshop: Aviation and Maritime Sector

Australian and regional infrastructure is vulnerable to exploitation and attack by transnational threats. Key vulnerabilities are communication hubs, flows of people and goods, transport and technology systems.

The Australian Research Council Centre of Excellence in Policing and Security (CEPS) and Global Access Partners (GAP) workshop took an 'all hazards' approach to vulnerable infrastructure. The workshop brought together experts from private, public and academic organisations to examine risk, ownership, interoperability, partnerships and the impact on the community.

The aim of this workshop was to identify academic research that will build

Australian and regional resilience to transnational threats and strengthens the knowledge base and expertise of public and private organisations. Specifically the workshop focused on aviation and maritime infrastructure within the transport sector.

## Summary of Research Opportunities

### Theme 1: Coordination and Communication

Research directed at ‘interoperability’ is needed to address the significant challenges caused by varied government and organisation processes, operating procedures, management standards, competencies and cultures.

### Theme 2: Target Hardening (Air and Maritime Sector)

Research aimed at galvanising the aviation and maritime sectors is needed to provide effective deterrents and increased resilience.

### Theme 3: Human Factors in Infrastructure Vulnerability

Characteristics required by the workforce and the public to build a resilient culture. The workforce needs to be made more aware and have a better level of understanding of the vulnerabilities and factors to be resilient.

## Workshop Themes

### Theme 1: Coordination and Communication

The fragmentation of government and corporate responsibilities for infrastructure security was identified as an ongoing issue. In the absence of unified guidance, often agencies (public and private) institute markedly different security strategies. As a consequence, it is a challenge to coordinate (i) security strategies, (ii) first response to emergencies, (iii) operational intelligence.

The complex mix of agencies also makes communication more difficult in both

intelligence-sharing and security planning as well as real-time emergencies.

Specific concerns discussed in the workshop to aviation/maritime sectors include:

- The need for greater cooperation by all agencies;
- Planning and response strategies need to be improved;
- Key operating challenge is the first response to critical incidents;
- Privatisation of the sector is creating a more complex mix of agencies, leading to partnerships, coordination and communication weaknesses;
- Continuing failure to share information across the sector;
- Improvement of coordinated incident management systems and procedures to interface with industry, government and non government agencies is required.

#### Research priority -

To investigate opportunities for improving coordination and communication structures within and between public and private agencies.

#### Specific activities -

- To map out the existing communication and coordination strategies between agencies in aviation and/or maritime sectors.
- To pinpoint the communication/coordination needs of agencies operating with/alongside critical infrastructures.
- To determine how well existing coordination/communication protocols operate.
- To research alternative coordination/communication protocols, either in government or private spheres.
- To determine improvements in coordinated incident management systems.

#### Research questions -

- *What specific issues do agencies encounter when working alongside other government/corporate agencies in the maritime/aviation sectors?*
- *What efforts have been undertaken*

*to resolve issues in communication/coordination, and how successful have these been?*

- *Are there any communication/coordination models that serve as exemplars (or best practice) in this sphere?*

### Theme 2: Target Hardening (Aviation and Maritime Sector)

The maritime and aviation sectors are a crucial component of Australia’s economic infrastructure. The downstream effects of interruption to transport supply chains can be catastrophic to almost every domestic industry. Yet industry officials are aware of a number of vulnerabilities to the sectors. There are particular concerns around physical port and airport security, access and egress to secure areas, and passenger controls for cruise ships. Moreover, both sectors exhibit the same complexities of communication and co-ordination as other infrastructures administered by public and corporate agencies.

Specific concerns discussed in the workshop to aviation/maritime sectors include:

- Inadequate passenger controls for cruise ships;
- Physical port security infrastructure;
- Workforce security awareness;
- Harden-up our operating environment;
- The challenge of introducing new technologies at air and maritime ports to deal with access and egress in the area communication and coordination are concerns;
- How to achieve public support and confidence by improving public education of new technologies introduced.

#### Research priority -

To map out key vulnerabilities in the aviation and maritime sectors with regard to (i) physical airport/port security, (ii) secure area access, (iii) cruise ship passenger controls.

#### Specific activities -

- To map out the structure of the aviation/maritime transport sector;
- Pinpoint the key ‘pressure points’ in

- airport/port and cruise ship security;
- Determine cost-effective strategies to minimize risks;
- Assess the major existing and emerging risks to the sectors;
- Weigh the cost of security against the benefits.

**Research questions -**

- *What is already known about vulnerabilities in the aviation/maritime sector?*
- *What are principle weaknesses in security?*
- *How have these weaknesses been exploited in the past, and what were the impacts?*
- *What are the emerging risks/threats that have not been previously encountered?*

**Theme 3: Human Factors in Infrastructure Vulnerability**

The culture of security and risk-management is central to the realization of resilient infrastructures, yet concerns around infrastructure vulnerability tend to focus on the structural, technological or material aspects. Decision-making occurs at every level of infrastructure security, from policy to operations. Poor decision-making and risk analysis, however, can significantly diminish the effectiveness of security measures.

Specific concerns discussed at the workshop include:

- How to improve methods of risk profiling, intelligence, risk assessments and behavioural analysis;
- Post event briefings: lessons are not being learnt and knowledge of the incident is lost;
- Risk aversion;
- The quality of the workforce and the culture of security;
- Fears of public/media perception and the impact of such fears on decision making.

**Research priority -**

To understand the primary human weaknesses pertaining to differing cultures of security, and how these

impact upon infrastructure resilience.

**Specific activities -**

- To understand how risk averse behavior operates, and identify circumstances where it is a qualitatively positive/negative trait;
- To identify areas in which post-event learning can be strengthened;
- To find case studies where a culture of demonstrably good security has enhanced infrastructure security.

**Research questions -**

- *What does academic research have to say about risk aversion?*
- *How has lapses in a culture of security previously had negative repercussions?*
- *What are some effective measures that can promote a culture of good security and risk analysis?*
- *How can lapses in human judgment be systemically mitigated?*

**Suggested other areas of information or research raised during discussions**

- APEC recovery program should be examined for research opportunities
- Kokoda research results should be checked for gaps;
- Evaluation of the trade recovery program may provide some insight;
- The impact on infrastructure by economic recovery could be researched;
- Utilities (water and power) vulnerabilities are unrehearsed.

**About the CEPS project on Critical Infrastructure and the Coordination of Government Response**

This project has been set up to examine the attributes of Australian and regional infrastructures that are most vulnerable to exploitation and attack by transnational threats. A significant part of the project will explore ways that governments can reduce infrastructure vulnerabilities and inform governmental planning and response to critical incidents. The project team will consider:

- Ways to increase the resilience and immunity of key infrastructures to transnational threats; and
- The impact such measures would have on our ways of life and modes of engagement with our regional neighbours.

The project will also map the range and variety of government arrangements at federal and state levels devised to meet security threats. The team will explore the challenges confronting a whole-of-government response both within and between governments and identify ways different countries have sought to react and assess their policy and organisational impact. The research will examine the governance and function of the Australian Government’s new approach to managing national security, including the impact of the National Security Statement<sup>1</sup> (2008) and the Critical Infrastructure Resilience Strategy<sup>2</sup> (2010).

1 <http://pmrudd.archive.dpvc.gov.au/>  
 2 <http://www.nationalsecurity.gov.au/>



## About the Author

Dr Tim Legrand is a public policy specialist with expertise in the transfer of best practice and policy learning between countries. He has previously worked as a policy consultant to the UK Home Office and Ministry of Justice and is presently employed a Research Fellow in the ARC Centre of Excellence in Policing and Security (CEPS).

### About this document:

This paper is a thematic record of the workshop discussions and the associated research priorities identified by partner agencies. Your comments on this paper are welcome and will contribute to the directions of research arising from the workshop.

All papers in this series are subject to expert peer review.

General Editor of this series: Professor Simon Bronitt, Director, ARC Centre of Excellence in Policing and Security.

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