

PROTECTING the nation

Geoscience Australia's contribution to the National Critical Infrastructure Protection Strategy

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Protecting the critical infrastructure (CI) that underpins Australia's economic strength and social stability is a high priority for the Australian Government. The Trusted Information Sharing Network (TISN) for Critical Infrastructure Protection (CIP), established in April 2003, forms the basis of a strong business-government partnership approach to this important national objective.

To support the TISN and advance a range of high-priority CIP initiatives, the Australian Government's 2004-05 Budget allocated additional funding of \$50.2 million over four years to Geoscience Australia and eight other Australian Government agencies. As the national agency for geospatial information, Geoscience Australia will contribute to three key areas—national coordination, infrastructure vulnerability identification, and interdependency modelling and analysis—by improving the government's capacity to analyse the consequences of CI failure within a geospatial modelling framework.

CI has been defined as physical facilities, supply chains, information technologies and communication networks whose destruction, degradation or unavailability for an extended period would significantly impact on the nation's social or economic wellbeing, or affect Australia's ability to conduct national defence and ensure national security. CI extends across many sectors of the economy, including banking and finance, transport, energy, communications, utilities, health and food supply.

Critical infrastructures are complex, highly connected and highly interdependent. This is particularly evident in sectors such as energy. The reliable continuity of supply of energy, and electricity in particular, is critical to many other sectors of the community. A significant loss of supply for an extended period would have substantial negative impacts, both on the economy and the social wellbeing of the population.

CI can be damaged, destroyed or disrupted by natural disasters, negligence, accidents, computer hacking, criminal activity and malicious damage, as well as by deliberate acts of terrorism. Accordingly, our CI must be protected against all threats and hazards presenting a risk to the continuity of service.

The main goal of the government's policy on CIP is to ensure that Australia's CI will be better protected and better able to continue to operate in the face of increasing threats and hazards. This will engender greater confidence in our CI in all sectors of the Australian economy and the community, and among foreign investors. The two programs Geoscience Australia will be working on are the CIP Modelling and Analysis Program and the Energy Group Supply Chain Mapping Project.

The CIPMA Program

The Attorney-General's Department is the lead coordinating agency for CIP, and is sponsor and manager of the CIP Modelling and Analysis (CIPMA) Program, one of the priority initiatives funded in the 2004-05 Budget. A CIPMA development team, consisting of representatives from that department, CSIRO and Geoscience Australia has been established to source necessary skills and expertise, and build the capability.

The overall aim of the CIPMA Program is to build and demonstrate the capability to answer the most important questions posed by key decision makers in government and industry about CI dependencies and interdependencies, and the flow-on consequences of a failure in one sector. The CIPMA Program will involve modelling, simulation and analysis of the primary dependencies and interdependencies and flow-on consequences for three priority sectors: banking and finance, communications, and energy. Building this capability will rely heavily on access to significant amounts of industry information and data, and will include geographic information system (GIS) functionality for data capture, management, modelling and visualisation.



The complexity and interconnectedness of CI poses challenges for the modelling and analysis of the systems in a spatial environment. While it may appear straightforward to apply GIS to site-specific physical CI, it is much more difficult to model and analyse the dynamics of CI systems. Crucial to the modelling process will be the capture and analysis of system dependencies via comprehensive geodatabase models that incorporate business processes and system functionality to determine the criticality or vulnerability of infrastructure systems.

Successful development of the capability will rely on strong support from key stakeholders, including the owners and operators of CI, and state and territory governments.

Specifically, the demonstration capability will provide significant input in four areas:

- **The consequences of a CI failure.** What are the consequences of attacks on or failures of infrastructure for national security, continuity of government, and economic and other impacts?
- **Single points of failure.** Are there key weaknesses in the nation's CI, where one or two attacks or failures could have a debilitating effect?
- **Risks.** What are the highest risk areas, considering consequences and likelihood?
- **Investment and mitigation strategies.** What investment strategies or policies can have the greatest impact in reducing overall risk?

Over the past 12 months, a strong foundation has been laid for the CIPMA Program, including an assessment of relevant initiatives in overseas jurisdictions, the development of a detailed CIPMA Implementation Plan, and collation of user requirements from government and participating industry sectors. Data capture and model development is now well underway.

The Energy Group and the Supply Chain Mapping Project

The TISN was created to establish a business–government partnership for sharing information on medium-to long-term aspects of CIP, particularly relating to the national interest, cross-sector interdependencies, regulatory impediments and research. The TISN comprises sectoral 'infrastructure assurance advisory groups' made up of industry and government representatives. The activities of the Energy Infrastructure Assurance Advisory Group (the Energy Group) are being undertaken in the context of the principles and responsibilities described in the National CI Protection Strategy.

In July 2004, the Energy and Environment Division of the Department of Industry, Tourism and Resources—which provides the secretariat to the Energy Group—commissioned Geoscience Australia to undertake a supply-chain mapping and vulnerability assessment project. The objective is to provide a comprehensive view of the energy supply chain to enable the Energy Group to assess vulnerabilities and interdependencies within the sector.

The supply-chain mapping project is focusing on the overall systems and networks that make up the national energy CI and associated interdependencies, and will:

- create a comprehensive picture of the Australian energy sector, including linkages between electricity, gas and liquid fuels.
- be an important tool both for energy industry owners and operators and for government, by providing a new level of understanding of the vulnerabilities and interdependencies associated with energy supply chains.
- assist in the development of appropriate measures and strategies for protecting energy infrastructure both at the organisational level and from a coordinated, national perspective.

The mapping project will also be an important input into the CIPMA Program.

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