

## SBEnc Project 1.35

**Transport Network Resilience: Disaster Logistics and Infrastructure Vulnerability**

Project Progress Report – May 2015

**Phase 1**

Since the last Project Progress Report (February 2015), the key activities within Phase 1 (Identifying the core challenges in the management of the transport network prior to, and in the aftermath of, a disaster) have been meetings between the research team and:

- a. Senior managers from QLD DTMR held on 12th March.
- b. Senior managers from MRWA held on 8th April.

The aim of both these sessions was to juxtapose the thinking of these senior staff with the output of the externally facilitated workshop that had previously been held in Townsville (Nov 2014) and Broome (Feb 2015) and, in particular, to obtain input in relation to the potential list of projects that are candidates for future research projects.

Summaries of all four of the above sessions have been circulated previously, but at the macro-level the following observations can be made:

- a. The overall process of conducting a locally based workshop and a subsequent meeting with senior Departmental staff was fully supported.
- b. As a result, it is planned that a further workshop and meeting will be conducted in Grafton (NSW), and this is currently scheduled for 16th July. It is intended that this will be followed by a meeting with senior NSW RMS staff to discuss the results.
- c. The core areas that are perceived to be candidates for future research can be summarised as:
  - (1) Assessing the disaster-readiness of the transport infrastructure.
  - (2) Improving the use of data to inform a rapid response to transport network interruptions.
  - (3) Developing the processes to underpin the 'repurposing' of city level infrastructure prior to, and in the aftermath of, a disaster.
  - (4) Streamlining governance structures to support disaster recovery.
  - (5) Culturally appropriate community activation.
  - (6) Multi-agency coordination and communications strategies and practices.

Of these, items (1) and (2) have, to date, garnered the most support.

**Phase 2a**

This phase seeks to develop modelling and analysis of logistics and resupply during and after a disaster. The work continues to follow the general approach provided in the original project schedule. Inputs from Phase 1 and from industry partners have focused the work onto two commodities: petroleum fuel and its distribution into and through NQ and FNQ after disasters; and bananas, as a representative commodity perishable commodity coming out of these regions.

In recent months all petrol stations for Queensland have been mapped to the road network, and matched to vehicle registrations in the regions to produce measures of likely demand at each site across the state following a disaster (i.e. excluding agricultural and mining uses).

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Road network closure data has been sourced to identify sub-regions and links affected by short and long-term closures, with a focus on those greater than three days (primarily large flooding events). Road closure data has been provided as an animation to visualise where and when problems are occurring and recovery rates from events. The analysis is currently determining additional travel times to sites, and routing options post-disaster. Obtaining spatial and volume data on commodities is proving more difficult with continued requests to the relevant industries not proving successful. Simulation data is being prepared, based on total averages and known growing locations.

**Phase 2b**

The aim of this phase of the research is to pilot test the Functional Resonance Analysis Methodology (FRAM). To this end, two questionnaires have been developed. The first of these targets key staff members who are in the best position to comment and reflect on critical operational functions performed by their departments/units during an emergency. The will allow the research team to gather information about function dependencies and the co-ordination between different agencies. Phone interviews are scheduled for the 2<sup>nd</sup> week of May.

The second questionnaire targets senior managers who will be advising on the different aspects of their organisational support system. The idea here is to evaluate the maturity level of organisational resilience working under pressure in response to a disaster event. Again, the interviews are scheduled for the 2<sup>nd</sup> week of May, and the preliminary findings are expected to be circulated early June.

**External Dissemination**

Findings from the workshops have been developed into appropriate formats for external dissemination as follow:

- a. A submission for a paper presentation at the 'Australian Regional Development Conference' from 26-28 August, Albury, NSW.
- b. A submission for a paper presentation at the 'International Conference on Disaster Management and Civil Engineering' from 1-2 October 2015 in Phuket, Thailand. It is intended that this conference paper will subsequently be extended for submission to the 'International Journal of Disaster Prevention and Management'.

**Summary**

In summary, the project is proceeding along planned lines and generally to schedule. The inclusion of a workshop in Grafton and subsequent senior management discussions represents an additional element of work, but this has been funded by CEO SBEnc and is containable within the overall project timeline. This additional data input is, of course, to be welcomed not least as it will broaden the geographic and contextual base from which the projects conclusions and results are drawn.

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